# Ordinary Council Meeting

# Minutes

25 November 2025

City of Belmont

CITY OF BELMONT

# Ordinary Council Meeting

## Minutes

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**Alternative Formats**

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**Elected Members are reminded to retain any confidential papers for discussion with the minutes.**

**Minutes of the Ordinary Council Meeting held in the Council Chamber, City of Belmont Civic Centre, 215 Wright Street, Cloverdale on Tuesday 25 November 2025 commencing at 6:30pm.**

# Minutes

### Present

| | |
|---|---|
| Mayor R Rossi, JP (Presiding Member) | Mayor |
| Cr D Sessions (Deputy Mayor) | West Ward |
| Cr G Sekulla, JP | Central Ward |
| Cr J Harris | Central Ward |
| Cr B Ryan | East Ward |
| Cr P Marks | East Ward |
| Cr Z Abedin | South Ward |
| Cr J Davis | South Ward |
| Cr C Kulczycki | West Ward |

### In attendance

| | |
|---|---|
| Mr J Christie | Chief Executive Officer |
| Mr S Downing | Director Corporate and Governance |
| Mr W Loh | Director Development and Communities |
| Mr M Murphy | Director Infrastructure Services |
| Ms D Dabala | Manager Governance and Legal |
| Ms G Carter-Nguyen (dep. 6:35pm) | Manager Public Relations and Stakeholder Engagement |
| Mr A Bott (dep. 6:35pm) | Manager Planning Services |
| Ms C Gilbert (dep. 6:35pm) | Coordinator Planning Projects |
| Mr B Pang (dep. 6:35pm) | Coordinator Planning |
| Ms L Nicholls | Coordinator Governance |
| Ms S Bell | Senior Governance Officer |

### Members of the gallery

There were 8 members of the public in the gallery and no press representatives.

# 1 Official Opening

**6:30pm The Presiding Member welcomed all those in attendance and declared the meeting open.**

The Presiding Member read aloud the Acknowledgement of Country.

| **Acknowledgement of Country** |
| --- |
| Before I begin, I would like to acknowledge the Whadjuk Noongar people as the Traditional Owners of this land and pay my respects to Elders past, present and emerging.<br><br>I further acknowledge their cultural heritage, beliefs, connection and relationship with this land which continues today. |

The Presiding Member invited Cr Sessions to read aloud the Affirmation of Civic Duty and Responsibility on behalf of Elected Members. Cr Sessions read aloud the affirmation.

| **Affirmation of Civic Duty and Responsibility** |
| --- |
| I make this affirmation in good faith and declare that I will duly, faithfully, honestly, and with integrity fulfil the duties of my office for all the people in the City of Belmont according to the best of my judgement and ability.<br><br>I will observe the City's Code of Conduct and Standing Orders to ensure efficient, effective and orderly decision making within this forum. |

# 2 Apologies and leave of absence

Ms J Cherry-Murphy (apology) Coordinator Governance

# 3 Declarations of interest that might cause a conflict

## 3.1 Financial Interests

Nil.

## 3.2 Disclosure of interest that may affect impartiality

| Name | Item No and Title | Nature of Interest (and extent, where appropriate) |
|---|---|---|
| Cr G Sekulla | 12.2 - Amendment No. 24 to Local Planning Scheme No. 15 | I have met the CEO, the Chairperson and a Director of the Perth Racing Board on a number of occasions during the past 8 years.<br>**Note: Disclosed prior to commencement of discussion on Item 12.2.** |
| Cr D Sessions | 12.2 - Amendment No. 24 to Local Planning Scheme No. 15 | I have met the CEO of Perth racing at multiple events whilst representing the City. |
| Cr D Sessions | 12.3 - Local Planning Policy No. 20 - Great Eastern Highway Urban Corridor | I live very close to the Gt Eastern Highway corridor |
| Mayor R Rossi | 12.4 – Demolition of a Single Dwelling – Lot 502 (314) Kew Street, Cloverdale | Mrs Hays was a fellow member of the Belmont Historical Society for many years. |
| Cr D Sessions | 14.1 – NAIDOC Awards 2025 Nomination | I know the nominee and nominator, and have previously been on various advisory groups with both. |

# 4 Announcements by the Presiding Member (without discussion) and declarations by Members

## 4.1 Announcements

'Last month I had the pleasure in sharing that our Rangers Team had been named the Ranger Team of the year.

It is with great pride that I announce our Planning Team have been awarded Local Government Planning Team of the Year in the Band 1 category by the Planning Institute of Australia.

This award recognises outstanding achievements by planning teams within WA's largest local governments.

It acknowledges the dedication, professionalism and collaborative approach the City of Belmont Planning Team brings to its work as they navigate a complex infill environment while supporting the City in meeting its targets.

It also reflects how a small council can deliver significant, State-level outcomes by embedding feasibility, design quality and pragmatism into the planning framework.

Please join me in congratulating our Planning Team for their remarkable achievements and the positive impact they have on planning a better City of Belmont.

I would now like to invite the representatives of the Planning Team to come forward to accept the award in recognition of their outstanding work.'

## 4.2 Disclaimer

**6:35pm The Presiding Member drew the public gallery's attention to the Disclaimer.**

The Presiding Member advised the following:

'I wish to draw attention to the Disclaimer Notice contained within the Agenda document and advise members of the public that any decisions made at the meeting tonight can be revoked, pursuant to the *Local Government Act 1995 (WA)*.

Therefore, members of the public should not rely on any decisions until formal notification in writing by Council has been received.'

## 4.3 Declarations by Members who have not given due consideration to all matters contained in the business papers presently before the meeting

**Note:**

Cr Harris made a declaration at Item 4.3 in relation to Item 12.7 – Annual Report 2024-25 in the agenda.

Cr Harris advised that whilst he has read Item 12.7, due to the item being a late item, he stated that he was not able to give the item due consideration, and that he would depart from the Chamber during the discussion and voting on this agenda item.

# 5 Public question time

## 5.1 Responses to questions taken on notice

### 5.1.1 Ms Hollands on behalf of Belmont Residents and Ratepayer Action Group

The following question was taken on notice at the 28 October 2025 Ordinary Council Meeting. Ms Hollands was provided with a response on 13 November 2025. The response from the City is recorded accordingly:

1) At the 23 September 2025 Ordinary Council Meeting I asked if Councillors blocking people from their social media page and whether residents could make a complaint of a breach of the Code of Conduct. The response from the City was that the social media page of a Councillor is the 'private realm of an individual, and it is up to the individual, or in this instance Councillor who they allow to see their social media page content.'

   In the Elected Members Communication Policy, it includes statements relating to social media such as 'increases residents access to Council information', and 'increase the level of trust in Council'. How does either of these happen when people are blocked?

   Additionally, I refer the City and Council to the Elected Member Code of Conduct sections 4.1(b), 5.1(a), 6(d), 8.1(a) and 8.2(b) and (d), and to regulation 18 within the Standards Panel Decision 'Walker vs Treeby', and 'Kepert vs Standards Panel and Attorney General where both breaches related to social media accounts. Now that I have provided this information, would the City and Council be prepared to re-investigate this information and review the responses provided to me at the 23 September 2025 Ordinary Council Meeting?

**Response**

**The City has reviewed the additional material provided by Belmont Residents and Ratepayer Action Group (BRRAG) as well as the Local Government Standards Panel cases quoted by BRRAG.**

**By the City's reading of the Standards Panel cases referred to by the questioner, these cases do not relate to blocking of access to a Facebook page by an Elected Member.**

**Should BRRAG believe an Elected Member has breached the Local Government Act by blocking a third party's access to that Elected Member's Facebook site, it is open to BRRAG to lodge a formal complaint with the City or the WAEC (as it occurred in the Municipal Election Period).**

### 5.1.2 Ms L Hollands, Redcliffe

The following question was taken on notice at the 28 October 2025 Ordinary Council Meeting. Ms Hollands was provided with a response on 13 November 2025. The response from the City is recorded accordingly:

4. Is there a policy to stop properties having overgrown grass, particularly in relation to front yards of residential properties?

**Response**

**There is no Council policy that addresses overgrown grass on private properties.**

**Where the property is grossly overgrown the owner would be required to cut back the vegetation in line with the *Bushfire Act 1954 (WA)*.**

### 5.1.3 Mr Cardozo on behalf of Belmont East Ward Connect

The following questions were taken on notice at the 28 October 2025 Ordinary Council Meeting. Mr Cardozo was provided with a response on 13 November 2025. The response from the City is recorded accordingly:

3. When the public is asked to leave an ABF for confidential matters, is the audio recording paused, as it is during confidential items at OCM's?

**Response**

**The audio recording continues during closed sessions for confidential matters at ABF's.**

4. So if the audio does not capture confidential matters, then confidentiality cannot be the reason that the public cannot access the ABF audio?

**Response**

**As above, the audio recording continues during closed sessions for confidential matters at ABF's.**

### 5.1.4 Ms J Gee, Cloverdale

The following questions were taken on notice at the 28 October 2025 Ordinary Council Meeting. Ms Gee was provided with a response on 13 November 2025. The response from the City is recorded accordingly:

1. Can I have a summary of how much has been spent on Councillor meals in the last 12-months?

**Response**

**The City provided meals for Elected Members for November 2024 to October 2025 (12 months) at a cost of $19,874 (ex-GST).**

2. How much is the Councillors' Lounge costing us including drinks and snacks over the last 12-months?

**Response**

**The Councillors Lounge cost for Elected Members for November 2024 to October 2025 (12 months) is estimated at $1,534 (ex-GST).**

### 5.1.5 Mr L Rosolin, Belmont

The following question was taken on notice at the 28 October 2025 Ordinary Council Meeting. Mr Rosolin was provided with a response on 13 November 2025. The response from the City is recorded accordingly:

2. In regard to employees and volunteers engaged with the City at multiple locations, what is the checks performed to ensure the safety of children and the community as to the backgrounds of these individuals?

**Response**

**As Mr Rosolin was advised at the 28 October 2025 Ordinary Council Meeting, relevant roles at the City require an employee to have a valid Working With Children Check and satisfactory National Police Clearance prior to their commencement at the City.**

## 5.2 Questions from members of the public

**6:37pm The Presiding Member drew the public gallery's attention to the rules of Public Question Time as written in the Public Question Time Form.**

**In accordance with rule (l), the Mayor advised that he had registered 6 members of the public who had given prior notice to ask questions.**

**The Presiding Member invited members of the public who had yet to register their interest to ask a question to do so. Two further registrations were forthcoming.**

### 5.2.1 Ms L Hollands, Redcliffe

1. With regard to the City's current Advisory Groups:
    a) What is the original date when the current City Advisory Groups were initiated?
    b) Can I have the dates of any subsequent changes to their Terms of Reference?
    c) How do I get a copy of the minutes that relate to these changes?

    **Response**

    **The Chief Executive Officer stated that these questions would be taken on notice.**

2. What was the date of the meeting that the decision to change the Terms of Reference for the Advisory Groups, and why was there no Ordinary, Special Council Meeting or minutes from this?

    **Response**

    **The Chief Executive Officer stated that these questions would be taken on notice.**

3. Can the City provide the section of the *Local Government Act 1995 (WA)* (the Act) amendments that now these groups are seen as administrative?
    a) Does it specifically state that councillors are no longer allowed to be on these groups?

**Response**

**The Chief Executive Officer stated that these questions would be taken on notice.**

4. At the 28 October 2025 Ordinary Council Meeting, I asked questions about Belmont Seniors Citizens Centre (BSCC) Bus Agreement, and these questions were deleted from the livestream. The City Administration claims it has the right to do this under Section 5.23 of the Act. This section is for when a meeting is closed, and it was not closed during Public Question Time. What specific section of 5.23 of the Act allows Council to remove sections from the livestream when it occurs during Public Question Time?

    a) Where does it state that the City has the right to enact this when the meeting is not closed?

    b) Where does it state that the City can do this for the purposes of closing the meeting?

    **Response**

    **The Manager Governance and Legal stated that some information has already been provided to Ms Hollands on this matter and general legal permissibility. Whilst the Act is not exhaustive on this matter as raised by Ms Hollands, there is nothing under general legal principles as confirmed with communication with the Department of Local Government, Industry Regulation and Safety (DLGIRS) that prevents the City from not livestreaming or publishing parts of its meeting, whether on the agenda or not that contains confidential information.**

5. To clarify, is the City stating that there is no specific section in the Act which allows for the removal of sections of the livestream?

    **Response**

    **The Manager Governance and Legal stated that she refers to her previous response, and that whilst there is no specific provision in the Act that deals with matters that the Council does not have forewarned or forenotice of, there is no prohibition on the general legal principle that any party, Council or otherwise cannot act to protect and preserve its confidential information. This position has been reinforced and supported by DLGIRS.**

### 5.2.2 Ms Hollands on behalf of Belmont Residents and Ratepayer Action Group

1. Did the City of Belmont, when asking DLGIRS for a determination on the matter, state that there was no confidentiality clause in the BSCC Bus Agreement, and there was a public BSCC meeting on the matter?

   **Response**

   **The Chief Executive Officer stated that yes, this was advised to DLGIRS.**

2. The Belmont Residents and Ratepayer Action Group (BRRAG) sent a letter to Council recently regarding the removal of two of Ms Hollands' questions during Public Question Time at the 28 October 2025 from the livestream, and a response was received from the Director Corporate and Governance. The response stated that 'legally permissible and entirely responsible decision and appropriate in the circumstances with both parties not waiving confidentiality'. The BSCC Bus Agreement had no confidentiality clause which means neither party agreed to the matter being confidential, so how does that work when there is no such clause for either party that both parties must waive the confidentiality in order to be spoken about publicly?

   **Response**

   **The Manager Governance and Legal stated that firstly, matters pertaining to the BSCC Bus Agreement between the City and BSCC are commercial-in-confidence for each of those parties, and is a matter for those parties to determine. Secondly, the absence of any note of confidentiality or a confidentiality clause in any agreement does not absolve any quality of confidentiality in a document or communication if the parties continue to treat it as such. The City has prevailed with a position that the City's legal privilege in the document has been maintained. The City is yet to be advised by BSCC that they have waived their legal privilege, and as such the commercial-in-confidence nature of the agreement stands.**

3. Under section 6.2(1)[sic] of the Standing Orders, it is at the Mayor's discretion during Public Question Time whether a question is to be answered, for instance if the question is deemed inappropriate or has been asked previously. At the 28 October 2025 Ordinary Council Meeting, I asked the question on the BSCC Bus Agreement and the Mayor received the question and referred the question to the Chief Executive Officer. When it is the Mayor's role to determine if a question is appropriate for response, why did the Mayor refer the question to

the Chief Executive Officer for reply and after the first question was deemed to be confidential in nature, why was my second question on the matter permitted to be asked, and I was not asked to withdraw the question at the time?

**Response**

**The Mayor stated that as Mayor, he is able to seek advice from the Chief Executive Officer and Officers, which is what occurred on the evening.**

4. The Livestreaming Policy requires the Chief Executive Officer consults with the Mayor regarding the removal of any section of the livestream. Did the Mayor consult with the Chief Executive Officer on this matter, and,

    a) Given that the Mayor is a member of the BSCC, and that there was a public BSCC meeting advertised on the matter, why did the Mayor agree to the removal of the questions from the livestream?

    b) Will the Mayor be following policy and moving a motion before Council to either agree, or disagree, with the removal from the livestream?

**Response**

**The Chief Executive Officer stated that to clarify, the clause Ms Hollands is referring to does not relate to anything and everything being excluded from the livestream. It discusses inappropriate behaviour during Public Question Time. There is a clause in the City's Livestreaming Policy that advises that confidential matters will not be recorded or livestreamed, or made available to the public.**

## 5.2.3 Ms D Ransome, Ascot

1. Has the development of fourteen units at 56/58 Hay Road met Government Sewerage guidelines?

**Response**

**The development is required to meet Government Sewerage Policy. A sewer connection point exists approximately 63 metres from the site, which is within the 91 metres requirement under the *Health Act 1911 (WA)*. Because of this, the development is not permitted to rely on an alternative septic system and must connect to the reticulated sewer network. This ensures sewer and wastewater are managed in accordance with current health and safety standards.**

2. When all units are occupied there will be at least twenty-eight people feeding into an alternative septic system. Given that these units are within sight of the Swan River does the council have any environmental concerns?

   **Response**

   **The development must connect to the reticulated sewerage network as indicated in the response to question 1.**

3. Alternative septic systems function adequately if people use them appropriately. Has council considered that many things such as sanitary items, fats oil or grease, food scraps, bleach etc. could cause these systems to mal function?

   **Response**

   **The development must connect to the reticulated sewerage network as indicated in the response to question 1.**

4. Will buyers be made aware that their property is not on reticulated sewerage and the costs involved of maintenance of the sewerage system?

   **Response**
   **The development must connect to the reticulated sewerage network as indicated in the response to question 1.**

### 5.2.4 Mr Cardozo on behalf of Belmont East Ward Connect

1. The City of Belmont's Information Statement has listed for many years the Agenda Briefing Forums (ABFs) as public meetings. Can the City confirm that changing that classification, including the removal of ABFs from the list, cannot be done by City Administration, and must be approved by Council at a public meeting?

   **Response**

   **The Chief Executive Officer stated that it is the City's understanding that Council has no intention at present to change ABFs, therefore they remain open to the public. The Chief Executive Officer stated that the remainder of the question would be taken on notice.**

2. Can the City confirm that the ABFs audio recording is a continuous recording which includes the entirety of the public portion of the meeting?

   **Response**

   **The Chief Executive Officer stated that he believes that yes, it is.**

   **The Director Corporate and Governance stated that the Chief Executive Officer is correct, it is a continuous recording.**

3. Given that the City has acknowledged the audio recording at an ABF is continuous throughout the session, and there are occasions when there are confidential items on the agenda, but are not discussed behind closed doors, meaning the entire meeting remains accessible to the public, what rationale does the City have for denying access to the ABF audio recording for meetings where no confidential matters are addressed, or at least for the public section as per the *Freedom of Information Act 1992 (WA)*?

   **Response**

   **The Chief Executive Officer stated that this matter raised by Mr Cardozo has been responded to by the City on a number of occasions, and that the audio recording of an ABF is for minutes verification purposes only.**

4. The City acknowledges that ABFs are continuously audio recorded, yet the ABF Matrix omits any public submissions or deputations, councillor questions and officer responses. Given that the *Freedom of Information Act 1992 (WA)* and the *State Records Act 2000 (WA)* both require accurate and accessible records of public information, what is the City's justification for releasing only a brief summary when the City holds a complete audio recording of the meeting?

   **Response**

   **The Manager Governance and Legal stated that she believes that the City has already responded to Mr Cardozo on this matter, and clarified that the issue pertains to the exemption in the *Freedom of Information Act 1992 (WA)* for material that is publicly available. Therefore, the release of an ABF audio recording is not subject to the FOI requirements of the Act, since it is already accessible in a public domain and at an event open to the general public. She also directed the questioner to previous correspondence sent to Mr Cardozo regarding this topic.**

## 5.2.5 Mr M Cardozo, Redcliffe

1. At the 10 December 2024 Agenda Briefing Forum, my written submission was refused as I was deemed not directly affected. Whilst the ABF Matrix does record the Mayor's refusal, it does not record any of the explanation I provided when asked how I was directly affected. Given that the Matrix is adopted at each Ordinary Council Meeting as an official public record of the meeting, how can an internal or external reviewer assess the fairness of the decision to not allow a submission or deputation?

**Response**

**The Manager Governance and Legal requested that Mr Cardozo clarify which parties he would consider to be an external reviewer.**

**The Manager Governance and Legal stated that as Mr Cardozo considers State Government agencies to be external reviewers, who would be aware of the obligations and rights under the relevant Acts, those agencies would be across what information is in the public domain.**

2. The City has previously stated it relies on dictionary definition of directly affected. If the residents reasoning is not recorded in the Minutes adopted by Council, how can the City claim that the Matrix is a complete or accurate public record for the purposes of the *State Records Act 2000 (WA)* and *Freedom of Information Act 1992 (WA)*.

**Response**

**The Manager Governance and Legal referred to previous responses given. The information is in the public realm, by operation of the *Freedom of Information Act 1992 (WA)*, it does not need to be specifically recorded. There is no obligation on the City to collect verbatim information from Officers, Councillors, members of public etc. provided at an ABF. The Matrixes are a high-level summary of the information exchanged on the evening.**

3. The AEM on 3 February 2025, had no confidential items and was recorded in full. The published minutes include only the motion headings, and omit the electors submissions, explanations and rationale. What reason is there for the City to withhold the audio and the complete record of the AEM.

**Response**

**The CEO stated that the recording is for the verification of the minutes. The legislation allows the City to provide a summary of the meeting.**

4. Throughout this year, the City has confirmed that the ABF is continuously recorded, supported by a Matrix, adopted as Minutes at the following OCM. Does the City acknowledge that ABF records must meet the same standard of accuracy, completeness and accessibility as OCMs and Special Council Meetings?

**Response**
**The Manager Governance and Legal stated that State Parliament would not have intended that the *Freedom of Information Act 1992 (WA)* would supersede the *Local Government Act 1995 (WA)*. The *Local Government Act 1995 (WA)* is very clear about the City's obligations, including the requirement to record information in the form of minutes. Meetings that are not statutorily required by the *Local Government Act 1995 (WA),* such as ABFs and other meetings, are open to the public but sit outside those obligations. They are two distinct statutory regimes that operate separately and would not override the obligations on local authorities under the *Local Government Act 1995 (WA)*.**

### 5.2.6 Ms C Padua, Redcliffe

1. Residents in the Lyall St area have been following the proposed 'left in, left out' trial at Lyall St and Stanton Rd. Can the City please advise whether the 'left in, left out' trial can proceed independently of the Western Power delay?

    a) And if so, when residents can expect it to begin and if it can proceed independently, is the City willing to prioritise the trial given the ongoing safety concerns raised by residents?

**Response**

**The Director Infrastructure Services stated that the design works had reached 85% completion and the City is liaising with Main Roads WA on funding.**

**A modelling exercise considered a number of scenarios, with one of them as the 'left in, left out' on its own. It was not the preferred scenario as it would push traffic in other directions. The best outcome was the 'left in, left out' and other treatments. The 'left in, left out' works could be done before the other works, but the concern would be the potential impact on traffic. The preferred solution would be to do them all together.**

**To do other parts of the treatment, for example, intersection plateaus at Lyall St, on Moreing St and the junctions at Stanton Rd, there is potential to do those initially but the modelling and preferred option would be that the 'left in, left out' is done at the same time as the roundabout.**

**In regard to the timing for lighting, the City has a direct Western Power application in and have applied on an 'Option B' process where the local government can design and deliver the lighting themselves under Western Power approval. The City is meeting with a lighting consultant on Friday. The City is also in discussions with suppliers for solar lighting. If there are delays on other aspects of lighting, they could be installed as a temporary measure.**

**The City is pursuing every avenue and anticipate that within the next month or two the City would have more information on project timings that would be available on the City's website.**

2. Could the City please advise whether another car counter or speed monitoring device is currently being used or is planned to be deployed to track speeding vehicles on Lyall St.

   **Response**

   **The Director Infrastructure Services stated that the City can carry out another audit on speeds and traffic volume on Lyall St.**

3. Regarding the intersection at Victoria St and Lyall St, does the City plan to implement any measures to further prevent accidents?

   **Response**

   **The Director Infrastructure Services stated there were a number of intersections identified under the Redcliffe Traffic Study. The Director Infrastructure Services stated that the remainder of the question would be taken on notice.**

**7:12pm Sessions moved, Harris seconded, that Public Question Time be extended.**

**Carried 9 votes to 0**

For: Abedin, Davis, Harris, Kulczycki, Marks, Rossi, Ryan, Sekulla and Sessions

Against: Nil

## 5.2.7 Mr M Russell, Kewdale

1. What money is in the dedicated reserve account for Lot 1, 314 Kew St property created in 2007, and why were none of the funds used to stabilise or reuse the heritage dwelling in the years since?

   **Response**

   **The Chief Executive Officer stated that the question would be taken on notice.**

2. When was last time the Annual Report was not inserted as a late item to the OCM?

   **Response**

   **The Chief Executive Officer stated that the question would be taken on notice.**

3. What legal basis is the City relying on to make the Belmont Senior Citizens Club bus contract confidential, and how is it consistent with upcoming reforms requiring public registers of contracts and community leases?

   **Response**

   **The CEO stated that the discussions were commercial in confidence. At the time the questions were raised, the agreement had not been signed. In accordance with legislation, the City believe that is a confidential matter between the City and the Senior Citizens Club.**

4. What commercial harm would occur if a community bus use Agreement between the City and a volunteer run seniors organisation were to be released.

   **Response**

   **The CEO stated that the rationale for confidentiality was because it was a confidential discussion with two parties.**

## 5.2.8 Ms J Gee, Cloverdale

1. The minutes in the public gallery do not mention the item being queried at this meeting that were removed from the livestream. Question one and question four from Ms Hollands are included, but no reference to the fact that question two and three were asked.

**Response**

**The Mayor stated there is an updated version.**

**The Manager Governance and Legal confirmed that an updated version of the Minutes are available on the website and to the public.**

2. The Ordinary Council Meeting 28 October 2025 Minutes in the public gallery include that a response to a question taken on notice was provided to me on 13 November 2025. As of tonight, I have not received a written response to my questions taken on notice?

   **Response**

   **The CEO stated that this matter would be followed up.**

3. Can I have the last five years of the costs of meals and the Councillors Lounge that were asked at the October 2025 Council meeting?

   **Response**

   **The Chief Executive Officer stated that the question would be taken on notice.**

4. On what date did the City remove part of the livestream of the 28 October 2025 Ordinary Council Meeting?

   **Response**

   **The CEO stated that it was believed this was actioned the day following the meeting.**

   **The Manager Governance and Legal confirmed that it happened the day following the meeting.**

5. What is the purpose of the Advisory Groups?

   a) Is it to assist the Council?

   b) What are Council going to get out of an Advisory Group that they don't sit on?

   **Response**

   **The Mayor stated that Elected Members do receive the minutes on the portal.**

**The CEO stated that it is not just officers who sit on Advisory Group meetings. There are members of the public and the City has advertised for members with a strong response. Elected Members are kept up to date with minutes from the meetings that are posted on the Elected Member portal.**

6. Are Elected Members allowed to attend Advisory Group meetings should they wish to?

   **Response**

   **The CEO stated that Advisory Groups are administrative in nature. The officers and members are attendees in accordance with the Terms of Reference.**

**7:19pm As there were no further questions, the Presiding Member declared Public Question Time closed.**

# 6 Confirmation of Minutes/receipt of Matrix

## 6.1 Matrix for the Agenda Briefing Forum held 18 November 2025

**Officer Recommendation**

**Harris moved, Sessions seconded**

That the Matrix of the Agenda Briefing Forum held on 18 November 2025, as printed and circulated to all Elected Members, be received and noted.

**Carried Unanimously 9 votes to 0**

For: Abedin, Davis, Harris, Kulczycki, Marks, Rossi, Ryan, Sekulla and Sessions

Against: Nil

## 6.2 Ordinary Council Meeting held 28 October 2025

**Note: Mayor Rossi asked if there were any questions from Elected Members on the Ordinary Council Meeting Minutes held 28 October 2025.**

**Note: Cr Harris asked the following questions:**

1. There was mention before on advice received from the Department of Local Government, Industry Regulation and Safety (DLGIRS) on the removal of a section of the 28 October 2025 livestream, and of two questions removed from the 28 October 2025 meeting minutes. Has Council been provided this advice?

**Response**

**The Chief Executive Officer stated that yes, he believes it had been provided to Elected Members, and that there was also a media item released in relation to this matter that included the Department's statement.**

**The Director Corporate and Governance stated that yes, an email was sent to Elected Members with DLGIRS's advice.**

2. To clarify, the advice from DLGIRS is the statement that was published on 13 November 2025 in the PerthNow article?

**Response**

**The Chief Executive Officer stated that correspondence was previously provided to a resident which confirmed advice from DLGIRS that local governments are not permitted to livestream or publish parts of the meeting that are closed to the public. Confidential matters such as contracts and commercial negotiations fall within this advice. It is not a legislative requirement that recordings remain completely unaltered, provided any edits are made for legitimate purposes, such as removing confidential or legally restricted information.**

3. The City's Livestreaming Policy states that any changes to the livestream are to be confirmed at the following Ordinary Council Meeting, why is this change not on the agenda this evening?

**Response**

**The Chief Executive Officer stated that his understanding of Council Policy 62 – Livestreaming Policy is that the clause Cr Harris is referring to relates to the questions also raised by Ms Hollands during Public Question Time at this meeting. The Policy also states that confidential matters in accordance with Section 5.23 of the *Local Government Act 1995 (WA)* (the Act) will not be livestreamed or made available to the public.**

4. Is it the City's position that Section 5.23 of the Act permits these questions to be removed from the Minutes, or is the basis more the general legal principle of protecting confidential information?

**Response**

**The Chief Executive Officer stated that both the *Local Government Act 1995 (WA)* (the Act) and the general legal principles are relevant, and that the advice from DLGIRS confirmed that removal of a section of the livestream, or questions from the minutes is acceptable as confidential matters such as contracts and commercial negotiations are not permitted to be livestreamed or published to the public.**

**The Manager Governance and Legal concurred with the Chief Executive Officer and further stated that it is important to remember that the City operates under the Act, but it also operates under larger common law principles, and that the legal obligations of the City are no less valid. In this particular instance, the City had received confirmation from DLGIRS that there is a general legal principle that applies in relation to the responsible handling of matters which are confidential or legally restricted.**

**It is rare for DLGIRS to provide individual advice to local governments, as it is often advised that the City seek its own external legal advice. On this matter, DLGIRS did confirm unequivocally that there is no prohibition on the City removing confidential matters from the public minutes, and that the minutes do not have to remain unaltered if there is a legitimate purpose seeking to protect and preserve confidential and legally restricted information.**

5. Were those comments from DLGIRS made to the City directly, or to PerthNow and then reported?

**Response**

**The Chief Executive Officer stated that the initial advice was reported via the media, but there was correspondence from the Director Corporate and Governance to DLGIRS on this issue, and DLGIRS confirmed this advice.**

**The Director Corporate and Governance stated that DLGIRS confirmed the comments and advice made to the City directly.**

**Note: Cr Harris stated that he had further questions relating to the 28 October 2025 Ordinary Council Meeting Confidential Minutes.**

**The Presiding Member advised that in accordance with Section 5.23(2)(c) of the *Local Government Act 1995 (WA)* in order to discuss the Confidential Minutes of the 28 October 2025 Ordinary Council Meeting, Council will need to go behind closed doors.**

**7:26pm Davis moved, Harris seconded that in accordance with Section 5.23(2)(c) of the *Local Government Act 1995 (WA)*, the meeting proceed behind closed doors to discuss the Confidential Minutes of the 28 October 2025 Ordinary Council Meeting.**

**Carried unanimously 9 votes to 0**

For: Abedin, Davis, Harris, Kulczycki, Marks, Rossi, Ryan, Sekulla and Sessions

Against: Nil

**7:27pm The Desktop Support Officer departed the meeting.**

**7:27pm Members of the public gallery departed the meeting.**

**Note: Refer to Confidential Minutes.**

**7:32pm The meeting came out from behind closed doors. Five members of the public returned to the meeting.**

**Note:**

**Cr Harris put forward the following Alternative Motion:**

| **Alternative Councillor Motion** |
|---|
| **Harris moved.**<br>That Council:<br>1. Defer the confirmation of the October 2025 Ordinary Council Meeting minutes to the December meeting.<br>2. Instructs the Chief Executive Officer to restore the livestream of the October 2025 Ordinary Council Meeting, including questions and answers from Ms Hollands.<br>**Lapsed.** |

**The Presiding Member advised that in accordance with Section 5.23(2)(c) of the *Local Government Act 1995 (WA)* in order to further discuss the confidential matters relating to Cr Harris' Alternative Motion, Council will need to go behind closed doors.**

**7:33pm Sekulla moved, Davis seconded that in accordance with Section 5.23(2)(c) of the *Local Government Act 1995 (WA)*, the meeting proceed behind closed doors to discuss the confidential matters relating to Cr Harris' Alternative Motion.**

**Carried unanimously 9 votes to 0**

For: Abedin, Davis, Harris, Kulczycki, Marks, Rossi, Ryan, Sekulla and Sessions

Against: Nil

**7:33pm The Desktop Support Officer departed the meeting.**

**7:33pm Members of the public gallery departed the meeting.**

**Note: Refer to Confidential Minutes.**

**7:40pm The meeting came out from behind closed doors. Five members of the public returned to the meeting.**

**Note: Cr Harris' Alternative Motion did not proceed.**

| **Officer Recommendation** |
|---|
| **Sekulla moved, Marks seconded**<br><br>That the Minutes of the Ordinary Council Meeting held on 28 October 2025, as printed and circulated to all Elected Members, be confirmed as a true and accurate record.<br><br>**Carried 8 votes to 1**<br><br>For: Abedin, Davis, Kulczycki, Marks, Rossi, Ryan, Sekulla and Sessions<br><br>Against: Harris |

# 7 Questions by Members on which due notice has been given (without discussion)

Nil.

# 8 Questions by members without notice

## 8.1 Responses to questions taken on notice

Nil.

## 8.2 Questions by members without notice

### 8.2.1 Cr Sessions

1. Do we have an update on when the State Government might be introducing the standardised meeting procedures?

**Response**

**The Chief Executive Officer stated that there was a presentation from the Department of Local Government, Industry Regulation and Safety (DLGIRS) at the WALGA East Metropolitan Zone Meeting on Thursday, 20 November 2025. The response from DLGIRS was that it is likely to be mid-2026 before there is any draft standardised meeting procedures to circulate for comment.**

# 9 New business of an urgent nature approved by the person presiding or by decision

Nil.

# 10 Business adjourned from a previous meeting

Nil.

# 11 Reports of committees

Nil.

# 12 Reports of administration

**Withdrawn Items**

Item 12.1 was withdrawn at the request of Cr Sessions
Item 12.2 was withdrawn at the request of Mayor Rossi
Item 12.3 was withdrawn at the request of Mayor Rossi
Item 12.4 was withdrawn at the request of Cr Sessions
Item 12.7 was withdrawn at the request of Cr Sessions

**Sekulla moved, Harris seconded**

That with the exceptions of Items 12.1, 12.2, 12.3, 12.4 and 12.7, which are to be considered separately, the Officer Recommendations for Items 12.5, and 12.6 be adopted en bloc.

**Carried by 9 votes to 0**

For: Abedin, Davis, Harris, Kulczycki, Marks, Rossi, Ryan, Sekulla and Sessions

Against: Nil

# 12.1 Amendment No. 23 to Local Planning Scheme No. 15 and modifications to Local Planning Policy No.19

| | | |
|---|---|---|
| Voting Requirement | : | Simple Majority |
| Subject Index | : | LPS15/023<br>LPP15/019 |
| Location/Property Index | : | Various |
| Application Index | : | N/A |
| Disclosure of any Interest | : | N/A |
| Previous Items | : | 27 May 2025 Ordinary Council Meeting – Item 12.1<br>23 July 2024 Ordinary Council Meeting- Item 12.1 |
| Applicant | : | N/A |
| Owner | : | N/A |
| Responsible Division | : | Development and Communities |

## Council role

| | |
|---|---|
| **Legislative** | The making and adopting of local laws, local town planning schemes and Council policies. |

## Purpose of report

For Council to consider final adoption of Amendment No. 23 to Local Planning Scheme No. 15 (LPS 15) and modifications to Local Planning Policy No. 19 (LPP 19) following public advertising.

## Summary and key issues

- In late 2024, the *Planning and Development (Local Planning Schemes) Regulations 2015 (WA)* (Regulations) were amended to create consistency in the assessment of short-term rental accommodation across local governments.
- The key changes relate to:
    - The inclusion of new definitions and modifications to existing definitions.
    - A State-wide exemption for 'hosted' Short-term Rental Accommodation (STRA).
    - A 90-night (cumulative) exemption within a 12-month period for 'unhosted' STRA in the Perth metropolitan area.

- The City is required to amend LPS 15 to be consistent with the State Regulations by the end of 2025. The required amendments to LPS 15 include the addition, modification and deletion of various definitions, as well as updates to the Zoning Table.
- Local Planning Policy No. 19 – Short-term Rental Accommodation also requires minor updates to reflect the proposed changes to LPS 15. These changes are minor in nature, and do not change the substantive policy objectives or application.
- At the 27 May 2025 Ordinary Council Meeting (OCM), Council endorsed public advertising of Amendment No. 23 to LPS 15 and modified LPP 19. The documents were advertised concurrently from 31 July 2025 to 12 September 2025.
- No submissions were received during the advertising period. It is therefore recommended that Council support Amendment No. 23 to LPS 15 and modified LPP 19 without modification.

**Officer Recommendation**

**Sessions moved, Davis seconded**

That Council:

1. Pursuant to Regulation 50(3) of the *Planning and Development (Local Planning Schemes) Regulations 2015 (WA)*, support Amendment No. 23 to Local Planning Scheme No. 15 contained at Attachment 12.1.1 with a recommendation that the Amendment be approved by the Minister for Planning without modification.
2. Adopt modified Local Planning Policy No. 19 - Short-term Rental Accommodation contained at Attachment 12.1.2 in accordance with Schedule 2, Part 2, Clause 4 of the *Planning and Development (Local Planning Schemes) Regulations 2015 (WA)*.

**Carried Unanimously 9 votes to 0**

For: Abedin, Davis, Harris, Kulczycki, Marks, Rossi, Ryan, Sekulla and Sessions

Against: Nil

## Location

Amendment No. 23 and modified LPP 19 relate to the entire City of Belmont local government area.

## Consultation

The Regulations require scheme amendments to be submitted to the Western Australian Planning Commission (WAPC) to obtain consent for public advertising.

On 15 July 2025, the City received consent to advertise from the WAPC, subject to a modification requiring 'Unhosted' STRA to be designated as 'A' instead of 'X' in the Mixed Business zone. This change reflects the guidance that 'Unhosted' STRA should be capable of consideration in zones where dwellings can be contemplated. Dwellings can currently be considered in the zone, with some already existing.

Amendment No. 23 and modified LPP 19 were advertised concurrently from 31 July 2025 until 12 September 2025 (43 days) as follows:

- The Amendment, revised Policy and public notices being displayed on the City's website and Civic Centre.
- A public notice being published in the 31 July 2025 edition of the PerthNow newspaper.

No submissions were received during this period.

## Strategic Community Plan implications

In accordance with the 2024–2034 Strategic Community Plan:

**Key Performance Area: Place**

**Outcome:** 6. Sustainable population growth with responsible urban planning.

## Policy implications

### Local Planning Policy No. 19 – Short-term Rental Accommodation

While the intent of the Policy remains unchanged, the updates to LPP 19 will ensure terminology and references align with the Regulations. Should Council ultimately approve the modifications to LPP 19, the amended Policy will guide the assessment of future applications for STRA.

## Statutory environment

### Planning Bulletin 115/2024 – Short-term Rental Accommodation – Guidance for Local Government

The Bulletin provides guidance for local governments on amending their local planning scheme to address STRA in a manner consistent with the Regulations. It also clarifies how such amendments should be classified as well as providing guidance on land use permissibility.

The Bulletin states that if a scheme amendment only replaces existing land use terms with new short-term rental accommodation terms without changing permissibility, it will generally be a basic amendment. However, if it introduces new land uses or changes the permissibility of existing ones, it will usually be treated as a standard amendment. The Bulletin also outlines that 'unhosted STRA' should be listed as a 'D' or 'A' use in zones where any type of dwelling is capable of approval.

### Local Planning Scheme No. 15

Schedule 1 of LPS 15 includes both general definitions and land use definitions for each use listed in the Zoning Table. The relevant definitions relating to this Amendment are outlined in Attachment 12.1.3.

Table 1 (Zoning Table) of LPS 15 sets out the permissibility of uses using the symbols 'P', 'D', 'A' and 'X'. The meaning of the symbols is listed below:

'P' Means the use is permitted by the Scheme, providing the use complies with the relevant development standards and the requirements of the Scheme.

'D' Means that the use is not permitted unless the local government has exercised its discretion by granting development approval.

'A' Means that the use is not permitted unless the local government has exercised its discretion by granting development approval after giving special notice in accordance with the provisions contained in Clause 64 of the Regulations Schedule 2.

'X' Means a use that is not permitted by the Scheme.

### *Planning and Development (Local Planning Schemes) Regulations 2015 (WA)*

### Model Provisions

Schedule 1 of the Regulations contains the Model Provisions for local planning schemes. The Model Provisions provide the form and content for all new local planning schemes and apply when a scheme is revised, prepared or amended by

a local government. The Model Provisions, along with any essential local variations approved by the Minister, should be gradually integrated into Local Planning Schemes through the scheme amendment process whenever an opportunity arises. All local governments are required to have their schemes align with the updated Regulations for STRA by the end of 2025.

## Local Planning Scheme Amendments

Section 75 of the *Planning and Development Act 2005 (WA)* provides for an amendment to be made to a local planning scheme. The procedures for amending a local planning scheme, including public consultation requirements, are set out within Part 5 of the Regulations.

The Regulations specify three different types of Scheme amendments, being 'basic', 'standard' and 'complex'. The main differences between the amendment classifications are the differing advertising requirements. Clause 35(2) of the Regulations requires a resolution of the local government specifying the type of amendment and the reasons for the classification.

When a local government resolves to amend a scheme, the proposed scheme amendment is required to be referred to the WAPC to obtain consent to advertise. Where an amendment is deemed to have an environmental impact, it is also required to be referred to the Environmental Protection Authority.

Following consent to advertise, the responsible authority shall advertise the amendment in accordance with the Regulations by:

- Displaying the amendment and associated public notice on the local government's website.
- Publishing the notice in a local newspaper and displaying this on the local government's public notice boards.
- Giving a copy of the notice to each public authority that the local government considers is likely to be affected by the amendment.

After the conclusion of the advertising period, Council is required to consider the submissions and pass a resolution to either support the amendment, with or without modification, or not support the amendment. After passing a resolution, the amendment is to be forwarded to the WAPC to review and provide a recommendation to the Minister for Planning.

## Local Planning Policy Amendments

Schedule 2, Part 2, Clause 5 of the Regulations outlines the procedure for amending a local planning policy. When a local government resolves to amend a policy, it is required to advertise the document for a period not less than 21 days. Modifications to a local planning policy are required to be advertised by displaying a notice on the local government's website and in a local newspaper, as well as

making a copy of the revised policy available for viewing at the local government's office.

After the conclusion of the advertising period, the local government must consider submissions and determine whether to proceed with the policy, with or without modification, or not proceed with the policy. Should the local government proceed with the modified policy, it must publish a notice of its decision.

## Background

Council endorsed Amendment No. 23 to LPS 15 and modified LPP 19 for advertising at the 27 May 2025 OCM. The intent of Amendment No. 23 and the modifications to LPP 19 is to bring the City's planning framework relating to STRA into alignment with the Regulations.

The rise of online booking platforms has significantly increased the number of properties originally approved for residential use, being used for STRA. Belmont's proximity to Perth Airport, the Perth CBD, Optus Stadium, and the Swan River has made it a desirable location for both traditional tourist accommodation and STRA land uses.

Recognising the need for local guidance, Council adopted LPP 19 to set standards for operators seeking to establish and operate STRA. Since then, the State has amended the Regulations to modify the STRA land use definitions and include exemptions from the requirement for development approval in certain instances. More specifically:

- The land uses of 'hosted short-term rental accommodation', 'unhosted short-term rental accommodation' and 'tourist and visitor accommodation' have been included.
- The 'bed and breakfast', 'holiday accommodation', 'holiday house', 'motel', 'serviced apartment' and 'tourist development' land uses have been deleted.
- Development approval is not required for 'hosted' STRA. 'Unhosted' STRA also does not require development approval where it is used for no more than 90 nights in a 12-month period.

To align the local planning framework with the State's Regulations, modifications are proposed to LPS 15 and LPP 19. These include updates to definitions, the zoning table, and land use permissibility in LPS 15, as well as concurrent amendments to LPP 19 to ensure consistency. An overview of these modifications is provided in the Report section.

## Report

Key changes proposed by Amendment No. 23 relate to:

- The addition, modification and deletion of various definitions;
- Updates to the Zoning Table to incorporate new land use terms with permissibility consistent with Planning Bulletin 115/2024; and
- Consequential changes to remove references to deleted definitions from the parking standards and Additional Uses schedule.

Modifications to LPP 19 include:

- Updating terminology to align with the Regulations;
- Clarifying one of the policy objectives and its associated clause; and
- Providing clearer guidance on how parking should be calculated where developments contain self-contained components on the same site.

Amendment No. 23 and modified LPP 19 were advertised concurrently for 43 days, with no submissions received. It is therefore recommended that Council adopt modified LPP 19 and support Amendment No. 23 without modification, with a recommendation that the Minister for Planning approve the Amendment.

## Financial implications

There are no financial implications evident at this time.

## Environmental implications

There are no environmental implications associated with this report.

## Social implications

The amendments to LPS 15 and LPP 19 aim to ensure that STRA uses are located and managed appropriately to protect the supply and amenity of

long-term residential accommodation.

## Attachment details

| Attachment No and title |
|---|
| 1. Amendment No. 23 to Local Planning Scheme No. 15 (LPS 15) [**12.1.1** - 34 pages] |
| 2. Revised Local Planning Policy No. 19 - Short-term Rental Accommodation [**12.1.2** - 10 pages] |
| 3. Definitions [**12.1.3** - 4 pages] |

City of Belmont

# Scheme Amendment 23

## Local Planning Scheme No. 15



Document Set ID: 6012572
Version: 1, Version Date: 14/07/2025

*Planning and Development Act 2005*

**RESOLUTION TO PREPARE AMENDMENT TO LOCAL PLANNING SCHEME**

**CITY OF BELMONT**

**LOCAL PLANNING SCHEME NO. 15**

**SCHEME AMENDMENT NO. 23**

Resolved that the local government pursuant to Section 75 of the *Planning and Development Act 2005*, amend the above local planning scheme by:

i. Deleting the existing definition of 'Short-Term Accommodation' in Schedule 1 – General Definitions of the Scheme Text.

ii. Amending the existing definition of Cabin in Schedule 1 – General Definitions of the Scheme Text to:

"means a building that —

(a) is an individual unit other than a chalet; and

(b) forms part of —

(i) tourist and visitor accommodation; or

(ii) a caravan park; and

(c) if the unit forms part of a caravan park — is used to provide accommodation for persons, on a commercial basis, with no individual person accommodated for a period or periods exceeding a total of 3 months in any 12-month period."

iii. Amending the existing definition of Chalet in Schedule 1 – General Definitions of the Scheme Text to:

"means a building that —

(a) is a self-contained unit that includes cooking facilities, bathroom facilities and separate living and sleeping areas; and

(b) forms part of —

(i) tourist and visitor accommodation; or

(ii) a caravan park; and



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(c) if the unit forms part of a caravan park — is used to provide accommodation for persons, on a commercial basis, with no individual person accommodated for a period or periods exceeding a total of 3 months in any 12-month period."

iv. Insert terms 'Short-term Rental Accommodation' and 'Short-term Rental Arrangement' in Schedule 1 – as follows:

"Short-term rental accommodation —

(a) means a dwelling provided, on a commercial basis, for occupation under a short-term rental arrangement; but does not include a dwelling that is, or is part of, any of the following —

(i) an aged care facility as defined in the Land Tax Assessment Act 2002 section 38A(1);

(ii) a caravan park;

(iii) a lodging-house as defined in the Health (Miscellaneous Provisions) Act 1911 section 3(1);

(iv) a park home park;

(v) a retirement village as defined in the Retirement Villages Act 1992 section 3(1);

(vi) workforce accommodation."

"Short-term rental arrangement means an arrangement under which —

(a) a dwelling, or part of a dwelling, is provided for occupation by a person; and

(b) the person occupies the dwelling, or part of the dwelling, for a period or periods not exceeding a total of 3 months in any 12-month period."

v. Deleting the 'Bed and Breakfast', 'Holiday Accommodation', 'Holiday House', 'Motel', 'Serviced Apartment', 'Short Stay Accommodation' and 'Tourist Development' definitions in Schedule 1 – Land Use Definitions of the Scheme Text.

vi. Insert the following definition for Tourist and Visitor Accommodation in Schedule 1 – Land Use Definitions:

"(a) means a building, or a group of buildings forming a complex, that —



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(i) is wholly managed by a single person or body; and

(ii) is used to provide accommodation for guests, on a commercial basis, with no individual guest accommodated for a period or periods exceeding a total of 3 months in any 12-month period; and

(iii) may include on-site services and facilities for use by guests; and

(iv) in the case of a single building — contains more than one separate accommodation unit or is capable of accommodating more than 12 people per night; and

(b) includes a building, or complex of buildings, meeting the criteria in paragraph (a) that is used for self-contained serviced apartments that are regularly serviced or cleaned during the period of a guest's stay by the owner or manager of the apartment or an agent of the owner or manager; but

(c) does not include any of the following —

(i) an aged care facility as defined in the Land Tax Assessment Act 2002 section 38A(1);

(ii) a caravan park;

(iii) hosted short-term rental accommodation;

(iv) a lodging-house as defined in the Health (Miscellaneous Provisions) Act 1911 section 3(1);

(v) a park home park;

(vi) a retirement village as defined in the Retirement Villages Act 1992 section 3(1);

(vii) a road house;

(viii) workforce accommodation."

vii. Insert the following definition for Hosted short-term rental accommodation in Schedule 1 – Land Use Definitions:

"means any of the following —

(a) short-term rental accommodation where the owner or occupier, or an agent of the owner or occupier who ordinarily resides at the dwelling, resides at the same dwelling during the short-term rental arrangement;



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(b) short-term rental accommodation that is an ancillary dwelling where the owner or occupier, or an agent of the owner or occupier who ordinarily resides at the other dwelling on the same lot, resides at that other dwelling during the short-term rental arrangement;

(c) short-term rental accommodation that is a dwelling on the same lot as an ancillary dwelling where the owner or occupier, or an agent of the owner or occupier who ordinarily resides at the dwelling, resides at the ancillary dwelling during the short-term rental arrangement."

viii. Insert the following definition for Unhosted short-term rental accommodation in Schedule 1 – Land Use Definitions:

"means short-term rental accommodation that —

(a) is not hosted short-term rental accommodation; and

(b) accommodates a maximum of 12 people per night."

ix. Deleting reference to 'Bed and Breakfast', 'Holiday Accommodation', 'Motel' and 'Serviced Apartments' in Table 1 – Zoning Table.

x. Inserting 'Hosted Short-term Rental Accommodation', 'Unhosted Short-term Rental Accommodation' and 'Tourist and Visitor Accommodation' in Table 1 – Zoning Table with the permissibilities outlined below.

| ZONES | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| USE CLASSES | Residential | Town Centre | Commercial | Mixed Use | Mixed Business | Industrial | Service Station | Places of Public Assembly | Residential and Stables | Special Development Precinct |
| Hosted Short-term Rental Accommodation | P | P | P | P | P | X | X | X | P | P |
| Unhosted Short-term Rental Accommodation | A | A | A | A | X | X | X | X | A | A |
| Tourist and Visitor Accommodation | X | X | X | D | A | X | X | X | X | A |

xi. Remove reference to 'Motel' from Table 2 – Car Parking Requirements and Table 3 – Bicycle Parking Requirements.

xii. Remove all references to 'Serviced Apartments' from Schedule No. 2 – Additional Uses.



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Pursuant to Clause 35(2) of the Planning and Development (Local Planning Schemes (Regulations) 2015 (WA), determines that Amendment No. 23 to Local Planning Scheme No. 15 is a 'Standard' amendment, for the following reasons:

i. The amendment would have minimal impact on land in the scheme area that is not the subject of the amendment;

ii. The amendment does not result in any significant environmental, social, economic or governance impacts on land in the scheme area; and

iii. The amendment relates to a zone or reserve that is consistent with the objectives identified in the scheme for that zone or reserve.

Dated this 27th day of May 2025.

**Chief Executive Officer**



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Version: 1, Version Date: 14/07/2025

*Planning and Development Act 2005*

**MODIFIED AMENDMENT TO LOCAL PLANNING SCHEME**

**CITY OF BELMONT**

**LOCAL PLANNING SCHEME NO. 15**

**SCHEME AMENDMENT NO. 23**

The local government as directed by the Department of Planning, Lands and Heritage, pursuant to section 83A of the *Planning and Development Act 2005,* amend the above Local Planning Scheme by:

i. Deleting the existing definition of 'Short-Term Accommodation' in Schedule 1 – General Definitions of the Scheme Text.

ii. Amending the existing definition of Cabin in Schedule 1 – General Definitions of the Scheme Text to:

"means a building that —

(a) is an individual unit other than a chalet; and

(b) forms part of —

(i) tourist and visitor accommodation; or

(ii) a caravan park; and

(c) if the unit forms part of a caravan park — is used to provide accommodation for persons, on a commercial basis, with no individual person accommodated for a period or periods exceeding a total of 3 months in any 12-month period."

iii. Amending the existing definition of Chalet in Schedule 1 – General Definitions of the Scheme Text to:

"means a building that —

(a) is a self-contained unit that includes cooking facilities, bathroom facilities and separate living and sleeping areas; and

(b) forms part of —

(i) tourist and visitor accommodation; or

(ii) a caravan park; and

(c) if the unit forms part of a caravan park — is used to provide accommodation for persons, on a commercial basis, with no individual person accommodated for a period or periods exceeding a total of 3 months in any 12-month period."

iv. Insert terms 'Short-term Rental Accommodation' and 'Short-term Rental Arrangement' in Schedule 1 – as follows:

"Short-term rental accommodation —

(a) means a dwelling provided, on a commercial basis, for occupation under a short-term rental arrangement; but does not include a dwelling that is, or is part of, any of the following —

(i) an aged care facility as defined in the Land Tax Assessment Act 2002 section 38A(1);

(ii) a caravan park;

(iii) a lodging-house as defined in the Health (Miscellaneous Provisions) Act 1911 section 3(1);

(iv) a park home park;

(v) a retirement village as defined in the Retirement Villages Act 1992 section 3(1);

(vi) workforce accommodation."

"Short-term rental arrangement means an arrangement under which —

(a) a dwelling, or part of a dwelling, is provided for occupation by a person; and

(b) the person occupies the dwelling, or part of the dwelling, for a period or periods not exceeding a total of 3 months in any 12-month period."

v. Deleting the 'Bed and Breakfast', 'Holiday Accommodation', 'Holiday House', 'Motel', 'Serviced Apartment', 'Short Stay Accommodation' and 'Tourist Development' definitions in Schedule 1 – Land Use Definitions of the Scheme Text.

vi. Insert the following definition for Tourist and Visitor Accommodation in Schedule 1 – Land Use Definitions:

"(a) means a building, or a group of buildings forming a complex, that —

(i) is wholly managed by a single person or body; and

(ii) is used to provide accommodation for guests, on a commercial basis, with no individual guest accommodated for a period or periods exceeding a total of 3 months in any 12-month period; and

(iii) may include on-site services and facilities for use by guests; and

(iv) in the case of a single building — contains more than one separate accommodation unit or is capable of accommodating more than 12 people per night; and

(b) includes a building, or complex of buildings, meeting the criteria in paragraph (a) that is used for self-contained serviced apartments that are regularly serviced or cleaned during the period of a guest's stay by the owner or manager of the apartment or an agent of the owner or manager; but

(c) does not include any of the following —

(i) an aged care facility as defined in the Land Tax Assessment Act 2002 section 38A(1);

(ii) a caravan park;

(iii) hosted short-term rental accommodation;

(iv) a lodging-house as defined in the Health (Miscellaneous Provisions) Act 1911 section 3(1);

(v) a park home park;

(vi) a retirement village as defined in the Retirement Villages Act 1992 section 3(1);

(vii) a road house;

(viii) workforce accommodation."

vii. Insert the following definition for Hosted short-term rental accommodation in Schedule 1 – Land Use Definitions:

"means any of the following —

(a) short-term rental accommodation where the owner or occupier, or an agent of the owner or occupier who ordinarily resides at the dwelling, resides at the same dwelling during the short-term rental arrangement;

(b) short-term rental accommodation that is an ancillary dwelling where the owner or occupier, or an agent of the owner or occupier who ordinarily resides at the other dwelling on the same lot, resides at that other dwelling during the short-term rental arrangement;

(c) short-term rental accommodation that is a dwelling on the same lot as an ancillary dwelling where the owner or occupier, or an agent of the owner or occupier who ordinarily resides at the dwelling, resides at the ancillary dwelling during the short-term rental arrangement."

viii. Insert the following definition for Unhosted short-term rental accommodation in Schedule 1 – Land Use Definitions:

"means short-term rental accommodation that —

(a) is not hosted short-term rental accommodation; and

(b) accommodates a maximum of 12 people per night."

ix. Deleting reference to 'Bed and Breakfast', 'Holiday Accommodation', 'Motel' and 'Serviced Apartments' in Table 1 – Zoning Table.

x. Inserting 'Hosted Short-term Rental Accommodation', 'Unhosted Short-term Rental Accommodation' and 'Tourist and Visitor Accommodation' in Table 1 – Zoning Table with the permissibilities outlined below.

| | ZONES | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| USE CLASSES | Residential | Town Centre | Commercial | Mixed Use | Mixed Business | Industrial | Service Station | Places of Public Assembly | Residential and Stables | Special Development Precinct |
| Hosted Short-term Rental Accommodation | P | P | P | P | P | X | X | X | P | P |
| Unhosted Short-term Rental Accommodation | A | A | A | A | A | X | X | X | A | A |
| Tourist and Visitor Accommodation | X | X | X | D | A | X | X | X | X | A |

xi. Remove reference to 'Motel' from Table 2 – Car Parking Requirements and Table 3 – Bicycle Parking Requirements.

xii. Remove all references to 'Serviced Apartments' from Schedule No. 2 – Additional Uses.



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The Amendment endorsed by Council on 27th May 2025 was considered to be standard under the provisions of the *Planning and Development (Local Planning Schemes (Regulations) 2015 (WA)* for the following reasons:

i. The amendment would have minimal impact on land in the scheme area that is not the subject of the amendment;

ii. The amendment does not result in any significant environmental, social, economic or governance impacts on land in the scheme area; and

iii. The amendment relates to a zone or reserve that is consistent with the objectives identified in the scheme for that zone or reserve.

Dated this 4th day of July 2025.

**Chief Executive Officer**



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# Scheme Amendment Details

| Item | Description | Details |
|---|---|---|
| **1.** | Local Authority | City of Belmont |
| **2.** | Description of Local Planning Scheme | Local Planning Scheme No. 15 |
| **3.** | Type of Scheme | Local Zoning Scheme |
| **4.** | Scheme Amendment No. | Amendment No. 23 |
| **5.** | Summary of Proposal | 1. Updating the General and Land Use definitions within Schedule No. 1 to be consistent with the *Planning and Development (Local Planning Schemes) Regulations 2015.*<br>2. Modifying Table 1 - Zoning Table to reflect the updated land use classifications.<br>3. Removing reference to 'Motel' from Table 2 – Car Parking Requirements and Table 3 – Bicycle Parking Requirements.<br>4. Removing reference to 'Serviced Apartments' from Schedule No. 2 – Additional Uses. |
| **6.** | Classification | Standard |

# Planning Report

## Introduction

Amendment No. 23 to Local Planning Scheme No. 15 (LPS 15) proposes to:

1. Update the General and Land Use definitions within Schedule No. 1 to be consistent with the *Planning and Development (Local Planning Schemes) Regulations 2015.*
2. Modify Table 1 - Zoning Table to reflect the updated land use classifications.
3. Remove reference to 'Motel' from Table 2 – Car Parking Requirements and Table 3 – Bicycle Parking Requirements.
4. Remove reference to 'Serviced Apartments' from Schedule No. 2 – Additional Uses.

## Background

## Location

Amendment No. 23 relates to the entire City of Belmont local government area.

## City of Belmont Context

The rise of online booking platforms has significantly increased the number of properties originally approved for residential use, being used for short-term rental accommodation (STRA). Belmont's proximity to Perth Airport, the Perth CBD, Optus Stadium, and the Swan River has made it a desirable location for both traditional tourist accommodation and STRA land uses.

Recognising the need for local guidance, Council adopted Local Planning Policy No. 19 – Short-term Rental Accommodation (LPP 19) to set standards for operators seeking to establish and operate STRA. Since then, the State has amended the Regulations to modify the STRA land use definitions and include exemptions from the requirement for development approval in certain instances. More specifically:



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- The land uses of 'hosted short-term rental accommodation', 'unhosted short-term rental accommodation' and 'tourist and visitor accommodation' have been included.
- The 'bed and breakfast', 'holiday accommodation', 'holiday house', 'motel', 'serviced apartment' and 'tourist development' land uses have been deleted.
- Development approval is not required for 'Hosted' STRA. 'Unhosted' STRA also does not require development approval where it is used for no more than 90 nights in a 12-month period.

To align the local planning framework with the State's Regulations, modifications are proposed to LPS 15 and LPP 19. These include updates to definitions, the zoning table, and land use permissibility in LPS 15, as well as concurrent amendments to LPP 19 to ensure consistency.

**Proposed Amendment**

The purpose of the Amendment is to align the City of Belmont's Local Planning Scheme with recent changes to the *Planning and Development (Local Planning Schemes) Regulations 2015*, relating to STRA.

**Planning Context**

Planning Bulletin 115/2024 – Short-term Rental Accommodation – Guidance for Local Government

The Bulletin provides guidance for local governments on amending their local planning scheme to address STRA in a manner consistent with the Regulations. It also clarifies how such amendments should be classified as well as providing guidance on land use permissibility.

The Bulletin states that if a scheme amendment only replaces existing land use terms with new short-term rental accommodation terms without changing permissibility, it will generally be a basic amendment. However, if it introduces new land uses or changes the permissibility of existing ones, it will usually be treated as a standard amendment.



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## Local Planning Scheme No. 15

Schedule 1 of LPS 15 includes both general definitions and land use definitions for each use listed in the Zoning Table. The relevant definitions relating to this Amendment are outlined in Table 1 and Table 2 in the Report section below.

Table 1 (Zoning Table) of LPS 15 sets out the permissibility of uses using the symbols 'P', 'D', 'A' and 'X'. The meaning of the symbols is listed below:

'P' Means the use is permitted by the Scheme providing the use complies with the relevant development standards and the requirements of the Scheme.

'D' Means that the use is not permitted unless the local government has exercised its discretion by granting development approval.

'A' Means that the use is not permitted unless the local government has exercised its discretion by granting development approval after giving special notice in accordance with the provisions contained in Clause 64 of the Regulations Schedule 2.

'X' Means a use that is not permitted by the Scheme.

## Planning and Development (Local Planning Schemes) Regulations 2015 (WA)

Model Provisions

Schedule 1 of the Regulations contains the Model Provisions for local planning schemes. The Model Provisions provide the form and content for all new local planning schemes and apply when a scheme is revised, prepared or amended by a local government.

The Model Provisions, along with any essential local variations approved by the Minister, should be gradually integrated into Local Planning Schemes through the scheme amendment process whenever an opportunity arises. All local governments are required to have their schemes align with the updated Regulations for STRA by the end of 2025

## Local Planning Scheme Amendments

Section 75 of the *Planning and Development Act 2005 (WA)* provides for an amendment to be made to a local planning scheme. The procedures for amending a local planning scheme, including public consultation requirements, are set out within Part 5 of the Regulations.

The Regulations specify three different types of Scheme amendments, being 'basic', 'standard' and 'complex'. The main differences between the amendment classifications are the differing advertising requirements. Clause 35(2) of the Regulations requires a resolution of the local government specifying the type of amendment and the reasons for the classification.

When a local government resolves to amend a scheme, the proposed scheme amendment is required to be referred to the Department of Planning, Lands and Heritage to obtain consent to advertise. Where an amendment is deemed to have an environmental impact, it is also required to be referred to the Environmental Protection Authority.

Following consent to advertise, the responsible authority shall advertise the amendment in accordance with the Regulations by:

- Displaying the amendment and associated public notice on the local government's website.
- Publishing the notice in a local newspaper and displaying this on the local government's public notice boards.
- Giving a copy of the notice to each public authority that the local government considers is likely to be affected by the amendment.

After the conclusion of the advertising period, Council is required to consider the submissions and pass a resolution to either support the amendment, with or without modification, or not support the amendment. After passing a resolution, the amendment is to be forwarded to the Western Australian Planning Commission (WAPC) to review and provide a recommendation to the Minister for Planning.

## Report

### Definitions

General Definitions

Local Planning Scheme No. 15 currently contains general definitions for 'Cabin', 'Chalet' and 'Short-term Accommodation'. To align with the Model Provisions of the Regulations, Amendment No. 23 proposes the following changes:

- Modifying the definitions of 'Cabin' and 'Chalet'.
- Deleting the definition of 'Short-term Accommodation'.

- Introducing definitions for 'Short-term Rental Accommodation' and 'Short-term Rental Arrangement'.

These amendments will ensure LPS 15 is consistent with the Regulations. The changes to the existing definitions and new definitions are shown in Table 1 below.

| Current LPS 15 General Definitions to be deleted | New Definition |
|---|---|
| **Cabin**<br>means a dwelling forming part of a tourist development or caravan park that is —<br>(a) an individual unit other than a chalet; and<br>(b) designed to provide short-term accommodation for guests. | **Cabin**<br>means a building that —<br>(a) is an individual unit other than a chalet; and<br>(b) forms part of —<br>(i) tourist and visitor accommodation; or<br>(ii) a caravan park;<br>and<br>(c) if the unit forms part of a caravan park — is used to provide accommodation for persons, on a commercial basis, with no individual person accommodated for a period or periods exceeding a total of 3 months in any 12-month period. |
| **Chalet**<br>means a dwelling forming part of a tourist development or caravan park that is —<br>(a) a self-contained unit that includes cooking facilities, bathroom facilities and separate living and sleeping areas; and | **Chalet**<br>means a building that —<br>(a) is a self-contained unit that includes cooking facilities, bathroom facilities and separate living and sleeping areas; and<br>(b) forms part of —<br>(i) tourist and visitor accommodation; or |

| Current LPS 15 General Definitions to be deleted | New Definition |
|---|---|
| (b) designed to provide short-term accommodation for guests. | (ii) a caravan park; and<br>(c) if the unit forms part of a caravan park — is used to provide accommodation for persons, on a commercial basis, with no individual person accommodated for a period or periods exceeding a total of 3 months in any 12-month period. |
| **Short-Term Accommodation**<br>means temporary accommodation provided either continuously or from time to time with no guest accommodated for periods totalling more than 3 months in any 12-month period. | **Short-term Rental Accommodation**<br>(a) means a dwelling provided, on a commercial basis, for occupation under a short-term rental arrangement; but<br>(b) does not include a dwelling that is, or is part of, any of the following:<br>(i) an aged care facility as defined in the *Land Tax Assessment Act 2002* section 38A(1);<br>(ii) a caravan park;<br>(iii) a lodging-house as defined in the *Health (Miscellaneous Provisions) Act 1911* section 3(1);<br>(iv) a park home park;<br>(v) a retirement village as defined in the *Retirement Villages Act 1992* section 3(1);<br>(vi) workforce accommodation. |



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| Current LPS 15 General Definitions to be deleted | New Definition |
|---|---|
| | **Short-term Rental Arrangement**<br>means an arrangement under which:<br>(a) a dwelling, or part of a dwelling, is provided for occupation by a person; and<br>(b) the person occupies the dwelling, or part of the dwelling, for a period or periods not exceeding a total of 3 months in any 12-month period. |

*Table 1 General Definition Changes*

Land Use Definitions

Local Planning Scheme No. 15 currently contains various land use definitions relating to forms of STRA. Amendment No. 23 proposes to delete several of these definitions as they are no longer contained within the Model Provisions of the Regulations. Various new definitions are also proposed to be introduced into LPS 15 to align with the Model Provisions of the Regulations.

Table 2 shows the existing LPS 15 definitions that are proposed to be deleted and the definitions they are proposed to be replaced with as part of Amendment No. 23.

| Current LPS 15 Land Use and Definition to be deleted | New Land Use and Definition |
|---|---|
| **Bed and breakfast**<br>means a dwelling —<br>(a) used by a resident of the dwelling to provide short-term accommodation, including breakfast, on a commercial basis for not | **Hosted short-term rental accommodation**<br>means any of the following —<br>(a) short-term rental accommodation where the owner or occupier, or an agent of the owner or occupier who ordinarily resides at the dwelling, resides at the same |

| Current LPS 15 Land Use and Definition to be deleted | New Land Use and Definition |
|---|---|
| more than 4 adult persons or one family; and<br>(b) containing not more than 2 guest bedrooms. | dwelling during the short-term rental arrangement;<br>(b) short-term rental accommodation that is an ancillary dwelling where the owner or occupier, or an agent of the owner or occupier who ordinarily resides at the other dwelling on the same lot, resides at that other dwelling during the short-term rental arrangement;<br>(c) short-term rental accommodation that is a dwelling on the same lot as an ancillary dwelling where the owner or occupier, or an agent of the owner or occupier who ordinarily resides at the dwelling, resides at the ancillary dwelling during the short-term rental arrangement. |
| **Holiday accommodation**<br>means two or more dwellings on one lot used to provide short-term accommodation for persons other than the owner of the lot. | **Tourist and visitor accommodation**<br>(a) means a building, or a group of buildings forming a complex, that —<br>(i) is wholly managed by a single person or body; and<br>(ii) is used to provide accommodation for guests, on a commercial basis, with no individual guest accommodated for a period or periods exceeding a total of |

| Current LPS 15 Land Use and Definition to be deleted | New Land Use and Definition |
|---|---|
| | 3 months in any 12-month period; and<br>(iii) may include on-site services and facilities for use by guests; and<br>(iv) in the case of a single building — contains more than one separate accommodation unit or is capable of accommodating more than 12 people per night;<br>and<br>(b) includes a building, or complex of buildings, meeting the criteria in paragraph (a) that is used for self-contained serviced apartments that are regularly serviced or cleaned during the period of a guest's stay by the owner or manager of the apartment or an agent of the owner or manager; but<br>(c) does not include any of the following —<br>(i) an aged care facility as defined in the Land Tax Assessment Act 2002 section 38A(1);<br>(ii) a caravan park;<br>(iii) hosted short-term rental accommodation.<br>or<br>**Unhosted short-term rental accommodation** |



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| Current LPS 15 Land Use and Definition to be deleted | New Land Use and Definition |
|---|---|
| | means short-term rental accommodation that — (a) is not hosted short-term rental accommodation; and (b) accommodates a maximum of 12 people per night;<br><br>Classification dependent on specific details of the proposal. |
| **Holiday House**<br><br>A single dwelling on one lot used to provide means a single dwelling on one lot used to provide short-term accommodation but does not include a bed and breakfast; | **Unhosted short-term rental accommodation**<br><br>As above. |
| **Serviced Apartments**<br><br>means a group of units or apartments providing —<br><br>(a) self-contained short stay accommodation for guests; and<br><br>(b) any associated reception or recreational facilities. | **Tourist and visitor accommodation**<br><br>As above. |
| **Motel**<br><br>A premises providing hotel-like accommodation with facilities for guests traveling with motor vehicles, and it may be licensed under the *Liquor Control Act 1988*. | **Tourist and visitor accommodation**<br><br>As above. |
| **Tourist Development**<br><br>means a building, or a group of buildings forming a complex, other than a bed and breakfast, a caravan park or holiday | **Tourist and visitor accommodation**<br><br>As above. |



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| Current LPS 15 Land Use and Definition to be deleted | New Land Use and Definition |
|---|---|
| accommodation, used to provide —<br>(a) short-term accommodation for guests; and<br>(b) onsite facilities for the use of guests; and<br>(c) facilities for the management of the development. | |
| **Short Stay Accommodation**<br>means the accommodation of short stay guests providing on site facilities for the convenience of guests and, management of the development, where occupation by any person is limited to a maximum of 3 months in any 12-month period, and excludes any other use falling within a use class specifically defined in this scheme. | This land use is proposed to be deleted, as it is a broad term covering accommodation limited to a maximum of three months within a 12-month period. This is now encompassed under the general definition of 'Short-term Rental Accommodation'. |

*Table 2 Land Use Definition Changes*

**Zoning Table and Land Use Permissibility Changes**

Proposed Changes

The various land use definitions outlined in Table 2 above for deletion will also be removed from the Zoning Table.

The following new land use definitions are required to be included within the Zoning Table as part of the subject amendment:

- Hosted Short-term Rental Accommodation
- Tourist and Visitor Accommodation
- Unhosted Short-term Rental Accommodation.

The permissibility proposed to be assigned to each of these land uses is shown in Table 3.

| ZONES | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **USE CLASSES** | Residential | Town Centre | Commercial | Mixed Use | Mixed Business | Industrial | Service Station | Places of Public Assembly | Residential and Stables | Special Development Precinct |
| Hosted Short-term Rental Accommodation | P | P | P | P | P | X | X | X | P | P |
| Unhosted Short-term Rental Accommodation | A | A | A | A | A | X | X | X | A | A |
| Tourist and Visitor Accommodation | X | X | X | D | A | X | X | X | X | A |

Table 3 Proposed land use permissibility for new land uses

The following justification is provided for the proposed permissibilities.

Hosted Short-term Rental Accommodation

Under the Regulations, this use is exempt from requiring development approval. Accordingly, Planning Bulletin 115/2024 recommends a 'P' permissibility be assigned where residential development is capable of approval. It is therefore proposed to apply this permissibility in the 'Residential,' 'Mixed Use,' 'Commercial,' 'Town Centre,' 'Residential and Stables,' and 'Special Development Precinct' zones.

Conversely, 'Hosted Short-term Rental Accommodation' is not considered appropriate in the 'Industrial,' 'Service Station,' or 'Places of Public Assembly' zones and is therefore proposed to be assigned an 'X' permissibility in these areas.

Unhosted Short-term Rental Accommodation

Planning Bulletin 115/2024 outlines that 'Unhosted Short-term Rental Accommodation' should be assigned the following permissibilities:

- 'A' in zones where any type of dwelling is capable of approval



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- 'P' (Permitted) in Tourism zones
- 'X' in all other zones

Consistent with this approach, this use is proposed to be assigned an 'A' designation in the 'Residential', 'Town Centre', 'Commercial', 'Mixed Use', 'Mixed Business', 'Residential and Stables' and 'Special Development Precinct' zones.

This designation would require any proposal to be advertised to surrounding residents and landowners for comment prior to the application being determined.

Tourist and Visitor Accommodation

This use is typically more intensive and operates at a larger scale than both 'hosted' and 'unhosted short-term rental accommodation'. Examples include motel operations and large-scale chalet developments, which generally involve a higher concentration of guests and more commercial-style management.

Given this, it is proposed to restrict the use to the 'Mixed Use', 'Mixed Business' and 'Special Development Precinct' zones, with different permissibility designations to reflect the nature of each area. This approach aligns with the current zones where the previous land uses could be considered.

In the 'Mixed Use' zone, which is predominantly located along Great Eastern Highway and has a stronger commercial focus, a 'D' designation is proposed. Whilst the use could be considered without advertising, this may be required depending on the specific circumstances and location of a proposal. In contrast, the 'Special Development Precinct' zone accommodates a broader mix of land uses. Due to this variability, an 'A' designation is proposed to ensure all proposals undergo public advertising.

An 'A' designation is also proposed for the 'Mixed Business' zone, consistent with the existing ability to consider Motel uses in this zone. This designation also provides the flexibility to assess the appropriateness of this use on a case-by-case basis, recognising that locations closer to Great Eastern Highway are likely to be more suitable due to their higher level of accessibility.

The use is proposed to be assigned an 'X' use in all other zones.

**Other Changes**

Parking

Tables 2 and 3 of LPS 15 contain car and bicycle parking requirements for the 'Motel' land use. As this land use is being deleted, reference to 'Motel' in the parking provisions will be removed.

Additional Uses

Local Planning Scheme No. 15 currently identifies 'Serviced Apartments' as an 'Additional Use' which can be considered at the following locations:

- 101, 103, 105, 107, 111 and 113 Orrong Road, Rivervale
- 289, 291A, 293 and 295 Orrong Road, Kewdale
- 2, 347 and 351 Orrong Road, Kewdale.

As this land use is proposed to be deleted, its reference as an 'Additional Use' will also be removed. An alternative form of STRA is not proposed as an 'Additional Use' for these sites. Most have already been developed, with the exception of 347 Orrong Road and 293 Orrong Road. 347 Orrong Road is owned by the State Government, who have not indicated any development intentions for the site. . In addition, there are no existing approvals or operations for 'Serviced Apartments' on any of these sites. This change does not preclude consideration of other forms of STRA at these sites, where permitted under the Scheme.

**Scheme Amendment Classification**

The Regulations define three types of Scheme amendments: 'basic,' 'standard,' and 'complex.' Clause 35(2) of the Regulations requires the local government to pass a resolution specifying the type of amendment and providing justification for its classification.

A Standard amendment is defined by the Regulations as:

"(a) an amendment relating to a zone or reserve that is consistent with the objectives identified in the scheme for that zone or reserve;

(b) an amendment that is consistent with a local planning strategy for the scheme that has been endorsed by the Commission;



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(c) an amendment to the scheme so that it is consistent with a region planning scheme that applies to the scheme area, other than an amendment that is a basic amendment;

(ca) an amendment to the scheme to — (i) include a provision in the scheme that a specified planning code is to be read as part of the scheme; or (ii) provide for the modification of a planning code that is to be read as part of the scheme;

(d) an amendment to the scheme map that is consistent with a structure plan or local development plan that has been approved under the scheme for the land to which the amendment relates if the scheme does not currently include zones of all the types that are outlined in the plan;

(e) an amendment that would have minimal impact on land in the scheme area that is not the subject of the amendment;

(f) an amendment that does not result in any significant environmental, social, economic or governance impacts on land in the scheme area;

(g) any other amendment that is not a complex or basic amendment."

The proposed amendment is considered to be a 'standard' amendment for the following reasons:

- The Amendment proposes changes to land use definitions and permissibility which align with the scheme's objectives for each zone.
- The Amendment would have minimal impact on land in the scheme area that is not the subject of the amendment, as it does not result in any significant environmental, social, economic, or governance impacts.
- Additionally, the amendment relates to a zone or reserve that is consistent with the objectives identified in the scheme for that zone or reserve.

Additionally, Planning Bulletin 115/2024, provides further guidance on amendment classifications. The bulletin outlines that if an amendment introduces or changes permissibility for STRA uses, it should generally be progressed as a 'Standard' amendment. The scope of Amendment No. 23 is considered to meet these considerations.



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## Conclusion

The Amendment proposes to update Local Planning Scheme No. 15 to align with the Planning and Development (Local Planning Schemes) Regulations 2015 in relation to short-term rental accommodation. It introduces new land use definitions, modifies existing ones, and updates land use permissibility across various zones, reflecting the guidance set out in Planning Bulletin 115/2024. The Amendment is classified as 'Standard' due to its alignment with strategic planning objectives and minimal impact on the broader scheme area.



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*Planning and Development Act 2005*

**City of Belmont**
**Local Planning Scheme No. 15**

**Scheme Amendment No. 23**

The Council of the City of Belmont, under and by virtue of the powers conferred upon it in that behalf by the *Planning and Development Act 2005*, hereby amends the above Local Planning Scheme by:

xiii. Deleting the existing definition of 'Short-Term Accommodation' in Schedule 1 – General Definitions of the Scheme Text.

xiv. Amending the existing definition of Cabin in Schedule 1 – General Definitions of the Scheme Text to:

"means a building that —

(d) is an individual unit other than a chalet; and

(e) forms part of —

(i) tourist and visitor accommodation; or

(ii) a caravan park; and

(f) if the unit forms part of a caravan park — is used to provide accommodation for persons, on a commercial basis, with no individual person accommodated for a period or periods exceeding a total of 3 months in any 12-month period."

xv. Amending the existing definition of Chalet in Schedule 1 – General Definitions of the Scheme Text to:

"means a building that —

(a) is a self-contained unit that includes cooking facilities, bathroom facilities and separate living and sleeping areas; and

(b) forms part of —

(i) tourist and visitor accommodation; or

(ii) a caravan park; and

(c) if the unit forms part of a caravan park — is used to provide accommodation for persons, on a commercial basis, with no individual person accommodated for a period or periods exceeding a total of 3 months in any 12-month period."



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xvi. Insert terms 'Short-term Rental Accommodation' and 'Short-term Rental Arrangement' in Schedule 1 – as follows:

"Short-term rental accommodation —

(a) means a dwelling provided, on a commercial basis, for occupation under a short-term rental arrangement; but does not include a dwelling that is, or is part of, any of the following —

(i) an aged care facility as defined in the Land Tax Assessment Act 2002 section 38A(1);

(ii) a caravan park;

(iii) a lodging-house as defined in the Health (Miscellaneous Provisions) Act 1911 section 3(1);

(iv) a park home park;

(v) a retirement village as defined in the Retirement Villages Act 1992 section 3(1);

(vi) workforce accommodation."

"Short-term rental arrangement means an arrangement under which —

(a) a dwelling, or part of a dwelling, is provided for occupation by a person; and

(b) the person occupies the dwelling, or part of the dwelling, for a period or periods not exceeding a total of 3 months in any 12-month period."

xvii. Deleting the 'Bed and Breakfast', 'Holiday Accommodation', 'Holiday House', 'Motel', 'Serviced Apartment', 'Short Stay Accommodation' and 'Tourist Development' definitions in Schedule 1 – Land Use Definitions of the Scheme Text.

xviii. Insert the following definition for Tourist and Visitor Accommodation in Schedule 1 – Land Use Definitions:

"(a) means a building, or a group of buildings forming a complex, that —

(i) is wholly managed by a single person or body; and

(ii) is used to provide accommodation for guests, on a commercial basis, with no individual guest accommodated for a period or periods exceeding a total of 3 months in any 12-month period; and



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(iii) may include on-site services and facilities for use by guests; and

(iv) in the case of a single building — contains more than one separate accommodation unit or is capable of accommodating more than 12 people per night; and

(b) includes a building, or complex of buildings, meeting the criteria in paragraph (a) that is used for self-contained serviced apartments that are regularly serviced or cleaned during the period of a guest's stay by the owner or manager of the apartment or an agent of the owner or manager; but

(c) does not include any of the following —

(i) an aged care facility as defined in the Land Tax Assessment Act 2002 section 38A(1);

(ii) a caravan park;

(iii) hosted short-term rental accommodation;

(iv) a lodging-house as defined in the Health (Miscellaneous Provisions) Act 1911 section 3(1);

(v) a park home park;

(vi) a retirement village as defined in the Retirement Villages Act 1992 section 3(1);

(vii) a road house;

(viii) workforce accommodation."

xix. Insert the following definition for Hosted short-term rental accommodation in Schedule 1 – Land Use Definitions:

"means any of the following —

(a) short-term rental accommodation where the owner or occupier, or an agent of the owner or occupier who ordinarily resides at the dwelling, resides at the same dwelling during the short-term rental arrangement;

(b) short-term rental accommodation that is an ancillary dwelling where the owner or occupier, or an agent of the owner or occupier who ordinarily resides at the other dwelling on the same lot, resides at that other dwelling during the short-term rental arrangement;



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(c) short-term rental accommodation that is a dwelling on the same lot as an ancillary dwelling where the owner or occupier, or an agent of the owner or occupier who ordinarily resides at the dwelling, resides at the ancillary dwelling during the short-term rental arrangement."

xx. Insert the following definition for Unhosted short-term rental accommodation in Schedule 1 – Land Use Definitions:

"means short-term rental accommodation that —

(a) is not hosted short-term rental accommodation; and

(b) accommodates a maximum of 12 people per night."

xxi. Deleting reference to 'Bed and Breakfast', 'Holiday Accommodation', 'Motel' and 'Serviced Apartments' in Table 1 – Zoning Table.

xxii. Inserting 'Hosted Short-term Rental Accommodation', 'Unhosted Short-term Rental Accommodation' and 'Tourist and Visitor Accommodation' in Table 1 – Zoning Table with the permissibilities outlined below.

| | ZONES | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| USE CLASSES | Residential | Town Centre | Commercial | Mixed Use | Mixed Business | Industrial | Service Station | Places of Public Assembly | Residential and Stables | Special Development Precinct |
| Hosted Short-term Rental Accommodation | P | P | P | P | P | X | X | X | P | P |
| Unhosted Short-term Rental Accommodation | A | A | A | A | A | X | X | X | A | A |
| Tourist and Visitor Accommodation | X | X | X | D | A | X | X | X | X | A |

xxiii. Remove reference to 'Motel' from Table 2 – Car Parking Requirements and Table 3 – Bicycle Parking Requirements.

xxiv. Remove all references to 'Serviced Apartments' from Schedule No. 2 – Additional Uses.



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**Council adoption for advertising**

Adopted for advertising by resolution of the Council of the City of Belmont at the Ordinary Meeting of the Council held on this 27th day of May 2025.

CITY OF BELMONT COMMON SEAL

Mayor

Chief Executive Officer

**Council recommended/submitted for approval**

Supported for submission to the Minister for Planning for approval by resolution of the City of Belmont at the Ordinary Meeting of the Council held on this day of and the Common Seal of the City of Belmont was hereunto affixed by the authority of a resolution of the Council in the presence of:

Mayor

Chief Executive Officer

**WAPC recommended/submitted for approval**

Delegated under S.16 of the
*Planning and Development Act 2005*

Date



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**Approval granted**

Minister for Planning
S.87 of the *Planning and Development Act 2005*

Date



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City of Belmont

# Local Planning Policy No. 19

## Short-term Rental Accommodation



Publication date: 18/03/24

# Local Planning Policy No. 19

*Pursuant to Schedule 2, Part 2, Clause 4 (Deemed Provisions) of the Planning and Development (Local Planning Schemes) Regulations 2015.*

## 1. Policy basis

The City of Belmont is an appealing location for short-term rental accommodation (STRA) uses due to its proximity to Perth Airport, the Perth CBD, Optus Stadium and the Swan River. Therefore, there is a need to ensure STRA uses are located and managed appropriately to protect the supply and amenity of long-term residential accommodation.

This Local Planning Policy contains the standards and objectives in which the City will assess applications for STRA.

## 2. Policy application

This Policy applies to development applications for STRA.

STRA is the collective name given to holiday homes, units or apartments offered for short-term letting, often through an online booking platform or management agent.

STRA is either hosted (where a host is present) or unhosted (where guests have exclusive use of an entire house, unit or apartment). Commonly, they can be:

a) a family holiday home, periodically offered as a short-term rental;

b) a property purchased for the sole intent of operating a short-term rental operation;

c) spare bedrooms and areas within a home, offered to let on a short-term basis; and

d) motels and serviced apartments.

The land use definitions for the various forms of STRA and classification table is outlined in Section 7.

## 3. Policy exclusions

This Policy is not intended to apply to the following forms of traditional tourist accommodation and other forms of temporary accommodation that are subject to alternative guidance or legislation:

- Hotels;
- Caravan parks (inclusive of chalets and cabins associated with this use);
- Lodging house and Boarding house;
- House swapping and house sitting;
- Personal use of a holiday home or the sharing of a holiday home with the owner's family and friends;
- Student exchange accommodation;
- Workforce accommodation; and
- Residential parks, park home parks, lifestyle villages.

# 4. Policy objectives

The objectives of this Policy are to:

a) Provide guidance and standards for operators seeking to establish and operate STRA.

b) Ensure STRA is appropriate for its location by being located near other short-term rental accommodation, tourist accommodation uses and hotels along Great Eastern Highway and accessible for visitors by being near a high frequency public transport stop along that road.

c) Ensure STRA does not adversely impact on the character and amenity of the surrounding residential area or nearby residents.

d) Safeguard the primary purpose of residential areas in providing residential dwellings which are affordable and available on a long-term basis.

e) Ensure dwellings located within the flexible density coded areas which have been developed above the base density coding are providing long-term and affordable residential accommodation.

# 5. Terms used

| | |
|---|---|
| Guest | A person who is accommodated within a short-term accommodation on a temporary basis for a fee but is not subject to a Residential Tenancy Agreement. |
| Host / Keeper | Means a person who permanently resides at the dwelling and is responsible for its upkeep and management of the accommodation. The host/keeper cannot reside on a different land parcel or in a different unit. |
| Anti-Social Behaviour | Means actions and behaviours that threaten the amenity of the locality, and includes but is not limited to swearing, shouting, abusive, threatening behaviour, raised voices, parties and loud music. |
| Strata Company | A body corporate constituted under section 32 of the Strata Titles Act 1985 whether for a strata scheme or a survey-strata scheme. |
| Short-term Rental Arrangement | Means an arrangement under which:<br>(a) a dwelling, or part of a dwelling, is provided for occupation by a person; and<br>(b) the person occupies the dwelling, or part of the dwelling, for a period or periods not exceeding a total of 3 months in any 12-month period |

# 6. Accompanying information

Pursuant to Clause 63(1)(d) of the *Planning and Development (Local Planning Schemes) Regulations 2015,* an application for development approval for any STRA use is to include the submission of a detailed Management Plan and Code of Conduct that addresses, but is not limited to, the following matters:

## 6.1. Management plan

The Management Plan is to address, but is not limited to, the following:

- Control of anti-social behaviour and the potential conflict between guests and permanent residents of the area;
- Minimum and maximum lengths of stay;
- Maximum occupancy limit, six guests or one family to a maximum of two people per bedroom;
- Guest arrival and departure procedures;
- Car parking management;
- Complaints management and after-hours complaints procedure including:
- Nature of complaint
- Date and time of complaint
- Complainant
- Description of how complaint was addressed and whether feedback was provided to complainant.
- The provision of a contact telephone number of the accommodation owner and operator to neighbouring properties for business-hours and after-hours complaints; and
- Explanation of how guests are informed of the Code of Conduct prior to and on arrival.

## 6.2. Code of conduct

The Code of Conduct is to address, but is not limited to, the following matters:

- The expected behaviour of guests.
- Periods of 'quiet time', including between 10pm to 7am;
- Parties are not permitted;
- Reasonable noise expectations (in compliance with the *Environmental Protection (Noise) Regulations 1997*);
- Details regarding guest check-in and check-out procedures;
- Expected control and maintenance of pets (if permitted at the property);
- Details of any car parking restrictions applicable to the area, and clarification on:
- the maximum number of vehicles that can park on a property; and
- that parking on surrounding properties and within the street and verge area is not permitted;
- Details regarding waste management which specifies the expectations on guests about general rubbish and bin collection;

- Rules and maintenance relating to the use of all common property and common facilities (if applicable);
- Information on relevant strata by-laws (if applicable);
- Emergency contact information;
- Contact details of emergency services, the City's Rangers Department and the Belmont Community Watch; and
- Implications of breaching the code of conduct.

The Code of Conduct shall be provided in the form of an information booklet for guests at the accommodation, and online prior to arrival.

### 6.3. Complaint register

A complaints register should accompany any application proposing to amend or extend an existing approval.

### 6.4. Strata approval

For STRA proposals, the signature from all lot owners who own an undivided share of the Common Property in accordance with the Strata Titles Act 1985 is needed.

## 7. Land use definitions and classification table

The City's Local Planning Scheme No. 15 (LPS 15) contains the following general definition for Short-term Rental Accommodation:

(a) "Means a dwelling provided, on a commercial basis, for occupation under a short-term rental arrangement; but
(b) Does not include a dwelling that is, or is part of, any of the following:
  i. An aged care facility as defined in the Land Tax Assessment Act 2002 section 38A(1);
  ii. A caravan park
  iii. A lodging-house as defined in the Health (Miscellaneous Provisions) Act 1911 section 3(1);
  iv. A park home park;
  v. A retirement village as defined in the Retirement Villages Act 1992 section 3(1);
  vi. A workforce accommodation."

LPS 15 defines various STRA land uses and outlines the associated permissibility as per the Zoning Table. If a defined land use is not contained within the Zoning Table, it will be treated as a 'Use Not Listed' and advertised accordingly.

The types of STRA that are subject to this policy are defined as follows:

| Land use | LPS 15 definition |
|---|---|
| **Hosted Short-term Rental Accommodation** | means any of the following —<br>(a) short-term rental accommodation where the owner or occupier, or an agent of the owner or occupier who ordinarily resides at the dwelling, resides at the same dwelling during the short-term rental arrangement; |

| | |
|---|---|
| | (b) short-term rental accommodation that is an ancillary dwelling where the owner or occupier, or an agent of the owner or occupier who ordinarily resides at the other dwelling on the same lot, resides at that other dwelling during the short-term rental arrangement;<br>(c) short-term rental accommodation that is a dwelling on the same lot as an ancillary dwelling where the owner or occupier, or an agent of the owner or occupier who ordinarily resides at the dwelling, resides at the ancillary dwelling during the short-term rental arrangement. |
| **Tourist and visitor accommodation** | (a) means a building, or a group of buildings forming a complex, that —<br>(i) is wholly managed by a single person or body; and<br>(ii) is used to provide accommodation for guests, on a commercial basis, with no individual guest accommodated for a period or periods exceeding a total of 3 months in any 12-month period; and<br>(iii) may include on-site services and facilities for use by guests; and<br>(iv) in the case of a single building — contains more than 1 separate accommodation unit or is capable of accommodating more than 12 people per night;<br>and<br>(b) includes a building, or complex of buildings, meeting the criteria in paragraph (a) that is used for self-contained serviced apartments that are regularly serviced or cleaned during the period of a guest's stay by the owner or manager of the apartment or an agent of the owner or manager; but<br>(c) does not include any of the following —<br>(i) an aged care facility as defined in the *Land Tax Assessment Act 2002* section 38A(1);<br>(ii) a caravan park; |

| | |
|---|---|
| | (iii) hosted short-term rental accommodation;<br>(iv) a lodging-house as defined in the *Health (Miscellaneous Provisions) Act 1911* section 3(1);<br>(v) a park home park;<br>(vi) a retirement village as defined in the *Retirement Villages Act 1992* section 3(1);<br>(vii) a road house;<br>(viii) workforce accommodation. |
| **Unhosted short-term rental accommodation** | means short-term rental accommodation that —<br>(a) is not hosted short-term rental accommodation; and<br>(b) accommodates a maximum of 12 people per night. |

# 8. Assessment criteria

STRA will generally only be supported where the following criteria (Section 8.1 to 8.5) are met:

## 8.1. Location

- Within 400 metres of a high frequency public transport stop located on Great Eastern Highway and an existing short-term rental accommodation, tourist accommodation use or hotel on Great Eastern Highway.

## 8.2. Car parking

Car parking must be provided in accordance with the below minimum standards:

| Dwelling type/Unit | Location A[1] | Location B[2] |
|---|---|---|
| **1 bedroom dwelling/unit** | 1 bay per dwelling/unit | 1 bay per dwelling/unit |
| **2+ bedroom dwellings/units** | 1 bay per dwelling/unit | 2 bays per dwelling/unit |

[1]Location A: within 800m walkable catchment of a train station and/or 250m of a transit stop of a high-frequency route or within the defined boundaries of an activity centre.

[2]Location B: Not within Location A.

- For the purpose of calculating parking requirements, any dwelling or accommodation unit that either functions or has the ability to function as two separate and independent dwellings, such as having its own entrance, kitchen, or bathroom facilities, will be treated as separate dwellings or accommodation units.
- All car parking associated with the use must be wholly contained on the subject site.
- Strata and community title developments must not rely on the use of visitor car parking bays.
- A Transport Impact Statement or Assessment will be required in support of proposals in the instances outlined in the Department of Planning, Lands and Heritage Transport Impact Assessment Guidelines.

## 8.3. Amenity

- The City will evaluate the potential amenity impacts of each STRA proposal, considering their individual circumstances and the specific local context.
- STRA proposals that detrimentally impact the surrounding locality's amenity will not be supported.
- The evaluation of a proposal will focus on the inherent suitability of each proposed use, as presented in the application, with specific attention to its details and how it impacts amenity of the locality. Conditions of approval should not be used to support proposals that are inherently unsuitable.
- In reviewing STRA proposals, the City will assess proposed management measures to consider if they are reasonable, enforceable, and effective in maintaining amenity.
- STRA proposals must, at a minimum, demonstrate compliance with the Environmental Protection (Noise) Regulations 1997. However, compliance does not automatically translate

into acceptable noise impacts from a planning amenity perspective. The City will consider factors such as arrival times, use of outdoor areas, proximity to adjoining dwellings, and other relevant aspects.

### 8.4. Strata developments

- For lots that have 2 or more proposed STRA land uses, there will be the requirement to have appointed on-site personnel, or demonstrate modern technology will be used, for access control and monitoring.

### 8.5. Instances in which STRA will not be supported

Applications for STRA will not be supported in the following instances:

a) Applications within multiple dwelling complexes proposing ad hoc STRA uses will not be supported. Instead, applications should seek to change the use of entire floors to ensure separation of uses within a building.

b) STRA applications will not be supported where associated with a grouped dwelling which has a lot size of less than 350m$^2$.

c) STRA will not be supported on flexible residential density coded sites which have been developed above the base density code.

d) In the 'Residential and Stables' zone.

e) Within 400m of a school.

## 9. Development approval

### 9.1. Approval period

If approved, the City will issue a time-limited approval of up to 12 months in the first instance. This approval will be of no further effect unless the City resolves to grant approval to a new development application, amends the original approval to delete the condition(s) limiting the time of approval or extends the terms of the approval under Clause 77 of the Deemed Provisions.

Where the Local Government is satisfied the STRA has been appropriately managed, an approval of the renewal application for a period of up to three years may be granted. In determining this, the City would have regard to the performance of the accommodation over the previous period, and if not satisfactory, the application may not be supported.

### 9.2. Conditions

In approving an application for development approval, the City may impose conditions including, but not limited to the following:

- There shall be no more than six short-stay guests or one family residing at the property at any one time to a maximum of two people per room.
- The whole property is to be rented as one booking only. No bedrooms or other areas of the house are to be rented on an individual basis.
- Prior to commencement of the use, the landowner shall implement the approved Management Plan (as well as any subsequently update and approved versions of the Management Plan) to the satisfaction of the City.

- The STRA operator shall supply the emergency contact details of the management agent or owner to address complaints from surrounding residents that require urgent attention.
- The landowner shall maintain a complaint register and outline the measures taken to address any complaints.
- The minimum length of stay.

### 9.3. Other approvals

This policy does not exempt STRA from the requirement to obtaining any other necessary approvals, including, but not limited to building or health approvals.

# Governance references

| | |
|---|---|
| **Statutory compliance** | *Planning and Development Act 2005*<br>*Planning and Development (Local Planning Schemes) Regulations 2015*<br>Local Planning Scheme No. 15 |
| **Industry compliance** | |
| **Organisational compliance** | |
| **Process links** | |

# Local planning policy administration

| Directorate | Officer title | Contact |
|---|---|---|
| Development and Communities | Manager Planning Services | 9477 7222 |

| Document date | Review Cycle | Next due |
|---|---|---|
| | Triennial | |

| Version | Decision to advertise | Decision to adopt | Synopsis |
|---|---|---|---|
| | | | |

**Attachment 12.X.3**

## General Definitions

The changes to the existing general definitions and proposed new definitions are shown in Table 1 below.

| Current LPS 15 General Definitions to be deleted | New Definition |
|---|---|
| **Cabin**<br>means a dwelling forming part of a tourist development or caravan park that is —<br>(a) an individual unit other than a chalet; and<br>(b) designed to provide short-term accommodation for guests. | **Cabin**<br>means a building that —<br>(a) is an individual unit other than a chalet; and<br>(b) forms part of —<br>(i) tourist and visitor accommodation; or<br>(ii) a caravan park;<br>and<br>(c) if the unit forms part of a caravan park — is used to provide accommodation for persons, on a commercial basis, with no individual person accommodated for a period or periods exceeding a total of 3 months in any 12-month period. |
| **Chalet**<br>means a dwelling forming part of a tourist development or caravan park that is —<br>(a) a self-contained unit that includes cooking facilities, bathroom facilities and separate living and sleeping areas; and<br>(b) designed to provide short-term accommodation for guests. | **Chalet**<br>means a building that —<br>(a) is a self-contained unit that includes cooking facilities, bathroom facilities and separate living and sleeping areas; and<br>(b) forms part of —<br>(i) tourist and visitor accommodation; or<br>(ii) a caravan park; and<br>(c) if the unit forms part of a caravan park — is used to provide accommodation for persons, on a commercial basis, with no individual person accommodated for a period or periods exceeding a total of 3 months in any 12-month period. |
| **Short-Term Accommodation**<br>means temporary accommodation provided either continuously or from time to time with no guest accommodated for periods totaling more than 3 months in any 12-month period. | **Short-term Rental Accommodation**<br>(a) means a dwelling provided, on a commercial basis, for occupation under a short-term rental arrangement; but<br>(b) does not include a dwelling that is, or is part of, any of the following:<br>(i) an aged care facility as defined in the *Land Tax Assessment Act 2002* section 38A(1);<br>(ii) a caravan park;<br>(iii) a lodging-house as defined in the *Health (Miscellaneous Provisions) Act 1911* section 3(1); |

| Current LPS 15 General Definitions to be deleted | New Definition |
|---|---|
| | (iv) a park home park;<br>(v) a retirement village as defined in the *Retirement Villages Act 1992* section 3(1);<br>(vi) workforce accommodation. |
| | **Short-term Rental Arrangement**<br>means an arrangement under which:<br>(a) a dwelling, or part of a dwelling, is provided for occupation by a person; and<br>(b) the person occupies the dwelling, or part of the dwelling, for a period or periods not exceeding a total of 3 months in any 12-month period. |

*Table 1 General Definition Changes*

### Land Use Definitions

The changes to the existing land use definitions and proposed new definitions are shown in Table 2 below.

| Current LPS 15 Land Use and Definition to be deleted | New Land Use and Definition |
|---|---|
| **Bed and breakfast**<br>means a dwelling —<br>(a) used by a resident of the dwelling to provide short-term accommodation, including breakfast, on a commercial basis for not more than 4 adult persons or one family; and<br>(b) containing not more than 2 guest bedrooms. | **Hosted short-term rental accommodation**<br>means any of the following —<br>(a) short-term rental accommodation where the owner or occupier, or an agent of the owner or occupier who ordinarily resides at the dwelling, resides at the same dwelling during the short-term rental arrangement;<br>(b) short-term rental accommodation that is an ancillary dwelling where the owner or occupier, or an agent of the owner or occupier who ordinarily resides at the other dwelling on the same lot, resides at that other dwelling during the short-term rental arrangement;<br>(c) short-term rental accommodation that is a dwelling on the same lot as an ancillary dwelling where the owner or occupier, or an agent of the owner or occupier who ordinarily resides at the dwelling, resides at the ancillary dwelling during the short-term rental arrangement. |
| **Holiday accommodation** | **Tourist and visitor accommodation** |

| Current LPS 15 Land Use and Definition to be deleted | New Land Use and Definition |
|---|---|
| means two or more dwellings on one lot used to provide short-term accommodation for persons other than the owner of the lot. | (a) means a building, or a group of buildings forming a complex, that —<br>(i) is wholly managed by a single person or body; and<br>(ii) is used to provide accommodation for guests, on a commercial basis, with no individual guest accommodated for a period or periods exceeding a total of 3 months in any 12-month period; and<br>(iii) may include on-site services and facilities for use by guests; and<br>(iv) in the case of a single building — contains more than one separate accommodation unit or is capable of accommodating more than 12 people per night;<br>and<br>(b) includes a building, or complex of buildings, meeting the criteria in paragraph (a) that is used for self-contained serviced apartments that are regularly serviced or cleaned during the period of a guest's stay by the owner or manager of the apartment or an agent of the owner or manager; but<br>(c) does not include any of the following —<br>(i) an aged care facility as defined in the *Land Tax Assessment Act 2002* section 38A(1);<br>(ii) a caravan park;<br>(iii) hosted short-term rental accommodation.<br>or<br>**Unhosted short-term rental accommodation**<br>means short-term rental accommodation that — (a) is not hosted short-term rental accommodation; and (b) accommodates a maximum of 12 people per night;<br>Classification dependent on specific details of the proposal. |
| **Holiday House**<br>A single dwelling on one lot used to provide means a single dwelling on one lot used to provide short-term accommodation but does not include a bed and breakfast; | **Unhosted short-term rental accommodation**<br>As above. |
| **Serviced Apartments** | **Tourist and visitor accommodation**<br>As above. |

| Current LPS 15 Land Use and Definition to be deleted | New Land Use and Definition |
|---|---|
| means a group of units or apartments providing —<br>(a) self-contained short stay accommodation for guests; and<br>(b) any associated reception or recreational facilities. | |
| **Motel**<br>A premises providing hotel-like accommodation with facilities for guests traveling with motor vehicles, and it may be licensed under the *Liquor Control Act 1988*. | **Tourist and visitor accommodation**<br>As above. |
| **Tourist Development**<br>means a building, or a group of buildings forming a complex, other than a bed and breakfast, a caravan park or holiday accommodation, used to provide —<br>(a) short-term accommodation for guests; and<br>(b) onsite facilities for the use of guests; and<br>(c) facilities for the management of the development. | **Tourist and visitor accommodation**<br>As above. |
| **Short Stay Accommodation**<br>means the accommodation of short stay guests providing on site facilities for the convenience of guests and, management of the development, where occupation by any person is limited to a maximum of 3 months in any 12-month period, and excludes any other use falling within a use class specifically defined in this scheme. | This land use is proposed to be deleted, as it is a broad term covering accommodation limited to a maximum of three months within a 12-month period. This is now encompassed under the general definition of 'Short-term Rental Accommodation'. |

*Table 2 Land Use Definition Changes*

Cr Sekulla disclosed an Impartiality Interest prior to commencement of discussion on Item 12.2 stating the nature of the interest as being that he has met the CEO, the Chairperson and a Director of the Perth Racing Board on a number of occasions during the past 8 years.

Cr Sessions disclosed at Item 3 of the Agenda "Disclosure of Interest" an Impartiality Interest in the following item in accordance with Regulation 22 of the *Local Government (Model Code of Conduct) Regulations 2021 (WA)*.

# 12.2 Amendment No. 24 to Local Planning Scheme No. 15

| | | |
|---|---|---|
| Voting Requirement | : | Simple Majority |
| Subject Index | : | LPS15/024 |
| Location/Property Index | : | Various |
| Application Index | : | N/A |
| Disclosure of any Interest | : | Nil |
| Previous Items | : | Ascot Racecourse Precinct Structure Plan - 15 April 2025 - Item 12.1 |
| Applicant | : | Rowe Group |
| Owner | : | The Western Australian Turf Club<br>Western Australian Planning Commission |
| Responsible Division | : | Development and Communities |

## Council role

| | |
|---|---|
| **Legislative** | The making and adopting of local laws, local town planning schemes and Council policies. |

## Purpose of report

For Council to consider initiating Amendment No. 24 to Local Planning Scheme No. 15 (LPS 15) for public advertising.

## Summary and key issues

- Rowe Group on behalf of Perth Racing (the applicant) has prepared the draft Ascot Racecourse Precinct Structure Plan (PSP) to guide the future use and development of the land in and around Ascot Racecourse.

- At the 15 April 2025 Ordinary Council Meeting (OCM), Council resolved to recommend that the draft PSP be approved by the Western Australian Planning Commission (WAPC) subject to modifications.
- The Department of Planning Lands and Heritage (DPLH) is currently considering the draft PSP but prior to a determination being made, a Local Planning Scheme Amendment is required to be progressed.
- Rowe Group has lodged an amendment request on behalf of Perth Racing (Attachment 12.2.1) for Precincts B, C, D, and E of the draft PSP. The applicant has advised that a request to rezone Precinct A will be prepared and submitted to the City of Belmont for consideration in due course.
- Several aspects of the applicant's amendment are not supported generally on the basis that they are inconsistent with Council's resolution on the draft PSP.
- Council has the discretion to either adopt Amendments as submitted, or subject to changes.
- It is recommended that Council adopt a modified version of the applicant's amendment as a 'complex' amendment for advertising as detailed within the Officer Recommendation.

**Officer Recommendation**

**Marks moved, Ryan seconded**

That Council:

i. Pursuant to Section 75 of the *Planning and Development Act 2005 (WA)*, adopts for the purpose of advertising the following amendment to Local Planning Scheme No. 15:

   i. Rezoning a portion of Lot 452 (No. 70) Grandstand Road, Ascot from the 'Place of Public Assembly' zone to the 'Residential' R60 zone.

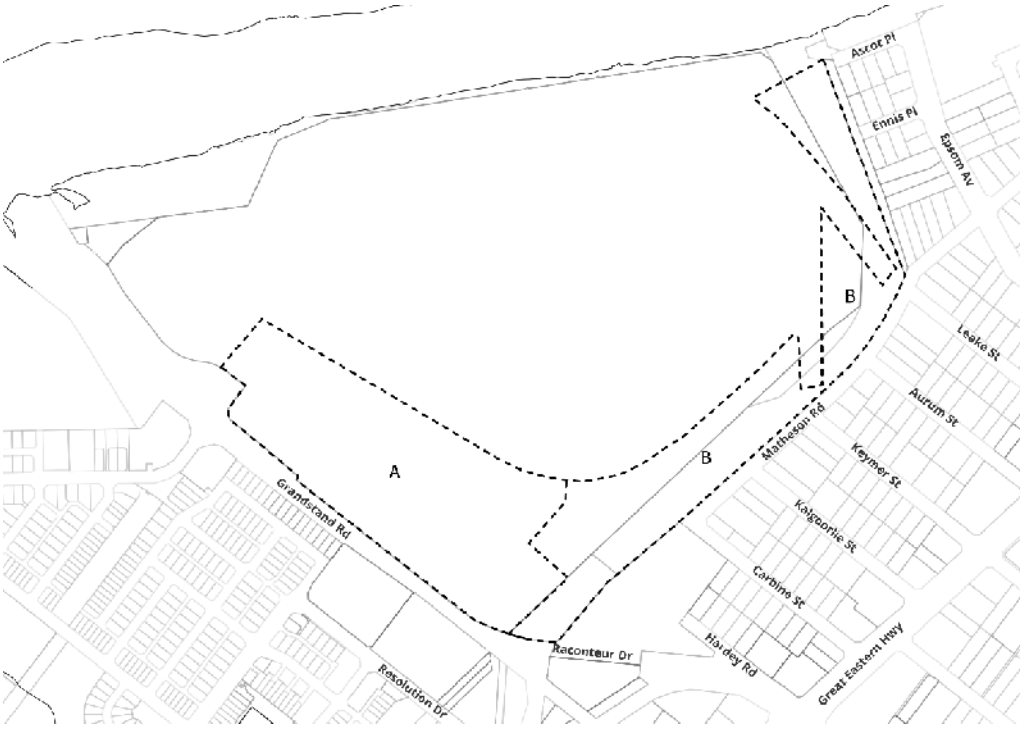
   ii. Rezoning a portion of Lot 452 (No. 70) Grandstand Road, Ascot from the 'Place of Public Assembly' zone to the 'Mixed Use' zone and including a Restricted Use (R1) designation and R60 density code.

   iii. Rezoning Lot 100 (No. 1) Raconteur Drive, Ascot from the 'Place of Public Assembly' zone to the 'Mixed Use' zone, rezoning Lot 23 (No. 2) Carbine Street from the 'Residential and Stables' zone to the 'Mixed Use' zone, deleting the Additional Use (A18) designation, inserting residential density codes of R10 and R-AC4, and including a Restricted Use (R1) designation.

   iv. Rezoning the redundant residual alignments of Grandstand Road and Matheson Road and part of Lot 1 (No. 88), Lot 3 (No. 96) Grandstand Road, and Lot 51 (No. 2) Raconteur Drive from the 'Mixed Use' zone and 'no zone' to the 'Commercial' zone, inserting a residential density

coding of R-AC3 and applying a Restricted Use (R2) designation.

v. Modifying Schedule No. 2 – Additional Uses as follows:

| No. | Location and Additional Uses |
|---|---|
| 18 | Within Precinct A, the local government may consider the following additional uses:<br>• Office<br>• Hotel<br>• Reception Centre<br>• Restaurant<br>• Tavern.<br>Within Precinct B, the local government may consider the following additional uses:<br>• Stables<br>• Veterinary Centre.<br>  |

vi. Inserting the following into Schedule No. 3 – Restricted Uses and deleting the text "There are no restricted uses which apply to the Scheme":

| No. | Description of Land | Restricted Use | Conditions |
|---|---|---|---|
| 1 | 'Mixed Use' zoned portion | • Aged or Dependent | Nil |

| | | | | |
|---|---|---|---|---|
| | | of Lot 452 (No. 70) Grandstand Road, Ascot<br><br>Lot 100 (No. 1) Raconteur Drive, Ascot.<br><br>Lot 23 (No. 2) Carbine Street, Ascot. | Persons Dwelling<br>• Ancillary Dwelling<br>• Art Gallery<br>• Betting Agency<br>• Car Park<br>• Caretakers Dwelling<br>• Child Care Premises<br>• Child Family Day Care<br>• Civic Use<br>• Club Premises<br>• Community Home<br>• Consulting Rooms<br>• Convenience Store<br>• Dry Cleaning Premises<br>• Educational Establishment<br>• Exhibition Centre<br>• Grouped Dwelling<br>• Health Centre<br>• Health Studio<br>• Home Business<br>• Home Occupation<br>• Home Store<br>• Hospital<br>• Hosted Short Term Rental Accommodation<br>• Hotel<br>• Laundromat<br>• Liquor Store – Small<br>• Lunch Bar<br>• Massage Parlour<br>• Medical Centre | |

| | | | | |
|---|---|---|---|---|
| | | | • Mobile Phone Tower & Associated Facilities<br>• Multiple Dwelling<br>• Nursing Home<br>• Office<br>• Private Recreation<br>• Place of Worship<br>• Public Amusement<br>• Reception Centre<br>• Residential Building<br>• Restaurant/Café<br>• Single House<br>• Small Bar<br>• Studio<br>• Tavern<br>• Telecommunications Infrastructure<br>• Tourist and Visitor Accommodation<br>• Unhosted Short term Rental Accommodation<br>• Veterinary Centre<br>• Vet Consulting Rooms<br>• Video Store. | |
| | 2 | Lot 1 (No. 88) and Lot 3 (No. 96) Grandstand Road and Lot 51 (No. 2) Raconteur Drive, Ascot | • Aged or Dependent Persons Dwelling<br>• Amusement Facility<br>• Art Gallery<br>• Betting Agency<br>• Car Park<br>• Caretaker's | Residential dwellings shall not be located on the ground floor.<br>Retail floorspace is restricted to 1,200m$^2$ increasing up |

| | | | | |
|---|---|---|---|---|
| | | | Dwelling<br>• Child Care Premises<br>• Civic Use<br>• Club Premises<br>• Consulting Rooms<br>• Dry Cleaning Premises<br>• Educational Establishment<br>• Exhibition Centre<br>• Fast Food Outlet/Lunch Bar<br>• Health Centre<br>• Health Studio<br>• Home Business<br>• Home Occupation<br>• Hosted Short Term Rental Accommodation<br>• Laundromat<br>• Liquor Store-Small<br>• Liquor Store-Large<br>• Lunch Bar<br>• Massage Parlour<br>• Medical Centre<br>• Mobile Phone Tower & Associated Facilities<br>• Multiple Dwelling<br>• Office<br>• Public Amusement<br>• Restaurant/Café<br>• Restricted Premises<br>• Shop | to 3,000m$^2$ where a Net Benefit Test is provided to the satisfaction of the Local Government.<br>'Fast Food Outlet/Lunch Bar' shall only be permitted where it forms part of and is integrated with the built form of the precinct, and where no drive-through facilities are proposed. |

| | | | |
|---|---|---|---|
| | | • Small Bar<br>• Tavern<br>• Telecommunications Infrastructure<br>• Unhosted Short Term Rental Accommodation<br>• Veterinary Centre<br>• Vet Consulting Rooms<br>• Video Store. | |

vii. Amending the Scheme Map accordingly.

2. Is of the view that the proposed amendment to Local Planning Scheme No. 15 is a 'complex' amendment because the intended zones, density codes and land use permissibility for the subject land is not addressed by the City's Local Planning Strategy.

3. Forwards the Amendment to the Environmental Protection Authority for assessment in accordance with Section 82 of the *Planning and Development Act 2005 (WA),* and to the Western Australian Planning Commission in accordance with Part 5, Division 2, Regulation 37 of the *Planning and Development (Local Planning Schemes) Regulations 2015 (WA)* for consent to advertise.

4. Subject to the Minister for Planning granting consent to advertise, advertises the amendment for public comment for a period of 60 days or a longer period approved by the Commission in accordance with Part 5, Division 2, Regulation 38 (3) of the *Planning and Development (Local Planning Schemes) Regulations 2015 (WA).*

**Carried 8 votes to 1**

For: Abedin, Davis, Harris, Kulczycki, Marks, Ryan, Sekulla and Sessions

Against: Rossi

## Location

Amendment No. 24 relates to 61.3 hectares of land bound by the Swan River, Ascot Waters Estate, Grandstand Road, Resolution Drive, the Residential and Stables zone, Hardey Road, Carbine Street and Matheson Road in Ascot (refer to Figure 1 below).

More specifically, the amendment area comprises nine lots, eight of which are owned by Perth Racing. The remaining lot shaded yellow on Figure 1 adjacent to Grandstand Road is owned by the WAPC.




Figure 1: Amendment Area (outlined red)

## Consultation

No consultation has been undertaken on the proposed Amendment at this point in time.

The *Planning and Development Act 2005 (WA)* requires scheme amendments to be advertised in accordance with the *Planning and Development (Local Planning Schemes) Regulations 2015 (WA)* (the Regulations). The details of this are outlined in the 'Statutory Environment' section of this report.

## Strategic Community Plan implications

In accordance with the 2020 – 2040 Strategic Community Plan:

**Key Performance Area: Place**

**Outcome:** 6. Sustainable population growth with responsible urban planning.

## Policy implications

There are no policy implications associated with this report.

## Statutory environment

### Statutory Planning Framework

Local Planning Scheme Amendments

Section 75 of the *Planning and Development Act 2005* provides for an amendment to be made to a local planning scheme. The procedures for amending a local planning scheme, including public consultation requirements are set out within Part 5 of the Regulations.

The Regulations specify three different types of scheme amendments being 'basic', 'standard', and 'complex'. Clause 35(2) of the Regulations requires a resolution of the local government which specifies the amendment type and the reasons for the classification.

When a local government resolves to amend a scheme, the proposed scheme amendment is required to be referred to the Department of Planning Lands and Heritage (DPLH) to obtain consent to advertise. Where an amendment is deemed to have an environmental impact, it is also required to be referred to the Environmental Protection Authority.

Following consent to advertise, the responsible authority shall advertise the amendment in accordance with the Regulations by:

- Displaying the amendment and associated public notice on the local government's website.
- Publishing the notice in a local newspaper and displaying this on the local government's public notice boards.
- Giving a copy of the notice to each public authority that the local government considers is likely to be affected by the amendment.

After the conclusion of the advertising period, Council is required to consider the submissions and pass a resolution to either support the amendment, with or without modification, or not support the amendment. After passing a resolution, the amendment is to be forwarded to the WAPC to review and provide a recommendation to the Minister for Planning.

Metropolitan Region Scheme

The subject land area is primarily zoned 'Private Recreation' under the Metropolitan Region Scheme (MRS), with the balance zoned 'Urban' and land abutting the Swan River reserved 'Parks and Recreation' (refer to Figure 2). The proposed Scheme Amendment is able to be accommodated under the current MRS zoning.




Figure 2: MRS Zones and Reserves (Amendment Area outlined Red)

Local Planning Scheme No. 15

The subject land is predominantly zoned 'Place of Public Assembly – Racecourse' under LPS 15. The southern portion of the subject land abutting Resolution Drive is zoned 'Mixed Use', Lot 23 (No. 2) Carbine Street is zoned 'Residential and Stables', and a separate portion of land adjacent to Grandstand Road is not currently assigned a zone or reserve (refer to Figure 3).

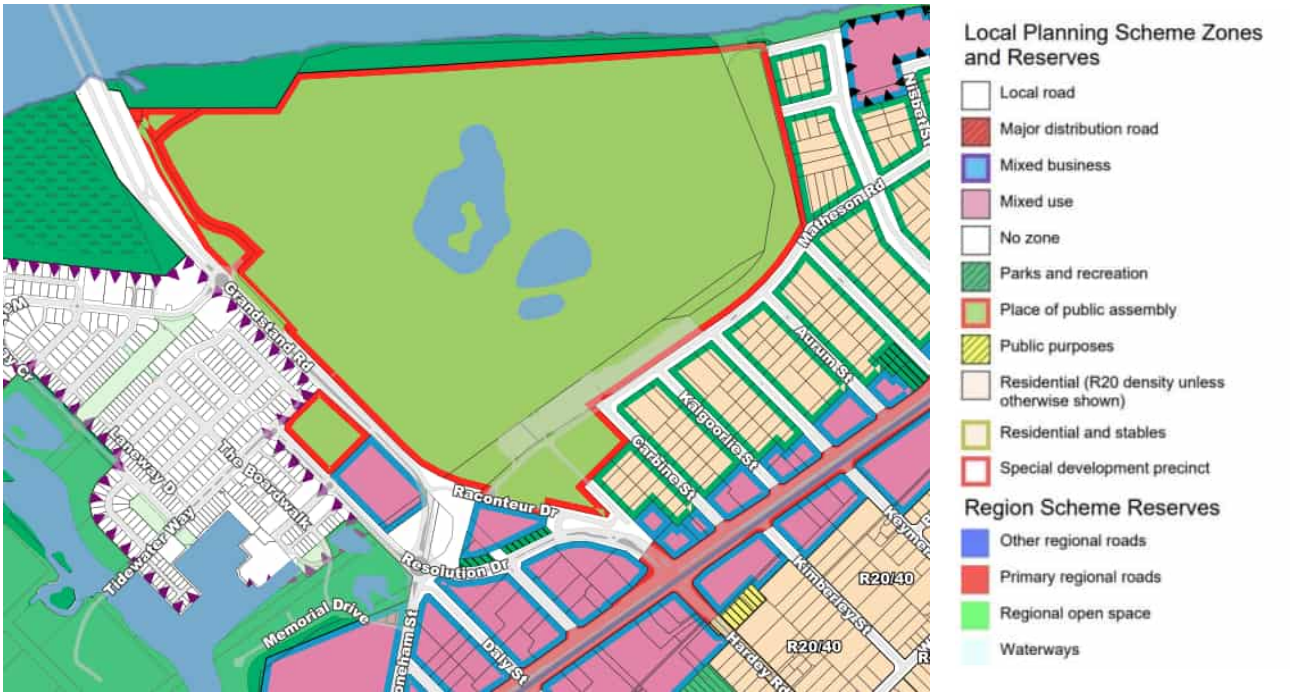



Figure 3: LPS 15 Zones and Reserves

The objectives of the 'Place of Public Assembly', 'Mixed Use' and 'Residential and Stables zones are as follows:

> "The 'Places of Public Assembly' zone is intended to allow for special places of assembly, such as halls, private schools, grounds for athletics, sports grounds with provision for spectators, racecourses, trotting track, stadia and/or showgrounds."
>
> "The Mixed Use Zone is intended to allow for the development of a mix of varied by compatible land uses such as housing, offices, showrooms, amusement centres, eating establishments and appropriate industrial activities which do not generate nuisances detrimental to the amenity of the district or to the health, welfare and safety of its residents. Buildings should be of a high standard of architectural design set in pleasant garden surrounds with limited vehicular access from properties to primary roads.
>
> To provide for a wide variety of active uses on street level which are compatible with residential and other non-active uses on upper levels."

> "The Residential and Stables Zone is intended to provide for compatible and environmentally responsible use of land in proximity to the Ascot Racecourse and the Swan River by residential accommodation and stables and ancillary functions of the horse racing industry."

Table 1 (Zoning Table) of LPS 15 sets out the permissibility of uses using the symbols of 'P', 'D', 'A', and 'X'. The meaning of the symbols is listed below:

'P' means the use is permitted by the Scheme providing the use complies with the relevant development standards and the requirements of the Scheme;

'D' means that the use is not permitted unless the local government has exercised its discretion by granting Development Approval;

'A' means the use is not permitted unless the local government has exercised its discretion by granting Development Approval after giving special notice in accordance with the provisions contained in Clause 64 of the *Planning and Development (Local Planning Schemes) Regulations 2015* Schedule 2;

'X' means a use that is not permitted by the scheme.

Clause 3.5 addresses Additional Uses and outlines that, regardless of the use class designation in the zoning table, land uses for areas specified in Schedule No. 2 can receive approval, subject to the specific conditions being met.

Schedule No. 3 of LPS 15 and Clause 3.6 relate to Restricted Uses. Clause 3.6 sets out the purpose of Restricted Uses as follows:

> "Despite anything contained in the Zoning Table, the land specified in Schedule 3 may only be used for the specific use or uses that are listed and subject to the conditions set out in Schedule 3 with respect to that land."

There are currently no restricted uses under LPS 15.

State Planning Policy 7.3 – Residential Design Codes

The Residential Design Codes (R-Codes) establish built form controls for all residential development within Western Australia and are used in the assessment of residential development and subdivision proposals. Volume 1 of the R-Codes establishes standards for single houses, grouped dwellings, and multiple dwellings up to R60. Volume 2 of the R-Codes specifically relates to multiple dwelling developments at the R80 code and above. Any future residential development will be assessed against the PSP and the R-Codes.

**Strategic Planning Framework**

Perth and Peel @ 3.5 Million

Perth and Peel @ 3.5 Million provides a strategic framework to guide development across the Perth and Peel regions, in response to a projected population of 3.5 million by 2050. The document divides the Perth metropolitan area into four

sub-regions: Central, North-West, North-East, and South. The subject land is located within the Central Sub-region.

The strategy also outlines Urban Consolidation Principles and identifies corresponding precincts. Of particular relevance to this amendment are the 'Green Network', 'Urban Corridor' and 'Activity Centres' principles and precincts.

The racecourse is identified as part of the 'Green Network' that extends along the Swan River. The document highlights the importance of supporting population growth and higher-density living with a connected network of public and private open spaces.

Great Eastern Highway, located south of the subject land, is identified as an 'Urban Corridor', intended to accommodate higher-density residential development that leverages proximity to public transport while minimising impacts on surrounding areas and maintaining the efficiency of the regional transport network. Great Eastern Highway, Grandstand Road, and Resolution Drive are also identified as high-frequency public transit routes.

The document references State Planning Policy 4.2 (SPP 4.2) and the hierarchy of centres based on the future importance of each centre from a network perspective. Additionally, the document identifies the important role that activity centres have in being a focal point for commercial and social activity and the importance of these areas being designed to be walkable and near public transport to support these means of access.

State Planning Policy 4.2

State Planning Policy 4.2 guides the planning and development of activity centres in the Perth and Peel region. The document emphasises the importance of activity centres having a compact urban form with pedestrian-focused streetscapes. The City's Activity Centre Planning Strategy (ACPS) identifies a local centre within the broader Golden Gateway precinct, which includes part of Perth Racing's landholdings subject to the draft PSP. State Planning Policy 4.2 states that neighbourhood and local centres should cater to daily and weekly household shopping needs, provide community facilities, and offer a small range of convenience services. Neighbourhood centres typically include a supermarket, personal services, and convenience shops, supported by small-scale offices. Local centres share these characteristics but operate on a smaller scale.

State Planning Policy 4.2 emphasises that development in activity centres should generally align with the floorspace requirements set out in local planning strategies or structure plans. Where a proposal exceeds that floorspace need, the proposal is to demonstrate a net benefit to the community. A net benefit test is to be prepared in accordance with Section 7.8 of SPP 4.2 and address matters included in Section 5.3 of the Implementation Guidelines.

The applicant's amendment request includes 'Showrooms' as a use capable of approval within Precinct E of the draft PSP. State Planning Policy 4.2 states that these should be located in an Activity Centre Frame but notes that smaller centres may not have a frame. It also identifies bulky goods showrooms as a desired use within the frame of district centres but not for the frame of local or neighbourhood centres.

City of Belmont Local Planning Strategy

The City of Belmont Local Planning Strategy is the strategic planning document that broadly sets out the long-term planning direction for the City. The Strategy also informed the preparation of LPS 15. The key objectives of the Local Planning Strategy and relevant sub strategies for this precinct are as follows:

- To enhance the north-west entrance to the City.
- To encourage landmark development.
- Acknowledge that Ascot Racecourse and the Swan River are 'strategic tourism sites' of State significance to benefit future tourism development.

This amendment is not considered to be addressed by the Local Planning Strategy.

Activity Centre Planning Strategy

The ACPS was prepared to guide the future planning and coordination of activity centres within the City of Belmont and was adopted by Council at the February 2024 OCM. The ACPS identifies a future local centre within the broader Golden Gateway precinct, which includes a portion of Perth Racing's land and outlines that it is to be 1,200m$^2$ in the first instance. The ACPS states that following further residential development within the Golden Gateway precinct, it may be appropriate for this figure to be reviewed through a Needs Assessment or Net Benefit Test.

Draft Ascot Racecourse Precinct Structure Plan

The draft PSP (refer to Figure 4) has been prepared to guide the future use and development of land in and around Ascot Racecourse. At the 15 April 2025 OCM, Council resolved to recommend that the WAPC approve the draft PSP and supporting technical appendices subject to modifications.

The amendment request lodged by the applicant seeks to apply zones, density codes and land use permissibility consistent with the draft PSP for Precincts B, C, D and E. The applicant has advised that a request to rezone Precinct A under LPS 15 will be prepared and submitted for consideration in due course.

The draft Local Structure Plan (LSP) is currently under consideration by officers at the DPLH. To avoid fettering the Minister's decision on this scheme amendment, the WAPC will not make a decision on the draft PSP until the amendment is signed off by the Minister.

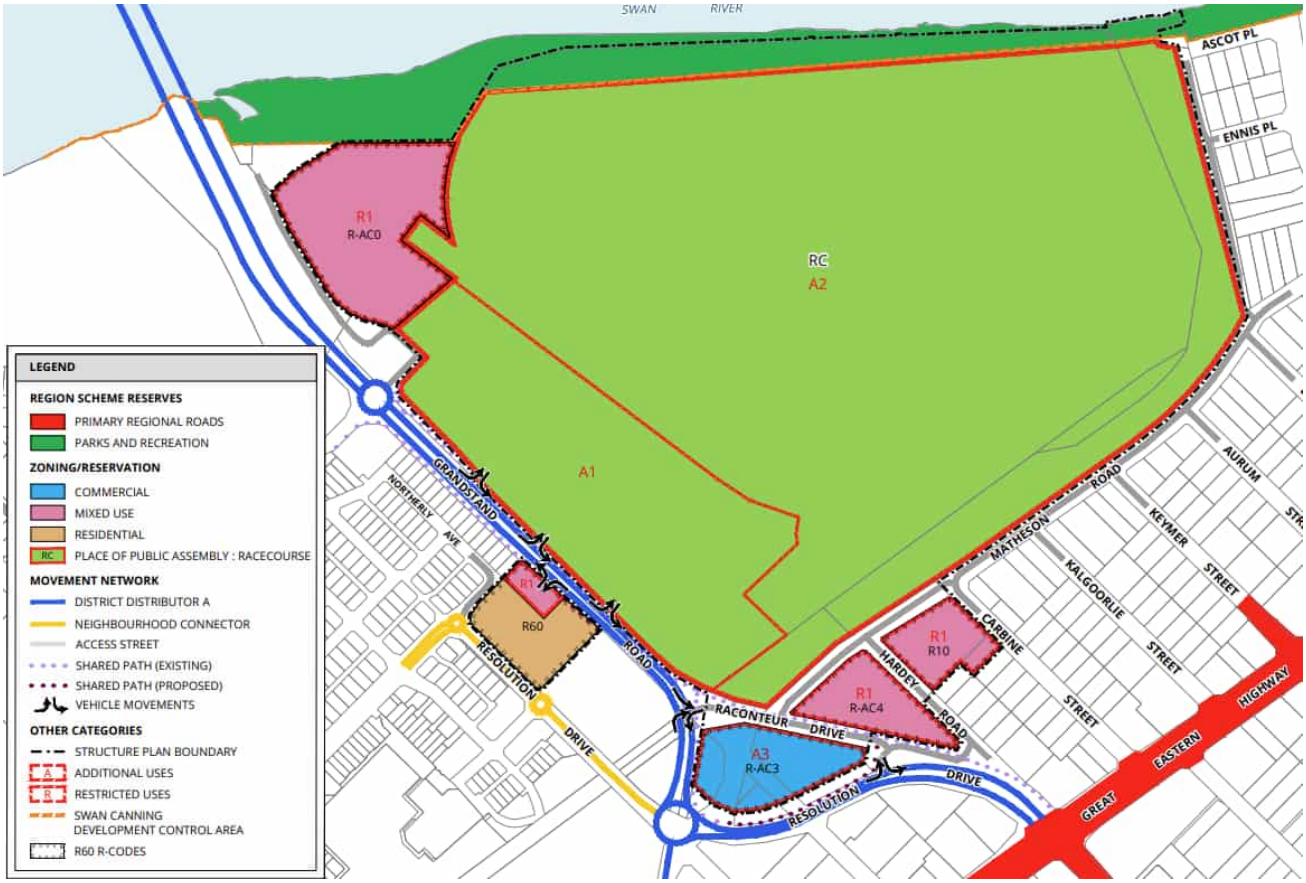



Figure 4: Draft Ascot Racecourse Precinct Structure Plan

## Background

Council resolved at its 15 April 2025 OCM to recommend approval of the draft PSP to the WAPC, subject to modifications. The draft PSP and Council's recommendation were subsequently forwarded to DPLH, where the proposal is currently under consideration.

Before the WAPC can determine the draft PSP, a Local Planning Scheme Amendment must be progressed. The applicant has therefore lodged the amendment request provided at Attachment 12.2.1. Officers have reviewed the request but do not support various aspects in light of Council's 15 April 2025 resolution. Further discussion on the applicant's request and the proposed amendment is set out in the following section of this report.

## Report

### Zoning and Density

The applicant's amendment request proposes zoning and density codes consistent with the draft PSP, as follows:

- Rezoning Lot 452 (No. 70) Grandstand Road, Ascot (refer to Figure 5) from the 'Place of Public Assembly' zone to the 'Residential' and 'Mixed Use' zone and applying a density code of R60.




Figure 5: Lot 452 (No. 70) Grandstand Road

- Rezoning Lot 100 (No. 1) Raconteur Drive, Ascot (refer to Figure 6) from the 'Place of Public Assembly' zone to the 'Mixed Use' zone and applying an R-AC4 code to land west of Hardey Road and an R10 density code east of Hardey Road.

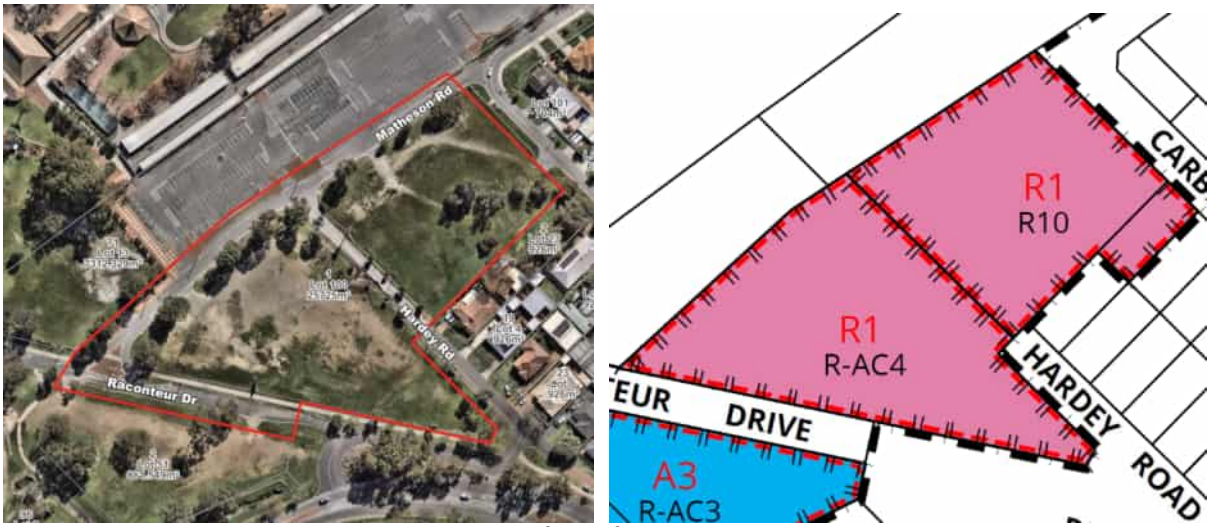



Figure 6: Lot 100 (No.1) Raconteur Drive

- Rezoning Lot 23 (No. 2) Carbine Street (refer to Figure 7) from the 'Residential and Stables' zone to the 'Mixed Use' zone and applying an R10 density code.




Figure 7: Lot 23 (No. 2) Carbine Street

- Rezoning the redundant residual alignments of Grandstand Road and Matheson Road and part Lot 1 (No. 88), Lot 3 (No. 96) Grandstand Road, and Lot 51 (No. 2) Raconteur Drive (refer to Figure 8) from the 'Mixed Use' zone and 'no zone' to the 'Commercial' zone and applying a density code of R-AC3.

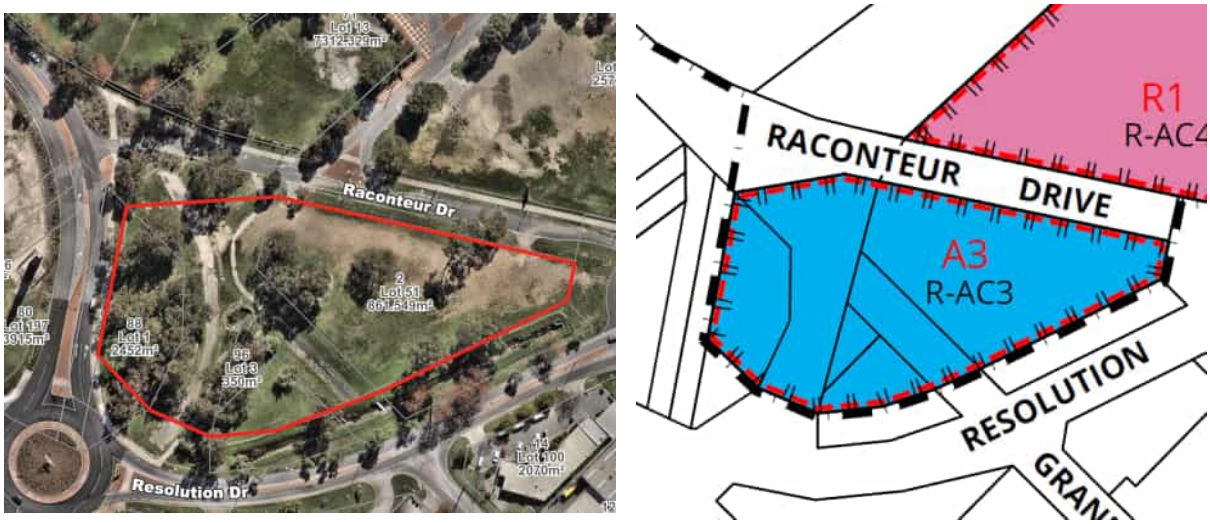



Figure 8: Residual alignments of Grandstand Road and Matheson Road,

Part Lot 1 (No. 88),Lot 3 (No. 96) Grandstand Road, and Lot 51 (No. 2) Raconteur Drive

As outlined in the 15 April 2025 OCM report (Attachment 12.2.2), the proposed zones and density codes are considered appropriate, subject to modifications to land use permissibility and development controls. It is noted that development controls will be addressed through the structure plan rather than LPS 15, and therefore are not dealt with in this amendment.

With respect to land use permissibility, further consideration has been given to the application of Additional Uses and Restricted Uses, as well as the appropriate permissibility for land proposed to be zoned 'Commercial'. This will be discussed further in the next section.

**Land Use Permissibility**

The applicant's amendment request includes several changes to land use permissibility. The land uses proposed are consistent with those defined in the current version of LPS 15. However, in light of Amendment No. 23, it is recommended that the uses 'Bed and Breakfast', 'Serviced Apartment' and 'Motel' be deleted and replaced with 'Hosted Short Term Rental Accommodation', 'Unhosted Short Term Rental Accommodation' and 'Tourist and Visitor Accommodation'. Other proposed changes to land use permissibility are outlined below.

Additional Use 18

Clause 3.5 of LPS 15 addresses Additional Uses and outlines that, regardless of the use class designation in the zoning table, land uses for areas specified in Schedule 2 can receive approval, subject to the specific conditions being met. Portions of the Amendment area are currently subject to Additional Use 18 (A18) which provides for 'Horse Sales' and 'Stables' to be approved on No. 71 Grandstand Road and No. 1 Raconteur Drive (refer to Figure 9).

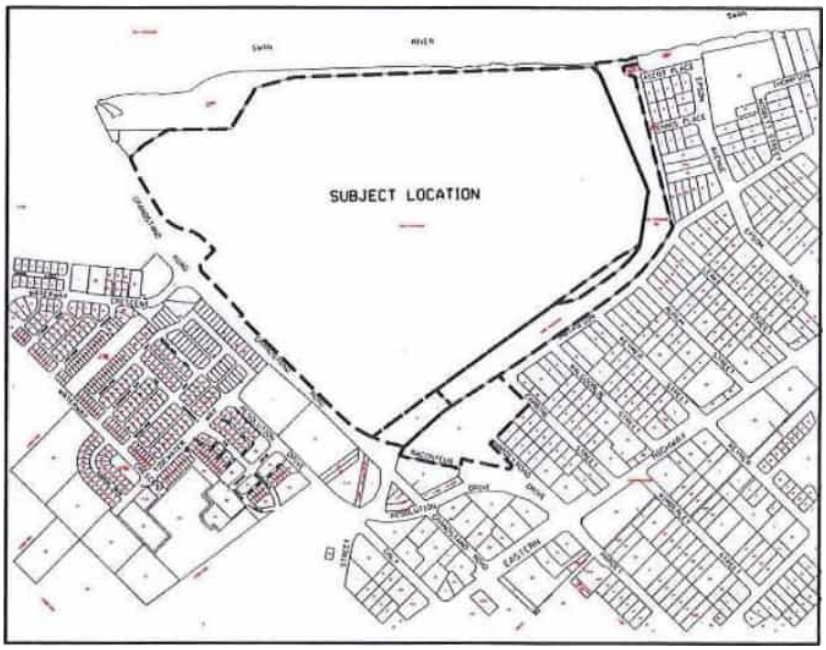



Figure 9: Area currently subject to A18

The applicant's amendment request proposes to modify A18 by:

- Deleting the use 'Horse Sales'.
- Providing for the following land uses to be capable of approval within Precinct B (refer to Figure 10) of the draft Ascot Racecourse PSP:
  - Office;
  - Hotel;

- Reception Centre;
- Restaurant; and
- Tavern.

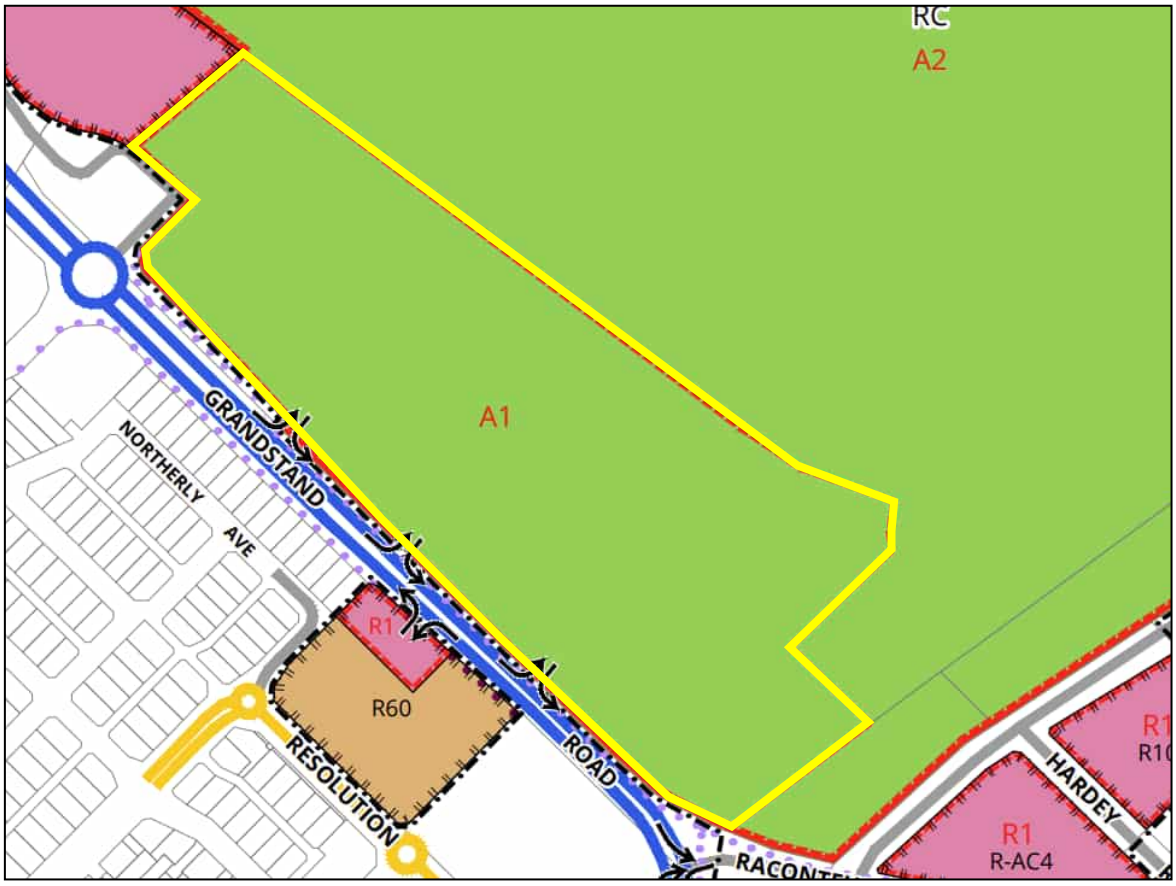



Figure 10: Precinct B of the draft PSP outlined yellow

- Providing for the following land uses to be capable of approval within Precinct C (refer to Figure 11) of the draft Ascot Racecourse PSP:
  - Animal Establishment;
  - Stables; and
  - Veterinary Centre.

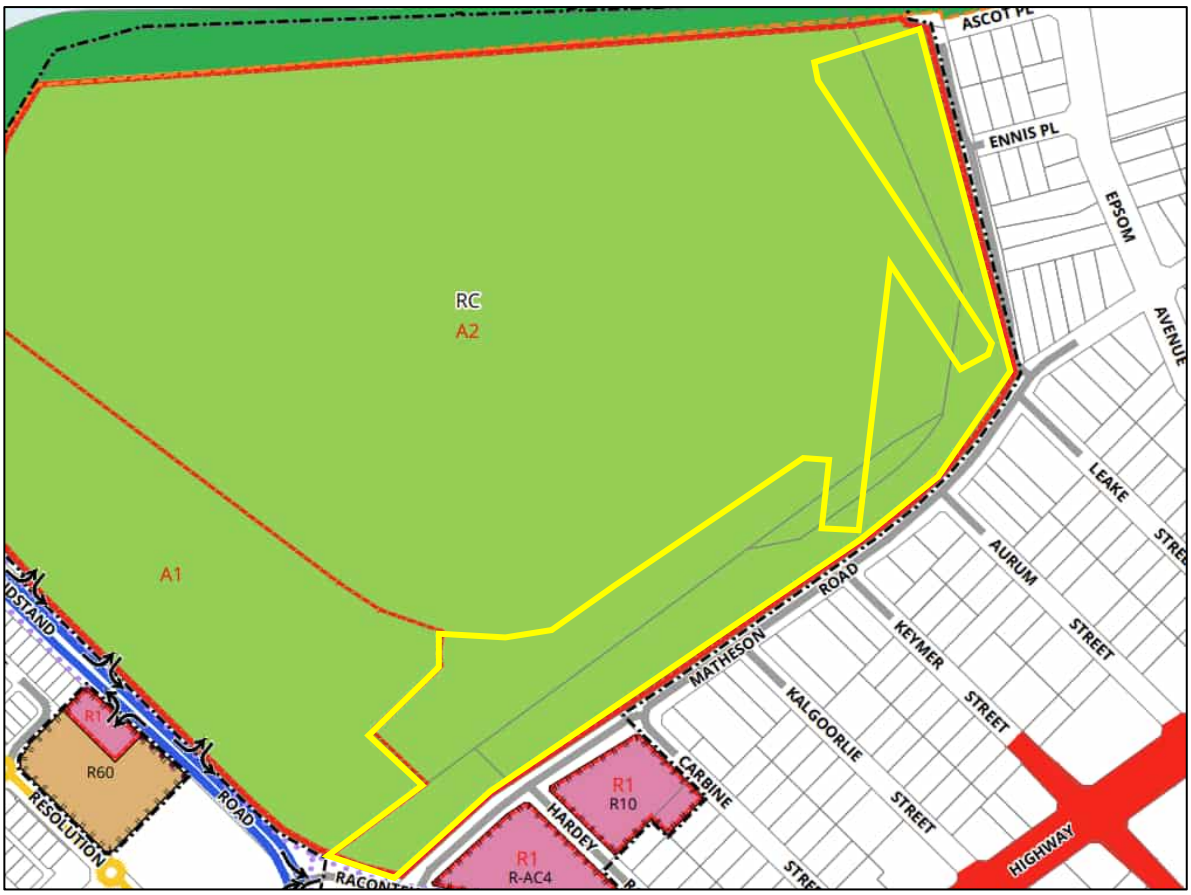


Figure 11: Precinct C of the draft PSP outlined yellow

- Providing for 'Health Centre' to be capable of approval within Precinct E (refer to Figure 12) of the draft Ascot Racecourse PSP.

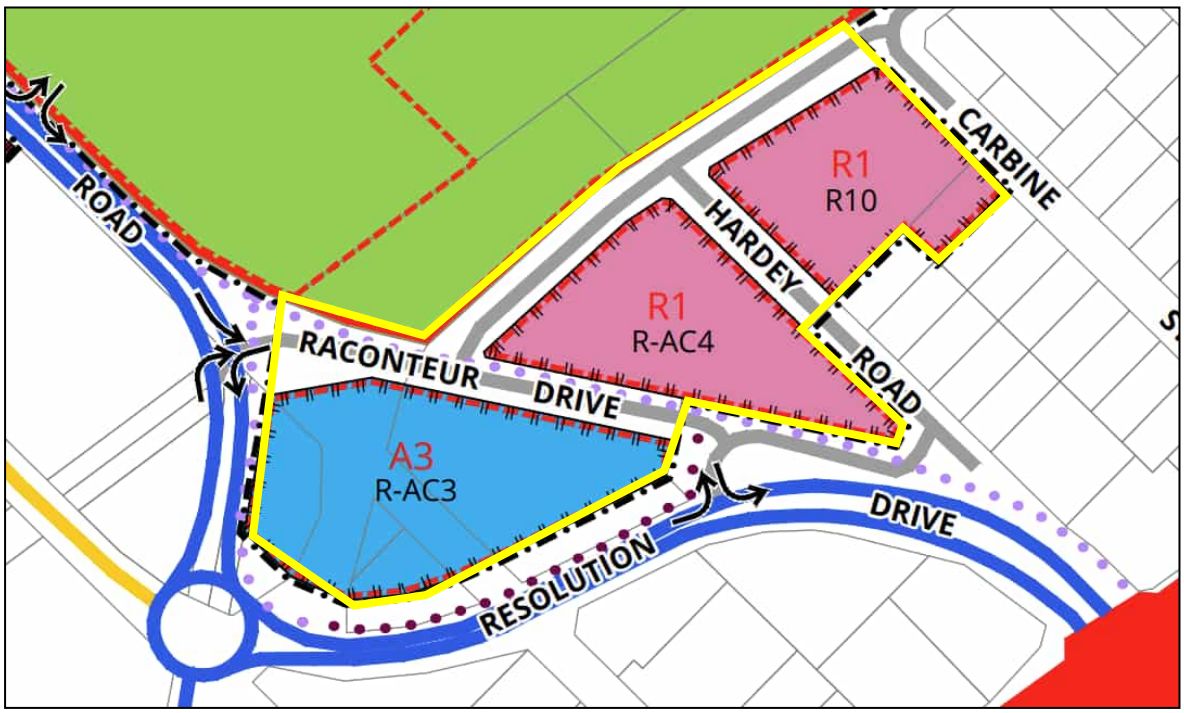


Figure 12: Precinct E of the draft PSP outlined yellow

- Replacing the existing plan included within Schedule 2 of LPS 15 for the A18 area with the plan included as Figure 13 below.

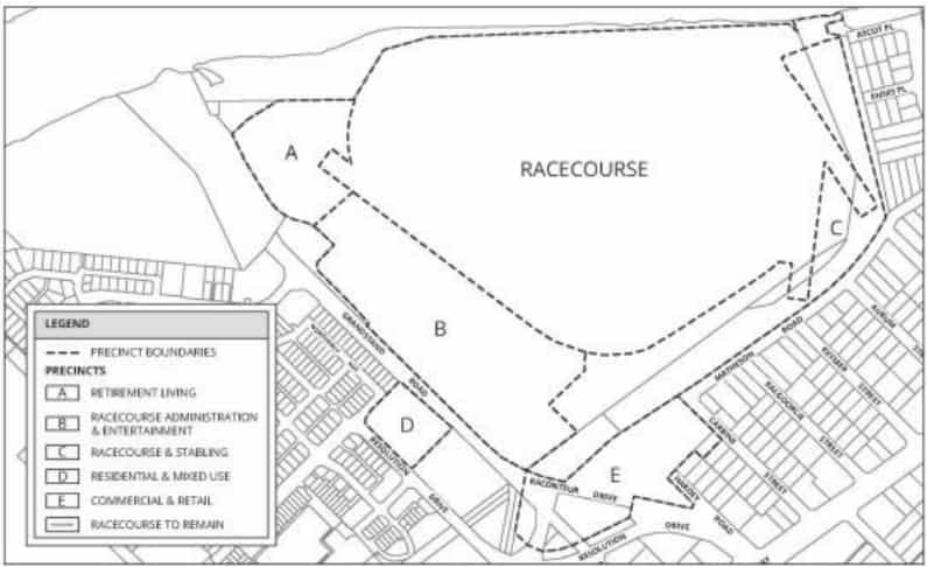


Figure 13: A18 plan requested by the applicant

In considering the applicant's request relating to A18 the following is relevant:

- The Additional Uses proposed to be applied to Precinct B of the draft PSP will support its function as a racecourse and entertainment precinct. Therefore, this aspect of the amendment is supported.
- Applying Additional Uses of 'Stables' and 'Veterinary Centre' to Precinct C of the draft PSP is supported as these uses will support the function of the racecourse and stabling area.

- While 'Animal Establishment' may be an appropriate land use within Precinct C of the draft PSP, this use is not listed in the Zoning Table and so it should not form part of A18. Any application for this use would need to be treated as a 'Use not Listed'.
- The applicant's request to apply an Additional Use of 'Health Centre' to Precinct E, is inconsistent with the draft Ascot Racecourse PSP, which only proposed the Additional Use for the 'Commercial' portion of Precinct E. This is because 'Health Centre' is an 'X' use within the 'Commercial' zone but a 'D' use within the 'Mixed Use' zone. Notwithstanding, this use can be provided for through Restricted Uses instead of Additional Uses. This will be explained further under the 'Restricted Uses' heading.

Having regard to the above, it is recommended that Council initiates an amendment to update A18 to apply the uses of 'Office', 'Hotel', 'Reception Centre', 'Restaurant' and 'Tavern' to Precinct B and 'Stables' and 'Veterinary Centre' to Precinct C. However, it is not considered appropriate for the scheme to make reference to the PSP. Therefore, Precinct B of the draft PSP will be labelled Precinct A on the A18 plan and Precinct C will be labelled Precinct B.

The applicant's amendment request also proposes extending Additional Use 3 (A3) to cover the 'Commercial' zoned land as shown in Figure 14. Additional Use 3 currently provides for 'Shop' to be approved over Lots 713, 237 and 236 Grandstand Road as shown in Figure 15. Given 'Shop' is already a 'D' use within the 'Commercial' zone, it is unclear why the A3 plan is proposed to be extended to the 'Commercial' zoned portion of the subject land. Instead, 'Shop' can become a 'Restricted Use' for the 'Commercial' zoned land as discussed below.

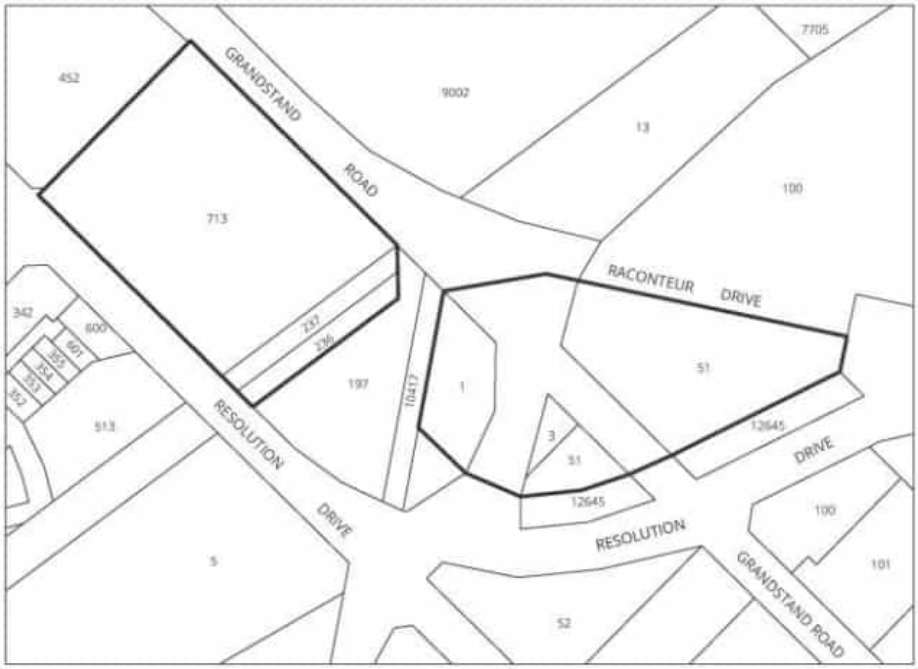


Figure 14: A3 plan requested by the applicant

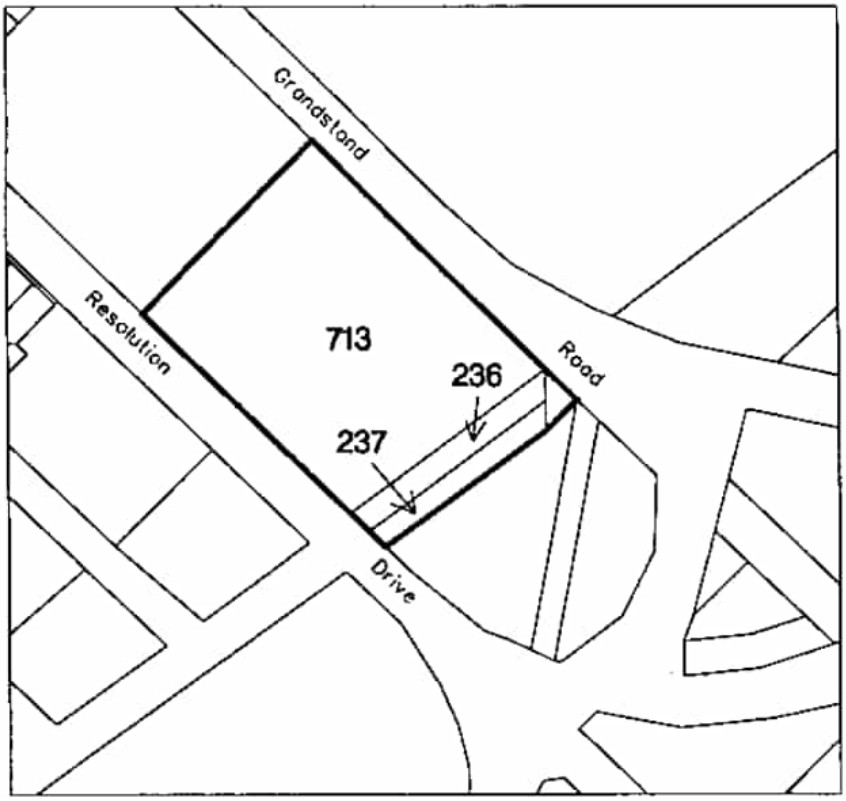


Figure 15: A3 plan currently included within LPS 15

Restricted Uses

Restricted Use areas are a mechanism in local planning schemes that limit land to specific permitted uses. This means that only the designated use(s) are allowed on a particular site, and any other uses that would typically be permissible within the zone are not permitted.

Restricted Use Area 1 (R1)

The applicant's amendment request proposes to restrict the permissible uses within the 'Mixed Use' portions of Precincts D and E (refer to Figure 5 and Figure 6) of the Ascot Racecourse PSP so that the following cannot be considered:

- 'Amusement Facility'
- 'Amusement Parlour'
- 'Auction Mart'
- 'Garden Centre'
- 'Industry-Light'
- 'Industry – Service'
- 'Motor Vehicle Repair'
- 'Warehouse'.

While this approach is generally supported, the proposed wording in the applicants request states: "uses permissible in the Mixed Use zone, but excluding the following uses", followed by a list of the abovementioned uses. To better reflect the intent of 'Restricted Use' areas, it is considered more appropriate to include a full list of uses capable of approval in Table 2. The modified amendment therefore proposes to explicitly list all permissible uses, ensuring clearer alignment with the purpose of the 'Restricted Use' mechanism.

Further, it is considered necessary to expand the list of uses not permissible in the 'Mixed Use' areas to include the following:

- 'Fast Food Outlet/Lunch Bar'
- 'Funeral Parlour'
- 'Pet Day Care'
- 'Night Club'
- 'Radio or Tv Installation'
- 'Restricted Premises'
- 'Service Station'
- 'Vet Hospital'
- 'Showroom'.

These uses are not considered appropriate within proximity to residential development as they are likely to have adverse amenity impacts or do not align with the intent of the precinct in the draft PSP. It should be noted that Council in considering the draft PSP resolved to ensure that these uses are not capable of approval. Reasons for this particularly with respect to 'Showrooms' is further detailed within the officers report included as Attachment 12.2.2. Having regard to this, R1 does not include the abovementioned uses or those listed by the applicant.

Restricted Use Area 2 (R2)

In considering the draft Ascot Racecourse PSP, Council did not resolve to restrict uses permissible within the portion of Precinct E that is proposed to be zoned 'Commercial'. However, officers have further considered land use permissibility over this land and consider it appropriate to restrict uses by applying an R2 designation. This will allow all uses capable of approval within the 'Commercial' zone, excluding the following:

- 'Garden Centre'
- 'Radio or Tv Installation'
- 'Showroom'
- 'Single House'
- 'Grouped Dwelling'.

In addition, the 'Health Centre' land use is proposed to be included as a use that can be considered (this captures the applicants request that 'Health Centre' be an Additional Use). 'Fast Food Outlet/Lunch Bar' is also proposed to be included as a use that may be considered; however, it is proposed to be subject to a condition limiting its development to circumstances where it does not include drive-through facilities. This approach enables the consideration of a use that may complement the local centre while ensuring that a standalone, car-oriented development does not establish within it.

In considering why the abovementioned uses are not appropriate, the following is relevant:

- The intent of the 'Commercial' zoned land is to facilitate the development of an activity centre. A 'Garden Centre' that includes the propagation, rearing and sale of plants and the storage of produces associated with horticulture and gardens is not considered to be consistent with this intent.
- 'Radio or TV Installations' could occur elsewhere within the City of Belmont and are not required within a 'Mixed Use' precinct within proximity to the Kilns site, Ascot Racecourse and future development within the Golden Gateway precinct.
- As detailed within the officers report included within Attachment 12.2.2, 'Showrooms' are more appropriate in existing planned precincts, such as those along Great Eastern Highway and within the City's business park.
- Low density dwelling typologies such as 'Single House' and 'Grouped Dwelling' are not consistent with the intent of this area to facilitate the development of an activity centre. Additionally, Council in its previous resolution have requested development provisions that require activation of all street frontages. It is considered that this should occur through active commercial uses on the ground floor supported by residential development on upper floors.

Having regard to the above, it is recommended that Council initiate the amendment so that the abovementioned uses cannot be considered. Additionally, it is recommended that a condition be applied to ensure multiple dwellings are not located on the ground floor, thereby reserving these areas for activity centre land uses that contribute to street-level activation.

A condition is also recommended to limit retail floorspace to 1,200m² initially, increasing to a maximum of 3,000m² where a Net Benefit Test demonstrates sufficient need to the satisfaction of the City of Belmont. In considering the appropriateness of this condition, officers had regard to the Retail Assessment prepared in support of the Ascot Racecourse PSP and Council's resolution for modifications to be made to it. At this stage, an updated Retail Assessment has not been provided and so it is considered necessary to restrict retail floorspace to 1,200m$^2$ having regard to the following:

- While the Retail Assessment concludes that the proposed 3,400m$^2$ retail floorspace aligns with the City's strategic framework, this view is not considered to reflect the intent of the City's ACPS. The City's ACPS anticipates incremental expansion over time.
- The Retail Assessment states that the centre will be sustainable by 2026 without broader precinct development and with minimal impact on adjacent centres. This assumption relies on sufficient demand from the immediate trade area. However, as the draft Golden Gateway LSP has not been finalised, development within the precinct is unlikely to progress within this timeframe.
- Population growth projections also indicate that growth may not materialise until 2031–2041. As a result, the local population base in 2026 may be insufficient to support a 3,400m$^2$ neighbourhood centre without significantly drawing sales from existing centres. The claim that the centre will be sustainable by 2026 is therefore considered overly optimistic and requires further justification.
- Section 2.1 of the Retail Assessment mentions the key considerations outlined in SPP 4.2's Implementation Guidelines for preparation and assessment of retail assessments. However, the report does not provide clear responses to address these matters. The Retail Assessment is therefore not satisfactory in its current form.

Considering the above, in the absence of a modified Retail Assessment, it is appropriate to restrict retail floorspace within the 'Commercial' portion of Precinct E of the draft PSP to 1,200m$^2$ in the first instance. This figure could be reviewed upon receipt of a Net Benefit Test which provides clear justification for a higher figure and addresses the above points.

**Scheme Amendment Classification**

The Amendment is considered to be a 'complex' amendment because the intended zones, density codes and land use permissibility for the subject land has not been addressed by the City's Local Planning Strategy.

The Amendment will be required to be advertised for 60 days consistent with the Regulations.

**Conclusion**

The applicant requested that the City modify LPS 15 consistent with the draft Ascot Racecourse PSP. While various aspects of the applicant's request are supported, a number of changes to land use permissibility are warranted. This reflects Council's resolution at the April 2025 OCM and officers' further consideration of appropriate land use permissibility for land proposed to be zoned 'Commercial'. It is recommended that the modified version of the amendment as reflected within the officers recommendation be supported by Council for the purpose of advertising. Following Council's resolution, the Amendment will be

referred to the Environmental Protection Authority and the WAPC for consent to advertise.

## Financial implications

There are no financial implications evident at this time.

## Environmental implications

There are no environmental implications associated with this report. The Amendment will need to be provided to the Environmental Protection Authority prior to advertising.

## Social implications

The Amendment will facilitate the enhancement of the range of services and facilities in the area.

## Attachment details

| Attachment No and title |
|---|
| 1. Applicant's Amendment Request [**12.2.1** - 989 pages] |
| 2. 15 April 2025 OCM Report - Item 12.1 [**12.2.2** - 1211 pages] |

# Proposed Amendment to the City of Belmont LPS No. 15

## Precincts B, C, D and E / Ascot Racecourse Precinct
## Ascot

ROWE GROUP

OUR REF: 9481 28/07/2025

# Document Control

Printed 28 July 2025 9481_241127_R_LPS Amt_Ascot_cr

| Version | File Name | Prepared | Approved | Date |
|---|---|---|---|---|
| 1 | 9481_241127_R_LPS Amt_Ascot_cr | Isabella Scarfone<br>Claire Richards | Ashleigh Maple | 12 December 2024 |
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## Attachments

1. Certificate of Title
2. Draft Ascot Racecourse Precinct Structure Plan Map

3. Local Water Management Strategy
4. Retail Assessment (Net Benefit Test)
5. Transportation Noise Assessment
6. Environmental Assessment Report
7. Engineering Servicing Report
8. Traffic Impact Assessment

## Tables

1. Cadastral Information
2. Certificate of Title Encumbrances
3. Summary of Proposed Amendment

# 1. Introduction

Rowe Group acts on behalf Perth Racing in relation to their landholdings at Lots 3, 13, 452 and 9002 Grandstand Road, Lot 7005 Matheson Road, and Lots 51 and 100 Raconteur Drive, Ascot ('site'). A draft Precinct Structure Plan known as the Ascot Racecourse Precinct Structure Plan ('draft PSP') has been prepared in relation to the site and was submitted to the City of Belmont for consideration on 21 August 2024. The draft PSP identifies future zoning, density, and land use controls that will facilitate future development of the site.

To give statutory effect to these elements and provide consistency with the PSP, it is necessary to amend the Metropolitan Region Scheme ('MRS') and the City of Belmont Local Planning Scheme No. 15 ('LPS15'). An MRS Amendment request has been prepared in relation to a portion of Lot 9002 Grandstand Road (Precinct 'A') and was submitted to the Western Australian Planning Commission ('WAPC') on 28 November 2024. A request to rezone Precinct 'A' under LPS15 will be prepared and submitted to the City of Belmont for consideration in due course.

The enclosed documentation requests support from the City of Belmont to initiate an amendment to LPS15 in relation to Precincts 'B', 'C', 'D' and 'E' of the draft PSP ('Amendment Area'). The proposed amendment comprises both textual modifications to LPS15 and modifications to the LPS15 scheme maps.

This report contains all of the necessary information required to support the initiation of the amendment to LPS15. It provides a detailed explanation of the proposed amendment, identifies and describes the Amendment Area and its surroundings, contains an overview of the relevant zoning and reservations, and includes an analysis of relevant planning and environmental considerations.

This report has been prepared following initial engagement with the Department of Planning Lands and Heritage (DPLH) and the City of Belmont in the context of the draft PSP.

# 2. Description of Site

## 2.1 Location

Located within the municipal district of the City of Belmont, the Amendment Area forms part of the locality of Ascot and is situated approximately 7.7 km east of the Perth Central Business District.

Refer **Figure 1 – Regional Context**

The Amendment Area is bound by the Swan River to the north, the Ascot Residential and Stables area and Matheson Road to the east and south-east, Resolution Drive to the south and south-west, and Grandstand Road to the west.

Grandstand Road provides access to the regional road network including Tonkin Highway and Graham Farmer Freeway via Garrat Road and Guildford Road to the north, and Great Eastern Highway to the south via Resolution Drive and Stoneham Street. The southern portion of the Amendment Area is bound by Resolution Drive and Matheson Road providing access to local residential streets.

Refer **Figure 2 – Local Context**

## 2.2 Cadastral Information

The Amendment Area comprises the following land parcels which collectively measure 61.42 ha:

| Lot | Street Address | Plan | Volume | Folio | Area | Landowner |
|---|---|---|---|---|---|---|
| 1 | 88 Grandstand Road | 55346 | 1724 | 276 | 2,452m$^2$ | State Planning Commission |
| 3 | 96 Grandstand Road | 55346 | 1742 | 278 | 350m$^2$ | The Chairman of the Committee of the WA Turf Club |
| 13 | 71 Grandstand Road | 26760 | 1883 | 670 | 7,312m$^2$ | The Chairman of the Committee of the WA Turf Club |
| 23 | 2 Carbine Street | 2198 | 321 | 107 | 926m$^2$ | The Chairman of the Committee of the WA Turf Club |
| 50 | 71 Grandstand Road | 5729 | 1041 | 934 | 3,516m$^2$ | The Chairman of the Committee of the WA Turf Club |
| 51 | 2 Raconteur Drive | 15104 | 1883 | 668 | 6,939m$^2$ | The Chairman of the Committee of the WA Turf Club |
| 100 | 1 Raconteur Drive | 60341 | 2723 | 304 | 25,725m$^2$ | The Chairman of the Committee of the WA Turf Club |
| 452 | 70 Grandstand Road | 60339 | 2723 | 355 | 11,441m$^2$ | The Chairman of the Committee of the WA Turf Club |
| 7705 | 71 Matheson Road | 209359 | 1789 | 567 | 43,318m$^2$ | The Chairman of the Committee of the WA Turf Club |
| 9002 | 71 Grandstand Road | 60352 | 2723 | 303 | 512,241m$^2$ | The Chairman of the Committee of the WA Turf Club |

**Table 1: Cadastral Information**

The proposed Amendment relates to all of the above landholdings with the exception of the portion of Lot 9002 which comprises the 'Racecourse' Precinct and Precinct 'A', as depicted within the draft PSP.

Refer **Figure 3 – Site Plan**

Copies of the Certificates of Title for the above land parcels are enclosed at **Attachment 1**. A review of the Certificates of Title reveal that the Amendment Area is affected by a number of encumbrances, details of which are set out in the table below.

| Document Number | Type | Details | Affected Lots |
|---|---|---|---|
| D367664 | Caveat | Diamond Syndicate Pty Ltd | 1 |
| K930699 | Easement | Water Corporation | 7705 |
| H712859 | Lease – telecommunications infrastructure | Vodaphone network Pty Ltd | 9002 |
| I041460 | Lease – telecommunications infrastructure | Optus Mobile Pty Ltd | 9002 |
| K929948 | Lease – telecommunications infrastructure | Crown Castle Australia Pty Ltd | 9002 |
| K944992 | Caveat - telecommunications infrastructure | Crown Castle Australia Pty Ltd | 9002 |
| N/A | Easement burden | Electricity | 9002 |
| L399948 | Memorial | Contaminated Sites Act 2003 | 9002 |
| M813804 | Lease – telecommunications infrastructure | Optus Mobile Pty Ltd | 9002 |
| L014550 | Easement | WA Gas Networks Pty Ltd | 100 |
| M230259 | Easement | Electricity | 100 |
| M230260 | Easement | Electricity | 100 |
| N/A | Easement | Drainage | 452 |
| L014556 | Easement | City of Belmont | 452 |

**Table 2: Certificate of Title Encumbrances**

None of the above encumbrances affect the advancement of the proposed amendment however further consideration will be required at the development stage, particularly in relation to the protection of easements.

Refer **Attachment 1 – Certificates of Title**

## 2.3 Existing Improvements and Surrounding Land Uses

The Amendment Area abuts the Swan River foreshore to the north, the Ascot Residential and Stables area to the south and east, light/commercial development to the south, and the Ascot Waters residential estate and Bristile Kilns (also known as the 'Ascot Kilns') to the west. The Ascot Residential and Stables area is inherently linked to the horse racing industry and the operation of Ascot Racecourse. The existing zoning applicable to the area permits the keeping of horses within private stable complexes, enabling horse trainers to operate in the area and utilise the Racecourse for training purposes.

Land to the west and south-west of the Amendment Area includes a historical landmark being the Bristile Kilns located on the border of the Ascot Waters residential estate. The light industrial/commercial development to the south comprises of a range of land uses including corporate offices, fast food outlets, and service stations.

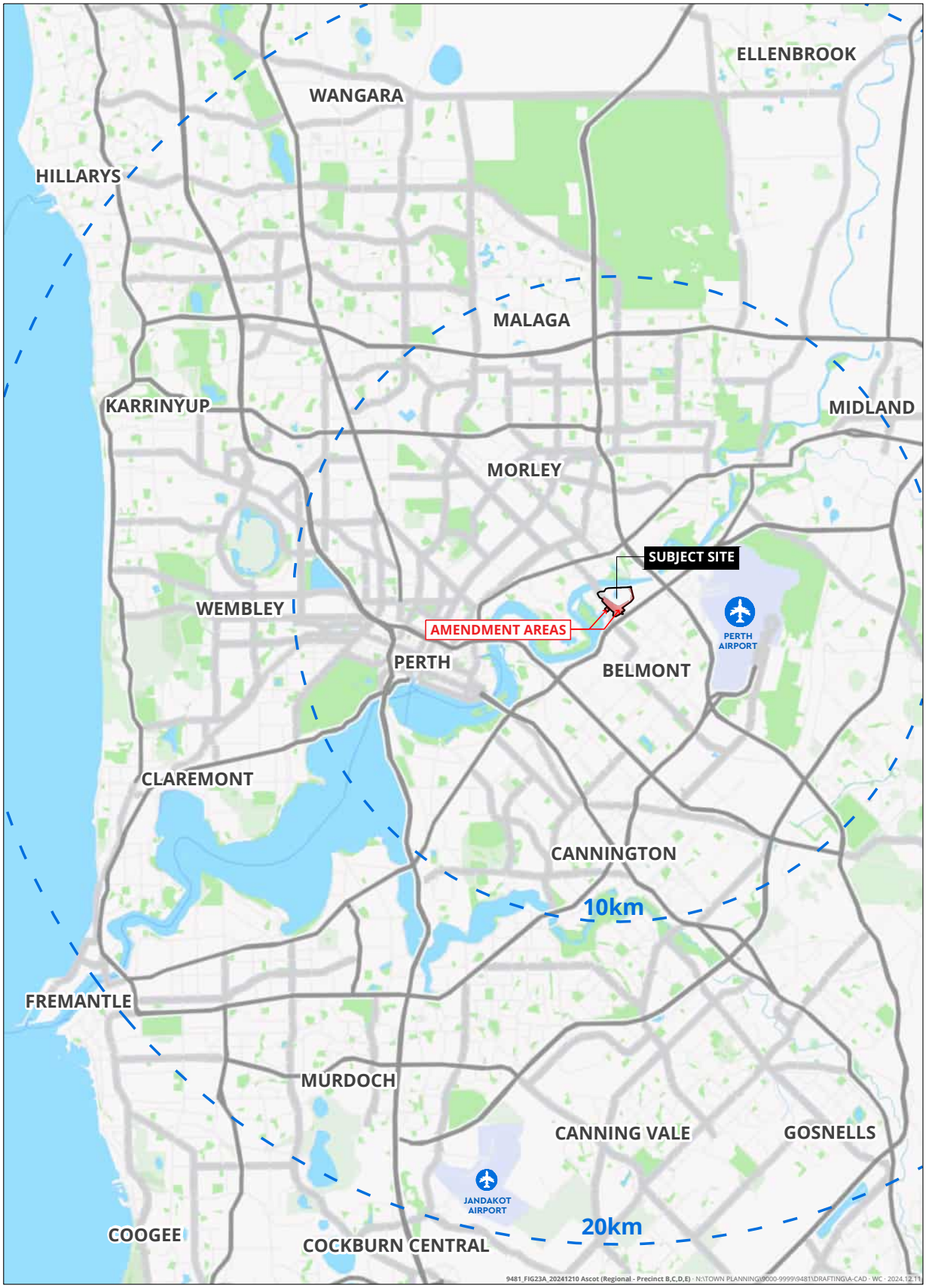
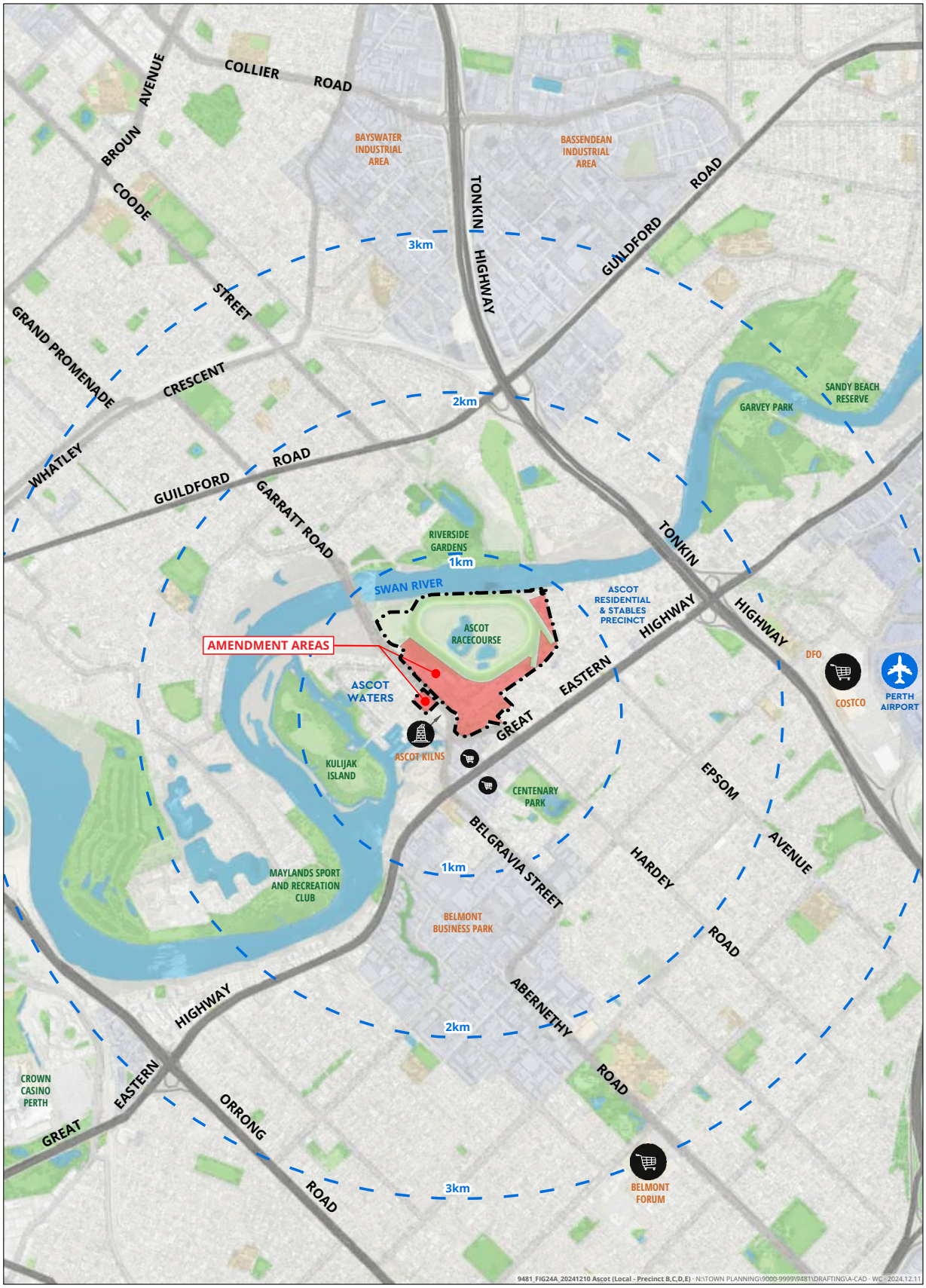



FIGURE 1
REGIONAL LOCATION




0 1000 m

SCALE @ A4: 1:30,000

FIGURE 2
LOCAL CONTEXT




FIGURE 3
SITE PLAN

# 3. Proposed Amendment

It is requested that the City of Belmont, pursuant to Section 75 of the *Planning and Development Act 2005*, resolves to initiate an amendment to LPS15 by:

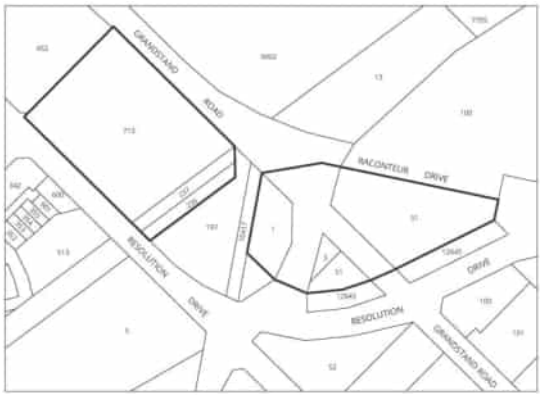
1. Rezoning a portion of Precinct 'D' (comprising Lot 452 (No. 70) Grandstand Road, Ascot) from the 'Place of Public Assembly: Racecourse' Zone to the 'Residential' R60 Zone as shown on the Scheme Amendment Plan.
2. Rezoning a portion of Precinct 'D' (comprising Lot 452 (No. 70) Grandstand Road, Ascot) from the 'Place of Public Assembly: Racecourse' Zone to the 'Mixed Use' Zone and including a Restricted Use (R1) designation as shown on the Scheme Amendment Plan.
3. Rezoning a portion of Precinct 'E' (comprising Lot 100 (No. 1) Raconteur Drive, Ascot) from the 'Place of Public Assembly: Racecourse' Zone and a portion of Precinct 'E' (comprising Lot 23 (No. 2) Carbine Street) from the 'Residential and Stables' Zone to the 'Mixed Use' Zone, deleting the Additional Use (A18) designation, inserting a Restricted Use (R1) designation and inserting a residential density coding of R10 and R-AC4 as shown on the Scheme Amendment Plan.
4. Rezoning portion of Precinct 'E' (comprising Lot 1 (No. 80) and Lot 3 (No. 96) Grandstand Road and Lot 51 (No. 2) Raconteur Drive, Ascot) from the 'Mixed Use' Zone and 'No Zone' to the 'Commercial' Zone, inserting a residential density coding of R-AC3 and inserting an Additional Use (A3) designation as shown on the Scheme Amendment Plan.
5. Including the following new provision in Schedule No. 2 – Additional Uses:

| No. | Location and Additional Uses |
|---|---|
| 18 | Within Precinct 'B', the local government may consider the following additional uses:<br>• Office<br>• Hotel<br>• Reception Centre<br>• Restaurant<br>• Tavern<br>Within Precinct 'C', the local government may consider the following additional uses:<br>• Animal Establishment<br>• Stables<br>• Veterinary Centre<br>Within Precinct 'E', the local government may consider the following additional uses:<br>• Health Centre<br>  |

6. Inserting the following table into Schedule No. 3 of LPS15 - Restricted Uses:

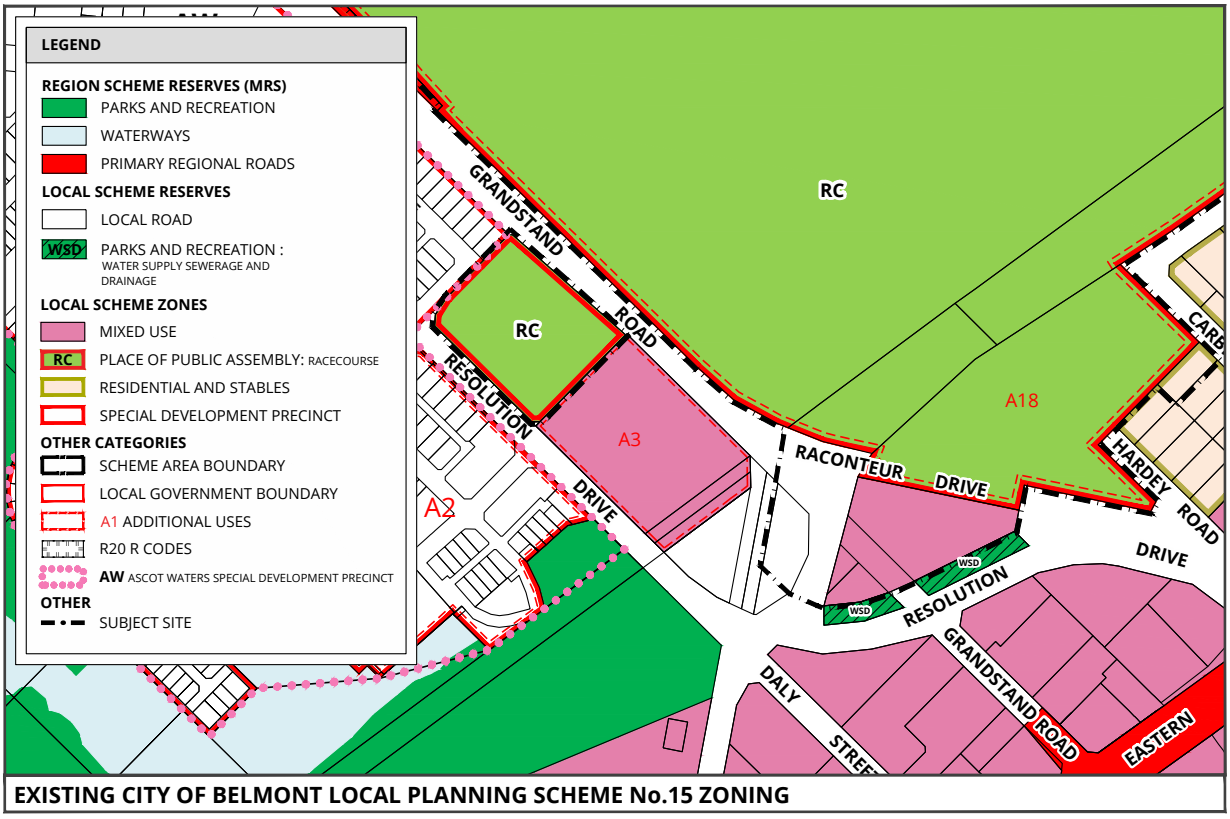
| No. | Description of Land | Restricted Use | Conditions |
|---|---|---|---|
| 1 | All land contained within Precinct D and Precinct E of the Ascot Racecourse Precinct Structure Plan area subject of the 'Mixed Use' zone | Uses permissible in the 'Mixed Use' Zone, but excluding the following uses:<br>Amusement Facility<br>Amusement Parlour<br>Auction Mart<br>Garden Centre<br>Industry – Light<br>Industry – Service<br>Motor Vehicle Repair<br>Warehouse | Nil. |

7. Modifying Schedule No. 2 – Additional Uses (A3) by inserting the following replacement plan:

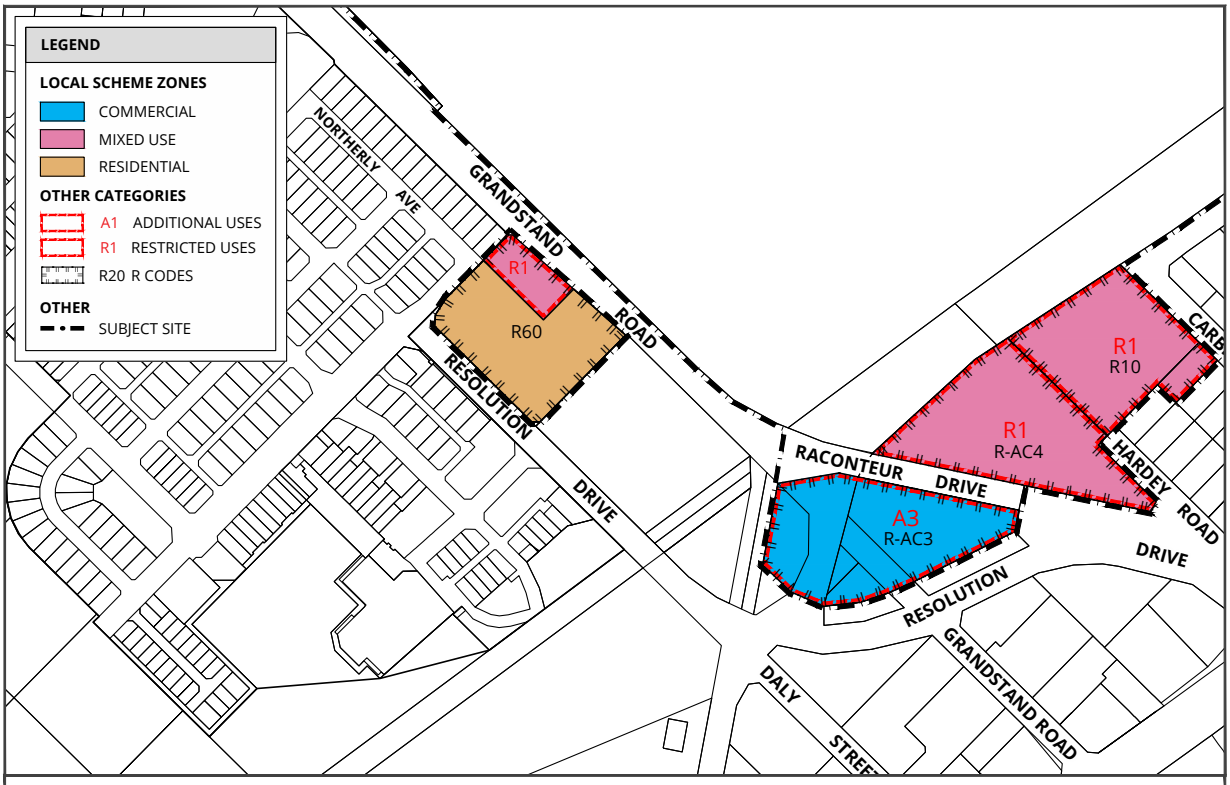
| No. | Location and Additional Uses |
|---|---|
| 3 |  |

8. Amending the Scheme Map accordingly.

The proposed Amendment is considered to fall within the category of a 'Complex' Amendment pursuant to Part 5 Regulation 34 of the *Planning and Development (Local Planning Schemes) Regulations 2015*.




EXISTING CITY OF BELMONT LOCAL PLANNING SCHEME No.15 ZONING




PROPOSED CITY OF BELMONT LOCAL PLANNING SCHEME No.15 ZONING

9481_FIG26A_20241210 Ascot (LPS rezoning - Precinct B,C,D,E) · N:\TOWN PLANNING\9000-9999\9481\DRAFTING\A-CAD · WC · 2024.12.12

0 300 m

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FIGURE 4
SCHEME AMENDMENT PLAN

# 4. Town Planning Considerations

## 4.1 Zones and Reservations

### 4.1.1 Metropolitan Region Scheme

The Amendment Area is primarily zoned 'Private Recreation' under the provisions of the MRS. The balance of the Amendment Area is zoned 'Urban'.

Refer **Figure 5 – MRS Zoning**

### 4.1.2 City of Belmont Local Planning Scheme No. 15

The Amendment Area is predominately zoned 'Place of Public Assembly – Racecourse' under the provisions of LPS15 and is assigned an 'Additional Use' ('A18') designation on the Scheme Map. The balance of the Amendment Area is zoned 'Mixed Use'.

The A18 designation enables a portion of the Amendment Area to be considered for the additional uses of 'Horse Sales' and 'Stables' which are not otherwise permissible under the 'Place of Public Assembly' Zone. The proposed Amendment seeks to modify the scope of additional uses applicable to the 'Place of Public Assembly' Zone but retain the general intent and nature of the uses provided.

Refer **Figure 6 – LPS15 Zoning**

## 4.2 Regional Planning Strategies

### 4.2.1 Central Sub-Regional Planning Framework

The Perth and Peel @ 3.5 Million suite of documents provides a framework for the development of the Perth and Peel regions as the population reaches an estimated 3.5 million people by 2050. The suite of documents includes four (4) planning frameworks for the Central, North-West, North-East and South Metropolitan sub-regions. These documents provide the detailed commentary and analysis accompanying the overall 'Spatial Plan for Perth and Peel @ 3.5 million'.

The Amendment Area is located within the parameters of the 'Central' Sub-Regional Planning Framework ('Framework'). The Framework identifies the racecourse as forming part of a 'Green Network' that extends along the Swan River. Great Eastern Highway is identified as an 'Urban Corridor' where focus should be given to investigating increased residential densities, with potential for mixed land uses where appropriate. Both Great Eastern Highway, Grandstand Road and Resolution Drive immediately abutting Perth Racing's landholdings are identified under the Framework as 'high-frequency public transit' routes.

The proposed amendment is broadly consistent with the Framework in that it seeks to provide mixed uses and higher residential densities in and around high frequency public transit routes whilst retaining a network of green space along the river foreshore.

Refer **Figure 7 – Central Sub-Regional Planning Framework Map**

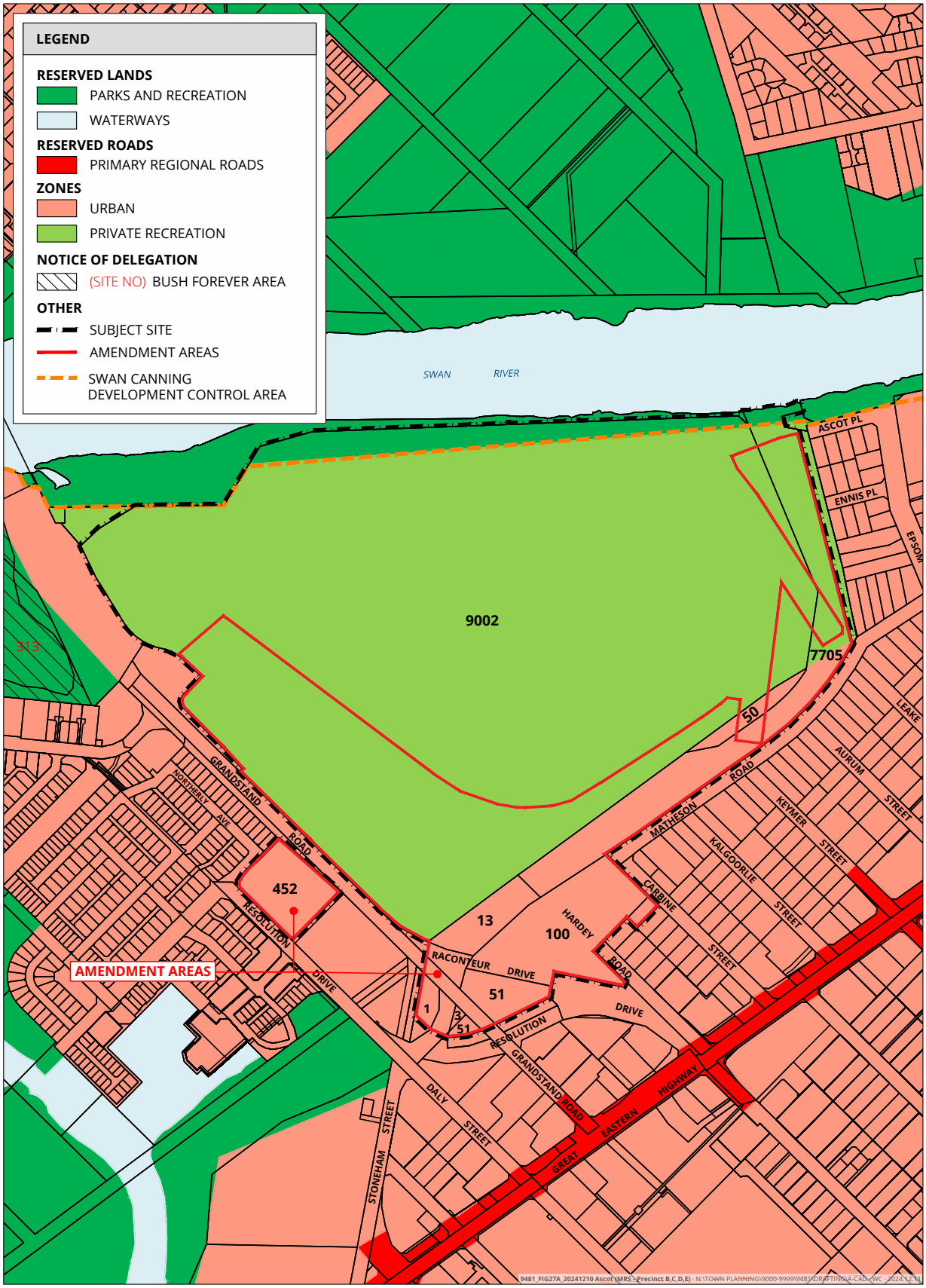
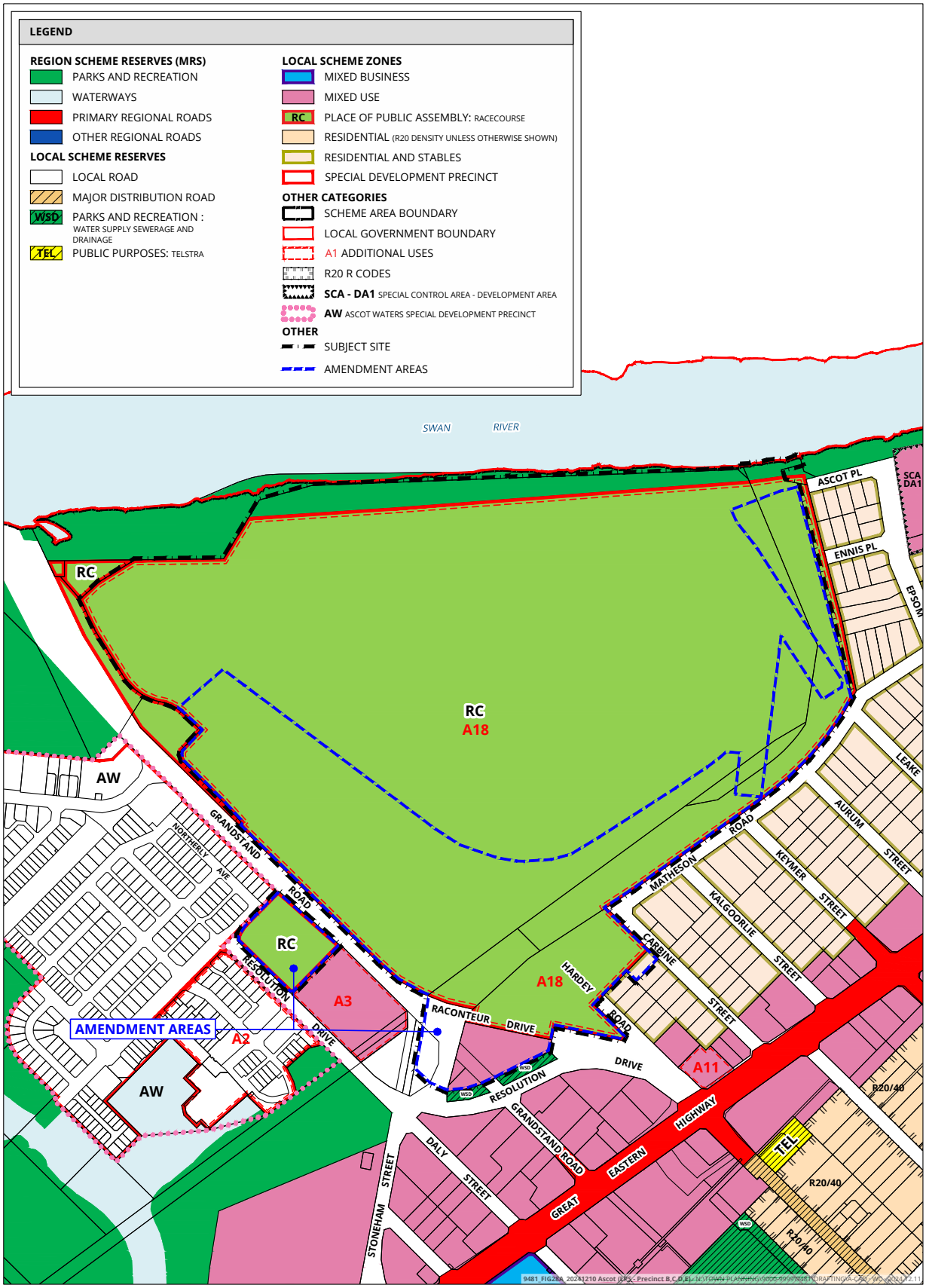



FIGURE 5
METROPOLITAN REGION SCHEME ZONING




0 200 m

SCALE @ A4: 1:7000

FIGURE 6
CITY OF BELMONT LOCAL PLANNING SCHEME No. 15 ZONING

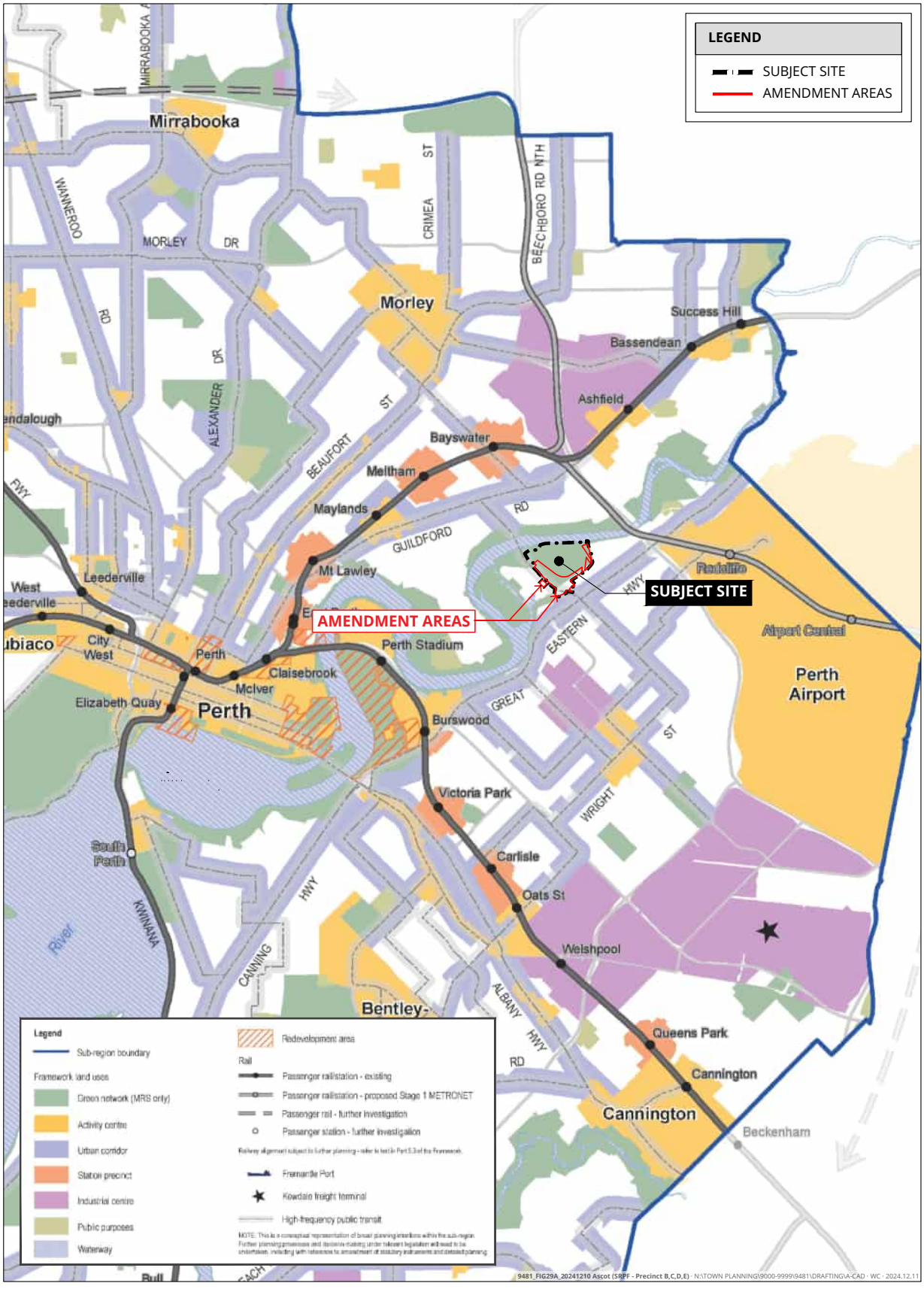



FIGURE 7
CENTRAL SUB-REGIONAL PLANNING FRAMEWORK

## 4.3 Local Planning Strategies

### 4.3.1 City of Belmont Local Planning Strategy

The City of Belmont is not currently guided by an adopted Local Planning Strategy however is in the process of preparing a Local Planning Strategy which will be used to inform the preparation of a new Local Planning Scheme to replace LPS15. No indication of timeframes for the preparation and advertising of the draft Local Planning Strategy and draft Local Planning Scheme are currently available.

### 4.3.2 City of Belmont Activity Centres Planning Strategy

The City of Belmont Activity Centres Planning Strategy ('ACPS') provides a holistic guide for future planning of activity centres within the City, based on the current strategic planning framework, future economic trends and analysis of best practice activity centre planning, as outlined by *State Planning Policy 4.2 – Activity Centres* ('SPP 4.2'). The ACPS identifies a future 'Local Centre' within the Ascot Waters residential estate (500m$^2$ NLA) to the west of the Amendment Area and the Golden Gateway Activity Centre (1,200m$^2$ NLA) which includes Precinct 'E'.

Precinct 'E' is identified in the draft PSP for future commercial development, reflective of its position within the Golden Gateway Activity Centre. Accordingly, the proposed Amendment seeks to rezone Precinct 'E' to the 'Commercial' and 'Mixed Use' Zones in order to facilitate a range of commercial uses. Land immediately adjacent to Resolution Drive and Grandstand Road, which is proposed for a 'Commercial' zoning under the proposed Amendment, would be suitable for active land uses such as a supermarket and speciality retail uses, and could form the 'core' of the activity centre, positioned centrally within the activity centre and having suitable access and exposure to passing trade.

To provide an appropriate transition to the adjacent 'Residential and Stables' precinct, transitional commercial and/or equine focussed development, such as bulky goods showroom, offices, a gym, and/or vet consulting rooms, to the north-east of Raconteur Drive is proposed via a 'Mixed Use' zoning. Like Precincts 'A' and 'D', 'Restricted Uses' are proposed to be applied to the 'Mixed Use' zone to ensure compatibility with surrounding development.

## 4.4 Structure Plans

### 4.4.1 Draft Ascot Racecourse Precinct Structure Plan

The Amendment Area forms part of the draft Ascot PSP which was lodged with the City of Belmont on 21 August 2024. The purpose of the PSP is to guide future land use, subdivision and development of the racecourse and surrounds. The draft PSP designates five (5) precinct areas ('A', 'B', 'C', 'D' and 'E') subject to different objectives and planning requirements. The proposed Amendment relates to Precincts 'B', 'C', 'D' and 'E' only. The following provides a description of each.

**Precinct B (Racecourse Administration & Entertainment)**

a) Support the continuation of the Racecourse spectator and entertainment area.

b) Integrate Perth Racing's administration functions within the Ascot Racecourse site.

c) Enhance public and spectator amenity through attractive built form, expansive open spaces, and landscaping.

d) Respect existing heritage values of the site.

**Precinct C (Racecourse & Stabling)**

a) Facilitate land use and development that supports, and is complementary to, the horse racing industry.

b) Provide for the planned development of on-course horse stabling and ancillary functions to support the ongoing viability of Ascot Racecourse.

c) Mitigate potential land use conflict through appropriate design and management practices.

**Precinct D (Residential & Mixed Use)**

d) Provide for medium density residential development of a scale that is consistent and/or compatible with surrounding residential area.

e) Support the development of small-scale non-residential uses fronting Grandstand Road, including but not limited to a 'Child Care Premises'.

**Precinct E (Commercial)**

f) Facilitate the development of an activity centre at the intersection of Grandstand Road and Resolution Drive.

g) Support retail, commercial, and other land uses that are consistent and complementary with the role and function of an activity centre.

h) Support land use and development that is complementary to Racecourse operations.

i) Satisfy existing and future demand for convenience retail and amenities in the local area.

Refer **Attachment 2 - Draft Ascot Precinct Structure Plan Map**

## 4.5 State Planning Policies

### 4.5.1 State Planning Policy 2.10 – Swan-Canning River System

The WAPC's *State Planning Policy 2.10 - Swan-Canning River Systems* ('SPP 2.10') provides an overarching framework that sets out guiding principles for decision-making in relation to planning proposals over the Swan and Canning River and its foreshore. SPP 2.10 contains four (4) guiding principles of social benefit, environmental values, cultural and natural heritage, and design and development, and nine (9) precinct areas.

The Amendment Area is located within the 'Lower Swan' precinct under SPP 2.10 which promotes planning decisions that:

- *Establish protection measures for riparian vegetation on foreshores;*
- *Promote an aesthetic environment for new riverside development appropriate to its surrounding, and establish a sense of place by the river;*
- *Recognise the importance of the river for transport, commerce, tourism and leisure as well as its conservation value;*
- *Enhance the appearance and function of existing recreation, tourism and commercial nodes and of proposed nodes identified in an adopted Swan-Canning precinct plan;*
- *Protect places of cultural significance, in particular places on the Register of Heritage Places and the Department of Indigenous Affairs register of significant places; and*
- *Ensure that subdivisions incorporate adequate foreshore reserves and building setbacks.*

The proposed Amendment does not directly affect the Swan-Canning River System on the basis that it does not involve any modifications to the zoning or statutory town planning provisions relating to land immediately adjoining the river foreshore. On this basis, the proposed Amendment is consistent with the objectives of SPP 2.10 and specific provisions in relation to the Lower Swan precinct.

### 4.5.2 State Planning Policy No. 2.9 – Water Resources

The WAPC's *State Planning Policy 2.9 – Water Resources* ('SPP 2.9') provides guidance for the planning, protection, conservation and management of surface and groundwater catchments. It also includes consideration of the availability of water and waterways management, wetlands, waterways, and estuaries and their buffers, and implementation of total water cycle management principles in the land use planning system.

The proposed Amendment will facilitate implementation of the draft PSP by providing the prerequisite local zoning and statutory town planning controls to support future development. The draft PSP is supported by a Local Water Management Strategy ('LWMS') prepared in accordance with the WAPC's Better Urban Water Management Guidelines and addressing the provisions and objectives set out in SPP 2.9.

Any future development within the Amendment Area will require demonstration by way of an Urban Water Management Plan ('UWMP') or Stormwater Management Plan (as appropriate) that the water management measures contained within the LWMS are suitability implemented.

Refer **Attachment 3 – Local Water Management Strategy**

### 4.5.3 Draft State Planning Policy 2.9 – Planning for Water

The WAPC has prepared a *draft State Planning Policy 2.9 – Water Resources* ('Draft SPP 2.9') and supporting draft Guidelines which, once gazetted, will consolidate and replace a number of existing State Planning Policies including SPP 2.9 – Water Resources and SPP 2.10 – Swan-Canning River System. Its purpose to is deliver greater clarity and simply the current framework around how water-related provisions are implemented across WA.

Whilst draft SPP 2.9 is yet to be finalised and adopted, its objectives and provisions have been taken into consideration as part of the draft PSP preparation process and are suitably addressed in the LWMS.

### 4.5.4 State Planning Policy 3.0 – Urban Growth and Settlement

The WAPC's *State Planning Policy 3.0 – Urban Growth and Settlement* ('SPP 3.0') is a broad sector policy that sets out the principles and considerations to facilitate sustainable patterns of urban growth and settlement in Western Australia. The proposed Amendment is consistent with (and promotes) a number of key principles contained within SPP 3.0 including the following:

- Sufficient and suitably serviced land in the right locations for housing, employment, commercial, recreational and other purposes, coordinated with the efficient and economic provision of transport, essential infrastructure and human services.
- Variety and choice in the size, type and affordability of housing to support a range of household sizes, ages and incomes and which is responsive to housing demand and preferences.
- Making the most efficient use of land in existing urban areas through the use of vacant and under-utilised land and buildings, and higher densities where these can be achieved without detriment to neighbourhood character and heritage values; the cost-effective use of urban land and buildings, schools and community services, infrastructure systems and established neighbourhoods; and promoting and encouraging urban development that is consistent with the efficient use of energy.
- Supporting higher residential densities in the most accessible locations, such as, in and around town and neighbourhood centres, high frequency public transport nodes and interchanges, major tertiary institutions and hospitals, and adjacent to high amenity areas such as foreshores and parks.
- Giving priority to infill development in established urban areas, particularly through urban regeneration and intensification of development of under-utilised urban land, whilst respecting neighbourhood character.
- Locating higher residential densities in locations accessible to transport and services, such as in and around the CBD, regional and district centres, activity corridors and higher education campuses, and in selected areas of high amenity on the coast and river foreshores.

The proposed Amendment is consistent with the objectives and principles for future urban growth and will provide for the implementation of a well-planned pattern of development within the existing urban area of the Ascot Racecourse and surrounding area.

### 4.5.5 State Planning Policy 4.2 – Activity Centres

The WAPC's *State Planning Policy No. 4.2 – Activity Centres* ('SPP 4.2') provides for a hierarchy and network of activity centres to meet the needs of the community, provide economic and environmental benefits, enable the distribution of goods and services, and facilitate retail, commercial and mixed used developments. As the proposed Amendment seeks to rezone land within Precinct 'E' to facilitate commercial development as part of the wider Golden Gateway Activity Centre, the objectives and provisions of SPP 4.2 are applicable.

The size and scale of the Golden Gateway Activity Centre (which includes Precinct 'E') would be akin to a 'Local Centre' or a 'Neighbourhood Centre' under SPP 4.2. The role and characteristics of a 'Local Centre' and 'Neighbourhood Centre' are described under SPP 4.2 as follows:

> ***Local centres*** *provide for the convenience and incidental needs of local communities. These centres provide an important role in providing walkable access to services and facilities for local communities.*
>
> ***Neighbourhood centres*** *are important focal points that provide for daily to weekly household shopping needs, community facilities and a small range of other convenience services. They are also a focus for medium density housing. These centres play an important role in providing walkable access to services and facilities for local communities.*

There are unique considerations in the planning of the Golden Gateway Activity Centre including, but not limited to, the extent of land fragmentation, the type and nature of existing land uses/development, and access constraints. The centre's proximity to Great Eastern Highway makes it attractive for uses reliant upon passing trade, such as bulky goods showrooms. Similarly, its proximity to the Perth Central Business District and Belmont Business Park, coupled with high levels of accessibility afforded by the road network and public transport services, makes it attractive for service industries and offices to locate.

The vision for Precinct 'E' under the draft PSP is to develop active commercial/retail land uses adjacent to Resolution Drive and Grandstand Road and transitioning to less intensive retail (i.e. bulky goods showrooms), commercial, and/or equine focussed development to the north-east of Raconteur Drive, adjacent to the Residential and Stables area. These land uses would be consistent with the intent of an activity centre in this location, whilst also responding to the existing 'equine-focus' of the area.

In accordance with SPP 4.2, a Net Benefit Test was prepared by Taktics4 in support of the draft PSP to assess the economic demand and implications for potential retail development in this area. The Net Benefit Test assesses the potential for 3,400m² net lettable area ('NLA') of 'Shop/Retail' floorspace and 9,600m² NLA of 'Other Retail', representing a 'worst-case' maximum retail floorspace scenario for Precinct 'E'. The findings of the Net Benefit Test indicate the following:

- The proposed development of 'Shop/Retail' and 'Other Retail' within the activity centre will have low/insignificant impacts on the existing and future activity centre network, with any impacts likely offset by potential sales growth generated by additional population and spending over the next 15 years.
- The creation of an activity centre in the area will reduce the number of vehicle kilometres required to be travelled by residents in the immediate trade area, and overall will save up to 700,000 vehicle trips per annum outside of the trade area.
- The development could create up to 205 full-time equivalent jobs.

- The 'Shop/Retail' floorspace will be sustainable from 2026 and satisfy an existing resident trade area, filling an existing demand in the market.
- Any development of 'Other Retail' will complement existing offerings in the vicinity.

Given the investigations undertaken as part of the precinct structure planning process, the proposed Amendment is considered to satisfy the objectives and provisions of SPP 4.2.

Refer **Attachment 4 – Retail Assessment (Net Benefit Test)**

### 4.5.6 State Planning Policy No. 5.4 – Road and Rail Noise

The WAPC's *State Planning Policy 5.4 – Road and Rail Noise* ('SPP 5.4') applies where a noise sensitive land use is proposed within proximity to major transport and freight corridors. Under SPP 5.4, the proposed 'Mixed Use' zone in Precinct 'E' is partially located within the noise buffer zone of Great Eastern Highway, being a strategic freight and major traffic route.

A Transportation Noise Assessment was prepared by Lloyd George Acoustics in support of the draft PSP and concluded that:

- Due to the screening effect of existing buildings, any ground floor noise sensitive uses would be compliant with the outdoor noise target; and
- Noise sensitive uses above ground floor and within 200m of Great Eastern Highway would be subject to Package A, including a notification on title. Alternatives to the Deemed to Comply Package A can be accepted if supported by a report from a suitably qualified acoustical consultant (member firm of the Association of Australasian Acoustical Consultants (AAAC)) once the specific plans are available.

Implementation of the abovementioned requirements will be applied as a condition of subdivision or development approval (as applicable).

Refer **Attachment 5 – Transportation Noise Assessment**

# 5. Environmental Considerations

The following provides a summary of the environmental site conditions and constraints relating to the Amendment Area and is sourced from the LWMS and Environmental Assessment Report ('EAR') prepared by Emerge Associates for the broader Ascot Racecourse Complex in support of the draft PSP. Copies of the LWMS and EAR are provided at **Attachments 3 and 6** respectively.

## 5.1 Landform and Soils

The Amendment Area is generally flat, with a slight increase in elevation in its eastern extent. The northern portion, adjacent to the Swan River, is the lowest at 0m Australian Height Datum ('AHD'). The remainder of the Amendment Area is elevated at 2m AHD to the north-west and 7.5m AHD to the east.

The Amendment Area falls within the Swan River Terrace system and contains Guildford formation of Alluvial and leached yellow sands. The soil types present at the subject site include:

- **Ms2** – Sandy Silt: Strong brown to mid grey, mottled, blocky, disseminated fine sand, hard when dry, variable clay content of alluvial origin.
- **Ms4** – Sandy Silt: light yellow brown, blocky, mottled with some fine to medium sand, soft when moist, variable clay content.
- **S8** – Sand: very light grey at surface, yellow at depth, fine to medium-grained, sub rounded quartz, moderately well sorted of eolian origin.

Geotechnical investigations were undertaken specifically for Precinct 'A' (Douglas Partners, 2014), Precinct 'C' (Douglas Partners, 2023) and Precinct 'D' (Galt, 2024). Each investigation confirms the regional geological mapping generally consisting of shallow layers of sand overlying sandy clay of the Guildford formation, which is generally unsuitable for on-site stormwater disposal.

From a site classification perspective, Precinct 'A' would be 'Class P', Precinct 'C' is also 'Class P' but can be re-classified to 'Class S' with appropriate site preparation, and Precinct 'D' is 'Class S'. It is assumed that Precinct 'B' will have ground conditions similar to Precincts 'A' and 'C', however further geotechnical investigations will be required to ensure adequate treatment of ground conditions before future development. For Precinct 'E', it is anticipated that ground conditions would be consistent with the natural material from the geotechnical investigations and geological mapping.

Refer **Attachment 7 - Engineering Servicing Report**

## 5.2 Acid Sulphate Soils

The Department of Water and Environmental Regulation's ('DWER') Acid Sulphate Soils ('ASS') risk mapping indicates that the majority of the Amendment Area is considered to have a 'high to moderate' risk of ASS occurrence within 3m of the natural surface. A portion of the Amendment Area, including parts of Precinct 'B' and Precinct 'C' are mapped as having 'moderate to low' risk of ASS occurring within 3m of the natural surface.

The existence of ASS within the Amendment Area does not affect the advancement of the proposed Amendment however it is acknowledged that a detailed ASS investigation and management plan will be required prior to any intrusive works being undertaken in the future.

## 5.3 Site Contamination

A review of the Department of Water and Environmental Regulation's ('DWER') Contaminated Sites Database reveals that the Amendment Area is not located within a registered 'Contaminated Site' under the *Contaminated Sites Act 2003*.

A Basic Summary of Records for Lot 9002 was requested from DWER as part of the draft PSP process which indicated that Precincts 'B' and 'C' are classified as 'possibly contaminated – investigation required'. The possible contamination is associated with the area's historic use for horse-racing and runoff from animal storage and agistment in the surrounding areas.

The contamination classification does not affect the advancement of the proposed Amendment however it is noted that Perth Racing are currently undertaking monitoring and investigation into the potential contamination which will be reviewed by DWER in due course. Any treatment or management requirements arising from these investigations will be implemented at the development stage.

## 5.4 Groundwater and Surface Water

The Perth Groundwater Map (DWER, 2023) indicates that the regional groundwater level sits at 0.5m AHD across the Amendment Area. The groundwater clearance from south-east to north-west of the Amendment Area therefore ranges from 6.5m to 0.5m.

In terms of future development, it is anticipated that additional fill will be required within the Amendment Area to satisfy a minimum groundwater clearance of 1.2m above maximum groundwater levels. This would be subject to further investigations on final development requirements and land uses. Further detail is outlined within the draft PSP.

## 5.5 Wetlands

The Geomorphic Wetlands of the Swan Coastal Plain dataset does not indicate the presence of any wetlands within the Amendment Area.

## 5.6 Biodiversity and Natural Area Assets

A flora and fauna survey of the broader Ascot Racecourse Complex was undertaken as part of the draft PSP process in March 2023 by Emerge Associates. The survey found the majority of the Racecourse Complex is heavily disturbed with limited intact native vegetation and that most of the vegetation was in a 'degraded' and 'completely degraded' state.

The survey found no threatened or priority flora species or suitable habitat for threatened or priority species within the Amendment Area. Whilst a desktop search indicated potential for two (2) threatened and priority flora species within the broader Racecourse Complex, these were not considered likely to occur due to lack of suitable habitat.

The northern portion of the broader Ascot Racecourse Complex (along the Swan River) is identified as an environmentally sensitive area which are prescribed protection under the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*. Any future development within this area will need to ensure clearing permits are obtained prior to clearing works occurring.

## 5.7 Fauna

A basic fauna and targeted black cockatoo survey of the broader Ascot Racecourse Complex was undertaken by Emerge Associates to inform the draft PSP. The survey found that fauna habitat values within the Amendment Area are limited due to historical disturbance and are primarily suited to widespread fauna species with non-specific habitat requirements.

Although the Amendment Area has historically been predominantly cleared of vegetation to facilitate racecourse activities, several existing trees have been identified. These trees were identified through the fauna survey as potential nesting habitat for Black Cockatoos. Future development within the Amendment Area will need to observe any retention measures deemed appropriate.

## 5.8 Heritage

### 5.8.1 Aboriginal Heritage

A search of the Aboriginal Cultural Heritage Inquiry System identified one (1) Aboriginal heritage place located within the Amendment Area, as follows:

- Site ID 3753 – Registered site, Name: Perth, Type: Historical, Mythological, Hunting Place, Named Place, Natural Feature.

Site ID 3753 partially intersects with the western edge of the site and the boundary is a broader area, with the exact area not being defined.

### 5.8.2 European Heritage

A search of the 'Inherit' database of the Western Australian Heritage Council ('WAHC') and the City of Belmont Local Heritage Survey and Heritage List identifies that the Amendment Area forms part of two (2) heritage sites, being the 'Ascot Racecourse Complex' (Place Number 6123) and 'Lee-Steere House' (Place Number 27274). These heritage sites are identified under the City of Belmont's Local Heritage Survey with a Management Category of '1' and '4', respectively.

# 6. Infrastructure and Servicing

An Engineering Servicing Report of the broader Ascot Racecourse Complex was prepared by TABEC Civil Engineering Consultants to support the draft PSP. A copy of the Engineering Servicing Report is enclosed at **Attachment 7** and the key findings and recommendations relevant to the Amendment Area are summarised below.

## 6.1 Water

Investigations indicate that the existing water reticulation network within the area can service the Amendment Area depending on final water usage requirements, specifically:

- Precinct 'B' is currently serviced by an existing 100mm water main, however if additional water is required, this water main may require upgrading.
- Precinct 'C' has access to an existing 100mm water main located along the southern verge of Matheson Road which can service the Precinct area. If greater supply is required above the capacity of the pipework, there may be a need to upgrade the size of the water main to Precinct 'C'.
- Precinct 'D' has access to an existing 150mm water main on the western verge of Resolution Drive and a 100mm water main on Grandstand Road which provide adequate opportunity for connection and water supply.
- Precinct 'E' can be serviced by an existing DN100mm water main located within the existing redundant road reserves dissecting this Precinct area.

## 6.2 Sewer

Precinct 'B' is currently serviced by an existing sewer connection located at Raconteur Drive, however Water Corporation do not have any record of this connection and therefore wastewater flows from this Precinct have not been included in their planning assumptions. As such, if there is a substantial increase in wastewater flows to this connection, further discussions will be required with Water Corporation.

In the case of Precinct 'C', which will include development of on-course stabling complexes along the outer edge of the Racecourse, multiple sewer connections will be required to service the site. The western portion of the Precinct (between Kalgoorlie Street and Raconteur Drive) is expected to be conveyed to the west to the existing internal sewer.

The central area of the Precinct, along Matheson Road, is proposed to be serviced via an existing connection from Kalgoorlie Street. The eastern portion of the Precinct will require two (2) new connections along the eastern boundary to the existing sewer network.

## 6.3 Power

Preliminary power investigations have been undertaken as part of the draft PSP process to determine anticipated high voltage infrastructure requirements within the Amendment Area. These investigations indicate that there is sufficient capacity within the network to accommodate future urban development within the Amendment Area.

## 6.4 Stormwater Drainage

There are two (2) significant drainage systems that convey stormwater from the Amendment Area to the Swan River. The first is the Central Belmont Main Drain which is managed by Water Corporation, and the second is the local drainage network located near Matheson Road which conveys water from the surrounding road reserves into the lake system at the centre of the Racecourse.

In terms of precinct-specific stormwater drainage management, the following is noted:

- Precinct 'B' currently captures and infiltrates water at source, with overland flow being graded towards the existing track.
- Precinct 'C' will require a combination of infiltration at source where levels and soil conditions allow, and discharge to the lake system.
- Precinct 'D' will include stormwater storage and infiltration at the site, with the 1% AEP event discharging into the local drainage network on Resolution Drive.
- Precinct 'E' is anticipated to be treated via bio-retention swale before overflow from the basin discharging into the Water Corporation's drainage system.

Further detail is outlined within the draft PSP with specific requirements for each Precinct to be subject to detailed design at the development stage.

## 6.5 Traffic and Access

A Traffic Impact Assessment ('TIA') of the broader Ascot Racecourse Complex was undertaken to support the draft PSP. A copy of the TIA is enclosed at **Attachment 8** and the key findings and recommendations relevant to the Amendment Area are summarised below.

### 6.5.1 Existing Road Network

Vehicular access to and from the Amendment Area will be provided from several locations along Grandstand Road, Resolution Drive, and Matheson Road. Grandstand Road provides access to the regional road network including Tonkin Highway and Graham Farmer Freeway via Garrat Road and Guildford Road to the north, and Great Eastern Highway to the south via Resolution Drive and Stoneham Street. Grandstand Road is classified as a 'Distributor A' road under the Main Roads WA Functional Road Hierarchy and forms a dual carriageway carrying volumes of approximately 16,700 vehicles per day (2018). Intersection arrangements to Grandstand Road will remain the same for the Ascot Racecourse complex.

There is an opportunity for a left-in/left-out access from Precinct 'D' (opposite the racecourse) to Grandstand Road to serve a future commercial/community use. This will need to ensure the access is integrated safely with the operations of the crossover on the opposite side of the road to the racecourse. Detailed assessment of the anticipated impacts associated with a commercial development on this site will occur in later planning stages. Precinct 'D' also accommodates future residential uses, however access to residential lots in this location will be provided from Resolution Drive.

In terms of Precinct 'E', the draft PSP proposes modifications to the existing access arrangement at Grandstand Road/Raconteur Drive to facilitate left-in, left-out and right-in movements only. Access from the existing Resolution Drive intersection is proposed to be restricted to left-in/left out movements only.

Detailed assessment of the anticipated impacts associated with modifications to access arrangements will occur in later planning stages.

### 6.5.2 Public Transport

The Amendment Area is serviced by existing bus stops along Grandstand Road, which is served by the 998/999 circle route, providing connectivity to the central Perth and Bayswater Train Stations. Additionally, frequent bus services are available along Great Eastern Highway, providing access to the Redcliffe Station, Central Perth and Perth Airport.

Development of the Amendment Area will utilise the existing public transport network, with opportunities to upgrade the infrastructure at the stops along Grandstand Road.

### 6.5.3 Pedestrian and Cycling Access

There are no on-road cycle lane facilities on Grandstand Road however a single continuous shared use path exists along the north-eastern side of Grandstand Road, with intermittent provision on the south-western side. A high-quality shared path extends from the Grandstand Road/Garratt Road bridge to Ascot Place, adjacent to the Swan River and along the northern boundary of the Racecourse. Additionally, Great Eastern Highway includes on-road cycle laneways with no physical separation and are combined with bus lanes.

The draft PSP proposes the continuation of pedestrian access within the precinct, including along Grandstand Road, adjacent to Precinct 'D' and the extension of the shared path along Resolution Drive, adjacent to Precinct 'E', connecting to the existing shared path network.

### 6.5.4 Trip Generation

The TIA prepared in support of the draft PSP considered trip generation and road capacity impacts for the broader Racecourse Complex but also examined each Precinct individually. Specific to the Amendment Area, the draft PSP will not impact trip generation for Precinct 'B' as the use of the racecourse will remain as it is currently used, where the morning and afternoon peaks is negligible. Use of this Precinct is at its highest on weekends and big race days where traffic management may be utilised on Grandstand Road.

Future development of Precinct 'C' will result in the development of stables, with the use of stables typically occurring well before the morning peak when horses are trained early in the morning. After this, traffic movements will occur again after the typical morning peak period.

Precinct 'D' is intended to be developed for residential and child care purposes, with trip generation in the order of 32 vehicles per hour (in and out) in both the morning and afternoon peak, with negligible impact on the local road network.

The draft PSP assesses the retail development of Precinct 'E' on the assumption that the Precinct would accommodate bulky goods and supermarket land uses. This development alone is not expected to generate notable trips independently, but traffic would be reciprocal between each use of this Precinct.

A more detailed TIA will be undertaken at the development stage to ensure the safe and efficient movement of vehicles in and around the Amendment Area.

# 7. Justification for Scheme Amendment

This report requests support from the City of Belmont to initiate an amendment to LPS15 in relation to Precincts 'B', 'C', 'D' and 'E' of the draft PSP. The proposed Amendment comprises both textual modifications to LPS15 and modifications to the LPS15 scheme maps which are broadly summarised as follows:

| Precinct Area | Proposed LPS15 Zoning/Text Changes |
|---|---|
| B | Retain the existing 'Place of Public Assembly: Racecourse' Zone under LPS15, but with modifications to 'Additional Uses' (A18) |
| C | Retain the existing 'Place of Public Assembly: Racecourse' Zone under LPS15, but with modifications to 'Additional Uses' (A18) |
| D | Rezone from the 'Place of Public Assembly: Racecourse' Zone to the 'Residential' and 'Mixed Use' under LPS15, with an 'R60' coding and 'Restricted Uses' (R1) to the 'Mixed Use' Zone |
| E | Rezone from the 'Place of Public Assembly: Racecourse', 'Residential and Stables' Zone and 'Mixed Use' Zones to the 'Commercial' and 'Mixed Use' Zones under LPS15, with 'R-AC3', 'R-AC4', and 'R10' coding and 'Additional Use' (A3) and 'Restricted Uses' (R1) |

**Table 3: Summary of Proposed Amendment**

The proposed Amendment is considered appropriate and justified on the basis that it:

- will facilitate future subdivision and development in accordance with the PSP;
- is consistent with its 'Urban' zoning under the MRS;
- is supported by a LWMS prepared in relation to the PSP which addresses the provisions and objectives of SPP 2.9 and draft SPP 2.9;
- is supported by a TIA prepared in relation to the PSP which demonstrates that the proposed zoning changes can be accommodated within the existing road network;
- has been identified as being suitable for zoning changes through the draft PSP process and satisfies the objectives and provisions of SPP 3.0;
- provides an opportunity for urban expansion to integrate with the surrounding 'Central Corridors' in accordance with the WAPC's *Perth and Peel @ 3.5 Million Central Sub-Regional Planning Framework*;
- is capable of being serviced by all essential utility infrastructure including water, sewer, stormwater, power and telecommunications infrastructure.
- is supported by a Net Benefit Test prepared in relation to the PSP which demonstrates that the proposed development of 'Shop/Retail' and 'Other Retail' within the Golden Gateway activity centre is economically viable having regard to the broader hierarchy of activity centres, consistent with the objectives and provisions of SPP 4.2;
- is supported by a noise assessment which demonstrates that the proposed zoning changes in Precinct 'E' will be capable of satisfying the noise targets under SPP 5.4; and
- does not contain any environmental or heritage constraints that would prohibit future development in the manner proposed.

# 8. Conclusion

This report has been prepared in support of a request to the City of Belmont to initiate an amendment to LPS15, pursuant to Part 5 Regulation 35 of the *Planning and Development (Local Planning Schemes) Regulations 2015*, in relation to Precincts 'B', 'C', 'D' and 'E' of the Ascot Racecourse PSP.

The PSP is currently under consideration by the City of Belmont and once certified and adopted by the WAPC will guide the future subdivision, use and development within the Amendment Area. The proposed Amendment seeks to give statutory effect to the future zonings, densities and land use controls contained within the PSP and in doing so, facilitate redevelopment of Ascot Racecourse and its surrounds.

The proposed Amendment is considered appropriate and justified on the basis of key town planning, environmental, servicing and traffic considerations and accordingly, support from the City and the WAPC to initiate the Amendment is requested.

# ATTACHMENT 1

Certificate of Titles

WESTERN AUSTRALIA

| TITLE NUMBER | |
|---|---|
| Volume | Folio |
| **321** | **107** |

# RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

BGRoberts

REGISTRAR OF TITLES

**LAND DESCRIPTION:**

LOT 23 ON PLAN 2198

**REGISTERED PROPRIETOR:**
(FIRST SCHEDULE)

THE CHAIRMAN OF THE COMMITTEE OF THE WESTERN AUSTRALIAN TURF CLUB OF 70 GRANDSTAND ROAD ASCOT WA 6104

(AN N508676 ) REGISTERED 13/12/2016

**LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:**
(SECOND SCHEDULE)

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required. Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

**STATEMENTS:**

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

| | |
|---|---|
| SKETCH OF LAND: | 321-107 (23/P2198) |
| PREVIOUS TITLE: | 283-14 |
| PROPERTY STREET ADDRESS: | 2 CARBINE ST, ASCOT. |
| LOCAL GOVERNMENT AUTHORITY: | CITY OF BELMONT |

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Landgate
www.landgate.wa.gov.au

WESTERN AUSTRALIA

| TITLE NUMBER | |
|---|---|
| Volume | Folio |
| **1041** | **934** |

# RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

REGISTRAR OF TITLES

**LAND DESCRIPTION:**

LOT 50 ON PLAN 5729

**REGISTERED PROPRIETOR:**
(FIRST SCHEDULE)

THE CHAIRMAN OF THE COMMITTEE OF THE WESTERN AUSTRALIAN TURF CLUB OF 70 GRANDSTAND ROAD ASCOT WA 6104

(AN N508676 ) REGISTERED 13/12/2016

**LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:**
(SECOND SCHEDULE)

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required. Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

**STATEMENTS:**

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

| | |
|---|---|
| SKETCH OF LAND: | P5729 |
| PREVIOUS TITLE: | 1041-164 |
| PROPERTY STREET ADDRESS: | 71 GRANDSTAND RD, ASCOT. |
| LOCAL GOVERNMENT AUTHORITY: | CITY OF BELMONT |

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WESTERN AUSTRALIA

| TITLE NUMBER | |
|---|---|
| Volume | Folio |
| **1742** | **276** |

# RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

REGISTRAR OF TITLES

**LAND DESCRIPTION:**

LOT 1 ON DIAGRAM 55346

**REGISTERED PROPRIETOR:**
(FIRST SCHEDULE)

STATE PLANNING COMMISSION OF 22 ST. GEORGE'S TERRACE, PERTH

(T D398174 ) REGISTERED 15/1/1987

**LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:**
(SECOND SCHEDULE)

1. D367664 CAVEAT BY DIAMOND SYNDICATE PTY LTD LODGED 24/11/1986.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required. Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

**STATEMENTS:**

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

| | |
|---|---|
| SKETCH OF LAND: | 1742-276 (1/D55346) |
| PREVIOUS TITLE: | 1742-275 |
| PROPERTY STREET ADDRESS: | 88 GRANDSTAND RD, ASCOT. |
| LOCAL GOVERNMENT AUTHORITY: | CITY OF BELMONT |
| RESPONSIBLE AGENCY: | WESTERN AUSTRALIAN PLANNING COMMISSION |

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WESTERN AUSTRALIA

| TITLE NUMBER | |
|---|---|
| Volume | Folio |
| **1742** | **278** |

# RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

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REGISTRAR OF TITLES

**LAND DESCRIPTION:**

LOT 3 ON DIAGRAM 55346

**REGISTERED PROPRIETOR:**
(FIRST SCHEDULE)

THE CHAIRMAN OF THE COMMITTEE OF THE WESTERN AUSTRALIAN TURF CLUB OF 70 GRANDSTAND ROAD ASCOT WA 6104

(AN N508676 ) REGISTERED 13/12/2016

**LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:**
(SECOND SCHEDULE)

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required. Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

**STATEMENTS:**

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| | |
|---|---|
| SKETCH OF LAND: | 1742-278 (3/D55346) |
| PREVIOUS TITLE: | 1742-275 |
| PROPERTY STREET ADDRESS: | 96 GRANDSTAND RD, ASCOT. |
| LOCAL GOVERNMENT AUTHORITY: | CITY OF BELMONT |

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WESTERN AUSTRALIA

| TITLE NUMBER | |
|---|---|
| Volume | Folio |
| **1789** | **567** |

# RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

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BGRoberts

REGISTRAR OF TITLES

**LAND DESCRIPTION:**

LOT 7705 ON DEPOSITED PLAN 209359

**REGISTERED PROPRIETOR:**
(FIRST SCHEDULE)

THE CHAIRMAN OF THE COMMITTEE OF THE WESTERN AUSTRALIAN TURF CLUB OF 70 GRANDSTAND ROAD ASCOT WA 6104

(AN N508676 ) REGISTERED 13/12/2016

**LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:**
(SECOND SCHEDULE)

1. THE LAND THE SUBJECT OF THIS CERTIFICATE OF TITLE EXCLUDES ALL PORTIONS OF THE LOT DESCRIBED ABOVE EXCEPT THAT PORTION SHOWN IN THE SKETCH OF THE SUPERSEDED PAPER VERSION OF THIS TITLE.
2. CROWN GRANT IN TRUST. SEE CROWN GRANT FOR CONDITIONS.
3. K930699 EASEMENT TO WATER CORPORATION FOR TANK AND PIPELINE PURPOSES - SEE DEPOSITED PLAN 58026 REGISTERED 5/5/2009.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required. Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

**STATEMENTS:**

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| | |
|---|---|
| SKETCH OF LAND: | 1789-567 (7705/DP209359) |
| PREVIOUS TITLE: | 1259-989 |
| PROPERTY STREET ADDRESS: | 71 MATHESON RD, ASCOT. |
| LOCAL GOVERNMENT AUTHORITY: | CITY OF BELMONT |

NOTE 1: K364458 DEPOSITED PLAN (INTEREST ONLY) 58026 LODGED

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WESTERN AUSTRALIA

| TITLE NUMBER | |
|---|---|
| Volume | Folio |
| **1883** | **668** |

# RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

REGISTRAR OF TITLES

**LAND DESCRIPTION:**

LOT 51 ON PLAN 15104

**REGISTERED PROPRIETOR:**
(FIRST SCHEDULE)

THE CHAIRMAN OF THE COMMITTEE OF THE WESTERN AUSTRALIAN TURF CLUB OF 70 GRANDSTAND ROAD ASCOT WA 6104

(AN N508676 ) REGISTERED 13/12/2016

**LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:**
(SECOND SCHEDULE)

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required. Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

**STATEMENTS:**

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| | |
|---|---|
| SKETCH OF LAND: | 1883-668 (51/P15104) |
| PREVIOUS TITLE: | 1883-666 |
| PROPERTY STREET ADDRESS: | 2 RACONTEUR DR, ASCOT. |
| LOCAL GOVERNMENT AUTHORITY: | CITY OF BELMONT |

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WESTERN AUSTRALIA

| TITLE NUMBER | |
|---|---|
| Volume | Folio |
| **1883** | **670** |

# RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

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REGISTRAR OF TITLES

**LAND DESCRIPTION:**

LOT 13 ON DIAGRAM 26760

**REGISTERED PROPRIETOR:**
(FIRST SCHEDULE)

THE CHAIRMAN OF THE COMMITTEE OF THE WESTERN AUSTRALIAN TURF CLUB OF 70 GRANDSTAND ROAD ASCOT WA 6104

(AN N508676 ) REGISTERED 13/12/2016

**LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:**
(SECOND SCHEDULE)

1. THE LAND THE SUBJECT OF THIS CERTIFICATE OF TITLE EXCLUDES ALL PORTIONS OF THE LOT DESCRIBED ABOVE EXCEPT THAT PORTION SHOWN IN THE SKETCH OF THE SUPERSEDED PAPER VERSION OF THIS TITLE. VOL 1883 FOL 670.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required. Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

**STATEMENTS:**

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

| | |
|---|---|
| SKETCH OF LAND: | 1883-670 (13/D26760) |
| PREVIOUS TITLE: | 202-100A |
| PROPERTY STREET ADDRESS: | 71 GRANDSTAND RD, ASCOT. |
| LOCAL GOVERNMENT AUTHORITY: | CITY OF BELMONT |

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WESTERN AUSTRALIA

| TITLE NUMBER | |
|---|---|
| Volume | Folio |
| **2723** | **303** |

# RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

BGRoberts

REGISTRAR OF TITLES

**LAND DESCRIPTION:**

LOT 9002 ON DEPOSITED PLAN 60342

**REGISTERED PROPRIETOR:**
(FIRST SCHEDULE)

THE CHAIRMAN OF THE COMMITTEE OF THE WESTERN AUSTRALIAN TURF CLUB OF 70 GRANDSTAND ROAD ASCOT WA 6104

(AN N508676 ) REGISTERED 13/12/2016

**LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:**
(SECOND SCHEDULE)

1. CROWN GRANT IN TRUST. SEE CROWN GRANT FOR CONDITIONS. AS TO THE PORTION OF SWAN LOCATION 823 FORMERLY COMPRISED IN VOLUME 1771 FOLIO 332 ONLY.
2. H712859 LEASE TO VODAFONE NETWORK PTY LTD OF 799 PACIFIC HIGHWAY, CHATSWOOD, NEW SOUTH WALES EXPIRES: SEE LEASE. AS TO PORTION ONLY. REGISTERED 4/4/2001.
   - H970091 TRANSFER OF LEASE H712859, LESSEE NOW CROWN CASTLE AUSTRALIA PTY LTD OF CARE OF LEVEL 1, 754 PACIFIC HIGHWAY, CHATSWOOD, NEW SOUTH WALES REGISTERED 24/12/2001.
   - K929949 EXTENSION OF LEASE H712859. REGISTERED 5/5/2009.
3. I041460 LEASE TO OPTUS MOBILE PTY LTD OF OPTUS CENTRE, 101 MILLER STREET, NORTH SYDNEY, NEW SOUTH WALES AS TO PORTION ONLY. EXPIRES: SEE LEASE. REGISTERED 13/3/2002.
4. K929948 LEASE TO CROWN CASTLE AUSTRALIA PTY LTD OF LEVEL 1, 754 PACIFIC HIGHWAY, CHATSWOOD, NEW SOUTH WALES EXPIRES: SEE LEASE. AS TO PORTION ONLY. REGISTERED 5/5/2009.
5. K944992 CAVEAT BY CROWN CASTLE AUSTRALIA PTY LTD AS TO PORTION ONLY. LODGED 19/5/2009.
6. EASEMENT BURDEN CREATED UNDER SECTION 167 P & D ACT FOR ELECTRICITY PURPOSES TO ELECTRICITY NETWORKS CORPORATION - SEE DEPOSITED PLAN 60342.
7. L399948 MEMORIAL. CONTAMINATED SITES ACT 2003 REGISTERED 13/8/2010.
8. M813804 LEASE TO OPTUS MOBILE PTY LTD OF 1 LYONPARK ROAD, MACQUARIE PARK, NEW SOUTH WALES EXPIRES: SEE LEASE. AS TO PORTION ONLY REGISTERED 31/10/2014.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required. Lot as described in the land description may be a lot or location.

END OF PAGE 1 - CONTINUED OVER

Subject to dealing

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RECORD OF CERTIFICATE OF TITLE

REGISTER NUMBER: 9002/DP60342 VOLUME/FOLIO: 2723-303 PAGE 2

----------END OF CERTIFICATE OF TITLE----------

**STATEMENTS:**

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

| | |
|---|---|
| SKETCH OF LAND: | DP60342 |
| PREVIOUS TITLE: | 2216-686 |
| PROPERTY STREET ADDRESS: | 71 GRANDSTAND RD, ASCOT. |
| LOCAL GOVERNMENT AUTHORITY: | CITY OF BELMONT |

Subject to dealing

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WESTERN AUSTRALIA

| TITLE NUMBER | |
|---|---|
| Volume | Folio |
| **2723** | **304** |

# RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

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BGRoberts

REGISTRAR OF TITLES

**LAND DESCRIPTION:**

LOT 100 ON DEPOSITED PLAN 60341

**REGISTERED PROPRIETOR:**
(FIRST SCHEDULE)

THE CHAIRMAN OF THE COMMITTEE OF THE WESTERN AUSTRALIAN TURF CLUB OF 70 GRANDSTAND ROAD ASCOT WA 6104

(AN N508676 ) REGISTERED 13/12/2016

**LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:**
(SECOND SCHEDULE)

1. EASEMENT BURDEN CREATED UNDER SECTION 27A T.P. & D. ACT FOR GAS PURPOSES TO S.E.C. - SEE SKETCH ON DEPOSITED PLAN 60341 AS CREATED ON PLAN 15104.
2. L014550 EASEMENT TO WA GAS NETWORKS PTY LTD FOR GAS PIPELINE PURPOSES - SEE DEPOSITED PLAN 60341 REGISTERED 21/7/2009.
3. M230259 EASEMENT TO ELECTRICITY NETWORKS CORPORATION FOR TRANSMISSION OF ELECTRICITY PURPOSES - SEE SKETCH ON DEPOSITED PLAN 76199 REGISTERED 4/4/2013.
4. M230260 EASEMENT TO ELECTRICITY NETWORKS CORPORATION FOR TRANSMISSION OF ELECTRICITY PURPOSES - SEE SKETCH ON DEPOSITED PLAN 76199 REGISTERED 4/4/2013.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required. Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

**STATEMENTS:**

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| | |
|---|---|
| SKETCH OF LAND: | DP60341 |
| PREVIOUS TITLE: | 1883-667 |
| PROPERTY STREET ADDRESS: | 1 RACONTEUR DR, ASCOT. |
| LOCAL GOVERNMENT AUTHORITY: | CITY OF BELMONT |

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WESTERN AUSTRALIA

| TITLE NUMBER | |
|---|---|
| Volume | Folio |
| **2723** | **355** |

# RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

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REGISTRAR OF TITLES

**LAND DESCRIPTION:**

LOT 452 ON DEPOSITED PLAN 60339

**REGISTERED PROPRIETOR:**
(FIRST SCHEDULE)

THE CHAIRMAN OF THE COMMITTEE OF THE WESTERN AUSTRALIAN TURF CLUB OF 70 GRANDSTAND ROAD ASCOT WA 6104

(AN N508676 ) REGISTERED 13/12/2016

**LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:**
(SECOND SCHEDULE)

1. EASEMENT BURDEN CREATED UNDER SECTION 167 P. & D. ACT FOR DRAINAGE PURPOSES TO CITY OF BELMONT - SEE DEPOSITED PLAN 60339.
2. L014556 EASEMENT TO CITY OF BELMONT FOR RIGHT OF FOOTWAY PURPOSES - SEE SKETCH ON DEPOSITED PLAN 60339. REGISTERED 30/7/2009.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required. Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

**STATEMENTS:**

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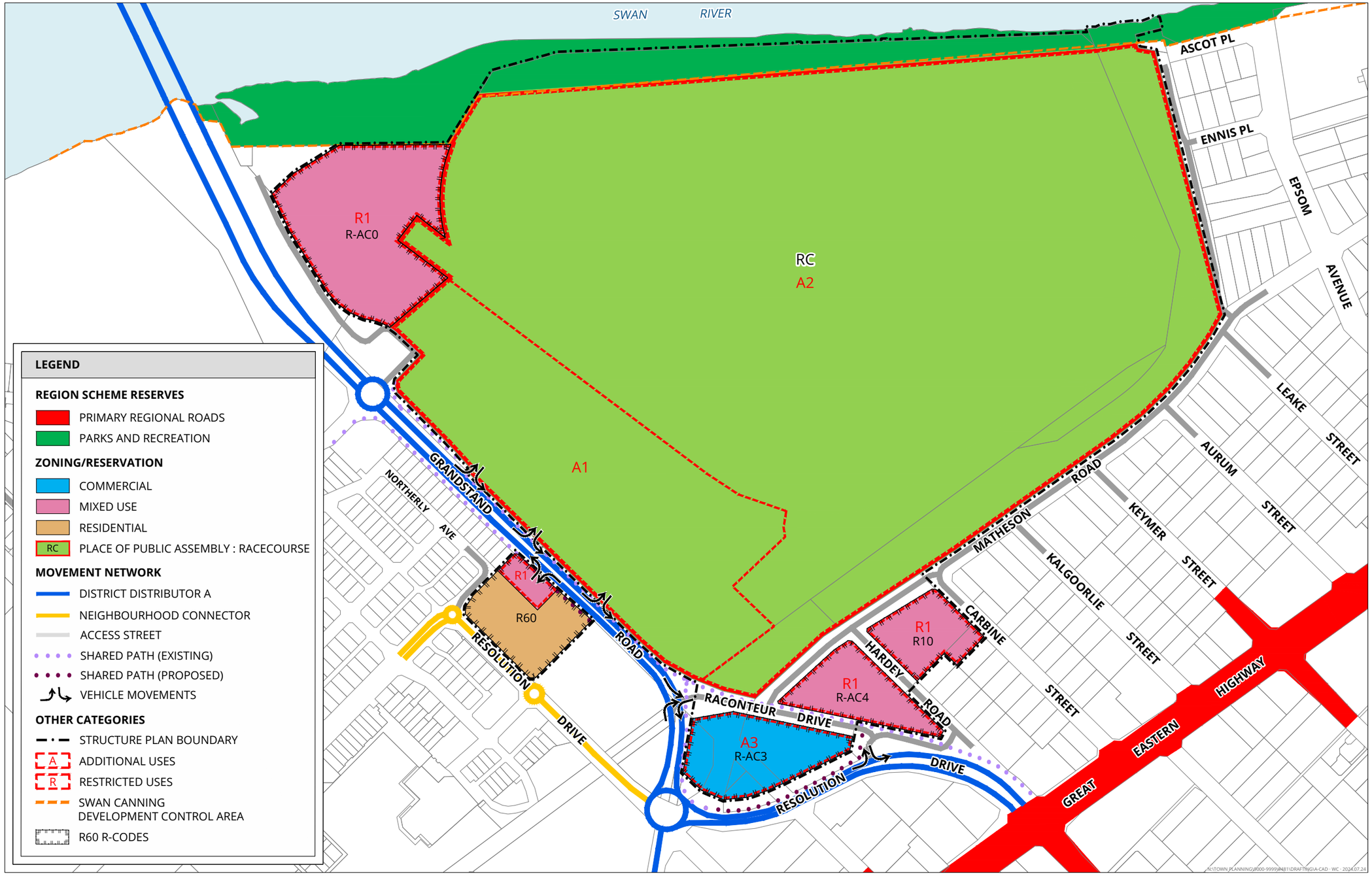
| | |
|---|---|
| SKETCH OF LAND: | DP60339 |
| PREVIOUS TITLE: | 1776-799 |
| PROPERTY STREET ADDRESS: | 70 GRANDSTAND RD, ASCOT. |
| LOCAL GOVERNMENT AUTHORITY: | CITY OF BELMONT |

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# ATTACHMENT 2

Draft Ascot Racecourse Precinct  Structure Plan Map




**PLAN 1 - STRUCTURE PLAN**
VARIOUS LOTS - ASCOT RACECOURSE
ASCOT

N
0 100 m
SCALE @ A3: 1:4000
**9481-STR-01-G**

DRAWN: WC
DATE CREATED: 2024.07.24
PROJECTION: MGA50 GDA94
CADASTRE: LANDGATE
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ROWE GROUP DESIGN

# ATTACHMENT 3

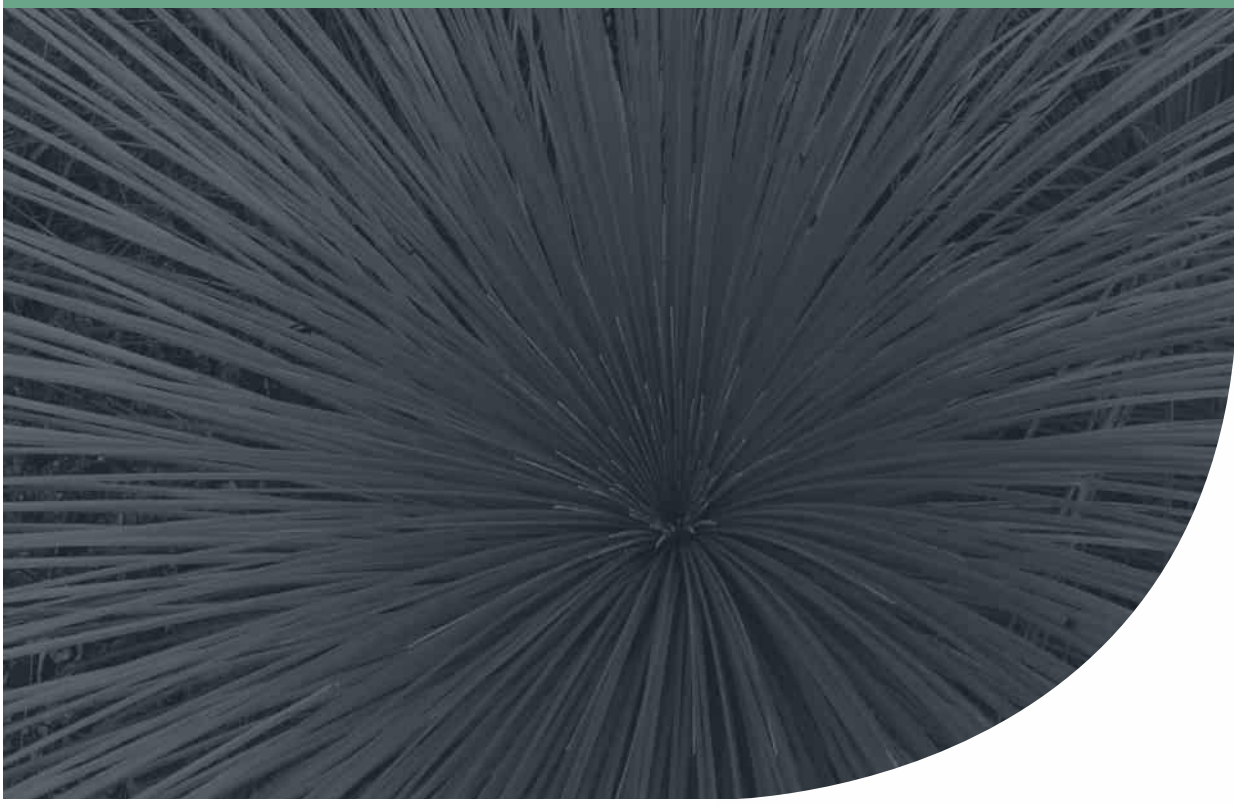
Local Water Management Strategy

# Local Water Management Strategy

## Ascot Racecourse Local Structure Plan

Project No: EP23-109(03)

**Prepared for Perth Racing**
**July 2024**



# Document Control

| Doc name: | Local Water Management Strategy<br>Ascot Racecourse Local Structure Plan | | | | |
|---|---|---|---|---|---|
| Doc no.: | EP23-109(03)--001B JM | | | | |
| Version | Date | Author | | Reviewer | |
| 1 | May 2024 | Joyti Mabruk | JM | David Coremans | DPC |
| | For project team review | | | | |
| A | May 2024 | Joyti Mabruk | JM | David Coremans | DPC |
| | For submission to Agencies | | | | |
| B | July 2024 | Joyti Mabruk | JM | David Coremans | DPC |
| | For submission to Agencies | | | | |

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# Executive Summary

Perth Racing (the 'proponent') proposes to progress a local structure plan (LSP) over its landholdings in Ascot. The area is bounded by the Swan River to the North, Grandstand Road to the west and south, Matheson Road and Resolution Drive to the south and residential areas to the east, referred to herein as 'the site'. The structure plan area also includes the existing Ascot Racecourse. The site is located approximately 8.5 km east of Perth central business district (CBD) and is approximately 62 ha in size, within City of Belmont (CoB). The LSP consists of six precincts: Precinct A, Precinct B (largely unchanged form existing), Precinct C, Precinct D, Precinct E, and the racecourse. The layout of LSP and precinct plan is shown on **Figure 1** and provided in **Appendix A**. The site is currently zoned "Urban", "Parks and Recreation", and "Private Recreation" under the Metropolitan Regional Scheme (MRS) (WAPC 2023b). Under the Local Planning Scheme (LPS) No. 15 (WAPC 2023a), the site is zoned as "RC – Place of Public Assembly: Racecourse", Mixed Use", "Parks and Recreation" and "Parks and Recreation: Water Supply Sewerage and Drainage".

This Local Water Management Strategy (LWMS) outlines the water management approach as required for the site by *Better Urban Water Management* (WAPC 2008b) and supports the Ascot Racecourse Structure Plan. It is intended to satisfy the expectations of the Department of Water and Environmental Regulation (DWER) and City of Belmont (CoB). The LWMS also aids in achieving the goals and objectives outlined in the *Kep Katitjin – Gabi Kaadadjan – Waterwise Perth Action Plan 2* (DWER 2023d).

The first step in applying integrated water cycle management in urban catchments is to establish agreed environmental values for receiving environments. In summary, the environmental investigations conducted to date indicate that:

- The site is being used for horse racing, mixed uses (i.e. car park, stables and entertainment/hospitality venues, and commercial). Some portions of the site are only used infrequently (e.g. for parking or events).
- The site is located in an area of moderate to high rainfall, receiving 756.3 mm on average annually with the majority of rainfall received between June and August.
- The majority of the site has a relatively flat topography of 1 mAHD at the northwest (along the Swan River) and 2 mAHD to the south and rising to 7 mAHD to the east of the site.
- The site is within the Swan River Terraces system and displays Guildford formation soils of alluvial and leached yellow sand described as:
    - **Ms2 –** Sandy Silt: Strong brown to mid grey, mottled, blocky, fine sand, hard when dry, variable clay content of alluvial origin
    - **Ms4 –** Sandy Silt: light yellow brown, blocky, mottled some fine to medium sand, soft when moist, variable clay content
    - **S8 –** Sand: very light grey at surface, yellow at depth, fine to medium-grained, sub rounded quartz, moderately well sorted of eolian origin
- The groundwater depth below the surface of Precinct A varies from 1.09 m mBGL to 2.37 mBGL (Douglas Partners 2024).
- The highest groundwater level beneath the site is reported 3.03 mBGL during February 2024 (Galt 2024), located beneath Precinct D.

- Most of the site is considered to have a high to moderate risk of ASS occurring, however some portions of Precinct B, Precinct C and the Racecourse are considered to have a moderate to low risk of ASS occurring within the 3 m of the natural surface.
- The northern portion of the site along the Swan River is identified as an ESA.
- The entirety of the site is classified as a SSA and classified as:
  - a) Estuary catchments on the Swan and Scott Coastal Plains.
  - f) The area is <1 km up-groundwater-gradient and 250 m down-gradient of a significant wetland; or where the groundwater gradient is unknown within 1 km of the significant wetland.
- The following wetlands are located within the site and these are classified as:
  - Multiple Use category wetland (MUW) area (UFI 8424, UFI 8425, UFI 8426).
  - Resource Enhancement wetland (REW) area (UFI 8423).
- The dominant hydrological feature of the site is the Swan River estuary. The northern boundary of the site falls within the Swan Canning Development Control Area (DCA) (CoB 2018) and Swan Canning River Park.
- The floodway of the Swan River is immediately adjacent to but not within the site. The 1% AEP flood elevation of the Swan River adjacent to the site is 2.8 mAHD.
- There are two existing major drainage network systems within or adjacent to the site include:
  - The Central Belmont Main Drain (CBMD), managed by the Water Corporation. This currently receives runoff from Precinct C (via the CoB drainage network) and Precinct E.
  - The CoB local piped drainage network, which exists along Matheson Road, Grandstand Road and the northern portion of Resolution Drive.
- There are three lakes (Irrigation Lake, Lined Lake and Wetland Lake) located within the centre of the racecourse. These are understood to receive runoff from the Grandstand buildings in Precinct B and stables/buildings in Precinct C.
- The groundwater beneath the site is a multi-layered system consisting of the Superficial, Kings Park Formation, Leederville and Yarragadee aquifers.
- Regional groundwater mapping indicates that the groundwater levels across the site are at approximately 0.5 m AHD.
- Local groundwater level monitoring indicates that annual maximum groundwater levels (recorded in August 2022) were measured at 1.26 m AHD and 1.70 m AHD at Bore 1 and Bore 2 respectively. Groundwater levels in adjacent areas included Precinct A levels at 1.09 mBGL to 2.37 mBGL and Precinct D levels of approximately 3.03 mBGL.
- Water quality monitoring indicates that EC, TDS and pH values do not exceed guideline trigger values. However, TN and TP concentrations continually exceed the ANZECC guideline trigger value of 1.2 mg/L and 0.065 mg/L respectively.

The design criteria and the manner in which they are proposed to be achieved are presented in **Table E1**.

*Table E1: Water management criteria and compliance summary*

| Management Aspect | Criteria Number | Criteria Description | Manner in which compliance will be achieved | Responsibility for implementation | Timing of implementation |
|---|---|---|---|---|---|
| Water Conservation | WC1 | For residential dwellings consumption target of 60 kL/person/year scheme water. | Provide advice to Precinct A and Precinct D residents on water conservation measures | Proponent | Point of sale |
| | | | RWTs can be utilised for non-potable uses | Lot owner | Post-house construction |
| | | | Promotion and use of WWG in lots within Precinct D and other open spaces across all precincts | Proponent/Lot owner | Point of sale/Post-house construction |
| | | | Promotion and use of water efficient appliances within Precinct A and Precinct D | Proponent/Lot owner | Point of sale/Post-house construction |
| | | | Mandate water efficient fittings within Precinct A and Precinct D | CoB | Building approval |
| | WC2 | Ensure the efficient use of all water resources. | Use of waterwise landscaping principles in all open spaces and verges | Proponent | Landscape design |
| | | | Open spaces designed to use no more than allocated groundwater | | |
| | | | Minimise water requirements for open spaces and verge maintenance | | |
| | | | Use of water efficient appliances within Precinct A and Precinct D | Lot owner | Post-house construction |
| | | | Use of WWG principles within Precinct A and Precinct D | | |
| | WC3 | Non-potable irrigation water to be sourced from existing groundwater licences held over the area. | The proponent holds a groundwater Licence with an allocation of 347,000 kL per annum which will meet the irrigation requirements of the racecourse. | Proponent | Landscape design |

*Table E1: Water management criteria and compliance summary (Continued)*

| Management Aspect | Criteria Number | Criteria Description | Manner in which compliance will be achieved | Responsibility for implementation | Timing of implementation |
|---|---|---|---|---|---|
| Stormwater Management | SW1 | Retain and treat the first 15 mm of rainfall as close to source as possible | Lots within Precinct D and Precinct E to retain the first 15 mm of rainfall on lot in soakwells/soakage. Lot storage will be the responsibility of the lot owners. | Lot owner/developer | Construction |
| | SW2 | Retain up to 1% AEP rainfall event on-site. | Runoff up to the 1% AEP to be detained within the FSA in Precinct A. Precinct A and a portion of Precinct C will ultimately discharge to the centre of the track. | Proponent | Construction |
| | | | Runoff up to 1% AEP to be managed with the sub-surface storage in Precinct D. | Proponent | Construction |
| | SW3 | Post-development critical 1% AEP peak flows leaving the site to mimic pre-development peak flows. | Runoff up to 1% AEP event to be detained in the detention basin and subsurface storage which will maintain the pre-development peak flow of 0.95 $m^3/s$ from Precinct E and 0.463 $m^3/s$ from Precinct D respectively. | Proponent | Construction |
| | SW4 | Finished floor levels must have a minimum of 300 mm clearance above the 1% AEP TWL in the FSA. | It is anticipated that the FSA and detention basin invert will be set so that the Finished floor levels must have a minimum of 300 mm clearance above the 1% AEP TWL in the basins. | Proponent | Detailed drainage design |
| | SW5 | All lots must have a minimum of 500 mm clearance above the 1% AEP flood level in the Swan River. | The 1% AEP flood level in the Swan River is 2.8 mAHD. The preliminary bulk earthworks concept provided in shows that finished floor level will be at 4.0 mAHD. | Proponent | Detailed drainage design |
| | SW6 | Nutrient concentrations within surface water discharging from the site to the Swan River are to meet regional water quality targets. | BRA will be designed so that after treatment the nutrient concentrations within surface water meet the regional water quality target. | Proponent | Detailed drainage design |
| | SW7 | Reduce nutrient loads by applying appropriate non-structural measures | • Minimise use of fertilisers within POS and road verges.<br>• Street sweeping at regular intervals.<br>• Use of drought tolerant turf species.<br>• Education of residents regarding fertiliser use | Landscape/Maintenance Contactor/Proponent | Landscape Implementation/ Point of Sale |
| | SW8 | Design infiltration areas to avoid creating mosquito habitat | Stormwater infrastructure will be designed to ensure all runoff is infiltrated within 96 hours. | Proponent | Detailed drainage design |

*Table E1: Water management criteria and compliance summary (Continued)*

| Management Aspect | Criteria Number | Criteria Description | Manner in which compliance will be achieved | Responsibility for implementation | Timing of implementation |
|---|---|---|---|---|---|
| Groundwater Management | GW1 | Surface based infiltration should have 300 mm clearance above MGL. | Basin inverts will be set at 300 mm above the MGL, and subsoil drainage will be provided in the POS. | Proponent | Detailed drainage design |
| | GW2 | Finished floor levels should have a clearance to the MGL of at least 1.2 m. | Lots will be set at least 1.2 m above the MGL. | Proponent | Detailed drainage design |

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# Appendices

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Concept plan

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**Appendix E**

Central Belmont Main Drain Water Corporation

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# Abbreviation Tables

*Table A1: Abbreviations – Organisations*

| Organisations | |
|---|---|
| ANZECC | Australian and New Zealand Environment and Conservation Council |
| BoM | Bureau of Meteorology |
| DBCA | Department of Biodiversity, Conservation and Attractions |
| DWER | Department of Water and Environmental Regulation |
| EPA | Environmental Protection Authority |
| CoB | City of Belmont |
| WC | Water Corporation of Western Australia (Water Corp) |

*Table A2: Abbreviations – General terms*

| General terms | |
|---|---|
| AEP | Annual exceedance probability |
| ASS | Acid sulfate soils |
| CCW | Conservation category wetland |
| CEMP | Construction Environmental Management Plan |
| DCA | Development Control Area |
| DMP | Drainage management plan |
| EC | Electrical conductivity |
| FMP | Foreshore management plan |
| LWMS | Local Water Management Strategy |
| MGL | Maximum groundwater level |
| MRS | Metropolitan Region Scheme |
| NWQMS | National Water Quality Management Strategy |
| POS | Public open space |
| SCWQIP | Swan and Canning Water Quality Improvement Plan |
| SRA | Swan River Alluvium |
| TDS | Total dissolved solids |
| TEC | Threatened ecological community |
| TKN | Total Kjeldahl nitrogen |
| TN | Total nitrogen |
| TP | Total phosphorus |
| TSS | Total suspended solids |

| General terms | |
|---|---|
| TWL | Top water level |
| UFI | Unique feature identifier |
| UWMP | Urban Water Management Plan |
| WSUD | Water sensitive urban design |
| WWG | Water wise gardening |

*Table A3: Abbreviations – units of measurement*

| Units of measurement | |
|---|---|
| cm | centimetre |
| ha | hectare |
| m | metre |
| $m^2$ | square metre |
| $m^3$ | cubic metre |
| $m^3$ / s | cubic metres per second |
| mAHD | metres in relation to the Australian height datum |
| mBGL | metres below ground level |
| mm | millimetre |
| mS / cm | millisiemens per centimetre |
| µg/L | micrograms per litre |
| mg / L | milligrams per litre |

*Table A4: Terminology – design rainfall*

| Rainfall event | Annual exceedance probability (AEP) | Approximate equivalent average recurrence interval (ARI) |
|---|---|---|
| Small | 1 exceedance year (EY) event (frequent) | 1 in 1 year ARI event |
| Minor (residential purposes) | 20% AEP event | 1 in 5 year ARI event |
| Minor (commercial purposes) | 10% AEP event | 1 in 10 year ARI event |
| Major | 1% AEP event | 1 in 100 year ARI event |

# 1 Introduction

## 1.1 Background

Perth Racing (the 'proponent') proposes to progress a local structure plan (LSP) over its landholdings in Ascot. The area is bounded by the Swan River to the North, Grandstand Road to the west and south, Matheson Road and Resolution Drive to the south and residential areas to the east, referred to herein as 'the site'. The structure plan area also includes the existing Ascot Racecourse and Perth Racing Administration lot/building on Grandstand Road. The site is located approximately 8.5 km east of Perth central business district (CBD) and is approximately 62 ha in size, within City of Belmont (CoB). The LSP consists of six precincts: Precinct A, Precinct B, Precinct C, Precinct D, Precinct E, and the racecourse. The layout of LSP and precinct plan is shown on **Figure 1** and provided in **Appendix A**.

## 1.2 Town planning context

The site is currently zoned "Urban", "Parks and Recreation", and "Private Recreation" under the Metropolitan Regional Scheme (MRS) (WAPC 2023b). Under the Local Planning Scheme (LPS) No. 15 (WAPC 2023a), the site is zoned as "RC – Place of Public Assembly: Racecourse", Mixed Use", "Parks and Recreation" and "Parks and Recreation: Water Supply Sewerage and Drainage".

## 1.3 Purpose of this report

This Local Water Management Strategy (LWMS) outlines the water management approach as required for the site by *Better Urban Water Management* (WAPC 2008b) and supports the Ascot Racecourse Structure Plan. It is intended to satisfy the expectations of the Department of Water and Environmental Regulation (DWER) and CoB. The LWMS also aids in achieving the goals and objectives outlined in the *Kep Katitjin – Gabi Kaadadjan – Waterwise Perth Action Plan 2* (DWER 2023d).

## 1.4 Policy Framework

There are a number of State Government legislation and policies of relevance to the site. These policies include:

- *Kep Katitjin – Gabi Kaadadjan – Waterwise Perth Action Plan 2* (DWER 2023d)
- *Swan and Canning Rivers Management Act 2006* (Government of WA 2006)
- *Policy 49 – Planning for stormwater management affecting the Swan Canning Development Control Area* (DPaW 2016)
- *Local Planning Scheme No. 15 (City of Belmont)* (WAPC 2023a)
- *State Water Plan* (Government of WA 2007)
- *Draft State Planning Policy 2.9: Planning for Water Guidelines* (DPLH 2021)
- *State Planning Policy 2.10 Swan Canning River System* (WAPC 2006b)
- *Guidance Statement No. 33: Environmental Guidance for Planning and Development* (EPA 2008)
- *Liveable Neighbourhoods* (WAPC 2009a)
- *Planning Bulletin No. 64: Acid Sulfate Soils* (WAPC 2009b)

In addition to the above policies, there are a number of published guidelines and standards available that provide direction regarding the water management characteristics that urban developments should aim to achieve. These are key inputs that relate either directly or indirectly to the site and include:

- *Better Urban Water Management* (WAPC 2008b)
- *Urban Water Management Plans: Guidelines for Preparing Plans and for Complying with Subdivision Conditions* (DoW 2008)
- *National Water Quality Management Strategy (NWQMS)* (ANZECC 2000)
- *Australian Runoff Quality* (Wong et al. 2006)
- *National Water Quality Management Strategy* (ANZECC 2000)
- *Stormwater Management Manual for Western Australia* (DoW 2007)
- *Decision Process for Stormwater Management in Western Australia* (DWER 2017)
- *Australian Rainfall and Runoff* (Ball J et al. 2019)
- *Swan and Canning Water Quality Improvement Plan* (SCWQIP) (SWT 2009)
- *Swan and Canning Rivers Foreshore Assessment and Management Strategy* (SRT 2008)
- *Golden Gateway Structure Plan* (CoB 2019).

## 1.5 Previous Studies

### 1.5.1 Golden Gateway Local Water Management Strategy

The draft Golden Gateway LWMS (Essential Environmental 2018b) was prepared to support the Golden Gateway Structure Plan (CoB 2019) by Essential Environmental. The LWMS was prepared in consideration of *Better Urban Water Management* (WAPC 2008b) and *State Planning Policy 2.9: Water Resources* (WAPC 2006a). The key objectives and design criteria of the draft LWMS (Essential Environmental 2018b) included:

**Water Conservation:**

- Ensure the efficient use of all water resources in the redeveloped urban form and aim to achieve highest value use of fit-for-purpose water.
- Maintain opportunities for future generations by using water more efficiently.

**Stormwater management:**

- The first 15 mm of rainfall is to be retained within all lots through a combination of raingardens, water tanks and soakwell systems.
- Raingardens and tree-pits are to be installed in all new or upgraded streets to provide infiltration of the first 15 mm of rainfall.
- Minor event runoff from events larger than 15mm total depth are to be managed in accordance with serviceability requirements of the City of Belmont.
- Roads and public open spaces are to be designed to cater for the surface overflow for more severe storm events with habitable floors at least 0.3 m above the 1% AEP flood or storage level at any location.
- Habitable floors are to be constructed at least 0.5m above the 1% AEP flood level in the Swan River adjacent to the development area.

- Water quality treatment systems and stormwater management structures should be designed in accordance with the *Stormwater Management Manual for Western Australia* (DoW 2007) and *Australian Runoff Quality: A guide to water sensitive urban design* (Wong et al. 2006).

**Groundwater management:**

- Groundwater management systems are to be designed as free discharging under normal operating conditions.
- Flows from groundwater management systems are to be treated prior to discharge.

## 1.6 LWMS objectives

Whilst the criteria proposed in the Golden Gateway LWMS are relevant to some parts of the Ascot Racecourse structure plan area, it is not representative of all areas and site characteristics and therefore only partially applicable. This LWMS supports the Ascot Racecourse Structure Plan, which proposes an alternate layout (to the Golden Gateway Structure Plan) to some of the land uses surrounding the Ascot Racecourse. The design criteria and objectives proposed in this LWMS are generally based on those proposed in the Golden Gateway LWMS, though with additional consideration for site and Precinct- specific characteristics. This LWMS adopts the following major objectives:

- Protect water quality in the Swan River by providing appropriate water quality treatment at source.
- Mitigate potential flooding within the Structure Plan area and immediate surrounds.
- Take account of existing drainage infrastructure capacity and ensure that sufficient land is set aside to manage stormwater.
- Provide a broad level stormwater management framework to support future urban development.
- Incorporate appropriate best management practices (BMPs) into the drainage systems that address the environmental and stormwater management issues identified.
- Minimise development construction costs, which will result in reduced land costs for future home owners.
- Minimise transport of nutrients/pollutants to groundwater.
- Develop a non-potable water conservation strategy that will accommodate existing groundwater allocation constraints for the area.
- Gain support from DWER, DBCA, CoB and Water Corporation for the proposed method to manage stormwater within the site.

Detailed objectives for water management within the site are further discussed in **Section 4**.

# 2 Proposed Development

A total of approximately 62.0 ha is proposed to be developed as shown on **Figure 1**. The Ascot Racecourse Structure Plan proposes six precincts with different objectives and character, and these include:

- **Precinct A –** Approximately 3.0 ha for retirement living/village and mixed use purposes
- **Precinct B –** Approximately 9.3 ha for the use of public assembly (i.e. entertainment/office purposes)
- **Precinct C –** Approximately 8.0 ha for the use of public assembly (i.e. racecourse/stabling purposes)
- **Precinct D –** Approximately 1.5 ha for residential/childcare purposes
- **Precinct E –** Approximately 4.2 ha for mixed use (i.e. commercial/retail purposes)
- **The Racecourse –** Approximately 36.0 ha of retained 'Place of Public Assembly: Racecourse' uses.

The proposed land uses surrounding Ascot Racecourse will be integrated into the Racecourse Precinct. Management of surface and groundwater will take a water sensitive urban design (WSUD) approach that will integrate the management of water within the Precincts with the Racecourse and immediately surrounding infrastructure.

The WSUD measures that will be adopted within the Structure Plan area will include:

- Bio-retention areas (BRAs) to meet water quality treatment requirements
- Subsurface infiltration cells that will facilitate at-source infiltration
- Flood storage integrated into existing surface water bodies located centrally within the Racecourse
- Flood storage areas (FSAs) to provide flood detention, retention and infiltration as close to source as possible.

The WSUD approaches are further discussed in **Section 6**.The detailed concept plan and preliminary civil drawings are provided in **Appendix A** and **Appendix C**.

# 3 Pre-development Environment

## 3.1 Sources of information

The following sources of information were used to provide a broad regional environmental context for the site:

- *Geological Survey of Western Australia* (Gozzard 2007)
- *Map Viewer Plus* (Landgate 2023)
- *Water Register* (DWER 2024c)
- *Perth Groundwater Map* (DWER 2024a)
- *Weather and Climate Statistics Data* (BoM 2024)
- *Acid Sulfate Soil Mapping* (DWER 2023a)
- *Water Information Reporting* (DWER 2024b).

In addition to the above information, site-specific investigations have been conducted. These have aimed at providing more detail to the existing regional information. These site-specific investigations and information have been available from the following sources:

- *Draft Golden Gateway Structure Plan* (CoB 2019)
- *Draft Golden Gateway LWMS* (Essential Environmental 2018b)
- *Draft Golden Gateway Environmental Report* (Essential Environmental 2018a)
- *Draft Infrastructure Assessment Report : Golden Gateway Precinct* (Cardno 2017)
- *Swan and Canning Water Quality Improvement Plan* (SCWQIP) (SWT 2009)
- *Swan and Canning Rivers Foreshore Assessment and Management Strategy* (SRT 2008).

## 3.2 Land use context

The site has been used as the Ascot Racecourse since 1892 (Landgate 2023). The northeast portion of the site is being used for horse racing and training purposes and the surrounding area is being used for stabling, training and entertainment venues which support the above purposes. Some portions of the site are predominantly cleared (e.g. Precinct A, Precinct E) and are occasionally used for parking or other temporary uses. The Precinct D area is used for commercial purposes, being the current Perth Racing administration building.

## 3.3 Climate

The site experiences a dry Mediterranean climate of hot dry summers and cool wet winters and is located in an area of moderate to high rainfall, receiving 756.3 mm on average annually with the majority of rainfall received between June and August (BoM 2024). The region experiences rainfall for 84.8 days annually (on average).

## 3.4 Topography

The site is mostly flat with a slight downward slope from east to north and northwest, with a few low points. The variance in topography of the Precincts is described further as:

- The Racecourse slopes from Precinct C towards the Swan River with topography approximately 7 m Australian Height Datum (mAHD) to 1m AHD and from 7 mAHD (east) to 3 mAHD (west). There are a few local depressions (i.e., lakes and swale) observed within the centre of the racecourse.
- Precinct A has a generally flat topography of 2 mAHD with a high point of 3 mAHD to the west adjacent to Grandstand Road.
- Precinct B slopes from south to north (4 mAHD to 2 mAHD) and from west to east (3 mAHD to 2 mAHD). Precinct D and E are generally flat with a topography of 3 mAHD and 2 mAHD respectively.
- Parts of Precinct C (existing stables and buildings) drain towards the Racecourse, however most of Precinct C is currently carpark that drains towards Precinct E and the Southern Main Drain.
- Precinct D is generally flat with a topographic level 3 mAHD.
- Precinct E has a gentle slope from east to west. The topography of the precinct ranges from 4 mAHD to the east to 2 mAHD to the west.

The topographic contours of the site are shown on **Figure 2**.

## 3.5 Geotechnical conditions

### 3.5.1 Geology and soils

*The Perth Metropolitan Region 1:50,000 Environmental Geology Series* (Gozzard 1986) *and Sea to scarp - geology, landscape, and land use planning in the southern Swan Coastal Plain* (Gozzard 2011) describes that the site lies in the Swan River Terraces system, being underlain by the Guildford formation of alluvial and leached yellow sand. The regional geological mapping indicates that the site soils include:

- **Ms2 –** Sandy Silt: Strong brown to mid grey, mottled, blocky, fine sand, hard when dry, variable clay content of alluvial origin
- **Ms4 –** Sandy Silt: light yellow brown, blocky, mottled some fine to medium sand, soft when moist, variable clay content
- **S8 –** Sand: very light grey at surface, yellow at depth, fine to medium-grained, sub rounded quartz, moderately well sorted of eolian origin

The regional geological mapping is shown on **Figure 3**.

### 3.5.2 Precinct A geotechnical investigation

A detailed geological investigation has been carried out in January 2024 (Douglas Partners 2024) for Precinct A (see **Appendix B**). This investigation generally confirms the regional geological mapping, and the ground conditions of Precinct A are described as:

- Uncontrolled Fill
  - Granular FILL - SAND, Organic SAND, Gravelly SAND, Silty SAND and Sandy GRAVEL
  - Cohesive FILL - Clayey SAND, Sandy CLAY, CLAY
- Overlying natural soils includes
  - Clayey soils including Clayey SAND and CLAY
  - Sandy soils including SAND and Silty SAND

Douglas Partners (2024) concluded that if unmodified, Precinct A is considered unsuitable for on-site stormwater disposal due to the low permeability soils and shallow groundwater depth. To meet geotechnical requirements, stormwater should be managed by connecting to a suitable outflow (Douglas Partners 2024).

### 3.5.3 Precinct D geotechnical investigation

Galt has undertaken a geotechnical study in March 2024 (Galt 2024) for Precinct D (provided in **Appendix B**) and has described the Precinct D ground conditions as:

- **Surficial Topsoil** (in landscaped areas) up to 0.3 m thick and **Hardstand Fill Layers** (in carparks and access ways); overlying
- **FILL: SAND / SAND (SP)**, fine to medium grained, sub-rounded to sub-angular, yellow / brown / grey layers, includes trace gravel / Sandy GRAVEL layers, trace / with fines, some typically medium dense to dense, extending to depths of about 0.4 m to 0.9 m; overlying
- **In BH03 and BH04 only: Silty SAND / Clayey SAND (SM/SC)** fine to medium grained, sub-rounded to sub-angular, brown / grey, low to medium plasticity fines, some typically medium dense to dense, extending to depths of about 0.7 m to 1.2 m; overlying
- **Sandy CLAY / CLAY (CI)**, medium plasticity, brown / orange / grey, trace sand to sandy, trace gravel in some zones, desiccated, CPT traces indicate presence of occasional sand layers, typically very stiff to hard, extending to the maximum depth investigated of 10 m.

Whilst detailed geotechnical investigations have not been undertaken in each Precinct, it is expected that the soils encountered will be generally consistent with regional geological mapping and the investigations undertaken for Precincts A and D and will consist of generally shallow layers of sand overlying sandy clay of the Guildford formation. Such soils are unlikely to be suitable for onsite infiltration of all stormwater and onsite detention unless modified and stormwater management will need to be supplied with an outlet so that flood storage areas have a way to drain between storm events.

### 3.5.4 Acid sulfate soils

The acid sulfate soil (ASS) risk mapping (DWER 2023b) indicates that most of the site is considered to have a high to moderate risk of ASS occurring within the 3 m of the natural surface. Some portions of Precinct B, Precinct C and the Racecourse are mapped to have a moderate to low risk of ASS occurring within the 3 m of the natural surface.

The ASS risk mapping is shown on **Figure 4**.

## 3.6 Environmental assets

### 3.6.1 Environmentally sensitive area

The northern portion of the site (along the Swan River) is identified as an environmentally sensitive area (ESA). ESAs are shown on **Figure 5**.

### 3.6.2 Sewerage sensitive area

The entirety of the site is classified as a sewage sensitive area (SSA) by the *Government Sewerage Policy* (DPLH 2019). The two classifications of relevance to the site define a SSA as:

- a) Estuary catchments on the Swan and Scott Coastal Plains.
- f) The area is <1 km up-groundwater-gradient and 250 m down-gradient of a significant wetland; or where the groundwater gradient is unknown within 1 km of the significant wetland.

### 3.6.3 Geomorphic wetlands

The *Geomorphic Wetlands of the Swan Coastal Plain* dataset indicates the following wetlands within the site:

- Multiple Use Category Wetland (MUW) area (UFI 8424, UFI 8425, UFI 8426).
- Resource Enhancement Wetland (REW) area (UFI 8423)

The Swan River, situated immediately adjacent to the northern boundary of the site, is recognised as a "Conservation Category Wetland" (CCW) (UFI 1316 - Estuary waterbody) within the *Geomorphic Wetlands of the Swan Coastal Plain* dataset and has additional significant ecological, cultural and heritage values (DEC 2011).

The location of the geomorphic wetlands is shown on **Figure 5.**

## 3.7 Hydrology

### 3.7.1 Surface water

#### 3.7.1.1 Water Resources

The dominant hydrological feature of the site is the Swan River estuary. The estuary is subject to marked seasonality, which controls the salinity of the site, and particularly the foreshore area. This seasonality is a result of the short winter rainfall patterns, a small tidal range and the landform of the estuary (Hodgkin and John 1986).

The northern boundary of the site falls within the Swan Canning Development Control Area (DCA) (CoB 2018) and Swan Canning River Park (shown on **Figure 6**). Any proposed development on land adjacent river within the DCA and/or partly within DCA are subject to assessed and approved by the Department of Biodiversity, Conservation and Attraction (DBCA) under Part 5 of the *Swan and Canning Rivers Management Act 2006* and the *Swan and Canning River Management Regulations 2007* (CoB 2018).

Water management strategies will be needed to ensure protection (i.e. water quality improvement) of the Swan River. The catchments of the Swan Canning River system are the subject of the Swan Canning Water Quality Improvement Plan (SRT 2009) which contains catchment management measures and control actions.

The major event flood levels in the Swan River have been documented in recent studies undertaken on behalf of DWER (DWER 2023c).These flood levels, along with the extent of floodway/floodplain

are shown in the DWER online floodplain mapping tool. This tool indicates that the anticipated 1% AEP flood level adjacent to the site is 2.8 mAHD – noting that this level includes consideration for future climate change. The extent of floodway/floodplain from the Swan River adjacent to the site is shown on **Figure 6**.

#### 3.7.1.2 Lakes

There are three lakes within the racecourse including:

- **Irrigation lake** – located adjacent to the Production Bore 1 (PB01) and has a volume of 6,000 $m^3$ to 7,000 $m^3$. Water is pumped out from PB01 into the lake, and irrigation water is drawn from the Irrigation Lake. During winter the Irrigation Lake overflows into the adjacent Lined Lake. The current irrigation demand for the Racecourse is approximately 3,000 $m^3$/day, there is no shortage of irrigation water supply as the lake has sufficient storage capacity. The top water level (TWL) of the Irrigation Lake is approximately 3.1 mAHD.
- **Lined Lake** – this Lake is sealed with a natural clay liner and fed via a 225 mm overflow pipe from the Irrigation Lake. The Lined Lake overflows into the Wetland Lake. The elevation of the Lined Lake is approximately 2.1 mAHD.
- **Wetland lake** – is the largest of the three lakes and has approximately 2.6 ha of surface area. The Wetland Lake has a TWL of approximately 0.4 mAHD. Two overflow pipes at the northern end of the Wetland Lake allow excess water within the Lake to flow to the Swan River.

Peak water levels within the Lined Lake and Wetland Lake were predicted for a 10% AEP storm event (Evangelisti & Associates 1997). The peak water level for was 2.68 mAHD in the Lined Lake which then discharged to the Wetland Lake. The Wetland Lake discharged to the Swan River after reaching the peak water level of 0.53 mAHD. The lakes are connected by 450 mm RCP pipes. The outfall into the Swan River is directed via two pipes (450 mm RCP and 375 mm RCP). The pipes are fitted with headwall and tidal control gate to mitigate inundation from the Swan River (Evangelisti & Associates 1997).

The location of the lakes and overflow pipes are shown on **Figure 6**.

#### 3.7.1.3 Drainage network systems

The Central Belmont Main Drain (CBMD) is managed by the Water Corporation and is the regional drainage system and has a catchment area of 189 ha and which discharges into the Swan River. Catchment plans for the CBMD indicate that inflow from the site occurs in the southwestern corner of Precinct E, where an open drain connects to the CBMD at node CAN008 as shown in **Appendix E** and **Figure 6**.

The CoB has a local drainage piped network located beneath Hardey Road adjacent to Precinct C and which discharges to the CBMD within Precinct E. A larger local CoB network extends along Matheson Road to the East. This is currently connected to the 900 mm pipe that discharges northwards to the lined lake within the centre of the racecourse.

CoB local drainage pipes also exist beneath Grandstand Road adjacent to Precinct A however there is no current connection between Precinct A and the local drainage network. The same network also extends past/adjacent to Precinct D along the northern end of Resolution Drive, however there is no

current connection from Precinct D to the local pipe network. The pipe network along Resolution Drive includes a 450 mm and 525 mm pipe which are understood to discharges into the CBMD. Whilst the CoB catchment has not been modelled to determine peak flows under differing storm durations, an estimate can be made based on the capacity of the pipes which discharge to the CBMD. The combined capacity of the two existing pipes is estimated to be 0.62 $m^3/s$, and therefore the allowable discharge from Precinct C and Precinct E is estimated to be 0.33 $m^3/s$.

Within the Racecourse an existing swale is being used around the racecourse to convey water from the track into the central Wetland Lake.

The location of the swales within the Racetrack Precinct and outlet to Swan River from the Wetland Lake is shown on **Figure 6**.

### 3.7.2 Groundwater

#### 3.7.2.1 Groundwater Resource

The groundwater beneath the site is a multi-layered system comprised of the following:

**City of Bayswater – Perth Superficial Swan unconfined aquifer**. The Superficial Aquifer is approximately 20 m thick under the Ascot Racecourse, with the base of the aquifer under the racecourse at approximately - 20 mAHD (Davidson, 1995). The aquifer is recharged directly by rainfall and from the Swan River.

**King Park Aquifer**. The Kings Park Aquifer is 155 m thick starting from - 20 mAHD and is recharged laterally from the adjacent northern Mirrabooka Aquifer and Superficial Aquifer. The Kings Park Aquifer comprises 2 members: the Mullaloo Sandstone and Como Sandstone. Only the Mullaloo Sandstone member is present at the Ascot site (Davidson, 1995). The Mullaloo Sandstone member is underlain by the Kardinya Shale confining bed of the Osborne Formation.

The groundwater salinity in the aquifer in 1995 was mapped as 500 mg/L to 1,000 mg/L TDS (Davidson, 1995). However, data in recent years indicates the aquifer salinity levels are increasing due to saltwater intrusion.

**Perth South – Perth Leederville** confined aquifer is below -160 mAHD and is approximately 370 m thick. In the Ascot area the Leederville Aquifer is confined but further to the south and north of Perth it is hydraulically connected to the Superficial Aquifer. The Leederville Aquifer comprises of four formations under the Ascot Racecourse, namely Henley Sandstone, Pinjar Member, Wanneroo Member and the Mariginiup Member.

Groundwater flow is generally westwards through the Leederville Aquifer. Lateral discharge can occur to the Kings Park Aquifer but depends on levels of abstraction in the Leederville Aquifer adjacent to the discharge area.

Generally, groundwater salinity in the Leederville Aquifer can be divided into an upper and a lower zone. The upper zone is generally fresh with salinity ranging from 250 to 1,000 mg/L. Salinity in the lower zone (below -400 mAHD) ranges from 1,000 mg/L to greater than 3,000 mg/L.

Groundwater is abstracted from an artesian production bore (PB1) assigned to the Leederville Aquifer to meet the irrigation demand of the Racecourse and surrounds. The bore is located adjacent the Irrigation Lake at the south corner of the Ascot Racecourse track. The bore is screen in the upper Leederville Formation which extends between -160 mAHD and -400 mAHD.

The allocation status of aquifers is further discussed in **Section 5.1.2**.

#### 3.7.2.2 Groundwater levels

Perth Groundwater Map indicates (DWER 2023e) that the regional groundwater level sits at 0.5 m AHD across the site. Therefore, the groundwater clearance from southeast to northwest of the site ranges from 6.5 m to 0.5 m.

There are two groundwater level and quality monitoring bores (Bore1 and Bore2) and one production bore (PB1) within the Racecourse (see **Figure 2**) which are monitored by Perth Racing. Groundwater levels in these are monitored monthly.

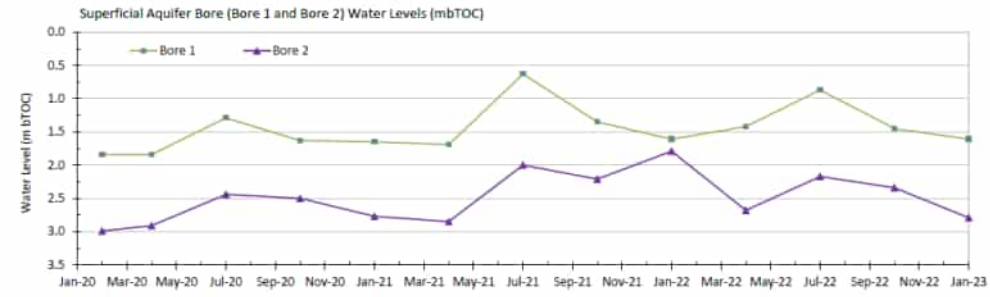



*Plate 1: Groundwater levels within the Superficial Aquifer at Bore1 and Bore2 (JDA 2023)*

**Plate 1** depicts the groundwater levels observed within the Racecourse which clearly indicates the rise and fall of groundwater levels seasonally. The peak groundwater level at Bore 1 and Bore 2 were recorded 1.26 m AHD and 1.70 m AHD respectively, during August 2022.

Monitoring has recently been undertaken within Precinct A. Six monitoring wells were installed for the Precinct A geotechnical investigation. The groundwater depth below the surface of the Precinct A (during January 2024) varied from 1.09 m below ground level (mBGL) to 2.37 mBGL (Douglas Partners 2024).

Monitoring has also recently been undertaken within Precinct D by Galt Geotechnics during the geotechnical investigation. The highest groundwater level beneath Precinct D is reported as 3.03 mBGL during February 2024 (Galt 2024).The various monitoring data/sources have been collated to prepare estimated maximum groundwater contours beneath the site. These have also considered the surface elevation of swales adjacent to the racetrack and the reported TWL of the Wetland Lake. The regional groundwater levels are shown in **Figure 2,** with spot heights recorded at the various locations also provided. It is noted that these do not necessarily represent the annual maximum groundwater levels at all parts of the site given the various timing of measurement of groundwater. Notwithstanding the variability of timing, it is likely that the management of stormwater (and in

particular infiltration) will more likely be influenced by localised soil conditions than seasonal peak groundwater levels in the superficial aquifer.

### 3.7.2.3 Groundwater quality

Water quality monitoring was conducted monthly at PB1 and quarterly at Bore1 (JDA 2023). Water quality parameters those were analysed during the monitoring period include:

**Monitoring Bore (Bore1)**

- EC
- pH
- TDS
- Total phosphorus (TP)
- Filterable Reactive Phosphorus or Phosphorus in Orthophosphate ($PO_4$-P)
- Total Nitrogen (TN)
- Nitrogen in Total Oxidised Nitrogen ($NO_x$-N)
- Nitrogen in Ammonia ($NH_3$-N)
- Total Kjeldahl Nitrogen (TKN)

**Production Bore (PB1)**

- Electrical conductivity (EC)
- pH
- Total Dissolved Solids (TDS)

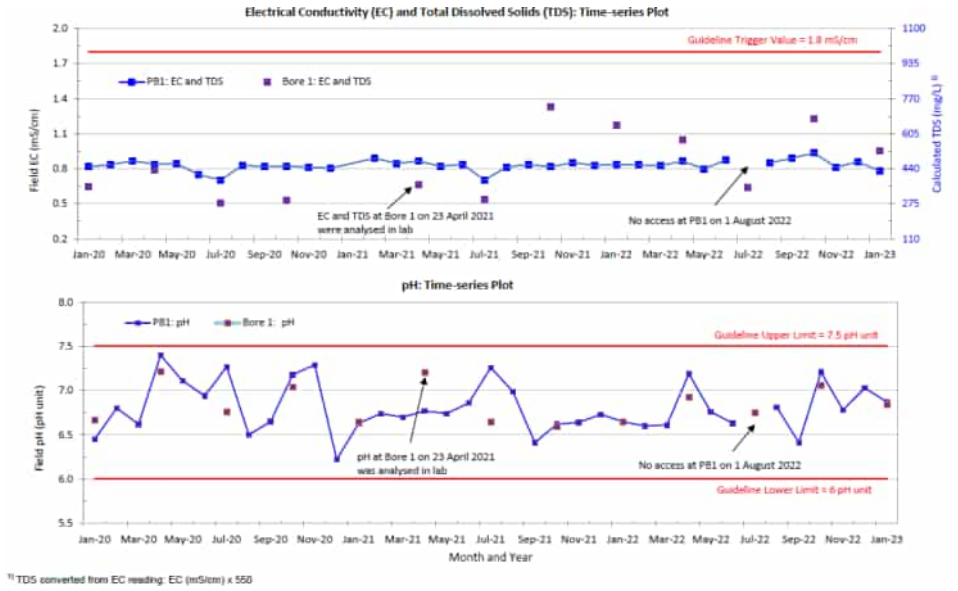



*Plate 2: Water Quality (EC, TDS and pH) Monitoring results* (JDA 2023)

**Plate 2** and **Plate 3** illustrate the water quality of the groundwater within the site is generally consistent over the monitoring periods with typically low variance in parameters tested. EC, TDS and

pH values did not display any exceedances of the trigger values. However, TN and TP regularly exceeded the ANZECC guideline trigger value of 1.2 mg/L and 0.065 mg/L (respectively). It is also noted a large exceedance in TN occurred in August 2022 however this does not appear to be representative of long-term values.




*Plate 3: Water Quality (TN and TP) Monitoring results (JDS 2023)*

## 3.8 Summary of existing environment

In summary, the environmental investigations conducted to date indicate that:

- The site is being used for horse racing, mixed uses (i.e. car park, stables and entertainment/hospitality venues, and commercial). Some portions of the site are only used infrequently (e.g. for parking or events).
- The site is located in an area of moderate to high rainfall, receiving 756.3 mm on average annually with the majority of rainfall received between June and August.
- The majority of the site has a relatively flat topography of 1 mAHD at the northwest (along the Swan River) and 2 mAHD to the south and rising to 7 mAHD to the east of the site.
- The site is within the Swan River Terraces system and displays Guildford formation soils of alluvial and leached yellow sand described as:
  - **Ms2 –** Sandy Silt: Strong brown to mid grey, mottled, blocky, fine sand, hard when dry, variable clay content of alluvial origin
  - **Ms4 –** Sandy Silt: light yellow brown, blocky, mottled some fine to medium sand, soft when moist, variable clay content
  - **S8 –** Sand: very light grey at surface, yellow at depth, fine to medium-grained, sub rounded quartz, moderately well sorted of eolian origin
- The groundwater depth below the surface of Precinct A varies from 1.09 m mBGL to 2.37 mBGL (Douglas Partners 2024).

- The highest groundwater level beneath Precinct D is reported 3.03 mBGL during February 2024 (Galt 2024).
- Most of the site is considered to have a high to moderate risk of ASS occurring, however some portions of Precinct B, Precinct C and the Racecourse are considered to have a moderate to low risk of ASS occurring within the 3 m of the natural surface.
- The northern portion of the site along the Swan River is identified as an ESA.
- The entirety of the site is classified as a SSA and classified as:
  - a) Estuary catchments on the Swan and Scott Coastal Plains.
  - f) The area is <1 km up-groundwater-gradient and 250 m down-gradient of a significant wetland; or where the groundwater gradient is unknown within 1 km of the significant wetland.
- The following wetlands are located within the site and these are classified as:
  - Multiple Use category wetland (MUW) area (UFI 8424, UFI 8425, UFI 8426).
  - Resource Enhancement wetland (REW) area (UFI 8423).
- The dominant hydrological feature of the site is the Swan River estuary. The northern boundary of the site falls within the Swan Canning Development Control Area (DCA) (CoB 2018) and Swan Canning River Park.
- The floodway of the Swan River is immediately adjacent to but not within the site. The 1% AEP flood elevation of the Swan River adjacent to the site is 2.8 mAHD.
- There are two existing major drainage network systems within or adjacent to the site include:
  - The CBMD, managed by the Water Corporation. This currently receives runoff from Precinct C (via the CoB drainage network) and Precinct E.
  - The CoB local piped drainage network, which exists along Mathieson Road, Grandstand Road and the northern portion of Resolution Drive.
- There are three lakes (Irrigation Lake, Lined Lake and Wetland Lake) located within the centre of the Racecourse. These are understood to receive runoff from the grandstand buildings in Precinct B and stables/buildings in Precinct C.
- Allowable discharge to the CBMD from the local drainage network is 0.95 $m^3/s$ based on Water Corporation modelling.
- The groundwater beneath the site is a multi-layered system consisting of the Superficial, Kings Park Formation, Leederville and Yarragadee aquifers.
- Regional groundwater mapping indicates that the groundwater levels across the site are at approximately 0.5 m AHD.
- Local groundwater level monitoring indicates that annual maximum groundwater levels (recorded in August 2022) were measured at 1.26 m AHD and 1.70 m AHD at Bore 1 and Bore 2 respectively. Groundwater levels in adjacent areas included Precinct A levels at 1.09 mBGL to 2.37 mBGL and Precinct D levels of approximately 3.03 mBGL.
- Water quality monitoring indicates that EC, TDS and pH values do not exceed guideline trigger values. However, TN and TP concentrations continually exceed the ANZECC guideline trigger value of 1.2 mg/L and 0.065 mg/L respectively.

# 4 Design Criteria and Objectives

This section outlines the objectives and design criteria that this LWMS and future management plans must achieve. The water management strategy includes water conservation, groundwater management and stormwater management.

## 4.1 Integrated water cycle management

*Better Urban Water Management* (WAPC 2008a) endorses the promotion of integrated water cycle management and application of WSUD principles to provide improvements in the management of stormwater, and to increase the efficient use of other existing water supplies.

The key principles of integrated water cycle management include:

- Considering all water sources, including wastewater, stormwater and groundwater
- Integrating water and land use planning
- Allocating and using water sustainably and equitably
- Integrating water use with natural water processes
- Adopting a whole catchment integration of natural resource use and management.

Integrated water cycle management addresses not only physical and environmental aspects of water resource use and planning, but also integrates other social and economic concerns. Water management design objectives should therefore seek to deliver better outcomes in terms of:

- Potable water consumption
- Stormwater quality management
- Groundwater management.

The first step in applying integrated water cycle management in urban catchments is to establish agreed environmental values for receiving environments. The existing environmental context of the site has been discussed in **Section 3** of this document. Guidance regarding environmental values and criteria is provided by a number of national and state policies/guidelines and site-specific studies undertaken in and around the site. These were detailed in **Section 1.4** and **Section 1.5** respectively.

## 4.2 Water conservation

This LWMS proposes the following water conservation criteria:

**Criteria WC1** For residential dwellings, consumption target of 60 kL/person/year.

**Criteria WC2** Ensure the efficient use of all water resources

**Criteria WC3** Non-potable irrigation water to be sourced from existing groundwater licences held over the area.

The manner in which this objective will be achieved is further detailed in **Section 5**.

## 4.3 Stormwater management

The principle behind stormwater management at the site is to mimic the pre-development hydrological conditions and utilise existing infrastructure where sensible to do so, as described in **Section 3.7**. This principle and the guidance documents discussed in **Section 1.4** and **Section 1.5** and have guided the stormwater management criteria.

**Criteria SW1** Retain and treat the first 15 mm of rainfall as close to source as possible and within site.

**Criteria SW2** Detain up to 1% AEP rainfall event on-site.

**Criteria SW3** Post-development critical 1% AEP peak flows leaving the site to mimic pre-development peak flows.

**Criteria SW4** Finished floor levels must have a minimum of 300 mm clearance above the 1 % AEP TWL in the FSA.

**Criteria SW5** All lots must have a minimum of 500 mm clearance above the 1 % AEP flood level in the Swan River.

**Criteria SW6** Nutrient concentrations within surface water discharging from the site to the Swan River are to meet regional water quality targets.

**Criteria SW7** Reduce nutrient loads by applying appropriate non-structural measures.

**Criteria SW8** Design infiltration areas to avoid creating mosquito habitat.

The manner in which these objectives will be achieved is further detailed in **Section 6**.

## 4.4 Groundwater management

The principle behind the groundwater management strategy is to maintain the existing groundwater hydrology. The groundwater management criteria for the site include:

**Criteria GW1** Surface based infiltration structures should have 300 mm clearance above the MGL.

**Criteria GW2** Habitable floor levels should have a clearance to the MGL of at least 1.2 m.

The manner in which the groundwater management objectives will be achieved is further detailed in **Section 7**.

# 5 Water Conservation Strategy

## 5.1 Fit for purpose water use

Conservation of water through fit-for-purpose use and best management practices is encouraged so that scheme water is not wasted. Fit-for-purpose describes the use of water that is of a quality suitable for the required use of the water. Fit-for-purpose principles have been utilised in the water conservation strategy for the site and will achieve **Criteria WC1**.

### 5.1.1 Scheme water supply

Scheme water will be supplied by the Water Corporation Integrated Water Supply System. Scheme water is proposed to be used for all potable uses. Scheme water will also service some external uses, where fit-for-purpose alternatives are not available.

### 5.1.2 Groundwater

As discussed in **Section 3.7.2.1**, the site is located beneath a multi-layered system comprising of the Superficial Swan, Kings Park Formation, Leederville and Yarragadee aquifers.

The proponent holds a groundwater allocation from the Perth South Leederville confined aquifer for the following:

- GWL 178519 - 347,000 kL

This licence will be used to meet the irrigation requirements for the Racecourse Precinct, Precinct A, Precinct B and part of Precincts C and E.

The above-mentioned measure will achieve **Criteria WC3**.

### 5.1.3 Rainwater tanks

Rainwater tanks (RWTs) can be used within private lots to harvest roof runoff. This water is considered non-potable but can be used to supplement non-potable water uses.

## 5.2 Lot scale water conservation measures

This LWMS proposes that the water conservation measures to be adopted would include RWTs, waterwise principles for lot scale gardens and within estate landscaping (WWG) and water efficient fixtures and appliances (WEFA) to ensure that the residential portion of the development minimises the use of water. These are summarised in the following sections.

### 5.2.1 Rainwater tanks

The use of RWTs will not be mandated, and the stormwater quantity management strategy does not rely on their use. They are therefore only considered to be a water conservation measure. Given that rainwater tanks will not be mandated or supplied by the proponent, it has been assumed that these would be implemented by 7.5% of households within Precinct D. Whilst they may be considered for

Precinct A they are not proposed to be taken up in other Precincts. The assumed uptake rate has been based on data obtained from the Australian Bureau of Statistics (ABS 2013). It is assumed (for the purposes of the water balance analysis) that all rainwater tanks have a capacity of 3 kL.

### 5.2.2 Water efficient fixtures and appliances

Water conservation strategy for the site proposes the use of WEFA. Water efficient fittings will be mandated through the building licence, while uptake of water efficient appliances can be encouraged by State and Local Government rebates in addition to education from the proponent at point of sale. WEFA are relevant to Precinct A and Precinct D. It is assumed that water efficient appliances will be implemented by 40% of households within Precinct A and Precinct D, which has been based on data obtained from the Australian Bureau of Statistics (ABS 2013, 2014).

### 5.2.3 Waterwise gardens

Landscape packages will not be provided as a part of the land sale contract. Lot scale waterwise gardening principles (WWG) are only relevant for Precinct D. These will be achieved by promoting Waterwise gardening principles (WWG) (WC 2003) at the time of sale of land within Precinct D. It is assumed that 75% of households in Precinct D will implement WWG principles within lot gardens (ABS 2013). WWG principles include:

- Soil to be improved with soil conditioner certified to Australian Standard (AS) 4454 to a minimum depth of 150 mm where turf is to be planted and a minimum depth of 300 mm for garden beds.
- The irrigation system shall be designed and installed according to best water efficient practices:
  - The controller must be 'hydrozoned'.
  - Emitters must disperse coarse droplets or be subterranean.
- Garden beds to be mulched to 75mm with a product certified to AS4454.
- Increasing community awareness of water conservation by promoting Waterwise practices, fixtures and fittings at the point of sale.

WWG principles will also be considered for Precinct A and Precinct E, however it is anticipated that these areas will have minimal irrigated landscaping to which this would apply. The current approach to irrigation within the Racecourse Precinct, Precinct B and Precinct C adopts a range of water conservation measures (including non-irrigated area and retention of existing trees/vegetation) to ensure that Perth Racing operates within the available groundwater allocation. This approach is not proposed to be significantly modified.

The above measures will assist in achieving **Criteria WC1** and **WC2**.

## 5.3 Water use analysis

### 5.3.1 Lot scale water use analysis

A water use analysis has been undertaken for Precinct D to estimate the expected individual residential lot water use to demonstrate the effectiveness of the water conservation strategy. The water use analysis has been based on the rates and calculation methodology presented in the Water

Corporation (2011) spreadsheet *AltWaterSupply_Water_Use_Model.xls*. This spreadsheet has been adapted to model the effects of using the water conservation measures proposed, and key assumptions include:

- Lot area has been based on a conceptual lot layout (see **Appendix A**).
- Average residency of 2.6 people per single lot dwelling. This value has been calculated from data provided by ABS for new housing developments in Perth (ABS 2022).
- Assumed up-take rates include:
  - 100% uptake of water efficient fittings
  - 40% uptake of water efficient appliances
  - 7.5% uptake of RWTs
  - 55% uptake of WWG principles.

The results of the water balance indicate that if households in Precinct A and Precinct D adopt the proposed water conservation measures (e.g. efficient fittings, RWT, WWG principals) at typical uptake rates they will use an average of 33.0 kL/year/person. This achieves the water target of no more than 60 kL/year/person of scheme water and satisfies **Criteria WC1**.

## 5.4 Wastewater management

The wastewater generated from the site will be managed by connecting the development to the Water Corporation deep sewer network.

## 5.5 Water conservation management criteria compliance

A summary of the proposed water conservation management criteria and how these are addressed is provided within **Table 1.**

*Table 1: Water conservation management criteria compliance*

| Criteria number | Criteria description | Manner in which compliance will be achieved |
|---|---|---|
| WC1 | Residential consumption target of 60 kL/person/year scheme water. | Provide advice to residents in Precinct A and Precinct D on water conservation measures |
| | | RWTs can be utilised for non-potable uses within Precinct D |
| | | Promotion and use of WWG in lots within Precinct D |
| | | Promotion and use of water efficient appliances to Precinct A and Precinct D |
| | | Mandate water efficient fittings within Precinct A and Precinct D |
| WC2 | Ensure the efficient use of all water resources. | Use of waterwise landscaping principles in open spaces |
| | | Open spaces designed to use no more than allocated groundwater |
| | | Minimise water requirements for open space and verge maintenance |
| | | Use of water efficient appliances within Precinct A and Precinct D |
| | | Use of WWG principles in lots in Precinct D |

*Table 2: Water conservation management criteria compliance (Continued)*

| Criteria number | Criteria description | Manner in which compliance will be achieved |
|---|---|---|
| WC3 | Non-potable irrigation water to be sourced from existing groundwater licences held over the area. | The proponent holds a groundwater Licence with an allocation of 347,000 kL per annum which will meet the irrigation requirements of the Racecourse and surrounding Precincts. |

# 6 Stormwater Management

The principle behind the stormwater management strategy for the site is to maintain the existing hydrology by detaining, retaining and treating runoff from the small rainfall event (i.e. first 15 mm) as close to source as possible and detaining/retaining the major event (1% AEP) on site prior to discharge to either the centre of the Racecourse (i.e. self-retained) or to the CBMD the pre-development outflow rates. Due to the existing soil conditions (See **Section 3.5**), the site is not well suited for structural controls utilising infiltration of stormwater unless modified. However, given that fill will be utilised to ensure that habitable floor levels are above the 1% AEP flood elevation of the Swan River, final elevations will be approximately 4 mAHD. Where fill is used to achieve this there will be sufficient clearance to MGL and permeability of soils to adopt WSUD measures which utilise infiltration.

WSUD measures proposed will vary across the Precincts and will include:

- BRAs to achieve water quality treatment (Precincts A, C, D and E)
- FSAs to detain runoff prior to discharge to the adjacent road network system
- Subsurface infiltration cells that will facilitate at-source infiltration (Precinct D)
- Flood storage integrated into existing surface water bodies located centrally within the Racecourse (for Precinct A and C)
- FSAs to provide flood detention and infiltration as close to source as possible (Precinct E).

The overall approach to precinct drainage is shown on **Figure 7**.

The WSUD measures that will be implemented as a part of the development are described in the following sections. Precinct B has been assumed to be self-retained and a portion of Precinct C (already connected to the Lakes in the centre of the track) has been assumed to be the same as it is now. Surface runoff modelling undertaken using XPSWMM has been used to inform the design of stormwater infrastructure as detailed in the following sections. Assumptions used to represent the post-development environment are provided in the modelling assumptions report in **Appendix D**.

## 6.1 Lot scale drainage measures

Lots within Precinct D and Precinct E will retain the first 15 mm rainfall event runoff within soakwells/soakage which will need a capacity of 150 $m^3$/ha. Lot storage is the responsibility of the lot owner and will be assessed as part of the building approval process prior to construction.

The use of soakwells/soakage areas will assist in achieving **Criteria SW1**.

## 6.2 Development drainage measures

### 6.2.1 Bio-retention areas

Runoff from the first 15 mm of rainfall will be captured and retained within a vegetated BRA located in open spaces. The BRA is assumed to have a depth of 500 mm with 1:3 side slopes. Treatment of

runoff will be provided through interaction with vegetation and adsorption to sand particles through infiltration prior to reaching groundwater.

The BRA will be underlain by material with an appropriate PRI (nominally a PRI of 20 at 150 mm or equivalent). It is acceptable for this to be achieved with a thicker layer of lower PRI soil (e.g. 300 mm of PRI 10). This will be finalised prior to detailed design. The location of the BRA will either be in a drainage reserve, an open space or they may be within the centre of the Racecourse as a separate treatment area (separate from the existing Lakes). The sizing and spatial requirements of BRAs will be confirmed in the detailed designs.

The use of BRA will assist in achieving **Criteria SW1, SW6,** and **SW8**.

### 6.2.2 Flood detention/storage

An FSA will be utilised to detain runoff above the first 15 mm and up to the 1% AEP rainfall event. To achieve this, the invert of the FSA will have sufficient clearance above groundwater 300 mm. FSAs are assumed to be 1.2 m depth with 1:6 side slope and will be integrated into POS or drainage reserve, and will overflow to the Water Corporation drainage network. The sizes and spatial requirements for the FSA will be confirmed in the detailed designs and development stages.

The use of an FSA will assist in achieving **Criteria SW1, SW2, SW4,** and **SW6.**

### 6.2.3 Subsurface storage

Surface runoff generated by lots, stables and hardstand/carpark areas will be directed into sub-surface storage. Precinct D will have an independent drainage pipe network within individual precincts which convey flows to downstream sub-surface retention structures.

These structures have been sized to accommodate up to the 1% AEP rainfall event and have been designed as a 1 m deep structure. The detailed configurations could be modified to suit site constraints. These will either be location beneath road reserve/verge or beneath an open space and will require an overflow connection to the local (CoB) drainage network to ensure that they can dry out. The sizes and spatial requirements for the subsurface storages are provided in **Table 2** and illustrated in **Figure 7A**: Precinct A Stormwater Management Plan

*Figure 7B: Precinct C Stormwater Management Plan*

Figure .

The use of the sub-surface storage will assist in achieving **Criteria SW1, SW2,** and **SW6.**

### 6.2.4 Lake storage

Precinct A and Precinct C (stables) will first direct runoff to a bio-retention areas, however overflow from these will be catered for in the Wetland Lake. In a 1% AEP storm event an additional 78 mm of depth will occur within the Wetland Lake from both Precincts.

As indicated in **Section 3.7.1.2**, the Wetland Lake is connected/discharges to the Swan River via a 375 mm and 450 mm culvert. These are not proposed to be modified. The combined nominal flow capacity of the 375 mm and 450 mm pipes is approximately 0.4 $m^3/s$. The inlet, length, grade, etc of

these pipes is not proposed to be modified and therefore the current overflow regime from the site to the Swan River will remain unchanged.

The use of the Wetland Lake storage will assist in achieving **Criteria SW1, SW2, SW3,** and **SW6.**

## 6.3 Precinct based drainage approach

### 6.3.1 Precinct A

There is no current connection point for drainage to be exported from site to the local CoB network. Runoff will therefore need to be managed within Precinct A and the Racecourse. Precinct A will require a single BRA that will address treatment of water quality; this will be located within Precinct A as close to source as possible. The BRA should have the following characteristics:

- Base will be vegetated with reeds/rushes as per a biofilter
- 1:3 side slopes
- Depth of 300 – 500 mm pending final design
- Volume of the BRA will need to achieve 194 $m^3$
- Nominal surface area of 450 $m^2$.

In addition to the volume achieved by the BRA, in a major (1% AEP) storm event a further 1,345$m^3$ of flood retention storage will be required. The proposed earthwork level of Precinct A (4.0 mAHD) means that it is possible to direct runoff exceeding BRA capacity to the Wetland Lake in the centre of the Racecourse. This approach will add approximately 52 mm to the central 2.6 ha Wetland Lake.

The volumes of storage required and locations of storage across the Precincts is summarised in **Table 2**. The approach to water management in Precinct A is shown in **Figure 7A**.

### 6.3.2 Precinct B and Racecourse

As indicate previously, there are no substantial changes proposed to Precinct B. Precinct B currently manages surface runoff within the precinct and adjacent Racecourse, largely via at source infiltration, swales around the perimeter of the track surface and the existing lake system Precinct B and the Racecourse are proposed to be retained largely as is.

As indicated in **Section 3**, the Wetland Lake currently has a piped overflow connection to the Swan River. This overflow pipe(s) reportedly rarely overflow and can be controlled via a structure at the outlet (which also prevents tidal influence on the Wetland Lake). The Wetland Lake has a 2.6 ha surface area, and therefore can provide significant volume of stormwater retention in the event of a major storm event. There are no new connections proposed to the Swan River and there are no changes proposed to the management approach currently taken for the Wetland Lake and the current piped outlets.

### 6.3.3 Precinct C

Precinct C is the existing stables area, adjacent carparks and future stables areas along the south and east of the Structure Plan area. The existing buildings currently either infiltrate runoff at source or

discharge to the Lined Lake in the centre of the Racecourse. This approach is proposed to be retained.

Surface runoff generated by hardstand/carpark areas of Precinct C will be directed and discharged towards Precinct E via the existing connections to the CoB drainage network along Matheson Road or via the existing pipe connection in the southwest of the Structure Planning area to the existing connection to the CBMD (Water Corporation drainage system) within Precinct E.

The drainage requirements for the southern (carpark) portion of Precinct C are therefore detailed with those proposed for Precinct E.

For the two currently undeveloped portions of Precinct C (future stables along the south and east of the Structure Plan area), the post-development drainage system will collect the runoff from these areas and direct them to the centre of the Racecourse. Initial treatment will be provided by a BRA which accommodates 418 $m^3$, with a nominal surface area of 924 $m^2$.

Runoff exceeding the capacity of the BRA (which will be 684 $m^3$) will be directed to the Wetland Lake. The direction of major event stormwater runoff to the Wetland Lake will add 26 mm to the top water level of the Wetland Lake.

The volumes required to be treated and for flood mitigation for Precinct C are summarised in **Table 2**. The approach to water management in Precinct A is shown in **Figure 7B**.

### 6.3.4 Precinct D

As indicated in **Section 6.1**, private lots and the childcare building within Precinct D are assumed to retain the first 15 mm within the lot boundary, most likely within soakwells, which should be appropriate given that some measure of imported fill will be required to meet clearance above regional flood levels. Based on the density of lots proposed in Precinct and lack of open space, this precinct will need 42 $m^3$ of subsurface storage to accommodate and detain the 1% AEP storm event to ensure that the post development peak flow rates will mimic the pre -development conditions. This is assumed to be located adjacent to Resolution Drive as shown in **Figure 7C**. The outflow from this Precinct will likely be predominantly overland flow once the first 15 mm of storage has reached capacity, however a low flow to ensure that these can adequately drain between storm events is recommended.

The volumes required to be treated and for flood mitigation for Precinct D are summarised in **Table 2**.

### 6.3.5 Precinct E

Surface runoff from across Precinct E (inclusive of Precinct C hardstand/carpark) will be conveyed via the drainage network firstly to a BRA for water quality treatment and then this will overflow to an FSA (detention drainage structure) at the south western corner of Precinct E for detention of the 1% AEP storm event. Overflow from Precinct E basin will discharge into the CBMD (Water Corporation drainage system) at existing flow rates. The Water Corporation surface runoff modelling of the CBMD indicates that the local drainage network contributes 0.95 $m^3/s$ at node CNA008. This is understood to be contributed to by existing 450 mm and 525 mm pipes beneath Resolution Drive and therefore it is assumed that 0.62 $m^3/s$ is taken up by the existing pipe network, and approximately 0.33 $m^3/s$ of

capacity is available to convey runoff from Precinct C, Precinct E and upstream contributing catchments.

The volumes required to be treated and for flood mitigation for Precinct E are summarised in **Table 2**. The approach to water management in Precinct E is shown in **Figure 7D**.

### 6.3.6 Precinct drainage summary

The requirements for water quality treatment within the Precincts is summarised in **Table 2**.

*Table 2: Precinct drainage summary*

| Precinct | First 15 mm requirement ($m^3$) | Location of first 15 mm | 1% AEP flood mitigation requirement ($m^3$) | Location of 1% AEP flood mitigation requirement | 1% AEP outflow from site |
|---|---|---|---|---|---|
| Precinct A | 194 | BRA located within Precinct A | 1,345 | Wetland Lake, centre of Racecourse | 0 |
| Precinct B | No change to existing | Precinct B | No change to existing | Precinct B | Self-retained |
| Precinct C (Stables) | 418 | BRA located in the centre of the Racecourse | 684 | Wetland Lake in centre of Racecourse | 0 |
| Precinct C (carpark) | Combined with Precinct E volumes | BRA in Precinct E | Combined with Precinct E volumes | FSA in Precinct E | |
| Precinct D | 28 | Subsurface storage cells beneath road reserve/drainage reserve | 42 | Subsurface storage cells beneath road reserve/drainage reserve | 0.402 $m^3/s$ to local drainage network/road pavement |
| Precinct E | 365 | Southwest corner of Precinct E, adjacent to FSA | 930 | South west corner of Precinct E | 0.32 $m^3/s$ to CBMD |

There will be no new connections to the Swan River or to the CBMD, and the existing flow regimes at these outlet points will be maintained. Specifically with regard to overflow from the Wetland Lake which occurs via gravity, the peak flow rates that the existing 375 mm and 450 mm pipes are capable of achieving (approximately 0.4 $m^3/s$) will not change given that the inlet, length, grade and outlet of these pipes is not proposed to be modified.

Precinct D will require a connection to the local drainage network, however the outflow rate will be nominal, and has not been accounted for when sizing the subsurface storage cells within Precinct D. The direction of runoff from Precinct A and a portion of Precinct C to the centre of the Racecourse will require a BRA with a surface area of 1,105 $m^2$ (for Precinct C) and will add a total of 78 mm depth to the top water levels within the Wetland Lake.

The precinct areas and a summary of the approach to surface water management are shown on **Figure 7**.

### 6.3.7 Non-structural measures

A number of non-structural measures will be implemented to help reduce nutrient loads within stormwater runoff. These measures include:

- Minimising fertiliser use to establish and maintain vegetation within POS and road verges.
- Street sweeping at regular intervals.
- Ongoing management of nutrient application to Precinct B and the Racecourse.
- Precinct A to adopt a similar nutrient application management regime as that currently applied to Precinct B.
- Minimising the use of turf within open spaces.
- Active management of equine waste within Precinct C and the Racecourse. This includes manual collection and remove of manure from site.
- Education of residents regarding fertiliser use and nutrient absorbing vegetation species within lots.

The above measures will assist in achieving **Criteria SW7**.

### 6.3.8 Earthwork levels

Finished floor levels of the entire development will be set at minimum of 4.0 mAHD (See **Appendix C**) which will assist in achieving **Criteria SW5**.

## 6.4 Stormwater criteria compliance

A summary of the proposed stormwater design criteria and how these are addressed is provided in **Table 3**.

*Table 3: Stormwater management criteria compliance*

| Criteria number | Criteria description | Manner in which compliance will be achieved |
|---|---|---|
| SW1 | Retain and treat the first 15 mm of rainfall as close to source as possible | Lots within Precinct D and Precinct E to retain the first 15 mm of rainfall on lot in soakwells/soakage. Lot storage will be the responsibility of the lot owners. |
| SW2 | Retain up to 1% AEP rainfall event on-site. | Runoff up to the 1% AEP to be detained within the FSA in Precinct A. Precinct A and a portion of Precinct C will ultimately discharge to the centre of the track. |
| | | Runoff up to 1% AEP to be managed with the sub-surface storage in Precinct D. |
| SW3 | Post-development critical 1% AEP peak flows leaving the site to mimic pre-development peak flows. | Runoff up to 1% AEP event to be detained in the detention basin and subsurface storage which will maintain the pre-development peak flow of 0.32 $m^3/s$ from Precinct E and 0.463 $m^3/s$ from Precinct D respectively. |
| SW4 | Finished floor levels must have a minimum of 300 mm clearance above the 1% AEP TWL in the FSA. | It is anticipated that the FSA and detention basin invert will be set so that the habitable floor levels must have a |

| | | |
|---|---|---|
| | | minimum of 300 mm clearance above the 1% AEP TWL in the basins. |
| SW5 | All lots must have a minimum of 500 mm clearance above the 1% AEP flood level in the Swan River. | The 1% AEP flood level in the Swan River is 2.8 mAHD. The preliminary bulk earthworks concept provided in shows that finished floor level will be at 4.0 mAHD. |
| SW6 | Nutrient concentrations within surface water discharging from the site to the Swan River are to meet regional water quality targets. | BRA will be designed so that after treatment the long term nutrient concentrations within surface water meet the regional water quality targets. |

*Table 4: Stormwater management criteria compliance (Continued)*

| Criteria number | Criteria description | Manner in which compliance will be achieved |
|---|---|---|
| SW7 | Reduce nutrient loads by applying appropriate non-structural measures | • Minimise use of fertilisers within open space and road verges.<br>• Street sweeping at regular intervals.<br>• Use of drought tolerant turf species.<br>• Education of residents regarding fertiliser use |
| SW8 | Design infiltration areas to avoid creating mosquito habitat | Stormwater infrastructure will be designed to ensure all runoff is infiltrated within 96 hours. |

# 7 Groundwater Management

## 7.1 Groundwater management approach

The principle behind groundwater management is to maintain the existing hydrology across the site, provide appropriate protection from groundwater inundation, and maintain or improve existing groundwater quality.

## 7.2 Groundwater level management

The regional groundwater map (DWER 2023e), localised measurement of groundwater and the surface contours of the site (see **Section 3.4** and **Figure 2**) indicate that there is sufficient clearance to groundwater beneath the site to facilitate infiltration of stormwater runoff, on the basis that fill is being imported to raise finished levels to 4.0 mAHD.

Whilst the underlying parent soils have demonstrated generally low permeability, the earthworks approach will require import of fill to 4.0 mAHD to achieve clearance above the 1% AEP flood level in the Swan River for Precinct A, Precinct D and Precinct E. Therefore, stormwater will be encouraged to infiltrate at source wherever possible to minimise stormwater runoff and to adopt an at-source approach to management of runoff where possible. This will occur within soakwells, permeable portions of lots and BRAs which will have at least 300 mm of clearance above the MGL. The above-mentioned measure will assist in achieving **Criteria GW1**.

For Precinct C (stables) runoff will be directed to the centre of the racetrack. The stables facilities do not require a specific separation from groundwater, and in order to accommodate equine uses the land between buildings/facilities should be as flat as possible. The most appropriate response is therefore to accommodate stormwater quality treatment and flood retention within the centre of the racetrack. Given the low permeability of soils in the centre of the racetrack, the BRA is unlikely to achieve separation from groundwater or the low permeability soil layer. This is however considered acceptable as it is consistent with the presence of the three Lakes currently within the centre of the racetrack.

The control of groundwater by subsoil drainage is not proposed due to requirements to provide adequate clearance above the 1% AEP flood levels and the proximity of the Swan River. Rather, groundwater separation requirements will be achieved by the use of imported fill as described above. The earthworks strategy provided in **Appendix C** shows that all habitable floor levels will be greater than 1.2 m above the MGL. The above-mentioned measure will assist in achieving **Criteria GW2**.

As previously discussed, there are no changes proposed to the form of development within Precinct B or to the Racecourse. These areas are currently managed by the swales aligned with the existing racetrack which control soil moisture conditions in these areas, and which discharge to the Wetland Lake. This approach will be retained in the post-development environment.

## 7.3 Groundwater quality management

Whilst not specified in a design criterion, the main objective for groundwater quality management is to maintain or improve the existing groundwater quality. This can be achieved by reducing the total nutrient load into the groundwater that originates from the site. Groundwater that originates from the site is surface runoff that has infiltrated into the soil profile. Therefore, improving groundwater quality can be achieved by treatment of the surface runoff prior to infiltrating to groundwater.

The reduction of nutrient load to the groundwater will be achieved by:

- Retention of existing trees within open spaces wherever possible.
- Directing stormwater to a vegetated (with native wetland species) BRA.
- The BRA will be underlain by material with an appropriate PRI (nominally a PRI of 20 at 150 mm or equivalent). It is acceptable for this to be achieved with a thicker layer of lower PRI soil (e.g. 300 mm of PRI 10).
- Minimise fertiliser use to establish and maintain vegetation within open space areas and road verges.
- Ongoing management of nutrient application to Precinct B and the Racecourse.
- Precinct A to adopt a similar nutrient application management regime as that currently applied to Precinct B.
- The use of turf will be minimised, however where adopted a drought tolerant turf species that require minimal water, and nutrients will be used.
- Roll-on turf will be used within the open space areas and road verges, to prevent the high nutrient input requirement during establishment of the turf.
- Garden beds should not be immediately adjacent to BRAs to reduce nutrient transportation into these infiltration areas.
- Active management of equine waste within Precinct C and the Racecourse. This includes manual collection and remove of manure from site.

The above measures will improve the quality of water prior to it infiltrating into the underlying groundwater.

## 7.4 Groundwater criteria compliance summary

A summary of the proposed groundwater quantity design criteria and how these are addressed within the site is provided in **Table 4**.

*Table 4: Groundwater criteria compliance summary*

| Criteria number | Criteria description | Manner in which compliances will be achieved |
|---|---|---|
| GW1 | Surface based infiltration should have 300 mm clearance above MGL. | Basin inverts will be set at 300 mm above the MGL, the exception being the BRA in the centre of the racetrack. |
| GW2 | Finished floor levels should have a clearance to the MGL of at least 1.2 m. | Lots will be set at least 1.2 m above the MGL. |

# 8 Subdivision and Urban Water Management Plans

The requirements to undertake preparation of more detailed water management plans to support subdivision is generally imposed as a condition of subdivision. This will be most relevant to Precinct D. Other precincts may be developed under a Development Approval and therefore water management will likely be documented within a Stormwater Management Plan (SMP). The development of future UWMP/SMPs should follow *Urban Water Management Plans: Guidelines for preparing plans and for Complying with Subdivision Conditions* (DoW 2008).

While strategies have been provided within this LWMS that address planning for water management within the site, it is a logical progression that future subdivision designs and the supportive UWMP/SMP will clarify details not provided within the LWMS. The main areas that will require further clarification within future UWMP/SMPs may include (pending which precinct is being addressed):

- Extent of land uses within Precincts
- Connection to local and Main Drainage networks
- Surface runoff modelling
- Implementation of water conservation strategies
- Non-structural water quality improvement measures
- Management and maintenance requirements
- Construction period management strategy.

These are further detailed in the following sections. As stated above, ongoing (post-development) monitoring of groundwater will be detailed in the UWMP/SPM, however in this LWMS is outlined broadly in **Section 9**.

## 8.1 Extent of land uses within Precincts

It is expected that the layout and extent of land uses within Precincts may evolve over time. Future water planning documents will need to be updated to align with the most up to date spatial plans for each Precinct. Changes to the spatial plans will likely have an implication on the size of stormwater infrastructure and possibly their location, and should be revised and clarified in future UWMP/SMPs.

## 8.2 Connection to local and Main Drainage networks

This LWMS has made assumptions regarding connectivity to the CoB local drainage network and to the Water Corporation's CBMD. These are assumptions are made based on the information available at the time of preparing this LWMS and may need to be revised pending feedback from these agencies. This could result in updates to surface runoff modelling (see **Section 8.3**).

## 8.3 Surface runoff modelling

It is acknowledged that the water management strategies documented in this LWMS are based upon broad-scale assumptions and to some extent regional data. These assumptions are considered

adequate for development of this LWMS and are of an appropriate level of detail. However, verification of proposed subdivision drainage designs will be undertaken once the specific basin designs and extent of inclusion of finer scale WSUD elements are confirmed.

It is expected that future UWMP/SMPs will update surface runoff modelling as appropriate, and this may result in evolution of the spatial layout of the structure plan/future subdivisions or detailed civil design approach.

## 8.4 Implementation of water conservation strategies

The non-potable water needs from the Precincts are to be accommodated from the existing groundwater allocation and therefore, track water usage is a significant consideration. Notwithstanding licensed volumes available, there is minimal new open space areas proposed within the Precincts that would demand significant additional groundwater allocation, and it is therefore anticipated that non-potable water needs can be met by the existing licence held by Perth Racing.

A number of potential measures to conserve water have been presented within this LWMS. These water conservation strategies will be incorporated into design and the on-going maintenance of the Precinct A, B and C open spaces and where relevant. Landscape concept design measures that will be incorporated into the water conservation strategy will be further detailed within the future UWMP/SMPs produced for the development.

The manner in which the developer intends to promote water conservation measures discussed in this LWMS to future lot owners will also be discussed within the future UWMP/SMPs.

## 8.5 Non-structural water quality improvement measures

Guidance for the development and implementation of non-structural water quality improvement measures is provided within the *Stormwater Management Manual for Western Australia* (DWER 2022). Some measures will be more appropriately implemented by CoB for local roads, such as street sweeping, however many can be implemented relatively easily within the design and maintenance of the subdivision and the open space areas. It is expected that any privately managed development areas (e.g. Precinct A, Precinct B and Precinct C) will be managed by Perth Racing or another appropriate management body, and that the management of areas exposed to equine uses (Precinct C and the Racecourse) will continue to adopt contemporary best practice nutrient management.

Future UWMP/SMPs will provide an implementation plan/timing/responsibility for measures such as street sweeping, public education (through measures such as signage that may be implemented to raise awareness), etc.

## 8.6 Management and maintenance requirements

The management measures to be implemented to address surface water quality (such as the use of vegetation within WSUD assets) will require ongoing maintenance. It is therefore expected that the future UWMP/SMPs will detail management and maintenance procedures that will set out required maintenance actions (e.g. gross pollutant removal), timing (e.g. how often it will occur), locations (e.g. exactly where it will occur) and responsibilities (e.g. who will be responsible for carrying out the

actions). Given that approval from the CoB will be sought for the proposed measures, it is anticipated that consultation will be undertaken and referral to guiding policies and documents will be made.

## 8.7 Construction period management strategy

It is anticipated that the construction stage will require some management of various aspects (e.g. soil erosion, sedimentation of downstream water bodies, dust, surface runoff, noise, traffic etc.). The management measures undertaken for construction management will be addressed either in the future UWMP/SMPs or a separate Construction Management Plan (CMP).

# 9 Monitoring

## 9.1 Post-development monitoring

The post-development monitoring of water quality should be undertaken within groundwater immediately upstream and downstream of BRAs within Precinct A, Precinct C and Precinct E. It should also be undertaken at the outlet to or adjacent to the subsurface detention system in Precinct D. This should be undertaken via shallow groundwater bores installed immediately upstream and immediately downstream based on local groundwater flow direction, based on information available at the time (or in the case of Precinct D it could be at the outlet from the subsurface storage cells).

The monitoring should also consider and be generally consistent in the approach with the monitoring undertaken to comply with conditions of Groundwater Licence GWL 178519.

The WSUD measures (BRAs) should also be monitored to ensure their continued effectiveness. This should occur at the outlets from BRAs prior to their discharge to the Wetland Lake. It is noted that this may be difficult to achieve as it will require a rainfall event > 15 mm and to be timed to occur when overflow is occurring or alternatively auto samplers could be employed.

Monitoring of the outlet to the Swan River from the Wetland Lake is not proposed to be undertaken given the infrequent nature of overflow from the Lake to the River. Further, the Lake intersects shallow groundwater and any discharge from the pipes to the River is likely to be influenced by local groundwater quality.

### 9.1.1 Trigger values

The water quality targets from the *National Water Quality Management Strategy* (ANZECC and ARMCANZ 2000) and the trigger criteria are acknowledged as long term targets for the site, being 1.2 mg/L for TN and 0.065 mg/L for TP. However, it is also recognised that recent site monitoring undertaken (and reported in **Section 3**) shows repeated exceedances of the NWQMS default trigger criteria. Therefore, short term trigger values are proposed based on the approximate average nutrient concentrations measured in groundwater, and these are shown in **Table 5**.

*Table 5: Post-development trigger values*

| Analyte | pH | EC (uS/cm) | TN (mg/L) | TP (mg/L) |
|---|---|---|---|---|
| Value | 6-7.5 | 1800 | 3.0 | 0.15 |

Monitoring should be undertaken on a quarterly basis and should include:

- pH
- Conductivity
- Dissolved oxygen
- Temperature
- Nutrients (TN, TP)
- Nutrient Species (Ammonium, $NH_4$, Oxides of nitrogen, $NO_x$ ortho-phosphorous (ORP))

### 9.1.2 Condition monitoring

It is proposed that the overall condition of the Precincts will be monitored on a bi-annual basis. This monitoring will be implemented after the completion of the civil and landscaping works and will continue for a period of two years.

A visual assessment will be undertaken to monitor the overall condition of the Precincts, with the aim to ascertain that the maintenance activities are achieving the overall management objectives for the development. The parameters that will be monitored include:

- Gross pollutants
- Terrestrial weeds
- Irrigation
- Vegetation density
- Paths, benches, walkways and other infrastructure.

The management and maintenance objectives will be detailed within future UWMPs along with details of the corresponding monitoring program.

### 9.1.3 Contingency Action Plan

If the results from the initial monitoring occasion indicate that nutrient concentrations exceed the nominated (short term) trigger values, a number of contingency measures may be employed.

The first action that should be undertaken if groundwater trigger criteria are exceeded is to repeat the monitoring to remove the potential for sampling error. If the repeat monitoring still shows results which breach the trigger value, the next action will be to compare the upstream (incoming) nutrient concentrations with the outgoing (downstream) nutrient concentrations. If the downstream nutrient concentrations are >50% higher than the upstream nutrient concentrations, the following actions should be undertaken:

- Review open space nutrient application practices to identify source if possible.
- Conduct surveillance of Precincts and drainage infrastructure to determine any other potential and obvious nutrient inputs.
- Remove source if possible (i.e. fertiliser input, etc.).
- Remove sediment–bound nutrients by removing basin sediments.
- Manual removal of plant material from BRAs to facilitate further nutrient uptake.

If the downstream nutrient concentrations are found to be generally consistent with the upstream concentrations the next action will be to conduct a site – specific comparison of long-term background data presented in this LWMS. There is some amount of variability (temporally) in nutrient concentrations experienced across the site, and this is the reason for the proposed short and long term trigger values. The comparison of measured values to trigger values and historical monitoring data should then be used as a management tool to determine if the trigger values should be revised.

Following the implementation of the above contingency measures the groundwater quality will be re – sampled. If the results of the analysis still show water quality characteristics which breach the trigger values an additional set of upstream/downstream monitoring bores may be installed. The

additional bores would be sampled as per the ongoing sampling regime already being undertaken for the first two bores. If the additional locations demonstrate results consistent with the initial monitoring, an assessment will be undertaken as to whether the results are representative of a broader site management concern, and whether any additional contingency actions need to be implemented onsite.

## 9.2 Reporting

A post-development monitoring report will be prepared on conclusion of the two-year monitoring period and will be provided to CoB on request. This will be undertaken per Precinct once development within the Precinct has occurred. Interim results (spreadsheet) can be provided to either CoB, DWER or DBCA on request during the monitoring program.

# 10 Implementation

## 10.1 Roles and responsibility

The LWMS provides a framework that the proponent can utilise to assist in establishing stormwater management methods that have been based upon site-specific investigations, are consistent with relevant State and Local Government policies and have been endorsed by DWER, DBCA and CoB. The responsibility for working within the framework established within the LWMS rests initially with the proponent, although it is anticipated that a future UWMP/SMP will be developed in consideration of other relevant policies and documents. A summary of roles and responsibilities relevant to the current and future planning stages and ongoing management of the site is summarised in **Table 6**.

*Table 6: Roles and responsibilities for various planning stages*

| Stakeholder | Perth Racing | City of Belmont | Water Corporation | DWER | DBCA | WAPC |
|---|---|---|---|---|---|---|
| LWMS preparation | √ | | | | | |
| LWMS review and advice | | √ | √ | √ | √ | |
| LWMS approval | | | | √ | | √ |
| UWMP/SMP & civil design preparation | √ | | | | | |
| UWMP/SMP review and approval | | √ | | | | |
| Precinct implementation | √ | | | | | |
| Post development Precinct management | √ | | | | | |
| Public roads/open space ongoing management | √ | √ | | | | |

## 10.2 Funding

The proponent will fund all subdivision, civil and landscape works within the public realm (roads and open spaces) and within Precincts that are being privately managed (Precinct A, Precinct B and Precinct C). Development of individual lots will be the responsibility of the lot owner at the lot-scale development application stage.

## 10.3 Review

It is not anticipated that this LWMS will be reviewed unless the Ascot Racecourse Structure plan undergoes significant change post-lodgement of the LWMS. If the proposed layout of the

development is substantially modified, the surface runoff modelling undertaken for this LWMS may need to be reviewed and the criteria revised to ensure that all are still appropriate.

The next stage of water management for most of the Precincts is UWMP preparation to support subdivision (relevant to Precinct D) or SMP preparation to support Development Approval (relevant to all other precincts). The UWMP/SMP is largely an extension of the LWMS, as it should provide detail to the designs proposed within this LWMS and will demonstrate compliance with the criteria proposed in **Section 4**. Regardless of whether a UWMP or SMP is prepared, these should be prepared as per *Better Urban Water Management*.

The next stage of development following the UWMP is single lot development. It is recognised that certain elements of the LWMS and the UWMP will not be implemented until this late stage, and that there is little or no statutory control that can be applied to ensure the implementation of any remaining measures. While the remaining measures are unlikely to be enforced at this stage their implementation could be encouraged by the CoB through policy (or modification of these where necessary), building licence or awareness programs (such as the Water Corporation Waterwise program).

# 11 References

## 11.1 General references

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## 11.2 Online references

The online resources that have been utilised in the preparation of this report are referenced in **Section 11.1**, with access date information provided in **Table R1**.

*Table R1 Access dates for online references*

| Reference | Date accessed | Website or dataset name |
|---|---|---|
| (ABS 2013) | 19/4/2024 | ABS: Water Use and Conservation Data |
| (ABS 2014) | 19/4/2024 | ABS: Energy Use and Conservation Data |
| (DWER 2023a) | 12/04/2024 | Acid Sulfate Soil Risk Map |
| (BoM 2024) | 12/04/2024 | Climate Data |
| (Landgate 2023) | 31/01/2024 | Landgate Map Viewer Plus |
| (WAPC 2023a) | 11/12/2023 | Local Planning Scheme No. 15 Map |
| (DWER 2024a) | 12/04/2024 | Perth Groundwater Map |
| (DWER 2024b) | 12/04/2024 | Water Information Reporting |
| (DWER 2024c) | 12/04/2024 | Water Register |
| (DWER 2023c) | 26/04/2024 | FPM Floodplain Area (DWER-020) |

# Figures

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*Figure 2: Topographic and Groundwater Contours*

*Figure 3: Geological Mapping*

*Figure 4: Acid Sulfate Soil Mapping*

*Figure 5: Environmental Assets*

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*Figure 7D: Precinct E Stormwater Management Plan*




**Figure 1: Site Location**

| | |
|---|---|
| **Project:** | Local Water Management Plan<br>Golden Gateway Local Structure Plan |
| **Client:** | Perth Racing |

**Plan Number:**
**EP23-109(03)--F23**

| | |
|---|---|
| Drawn: | WJC |
| Date: | 26/04/2024 |
| Checked: | JM |
| Approved: | DPC |
| Date: | 17/05/2024 |

N

0 100 200 300
Metres
Scale: 1:8,000@A4
GDA2020 MGA Zone 50

emerge ASSOCIATES

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**Figure 2:** **Topographic and Groundwater Contours**

| | |
|---|---|
| **Project:** | Local Water Management Plan<br>Golden Gateway Local Structure Plan |
| **Client:** | Perth Racing |

**Plan Number:**
**EP23-109(03)--F24**
Drawn: WJC
Date: 26/04/2024
Checked: JM
Approved: DPC
Date: 17/05/2024

N

0 100 200 300
Metres
Scale: 1:8,000@A4
GDA2020 MGA Zone 50

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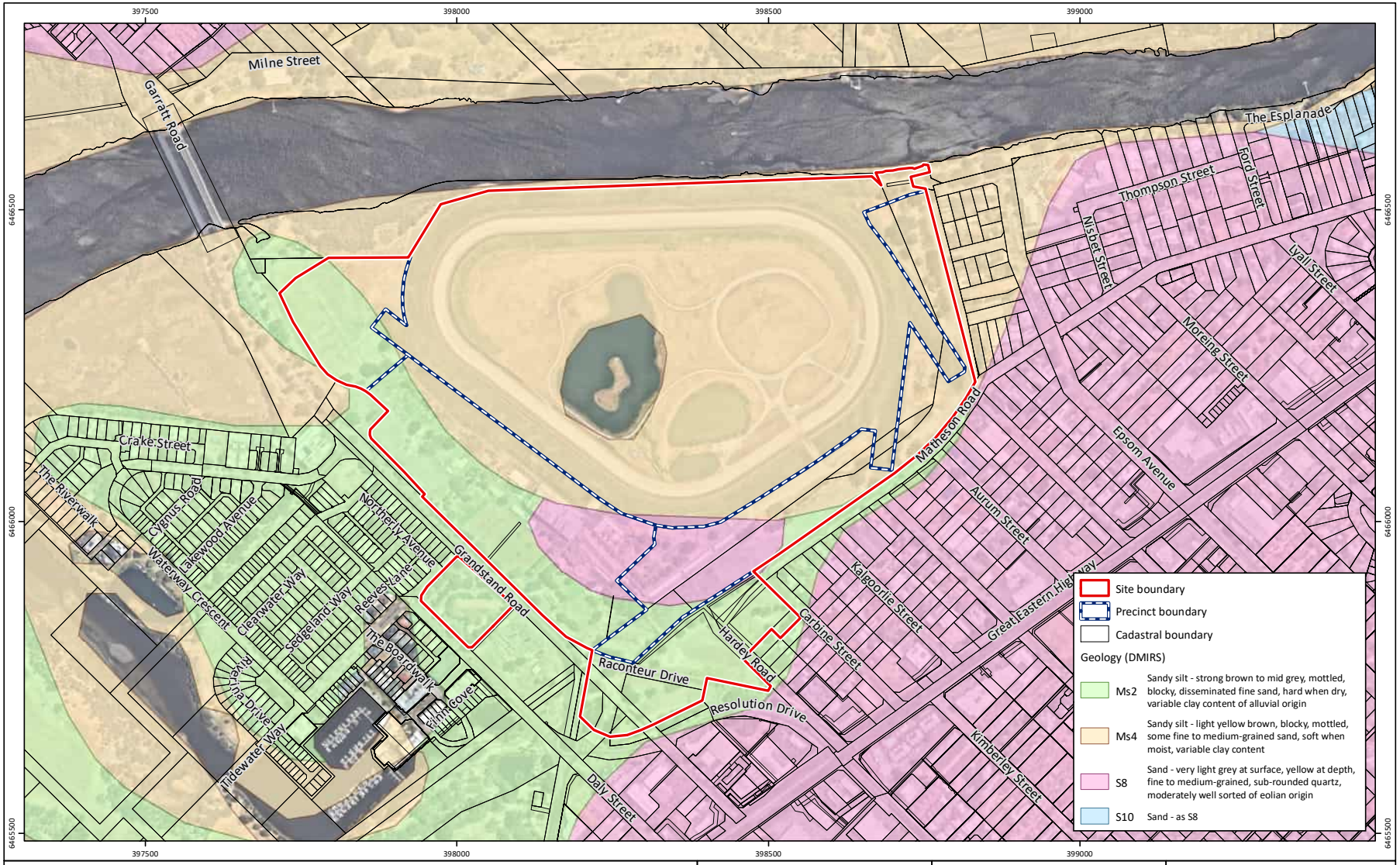



**Figure 3: Geological Mapping**

| | |
|---|---|
| **Project:** | Local Water Management Plan<br>Golden Gateway Local Structure Plan |
| **Client:** | Perth Racing |

**Plan Number:** EP23-109(03)--F25

| | |
|---|---|
| Drawn: | WJC |
| Date: | 26/04/2024 |
| Checked: | JM |
| Approved: | DPC |
| Date: | 17/05/2024 |

N

0 100 200 300
Metres
Scale: 1:8,000@A4
GDA2020 MGA Zone 50

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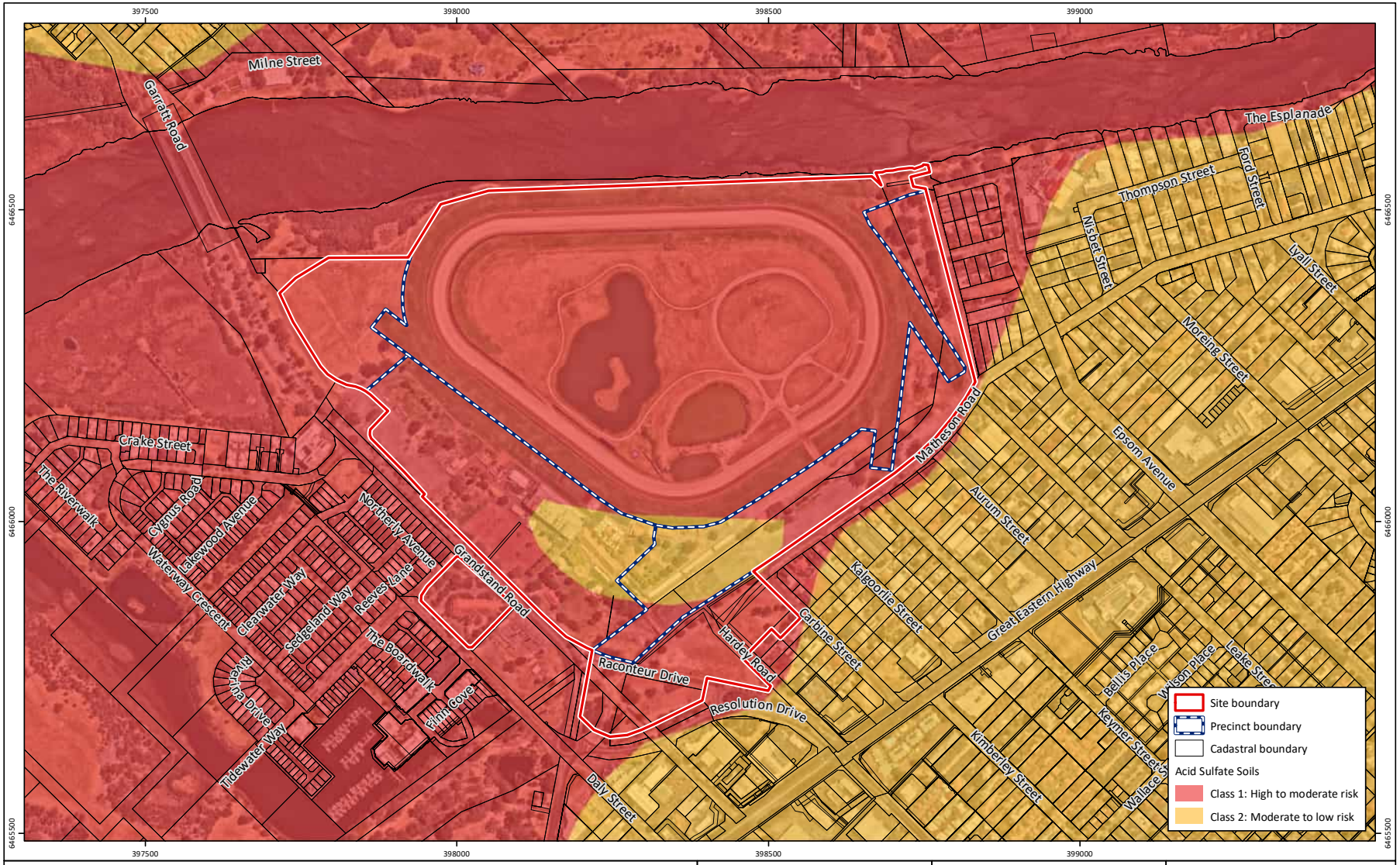



**Figure 4:** **Acid Sulfate Soil Mapping**

**Project:** Local Water Management Plan
Golden Gateway Local Structure Plan
**Client:** Perth Racing

**Plan Number:**
**EP23-109(03)--F26**
Drawn: WJC
Date: 26/04/2024
Checked: JM
Approved: DPC
Date: 17/05/2024

N

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Metres
Scale: 1:8,000@A4
GDA2020 MGA Zone 50

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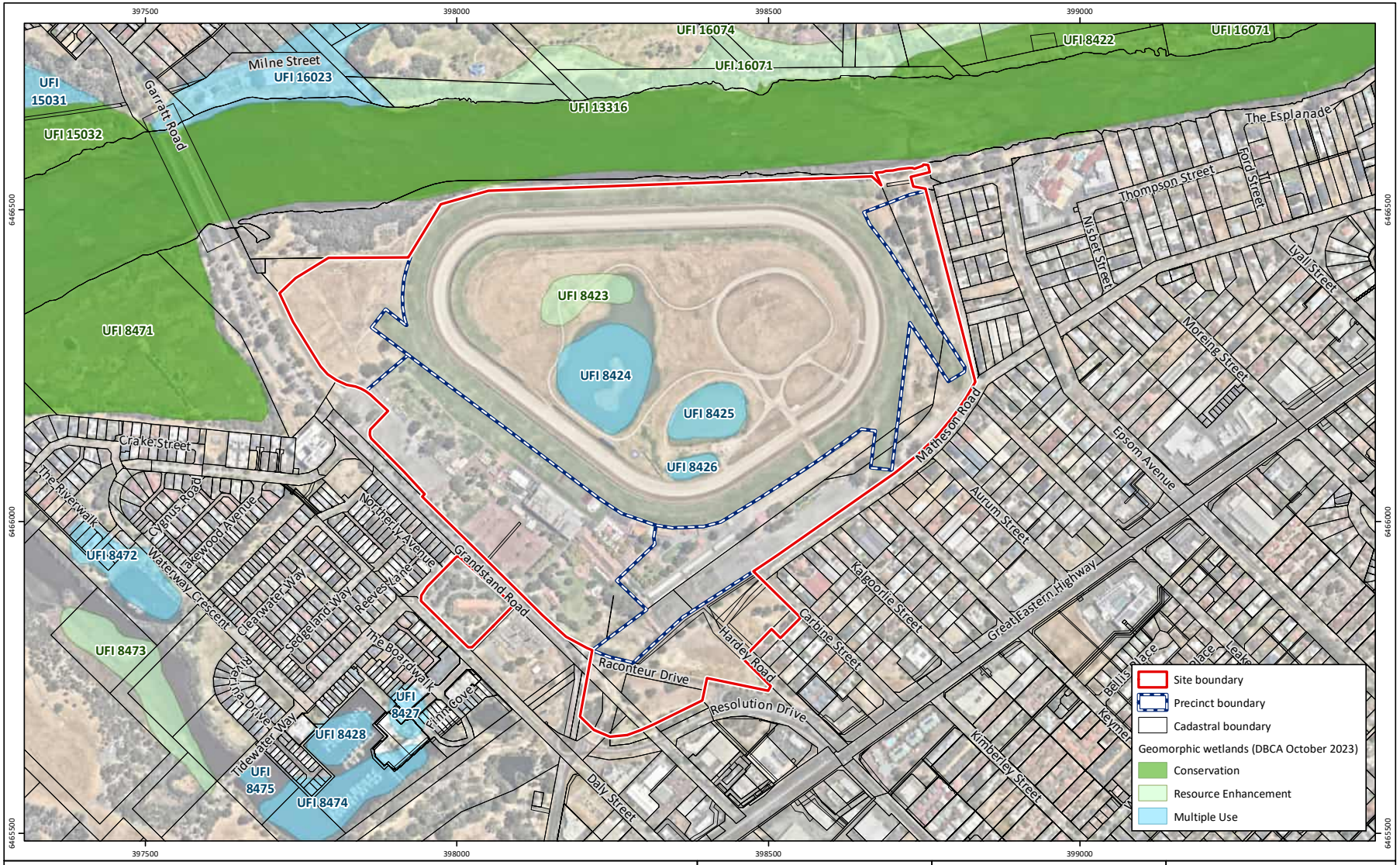



**Figure 5: Environmental Assets**

| | |
|---|---|
| **Project:** | Local Water Management Plan<br>Golden Gateway Local Structure Plan |
| **Client:** | Perth Racing |

**Plan Number:**
**EP23-109(03)--F27**
Drawn: WJC
Date: 26/04/2024
Checked: JM
Approved: DPC
Date: 17/05/2024

N

0 100 200 300
Metres
Scale: 1:8,000@A4
GDA2020 MGA Zone 50

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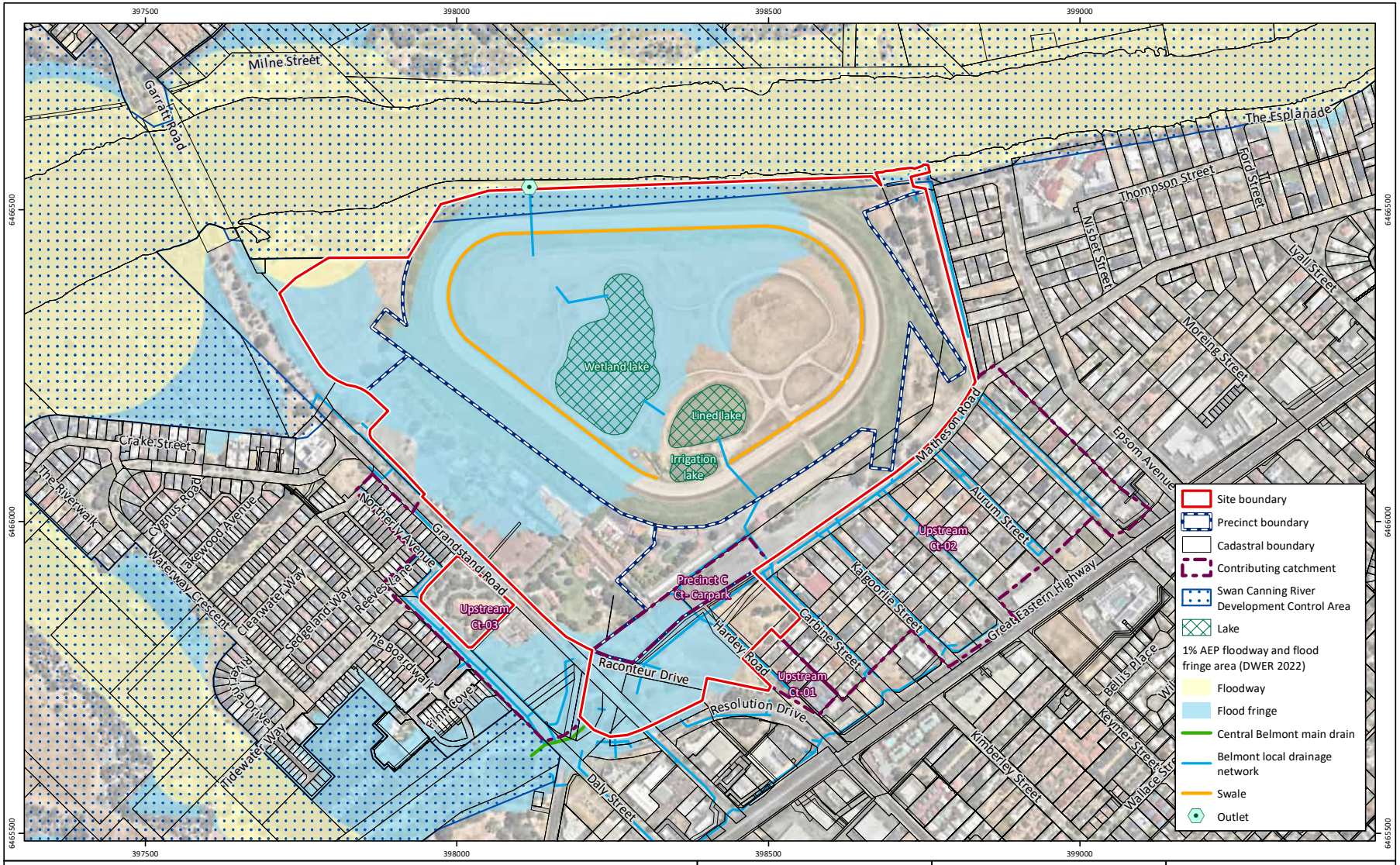



**Figure 6: Hydrological Features**

| | |
|---|---|
| **Project:** | Local Water Management Plan<br>Golden Gateway Local Structure Plan |
| **Client:** | Perth Racing |

**Plan Number:**
**EP23-109(03)--F28**

| | |
|---|---|
| Drawn: | WJC |
| Date: | 26/04/2024 |
| Checked: | JM |
| Approved: | DPC |
| Date: | 17/05/2024 |

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Metres
Scale: 1:8,000@A4
GDA2020 MGA Zone 50

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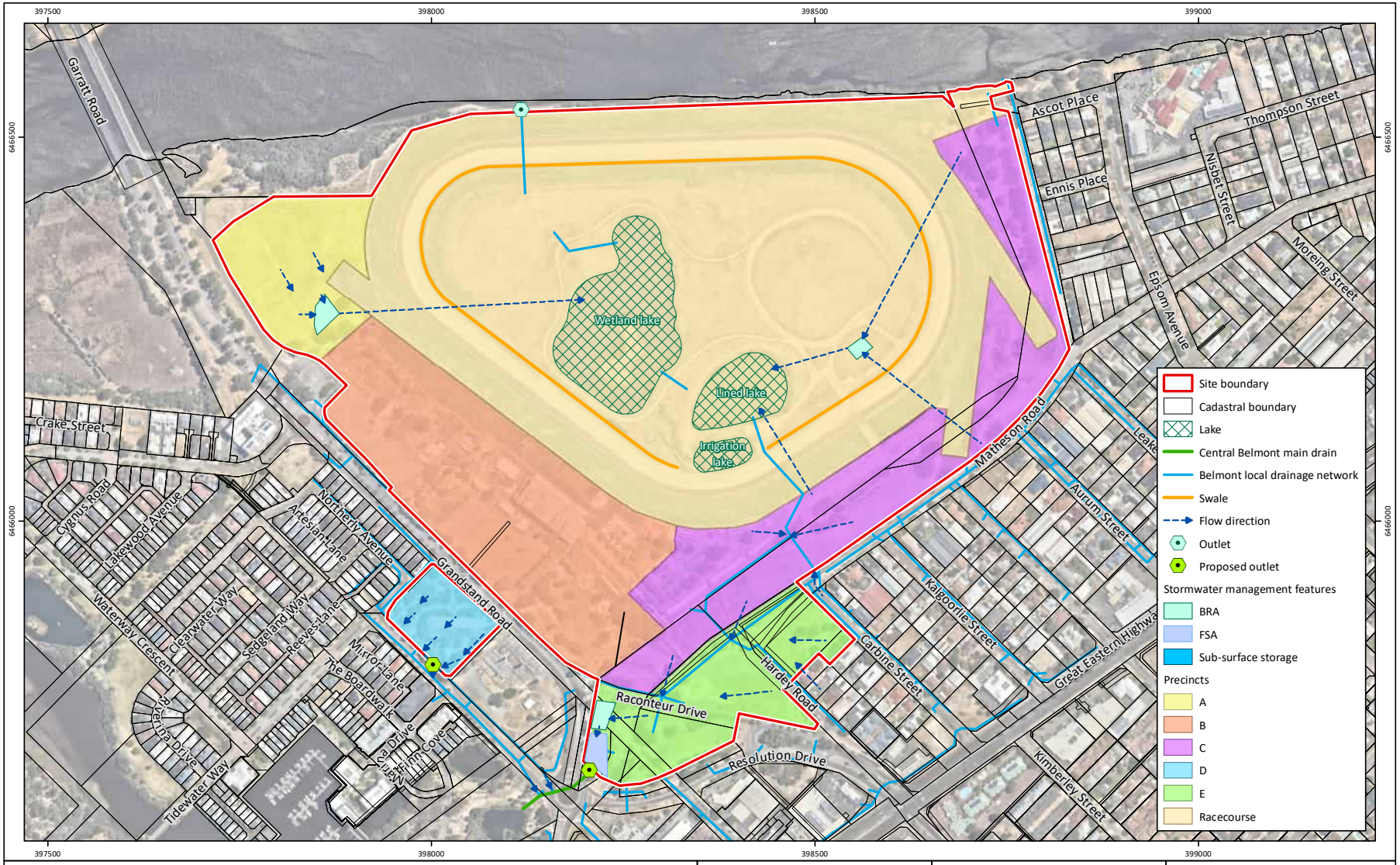



**Figure 7: Ascot LSP Precinct Plan**

| | |
|---|---|
| **Project:** | Local Water Management Plan<br>Golden Gateway Local Structure Plan |
| **Client:** | Perth Racing |

**Plan Number:** EP23-109(03)--F29

| | |
|---|---|
| Drawn: | WJC |
| Date: | 01/05/2024 |
| Checked: | JM |
| Approved: | DPC |
| Date: | 17/05/2024 |

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Metres
Scale: 1:6,500@A4
GDA2020 MGA Zone 50

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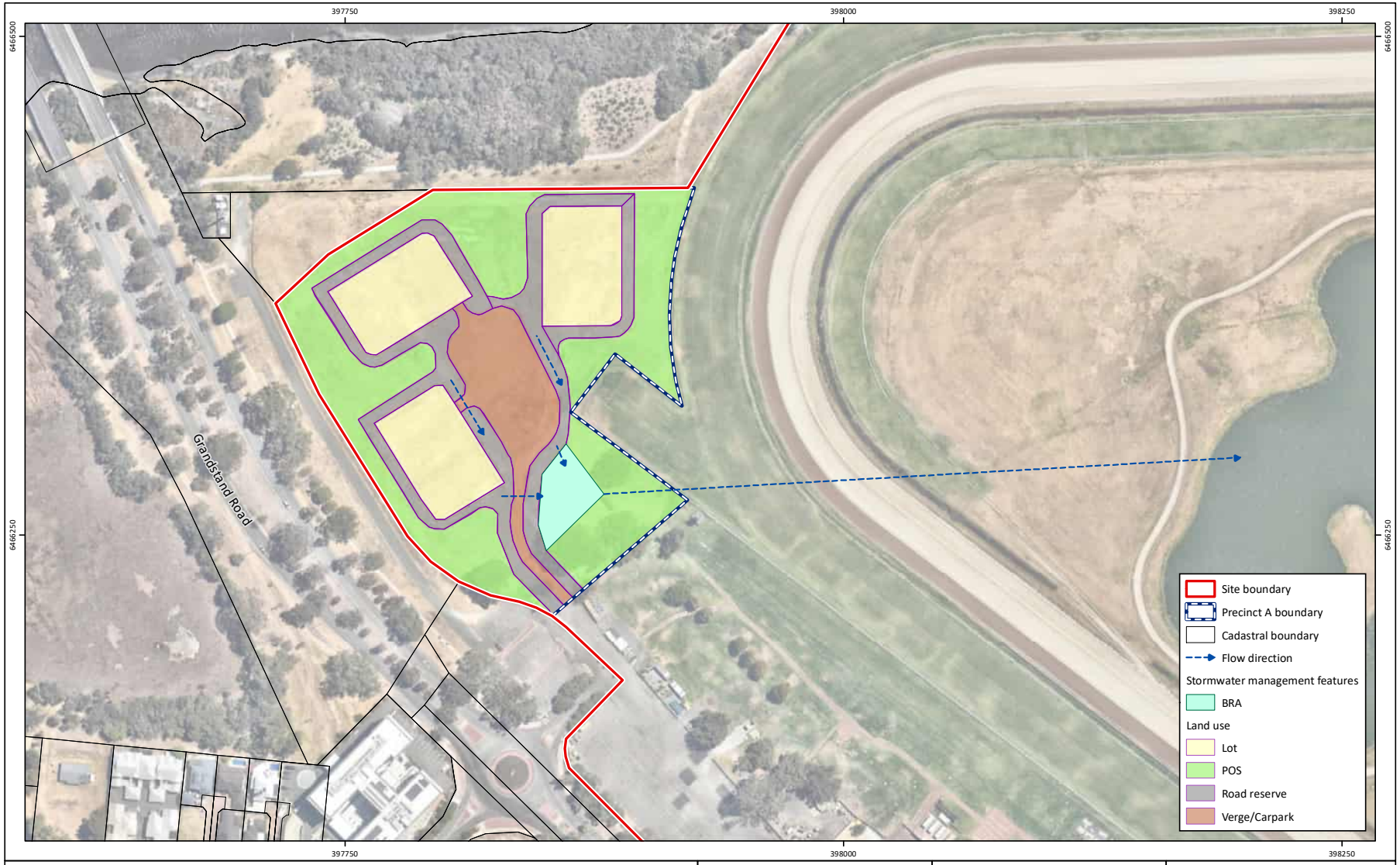



**Figure 7A: Precinct A Stormwater Management Plan**

| | |
|---|---|
| **Project:** | Local Water Management Plan<br>Golden Gateway Local Structure Plan |
| **Client:** | Perth Racing |

**Plan Number:**
**EP23-109(03)--F32**

| | |
|---|---|
| Drawn: | WJC |
| Date: | 01/05/2024 |
| Checked: | JM |
| Approved: | DPC |
| Date: | 17/05/2024 |

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Metres
Scale: 1:2,500@A4
GDA2020 MGA Zone 50

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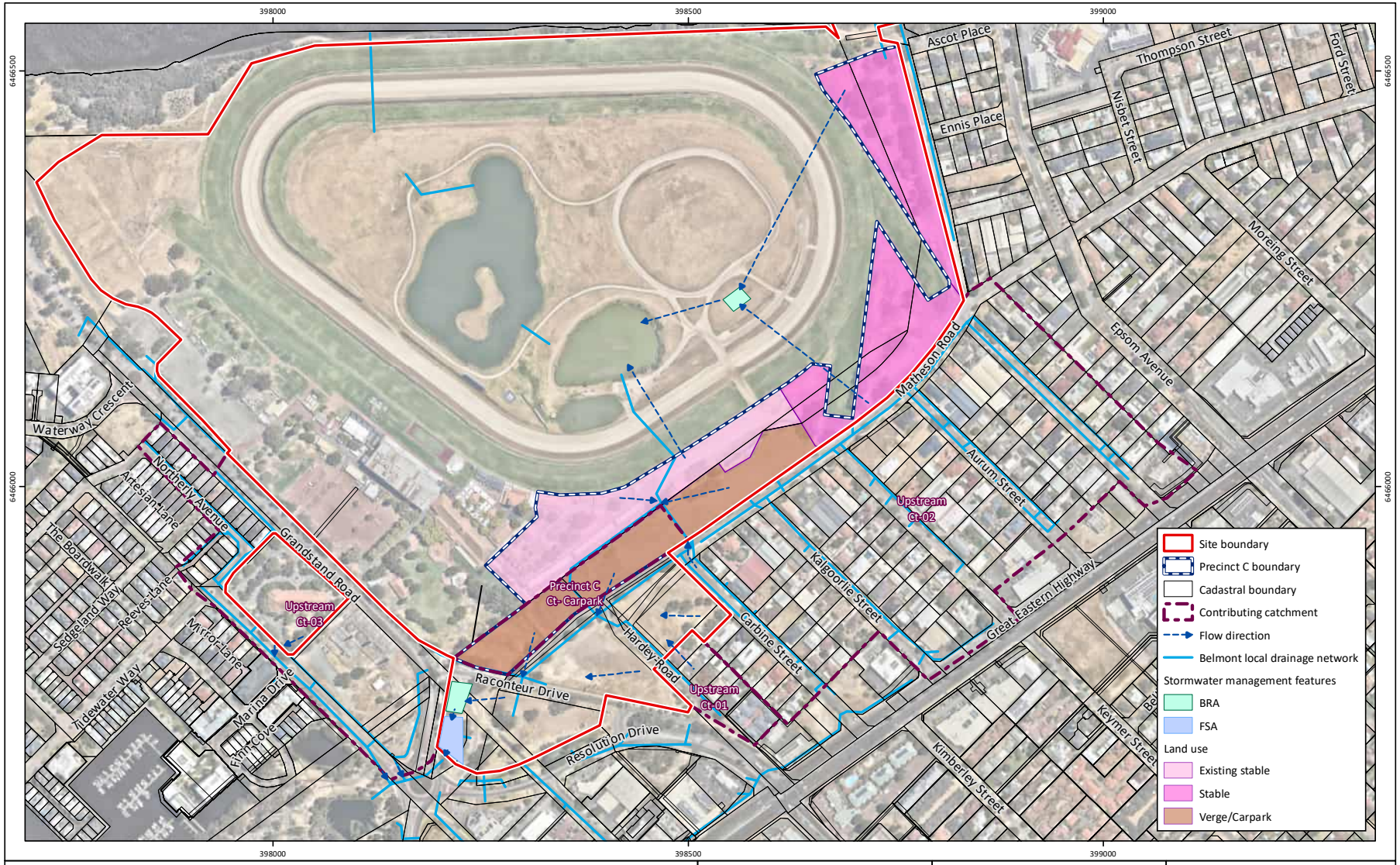



**Figure 7B: Precinct C Stormwater Management Plan**

**Project:** Local Water Management Plan
Golden Gateway Local Structure Plan
**Client:** Perth Racing

**Plan Number:**
**EP23-109(03)--F33**
Drawn: WJC
Date: 01/05/2024
Checked: JM
Approved: DPC
Date: 17/05/2024

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Metres
Scale: 1:6,000@A4
GDA2020 MGA Zone 50

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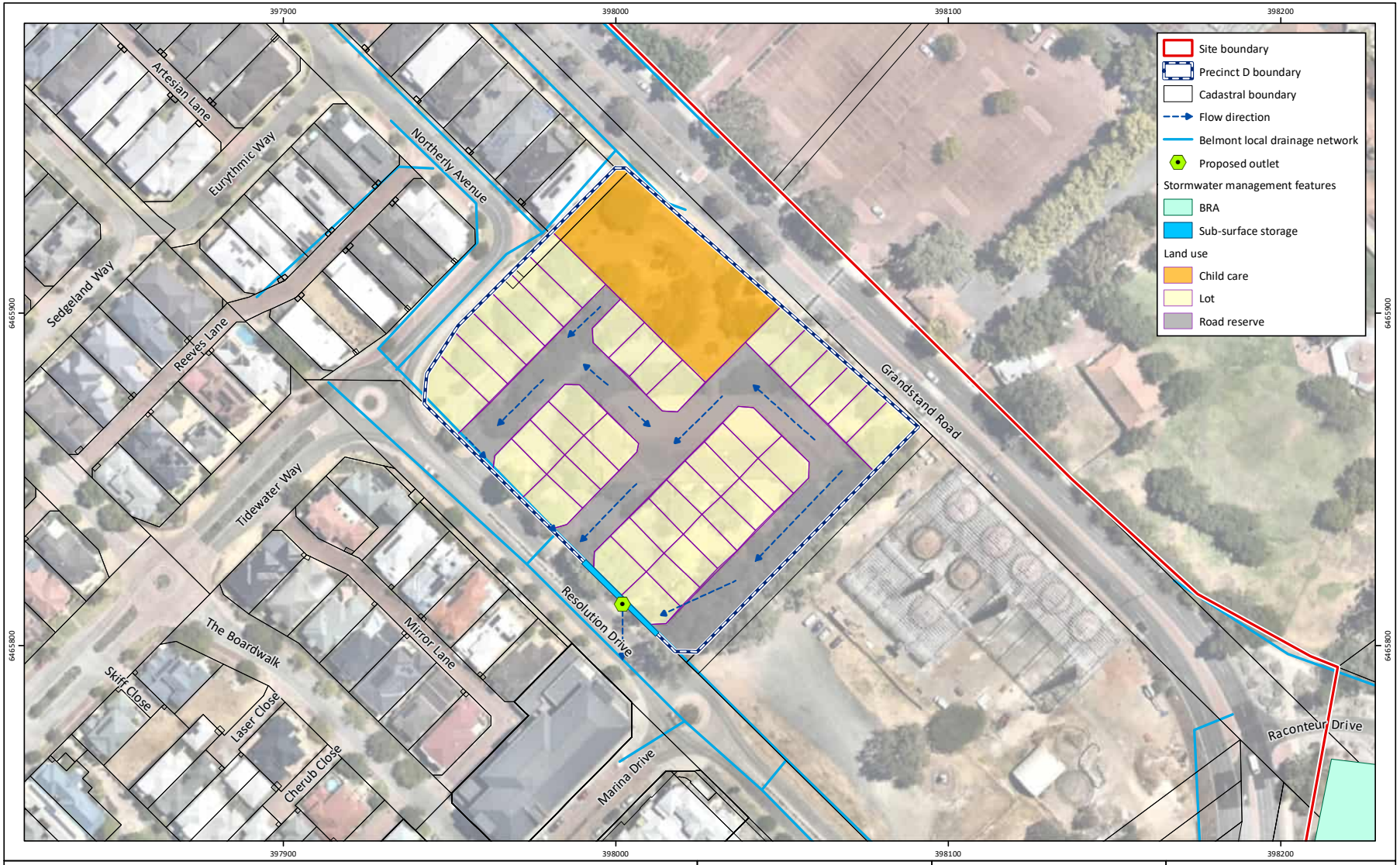



**Figure 7C: Precinct D Stormwater Management Plan**

| | |
|---|---|
| **Project:** | Local Water Management Plan<br>Golden Gateway Local Structure Plan |
| **Client:** | Perth Racing |

**Plan Number:**
**EP23-109(03)--F34**

| | |
|---|---|
| Drawn: | WJC |
| Date: | 01/05/2024 |
| Checked: | JM |
| Approved: | DPC |
| Date: | 17/05/2024 |

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Metres
Scale: 1:1,500@A4
GDA2020 MGA Zone 50

emerge ASSOCIATES

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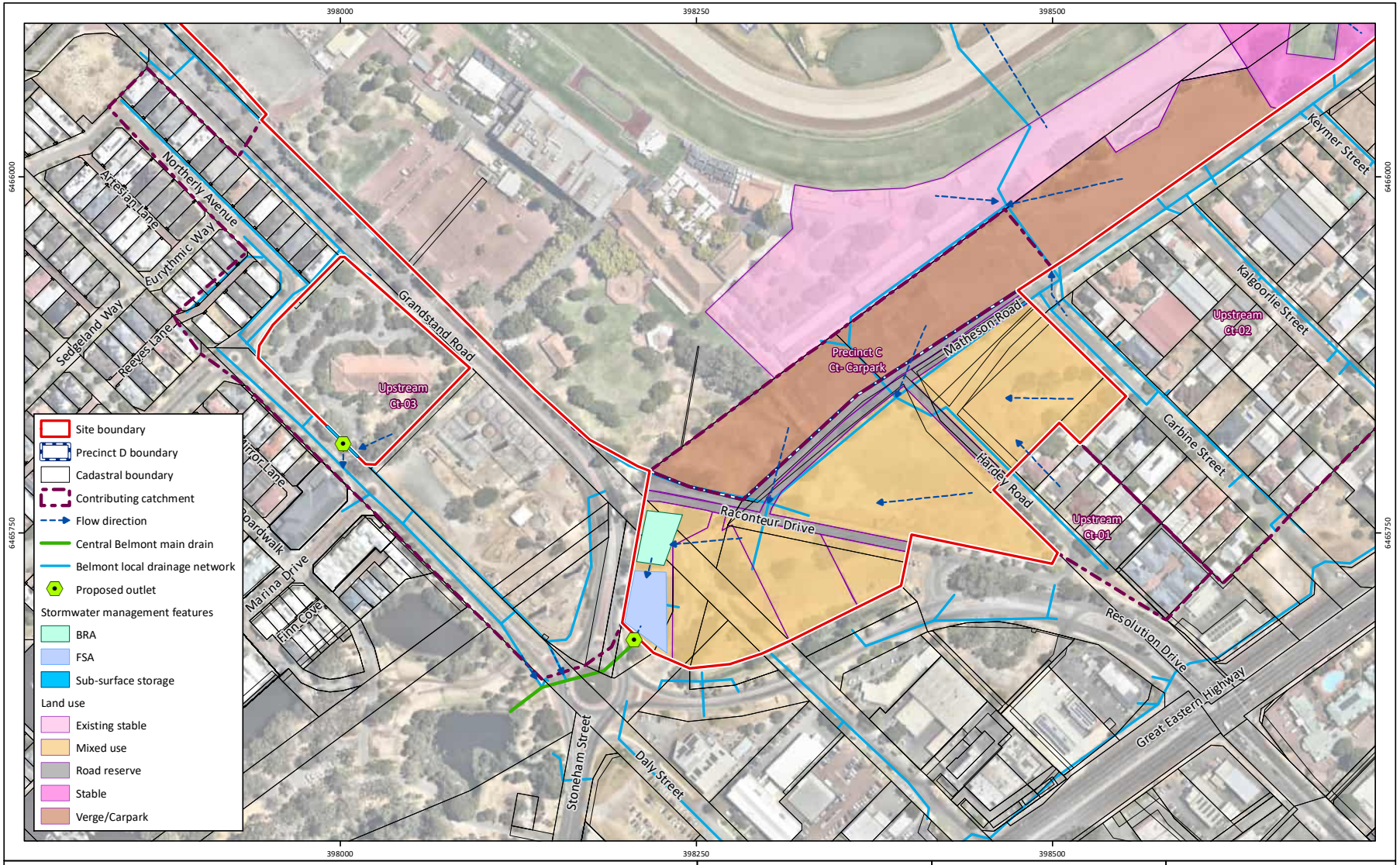



**Figure 7D: Precinct E Stormwater Management Plan**

| | |
|---|---|
| **Project:** | Local Water Management Plan<br>Golden Gateway Local Structure Plan |
| **Client:** | Perth Racing |

**Plan Number:**
**EP23-109(03)--F35**

| | |
|---|---|
| Drawn: | WJC |
| Date: | 01/05/2024 |
| Checked: | JM |
| Approved: | DPC |
| Date: | 17/05/2024 |

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GDA2020 MGA Zone 50

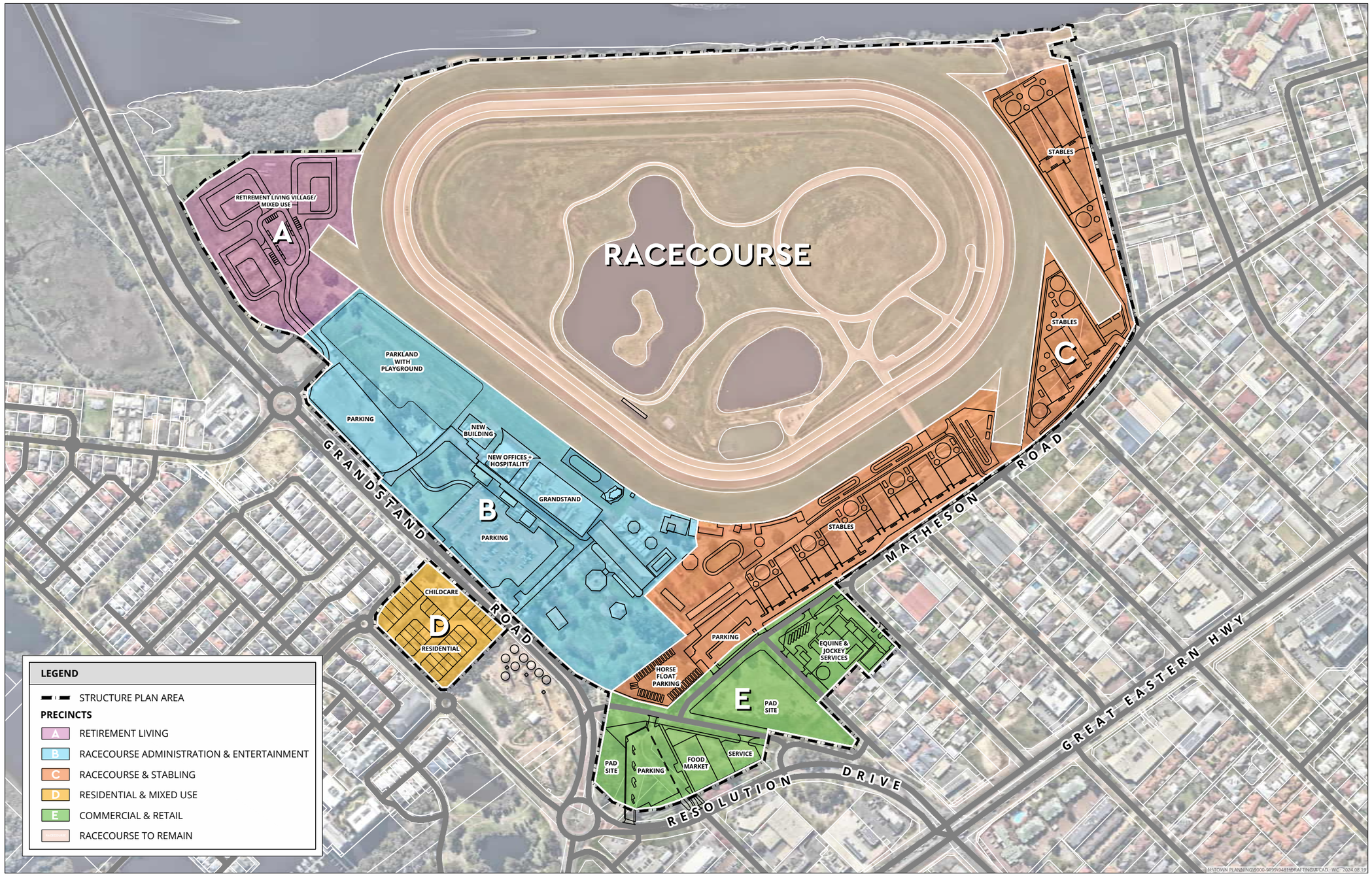
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# Appendix A

Concept plan

*ROWE Group Design (2023)*




# DRAFT MASTER PLAN CONCEPT

VARIOUS LOTS - ASCOT RACECOURSE
ASCOT

N

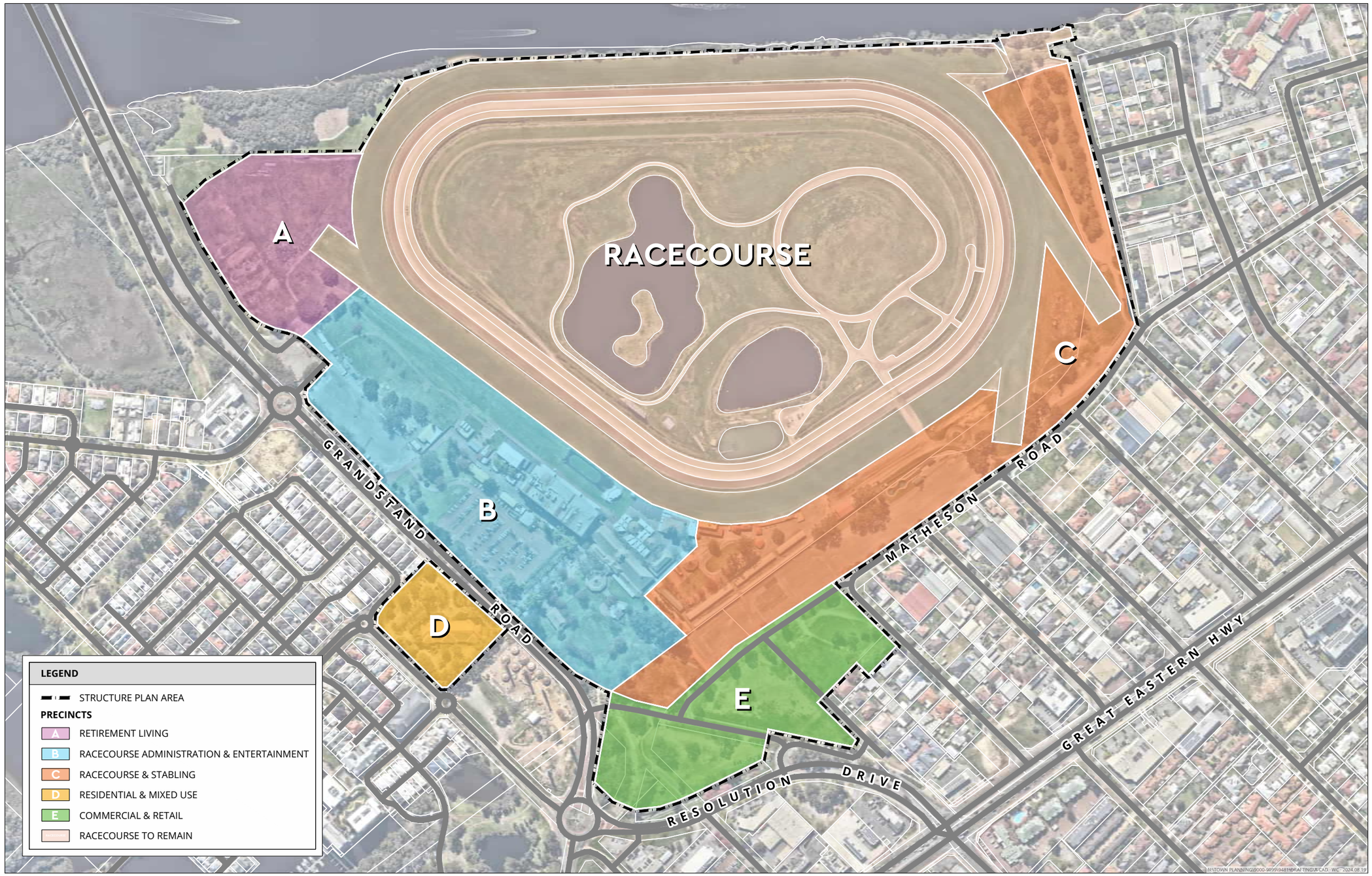
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**9481-CON-01-D**

DRAWN: WC
DATE CREATED: 2024.08.19
PROJECTION: MGA50 GDA94
CADASTRE: LANDGATE
AERIAL: NEARMAP 20230831

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ROWE GROUP DESIGN




## STRUCTURE PLAN PRECINCTS

VARIOUS LOTS - ASCOT RACECOURSE
ASCOT

N
0 100 m
SCALE @ A3: 1:4000
9481-FIG-02-C

DRAWN: WC
DATE CREATED: 2024.08.19
PROJECTION: MGA50 GDA94
CADASTRE: LANDGATE
AERIAL: NEARMAP 20230831

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ROWE GROUP DESIGN

# Appendix B

Geotechnical Reports

*Precinct A – Douglas Partners 2024*

*Precinct D – Galt 2024*

Douglas PARTNERS

GROUNDED EXPERTISE

# Report on Preliminary Geotechnical Investigation

**Proposed Residential Development**

**Part of Lot 9002 Grandstand Road, Ascot WA**

**Prepared for Perth Racing**

**Project 219164.03**

**25 January 2024**

Douglas Partners Pty Ltd
ABN 75 053 980 117
douglaspartners.com.au
**36 O'Malley Street, Osborne Park,** WA 6017
**(08) 9204 3511**

## Document History
## Details

| | |
|---|---|
| **Project No.** | 219164.03 |
| **Document Title** | Report on Preliminary Geotechnical Investigation |
| **Site Address** | Part of Lot 9002 Grandstand Road, Ascot WA |
| **Report Prepared For** | Perth Racing |
| **Filename** | 219164.03.R.001.Rev0 |

## Status and Review

| Status | Prepared by | Reviewed by | Date issued |
|---|---|---|---|
| Revision 0 | Venkat Vallurapalli/Brendan Divilly | Frederic Verheyde | 25 January 2024 |

## Distribution of Copies

| Status | Issued to |
|---|---|
| Revision 0 | Perth Racing |

The undersigned, on behalf of Douglas Partners Pty Ltd, confirm that this document and all attached drawings, logs and test results have been checked and reviewed for errors, omissions and inaccuracies.

| Signature | Date |
|---|---|
| **Author** | 25 January 2024 |
| **Reviewer** | 25 January 2024 |

FS604853

Douglas Partners acknowledges Australia's First Peoples as the Traditional Owners of the Land and Sea on which we operate. We pay our respects to Elders past and present and to all Aboriginal and Torres Strait Islander peoples across the many communities in which we live, visit and work. We recognise and respect their ongoing cultural and spiritual connection to Country.

Douglas PARTNERS | GROUNDED EXPERTISE

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   - 7.1 Site Suitability ..... 7
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**Appendix A:** About This Report

**Appendix B:** Test Location Plan

Test Pit and Borehole Logs

CPT Results

**Appendix C:** Geotechnical Laboratory Test Certificates

FS604853

Douglas Partners acknowledges Australia's First Peoples as the Traditional Owners of the Land and Sea on which we operate. We pay our respects to Elders past and present and to all Aboriginal and Torres Strait Islander peoples across the many communities in which we live, visit and work. We recognise and respect their ongoing cultural and spiritual connection to Country.

# Report on Preliminary Geotechnical Investigation
# Proposed Residential Development
# Part of Lot 9002 Grandstand Road, Ascot WA

## 1. Introduction

This report presents the results of a preliminary geotechnical investigation undertaken for a proposed residential development across Part of Lot 9002 Grandstand Road, Ascot WA. The investigation was commissioned by Mr. James Oldring of Perth Racing in a signed order to proceed dated 8 August 2023 and was undertaken in accordance with Douglas' proposal dated 8 May 2023.

It is understood that Perth Racing is evaluating the feasibility of developing the northwest portion of Lot 9002 for possible residential use (the 'site').

The objective of the investigation is to assess the subsurface soil and groundwater conditions at across the site to provide preliminary comments on:

- The geotechnical suitability of the site for the proposed development.
- Geotechnical opportunities and constraints relevant to the proposed development.
- Areas of foundation risk including the presence of aggressive soils and strategies to address identified risks.
- Site preparation, including the possible reuse of existing soil as controlled fill.
- Excavation conditions.
- The likely site classification in accordance with the requirements of AS 2870-2011.
- Appropriate earthquake design factor for the site, in accordance with AS 1170.4-2007.
- Suitable foundation systems, including preliminary design parameters.
- Preliminary design parameters for the design of retaining structures and batter slopes.
- Depth to groundwater at the time of the investigation.
- Recommendations on additional geotechnical investigation at detailed design phase or to address specific ground conditions encountered.

The investigation included eight cone penetration tests, 16 test pits and one borehole excavated and drilled as a part of detailed site investigation (for contamination), and laboratory testing of selected samples. The details of the field work are presented in this report, together with comments and recommendations on the items listed above.

The investigation was conducted concurrently with a detailed site investigation (for contamination), which has been reported under separate cover (219164.01.R.001.Rev0). The detailed site investigation (for contamination) report should be read in conjunction with this report.

## 2. Site Description

The site comprises an irregular shaped area, approximately 36.2 ha in size, that covers a part of Lot 9002 Grandstand Road, within the Ascot Racecourse.

At the time of the field work, the majority of the site was vacant and vegetated with short grass. A few mature trees, about 5 m to 10 m in height, occupied the southern part of the site. A parking lot and small loading area were located at the south-western corner of the site. Some fly-tipped rubbish, including fences and posts, were observed at several locations across the site.

According to publicly available LiDAR data (DEM derived to 5 m), the topography across Lot 9002 is relatively flat with existing surface levels ranging from approximately RL 2 m relative to the Australian Height Datum (AHD) in the western part of the site to RL 3.5 in the north-eastern corner of the site.

The Perth 1: 50 000 Environmental Geology sheet indicates that shallow sub surface conditions beneath the western two thirds of the site comprise sandy silt of the Guildford Formation, and beneath the north-eastern corner and eastern corner of the site comprise alluvium.

The Perth Groundwater Atlas (2004) indicates that in May 2003, the groundwater level beneath the site was less than RL 1 m, or between approximately 1.0 m and 2.5 m below the existing surface level. The Atlas also indicates that the groundwater flow direction beneath the site in May 2003 was approximately northwest towards the Swan River.

The published acid sulfate soil risk mapping indicates that the site is located within an area which is mapped as "*high to moderate risk of acid sulfate soils occurring within 3 m of natural soil surface*".

## 3. Field Work Methods

Field work for the investigation was carried out between 11 October and 9 November 2023 and comprised:

- The excavation of 16 test pits.
- The drilling of one borehole.
- Perth sand penetrometer (PSP) or Dynamic cone penetrometer (DCP) testing adjacent to each test pit or borehole location.
- The performance of cone penetration tests at 8 locations (CPT24 to CPT31A). A total of 14 CPTs were undertaken after repeating CPTs at some locations in attempt to achieve greater testing depth following shallow refusal in uncontrolled fill.

The test pits (locations 7 to 22) were excavated using a 5-tonne excavator, equipped with 450 mm toothed bucket, and the borehole (location 23) was drilled using a 250 mm diameter power auger attached to the same excavator. The ground conditions at each test pit and borehole were logged in accordance with Australian Standard (AS 1726, 2017) by a geo-environmental engineer from Douglas. Soil samples were recovered from selected locations for subsequent laboratory testing.

Dynamic cone penetrometer (DCP) and Perth sand penetrometer (PSP) tests were undertaken adjacent to the test pit and borehole locations in accordance with Australian Standards (AS 1289.6.3.3, 1997; AS 1289.6.3.2, 1997) to assess the in-situ density of the shallow soils.

The CPTs use a 36 mm diameter instrumented cone with a following 130 mm long friction sleeve attached to rods of the same diameter, pushed continuously at a rate of 20 mm/sec into the soil by hydraulic thrust from a truck rig. Strain gauges in the cone and sleeve measure resistance to penetration and friction along the sleeve during penetration. This data is recorded on a computer and analysed to assess the type, properties and condition of the materials penetrated. The CPT's were pushed to termination depths of up to 20.2 m. Upon withdrawing the CPT probe, each test hole was dipped in an attempt to measure groundwater levels. CPTs were repeated at several test locations to attempt achieving greater testing depth following shallow CPT refusal on inferred hard foreign inclusions in the uncontrolled fill.

Test locations were determined using a handheld GPS and site features and are marked on Drawing 1, Appendix B. Surface elevations were recorded using a differential GPS with a reported accuracy of 0.1 m.

## 4. Field Work Results

### 4.1 Ground Conditions

The logs of the ground conditions and results of the field testing are presented in Appendix B, together with notes defining descriptive terms and classification methods, in Appendix A.

- **Uncontrolled FILL**
    - **Granular FILL - SAND, Organic SAND, Gravelly SAND, Silty SAND and Sandy GRAVEL (SP, SP-SM, SM and GP-GM)** – generally sandy fill (or gravelly material associated with pavement layers at location 23), uncontrolled (apart from the pavement layers), from surface to depths of between 0.6 m and 3.6 m depth, encountered at all locations. A layer of organic sandy fill layer was observed between 1.4 m and 1.8 m depth at location TP8. The sandy fill was generally loose to medium.
    - **Cohesive FILL - Clayey SAND, Sandy CLAY, CLAY (SM, SC, CI and CL-CI)** – generally stiff to very stiff, either underlying the aforementioned sandy fill material or interbedded within layers of sandy fill, encountered at test pit locations 9, 20, 21, 23, and CPT locations 24, 24A, 29 and 29A.

  A considerable amount of foreign inclusions such as fragments of brick, glass, timber, geo-fabric, concrete, plastic, rubber, scrap metal, terracotta pipes, redundant cables and PACMs were observed at all test pit locations, except location 22. A layer of asphalt was encountered at 0.95 m depth at TP9. The fill materials across the site are uncontrolled.

  It is noted that the fill extended below groundwater level at many locations.

Overlying natural soils including:

- **Clayey soils including Clayey SAND and CLAY** – ranging between very soft to soft and stiff to very stiff, encountered under the fill materials at CPTs 25, 30 and 31A to depths between 4.2 m and 14.9 m.
- **Sandy soils including SAND and Silty SAND** – underlying and interbedded within the above clayey soils at CPTs 25, 30 and 31A. The sand was generally very loose and loose to medium dense to depths between 10.5 m and 14.9 m, becoming medium dense and dense below.

## 4.2 Groundwater

Groundwater level observations between 18 September and 9 November 2023 are summarised in Table 1 and are shown on the logs in Appendix B.

The test holes were immediately backfilled following sampling, which precluded longer-term monitoring of groundwater levels. Six monitoring wells (MW01 to MW06) were installed as part of the preliminary environmental investigation (reported separately) and groundwater observations available from these wells at the time of report writing have been included in Table 1.

**Table 1: Summary of Groundwater Levels**

| Location | Date of Measurement | Ground Surface Level [1] (m AHD) | Groundwater Depth (m) | Groundwater Level [2] (RL m AHD) |
|---|---|---|---|---|
| MW01 | 18 September 2023 | 1.9 | 1.30 | 0.6 |
| MW02 | | 2.0 | 1.46 | 0.5 |
| MW03 | | 3.2 | 2.37 | 0.8 |
| MW04 | | 2.4 | 1.59 | 0.8 |
| MW05 | | 2.5 | 1.21 | 1.3 |
| MW06 | | 2.2 | 1.09 | 1.1 |
| TP7 | 9 November 2023 | 2.9 | 2.30 | 0.6 |
| TP9 | | 2.1 | 2.10 | 0.0 |
| TP12 | | 2.1 | 2.10 | 0.0 |
| TP13 | | 2.8 | 2.50 | 0.3 |
| TP15 | | 2.2 | 2.40 | -0.2 |
| TP16 | | 2.6 | 2.50 | -0.1 |
| TP17 | | 2.2 | 2.10 | 0.1 |
| TP19 | | 2.2 | 1.80 | 0..4 |
| TP20 | | 2.0 | 2.10 | -0.1 |
| TP21 | | 2.1 | 1.80 | 0.3 |
| TP22 | | 2.3 | 1.80 | 0.5 |
| BH23 | | 2.4 | 1.70 | 0.7 |
| CPT25 | 11 October 2023 | 3.4 | 3.00 | 0.4 |
| CPT28 | | 1.9 | 1.30 | 0.6 |
| CPT29A | | 2.3 | 2.20 | 0.1 |
| CPT30 | | 3.2 | 2.80 | 0.4 |
| CPT31A | | 2.1 | 2.00 | 0.1 |

Notes for Table 1: [1]: Surface level measured using a differential GPS.
[2]: Groundwater Level = Surface Level – Groundwater Depth.

It should be noted that groundwater levels are affected by climatic conditions and land usage and will therefore vary with time. In addition, owing to the proximity of the Swan River, the groundwater levels are expected to be impacted by the tidal river conditions and river flood levels.

## 5. Laboratory Testing

A geotechnical laboratory testing programme was carried out by a NATA accredited laboratory and comprised:

- the particle size distributions on seven samples;
- the Atterberg Limits and linear shrinkage on three samples; and
- the organic content on four samples.

Results of the laboratory testing are summarised in Tables 2. The test certificates are presented in Appendix C.

**Table 2: Results of Laboratory Testing for Soil Identification**

| Location | Depth (m) | Fines (%) | Sand (%) | Gravel (%) | LL (%) | PL (%) | PI (%) | LS (%) | OC (%) | Material |
|---|---|---|---|---|---|---|---|---|---|---|
| TP8 | 1.5 | 9 | 61 | 30 | - | - | - | - | 6.8 | FILL / Organic SAND SP-SM, with gravel and silt |
| TP13 | 1.5 | 4 | 95 | 1 | - | - | - | - | 1.6 | FILL / SAND SP, trace gravel and silt |
| TP19 | 2.5 | 5 | 83 | 12 | - | - | - | - | 1.5 | FILL / SAND SP, trace gravel and silt |
| TP21 | 2.0 | 40 | 51 | 9 | 37 | 24 | 13 | 8.5 | - | Sandy CLAY CI, medium plasticity, trace gravel |
| TP22 | 2.0 | 7 | 93 | 0 | NO | NP | NP | - | - | SAND SP-SM, with silt |
| TP23 | 2.0 | 45 | 48 | 7 | 44 | 22 | 22 | 9.5 | - | FILL / Sandy CLAY CI, medium plasticity, trace gravel |
| TP23 | 2.5 | 12 | 87 | 1 | - | - | - | - | 1.2 | FILL / SAND SP-SM, with silt, trace gravel |

Notes: Fines = Finer than 75 µm.
Sand = Between 2.36 mm and 75 µm.
Gravel = Larger than 2.36 mm.
LL – liquid limit PL – plastic limit PI – plasticity index LS – linear shrinkage
OC – organic content NO – not obtainable NP – non plastic

## 6. Proposed Development

At the time of preparing this report, the details for the proposed development were not yet available. Notwithstanding, it is understood that the proposed development is likely to be residential and, given the location, is presumed would likely be multistorey and possibly include a basement level.

## 7. Comments

### 7.1 Site Suitability

The investigation indicates that the site is generally underlain by uncontrolled fill overlying very soft to stiff clayey materials and very loose sandy soils becoming medium dense and dense with depth as described in Section 4.1 above.

From a geotechnical standpoint, there are several significant geotechnical constraints that will adversely impact on any development of the site including;

- Deep uncontrolled fill, unsuitable to support shallow foundations, and will impact on construction activities associated with deep piled foundations.
- Deep very soft and very loose natural soils under the uncontrolled fill, unsuitable to support shallow foundations.
- Shallow groundwater which will make earthworks across the site any possible remediation works of the above difficult. It should be noted that the abovementioned uncontrolled fill and soft soils both extend below groundwater.

Owing to the significant geotechnical constraints, any possible development will likely require a piled foundation solution into the medium dense and dense sandy soils, encountered below depths of approximately 10 m to 15 m. Additional geotechnical investigation will be required to confirm the foundation design and suitable pile design parameters. Also, noting that any proposed additional loading of the ground (for instance from the placement of fill to raise site levels, if proposed) would generate further consolidation of the soft soils underlying the site and cold result in some possible significant ground settlement. Therefore, surcharging areas (by placing temporary fill prior to construction of any structure) outside the proposed building envelopes might also be required during the site preparation to manage the risk of differential settlements between proposed buildings and adjacent ground, following their construction.

### 7.2 Site Classification

The shallow ground conditions beneath the site comprise uncontrolled fill materials and deep loose and soft soil deposits. Based on the results of the investigation and in accordance with Australian Standard (AS 2870, 2011), a site classification of 'Class P' applies to the site, owing to the presence of the uncontrolled fill and deep loose and soft soil.

### 7.3 Site Seismic Classification

Owing to the uncontrolled fill and deep very loose and very soft soil deposits across the site, an earthquake design soil sub-class of Ee is considered appropriate for this site in accordance with Australian Standard (AS 1170.4, 2007). The Hazard Factor (Z) for the site is 0.09, according to Australian Standard (AS 1170.4, 2007). Due to the deep loose soil below the water table, the site also has a significant potential for liquefaction. An assessment on the liquefaction potential of the site should be considered during any detailed investigation, when more details can be collected on the extent of deep loose soils.

### 7.4 Excavation Conditions

The encountered ground conditions generally comprise uncontrolled fill, with some large foreign inclusions within the fill, extending below groundwater. Conventional earthmoving equipment (such as large excavators, say at least 20 t) should be generally suitable for shallow excavations in the surficial uncontrolled fill. Shallow groundwater is likely to impact excavations across the site.

The majority of the uncontrolled fill encountered during this preliminary investigation is considered to be geotechnically unsuitable for re-use as structural fill in its current condition. Any further consideration to reuse the uncontrolled fill would require some specific geotechnical provisions, such as screening and disposing its unsuitable components. Separating the re-useable granular components (e.g. the sandy fill) from its cohesive components (e.g. clayey fill) might also prove to be practically difficult. Owing to the significant variability of uncontrolled fill materials across the site, any re-use potential from a geotechnical standpoint should be confirmed on-site by a geotechnical engineer. Some environmental considerations (i.e. contamination) are also anticipated to be required. Overall, at this stage of the study, the reuse of the encountered uncontrolled fill should be considered to be associated with some significant constraints that might preclude such reuse.

### 7.5 Slope Stability

During construction, it is recommended that temporary batter slopes across the site are maintained flatter than 2:1 (H:V) if not retained. This batter angle is valid provided no surcharge loads (including live loads such as vehicles and machinery) apply at the top of the slope. In uncontrolled fill materials, a safe batter angler not steeper than 3:1 (H:V) is recommended for design for slopes not greater than 3 m in height, however, owing to variability of the uncontrolled fill materials, this value should be adjusted during construction based on the encountered conditions.

The design of unpropped flexible or rigid walls should be undertaken using a triangular pressure distribution and the earth pressure parameters given in Table 4. In addition to the soil pressure, wall design should also allow for external loads such as buildings, live loads and hydrostatic pressure. Owing to the likely significant settlements associated with the uncontrolled fill and deep soft soils, the requirement to adopt a piles foundation system to support proposed retaining walls is anticipated.

**Table 4: Preliminary Soil Parameters for Earth Retaining Design**

| Soil Type and Density | Soil Unit Weight Above Water<br>$\gamma$<br>(kN/m$^3$) | Submerged Soil Unit Weight<br>$\gamma'$<br>(kN/m$^3$) | Drained Angle of Friction<br>$\Phi'$<br>(°) | Undrained Shear Strength<br>Cu<br>(kPa) | Coefficient of Earth Pressure – Active<br>$K_a$ | Coefficient of Earth Pressure – Passive<br>$K_p$ | Coefficient of Earth Pressure – at Rest<br>$K_o$ |
|---|---|---|---|---|---|---|---|
| Uncontrolled Fill Materials | 16 | 6 | 28 | - | 0.36 | 2.7 | 0.5 |

It should be noted that the passive earth pressure coefficient (second last column of Table 4) is an ultimate value and does not incorporate a factor of safety. Because the stress-strain relationship curve for lateral loading is not linear, relatively large strains are required to mobilise full passive pressure, but only relatively small strains are required to mobilise half the passive pressure, therefore it would be prudent to incorporate a factor of safety of at least 2 for uncontrolled fill materials, to derive design values from the ultimate values.

## 7.6 Foundation Options

Shallow footings are not considered suitable across this site, owing to the significant thickness of uncontrolled fill and deep loose and soft soils.

### 7.6.1 Piles

It is anticipated that a piled foundation system, with deep bored piles that penetrate the deep loose and soft soils into the medium dense and dense sandy soils at depth, would likely be required for any foundations on-site.

Bored piles will require temporary or permanent casing throughout the uncontrolled fill materials, noting that possible obstructions within the uncontrolled might cause some difficulties when driving the casing or drilling the pile hole. This pile type will involve soil excavation to target founding level and hence would produce spoil that needs to be handled and disposed of in a suitable manner, which will need to also be considered from an environmental standpoint.

Installation through the uncontrolled fill materials could be affected by the possible presence of large, hard inclusions and the design of the pile installation methodology should take this possibility into consideration.

The settlement of the uncontrolled fill will exert negative skin friction on the piles, which the piles will need to be designed to accommodate or be constructed in sleeves.

Additional deep geotechnical boreholes will be required across the site to inform on the pile design.

### 7.6.1 Controlled Modulus Columns

Controlled modulus columns could be installed as an alternative to conventional pile foundations, allowing shallow footings to be used whilst controlling settlements to acceptable limits.

Installation of controlled modulus columns involves displacing a column of material using a reverse flight auger, densifying the soil around the auger, and backfilling the resulting hole with cement ground under moderate pressure to create a 'hard' inclusion in the ground. The columns are typically 250 mm to 500 mm in diameter. Column spacings of columns typically 1.8 m to 2.5 m but would need input from a specialist ground improvement contractor. Columns can be installed to depths of up to 50 m, so could penetrate to the base of the uncontrolled fill and deep loose and soft soils. However, if large hard inclusions such as concrete slabs or beams, are encountered then the auger may experience refusal, as the CPTs did at several locations during the preliminary geotechnical investigation.

A load transfer platform, such as a granular, well compacted fill layer, possibly reinforced with geogrid or geotextile, would be needed to transfer loads from shallow foundations to the columns.

One main benefit of this ground improvement option (compared to piling) would be to minimise differential settlement across the site and notably between buildings and surrounding grounds. However, it would likely be limited to low level development (say 2 to 3 level buildings), and this option is anticipated to likely be prohibitively expensive, with likely significant mobilisation and installation costs. The advice of a specialist ground improvement contractor, such as Menard Oceania, is suggested to be sought to further assess the suitability of this ground improvement to the proposed development.

### 7.7 Pavement Construction

The uncontrolled fill across the site does not form a suitable subgrade material for pavement in its current condition. Depending on the expected loading of proposed pavement, the requirement for some over-excavation of uncontrolled fill is likely. Construction should involve the use of a geo-composite layer (such as Global Synthetics' Combigrid) across the base of the over-excavation, overlain by a 500 mm thick layer of compacted crushed limestone, placement of a layer of geogrid (such as Global Synthetics' Secugrid), and a further 500 mm of compacted sand fill. The base of the constructed floating pavement footprint should be at least 2 m wider on each side than the total pavement width (4 m wider in total) to account for a suitable batter and transfer of load. Standard flexible pavements could then be constructed on the 1 m thick raft of stiffened subgrade. Placement of the initial base layer of composite geogrid may be difficult across areas of exposed uncontrolled fill. As such, depending on the site conditions, a 300 mm thick capping layer of clean fill may be required.

Regardless of the above site preparation, some settlement of the pavement should be expected over its service life and should be considered in the selection of the pavement surfacing. The use of pavers should be considered as such surfacing treatment would deform without cracking. Alternatively, a bituminous seal should be preferred over say an asphalt, owing to greater flexibility and to decrease maintenance and repair requirements, noting however that seals are less resistant than asphalt to shearing forces from tyres of turning heavy vehicles. The use a specialised asphalt, such as a stone mastic asphalt, could also be considered, noting it would be less resistant to the risk of cracking than a seal. Some allowance for regular maintenance and repairs should be allowed during the serviceability of the pavement.

### 7.8 Stormwater Drainage

Owing to the occurrence of low permeability soils and groundwater at shallow depth, the site is considered unsuitable for on-site stormwater disposal. It is suggested that stormwater is controlled using positive drainage or a subsoil drainage network, connected to a suitable outflow.

### 7.9 Additional Geotechnical Investigation

Additional geotechnical investigation across the site, by way of deep geotechnical boreholes (as a minimum), further CPT and additional laboratory testing, should be undertaken to help refine the ground model, provide pile design parameters, confirm suitable bearing strata for piles, and assess the soil aggressivity and exposure classification for piles. It is recommended that the detailed investigation programme be developed once some details of the proposed development

are known, if possible, in order to target specific geotechnical issues associated with the development.

The investigation covered in this report should be considered preliminary and as noted in selected sections of the report, additional detailed geotechnical testing at a greater testing frequency is anticipated once the project design has progressed.

## 8. References

AS 1170.4. (2007). *Structural Design Actions, Part 4: Earthquake Actions in Australia.* Reconfirmed 2018. Incorporating Amendments 1 & 2: Standards Australia.

AS 1289.6.3.2. (1997). *Methods for testing soils for engineering purposes - Soil strength and consolidation tests - Determination of the penetration resistance of a soil - 9kg dynamic cone penetrometer test.* Reconfirmed 2013: Standards Australia.

AS 1289.6.3.3. (1997). *Methods for testing soils for engineering purposes - Soil strength and consolidation tests - Determination of the penetration resistance of a soil - Perth sand penetrometer test.* Reconfimed 2013: Standards Australia.

AS 1726. (2017). *Geotechnical Site Investigations.* Standards Australia.

AS 2159. (2009). *Piling - Design and Installation.* Standards Australia.

AS 2870. (2011). *Residential Slabs and Footings.* Standards Australia.

## 9. Limitations

Douglas Partners (DP) has prepared this report for this project at Part of Lot 9002 Grandstand Road, Ascot WA in accordance with DP's proposal dated 8 May 2023 and acceptance received from Mr James Oldring in a signed services order dated 8 August 2023. The work was carried out under DP's Engagement Terms. This report is provided for the exclusive use of Perth Racing for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

The results provided in the report are indicative of the sub-surface conditions on the site only at the specific sampling and/or testing locations, and then only to the depths investigated and at the time the work was carried out. Sub-surface conditions can change abruptly due to variable geological processes and also as a result of human influences. Such changes may occur after DP's field testing has been completed.

DP's advice is based upon the conditions encountered during this investigation. The accuracy of the advice provided by DP in this report may be affected by undetected variations in ground conditions across the site between and beyond the sampling and/or testing locations. The advice may also be limited by budget constraints imposed by others or by site accessibility.

The assessment of atypical safety hazards arising from this advice is restricted to the geotechnical components set out in this report and based on known project conditions and stated design advice and assumptions. While some recommendations for safe controls may be provided, detailed 'safety in design' assessment is outside the current scope of this report and requires additional project data and assessment.

This report must be read in conjunction with all of the attached and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by DP. This is because this report has been written as advice and opinion rather than instructions for construction.

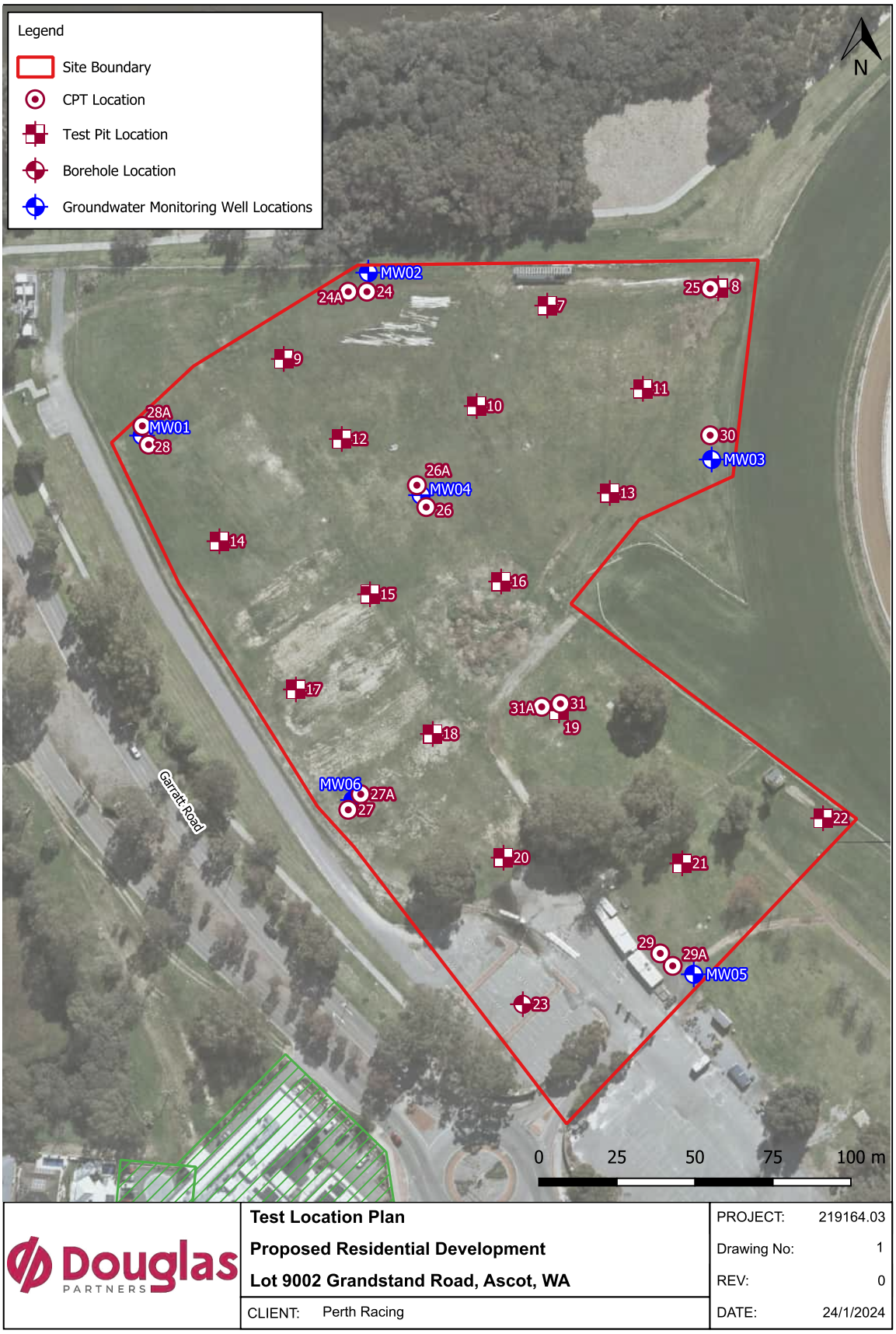
The scope of work for this investigation/report did not include the assessment of surface or sub-surface materials or groundwater for contaminants, within or adjacent to the site. Should evidence of fill of unknown origin be noted in the report, and in particular the presence of building demolition materials, it should be recognised that there may be some risk that such fill may contain contaminants and hazardous building materials.

**Appendix B**

Test Location Plan

Test Pit and Borehole Logs

CPT Results

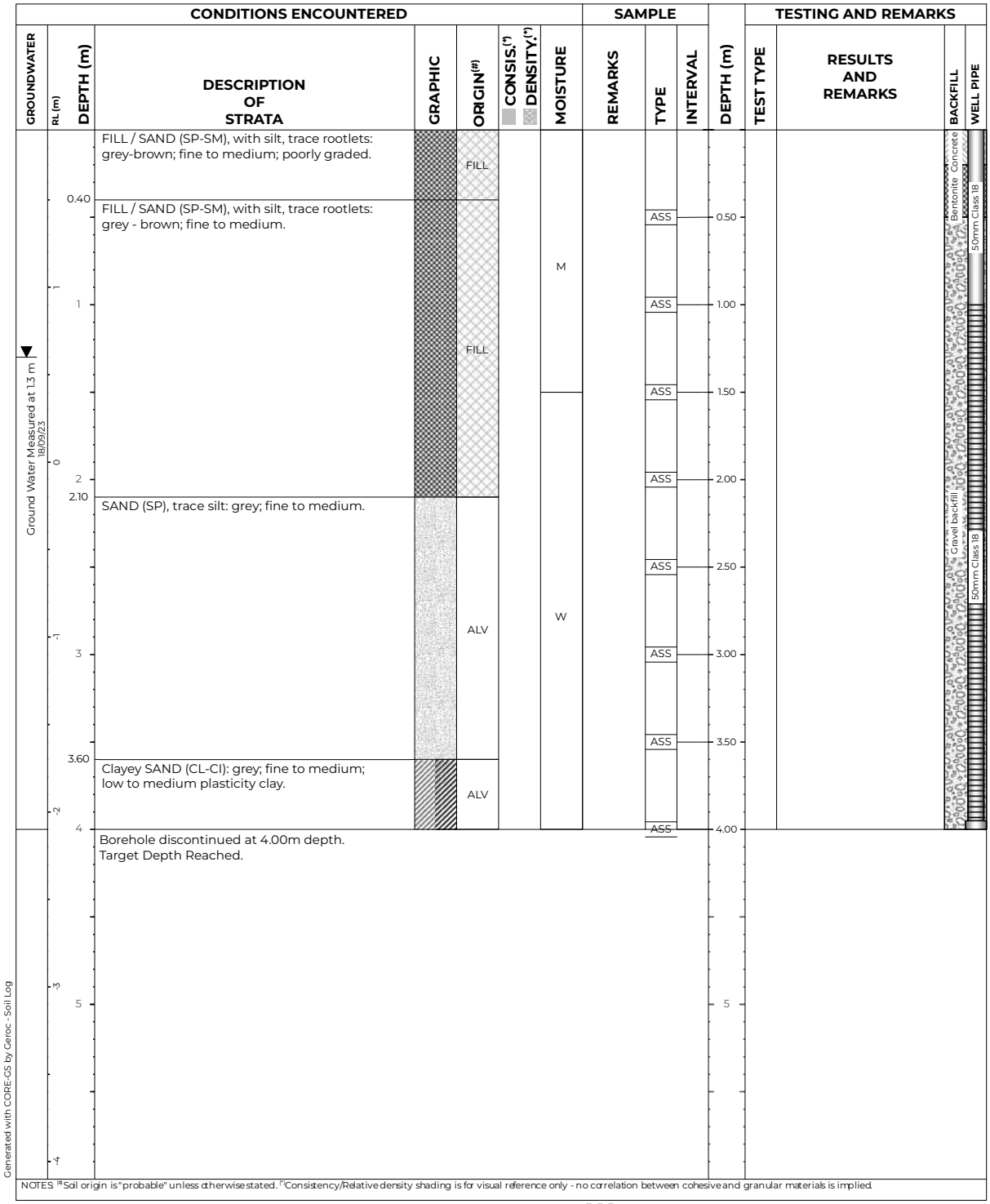

Legend
Site Boundary
CPT Location
Test Pit Location
Borehole Location
Groundwater Monitoring Well Locations
N
MW02
24A
24
25
8
7
9
11
10
28A
MW01
28
12
30
MW03
26A
MW04
26
13
14
16
15
17
31A
31
19
18
MW06
27A
27
Garratt Road
22
20
21
29
29A
MW05
23
0
25
50
75
100 m
Douglas
PARTNERS
Test Location Plan
Proposed Residential Development
Lot 9002 Grandstand Road, Ascot, WA
CLIENT: Perth Racing
PROJECT: 219164.03
Drawing No: 1
REV: 0
DATE: 24/1/2024

# BOREHOLE LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 1.9 AHD
**COORDINATE:** E:397722.0, N:6466365.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** MW 01
**PROJECT No:** 219164.01
**DATE:** 11/09/23
**SHEET:** 1 of 1




**PLANT:** Geoprobe 7822DT
**OPERATOR:** DPP
**LOGGED:** VV
**METHOD:** Direct Push Probing
**CASING:** Nil
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.

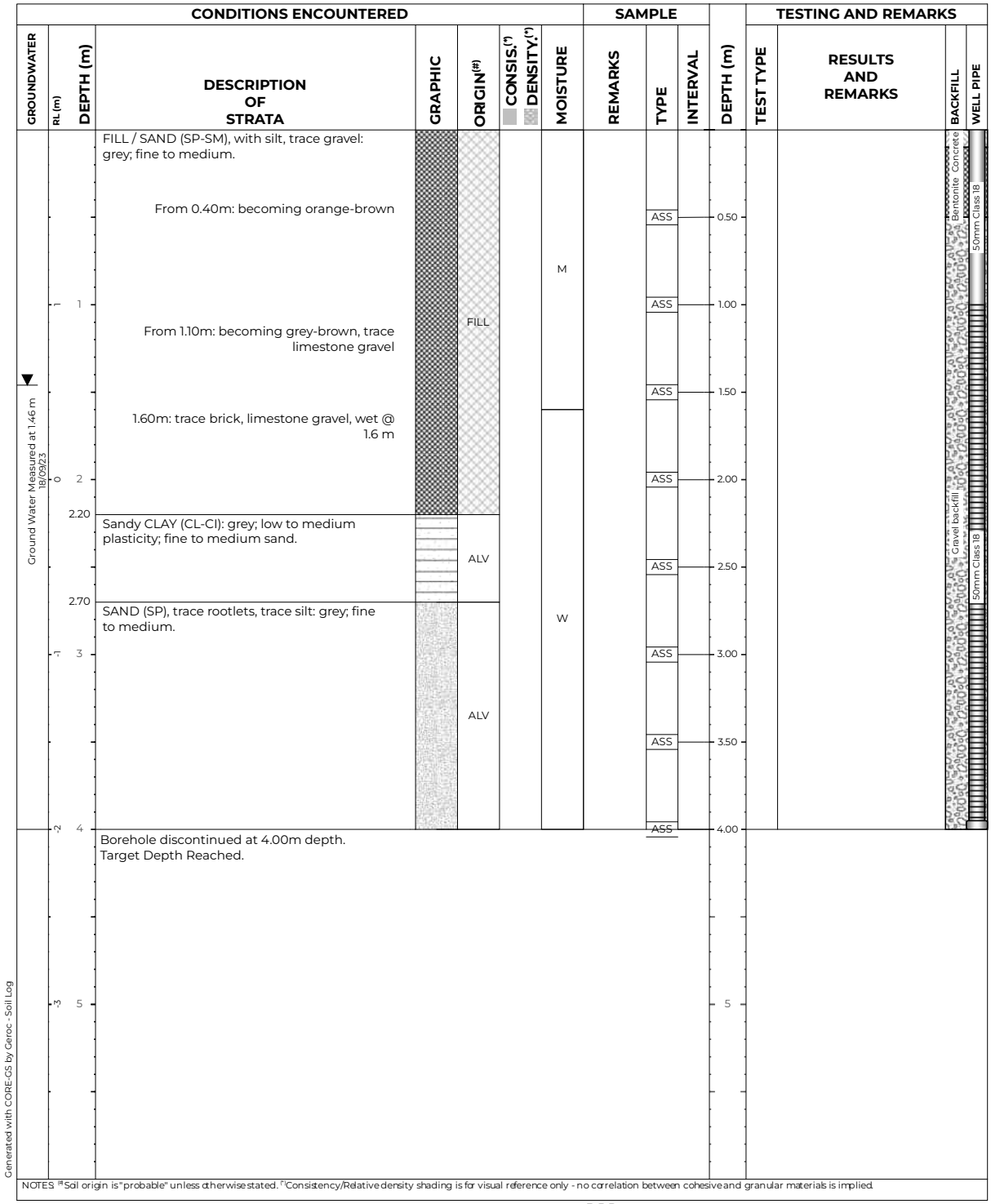
Refer to explanatory notes for symbol and abbreviation definitions

# BOREHOLE LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.0 AHD
**COORDINATE:** E:397795.0, N:6466418.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** MW 02
**PROJECT No:** 219164.01
**DATE:** 11/09/23
**SHEET:** 1 of 1




**PLANT:** Geoprobe 7822DT
**OPERATOR:** DPP
**LOGGED:** VV
**METHOD:** Direct Push Probing
**CASING:** Nil
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE-GS by Geroc - Soil Log

# BOREHOLE LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 3.2 AHD
**COORDINATE:** E:397905.0, N:6466358.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** MW 03
**PROJECT No:** 219164.01
**DATE:** 11/09/23
**SHEET:** 1 of 1

| GROUNDWATER | RL (m) | DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN(#) | CONSIS.(*) DENSITY.(*) | MOISTURE | REMARKS | SAMPLE TYPE | SAMPLE INTERVAL | DEPTH (m) | TESTING AND REMARKS: TEST TYPE | RESULTS AND REMARKS | BACKFILL | WELL PIPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ground Water Measured at 2.37 m 18/09/23 | 3 | 0 | FILL / SAND (SP), trace silt: orange; fine to medium. | | FILL | | | | | | 0 | | | Bentonite Concrete | |
| | | | From 0.30m: becoming grey, trace clay, limestone gravel | | | | | | | | | | | Gravel backfill | 50mm Class 18 |
| | 2 | 1 | | | | | | | | | 1 | | | | |
| | | 1.60 | FILL / Clayey SAND (SC), trace gravel: grey; fine to medium; low to medium plasticity clay. | | FILL | | | | | | | | | | |
| | 1 | 2 | | | | | | | | | 2 | | | | |
| | | 2.20 | FILL / SAND (SP), trace silt: orange - grey; fine to medium. | | FILL | | | | | | | | | | |
| | 0 | 3 | 2.80m: trace brick | | | | | | | | 3 | | | | |
| | | 3.00 | FILL / Clayey SAND (SC): grey; fine to medium; low to medium plasticity clay. | | FILL | | | | | | | | | | |
| | | | 3.30m-3.50m: with bitumen layer | | | | | | | | | | | | |
| | -1 | 3.60 | FILL / CLAY (CL-CI), trace sand: grey - green; low to medium plasticity. | | FILL | | | | | | | | | | |
| | | 4 | Borehole discontinued at 4.00m depth. Target Depth Reached. | | | | | | | | 4 | | | | |
| | -2 | 5 | | | | | | | | | 5 | | | | |

NOTES: (#)Soil origin is "probable" unless otherwise stated. (*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

Generated with CORE-GS by Geroc - Soil Log

**PLANT:** Geoprobe 7822DT
**METHOD:** Direct Push Probing
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.

**OPERATOR:** DPP

**LOGGED:** VV
**CASING:** Nil

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

# BOREHOLE LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.4 AHD
**COORDINATE:** E:397812.0, N:6466346.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** MW 04
**PROJECT No:** 219164.01
**DATE:** 11/09/23
**SHEET:** 1 of 1

| GROUNDWATER | RL (m) | DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[^] / DENSITY.[^] | MOISTURE | REMARKS | SAMPLE TYPE | SAMPLE INTERVAL | DEPTH (m) | TESTING AND REMARKS: TEST TYPE | RESULTS AND REMARKS | BACKFILL | WELL PIPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 | | FILL / SAND (SP-SM), with silt, trace rootlets: orange grey; fine to medium. | | FILL | | | | ASS | | 0.50 | | | Bentonite Concrete | 50mm Class 18 |
| | | 0.60 | FILL / SAND (SP), with gravel, trace clay: grey; fine to medium; fine to medium gravel. | | | | | | ASS | | 1.00 | | | Gravel backfill | |
| | 1 | | | | | | | | ASS | | 1.50 | | | | |
| ▼ | | | 1.50m: trace brick, wet | | FILL | | | | ASS | | 2.00 | | | | 50mm Class 18 |
| Ground Water Measured at 1.59 m 18/09/23 | 0 | | 2.00m: trace brick | | | | | | ASS | | 2.50 | | | | |
| | | | 3.00m: trace brick | | | | | | ASS | | 3.00 | | | | |
| | -1 | 3.20 | SAND (SP), trace silt: grey-orange; fine to medium. | | ALV | | | | | | | | | | |
| | | 3.40 | Clayey SAND (SC): orange-grey; fine to medium; low to medium plasticity clay. | | ALV | | | | ASS | | 3.50 | | | | |
| | | 3.60 | Sandy CLAY (CL): grey; low to medium plasticity; fine to medium sand. | | ALV | | | | | | | | | | |
| | 4 | | Borehole discontinued at 4.00m depth. Target Depth Reached. | | | | | | ASS | | 4.00 | | | | |
| | -2 | | | | | | | | | | | | | | |
| | 5 | | | | | | | | | | 5 | | | | |
| | -3 | | | | | | | | | | | | | | |

NOTES: [#]Soil origin is "probable" unless otherwise stated. [^]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

Generated with CORE-GS by Geroc - Soil Log

**PLANT:** Geoprobe 7822DT
**OPERATOR:** DPP
**LOGGED:** VV
**METHOD:** Direct Push Probing
**CASING:** Nil
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.

Refer to explanatory notes for symbol and abbreviation definitions

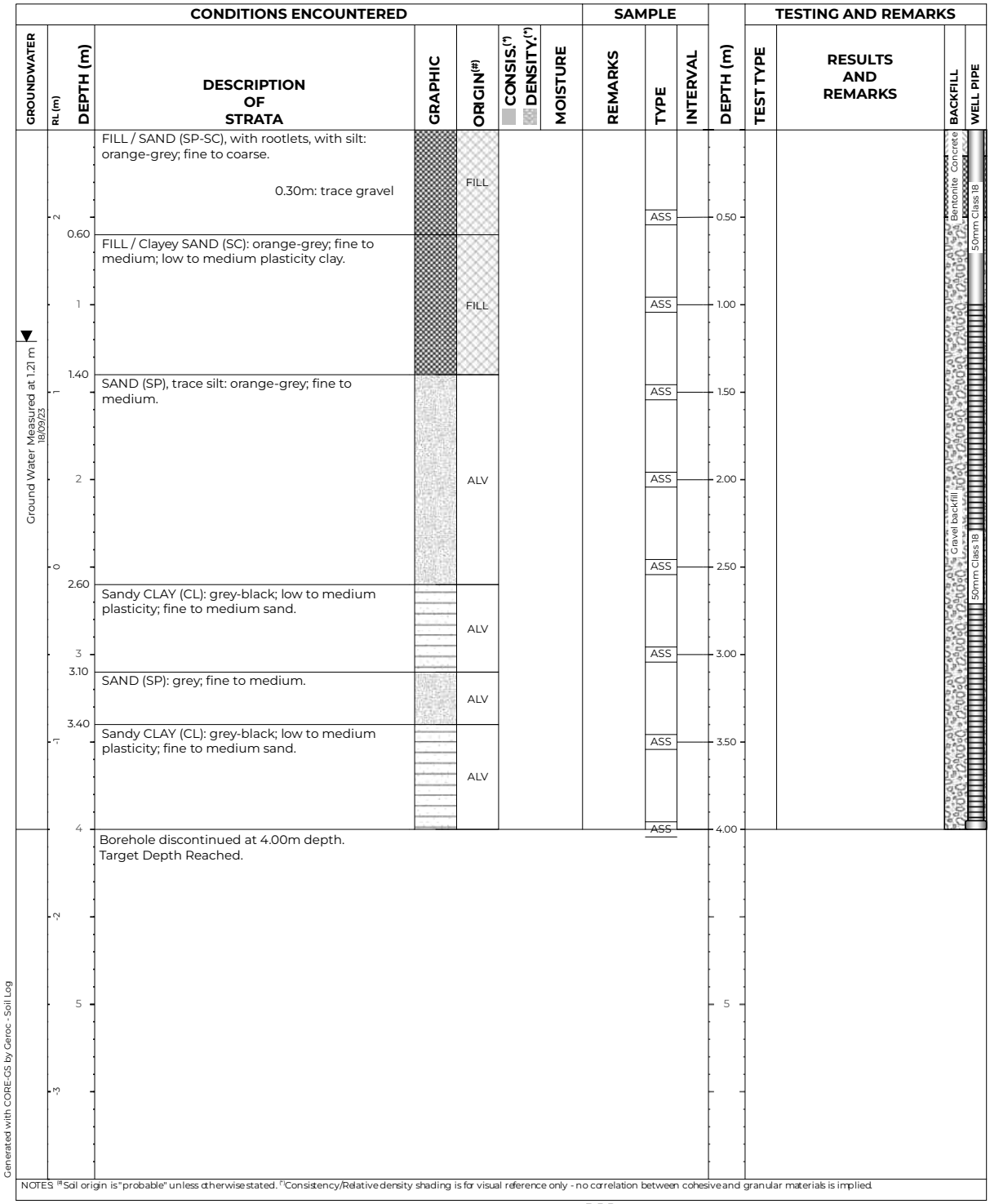
Douglas PARTNERS

# BOREHOLE LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.5 AHD
**COORDINATE:** E:397900.0, N:6466193.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** MW 05
**PROJECT No:** 219164.01
**DATE:** 11/09/23
**SHEET:** 1 of 1




**PLANT:** Geoprobe 7822DT
**OPERATOR:** DPP
**LOGGED:** VV
**METHOD:** Direct Push Probing
**CASING:** Nil
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.

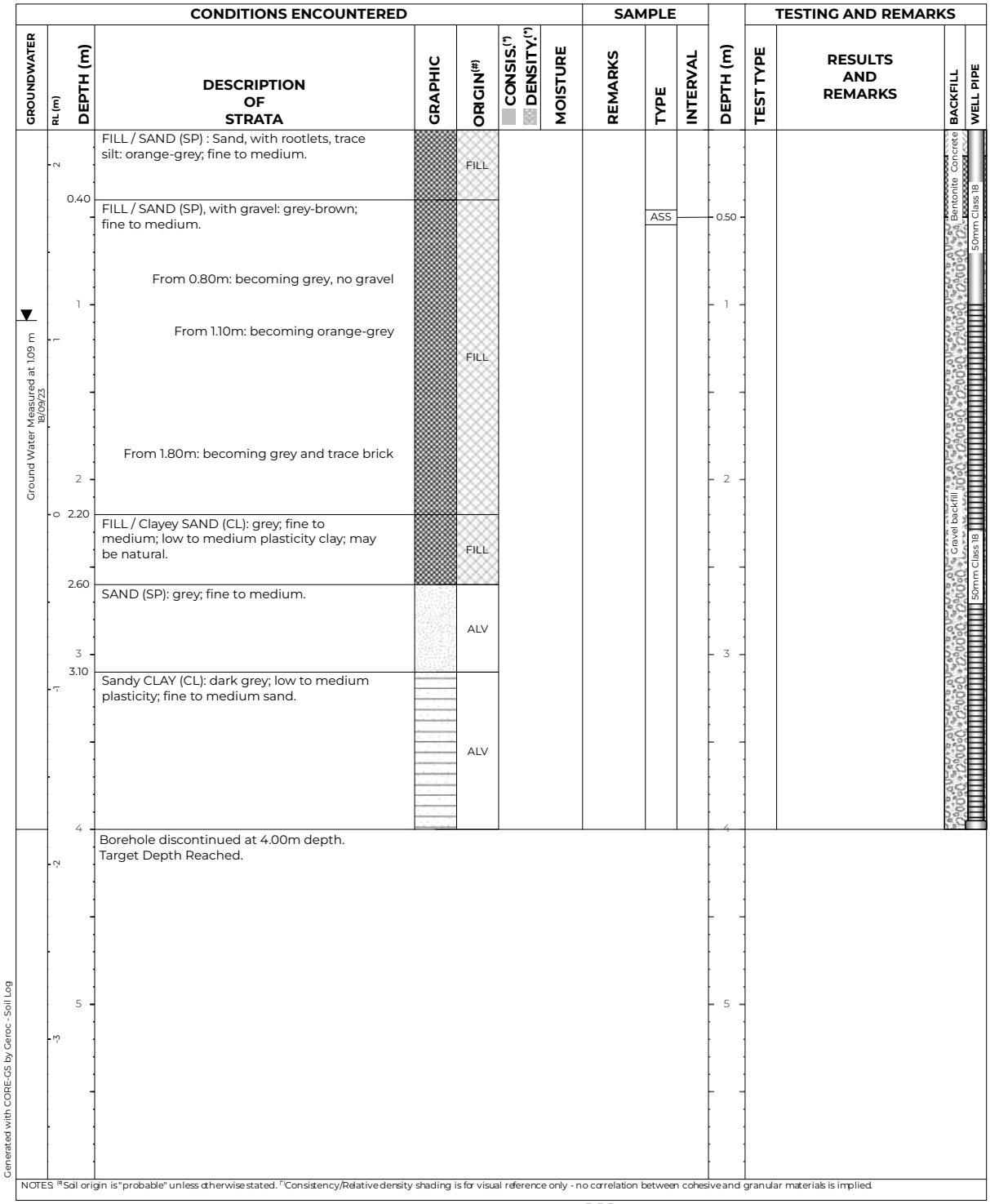
Refer to explanatory notes for symbol and abbreviation definitions

# BOREHOLE LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.2 AHD
**COORDINATE:** E:397790.0, N:6466249.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** MW 06
**PROJECT No:** 219164.01
**DATE:** 11/09/23
**SHEET:** 1 of 1




**PLANT:** Geoprobe 7822DT
**OPERATOR:** DPP
**LOGGED:** VV
**METHOD:** Direct Push Probing
**CASING:** Nil
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.

Refer to explanatory notes for symbol and abbreviation definitions

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.9 AHD
**COORDINATE:** E:397852.9, N:6466410.7
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP07
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | DEPTH (m) / RL (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[^] / DENSITY.[^] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 0.00 / 2 | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium. From 0.17m: becoming orange. 0.54m: trace geo-fabric | | FILL | MD to VD | D to M | | ES | 0.10 | 0.10 | PID | <1ppm |
| | | | | | | | | ES | 0.40–0.50 | 0.40 | PID | <1ppm |
| | 0.60 / 2 | FILL / Sandy GRAVEL (GP-GM), with silt: grey; medium to coarse, angular to sub-angular; fine to medium sand. 0.84m: trace geo-fabric | | FILL | | | | | | 0.50 | DCP9/150 | 5 10 15 |
| | 0.90 / 1 | FILL / GRAVEL (GP-GM) : Gravel, with mulch, with sand: dark brown and dark grey-brown; with silt. | | FILL | | | | ES | 1.00–1.10 | 1.00 | PID | <1ppm |
| | 1.40 / 1 | FILL / SAND (SP-SM), with silt: dark grey; fine to medium. 1.50m: trace PACM fragment. From 1.60m-2.60m: with fragments of bricks, concrete and metal roofing sheetings | | FILL | ND | M | ASB9, ASB10, AF/FA | D | 1.50 | 1.10 | | |
| | | | | | | | | ES | 1.50–1.60 | 1.50 | PID | <1ppm |
| | 2 / 1 | | | FILL | | | | ES | 2.00–2.10 | 1.60 | | |
| | | | | | | | | | | 2.00 | PID | <1ppm |
| 09/11/23 | | | | | | W | | | | 2.10 | | |
| | | | | | | | | ES | 2.50 | 2.50 | PID | <1ppm |
| | 0 | Test Pit discontinued at 2.60m depth. (Collapsing conditions). | | | | | | | | 2.60 | | |





NOTES: [#] Soil origin is "probable" unless otherwise stated. [^] Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

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**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 2.3 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 3.6 AHD
**COORDINATE:** E:397905.7, N:6466414.7
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP08
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) / DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[^] / DENSITY.[^] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 3 | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium. | | | VD | | | ES | | 0.10 | PID | <1 ppm |
| | | From 0.43m: becoming pale grey, trace gravel | | FILL | | | | ES | | 0.50<br>0.60 | PID | <1 ppm |
| | 1 | From 1.20m: becoming grey | | | | M | | ES | | 1.00<br>1.10 | PID | <1 ppm |
| | 1.40 | FILL / organic SAND (SP-SM), with silt, with gravel: dark grey-brown; fine to medium; trace fragments of brick and concrete. | | FILL | ND | | AF/FA<br>ASB 8 | D<br>ES<br>MAT | | 1.50<br>1.60 | PID | <1 ppm |
| | 2 | 1.55m-2.00m: with fragments of brick, concrete and PVC | | | | | | | | | | |
| | 1.80 | FILL / SAND (SP), trace gravel, fragments of brick and concrete, trace silt: dark grey; fine to medium. | | FILL | | | | D<br>ES | | 2.00<br>2.10 | PID | <1 ppm |
| | | 2.20m: trace metal sheet, PVC | | | | | | | | | | |
| | 1 | 2.40m: trace rubber pipe, metal bar | | | | | | ES | | 2.50<br>2.60 | PID | <1 ppm |
| | | Test Pit discontinued at 2.70m depth. (Test Pit terminated due to slow digging). | | | | | | | | | | |

PSP/150: 5, 10, 15, Refusal 20





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NOTES: [#] Soil origin is "probable" unless otherwise stated. [^] Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
No free groundwater observed.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.1 AHD
**COORDINATE:** E:397768.9, N:6466392.5
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP09
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| GROUNDWATER | RL (m) | DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN(#) | CONSIS.(*) DENSITY.(*) | MOISTURE | REMARKS | SAMPLE TYPE | SAMPLE INTERVAL | DEPTH (m) | TESTING AND REMARKS: TEST TYPE | RESULTS AND REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 | | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium. | | FILL | D to VD | D to M | | ES | | 0.10 | PID | <1ppm |
| | | 0.45 | FILL / Clayey SAND (SC): orange-brown; fine to medium; low to medium plasticity clay. | | FILL | | | | D<br>ES | | 0.50<br>0.60 | PID | <1ppm |
| | | 0.95<br>0.98 | FILL / ASPHALTIC CONCRETE: black, 7 mm sized nominal aggregate. | | | | | | | | | | |
| | 1 | | FILL / Silty SAND (SM): brown; fine to medium. From 1.15m: becoming grey-brown<br>From 1.20m: with fragments of brick, concrete slab of 0.4 m in thickness, geo-fabric, metal bar and terracotta pipe<br>1.40m: trace metal sheet | | FILL | ND | M | | ES | | 1.00<br>1.10<br>1.50<br>1.60 | PID | <1ppm |
| 09/11/23 | 0 | 2 | 1.90m-2.10m: trace pockets of Clayey SAND SC | | | | | | ES | | 2.00<br>2.10 | PID | <1ppm |
| | | | Test Pit discontinued at 2.30m depth. (Collapsing conditions). | | | | W | | | | | | |

PSP/150: 5, 10, 15; REFUSAL 25 25





NOTES: (#)Soil origin is "probable" unless otherwise stated. (*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 2.1 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

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# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.4 AHD
**COORDINATE:** E:397829.1, N:6466375.7
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP10
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) / DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[^] / DENSITY.[^] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 2 | FILL / SAND (SP-SM), with silt, trace rootlets: bands of grey, orange-brown and pale grey; fine to medium. | | FILL | MD to D | | DUP 2 | ES | | 0.10 | PID | <1ppm |
| | | 0.70m: trace geo-fabric | | | | | | ES | | 0.50 | PID | <1ppm |
| | 0.80 | FILL / Sandy GRAVEL (GP-GM), with silt: grey; medium to coarse, angular to sub-angular; fine to medium sand. | | FILL | | | | | | 0.60 | | |
| | 1 | | | | | | | ES | | 1.00 | PID | <1ppm |
| | 1.20 | FILL / SAND (SP), trace rootlets, trace silt: grey -brown; fine to medium. | | FILL | ND | | | | | 1.10 | | |
| | | From 1.40m-1.80m: with fragments of brick and concrete | | | | | | ES | | 1.50 | PID | <1ppm |
| | | From 1.80m: becoming dark grey, trace fragments of brick and concrete | | | | | | | | 1.60 | | |
| | 2 | | | | | | | ES | | 2.00 | PID | <1ppm |
| | | Test Pit discontinued at 2.15m depth. (Test Pit terminated due to slow digging). | | | | | | | | 2.10 | | |
| | 0 | | | | | | | | | | | |

PSP/hr





NOTES: [#] Soil origin is "probable" unless otherwise stated. [^] Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

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**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
No free groundwater observed.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 3.1 AHD
**COORDINATE:** E:397881.2, N:6466387.1
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP11
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) / DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN(#) | CONSIS.(*) DENSITY.(*) | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 3 | FILL / SAND (SP-SM), with silt: grey and orange-brown; fine to medium. | | | VD | D to M | | ES | | 0.10 | PSP/150 | 5 10 15 REFUSAL 25 25 |
| | | From 0.35m: becoming grey | | | | | | ES | | 0.50<br>0.60 | | |
| | 1 | | | | | | DUP 3 | D<br>ES | | 1.00<br>1.10 | | |
| | 2 | | | FILL | ND | M | | | | | | |
| | | From 1.60m: becoming dark grey, trace fragments of brick | | | | | | D<br>ES | | 1.60<br>1.70 | | |
| | | From 1.70m-2.40m: with fragments of brick and concrete | | | | | | | | | | |
| | 2 | 1.80m: piece of concrete boulder (1 m x 0.5 m) observed | | | | | | ES | | 2.00<br>2.10 | | |
| | 1 | 2.10m: trace plastic bottle, glass bottle, concrete rubble | | | | | | | | | | |
| | | 2.30m: trace fragments of wooden plank and timer | | | | | | D | | 2.30 | | |
| | | Test Pit discontinued at 2.40m depth.<br>(Test Pit terminated due to slow digging). | | | | | | | | | | |





NOTES: (#)Soil origin is "probable" unless otherwise stated. (*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
No free groundwater observed.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

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# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.1 AHD
**COORDINATE:** E:397785.4, N:6466366.6
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP12
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) / DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN(#) | CONSIS.(*) DENSITY.(*) | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 2 | FILL / SAND (SP-SM), with silt, trace gravel and rootlets: grey; fine to medium. | | FILL | D to VD | D to M | | ES | | 0.10 | PID | <1ppm |
| | | From 0.20m: becoming yellow-brown | | | | | | | | | | |
| | | | | | | | | ES | | 0.50 | PID | <1ppm |
| | | | | | | | | | | 0.60 | | |
| | 0.85 | FILL / Sandy GRAVEL (GP-GM), with silt: grey; medium to coarse, angular to sub-angular; fine to medium sand. | | FILL | | | | | | | | |
| | 0.90 | | | | | | | | | | | |
| | 1 | FILL / SAND (SP), trace fragments of brick, scrap metal, timber and rubber cable, trace silt: dark grey-brown; fine to medium. | | FILL | ND | M | AF/FA, ASB 6, ASB 7 | D | | 1.00 | PID | <1ppm |
| | | | | | | | | ES | | 1.10 | | |
| | | 1.30m-1.80m: with fragments of plastic waste, insulation material, terracotta pipes and concrete, trace PACM fragments | | | | | | | | | | |
| | | | | | | | | ES | | 1.50 | PID | <1ppm |
| | | | | | | | | | | 1.60 | | |
| | 2 | From 1.90m: becoming green-grey, trace pockets of CLAY CL-CI | | | | | | B | | 2.00 | PID | <1ppm |
| 09/11/23 | 0 | | | | | W | | ES | | 2.10 | | |
| | | Test Pit discontinued at 2.30m depth. (Collapsing conditions). | | | | | | | | | | |

PSP/ISP: 5 10 15 25





NOTES: (#) Soil origin is "probable" unless otherwise stated. (*) Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

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**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 2.1 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.8 AHD
**COORDINATE:** E:397872.7, N:6466350.7
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP13
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| GROUNDWATER | RL (m) | DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN(#) | CONSIS.(*) DENSITY.(*) | MOISTURE | REMARKS | SAMPLE TYPE | SAMPLE INTERVAL | DEPTH (m) | TESTING AND REMARKS: TEST TYPE | RESULTS AND REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium; 10% non-plastic fines. From 0.15m: becoming orange | | FILL | D to VD | D to M | | ES | | 0.10 | PID | <1ppm |
| | | | 0.70m: trace geo-fabric | | | | | | D | | 0.50 | PID | <1ppm |
| | | 0.75 | | | | | | | ES | | 0.60 | PSP/150 | 5 10 15 25 |
| | 2 | | FILL / Sandy GRAVEL (GP-GM), with silt: grey; medium to coarse, angular to sub-angular; fine to medium sand. | | | | | | | | | | |
| | 1 | | | | FILL | | | | ES | | 1.00 | PID | <1ppm |
| | | | 1.20m: trace geo-fabric | | | | | | | | 1.10 | | |
| | | 1.30 | FILL / SAND (SP), trace gravel, fragments of brick and concrete, trace silt: dark grey; fine to medium. 1.50m-2.40m: with fragments of bricks and concrete slab | | | | M | | D | | 1.50 | PID | <1ppm |
| | | | | | | ND | | | ES | | 1.60 | | |
| | 1 | | | | | | | | | | | | |
| | | | | | FILL | | | | ES | | 2.00 | PID | <1ppm |
| | 2 | | | | | | | | | | 2.10 | | |
| ▼ 09/11/23 | | | | | | | | | ES | | 2.50 | PID | <1ppm |
| | | | | | | | W | | | | 2.60 | | |
| | 0 | | Test Pit discontinued at 2.70m depth. (Collapsing conditions). | | | | | | | | | | |





NOTES: (#) Soil origin is "probable" unless otherwise stated. (*) Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

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**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 2.5 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.2 AHD
**COORDINATE:** E:397745.6, N:6466334.5
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP14
**PROJECT No:** 219164.01
**DATE:** 08/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) / DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[^] / DENSITY.[^] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 2 / 0.25 | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium. | | FILL | D to VD | D to M | | ES | | 0.10 | PID | <1ppm |
| | | FILL / Silty SAND (SM): brown and grey-brown; weakly to moderately cemented. | | | | | | | | | DCP9/150 | 5 10 15 29 30 |
| | | | | | | | | D | | 0.50 | PID | <1ppm |
| | | | | | | | | ES | | 0.60 | | |
| | | 0.65m: trace fragments of brick and glass | | | | | | | | | | |
| | | 0.72m-2.00m: with framgnes of brick, metal sheet and insulation material | | | | | | | | | | |
| | 1 | 0.92m: trace fragments of plastic waste, glass and limestone boulders | | | | | | ES | | 1.00 | PID | <1ppm |
| | | | | | | | | | | 1.10 | | |
| | | | | FILL | ND | M | | ES | | 1.50 | PID | <1ppm |
| | | | | | | | | | | 1.60 | | |
| | 2 / 0 | 2.00m: becoming gren-grey, trace fragments of timber, brick and concrete blocks, with pockets of Clayey SAND SC | | | | | | ES | | 2.00 | PID | <1ppm |
| | | | | | | | | | | 2.10 | | |
| | | From 2.20m: with fragments of brick and scrap metal | | | | | | D | | 2.40 | | |
| | | Test Pit discontinued at 2.50m depth. (Test Pit terminated due to slow digging). | | | | | | | | | | |





NOTES: [#] Soil origin is "probable" unless otherwise stated. [^] Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

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**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
No free groundwater observed.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.2 AHD
**COORDINATE:** E:397794.3, N:6466319.4
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP15
**PROJECT No:** 219164.01
**DATE:** 08/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) / DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN(#) | CONSIS.(^)/DENSITY.(^) | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 0 | FILL / SAND (SP-SM), with silt, trace gravel and rootlets: orange-brown; fine to medium. | | FILL | VD | D to M | | ES | | 0.10 | PID | <1ppm |
| | | From 0.24m: becoming grey | | | | | | | | | DCP9/150 | |
| | | From 0.42m: becoming pale grey | | | | | | D | | 0.50 | PID | <1ppm |
| | | | | | | | | ES | | 0.60 | | |
| | 0.75 | FILL / Sandy GRAVEL (GP-GM), with silt: dark brown and grey; medium to coarse, angular to sub-angular; fine to medium sand. | | FILL | ND | | | | | | | |
| | 0.95 | FILL / SAND (SP), with fragments of brick and concrete, trace silt: grey; fine to medium. | | | | | | D | | 1.00 | PID | <1ppm |
| | | | | | | | | ES | | 1.10 | | |
| | | 1.20m: trace fragments of timber, terracotta pipe and scrap metal | | | | | | | | | | |
| | | 1.50m: trace redundant cable | | | | M | | ES | | 1.50 | PID | <1ppm |
| | | | | | | | | | | 1.60 | | |
| | | From 1.80m: becoming orange-brown | | FILL | ND | | | | | | | |
| | 2 | 2.00m: trace PACM pipe | | | | | AF/FA, ASB 5 | ES | | 2.00 | PID | <1ppm |
| | | 2.10m: trace fragments of timer | | | | | | | | 2.10 | | |
| 08/11/23 | | From 2.40m: becoming dark grey | | | | W | | | | | | |
| | | | | | | | | ES | | 2.50 | | |
| | | | | | | | | | | 2.60 | | |
| | | Test Pit discontinued at 2.70m depth. (Test Pit flodded with water seepage). | | | | | | | | | | |





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NOTES: (#) Soil origin is "probable" unless otherwise stated. (^) Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 2.4 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.4 AHD
**COORDINATE:** E:397837.5, N:6466321.2
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP16
**PROJECT No:** 219164.01
**DATE:** 08/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) / DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[^] / DENSITY.[^] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 2 | FILL / SAND (SP-SM), with silt, trace gravel and rootlets: grey; fine to medium. | | FILL | | | | ES | | 0.10 | PID | <1ppm |
| | 0.34 | FILL / Sandy (GP-GM), with silt: grey; fine to medium sand. | | FILL | ND | D to M | | ES | | 0.50<br>0.60 | PID | <1ppm |
| | | 0.80m: trace fragments of plastic waste | | | | | | | | | | |
| | 0.84 | FILL / SAND (SP), with fragments of brick and concrete, trace silt: grey; fine to medium. | | FILL | MD to D | M | | ES | | 1.00<br>1.10 | PID | <1ppm |
| | 1 | 1.50m: trace fragments of plastic waste | | | | | | D<br>ES | | 1.50<br>1.60 | PID | <1ppm |
| | 2 | 2.00m: trace metal plate (0.5 m x 0.5 m)<br>2.10m: with limestone boulders | | | ND | | | ES | | 2.00<br>2.10 | PID | <1ppm |
| 08/11/23 | | | | | | W | | D<br>ES | | 2.50<br>2.60 | PID | <1ppm |
| | | Test Pit discontinued at 2.60m depth. (Collapsing conditions). | | | | | | | | | | |

DCP9/150: 5, 10, 15





NOTES: [#]Soil origin is "probable" unless otherwise stated. [^]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

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**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 2.5 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.2 AHD
**COORDINATE:** E:397775.7, N:6466289.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP17
**PROJECT No:** 219164.01
**DATE:** 08/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | DEPTH (m) / RL (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN(#) | CONSIS.(†) DENSITY.(†) | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 0.15 / 2 | FILL / SAND (SP-SM), with silt, trace rootlets: orange - grey; fine to medium. | | FILL | | | | ES | | 0.10 | PID | <1ppm |
| | | FILL / Sandy GRAVEL (GP-GM), with fragments of concrete, with silt: grey; medium to coarse, angular to sub-angular; fine to medium sand. | | FILL | L to VD | D to M | | | | | DCP9/150 | 5 10 15 25 |
| | 0.90 / 1 | FILL / SAND (SP), with fragments of brick and concrete, trace silt: grey; fine to medium. | | | | | | ES | | 0.50 0.60 | PID | <1ppm |
| | | 1.10m: trace fragments of plastic waste | | | | | | ES | | 1.00 1.10 | PID | <1ppm |
| | | 1.60m: trace metal sheets | | FILL | ND | M | ASB 3 | ES | | 1.50 1.60 | PID | <1ppm |
| | | 1.90m: piece of concrete block observed | | | | | ASB 4 | ES | | 2.00 2.10 | PID | <1ppm |
| 08/11/23 | 0 / 2 | | | | | W | | | | | | |
| | | Test Pit discontinued at 2.50m depth. (Collapsing conditions). | | | | | | | | | | |





NOTES: (#) Soil origin is "probable" unless otherwise stated. (†) Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

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**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 2.1 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.2 AHD
**COORDINATE:** E:397816.0, N:6466272.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP18
**PROJECT No:** 219164.01
**DATE:** 08/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) / DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[^] / DENSITY.[^] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 2 / 0 | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium; weakly cemented. | | FILL | | D to M | | ES | | 0.10 | PID | <1ppm |
| | 0.26 | FILL / Sandy GRAVEL (GP-GM), with silt: grey; medium to coarse, angular to sub-angular; fine to medium sand. | | FILL | ND | | | | | | | |
| | 0.45 | FILL / SAND (SP), with fragments of brick and concrete, with clay: grey; fine to medium. | | | | | ASB 1 | ES | | 0.50 | PID | <1ppm |
| | | 0.50m-1.50m: with fragments of tile and brick, trace PACM fragments | | | | | | | | 0.60 | | |
| | | 0.75m: trace metal bar | | | MD to VD | | | | | | | |
| | 1 / 1 | 1.00m: trace fragments of redundant cables, glass, geo-fabric and limestone blocks | | FILL | | M | | D | | 1.00 | PID | <1ppm |
| | | From 1.20m: with limestone boulders | | | | | | ES | | 1.10 | | |
| | | | | | ND | | | | | | | |
| | | | | | | | | ES | | 1.40 | PID | <1ppm |
| | | Test Pit discontinued at 1.50m depth. (Test Pit terminated due to slow digging). | | | | | | | | 1.50 | | |
| | 2 / 0 | | | | | | | | | 2 | | |

DCP9/150: 5, 10, 15





NOTES: [#] Soil origin is "probable" unless otherwise stated. [^] Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
No free groundwater observed.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

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# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.2 AHD
**COORDINATE:** E:397856.8, N:6466280.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP19
**PROJECT No:** 219164.01
**DATE:** 08/11/23
**SHEET:** 1 of 1

| GROUNDWATER | RL (m) | DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[^] / DENSITY.[^] | MOISTURE | REMARKS | SAMPLE TYPE | SAMPLE INTERVAL | DEPTH (m) | TESTING AND REMARKS: TEST TYPE | TESTING AND REMARKS: RESULTS AND REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 | 0.20 | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium. | | FILL | | | DUP 1 | ES | | 0.10 | PID | <1ppm |
| | | | FILL / Sandy GRAVEL (GP-GM), with silt: orange-brown; medium to coarse; fine to medium sand; Gravel is crushed limestone. | | FILL | ND | D | | D | | 0.50 | PID | <1ppm |
| | | | | | | | | | ES | | 0.60 | | |
| | | 0.70 | FILL / SAND (SP-SM), with silt, trace gravel: grey-brown; fine to medium. | | | | | | | | | | |
| | 1 | | 0.75m: trace concrete slab, fragments of brick and terracotta pipes | | | | | | | | | | |
| | | | From 0.90m: with fragments of brick | | | MD | | | ES | | 1.00 | PID | <1ppm |
| | | | From 1.20m: becoming grey, trace fragments of timber | | FILL | | M | | | | 1.10 | PSP 150 | 5 10 15 |
| | | | From 1.60m: becoming grey-brown | | | | | | ES | | 1.50 | PID | <1ppm |
| 09/11/23 | | | | | | | | | | | 1.60 | | |
| | | 1.90 | FILL / SAND (SP), trace roots, trace silt: dark grey; fine to medium. | | | ND | | | ES | | 2.00 | PID | <1ppm |
| | 2 | | | | FILL | | W | | | | 2.10 | | |
| | 0 | | 2.40m: trace fragments of sea shells | | | | | | D | | 2.50 | PID | <1ppm |
| | | | | | | | | | ES | | 2.60 | | |
| | | | Test Pit discontinued at 2.60m depth. (Collapsing conditions). | | | | | | | | | | |





NOTES: [#] Soil origin is "probable" unless otherwise stated. [^] Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 1.8 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

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# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.0 AHD
**COORDINATE:** E:397838.6, N:6466231.5
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP20
**PROJECT No:** 219164.01
**DATE:** 08/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | DEPTH (m) / RL (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[^] / DENSITY.[^] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 0.05 | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium. | | FILL | MD to VD | D to M | | ES | | 0.10 | PID | <1ppm |
| | 0.34 | FILL / Sandy GRAVEL (GP-GM), with silt: yellow-brown; medium to coarse; fine to medium sand. | | | | | | | | | | |
| | | FILL / SAND (SP-SM), with silt, trace gravel: grey and orange-brown; fine to medium. 0.50m: with fragments of brick and concrete | | | | | | ES | | 0.50 | PID | <1ppm |
| | | 0.80m: trace fragments of rubber waste and scrap metal | | | | | | | | 0.60 | | |
| | 1 | | | FILL | | | | D | | 1.00 | PID | <1ppm |
| | | | | | | | | ES | | 1.10 | | |
| | | From 1.20m: becoming dark grey, with fragments of brick | | | | M | | | | | | |
| | | 1.30m-2.10m: with hydrocarbon odour | | | | | | | | | | |
| | | 1.50m: with pockets of Clayey SAND SC | | | | | | D | | 1.50 | PID | 9.4ppm |
| | | | | | | | | ES | | 1.60 | | |
| | 1.80 | FILL / Clayey SAND (SC): dark grey; fine to medium; low to medium plasticity clay. | | | ND | | | | | | | |
| 08/11/23 | 0 2 | | | | | | | ES | | 2.00 | PID | 1.4ppm |
| | | From 2.10m: becoming green-grey | | FILL | | | | | | 2.10 | | |
| | | | | | | W | | | | | | |
| | | | | | | | | ES | | 2.50 | PID | 1.1ppm |
| | | | | | | | | | | 2.60 | | |
| | | Test Pit discontinued at 2.60m depth. (Collapsing conditions). | | | | | | | | | | |

PSP/hr





NOTES: [#] Soil origin is "probable" unless otherwise stated. [^] Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

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**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 2.1 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.1 AHD
**COORDINATE:** E:397896.5, N:6466231.5
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP21
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| GROUNDWATER | RL (m) | DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN(#) | CONSIS.(*) DENSITY.(*) | MOISTURE | REMARKS | SAMPLE TYPE | SAMPLE INTERVAL | DEPTH (m) | TESTING AND REMARKS: TEST TYPE | RESULTS AND REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 | 0.17 | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium. | | FILL | | | | ES | | 0.10 | PID | <1ppm |
| | | | FILL / Sandy GRAVEL (GP-GM), with silt: grey; fine to coarse; fine to medium sand; Gravel is crushed limestone. | | FILL | MD to D | D to M | | ES | | 0.50<br>0.60 | PID | <1ppm |
| | | 0.70 | FILL / SAND (SP-SM), with fragments of brick and concrete, with silt: grey; fine to medium. | | | | | | ES | | 1.00<br>1.10 | PID | <1ppm |
| | 1 | | 1.20m: trace fragments of rubber waste and scrap metal | | FILL | ND | M | | D<br>ES | | 1.50<br>1.60 | PID | <1ppm |
| ▼ 08/11/23 | | | From 1.80m: trace pockets of CLAY CL-CI | | | | | | | | | | |
| | | 1.90 | FILL / Sandy CLAY (CI), trace fragments of brick and timber, trace gravel: dark grey; medium plasticity; fine to medium sand. | | FILL | | w>PL | | B<br>ES | | 2.00<br>2.10 | PID | <1ppm |
| | 0 | | Test Pit discontinued at 2.10m depth. (Collapsing conditions). | | | | | | | | | | |

DCP 9/150

NOTES: (#) Soil origin is "probable" unless otherwise stated. (*) Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 1.8 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

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# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.3 AHD
**COORDINATE:** E:397941.6, N:6466244.9
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP22
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) / DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[^] / DENSITY.[^] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 2 | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium. | | | | D to M | | ES | | 0.10 | PID | <1ppm |
| | | From 0.22m: becoming orange | | | | | | | | | | |
| | | From 0.40m: becoming brown | | | MD | | | ES | | 0.50 | PID | <1ppm |
| | | From 0.70m: becoming dark grey-brown | | FILL | | | | | | 0.60 | | |
| | 1 | | | | | M | | ES | | 1.00 | PID | <1ppm |
| | 1 | | | | | | | | | 1.10 | | |
| | 1.40 | SAND (SP-SM), with silt: pale yellow-brown; fine to medium. | | | | | | ES | | 1.50 | PID | <1ppm |
| ▼ 09/11/23 | | From 1.70m: becoming orange-grey | | possibly ALV | ND | | | | | 1.60 | | |
| | 2 | | | | | W | | B | | 2.00 | PID | <1ppm |
| | | | | | | | | ES | | 2.10 | | |
| | 0 | Test Pit discontinued at 2.20m depth. (Collapsing conditions). | | | | | | | | | | |

PSP/hr





NOTES: [#]Soil origin is "probable" unless otherwise stated. [^]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

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**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 1.8 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

# BOREHOLE LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.4 AHD
**COORDINATE:** E:397844.9, N:6466181.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP23
**PROJECT No:** 219164.01
**DATE:** 08/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) / DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[^] / DENSITY.[^] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 0.05 | ASPHALT: black, 7 mm sized nominal aggregate. | | FILL | | | | | | | | |
| | 0.15 | FILL / Sandy GRAVEL (GP-GM), with silt: grey; medium to coarse, angular to sub-angular; fine to medium sand; BASECOURSE, gravel is crushed rock. | | FILL | ND | D | | | | | | |
| | 0.30 | FILL / Sandy GRAVEL (GP-GM), with silt: red-brown; medium to coarse, angular to sub-angular; fine to medium sand; SUB-BASE, gravel is granitic and lateritic. | | FILL | | M | | ES | | 0.50<br>0.60 | PID | <1ppm |
| | 0.65 | FILL / Silty SAND (SM), trace gravel: brown; fine to medium; with pockets of Clayey SAND SC. 0.90m: trace fragments of brick | | | MD to D | | | | | | | |
| | 1 | FILL / Clayey SAND (SC): orange-grey; fine to medium; low to medium plasticity clay. | | FILL | | M | | D<br>ES | | 1.00<br>1.10 | PID | <1ppm |
| 08/11/23 | 1.40 | FILL / SAND (SP), trace silt: grey; fine to medium; trace pockets of Clayey SAND SC. 1.80m: trace fragments of brick | | FILL | | | | ES | | 1.50<br>1.60 | PID | <1ppm |
| | 1.90 | FILL / Sandy CLAY (CI), trace gravel: dark grey; medium plasticity; fine to medium sand. | | FILL | ND | W | | D<br>ES | | 2.00<br>2.10 | PID | <1ppm |
| | 2.20 | FILL / SAND (SP-SM), with silt: dark grey; fine to medium. | | FILL | | | | D<br>ES | | 2.50<br>2.60 | PID | <1ppm |
| | | Borehole discontinued at 2.60m depth. (Collapsing conditions). | | | | | | | | | | |

DCP9/150: 5, 10, 15





NOTES: [#]Soil origin is "probable" unless otherwise stated. [^]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

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**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**CASING:** Nil

**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 1.7 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

**Appendix C**

Geotechnical Laboratory Test Certificates

WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

**TEST REPORT - ASTM D2974-14 (Test Method C)**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18256-18262_1_ORG |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18256-18262 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | Various See Below | *Date Tested:* | 15/11/2023 |

## TEST RESULTS - Organic Content

**Sampling Method:** Sampled by Client, Tested as Received

**Testing Completed By:** WGLS-LC

**Furnace Temperature (°C):** 440

| Sample Number | Sample Identification | Ash Content (%) | Organic Content (%) |
|---|---|---|---|
| WG23.18256 | TP13/1.5 | 98.4 | 1.6 |
| WG23.18257 | TP8/1.5 m | 93.2 | 6.8 |
| WG23.18258 | TP19/2.5 | 98.5 | 1.5 |
| WG23.18262 | BH23/2.5 m | 98.8 | 1.2 |

***Comments:***

**Approved Signatory:** Coneill

**Name:** Cody O'Neill

**Date:** 16/November/2023

NATA **Accreditation No. 20599**

**Accredited for compliance with ISO/IEC 17025 - Testing**

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WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

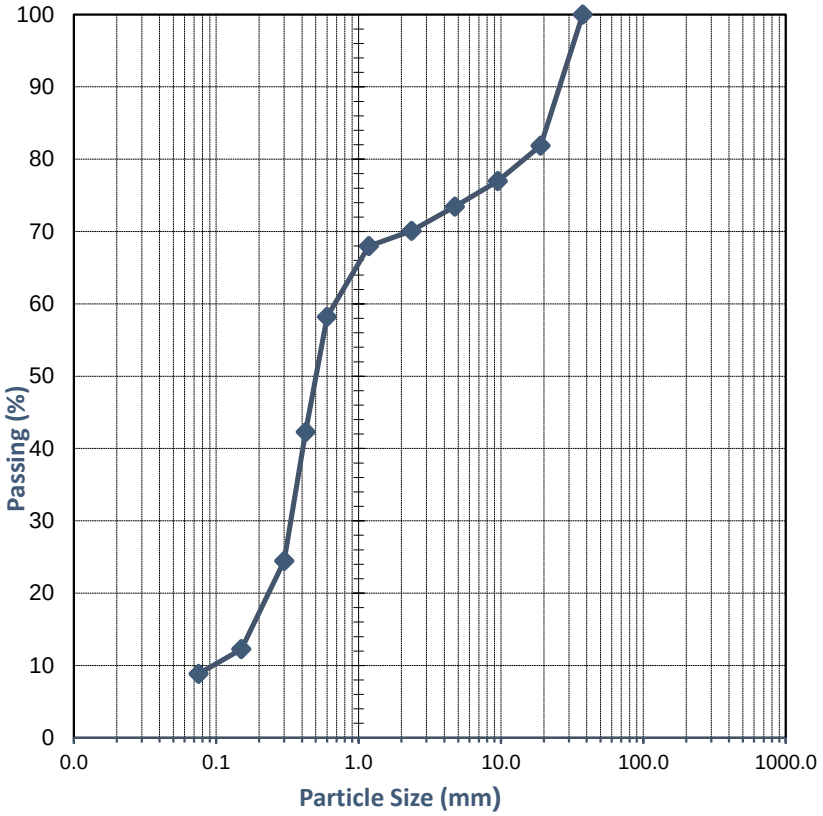
**TEST REPORT - AS 1289.3.6.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18257_1_PSD |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18257 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | TP8/1.5 m | *Date Tested:* | 16/11 - 17/11/2023 |

## TEST RESULTS - Particle Size Distribution of Soil

**Sampling Method:** Sampled by Client, Tested as Received

| Sieve Size (mm) | Percent Passing Sieve (%) |
|---|---|
| 150.0 | |
| 100.0 | |
| 75.0 | |
| 37.5 | 100 |
| 19.0 | 82 |
| 9.5 | 77 |
| 4.75 | 73 |
| 2.36 | 70 |
| 1.18 | 68 |
| 0.600 | 58 |
| 0.425 | 42 |
| 0.300 | 24 |
| 0.150 | 12 |
| 0.075 | 9 |




*Comments:*

**Approved Signatory:** Cody O'Neill

**Name:** Cody O'Neill

**Date:** 17/November/2023

**Accreditation No. 20599**
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SOIL | AGGREGATE | CONCRETE | CRUSHING

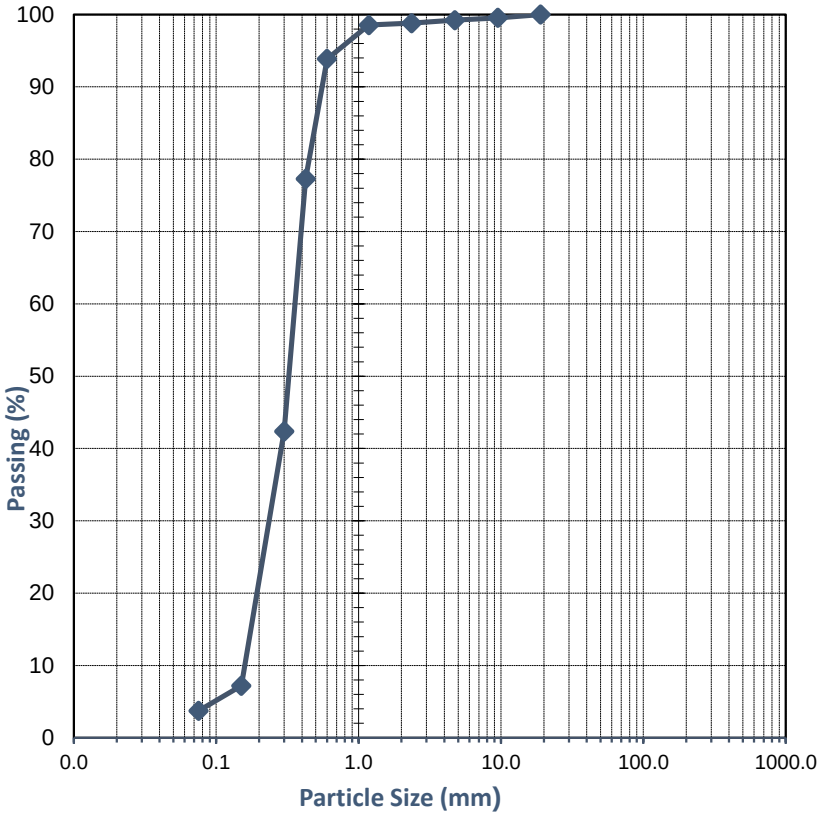
**TEST REPORT - AS 1289.3.6.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18256_1_PSD |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18256 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | TP13/1.5 | *Date Tested:* | 16/11 - 17/11/2023 |

## TEST RESULTS - Particle Size Distribution of Soil

**Sampling Method:** Sampled by Client, Tested as Received

| Sieve Size (mm) | Percent Passing Sieve (%) |
|---|---|
| 150.0 | |
| 100.0 | |
| 75.0 | |
| 37.5 | |
| 19.0 | 100 |
| 9.5 | 100 |
| 4.75 | 99 |
| 2.36 | 99 |
| 1.18 | 99 |
| 0.600 | 94 |
| 0.425 | 77 |
| 0.300 | 42 |
| 0.150 | 7 |
| 0.075 | 4 |




*Comments:*

**Approved Signatory:** Cody O'Neill

**Name:** Cody O'Neill

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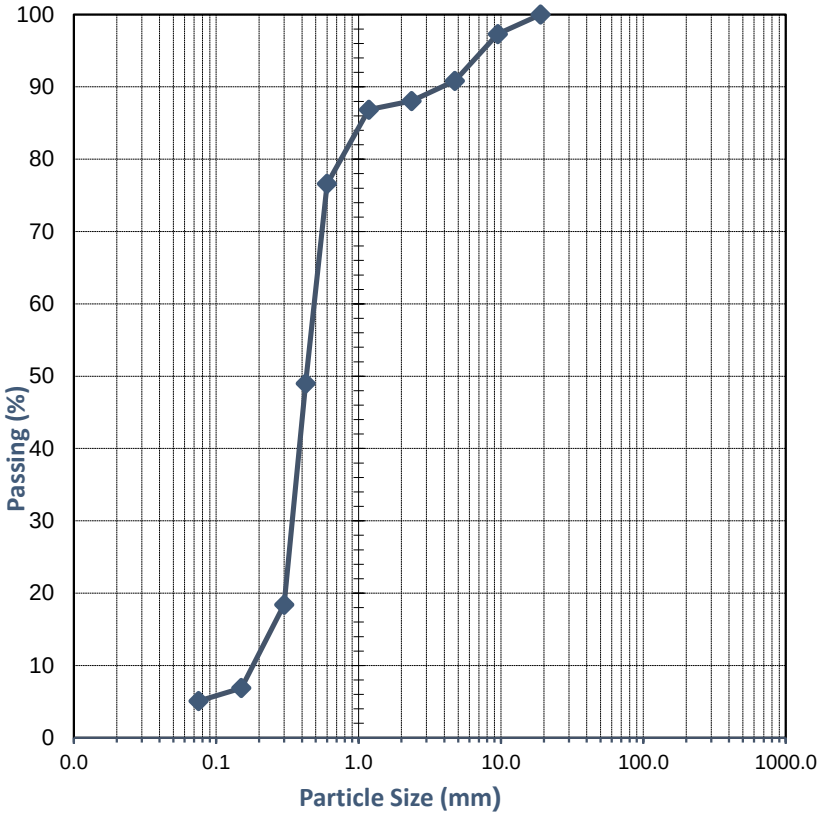
**TEST REPORT - AS 1289.3.6.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18258_1_PSD |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18258 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | TP19/2.5 | *Date Tested:* | 16/11 - 17/11/2023 |

## TEST RESULTS - Particle Size Distribution of Soil

**Sampling Method:** Sampled by Client, Tested as Received

| Sieve Size (mm) | Percent Passing Sieve (%) |
|---|---|
| 150.0 | |
| 100.0 | |
| 75.0 | |
| 37.5 | |
| 19.0 | 100 |
| 9.5 | 97 |
| 4.75 | 91 |
| 2.36 | 88 |
| 1.18 | 87 |
| 0.600 | 77 |
| 0.425 | 49 |
| 0.300 | 18 |
| 0.150 | 7 |
| 0.075 | 5 |




*Comments:*

**Approved Signatory:** Cody O'Neill

**Name:** Cody O'Neill

**Date:** 17/November/2023

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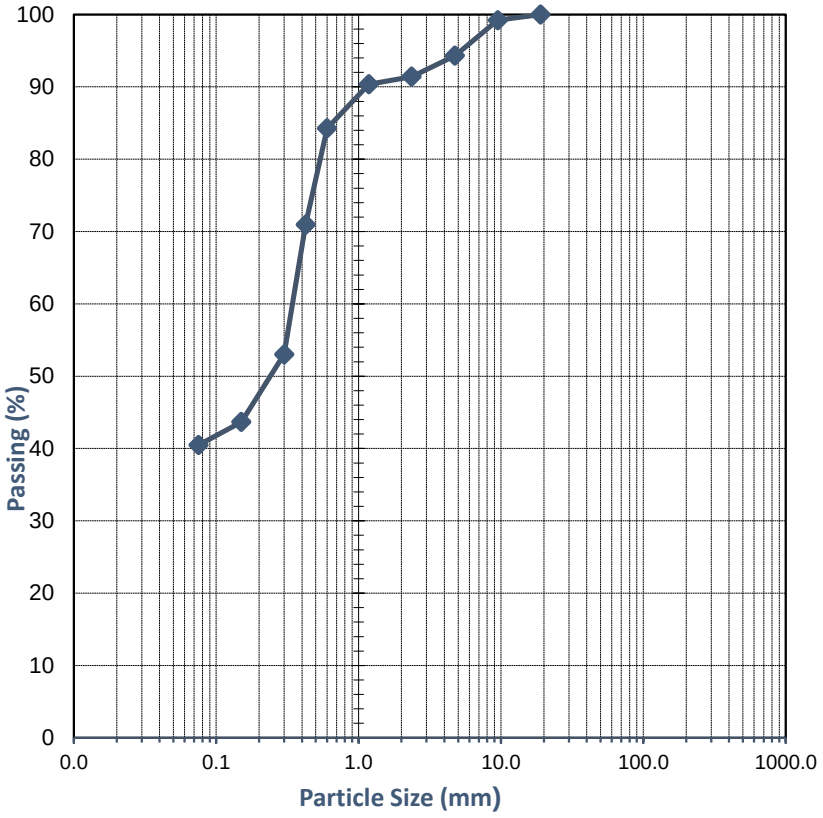
**TEST REPORT - AS 1289.3.6.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18259_1_PSD |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18259 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | TP21/2.0 m | *Date Tested:* | 16/11 - 17/11/2023 |

## TEST RESULTS - Particle Size Distribution of Soil

**Sampling Method:** Sampled by Client, Tested as Received

| Sieve Size (mm) | Percent Passing Sieve (%) |
|---|---|
| 150.0 | |
| 100.0 | |
| 75.0 | |
| 37.5 | |
| 19.0 | 100 |
| 9.5 | 99 |
| 4.75 | 94 |
| 2.36 | 91 |
| 1.18 | 90 |
| 0.600 | 84 |
| 0.425 | 71 |
| 0.300 | 53 |
| 0.150 | 44 |
| 0.075 | 40 |




*Comments:*

**Approved Signatory:** Cody O'Neill

**Name:** Cody O'Neill

**Date:** 17/November/2023

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SOIL | AGGREGATE | CONCRETE | CRUSHING

**TEST REPORT - AS 1289.3.1.1, 3.2.1, 3.3.1 & 3.4.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18259_1_PI |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18259 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | TP21/2.0 m | *Date Tested:* | 17/11/2023 |

## TEST RESULTS - Consistency Limits (Casagrande)

| | |
|---|---|
| **Sampling Method:** | **Sampled by Client, Tested as Received** |
| **History of Sample:** | **Oven Dried <50°C** |
| **Method of Preparation:** | **Dry Sieved** |

| | | |
|---|---|---|
| **AS 1289.3.1.1** | **Liquid Limit (%)** | **37** |
| **AS 1289.3.2.1** | **Plastic Limit (%)** | **24** |
| **AS 1289.3.3.1** | **Plasticity Index (%)** | **13** |
| **AS 1289.3.4.1** | **Linear Shrinkage (%)** | **8.5** |
| **AS 1289.3.4.1** | **Length of Mould (mm)** | **250** |
| **AS 1289.3.4.1** | **Condition of Dry Specimen:** | **Curled** |

***Comments:***

**Approved Signatory:**

**Name:** Madhav Basnet

**Date:** 20/November/2023

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SOIL | AGGREGATE | CONCRETE | CRUSHING

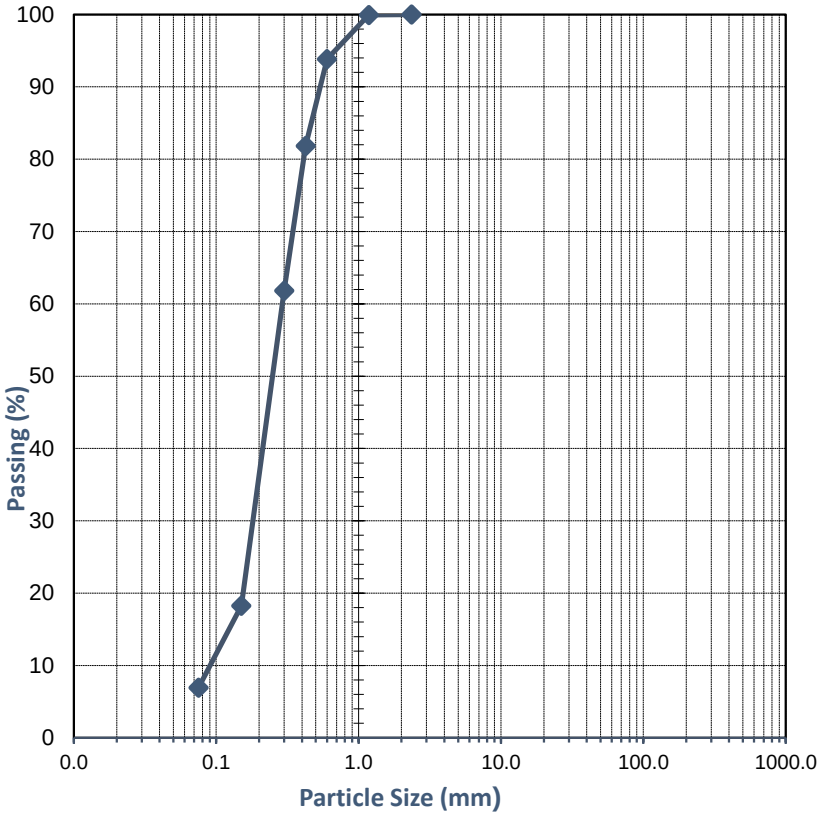
**TEST REPORT - AS 1289.3.6.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18260_1_PSD |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18260 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/2023 |
| *Sample Identification:* | TP22/2.0 | *Date Tested:* | 22/11 - 23/11/2023 |

## TEST RESULTS - Particle Size Distribution of Soil

**Sampling Method:** Sampled by Client, Tested as Received

| Sieve Size (mm) | Percent Passing Sieve (%) |
|---|---|
| 150.0 | |
| 100.0 | |
| 75.0 | |
| 37.5 | |
| 19.0 | |
| 9.5 | |
| 4.75 | |
| 2.36 | 100 |
| 1.18 | 100 |
| 0.600 | 94 |
| 0.425 | 82 |
| 0.300 | 62 |
| 0.150 | 18 |
| 0.075 | 7 |




*Comments:*

**Approved Signatory:**

**Name:** Natasha Bielawski

**Date:** 23/November/2023

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SOIL | AGGREGATE | CONCRETE | CRUSHING

**TEST REPORT - AS 1289.3.1.1, 3.2.1, 3.3.1 & 3.4.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18260_1_PI |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18260 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | TP22/2.0 | *Date Tested:* | 23/11/2023 |

## TEST RESULTS - Consistency Limits (Casagrande)

| | |
|---|---|
| **Sampling Method:** | **Sampled by Client, Tested as Received** |
| **History of Sample:** | **Oven Dried <50°C** |
| **Method of Preparation:** | **Dry Sieved** |

| | | |
|---|---|---|
| **AS 1289.3.1.1** | **Liquid Limit (%)** | **Not Obtainable** |
| **AS 1289.3.2.1** | **Plastic Limit (%)** | **Non-Plastic** |
| **AS 1289.3.3.1** | **Plasticity Index (%)** | **Non-Plastic** |
| **AS 1289.3.4.1** | **Linear Shrinkage (%)** | **0.0** |
| **AS 1289.3.4.1** | **Length of Mould (mm)** | **250** |
| **AS 1289.3.4.1** | **Condition of Dry Specimen:** | **-** |

***Comments:***

**Approved Signatory:**

**Name:** Matthew Lichon

**Date:** 24/November/2023

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SOIL | AGGREGATE | CONCRETE | CRUSHING

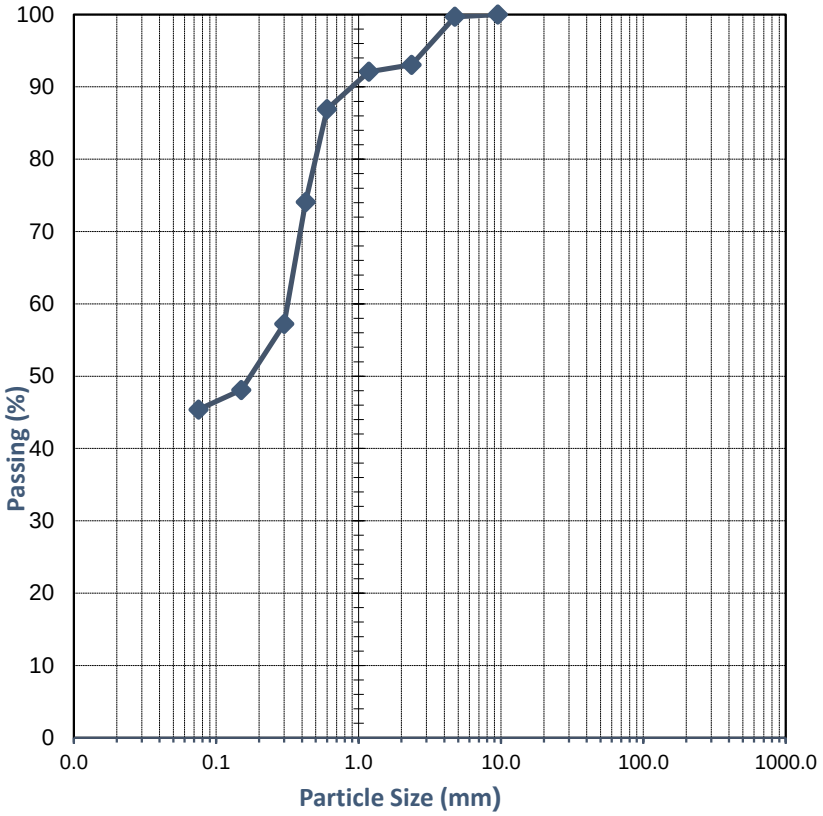
**TEST REPORT - AS 1289.3.6.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18261_1_PSD |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18261 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | BH23/2.0 m | *Date Tested:* | 16/11 - 17/11/2023 |

## TEST RESULTS - Particle Size Distribution of Soil

**Sampling Method:** Sampled by Client, Tested as Received

| Sieve Size (mm) | Percent Passing Sieve (%) |
|---|---|
| 150.0 | |
| 100.0 | |
| 75.0 | |
| 37.5 | |
| 19.0 | |
| 9.5 | 100 |
| 4.75 | 100 |
| 2.36 | 93 |
| 1.18 | 92 |
| 0.600 | 87 |
| 0.425 | 74 |
| 0.300 | 57 |
| 0.150 | 48 |
| 0.075 | 45 |




*Comments:*

**Approved Signatory:** Cody O'Neill

**Name:** Cody O'Neill

**Date:** 17/November/2023

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SOIL | AGGREGATE | CONCRETE | CRUSHING

**TEST REPORT - AS 1289.3.1.1, 3.2.1, 3.3.1 & 3.4.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18261_1_PI |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18261 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | BH23/2.0 m | *Date Tested:* | 17/11/2023 |

## TEST RESULTS - Consistency Limits (Casagrande)

| | |
|---|---|
| **Sampling Method:** | **Sampled by Client, Tested as Received** |
| **History of Sample:** | **Oven Dried <50°C** |
| **Method of Preparation:** | **Dry Sieved** |

| | | |
|---|---|---|
| **AS 1289.3.1.1** | **Liquid Limit (%)** | **44** |
| **AS 1289.3.2.1** | **Plastic Limit (%)** | **22** |
| **AS 1289.3.3.1** | **Plasticity Index (%)** | **22** |
| **AS 1289.3.4.1** | **Linear Shrinkage (%)** | **9.5** |
| **AS 1289.3.4.1** | **Length of Mould (mm)** | **250** |
| **AS 1289.3.4.1** | **Condition of Dry Specimen:** | **Curled** |

***Comments:***

**Approved Signatory:**

**Name:** Madhav Basnet

**Date:** 20/November/2023

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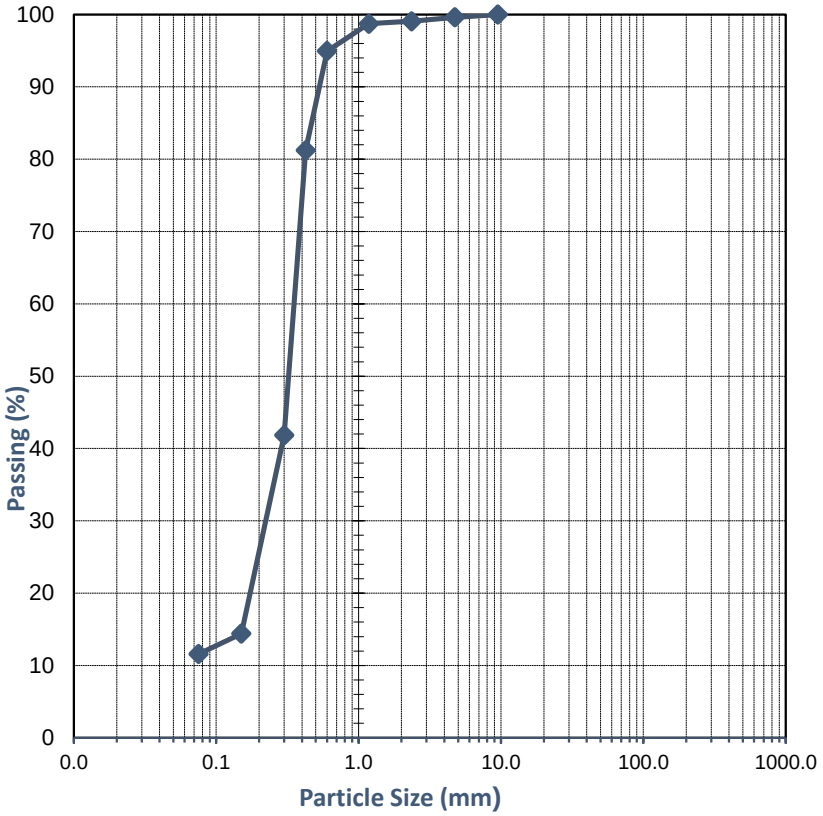
**TEST REPORT - AS 1289.3.6.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18262_1_PSD |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18262 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | BH23/2.5 m | *Date Tested:* | 16/11 - 17/11/2023 |

## TEST RESULTS - Particle Size Distribution of Soil

**Sampling Method:** Sampled by Client, Tested as Received

| Sieve Size (mm) | Percent Passing Sieve (%) |
|---|---|
| 150.0 | |
| 100.0 | |
| 75.0 | |
| 37.5 | |
| 19.0 | |
| 9.5 | 100 |
| 4.75 | 100 |
| 2.36 | 99 |
| 1.18 | 99 |
| 0.600 | 95 |
| 0.425 | 81 |
| 0.300 | 42 |
| 0.150 | 14 |
| 0.075 | 12 |




*Comments:*

**Approved Signatory:** Cody O'Neill

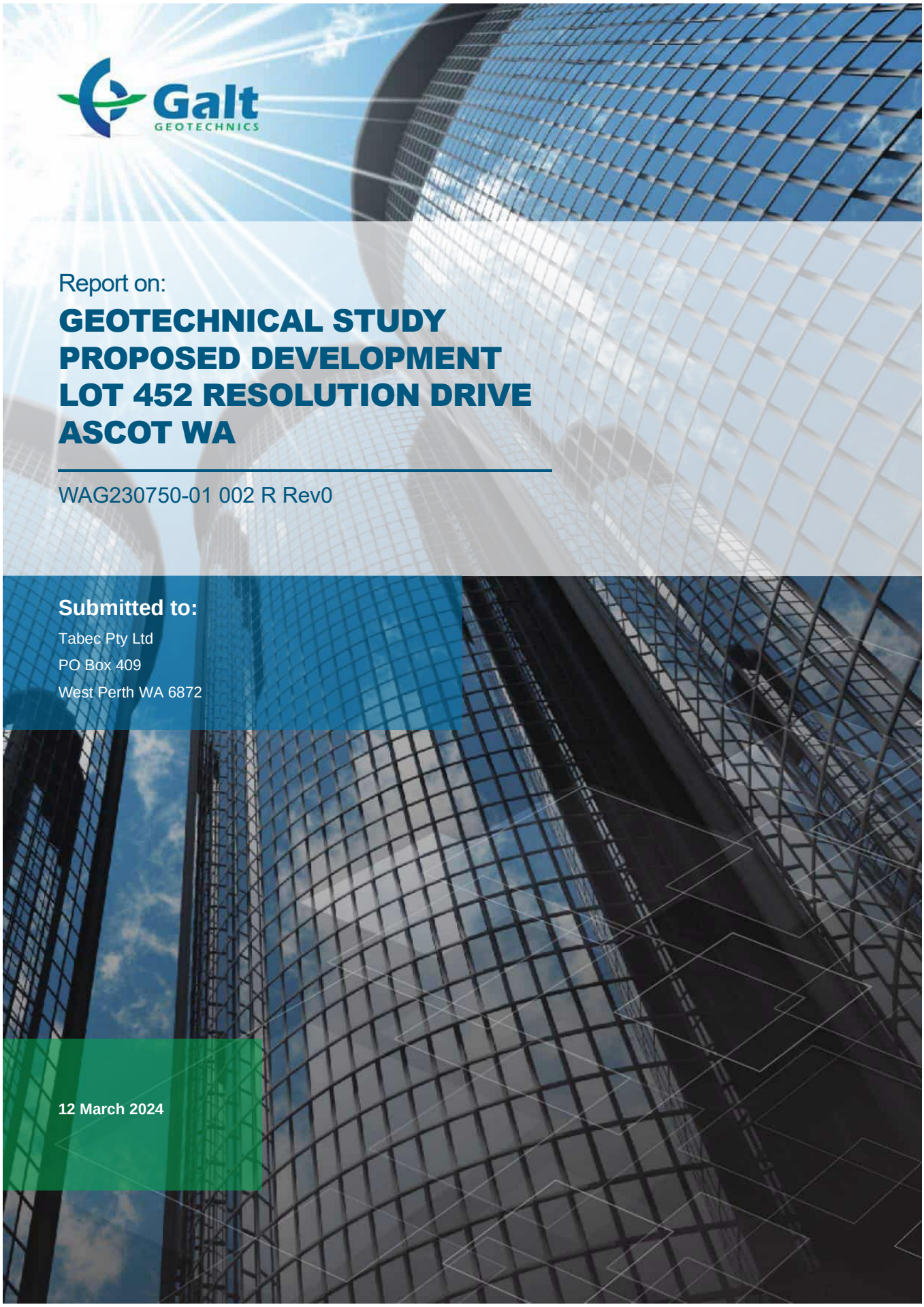
**Name:** Cody O'Neill

**Date:** 17/November/2023

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Galt GEOTECHNICS

Report on:

# GEOTECHNICAL STUDY PROPOSED DEVELOPMENT LOT 452 RESOLUTION DRIVE ASCOT WA

WAG230750-01 002 R Rev0

**Submitted to:**

Tabec Pty Ltd
PO Box 409
West Perth WA 6872

**12 March 2024**

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**3. PROPOSED DEVELOPMENT** 2
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Figure 1: Site and Location Plan

Appendix A: Site Photographs
Appendix B: Cone Penetration Test Results
Appendix C: Machine Borehole and Monitoring Well Logs
Appendix D: Laboratory Test Results

Standard Geotechnical Definitions, Recommendations, Requirements and Limitations

# 1. INTRODUCTION

This report presents the outcomes of Galt Geotechnics' (Galt's) geotechnical study for the proposed development at Lot 452 Resolution Drive, Ascot ("the site").

This report is to be read in conjunction with the appended "Geotechnical Definitions, Recommendations, Requirements and Limitations". 'Clause GDR1', etc. refer to this Appendix, found at the back of this report.

# 2. KEY FINDINGS

## Site Description

*Table 1: Summary of Site*

| Item | Comment |
|---|---|
| Site Extent | Refer Figure 1. |
| Site Area | About 1.14 Ha. |
| Current Site Surface Levels[1] | About RL 3 m AHD. |
| Vegetation | Mature trees, shrubs and lawn in landscaped areas covering a large portion of the site. |
| Existing Infrastructure | Single Storey building (used by Perth Racing Security Services) with surrounding accessways, car parking and landscaped areas. |
| Site History[2] | **Prior to 1953**: two residences in northern portion of site. Remainder of site relatively clear.<br>**1953 to 1985**: Relatively unchanged. Undeveloped portion of site used as laydown area, car park area, and to stockpile materials at different times.<br>**1989**: Existing Perth Racing Security Services development (as described above) is present<br>**1989 to Present**: Site relatively unchanged. |

***NOTES:*** ***1.*** *Site level based on correspondence with client.*

***2.*** *Site history based on aerial imagery (Landgate).*

# 3. PROPOSED DEVELOPMENT

*Table 2: Summary of Proposed Development*

| Item | Comment |
|---|---|
| Proposed Development | Unknown, assumed subdivision for commercial/residential purposes. |
| Proposed Finished Level | Assumed within about 1 m of current ground levels. |
| Cut/Fill | Assumed ± 1 m with up to 5 m excavation to connect development to existing sewer. |
| Assumed Foundation Type | Shallow Footings. |
| Assumed Retaining Walls | Gravity walls up to 1 m in height. |
| Assumed Stormwater Disposal | Off site into council network. |
| Assumed Sewage Disposal | Off site via reticulated sewer. |

***NOTES:*** ***1.*** *FFL – finished floor level*

***2.*** *Proposed development details based on supplied information.*

# 4. PROJECT OBJECTIVES

The objectives of the study were to:

- Assess the geotechnical suitability of the site for the proposed development;

- Geotechnical opportunities and constraints relevant to the proposed development;
- Areas of foundation risk including the presence of aggressive soils and strategies to address identified risks;
- Site preparation including possible reuse of existing soil as controlled fill;
- Excavation conditions;
- The likely site classification;
- Suitable foundation systems including preliminary design parameters;
- Preliminary design parameters for the design of retaining structures and batter slopes;
- Depth to groundwater at time of investigation; and
- Recommendations on additional geotechnical investigation at detailed design phase or to address specific ground conditions encountered.

# 5. FIELDWORK

Fieldwork was carried out in the presence of a representative from Galt between the 8 and 14 February 2024 and comprised:

*Table 3: Summary of Field Data*

| Type | Results Appendix | Summary | GDR Clause | Equipment Used | No. Tests | Depth Range (m) |
|---|---|---|---|---|---|---|
| Site Plan | Figure 1 | - | - | Hand held GPS[1] | - | - |
| Photographs | A | - | - | - | - | - |
| Cone Penetration Tests (CPTs) | B | Section 8 | GDR3.2 | 14-tonne truck | 5 | 1.6 to 10.1 |
| Machine Auger Boreholes (BH) | C | Section 8 | GDR3.3 | AMS Power Probe | 4 | 0.7 to 6.5 |
| Monitoring Well (MW) | C | Section 8 | GDR3.3 | AMS Power Probe | 1 | 6.0 |

***NOTES:*** ***1.*** *Hand held GPS is accurate to ±5 m.*

# 6. LABORATORY TESTING

Laboratory test certificates are presented in Appendix D, and summarised in Attached Tables 1 and 2.

# 7. SITE CONDITIONS

## 7.1. Geology

*Table 4: Summary of Geology Mapping*

| Map Sheet | Map Scale | Mapped Soils | Typical Site Findings |
|---|---|---|---|
| Perth | 50K | Guildford Formation, described as: *"SANDY SILT - strong brown to mid grey, mottled, blocky, disseminated fine sand, hard when dry, variable clay content of alluvial origin."* | **Thin topsoil** (landscaped areas) **and pavement materials** (car parks / access ways) **over FILL: SAND / SAND** to about 0.4 m to 0.9 m depth, **over Sandy CLAY / CLAY**. |

## 7.2. Groundwater

*Table 5: Summary of Groundwater Levels*

| Item | Date | Depth Range (m) | Elevation Range (m AHD) | Comment |
|---|---|---|---|---|
| Perth Groundwater Atlas | 1997 | - | 3.0 | Historical maximum |
| Department of Water and Environmental Regulation (DWER) Flood Mapping | - | - | 2.7 to 2.9 (DWER mapped 1% AEP flood event level) | Portion of site along southern and south western site boundaries, and the northern side of Grandstand road are mapped as being part of flood fringe by DWER. **Advice on development within the defined flood event (DFE) floodplain is provided by DWER on a case by case basis. DWER recommends a minimum building floor level of 0.50 metres above this level (RL 3.4 m AHD).** |
| Site observations in MW01 | February 2024 | 3.03 | - | Based on highest recorded water levels in monitoring well. |
| Site observations in CPT test probes | February 2024 | 1.90 to 2.80 | - | CPT probes may not have had sufficient time to recharge to hydrostatic levels. |
| Recommended Design | - | - | 2.7 to 2.9 | Groundwater likely to perch on clay soils at site. Proposed development must be designed for DWER DFE flood event. |

***NOTES:*** ***1.*** *Depths for site observations based on the site surface level at the time of investigation.*

# 8. GROUND MODEL

The encountered subsurface conditions are summarised as comprising:

- **Surficial Topsoil (in landscaped areas)** up to 0.3 m thick **and Hardstand Fill Layers** (in carparks and access ways); **overlying**
- **FILL: SAND / SAND (SP)**, fine to medium grained, sub-rounded to sub-angular, yellow / brown / grey layers, includes trace gravel / Sandy GRAVEL layers, trace / with fines, some typically medium dense to dense, extending to depths of about 0.4 m to 0.9 m; overlying
- **In BH03 and BH04 only: Silty SAND / Clayey SAND (SM/SC)** fine to medium grained, sub-rounded to sub-angular, brown / grey, low to medium plasticity fines, some typically medium dense to dense, extending to depths of about 0.7 m to 1.2 m; overlying
- **Sandy CLAY / CLAY (CI)**, medium plasticity, brown / orange / grey, trace sand to sandy, trace gravel in some zones, desiccated, CPT traces indicate presence of occasional sand layers, typically very stiff to hard, extending to the maximum depth investigated of 10 m.

Geotechnical design parameters for the generalised subsurface units described above are presented in Table 6.

*Table 6: Geotechnical Model Units and Design Parameters*

| Unit Name | $\gamma_{bulk}$ (kN/m$^3$) | $\phi'$ (°) | c' (kPa) | $S_u$ (kPa) | $E_v$ (MPa) | $\nu$ | $k_0$ | Wall Friction=0 | | Wall Friction=0.5$\phi$ | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | $k_a$ | $k_p$ | $k_a$ | $k_p$ |
| Compacted Approved FILL | 18 | 36 | - | - | 50 | 0.25 | 0.41 | 0.26 | 3.85 | 0.22 | 6.54 |
| SAND / Silty SAND / Clayey SAND | 18 | 35 | - | - | 25 | 0.3 | 0.43 | 0.27 | 3.69 | 0.24 | 6.08 |
| Sandy CLAY / CLAY | 18 | 21 | 0 to 5 | 150 | 30 | 0.45 | Earth pressure coefficients can be calculated for undrained or drained conditions as outlined in GDR11.2.2 using Firm parameters (undrained) or Fines Content >35% & PI 40% (drained). | | | | |

***NOTES:***

1. *These units are a generalization of results from individual tests, which should be referred to for more information.*
2. *Conditions at CPT locations below depth of soil sample recovery are inferred (refer to clause GDR3.2)*
3. *Surficial topsoil and hardstand layers are not included as discrete units.*
4. *Compacted approved fill is as described in Table 7.*
5. *For all earth pressure coefficients (retaining wall design) refer to clause GDR11.2 for more detail and interpretation. Unit weights for retaining structure design should be as per GDR11.2 or 1 kN/m$^3$ greater than the values in the table above.*

*$\gamma_{bulk}$ – bulk unit weight*
*$\phi'$ – effective friction angle*
*$S_u$ – undrained shear strength*
*c'– effective cohesion*
*$E_v$ – vertical elastic modulus*
*$\nu$ – Poisson's Ratio*
*$k_a$ – coefficient of active earth pressure (Coulomb – AS4678-2002, Appendix E)*
*$k_p$ – coefficient of passive earth pressure (Coulomb – AS4678-2002, Appendix E)*
*$k_0$ – coefficient of at-rest earth pressure (Jaky)*

# 9. GEOTECHNICAL ASSESSMENT

## 9.1. Summary

*Table 7: Summary of Geotechnical Assessment*

| Type | Clause | Parameter | Comment |
|---|---|---|---|
| Site Suitability | - | - | We consider the site to be geotechnically suitable for the proposed subdivision development. Standard site preparation measures will apply. However, groundwater could impact construction if it occurs during winter. Flood levels will impact site levels (refer Table 5). |
| Construction Methodology and Suitability | - | - | Shallow footings in accordance with AS2870-2011 will be suitable for this site. Mass retaining will be suitable for retaining however, must be designed for potential flooding of the site. Stormwater disposal via infiltration is **not** suitable. |
| Site Classification (AS2870) | GDR5 | S | Where **no less than 0.7 m of sand** (including insitu silty sand and clayey sand layers encountered in BH03 and BH04) is present **over in situ CLAY / Sandy CLAY.** |
| Site Subsoil Class (AS1170.4) | - | Ce | Base of superficial formation mapped to be about 25 m below ground. |
| Site Preparation | GDR6 | - | **GDR6.2.1 Common Measures** followed by **GDR6.2.4 Clayey Sites** followed by **GDR6.2.5 Sand Topping Layer.** |
| Approved Fill | GDR8 | - | **Approved Fill** for this site is to comprise **Permeable Sand**.<br>Only relatively thin surficial layers of sand at the site (excluding topsoil) are suitable as approved fill. If additional fill is required, imported **Permeable Sand** will be needed.<br>Although not classed as 'approved fill', where clay is encountered in trench excavations, this material could possibly be reused to backfill the same portion of the trench (excluding any special fill materials required around buried elements). However, this material will be difficult to work and moisture condition to near optimum (particularly if removed from below the groundwater table). |
| Compaction Control | GDR7 | - | A PSP may be used for compaction control on **Permeable Sand.** Deemed to comply values for 'Tamala' sand in GDR7.4 are applicable.<br>Where filling with clay is done (in trenches, etc), compaction control must be done with the NDG as outlined in GDR7.3 Nuclear Density Gauge. |
| Shallow Footings | GDR9 | $q_{all}$ = 100 kPa to 250 kPa | Design tables for shallow footings are presented in Section 9.2. Estimated settlements are not considered excessive. 70% of the settlement is expected to occur during construction. |
| Earth Pressure Coefficients | GDR11 | Table 6 | Earth pressure coefficients are presented in Table 6. |
| Unsaturated Hydraulic Conductivity | GDR13 | - | On site disposal of stormwater unlikely to be suitable due to shallow depth to clay and potential for flooding adjacent the site. Off site disposal of stormwater likely to be required. |
| Pavement Subgrade CBR | GDR16 | CBR = 10% | Subgrade to comprise compacted **Approved Fill no less than 0.6 m thick.** |
| Soil Aggressivity | GDR17 | - | Refer Section 9.3 |
| Batters | GDR12 | **Temporary:**<br>Sand: 1V:2H<br>Clay: 1V:1H<br>**Permanent:**<br>1V:3H | Batter angles apply to soil units (refer Table 6) above the water table, as per GDR12.3. Dewatering and possibly retention (i.e. shoring) required below the groundwater table. |
| Excavations | GDR12.1 | 20 Ton Excavator | Potential for obstructions (buried concrete, Soakwells etc…), cemented soils and surficial pavement layers must be considered when selecting earthmoving plant. |

**NOTES:**
1. $q_{all}$ – allowable bearing pressure (maximum for all footings, refer to footing tables for further details)

## 9.2. Shallow Footings

*Table 8: Isolated Pad Footing Allowable Bearing Pressures and Estimated Settlements*

| $d_e$ (m) | b (m) | $q_{all}$ (kPa) | s (mm) |
|---|---|---|---|
| 0.5 | 0.5 | 120 | < 5 |
| 0.5 | 1.0 | 130 | < 5 |
| 1.0 | 1.0 | 240 | 5 - 10 |
| 1.0 | 2.0 | 250 | 10 - 15 |
| 1.0 | 3.0 | 250 | 20 - 25 |

**NOTES:**
1. $d_e$ – minimum embedment depth (below finished ground level or floor slab)
2. b – Footing breadth (footings assumed approximately square)
3. $q_{all}$ – allowable bearing pressure (peak). Limited to keep estimated settlements less than 25 mm. Higher $q_{all}$ may be possible if higher settlements can be tolerated – refer queries to us.
4. s – estimated settlement (excludes shrink/swell from site class)
5. Refer to GDR9
6. Groundwater assumed to be at ground level.

*Table 9: Isolated Strip Footing Allowable Bearing Pressures and Estimated Settlements*

| $d_e$ (m) | b (m) | $q_{all}$ (kPa) | s (mm) |
|---|---|---|---|
| 0.5 | 0.5 | 100 | < 5 |
| 0.5 | 1.0 | 130 | 5 - 10 |
| 1.0 | 1.0 | 190 | 10 - 15 |
| 1.0 | 2.0 | 250 | 20 - 25 |

**NOTES:**
1. $d_e$ – minimum embedment depth (below finished ground level or floor slab)
2. b – Footing breadth (footings assumed long relative to breadth)
3. $q_{all}$ – allowable bearing pressure (peak). Limited to keep estimated settlements less than 25 mm. Higher $q_{all}$ may be possible if higher settlements can be tolerated – refer queries to us.
4. s – estimated settlement (excludes shrink/swell from site class)
5. Refer to GDR9
6. Groundwater assumed to be at ground level.

## 9.3. Soil Aggressivity

Results of aggressivity testing on clay samples is summarised in Attached Table 2. The results indicate the clay is 'non aggressive' to concrete and steel (in accordance with AS2159-2009) with a AS3600-2009 classification of 'A1'.

Based on regional experience, we anticipate the sand will have the same aggressivity classifications as the underlying clay where above the groundwater. However, for concrete in sand below the water table, an AS2159-2009 'mild' classification, and AS3600-2009 'A2' classification is appropriate.

Groundwater was not tested.

# 10. CLOSURE

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Owen Woodland CPEng
*Geotechnical Engineer*

Tyrone Mardesic CPEng
*Geotechnical Engineer*

https://galtgeo.sharepoint.com/sites/wag230750/shared documents/01 tabec si/03 correspondence/wag230750-01 002 r rev0.docx

*Attached Table 1: Summary of Geotechnical Index Test Results*

| Test Name | Sample Depth (m) | Soil Class (AS1726 2017) | Fines (%) | Sand (%) | Gravel (%) | LL (%) | PI (%) | LS (%) |
|---|---|---|---|---|---|---|---|---|
| BH03 | 1.5 - 2.2 | CLAY (CI) | 89 | 11 | 0 | 46 | 28 | 12.5 |
| BH04 | 1.0 - 1.3 | Sandy CLAY (CI) | 54 | 43 | 3 | 34 | 20 | 8.5 |

***Notes***

1. *Particle size distribution (by mass)*
   *Gravel: 2.36 mm – 63 mm* *Sand: 0.075 mm – 2.36 mm* *Fines: <0.075 mm*
2. *Atterberg Limits*
   *LL: Liquid limit* *PI: Plasticity index* *LS: Linear shrinkage*
   *NO: Not obtainable* *NP: Non-plastic*

*Attached Table 2: Summary of Chemical Test Results and Exposure Classification*

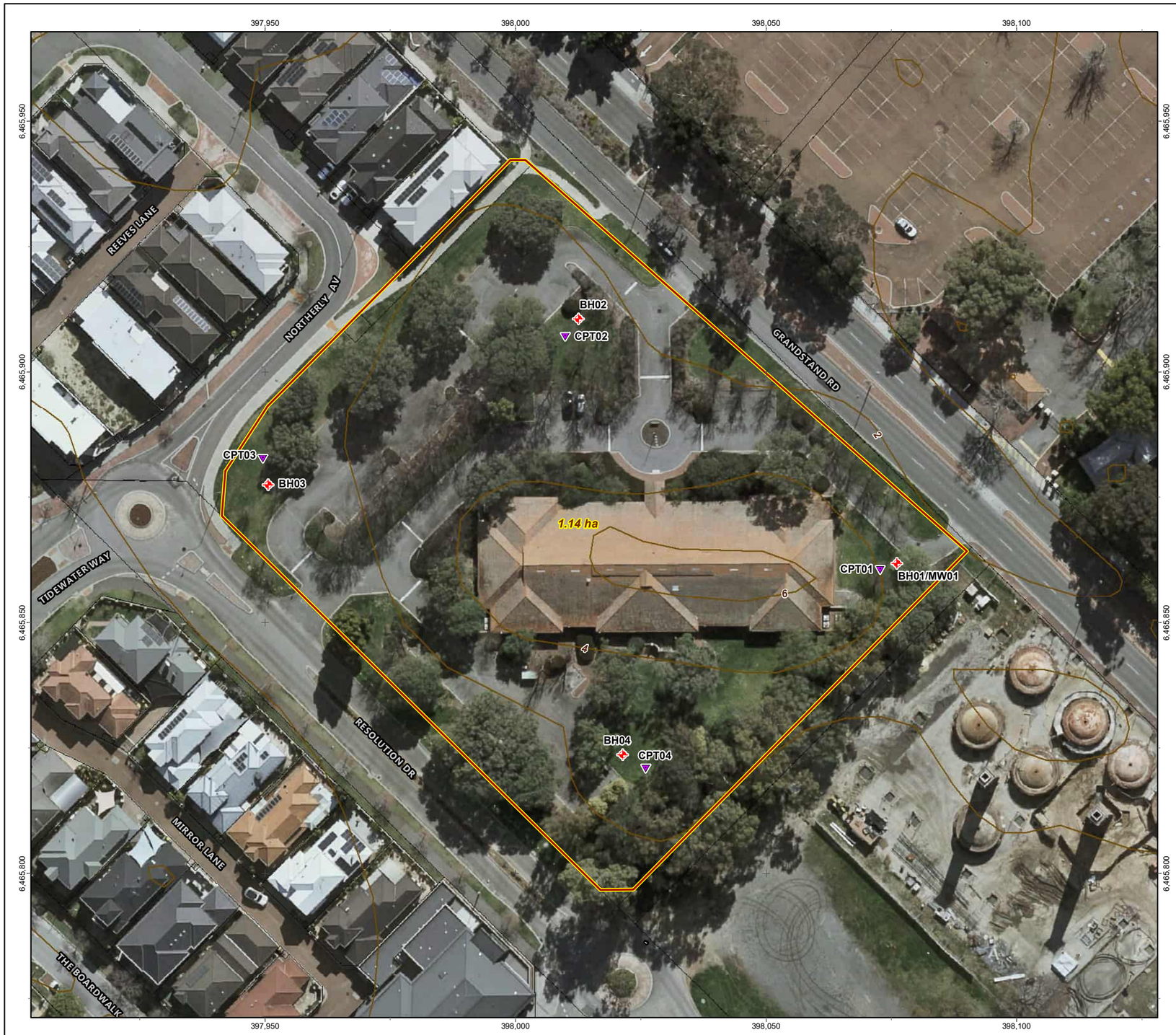
| Location | Sample Depth (m) | Soil Description | Soil Condition | pH | $SO_4$ (ppm) | Cl (ppm) | AS2159 Steel EC | AS2159 Concrete EC | AS3600 Concrete EC |
|---|---|---|---|---|---|---|---|---|---|
| BH03 | 1.5 - 2.2 | CLAY (CI) | B | 8.8 | 100 | 210 | Non-Aggressive | Non-Aggressive | A1 |
| BH04 | 1.0 - 1.3 | Sandy CLAY (CI) | B | 7.5 | 170 | 94 | Non-Aggressive | Non-Aggressive | A1 |

***NOTES:***

1. *Soil condition*
   *A – high permeability soils (sands and gravels) which are below water table.* *B – Low permeability soils (silts and clays) and all soils above water table*
2. *Sulfate expressed as $SO_4$*
3. *Cl – Chloride*
4. *ER – Electrical Resistivity*
5. *EC – Exposure Classification*
5. *Exposure Classification for AS2159-2009 (for steel and concrete piles)*
   *[Exposure Classification for AS3600-2009 (for buried concrete structures)]*

| *Non-aggressive [A1]* | *Mild [A2]* | *Moderate [B1]* | *Severe [B2]* | *Very Severe [C2]* |
|---|---|---|---|---|

# Figures







**Legend**

- Site Boundary
- Borehole
- Cone Penetration Test

N

0 10 20 30 40 50
Meters

***NOTES***
*Aerial Imagery and Cadastre sourced from Landgate/SLIP*




| | |
|---|---|
| SCALE | 1:750 (A3) |
| DRAWN | CED |
| DATE DRAWN | 13/2/2024 |
| CHECKED | _ |
| DATE CHECKED | _ |
| PROJECTION | GDA 1994 MGA Zone 50 |

Galt Geotechnics Pty Ltd
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Osborne Park WA 6017

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| | |
|---|---|
| CLIENT | **TABEC CIVIL ENGINEERING CONSULTANTS** |
| PROJECT | PROPOSED DEVELOPMENT |
| LOCATION | LOT 452 RESOLUTION DRIVE ASCOT |
| TITLE | SITE & LOCATION PLAN |
| Job No | WAG230750-01 |
| Fig No | FIGURE 1 |
| Rev | **A** |

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Appendices

# Appendix A: Site Photographs

*Photograph 1: Near CPT02 facing south*



*Photograph 2: Near CPT02 facing south west*



*Photograph 3: Site photo from near northern portion of site*



# Appendix C: Machine Borehole and Monitoring Well Logs

# EXPLANATORY NOTES TO BE READ WITH BOREHOLE AND TEST PIT REPORTS

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## METHOD OF DRILLING OR EXCAVATION

| | | | | | |
|---|---|---|---|---|---|
| AC | Air Core | E | Excavator | PQ3 | PQ3 Core Barrel |
| AD/T | Auger Drilling with TC-Bit | EH | Excavator with Hammer | PT | Push Tube |
| AD/V | Auger Drilling with V-Bit | HA | Hand Auger | R | Ripper |
| AT | Air Track | HE | Hand Excavation | RR | Rock Roller |
| B | Bulldozer Blade | HQ3 | HQ3 Core Barrel | SON | Sonic Rig |
| BH | Backhoe Bucket | N | Natural Exposure | SPT | Driven SPT |
| CT | Cable Tool | NMLC | NMLC Core Barrel | WB | Washbore |
| DT | Diatube | PP | Push Probe | X | Existing Excavation |

## SUPPORT

| | |
|---|---|
| T | Timbering |

## PENETRATION EFFORT (RELATIVE TO THE EQUIPMENT USED)

| | | | | | |
|---|---|---|---|---|---|
| VE | Very Easy | E | Easy | F | Firm |
| H | Hard | VH | Very Hard | | |

## WATER

| | | | |
|---|---|---|---|
| ► | Water Inflow | ▼ | Water Level |
| ◄ | Water Loss (complete) | | |
| ◁ | Water Loss (partial) | | |

## SAMPLING AND TESTING

| | | | |
|---|---|---|---|
| B | Bulk Disturbed Sample | P | Piston Sample |
| BLK | Block Sample | PBT | Plate Bearing Test |
| C | Core Sample | U | Undisturbed Push-in Sample |
| CBR | CBR Mould Sample | | U50: 50 mm diameter |
| D | Small Disturbed Sample | SPT | Standard Penetration Test |
| ES | Environmental Soil Sample | | Example: 3, 4, 5 N=9 |
| EW | Environmental Water Sample | | 3,4,5: Blows per 150 mm |
| G | Gas Sample | | N=9: Blows per 300 mm after |
| HP | Hand Penetrometer | | 150 mm seating interval |
| LB | Large Bulk Disturbed Sample | VS | Vane Shear; P = Peak |
| M | Mazier Type Sample | | R = Remoulded (kPa) |
| MC | Moisture Content Sample | W | Water Sample |

## ROCK CORE RECOVERY

TCR = Total Core Recovery (%) $= \frac{CRL}{TCL} \times 100$

RQD = Rock Quality Designation (%) $= \frac{ALC>100}{TCL} \times 100$

| | |
|---|---|
| TCL | Length of Core Run |
| CRL | Length of Core Recovered |
| ALC>100 | Total Length of Axial Lengths of Core Greater than 100 mm Long |

# METHOD OF SOIL DESCRIPTION
# BOREHOLE AND TEST PIT REPORTS

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## GRAPHIC LOG & SOIL CLASSIFICATION SYMBOLS

| Graphic | USCS | Soil Name |
|---|---|---|
| | | FILL (various types) |
| | | COBBLES / BOULDERS |
| | GP | GRAVEL (poorly graded) |
| | GW | GRAVEL (well graded) |
| | GC | Clayey GRAVEL |
| | GM | Silty GRAVEL |
| | SP | SAND (poorly graded) |
| | SW | SAND (well graded) |
| | SC | Clayey SAND |

| Graphic | USCS | Soil Name |
|---|---|---|
| | SM | Silty SAND |
| | ML | SILT (low liquid limit) |
| | MH | SILT (high liquid limit) |
| | CL | CLAY (low plasticity) |
| | CI | CLAY (medium plasticity) |
| | CH | CLAY (high plasticity) |
| | OL | Organic SILT (low liquid limit) |
| | OH | Organic SILT (high liquid limit) |
| | Pt | PEAT |

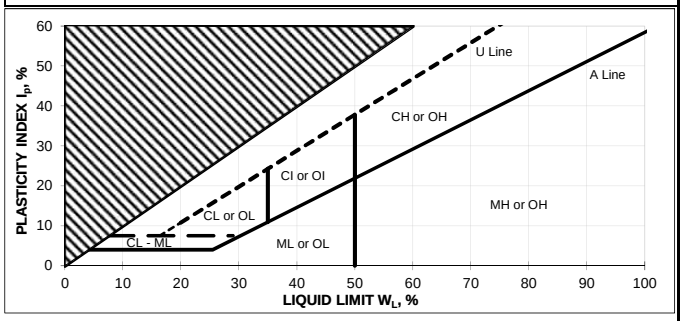
NOTE: Dual classification given for soils with a fines content between 5% and 12%.

## SOIL CLASSIFICATION AND INFERRED STRATIGRAPHY

Soil descriptions are based on AS1726-2017. Material properties are assessed in the field by visual/tactile methods in combination with field and laboratory testing techniques (where used).
NOTE: AS 1726-2017 defines a fine grained soil where the total dry mass of fine fractions (<0.075 mm particle size) exceeds 35%.

| PARTICLE SIZE | | |
|---|---|---|
| **Soil Name** | | **Particle Size (mm)** |
| BOULDERS | | >200 |
| COBBLES | | 63 to 200 |
| GRAVEL | Coarse | 19 to 63 |
| | Medium | 6.7 to 19 |
| | Fine | 2.3 to 6.7 |
| SAND | Coarse | 0.6 to 2.36 |
| | Medium | 0.21 to 0.6 |
| | Fine | 0.075 to 0.21 |
| FINES | SILT | 0.002 to 0.075 |
| | CLAY | <0.002 |

**PLASTICITY - MODIFIED CASAGRANDE CHART - AS1726-2017**




| RESISTANCE TO EXCAVATION | | |
|---|---|---|
| **Symbol** | **Term** | **Description** |
| VE | Very easy | All resistances are relative to the selected method of excavation |
| E | Easy | |
| F | Firm | |
| H | Hard | |
| VH | Very hard | |

| MOISTURE CONDITION | |
|---|---|
| **Symbol** | **Term** |
| D | Dry |
| M | Moist |
| W | Wet |

| CEMENTATION | |
|---|---|
| **Cementation** | **Description** |
| Weakly cemented | Soil may be easily disaggregated by hand in air or water |
| Moderately cemented | Effort is required to disaggregate the soil by hand in air or water |

| CONSISTENCY | | |
|---|---|---|
| **Symbol** | **Term** | **Undrained Shear Strength (kPa)** |
| VS | Very Soft | 0 to 12 |
| S | Soft | 12 to 25 |
| F | Firm | 25 to 50 |
| St | Stiff | 50 to 100 |
| VSt | Very Stiff | 100 to 200 |
| H | Hard | >200 |

| ORGANIC SOILS | |
|---|---|
| **Material** | **Organic Content % of dry mass** |
| Inorganic soil | <2% |
| Organic soil | 2% to 25% |
| Peat | >25% |

| DENSITY | | |
|---|---|---|
| **Symbol** | **Term** | **Density Index (%)** |
| VL | Very Loose | <15 |
| L | Loose | 15 to 35 |
| MD | Medium Dense | 35 to 65 |
| D | Dense | 65 to 85 |
| VD | Very Dense | >85 |

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Galt Form PMP17
December 2017

Galt

# REPORT OF BOREHOLE: BH01/MW01

| | | | | | |
|---|---|---|---|---|---|
| Job No | : WAG230750-01 | Easting | : 0.00 | Sheet | : 1 OF 1 |
| Client | : Tabec | Northing | : 0.00 | Logged | : MDS |
| Project | : Proposed Development | UTM | : | Logged Date | : 08/02/2024 |
| Location | : Lot 452 Resolution Drive, Ascot | Drill Rig | : AMS Super Rig | Checked | : TM |
| Contractor | : Galt Geotechnics | Inclination | : -90 deg | Checked Date | : 25/02/2024 |

**General comments: Monitoring Well Installed at this location**

| Drilling Method | Depth (m) | Water | Classification Code | Soil Origin | Graphic Log | Consistency/Density | Moisture | Material Description | Structural and Additional Observations | Well Diagram |
|---|---|---|---|---|---|---|---|---|---|---|
| 90mm Solid Auger | 0.3 | | SP | Natural | | | D | Natural SAND: dark brown and black, fine to coarse grained, with low plasticity clay, (trace organics present in upper 200mm). | (trace organics present in upper 200mm) | Backfill (Drill Spoil) |
| | 0.45 | | SP | Natural | | MD-D | | Natural SAND: pale yellow, fine to coarse grained, trace low plasticity clay. | | 50mm PVC Solid |
| | | | SP | Natural | | | | Natural SAND: dark brown and black, fine to coarse grained, trace low plasticity clay. | | Bentonite (Sealed above Slotted PVC) |
| | 0.9 | | | | | | | | | |
| | 1 | | Cl | Natural | | VSt-H | | Natural Sandy CLAY: medium plasticity, brown and pale orange, fine grained sand, inorganic, clay is highly desiccated. | Clay is highly desiccated | |
| | 2 | | | | | | | | | |
| | 2.3 | | | | | | | | | |
| | 2.5 | | SC | Natural | | | | Natural Clayey SAND: low plasticity clay, brown and dark brown, fine to coarse grained, trace fine to medium sized gravel. | | Filter Pack (Gravel Filter Medium Installed) |
| | | | Cl | Natural | | VSt-H | | | Clay is desiccated at shallower depths | |
| | 3 | ▼ | | | | | | Natural CLAY: medium plasticity, brown and pale orange, trace fine to medium grained sand, inorganic, clay is desiccated at shallower depths. | | |
| | 4 | | | | | | | | | 50mm PVC Slotted |
| | 5 | | | | | | | | | |
| | 6 | | | | | | | **BH01/MW01 Terminated at 6m (Target Depth GW @3.03m)** | | |
| | 7 | | | | | | | | | |
| | 8 | | | | | | | | | |



Galt

# REPORT OF BOREHOLE: BH02

| | | | | | |
|---|---|---|---|---|---|
| Job No | : WAG230750-01 | Easting | : 0.00 | Sheet | : 1 OF 1 |
| Client | : Tabec | Northing | : 0.00 | Logged | : MDS |
| Project | : Proposed Development | UTM | : | Logged Date | : 08/02/2024 |
| Location | : Lot 452 Resolution Drive, Ascot | Drill Rig | : AMS Super Rig | Checked | : TM |
| Contractor | : Galt Geotechnics | Inclination | : -90 deg | Checked Date | : 25/02/2024 |

| Drilling Method | DCP graph | Water | Depth (m) | Soil Origin | Graphic Log | Classification Code | Material Description | Moisture | Consistency/Density | Remarks | Sample |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 90mm Solid Auger | | | | Natura | | SP | Natural SAND: dark grey and black, fine to coarse grained, trace low plasticity clay, (trace organics present in upper 200mm). | M-D | MD-D | | |
| | | | 1 | | | | **BH02 refusal at 0.7m (Refusal on Desiccated Clay Groundwater not encountered)** | | | | |
| | | | 2 | | | | | | | | |
| | | | 3 | | | | | | | | |
| | | | 4 | | | | | | | | |
| | | | 5 | | | | | | | | |
| | | | 6 | | | | | | | | |
| | | | 7 | | | | | | | | |
| | | | 8 | | | | | | | | |

Page 1 of 1

Galt

# REPORT OF BOREHOLE: BH03

| | | | | | |
|---|---|---|---|---|---|
| Job No | : WAG230750-01 | Easting | : 0.00 | Sheet | : 1 OF 1 |
| Client | : Tabec | Northing | : 0.00 | Logged | : PA |
| Project | : Proposed Development | UTM | : | Logged Date | : 14/02/2024 |
| Location | : Lot 452 Resolution Drive, Ascot | Drill Rig | : AMS Super Rig | Checked | : TM |
| Contractor | : Galt Geotechnics | Inclination | : -90 deg | Checked Date | : 25/02/2024 |

| Drilling Method | DCP graph | Water | Depth (m) | Soil Origin | Graphic Log | Classification Code | Material Description | Moisture | Consistency/Density | Remarks | Sample |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 90mm Solid Auger | | | 0.1 | Topsoil | | SP | Topsoil SAND: dark grey, fine to medium grained, trace medium plasticity clay, with roots / organics. | D | | | |
| | | | 0.25 | Fill | | SP | Fill SAND: brown, medium dense to dense, fine to medium grained, trace low plasticity clay. | | MD-D | | |
| | | | 0.4 | Fill | | GP | Fill Sandy GRAVEL: grey, medium dense to dense, fine to medium sized, fine to medium grained sand, trace low to medium plasticity clay. | | | | |
| | | | | Natural | | SM | Natural Silty SAND: grey brown, fine to medium grained. | | | | |
| | | | 0.7 | Natural | | CI | Natural CLAY: medium plasticity, grey, with fine to medium grained sand, inorganic, trace organics, clay is desiccated at shallow depths. | | VSt-H | | |
| | | | 1 | | | | | | | | |
| | | | 1.5 | Natural | | CI | As above, brown, trace organics. | | | | |
| | | | 2 | | | | | | | | |
| | | | 3 | | | | | | | | |
| | | | 4 | Natural | | CI | As above. | M | | | |
| | | | 5 | | | | | | | | |
| | | | 6 | | | | **BH03 Terminated at 6m (Target depth. Groundwater not encountered)** | | | | |
| | | | 7 | | | | | | | | |
| | | | 8 | | | | | | | | |



Page 1 of 1

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# REPORT OF BOREHOLE: BH04

| | | | | | |
|---|---|---|---|---|---|
| Job No | : WAG230750-01 | Easting | : 0.00 | Sheet | : 1 OF 1 |
| Client | : Tabec | Northing | : 0.00 | Logged | : PA |
| Project | : Proposed Development | UTM | : | Logged Date | : 14/02/2024 |
| Location | : Lot 452 Resolution Drive, Ascot | Drill Rig | : AMS Super Rig | Checked | : TM |
| Contractor | : Galt Geotechnics | Inclination | : -90 deg | Checked Date | : 25/02/2024 |

| Drilling Method | DCP graph | Water | Depth (m) | Soil Origin | Graphic Log | Classification Code | Material Description | Moisture | Consistency/Density | Remarks | Sample |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 90mm Solid Auger | | | 0.25 | Topsoil | | SP | Topsoil SAND: grey, fine to medium grained, trace medium plasticity clay, trace / with organics. | D | | | |
| | | | 0.5 | Fill | | SP | Fill SAND: brown, fine to medium grained, trace low plasticity clay. | | | | |
| | | | 1 | Natural | | SC | Natural Clayey SAND: medium plasticity clay, brown, fine to medium grained. | | | | |
| | | | 1.2 | Natural | | Cl | Natural Sandy CLAY: medium plasticity, brown mottled red, fine to medium grained sand, trace fine to medium sized gravel, inorganic, clay is desiccated. | | VSt-H | | |
| | | | 1.5 | Natural | | Cl | Natural CLAY: medium plasticity, brown, with fine to medium grained sand, inorganic, clay is desiccated at shallow depths. | | | | |
| | | | 3 | Natural | | Cl | As above. | M | | | |
| | | | 4.5 | Natural | | Cl | As above. | W | | | |
| | | | | | | | **BH04 Terminated at 6.5m (Target depth. Groundwater possibly at 4.5 m depth)** | | | | |

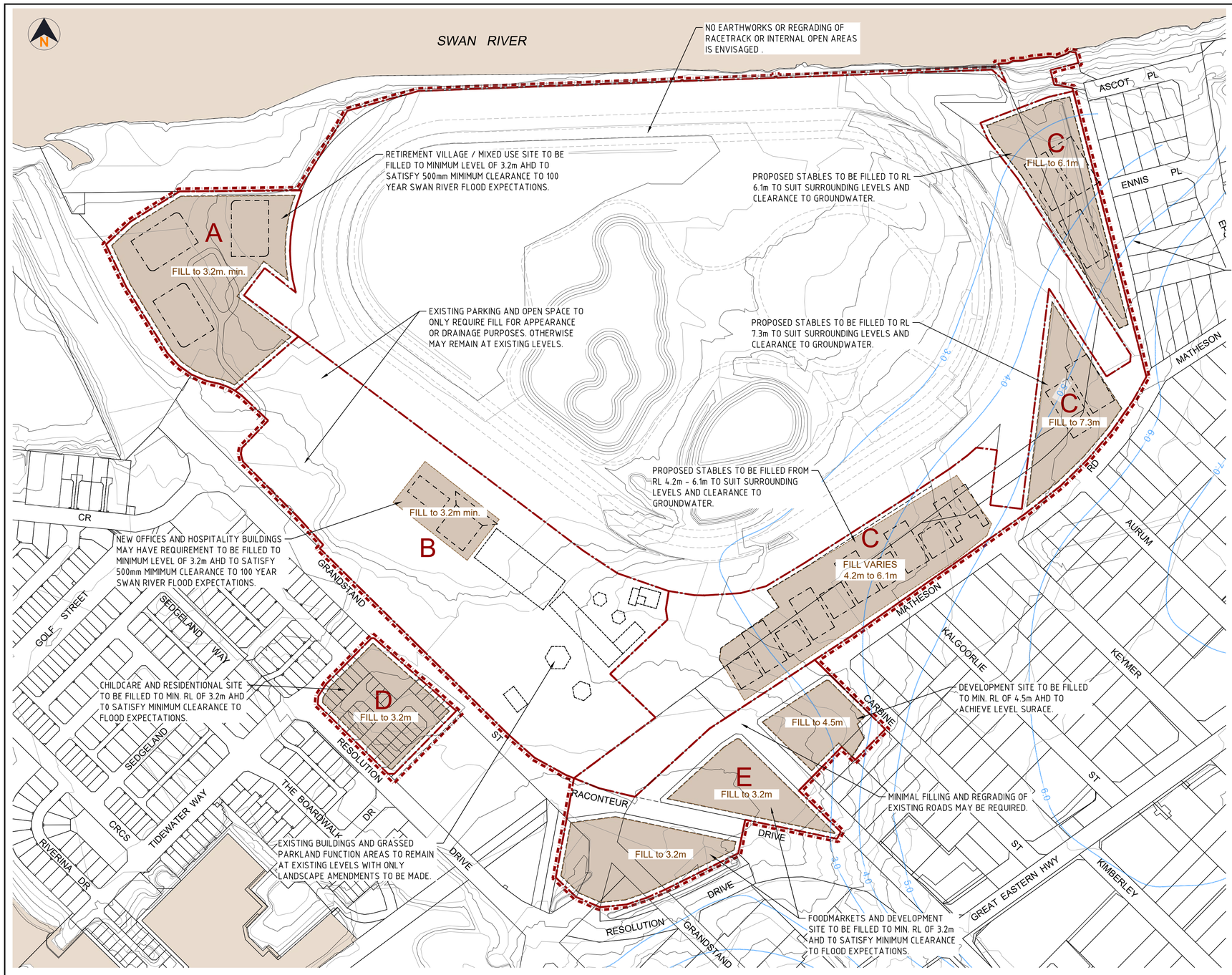


Page 1 of 1

# Appendix C

Preliminary Civil Drawing

Tabec 2024




| No. | DATE | DRAWN | APPROVED | AMENDMENT |
|---|---|---|---|---|
| C | 21.06.24 | PK | JZ | MINIMUM FILL LEVELS AMENDED IN LINE WITH THE LWMS |
| B | 18.06.24 | PK | JZ | PRELIMINARY ISSUE FOR INFORMATION ONLY |
| A | 24.01.24 | PK | JZ | PRELIMINARY ISSUE FOR REVIEW |

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CLIENT: PERTH RACING

| DESIGNED | CHECKED | APPROVED |
|---|---|---|
| PK | JZ | |
| DRAWN | CHECKED | DATE |
| PK | JZ | |

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PROJECT: ASCOT RACECOURSE - LOCAL STRUCTURE PLAN

TITLE: EARTHWORKS CONCEPT PLAN

DRAWING NUMBER: 2541-00-100

ISSUE: C

Plotted By: jkeenan Plot Date: 21/06/24 - 14:47 Cad File: C:\JOBS\Admin\TB-JOBS\2541 - Ascot Racecourse LSP_JOY\CAD\CAD\2541-100\2541-100.dwg

# Appendix D

Modelling Assumption Report

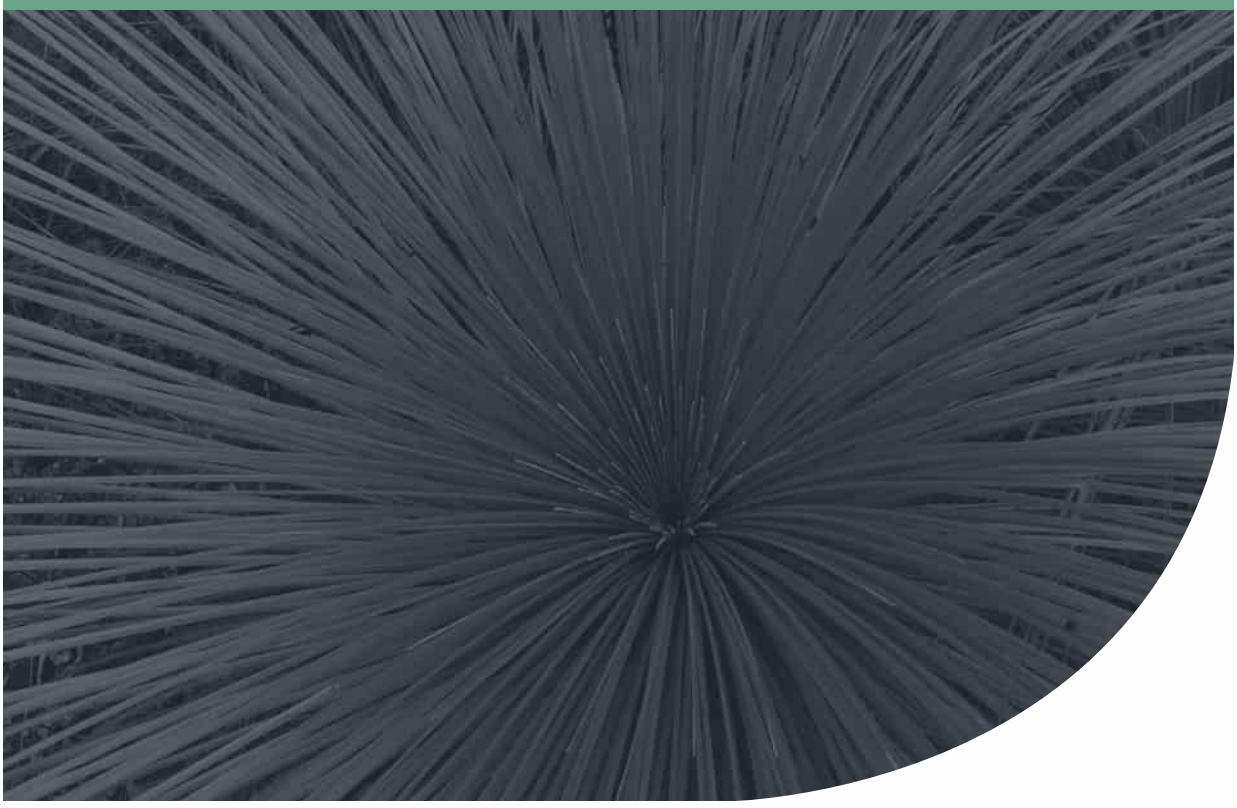
Emerge Associates 2024

# Modelling Assumptions Report

## Golden Gateway Local Structure Plan

Project No: EP23-109(03)

**Prepared for Perth Racing**
**May 2024**



# Document Control

| Doc name: | Modelling Assumptions Report<br>Golden Gateway Local Structure Plan | | | | |
|---|---|---|---|---|---|
| Doc no.: | EP23-109(03)--008 JM | | | | |
| Version | Date | Author | | Reviewer | |
| 1 | May 2024 | Joyti Mabruk | JM | David Coremans | DPC |
| | Appendix to the LWMS | | | | |

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# 1 Background

Perth Racing (the 'proponent') proposed to progress a local structure plan (LSP) over its landholdings in Ascot. The area is bounded by the Swan River to the North, Grandstand Road to the west and south, Matheson Road and Resolution Drive to the south and residential areas to the east, referred to herein as 'the site'. The structure plan area also includes the Ascot Racecourse area. The site is located approximately 8.5 km east of Perth central business district (CBD) and is approximately 62 ha in size, within City of Belmont (CoB). The LSP consists of six precincts: Precinct A, Precinct B, Precinct C, Precinct D, Precinct E, and the racecourse.

# 2 Methodology

XPSWMM hydrologic and hydraulic modelling software (v21.3) was used to calculate the surface water runoff volumes within the road reserves and lots associated with the development of Ascot Racecourse.

The hydrologic component of the software uses the Laurenson non-linear runoff-routing method to simulate runoff from design storm events. Key assumptions regarding the hydrologic model include:

- Runoff is proportional to slope, area, infiltration and percentage of imperviousness of a catchment.
- Sub-catchment areas and slopes are determined from surveyed topographical data and earthworks plans.
- Infiltration rates and percentage imperviousness have been selected based on experience with model preparation for similar soil conditions.

Runoff from each sub-catchment is routed through the catchment using the hydraulic component of XPSWMM. Generally, assumptions associated with the hydraulic component of the model include:

- Virtual links (i.e. purely for model construction, not equivalent to flow path onsite) between nodes within a sub-catchment are given the length of 10 m and slope of 0.05 to minimise the lag time of conveying the water from a sub-catchment node to a 'storage' node, a 'dummy intermediate' node or a conduit/link.
- Links between sub-catchment storages act as conveyance channels (e.g. sheet flow within roads in a 1% annual exceedance probability (AEP)). These links are given lengths and slopes that are representative of the site conditions and actual pathway lengths between catchments.
- All channels are designed with a width of 5 m, roughness of 0.014 (Manning's n) and are trapezoidal in shape. This allows for easy conveyance and represents concrete pipes and road surfaces within the model.
- Where relevant median swales, bio-retention areas (BRAs), and flood storage areas (FSAs) are modelled as nodal-reservoirs with infiltration depth-rating curves to account for differential infiltration rates with changing depth.

## 2.1 Rainfall

The ensemble temporal patterns obtained from the Australian Rainfall and Runoff (AR&R) Data Hub (AR&R 2019) were used for the rainfall analysis.

Durations ranging between 15 min and 72 hours were tested, with the peak flood elevation being assessed as the determining result.

Following the process suggested by AR&R (Ball J et al. 2019), the highest mean duration was selected as the critical duration. AR&R also recommends that when it is not practical to run the entire ensemble array, the ensemble that produces the result closest to the mean (for the critical duration) should be adopted and provided in **Table 1**.

*Table 1: Critical Duration Analysis*

| Catchment | Critical Duration (20% AEP) | Critical Duration (10% AEP) | Critical Duration (1% AEP) |
|---|---|---|---|
| Precinct A | 3 hour duration ensemble 4 | 3 hour duration ensemble 1 | 3 hour duration ensemble 1 |
| Precinct C | 30 min duration ensemble 6 | 30 min duration ensemble 7 | 30 min duration ensemble 8 |
| Precinct D | 1 hour duration ensemble 1 | 30 min duration ensemble 5 | 30 min duration ensemble 1 |
| Precinct E | 45 min duration ensemble 6 | 30 min duration ensemble 5 | 30 min duration ensemble 8 |

# 3 Pre-development model

The catchment parameters determined for Precinct D within the LWMS for the initial loss – continuous loss model have been adopted to account for catchment losses. The pre-development loss parameters used are given in **Table 2**.

*Table 2: Pre-development loss parameters*

| Land type | Initial loss (mm) | Continual loss (mm) | Roughness |
|---|---|---|---|
| Existing residential/Carpark | 15 | 0.1 | 0.014 |

Catchment analysis for pre-development scenario was based on topographic contour data, site visit and aerial photography. Pre-development catchment area within Precinct D is 1.145 ha.

# 4 Post-development model

An initial loss continuing loss model was adopted to account for post-development catchment losses. The post-development catchment area, land types and loss values were based on the structure plan design, typical infiltration rates for the soils which occur onsite and based on project team experience. Post-development catchment areas and land types within the site were informed by sub-division plan provided by LPD surveyors. **Table 3** summarises the loss parameters used within the post-development model.

*Table 3: Post-development loss parameters*

| Land type | Initial loss (mm) | Continual loss (mm) | Roughness |
|---|---|---|---|
| Road Surface | 1 | 0.1 | 0.02 |
| Road Verge | 9 | 1.5 | 0.05 |
| Fully Impervious | 1 | 0.1 | 0.02 |
| Roof | 1 | 0.1 | 0.02 |
| Lot IMP | 1 | 0.1 | 0.02 |
| Gardens | 25 | 2 | 0.05 |
| POS | 25 | 2 | 0.05 |
| Precinct E Lots | 15 | 0.1 | 0.014 |

A summary of post-development catchment information is provided in **Table 4** with the catchment plan and basin location shown in Figure 08 of the LWMS.

*Table 4: Post-development catchment areas (ha)*

| Road reserve | Lots | Road Reserve | POS | Fully Impermeable | Child Care |
|---|---|---|---|---|---|
| Precinct A | 0.714 | 0.606 | 1.360 | 0.330 | - |
| Precinct C | - | 5.903 | - | - | - |
| Precinct D | 0.526 | 0.421 | - | - | 0.199 |
| Precinct E | 3.622 | 0.365 | 0.219 | - | - |

The following assumptions were incorporated into the model:

- Precinct A
  - Lots will have 100% roof areas and road reserve contains 5% pervious verge and 95% impervious bitumen areas.
  - POS will be 100% pervious.
  - There is no current connection point for drainage to be exported from Precinct A.
  - 1 single basin/Flood storage area (FSA) for both treatment and flood mitigation.
  - Base of the FSA will need to be vegetated with reeds/rushes as per a biofilter.
  - FSA will have 1:6 side slopes and maximum depth 1.2m in a 1% AEP – to avoid the need for fencing or access control.

- A hydraulic conductivity of 1m/day is assumed.

- Precinct C
  - The existing portion of Precinct C already connected to the centre of the track (existing buildings and stables) and no change has been assumed.
  - Rest of the Precinct C were modelled as two separate catchments i.e., carpark and stables which are 95% impervious and 5% pervious.
  - 1m deep sub-surface storage has been designed to accommodate 1% AEP event.
  - A hydraulic conductivity of 1m/day is assumed.
  - The storage configuration could be changed/modified to suit site layout/constraints.
  - The carpark in Precinct C that discharges to the southwest will discharge to Precinct E.

- Precinct D
  - Lots will have 50% roof areas, 45% paved areas and 5% pervious garden areas, the childcare has roof areas and Road reserve contains 20% pervious verge and 80% impervious bitumen areas.
  - 1m deep sub-surface storage has been designed to accommodate and detain upto 1% AEP events that will mimic pre-development flow of 0.4.
  - A hydraulic conductivity of 1m/day is assumed.
  - The storage configuration could be changed/modified to suit site layout/constraints.

- Precinct E
  - The carpark in Precinct C discharges to Precinct E.
  - Outflow of pre-development Water Corporation (WC) drain is 0.95 $m^3/s$ as per WC modelling.
  - All lots of Precinct E retain 15mm of rainfall.
  - Runoff above 15 mm rainfall up to the 1% AEP will be managed by a detention basin which will mimic pre-development 1% AEP peak flow of 0.463 $m^3/s$.
  - The basin will have 1:6 side slopes and maximum depth 1.2m in a 1% AEP – to avoid the need for fencing or access control.
  - A hydraulic conductivity of 1m/day is assumed.

# 5 References

## 5.1 General references

The references listed below have been considered as part of preparing this document.

Ball J, Babister M, Nathan R, Weeks W, Weinmann E, Retallick M and Testoni I (Editors) 2019, *Australian Rainfall and Runoff: A Guide to Flood Estimation*, Commonwealth of Australia (Geoscience Australia).

## 5.2 Online references

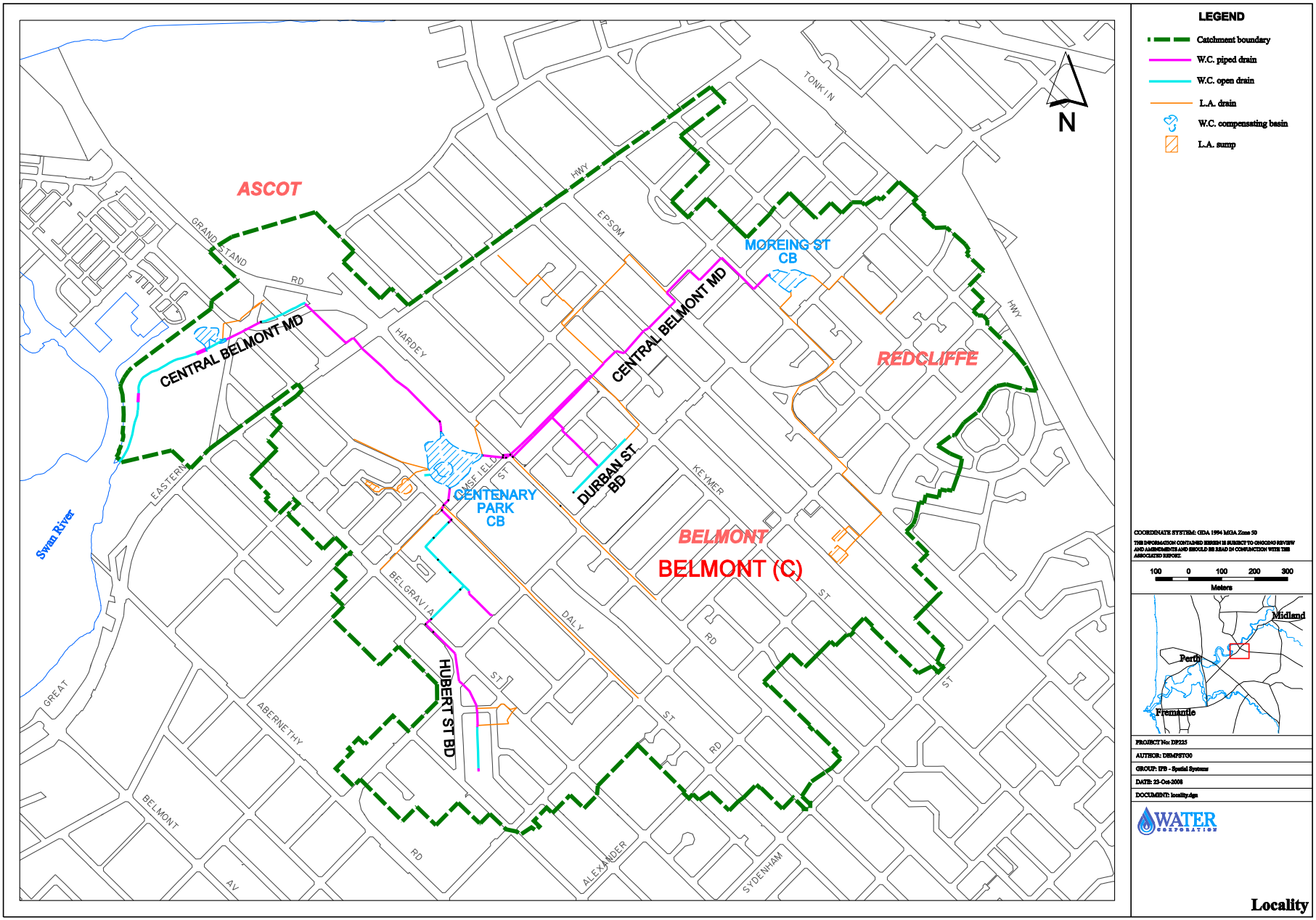
Australian Rainfall and Runoff (AR&R) 2021, ARR Data Hub, viewed 1 December 2021, Available from: <https://data.arr-software.org/>.

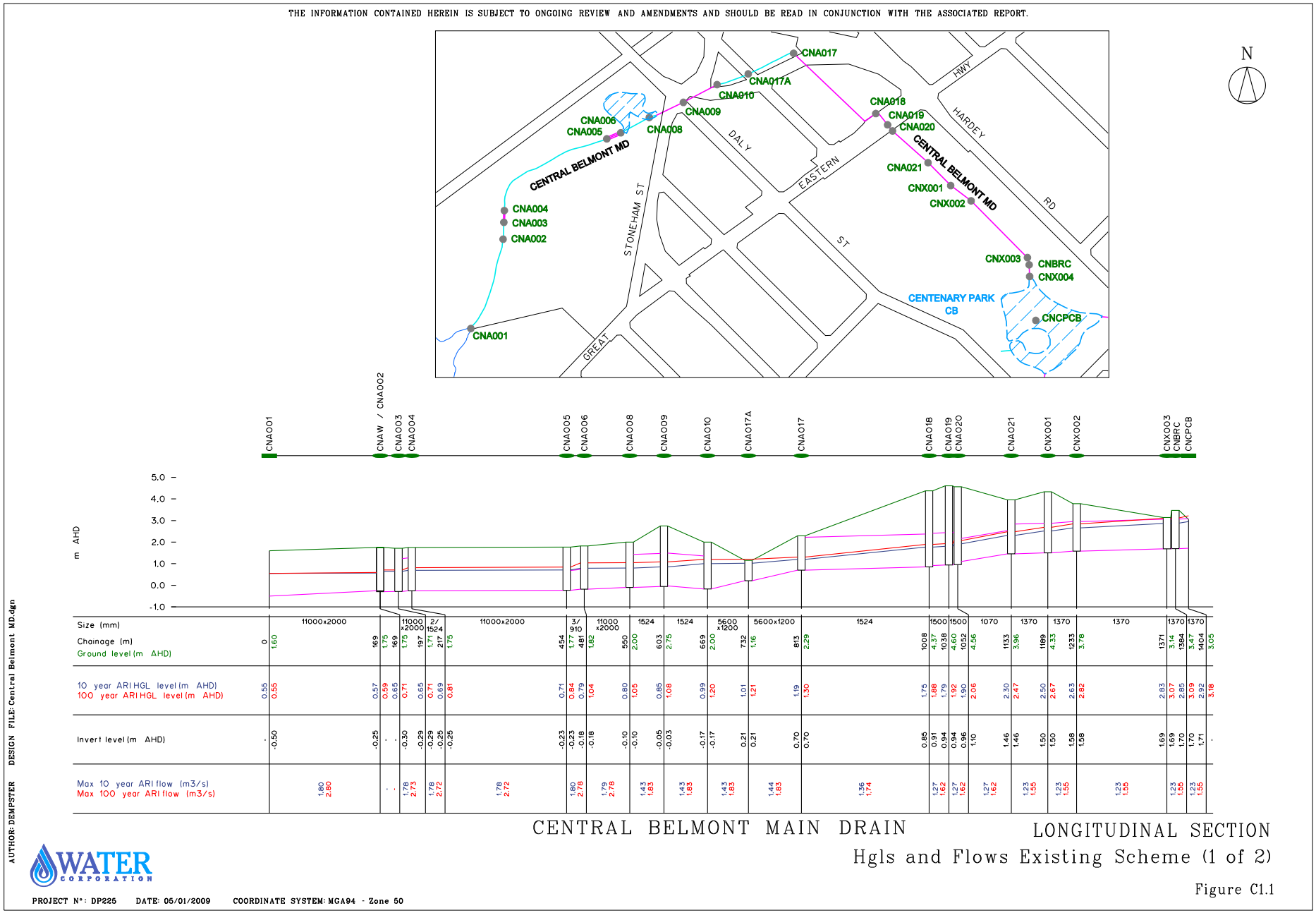
Bureau of Meteorology (BoM) 2021a, Climate Data Online, viewed 1 December 2021, Available from, <http://www.bom.gov.au/water/designRainfalls/revised-ifd/>.

Bureau of Meteorology (BoM) 2021b, Design Rainfall Data System (2016), viewed 1 December 2021, Available from, <http://www.bom.gov.au/water/designRainfalls/revised-ifd/>.

# Appendix E

Central Belmont Main Drain Water Corporation


ASCOT
REDCLIFFE
BELMONT
BELMONT (C)
CENTRAL BELMONT MD
CENTRAL BELMONT MD
MOREING ST CB
CENTENARY PARK CB
DURBAN ST BD
HUBERT ST BD
Swan River
GRAND STAND RD
HARDEY
EPSOM
TONKIN HWY
HWY
EASTERN
CHESTFIELD ST
KEYMER ST
BELGRAVIA
DALY
RD
ST
GREAT
ABERNETHY
BELMONT
AV
ALEXANDER
SYDENHAM
N
LEGEND
Catchment boundary
W.C. piped drain
W.C. open drain
L.A. drain
W.C. compensating basin
L.A. sump
COORDINATE SYSTEM: GDA 1994 MGA Zone 50
THE INFORMATION CONTAINED HEREIN IS SUBJECT TO ONGOING REVIEW AND AMENDMENTS AND SHOULD BE READ IN CONJUNCTION WITH THE ASSOCIATED REPORT.
100 0 100 200 300
Meters
Midland
Perth
Fremantle
PROJECT No: DP225
AUTHOR: DEMPSTOO
GROUP: IPD - Spatial Systems
DATE: 23-Oct-2008
DOCUMENT: locality4gs
WATER CORPORATION
Locality
Figure 1.1


THE INFORMATION CONTAINED HEREIN IS SUBJECT TO ONGOING REVIEW AND AMENDMENTS AND SHOULD BE READ IN CONJUNCTION WITH THE ASSOCIATED REPORT.
N
CNA017
CNA017A
CNA010
CNA009
CNA018
CNA019
CNA020
CNA021
CNX001
CNX002
CNX003
CNBRC
CNX004
CNCPCB
CENTENARY PARK CB
CNA006
CNA005
CNA008
CNA004
CNA003
CNA002
CNA001
CENTRAL BELMONT MD
HWY
HARDEY
RD
DALY
EASTERN
STONEHAM ST
GREAT
ST
m AHD
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
Size (mm)
Chainage (m)
Ground level (m AHD)
10 year ARI HGL level (m AHD)
100 year ARI HGL level (m AHD)
Invert level (m AHD)
Max 10 year ARI flow (m3/s)
Max 100 year ARI flow (m3/s)
CENTRAL BELMONT MAIN DRAIN
LONGITUDINAL SECTION
Hgls and Flows Existing Scheme (1 of 2)
Figure C1.1
AUTHOR: DEMPSTER DESIGN FILE: Central Belmont MD.dgn
PROJECT N°: DP225 DATE: 05/01/2009 COORDINATE SYSTEM: MGA94 - Zone 50

# ATTACHMENT 4

Retail Assessment (Net Benefit Test)

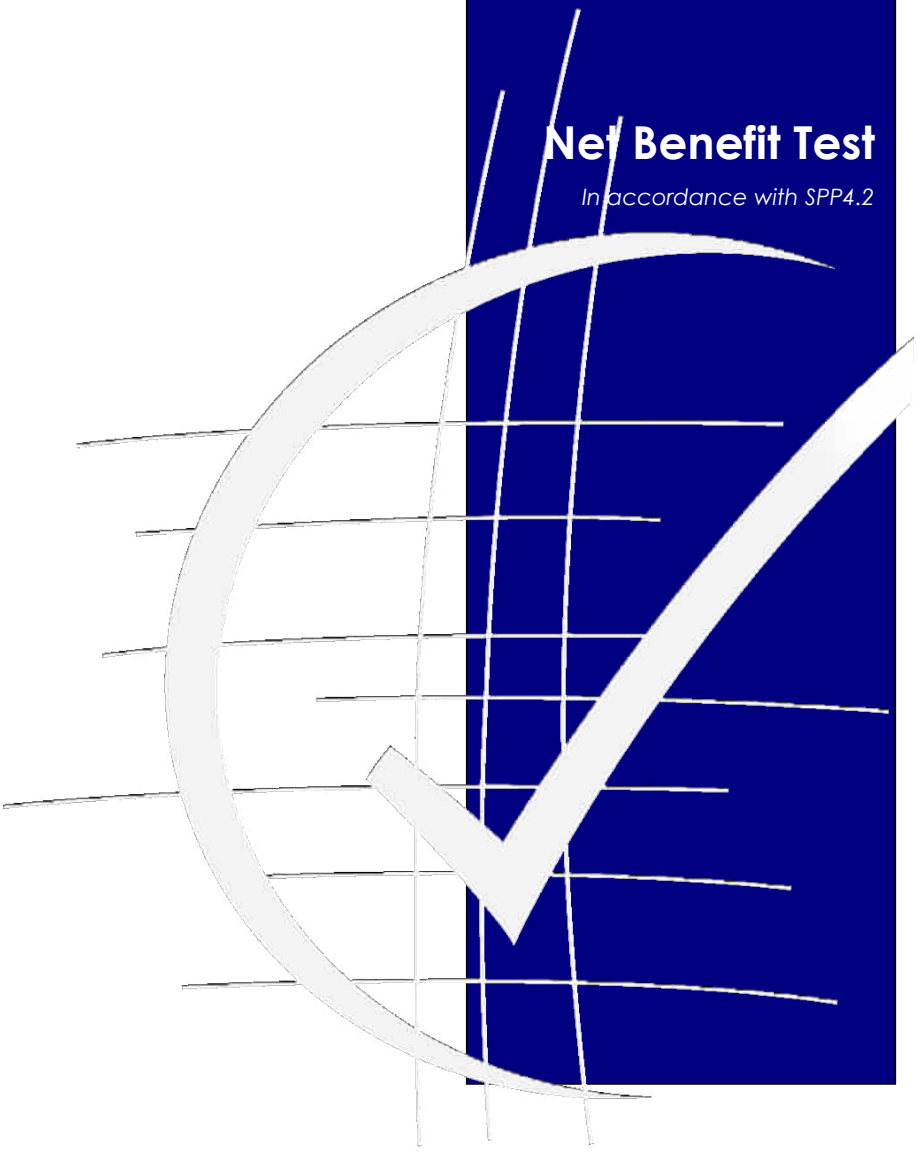
Taktics4

Proposed Activity

Ascot, City of Belmont

# Net Benefit Test

*In accordance with SPP4.2*



### Project

| | |
|---|---|
| Project name | **Ascot Centre** |
| Project number | **2360** |
| Prepared for | **Perth Racing / Rowe Group** |

### Contact

| | |
|---|---|
| Enquiries regarding this document should be directed to | Taktics4<br>Greg Davis<br>+61 439 959 762<br>g.davis@taktics4.com.au |

### Version

| Document Name | Date | Description | Prepared |
|---|---|---|---|
| 2360-Ascot-NBT-T4-Draft-02 | May 2024 | Draft for Consideration | GRD |
| 2360-Ascot-NBT-T4-Draft-03 | June 2024 | Draft for Consideration | GRD |
| **2360-Ascot-NBT-T4-Final-01.docx** | **Aug 2024** | **Draft for Consideration** | **GRD** |
| | | | |

### Distribution

| Document Name | Date | Distribution | Format | Delivery |
|---|---|---|---|---|
| 2360-Ascot-NBT-T4-Draft-02 | May 2024 | LL-RG | PDF | email |
| 2360-Ascot-NBT-T4-Draft-03 | June 2024 | LL-RG | PDF | email |
| **2360-Ascot-NBT-T4-Final-01.docx** | **Aug 2024** | **LL-RG** | **PDF** | **email** |
| | | | | |

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# 1. EXECUTIVE SUMMARY

This assessment considers the net benefit of two proposed activity categories proposed in Ascot, in the City of Belmont. The assessment has been prepared in response to the policy requirements established by State Planning Policy 4.2. This Net Benefit Test assesses:

1. Proposed local centre of 3,400 sqm NLA (PLUC 5 – 'SHOP')
2. Proposed bulky goods precinct of 9,600 sqm (PLUC 6 – 'OTHER RETAIL')

**Proposed Local Centre**

The assessment reveals that the proposed local centre activity will generate a Net Benefit by:

- being sustainable from 2026 – satisfying an existing resident trade area and filling an existing demand/gap/need in the market
- having low – insignificant impacts on surrounding activity network – with any impacts likely to be offset by potential sales growth generated by additional resident population and spending over the next 15 years.
- creating up to 85 full time equivalent jobs,
- reducing the number of vehicle km required to be travelled by residents in the immediate trade area.

Residents in Ascot and Belmont:

- are the communities most likely to experience the benefit from the proposed activity.
- are estimated to account for 40% of total sales / trips at the proposed activity.
- do not currently have access to a full line supermarket-based centre within 2.5 km.
- travel up to 2.5 km each way (5 km round trip) every time they access their full line supermarket needs.

**Proposed Bulky Goods**

The assessment reveals that the proposed activity will generate a Net Benefit by:

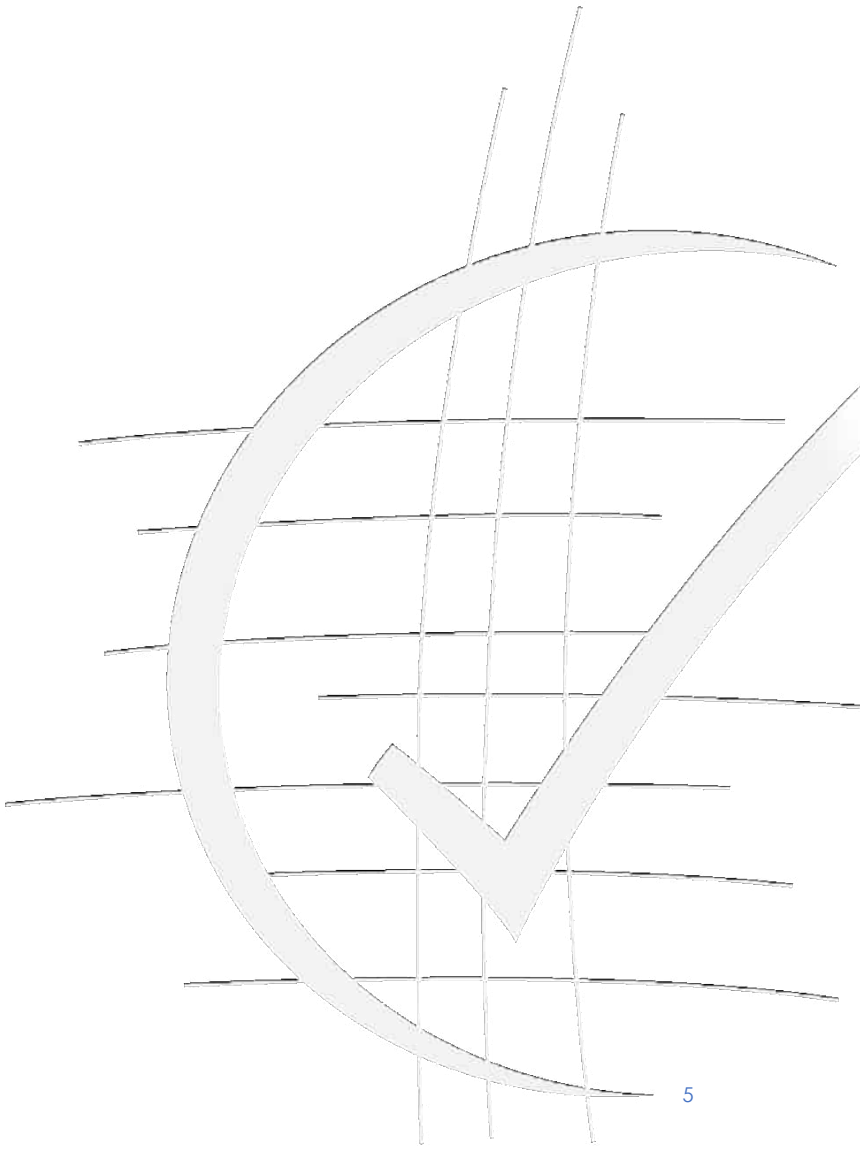
- complementing the existing offer in the vicinity
- being accessible through strong north south and east west connections.
- creating up to 120 jobs.
- having low/insignificant impacts on existing and planned activity precincts – which will subsequently be offset by planned population and retail spending growth in the trade area.

**Net Benefit**

Subsequently, the proposed activity:

- will not impact the integrity of the surrounding activity centre network – and as such will not have any negative impact on existing or planned public or private investment in the trade area.
- will reduce the amount of trip kilometres that Ascot and Belmont residents must travel each year to satisfy their daily/weekly and bulky goods shopping needs.
- will save over 530,000 to 700,000 trips p.a. to centres outside their trade area
- will save between 40 and 50 trips per person per annum.

- will save between 2.7 M km p.a. and 3.5 M km p.a. of vehicular travel per annum
- is consistent with the objectives and outcomes of SPP 4.2.
- is aligned with local planning strategies.



# 2. INTRODUCTION

This assessment represents a 'Net Benefit Test' for two activity categories proposed in Ascot, City of Belmont. The Net Benefit Test has been prepared in response to the policy requirements established by State Planning Policy 4.2 – Activity Centres. The Net Benefit Test assesses:

1. a proposed local centre of 3,400 sqm NLA (PLUC 5 – 'SHOP')
2. a proposed bulky goods precinct of 9,600 sqm (PLUC 6 – 'OTHER RETAIL')

This assessment has been prepared in three distinct parts and should be read in conjunction with the proposed Local Structure Plan and Scheme Amendment documents.

| | | |
|---|---|---|
| **Part 1** | Relevant market variables appropriate to the assessment of both activity types | Activity Centre Network<br>Trade Area Definition<br>Population<br>Retail Spending Profile<br>Retail Spending capacity |
| **Part 2** | Proposed Local Centre (PLUC 5) | Market Demand/Need<br>Impact Test<br>Net Benefit Test |
| **Part 3** | Proposed Bulky Goods (PLUC 6) | Market Demand/Need<br>Impact Test<br>Net Benefit Test |

## 2.1 Purpose

A net benefit occurs when the benefits (pros) to the community arising from a proposal outweigh any identified impacts (cons) to the community arising from a proposal. The Net Benefit Test assesses the potential impacts and benefits of a proposal to the community and on existing and planned activity centres and is expected to answer the following questions.

- Is there a demand for additional floorspace, and if so, how does the proposal meet this demand?
- How will the proposed development impact on the role of the activity centre?
- How will the proposal impact the viability and vibrancy of other activity centres in the hierarchy?
- Are any potential impacts reduced or mitigated over the longer term?
- What is the anticipated loss and/or gain of services to the community?
- What is the anticipated impact on access (distance, time, mode of travel) to services by the community?
- Will the proposal contribute to a net increase in employment?
- Does the proposal align with the objectives and outcomes of this policy and the planning framework?

A Net Benefit Test is to be prepared when:

- A proposal introduces floorspace in an existing or planned activity centre which exceeds the floorspace identified for that centre in a current 'Needs Assessment'.
- A proposal introduces new land or rezones land to facilitate major development or out-of-centre development.

## 2.2 Out-of-Centre Development

An Out of Centre Development is defined by SPP4.2 as a proposal which introduces:

- Category A or B activity centre (see table) uses outside of an existing or planned activity centre as identified by a Needs Assessment (regardless of land size).
- More than 500 sqm NLA of Category A uses outside an existing or planned activity centre as identified by a Needs Assessment.

Exemptions to Out of Centre Development includes:

- Development applications for Category B activity centre uses where the existing zoning contemplates (P, D, A) land uses.
- Development applications for Category A activity centre uses up to 1,500 sqm NLA where they are located substantially within the 400m walkable catchment of a rail station.

Out of Centre Development may only be appropriate where a proposal:

- is sufficiently separated from nearby activity centres to minimise negative impacts to those activity centres (as demonstrated through the Net Benefit Test).
- is in proximity to existing housing at an average dwelling density of at least 25 dwellings per gross Urban Zone (Region Schemes) hectare within a 400 m walkable catchment of the development; and
- accessible to its catchment community by walking and cycling, minimising the need for additional private vehicle trips.

## 2.3 Major Development

A major development is defined by SPP4.2 as a proposal which introduces additional Category A activity floor space which exceeds the threshold for the activity centre hierarchy in the table below.

*FIGURE 1 - MAJOR DEVELOPMENT FLOORSPACE THRESHOLDS by CENTRE TYPE*

| **Existing Activity Centre Hierarchy** | **Additional Floor space threshold (sqm NLA)** |
|---|---|
| Strategic | 10,000 |
| Specialised | 3,000 |
| Secondary | 10,000 |
| District | 5,000 |
| Neighbourhood | 3,000 |
| Local | 1,500 |
| **Proposed Activity Centre Hierarchy** | any development in a proposed / planned centre is a major development regardless of floor space amount |

## 2.4 Activity Centre Uses

Assessments are only required to be undertaken for the following activity types.

*FIGURE 2 – PLANNING CATEGORY*

| Planning Land Use Code (PLUC) | Category A<br>Activity Centre Uses | Category B<br>Activity Centre Uses |
|---|---|---|
| **5 – 'SHOP'** | Shop<br>Liquor Store - Large<br>Fast Food Outlet<br>Lunch Bar<br>Restaurant & Café | Convenience store<br>Liquor store - small<br>Restricted premises<br>Service station |
| **6 – 'OTHER RETAIL'** | | Bulky goods showroom<br>Motor vehicle, boat, or caravan sales |

## 2.5 Scope and Methodology

The Net Benefit Test is to be based on:

- The contextual description of the proposal and location with supporting maps, identifying if out-of-centre, within-centre or new activity centre.
- The change in net lettable area (NLA) of the shop/ retail (PLUC 5 - SHP) and/or other retail (PLUC 6 - RET) floor space.
- The defined trade area (including primary trade area and any secondary and tertiary trade areas).
- The estimated existing and forecast population of the trade area.
- The trade area resident attributes and implications for floorspace need and spending estimates.
- The estimated existing and forecast expenditure of the trade area using latest ABS Household Expenditure Survey or other reliable source.
- The estimated average annual sales (aggregate and per sqm NLA) for the proposed development and/or activity centre pre-and post-development proposal.

## 2.6 Modelling Method

The retail model is designed to assess the likely propensity for a resident in a particular area to visit/spend at each centre in the network. Based on the proximity of the resident to each centre, the role and function of each centre, the size of the retail offer at each centre, relative to other centres. The sales potential for the proposed centre will be based on the extent to which it may capture retail sales from each trade area. The results of the retail modelling shows:

- The expected market share that each centre may expect to capture from each trade area.
- The retail sales that may therefore be expected to be captured by each centre in the network from the designated trade areas.
- The relative contribution of each trade area to the overall sales at each centre.

The model results are focused primarily on the centres which can be expected to generate most of their sales from within the modelled trade areas. Centres located on the fringe of, or outside the trade areas will only show that proportion of sales captured from the trade areas. Subsequently, centres on the fringe of, or outside will not show a true sales figure, but rather

that part of the sales captured solely from within the trade area modelled. The impact assessment typically focuses primarily on the existing and planned centres closest to the proposed centre.

## 2.7 Measuring Impact

The potential sales generated by the development of the proposed centre will be drawn from centres in the network that would have reasonably expected to capture those sales had the proposed centre not been developed. The impact of the proposal on existing and planned activity centres is defined as an estimate of the retail turnover for each relevant activity centre identified for the following scenarios:

- without the proposed activity centre and
- with the new activity centre(s) assumed to be developed (or expanded).
- The differences between the 'without' and 'with' scenario is the potential turnover impact for each activity centre.

Competition between businesses in and of itself is not considered a relevant planning consideration. The impact of a proposal on an activity centre is defined as the potential loss of services and any associated detriment to the community caused by the proposed development. The following impact percentage and risk level for retail turnover is provided as a general guide and should not be used as the only indicator of acceptability of a proposal.

*FIGURE 3 - SPP4.2 IMPACT and RISK GUIDE*

| Impact Percentage | Potential Impact | Risk Level | Description |
|---|---|---|---|
| **0-5%** | Insignificant | Low | Any impacts are likely to be temporary and have no long-term effects on the viability of individual activity centres. |
| **5-10%** | Moderate | Medium | Impacts are likely to be more significant for individual centres, but overall network sustainability is unlikely to be undermined in the long term. |
| **10% +** | Significant | High | Impacts are likely to be very significant for individual centres and are likely to undermine the long-term network sustainability. |

Where the short-term impact is initially high before falling to a medium or low level in the long term, consideration should be given to how the development can be staged or if there needs to be any additional short-term benefits to ensure that level of service is always maintained. However, the overall impact of the proposal may be lessened or offset by the potential growth in sales each activity centre may generate from the introduction of additional residents and spending in the trade area over time.

# 3. ACTIVITY CENTRE NETWORK

The existing and planned activity centres in the immediate network of a proposed activity centre represents a key determinant for assessing the demand for a proposed activity centre. The following activity centres are considered most likely to influence and be influenced by the proposed activity.

## 3.1 Strategic / Secondary Activity Centres

A Strategic Centre and two Secondary Centres are estimated to influence the potential demand and sustainability of the proposed activity.

***Morley Strategic Centre***

| | | |
|---|---|---|
| Designated / Classified | Strategic Centre | SPP4.2 |
| Performs the role of a | Strategic Centre | |
| Location from proposed activity | 4.5 km north | |
| Estimated current 'Shop' floor space (PLUC 5) | 99,000 sqm NLA | (LUS 2015/17) |
| Majors / Anchor Tenants | C, W, A, S, K, T | |
| Estimated current 'Other Retail' floor space (PLUC 6) | 22,500 sqm NLA | (LUS 2015/17) |
| Development potential | Medium | |

***Belmont***

| | | |
|---|---|---|
| Designated / Classified | Secondary Centre | SPP4.2 |
| Performs the role of a | Secondary Centre | |
| Location from proposed activity | 3.0 km south | |
| Estimated current 'Shop' floor space (PLUC 5) | 63,000 sqm NLA | (LUS 2015/17) |
| Majors / Anchor Tenants | C, W, A, K, BW | |
| Estimated current 'Other Retail' floor space (PLUC 6) | 30,000 sqm NLA | (LUS 2015/17) |
| Development potential | Medium | |

***Victoria Park***

| | | |
|---|---|---|
| Designated / Classified | Secondary Centre | SPP4.2 |
| Performs the role of a | Neighbourhood | |
| Location from proposed activity | 4.5 km southwest | |
| Estimated current 'Shop' floor space (PLUC 5) | 22,000 sqm NLA | (LUS 2015/17) |
| Majors / Anchor Tenants | W | |
| Estimated current 'Other Retail' floor space (PLUC 6) | 25,000 sqm NLA | (LUS 2015/17) |
| Development potential | Low | |

## 3.2 District Centres

Four district centres are estimated to influence the potential demand and sustainability of proposed the activity.

***Inglewood***

| | | |
|---|---|---|
| Designated / Classified | District Centre | SPP4.2 |
| Performs the role of a | Neighbourhood | |
| Location from proposed activity | 4 km north | |
| Estimated current 'Shop' floor space (PLUC 5) | 10,000 sqm NLA | (LUS 2015/17) |
| Majors / Anchor Tenants | C, W, A | |
| Estimated current 'Other Retail' floor space (PLUC 6) | 2,700 sqm NLA | (LUS 2015/17) |
| Development potential | Low | |

***Bayswater***

| | | |
|---|---|---|
| Designated / Classified | District Centre | SPP4.2 |
| Performs the role of a | Local | |
| Location from proposed activity | 2.5 km north | |
| Estimated current 'Shop' floor space (PLUC 5) | 3,800 sqm NLA | (LUS 2015/17) |
| Majors / Anchor Tenants | IGA | |
| Estimated current 'Other Retail' floor space (PLUC 6) | 0 sqm NLA | (LUS 2015/17) |
| Development potential | Low | |

***Maylands***

| | | |
|---|---|---|
| Designated / Classified | District Centre | SPP4.2 |
| Performs the role of a | Neighbourhood | |
| Location from proposed activity | 3 km northwest | |
| Estimated current 'Shop' floor space (PLUC 5) | 12,000 sqm NLA | (LUS 2015/17) |
| Majors / Anchor Tenants | C, 2 x IGA | |
| Estimated current 'Other Retail' floor space (PLUC 6) | 0 sqm NLA | (LUS 2015/17) |
| Development potential | Low | |

***Ashfield***

| | | |
|---|---|---|
| Designated / Classified | District Centre | SPP4.2 |
| Performs the role of a | Local | |
| Location from proposed activity | 3 km northeast | |
| Estimated current 'Shop' floor space (PLUC 5) | 750 sqm NLA | (LUS 2015/17) |
| Majors / Anchor Tenants | IGA | |
| Estimated current 'Other Retail' floor space (PLUC 6) | 0 sqm NLA | (LUS 2015/17) |
| Development potential | Medium | |

### 3.3 Neighbourhood/Local

Four neighbourhood/local centres are estimated to influence the potential demand and sustainability of the proposed activity.

***Rivervale***

| | | |
|---|---|---|
| Designated / Classified | Neighbourhood Centre | |
| Performs the role of a | Local | |
| Location from proposed activity | 2.5 km southwest | |
| Estimated current 'Shop' floor space (PLUC 5) | 3,000 sqm NLA | (LUS 2015/17) |
| Majors / Anchor Tenants | IGA | |
| Estimated current 'Other Retail' floor space (PLUC 6) | 0 sqm NLA | (LUS 2015/17) |
| Development potential | Low | |

***Kooyong***

| | | |
|---|---|---|
| Designated / Classified | Neighbourhood Centre | |
| Performs the role of a | Local | |
| Location from proposed activity | 3 km southwest | |
| Estimated current 'Shop' floor space (PLUC 5) | 2,250 sqm NLA | (LUS 2015/17) |
| Majors / Anchor Tenants | IGA | |
| Estimated current 'Other Retail' floor space (PLUC 6) | 0 sqm NLA | (LUS 2015/17) |
| Development potential | Low | |

***Belvidere***

| | | |
|---|---|---|
| Designated / Classified | Neighbourhood Centre | |
| Performs the role of a | Local | |
| Location from proposed activity | 1.5 km east | |
| Estimated current 'Shop' floor space (PLUC 5) | 6,200 sqm NLA | (LUS 2015/17) |
| Majors / Anchor Tenants | IGA | |
| Estimated current 'Other Retail' floor space (PLUC 6) | 0 sqm NLA | (LUS 2015/17) |
| Development potential | Low | |

***Epsom***

| | | |
|---|---|---|
| Designated / Classified | Local Centre | |
| Performs the role of a | Local | |
| Location from proposed activity | 1.5 km east | |
| Estimated current 'Shop' floor space (PLUC 5) | 6,200 sqm NLA | (LUS 2015/17) |
| Majors / Anchor Tenants | IGA | |
| Estimated current 'Other Retail' floor space (PLUC 6) | 0 sqm NLA | (LUS 2015/17) |
| Development potential | Low | |

## 3.4 Service Commercial Precincts / Other Centres

***Airport***

| | | |
|---|---|---|
| Designated / Classified | Specialised Centre | |
| Performs the role of a | Neighbourhood | |
| Location from proposed activity | 2.5 km east | |
| Estimated current 'Shop' floor space (PLUC 5) | 5,000 sqm NLA | |
| Majors / Anchor Tenants | W | |
| Estimated current 'Other Retail' floor space (PLUC 6) | 25,000 sqm NLA | |
| Development potential | High | |

***Great Eastern Highway***

| | | |
|---|---|---|
| Designated / Classified | N/a | |
| Performs the role of a | Service Commercial | |
| Location from proposed activity | 1.5 km east | |
| Estimated current 'Shop' floor space (PLUC 5) | 8,600 sqm NLA | (LUS 2015/17) |
| Majors / Anchor Tenants | - | |
| Estimated current 'Other Retail' floor space (PLUC 6) | 4,700 sqm NLA | (LUS 2015/17) |
| Development potential | Medium | |

## 3.5 Summary

Analysis of the activity centre network reveals that:

- Residents in the trade area have access to approximately 70,500 sqm NLA of total convenience-based retail floor space.
- There are no full line supermarkets within 1.5 km of the proposed activity.
- There are only two full line supermarkets (Coles at Maylands and Woolworths at Airport) within 3km of the proposed activity.
- There are four small, limited line IGA supermarkets located between 1.5 km and 3 km of the proposed activity.
- The closest 'clusters' of multiple supermarket operators are located at Belmont (3 km) and Inglewood (4 km)

- There are three classified district activity centres north of the proposed activity (Maylands, Bayswater, Ashfield), yet none of these activity centres perform the role of a district centre and function more as neighbourhood or local centres due to their limited retail offer.
- Residents in the trade area have access to nearly 105,000 sqm NLA of bulky goods retail activity across six precincts.

*FIGURE 4*
*EXISTING & PLANNED ACTIVITY CENTRES FRAMEWORK*
*By Centre Name, by Centre Type, by Floorspace /Year*

| Total Convenience | | Estimated NLA Floorspace (sqm) by Year | | | | |
|---|---|---|---|---|---|---|
| **Centre Name** | **Centre Type** | **2023** | **2026** | **2031** | **2036** | **2041** |
| Morley | Strategic | 13,100 | 13,100 | 13,100 | 13,100 | 13,100 |
| Belmont | Secondary | 11,250 | 11,250 | 11,250 | 11,250 | 11,250 |
| East Vic Park | District | 5,400 | 5,400 | 5,400 | 5,400 | 5,400 |
| Victoria Park | Secondary | 3,750 | 3,750 | 3,750 | 3,750 | 3,750 |
| Inglewood | District | 8,750 | 8,750 | 8,750 | 8,750 | 8,750 |
| Bassendean | District | 4,400 | 4,400 | 4,400 | 4,400 | 4,400 |
| Maylands | District | 4,600 | 4,600 | 4,600 | 4,600 | 4,600 |
| GEH (west) | Local | 1,500 | 1,500 | 1,500 | 1,500 | 1,500 |
| Airport | Special | 4,400 | 4,400 | 4,400 | 4,400 | 4,400 |
| Bayswater | District | 500 | 500 | 500 | 500 | 500 |
| Belvidere | Local | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 |
| Rivervale (Kooyong) | Local | 1,250 | 1,250 | 1,250 | 1,250 | 1,250 |
| Ashfield | District | 550 | 550 | 550 | 550 | 550 |
| GEH (east) | District | 6,900 | 6,900 | 6,900 | 6,900 | 6,900 |
| Epsom | Local | 1,200 | 1,200 | 1,200 | 1,200 | 1,200 |
| **All Existing and Planned Centres** | | **70,550** | **70,550** | **70,550** | **70,550** | **70,550** |
| Ascot | | - | 3,400 | 3,400 | 3,400 | 3,400 |
| **All Centres** | | **70,550** | **73,950** | **73,950** | **73,950** | **73,950** |

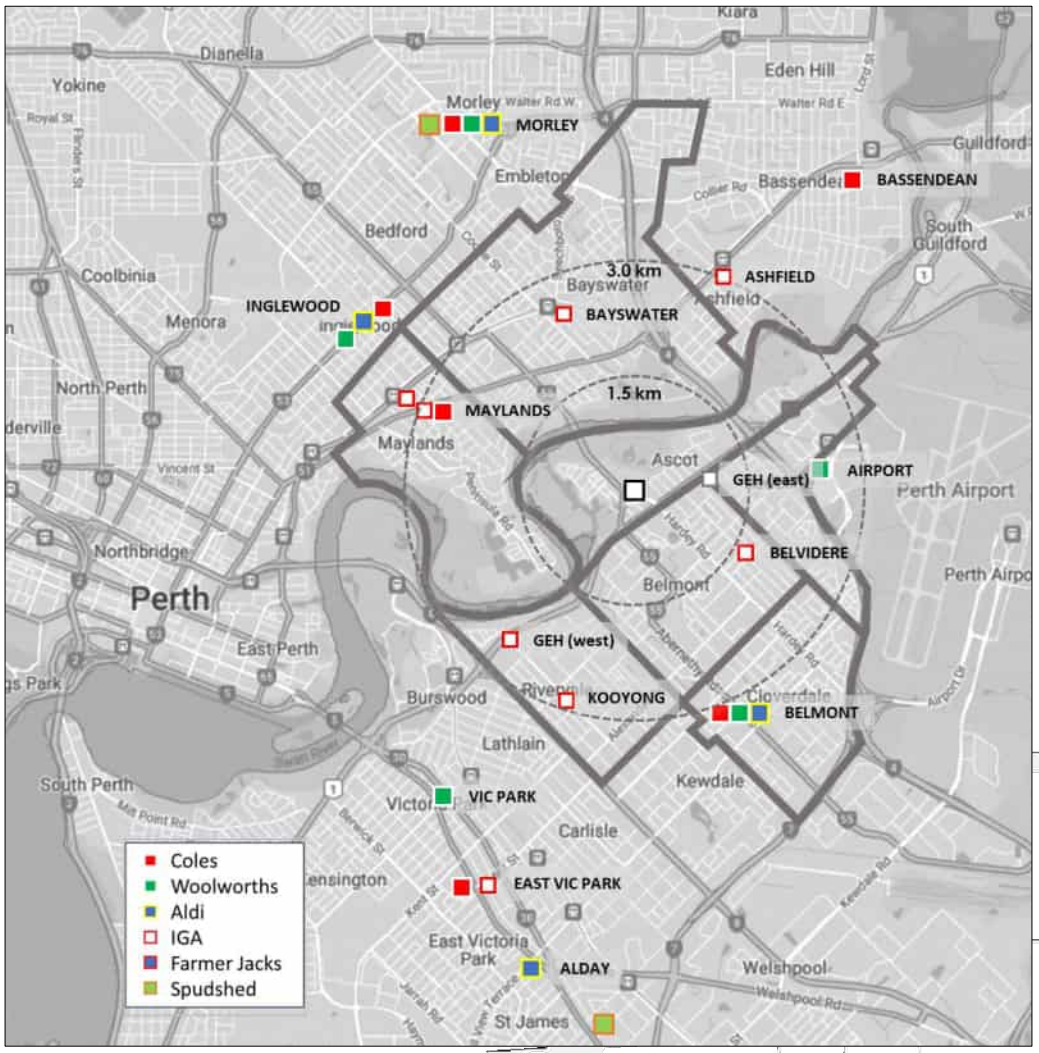
*Land Use Employment Survey (WAPC 2015) / Taktics4*

*FIGURE 5*
*EXISTING & PLANNED ACTIVITY CENTRES FRAMEWORK*
*By Centre Name, by Centre Type, by Floorspace /Year*

| Bulky Goods/LFR | | Estimated NLA Floorspace (sqm) by Year | | | | |
|---|---|---|---|---|---|---|
| **Centre Name** | **Centre Type** | **2023** | **2026** | **2031** | **2036** | **2041** |
| Morley | Strategic | 22,500 | 22,500 | 22,500 | 22,500 | 22,500 |
| Belmont | Secondary | 30,000 | 30,000 | 30,000 | 30,000 | 30,000 |
| East Vic Park | District | 0 | 0 | 0 | 0 | 0 |
| Victoria Park | Secondary | 25,000 | 25,000 | 25,000 | 25,000 | 25,000 |
| Inglewood | District | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| Bassendean | District | 0 | 0 | 0 | 0 | 0 |
| Maylands | District | 0 | 0 | 0 | 0 | 0 |
| GEH (west) | Local | 0 | 0 | 0 | 0 | 0 |
| Airport | Special | 20,000 | 20,000 | 20,000 | 20,000 | 20,000 |
| Bayswater | District | 0 | 0 | 0 | 0 | 0 |
| Belvidere | Local | 0 | 0 | 0 | 0 | 0 |
| Rivervale (Kooyong) | Local | 0 | 0 | 0 | 0 | 0 |
| Ashfield | District | 0 | 0 | 0 | 0 | 0 |
| Eastgate/GE Hwy | District | 4,700 | 4,700 | 4,700 | 4,700 | 4,700 |
| Epsom | District | 0 | 0 | 0 | 0 | 0 |
| **All Existing and Planned Centres** | | **104,900** | **104,900** | **104,900** | **104,900** | **104,900** |
| Ascot | | | 9,600 | 9,600 | 9,600 | 9,600 |
| **All Centres** | | **104,900** | **114,500** | **114,500** | **114,500** | **114,500** |

*Land Use Employment Survey (WAPC 2015) / Taktics4*

*FIGURE 6 - SUPERMARKET BASED ACTIVITY CENTRES*




*Taktics4*

# 4. TRADE AREA

The trade area for retail activity is largely determined by a range of industry, market and consumer-based principles. Consumer dynamics vary significantly between different retail categories and is influenced by the frequency in which consumers require access to certain retail goods and services. Retailers, shopping centre developers, and urban planners acknowledge this variation in dynamics through the establishment of a clearly defined hierarchy of activity centres which reflect different shopping trips and expectations for consumers/residents.

## 4.1 Market Behaviour

Convenience retail

Convenience retail trips include visits to supermarkets, other food and grocery stores, newsagencies, and cafes/takeaway stores. These trips are typically daily or weekly trips and are generally made to activity centres closest to the resident/consumer. Activity centres serving this category are typically anchored by a supermarket, or small grocery store and classified as Neighbourhood and/or Local Centres.

Comparative retail

Comparative retail trips include visits to department stores, discount department stores, fashion, and household goods stores. These are typically less frequent trips than convenience-based trips and consumers are more likely to target specific items, brands, products, and prices on these trips. They are therefore more likely to travel further to access these goods and services. Centres serving this category are typically anchored by a Department Store or DDS and classified as Strategic, Secondary, or District Centres. These centres invariably also serve a convenience-based role.

Large Format/Bulky Goods

Homewares, furnishing, and recreation goods are more likely to reflect infrequent trips for targeted goods/purchases. Consumers are prepared to travel further for these goods and services. These centres are less likely to include a convenience-based role beyond access to cafes/takeaway facilities as part of the shopping experience.

Behaviour Philosophy

The fundamental retail consumer principles adopted by modelling techniques in this assessment are that residents are generally:

- Less likely to travel beyond the nearest Strategic Centre and or Secondary Centre to visit another centre with the same role/function/offer.
- Less likely to travel beyond the nearest District Centre to visit another District Centre with the same role/function/offer.
- Just as likely to travel beyond one supermarket-based neighbourhood centre to visit another supermarket-based centre with another operator (i.e., to shop at a Coles instead of a Woolworths or vice versa).
- Less likely to travel beyond the nearest local centre to visit another local centre with the same role/function/offer (i.e., to drive past one IGA to shop at another IGA).

That is not to say that residents will not visit other centres, but that they will not visit these centres frequently enough to establish a pattern of behaviour.

### 4.2 Delineation of Trade Area

The trade area for proposed activity represents the area likely to generate most of the sales for a proposed activity centre. A trade area can be defined by applying these market behaviour principles, collating proximity of existing and planned urban areas with their accessibility to existing and planned centres, based on road networks, and physical barriers.

The trade area for the proposed activity may be delineated by residents in**:**

| | |
|---|---|
| ***Ascot, Belmont*** | Mainly within 1.5 km of the proposed activity. |
| ***Redcliffe, Rivervale, Bayswater, Maylands, Cloverdale*** | All or partly within 1.5 km-3.0 km of the proposed activity. |

This trade area comprises residents which are likely to generate most of the sales for the proposed activity. The trade area is divided north and south by the Swan River. However, the proposed activity is located on a road with access across the river, which therefore creates direct access to residents in the trade areas to the north and the south. The trade area incorporates residents across three Local Government Areas – City of Belmont, City of Bayswater, and Town of Victoria Park.

### 4.3 Population

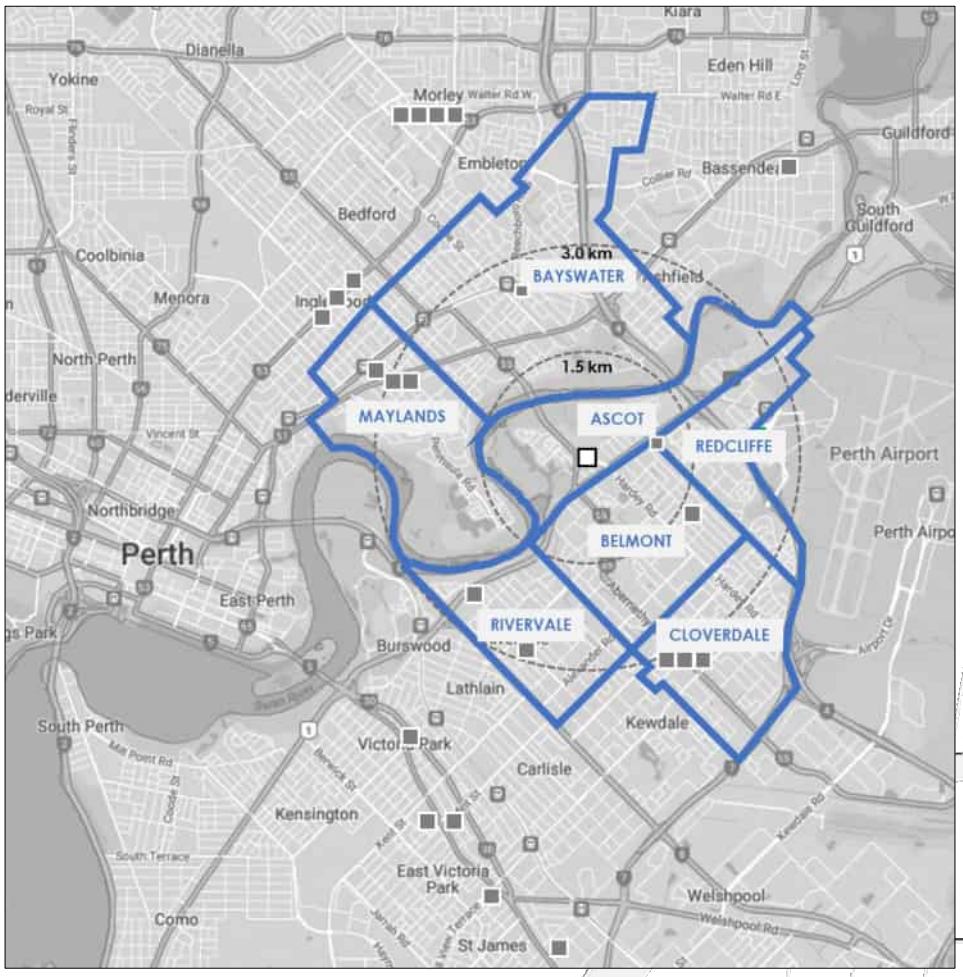
The existing and forecast resident population in the trade area represents the first variable for determining the demand for retail activity in a trade area. According to adopted population forecasts for the three local government areas the total trade area is:

- Estimated to contain nearly 78,000 residents in 2026.
- Forecast to increase to 93,500 residents by 2041.
- Therefore, estimated to grow by 15,800 additional residents over the 15-year period at an average of over 1,050 additional residents p.a.

Ascot and Belmont trade areas are:

- Estimated to contain a resident population of 11,000 residents in 2026.
- Forecast to increase to 16,400 residents by 2041.
- Therefore, estimated to grow by an additional 5,400 over a 15-year period at an average of 300 additional residents per annum.
- Expected to be the trade areas with the largest proportional growth over the next 15 years.

*FIGURE 7 - TRADE AREA MAP*




*Taktics4/Australian Bureau of Statistics/ id forecast*

*FIGURE 8*

*CURRENT and FORECAST POPULATION*
*By Trade Area by Year*

| Catchment | 2023 | 2026 | 2031 | 2036 | 2041 | 2023-2041 | % |
|---|---|---|---|---|---|---|---|
| Bayswater | 25,050 | 25,600 | 26,800 | 28,000 | 29,200 | 4,150 | 17% |
| Maylands | 13,350 | 13,400 | 13,900 | 14,400 | 14,900 | 1,550 | 12% |
| Ascot | 3,300 | 3,400 | 3,700 | 4,600 | 5,200 | 1,900 | 58% |
| Belmont | 7,400 | 7,600 | 9,000 | 10,300 | 11,200 | 3,800 | 51% |
| Rivervale | 11,850 | 12,400 | 13,400 | 14,200 | 15,000 | 3,150 | 27% |
| Redcliffe | 5,400 | 5,500 | 5,700 | 5,800 | 7,000 | 1,600 | 30% |
| Cloverdale | 9,500 | 9,800 | 10,200 | 10,500 | 11,000 | 1,500 | 16% |
| **Total Trade Area** | **75,850** | **77,700** | **82,700** | **87,800** | **93,500** | **17,650** | **23%** |
| Average growth per census | | 1,850 | 5,000 | 5,100 | 5,700 | | |
| Average growth p.a. | - | 617 | 1,000 | 1,020 | 1,140 | | |
| Average growth p.a. (%) | | 0.8% | 1.3% | 1.2% | 1.3% | | |

*id forecast - LGA Bayswater, Belmont Victoria Park*

*Taktics4/Australian Bureau of Statistics/ id forecast*

### 4.4 Resident Demographic Profiles

The demographic profile of the resident population in a trade area represents a second level of demand for retail activity in a trade area. Consumer spending surveys confirm that residents with different personal, household and economic characteristics are likely to exhibit different spending behaviour regarding the amount they buy and the type of goods they buy. The demographic characteristics of the resident population in the trade area will determine the retail spending profile and retail spending capacity available to retailers/centres in the trade areas. Key demographic characteristics include household composition, dwelling tenure, and income potential. Relevant socio-economic characteristics for residents in the trade area are highlighted below.

Person and Household Profile

The resident population in the Ascot, Belmont, Bayswater trade area is characterised by:

- an average age of 40 years which is 3.8% above the Perth average.
- an average household size of 2.3 persons per dwelling which is 9% smaller than the Perth average.
- a higher representation of one person households.
- a predominantly Australian born population.
- an ethnic/cultural balance consistent with Perth averages.
- a stable resident base with longevity in the trade area.

Employment, Income, Economic Profile

The resident labour force in the Ascot, Belmont, Bayswater trade area is characterised by:

- a labour force participation rate consistent with Perth averages.
- a higher representation of professionals.
- a higher representation of labour force employed in the retail, accommodation, and F&B sector and professional services sector.
- an average personal income that is 6% above Perth averages.
- an average of 2 incomes per dwelling which is 5% below Perth averages.
- an average household income that is 1% higher than Perth averages.
- an average mortgage that is 1% higher than Perth averages.
- an average rent that is 6% lower than Perth averages.
- a higher representation of rental dwellings.
- a slightly lower representation of dwellings with a mortgage.

Dwelling Profile

The dwelling stock in the Ascot, Belmont, Bayswater trade area is characterised by:

- slightly higher representation of townhouses and semi-detached dwellings.
- an average of 3 bedrooms per dwellings which is 9% smaller than the average Perth dwelling.

### 4.5 Resident Retail Spending Profile

Resident retail spending profiles for the trade area are derived by extrapolating data from a range of sources including:

- Household Expenditure Survey by socio economic characteristics (ABS 2015)
- Population and Household Census by socio economic characteristics (ABS 2021)
- Retail Sales by store categories (ABS 2024)

Correlation of data from these sources relative to the demographic profiles of an area produces an estimate of the average retail spending potential of residents within that area. Some of the trade areas may not currently have sufficient population bases to extract valid demographic profiles. Where trade areas do not have sufficient population base the retail spending profiles have been adopted from neighbouring/adjoining trade areas. Correlation of demographic profiles to retail spending profiles for residents in the trade area reveal that:

- Ascot and Bayswater residents are estimated to have an average total retail spending profile of between $19,550 and $21,900 per resident p.a. which is higher than Perth averages.
- Maylands, Belmont, Rivervale, Redcliffe, and Cloverdale residents have an average total retail spending profile of between $15,200 and $16,600 per resident p.a. which is lower than Perth averages.

*FIGURE 9*

*ESTIMATED AVERAGE RETAIL SPENDING PER CAPITA*
*By Retail Category by Trade Area*
*Dec-23*

| Retail Store Category | Total Convenience Retail | Total Comparison Retail | Total Shop | Bulky Goods/LFR | Total 'Shop' & 'Other Retail' |
|---|---|---|---|---|---|
| Bayswater | $11,143 | $5,367 | $16,510 | $3,046 | $19,556 |
| Maylands | $9,464 | $4,446 | $13,910 | $2,605 | $16,515 |
| Ascot | $12,289 | $6,240 | $18,529 | $3,363 | $21,891 |
| Belmont | $8,933 | $4,198 | $13,130 | $2,468 | $15,598 |
| Rivervale | $9,495 | $4,461 | $13,956 | $2,613 | $16,568 |
| Redcliffe | $8,829 | $4,149 | $12,977 | $2,441 | $15,418 |
| Cloverdale | $8,741 | $4,108 | $12,848 | $2,418 | $15,267 |
| ***Perth Average*** | ***$10,374*** | ***$4,872*** | ***$15,246*** | ***$2,839*** | ***$18,086*** |

*8501.0 Retail Trade, Australia*
*Retail Turnover, State by Industry Subgroup*

### 4.6 Resident Retail Spending Capacity

The resident retail spending capacity represents the total retail spending that is generated by residents in a trade area that is available to be capture by existing and planned centres in the trade area (and beyond). It is measured by multiplying the average potential resident retail spending profile for each area by the forecast resident population in each area to determine the forecast resident retail spending capacity of each trade area over time. Based on the average potential resident retail spending profiles for supermarkets, residents in the trade area are estimated to generate:

*FIGURE 10*

*ESTIMATED ANNUAL RESIDENT RETAIL SPENDING CAPACITY in TRADE AREA ($M p.a.)*
*By Retail Category by Year*

| | 2023 | 2026 | 2031 | 2036 | 2041 |
|---|---|---|---|---|---|
| Total Convenience Retail | $755 | $774 | $823 | $875 | $931 |
| Total Comparison Retail | $360 | $368 | $392 | $417 | $444 |
| Total Shop | $1,115 | $1,142 | $1,215 | $1,291 | $1,374 |
| Bulky Goods/LFR | $208 | $213 | $226 | $240 | $256 |
| Total 'Shop & Other' Retail | $1,323 | $1,355 | $1,441 | $1,532 | $1,630 |

*8501.0 Retail Trade, Australia*
*Retail Turnover, State by industry Subgroup*

Convenience based retail spending

Residents across the total trade area are estimated to spend:

- $774 M p.a. in convenience-based shops/centres in 2026.
- $931 M p.a. in convenience-based shops/centres by 2041.

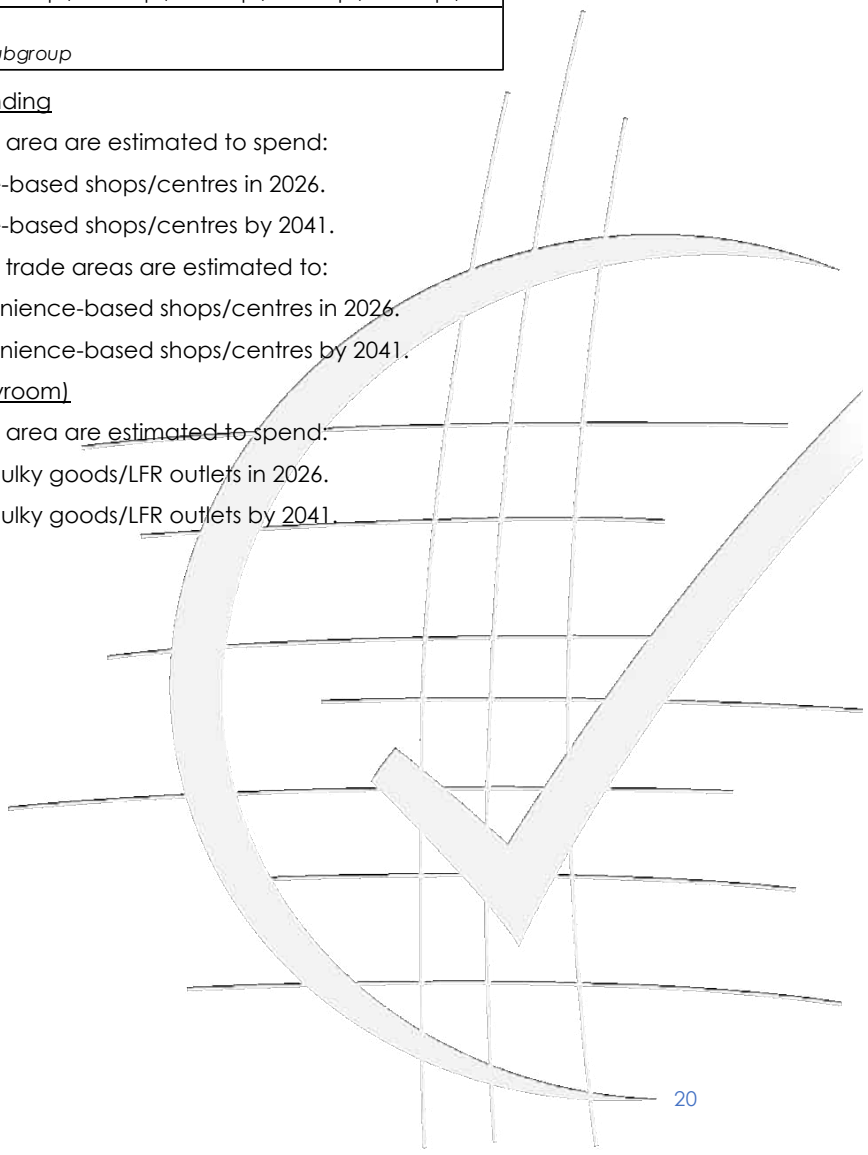
Residents in Ascot and Belmont trade areas are estimated to:

- spend $106 M p.a. in convenience-based shops/centres in 2026.
- spend $164 M p.a. in convenience-based shops/centres by 2041.

Other Retail (Bulky Goods/Showroom)

Residents across the total trade area are estimated to spend:

- spend $213 M p.a. in total bulky goods/LFR outlets in 2026.
- spend $256 M p.a. in total bulky goods/LFR outlets by 2041.



# 5. PART A – LOCAL CENTRE

This section assesses the potential market demand for, and potential sustainability of a proposed local centre at Ascot. This assessment subsequently informs the assessment of potential impacts at existing and planned activity centres. The proposed local centre is:

- Included as part of the planning for the City of Belmont Golden Gateway Precinct.
- Located 3 km from the nearest supermarket-based activity centre.
- Classified as a planned activity centre.
- Not classified as an out of centre development.
- Considered a major development because it proposes 3,400 sqm NLA of PLUC 5 activity.

Eligibility for Exemption from a Net Benefit Test

The proposed local centre activity:

- is accessible to an existing walkable trade area.
- includes more than 1,500 sqm NLA of PLUC 5 activity
- is not located within 400 metres of a railway station.
- is therefore not eligible for exemption from a Net Benefit Test under the provisions of SPP4.2.

## 5.1 Market Share

Market share represents the proportion of resident spending generated from a trade area to a proposed activity centre. Market share is a measure of influence that a centre will have over customers in an area.

*Example:*

*Total annual retail spending generated by residents in a trade area is $100M p.a.*

*A centre is capturing a market share of 20% of that retail spending*

*The centre therefore captures $20M p.a. in sales from the trade area*

The proposed local centre if developed by 2026, is estimated to capture:

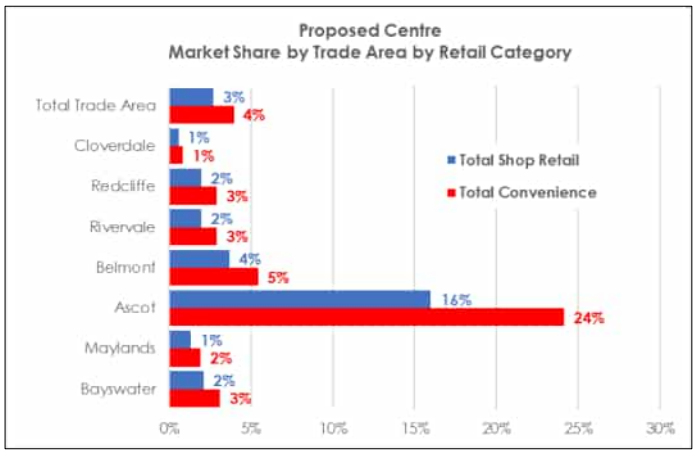
Convenience Spending

- 24% of all convenience/food/grocery/local spending generated by residents in Ascot.
- 5% of all convenience/food/grocery/local spending generated by residents in Belmont.
- A combined total of 4% of all convenience/food/grocery/local spending generated by residents across the total trade area.

Total Retail Spending

- 16% of all retail spending generated by residents in Ascot.
- 4% of all retail spending generated by residents in Belmont.
- A combined total of 3% of all retail spending generated by residents in the total trade area.

*FIGURE 11*




*Taktics4 Retail Model*

## 5.2 Sales Contribution

Sales contribution represents the proportion of a centres annual sales that is captured from a trade area. Sales contribution is a measure of the reliance / exposure that an activity centre has to a trade area.

*Example:*

*A centre is capturing total retail sales of $20M p.a.*

*$15M p.a. of those sales are being captured from one trade area.*

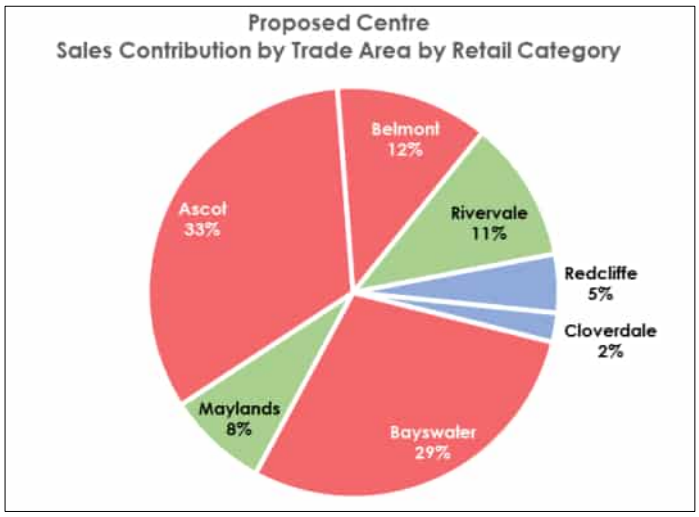
*Therefore 75% of the centre sales are being contributed from that trade area.*

The proposed local centre is ultimately estimated to generate:

- 62% of its forecast annual retail sales from residents in the immediate suburbs of Ascot (33%), and Bayswater (29%).
- 31% of its forecast annual retail sales from residents in Maylands, Belmont, and Rivervale.
- A combined total of 74% of its forecast annual retail sales will be derived from residents in the immediate local catchment it is intended to serve.

This sales contribution level is consistent with industry expectations.

*FIGURE 12*




*Taktics4 Retail Model*

### 5.3 Sales Potential

The Sales Potential represents the total sales that a centre may be expected to capture based on achieving the estimated market share from each trade area. It is a measure of a centre's viability and sustainability. Sales potential is measured by either annual sales and/or by sales productivity. Sales productivity is the total annual sales of centre divided by the total retail floor space NLA of the centre.

*Example:*

*A centre captures total annual retail sales of $20M p.a.*

*The centre has a retail floor space of 4,000 sqm NLA.*

*The centre has a sales productivity of $20M p.a. divided by 4,000 sqm NLA = $5,000/sqm p.a.*

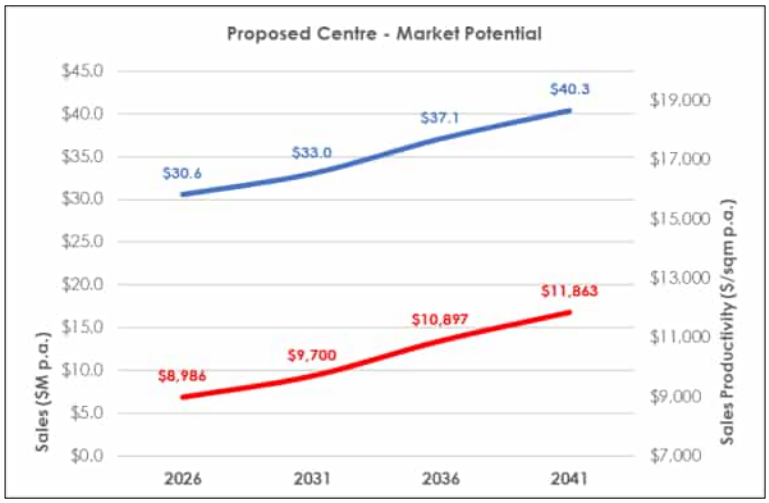
The proposed local centre if developed ~~in 2026~~ is estimated to have the potential to generate:

- $30.6M p.a. at $9,000/sqm p.a. by 2026
- $33.0M p.a. at $9,700/sqm p.a. by 2031
- $37.1M p.a. at $10,900/sqm p.a. by 2036
- $40.3M p.a. at $11800/sqm p.a. by 2041

The proposed local centre at Ascot:

- Has the potential to generate sufficient sales to be sustainable by 2026, satisfying industry measures conducive to a sustainable supermarket based ~~local centre~~.
- Serve an immediate role in meeting the day-to-day convenience needs of residents in the immediate walkable catchment of the proposed local centre.
- Rely predominantly on sales being captured from the immediate suburbs of Ascot, Maylands and Belmont.
- Be sustainable despite a potential market capture of only 16% of total retail sales from resident spending in Ascot, leaving 84% of retail spending to be captured by existing and planned centres.

*FIGURE 13*




*Taktics4 Retail Model*

## 5.4 Sales Impact

Sales impact represents the potential loss of sales at a centre due to the development of another centre. Sales impact is measured by comparing the potential sales of a centre at a particular year/period with the other centre included and excluded from the equation/modelling. Sales impact may be measured by potential actual annual sales or a percentage of potential annual sales.

*Example*

*A centre is forecast to generate annual sales of $20M p.a. in 2026 without the proposed centre being developed by 2026.*

*The centre is forecast to generate annual sales of $18M p.a. in 2026 if the proposed centre is developed by 2026.*

*The centre is therefore estimated to experience a potential sales impact of $2M p.a. in 2026.*

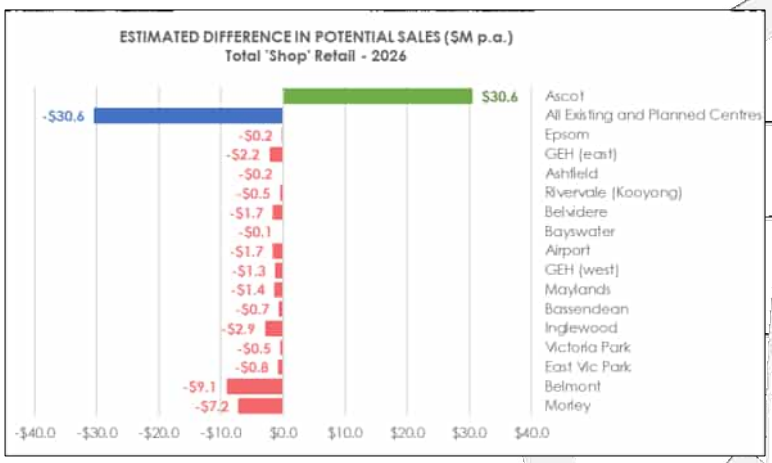
*The centre is estimated to subsequently experience a potential sales impact of 10% of its sales ($2M p.a. loss from its $20M p.a.)*

***Actual Sales***

Modelling the activity centres network with and without the proposed activity reveals that the development of the proposed activity by 2026 would have the potential to capture $30.6M p.a. in retail sales that might otherwise be captured from existing or planned centres.

Over 68% of all retail sales generated by the proposed local centre would be captured from four centres including Belmont Centre (-$9.1M p.a.), Morley Centre (-$7.2M p.a.), Inglewood (-$2.9M p.a.), and Maylands ($1.4M p.a.). This is because these centres currently contain the retail offer that a proposed local centre is likely to provide at Ascot.

*FIGURE 14*
*ESTIMATED ACTUAL ANNUAL SALES CAPTURED from OTHER ACTIVITY CENTRES by SHOP SALES by FIRST YEAR TRADE of PROPOSED ACTIVITY (2026)*




*Taktics4 Retail Model (2024)*

***Percentage of Sales***

The modelling shows that upon trading in 2026, the retail sales captured by a proposed local centre has the potential to impact the overall retail sales generated by residents in the trade area at:

Belmont

The public and private investment at Belmont Centre will not be impacted by the proposed local centre. The potential sales impact is forecast to be less than 3.0% which is classified as insignificant impact/risk. The potential sales impact at Belmont is in effect considerably less than 3.0% as the model only shows the potential loss in sales at Belmont from residents in the modelled trade area. The Belmont Centre generates sales from a more extensive trade area than the trade area for the proposed local centre.

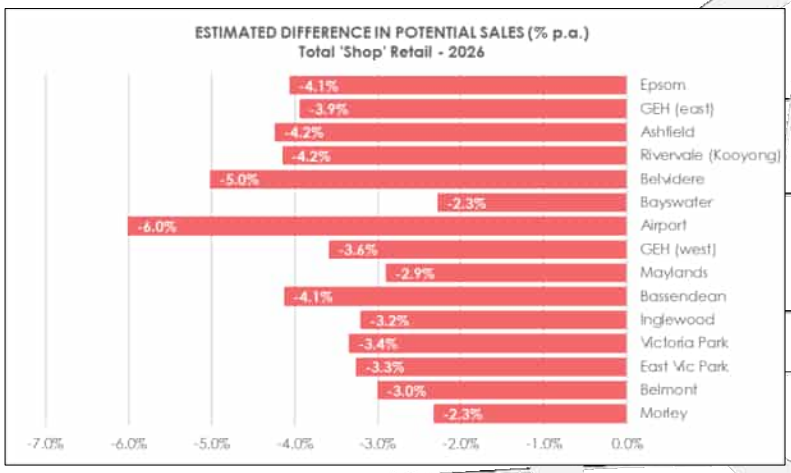
Morley

The public and private investment at Morley Centre will not be impacted by the proposed local centre. The potential sales impact is forecast to be less than 2.3% which is classified as insignificant impact/risk. The potential sales impact is in effect considerably less than 2.3% as the model only shows the potential loss in sales at Morley from residents in the modelled trade area. The Morley Centre generates sales from a more extensive trade area than the trade area for the proposed local centre.

Bayswater

The public and private investment at Bayswater will not be impacted by the proposed local centre. The potential sales impact at Bayswater is less than 2.3% which is classified as low impact/low risk. The low impact is because the Bayswater Centre does not provide the offer intended at the proposed local centre. Therefore, the Bayswater Centre is not capturing the sales that will be captured by the proposed local centre.

*FIGURE 15*
*ESTIMATED IMPACT of PROPOSED ACTIVITY on ANNUAL SALES at OTHER ACTIVITY CENTRES by SHOP SALES by FIRST YEAR TRADE of PROPOSED ACTIVITY (2026)*




*Taktics4 Retail Model (2024)*

Local Centres

Centres at Epsom (4.1%), Ashfield (4.2%), Rivervale/Kooyong (4.2%) and Belvidere (5.0%) are all estimated to be impacted by between 4% and 5%. These impacts are classified as insignificant impact65/ low risk. There is not expected to be an impact to private or public investment. This is because these centres do not currently offer the extent of the retail offer intended to be provided by the proposed local centre.

Airport

The convenience-based centre anchored by Woolworths at the Airport, is the only centre which is estimated to experience a moderate impact (6%). The potential sales impact is in effect considerably less than 6.0% as the model only shows the potential loss in sales at the Airport from resident spending generated from within the modelled trade area. The Airport Centre generates sales from a far more extensive trade area than the trade area for the proposed local centre.

### 5.5 Sales Growth

Sales Growth represents the increase in retail sales that may be expected from a centre because of an increase in population growth in the trade area.

*For example:*

*A centre is currently capturing total retail sales of $20M p.a.*

*It achieves these sales by capturing 20% market share of all resident spending in the trade area.*

*Therefore, the trade area has a current resident retail spending capacity of $100M p.a.*

*Residential development occurs in the trade area at 10% growth over a five-year period.*

*In five years, the resident retail spending capacity in the trade area has increased to $110M p.a.*

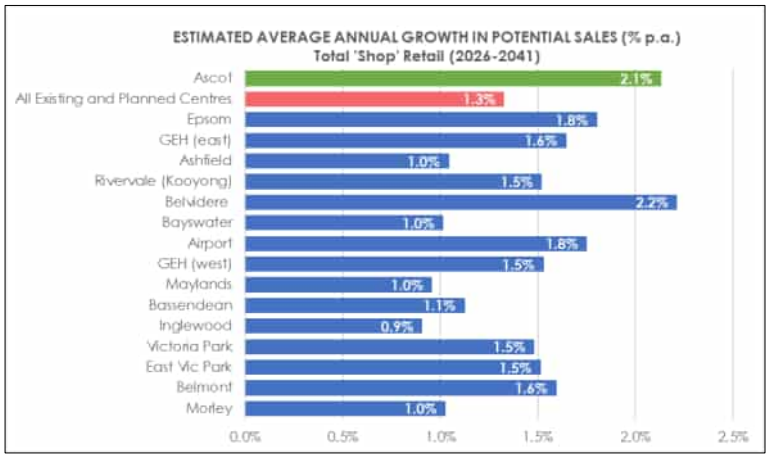
*The sales potential for the centre is forecast to increase to $22M p.a. (in constant dollars) despite maintain the same market share within the trade area.*

*This potential sales growth across centres has the potential to offset any initial sales impact generated by the development of a proposed local centre.*

The population in the total trade area is expected to increase from 77,700 in 2026 to 93,500 in 2041. This population growth will result in an increase in resident retail spending capacity in the total trade area from $1,142M p.a. in 2026 to $1,374M p.a. in 2041. That represents an additional $232M p.a. in the total trade area for all centres to capture.

The graph shows that beyond the development of the proposed local centre in 2026, all centres in the trade area, or area of influence by the proposed local centre is forecast to have the potential to experience an average annual growth in sales of between 1% and 2.0% p.a. over the subsequent 15 years.

*FIGURE 16*
*ESTIMATED AVERAGE ANNUAL SALES GROWTH at ACTIVITY CENTRES SHOP SALES Between 2026 and 2041*




*Taktics4 Retail Model (2024)*

## 5.6 Summary

The findings in this Net Benefit Test confirm that a proposed local centre at Ascot will result in insignificant/low risk impacts on the surrounding existing and planned activity centres network. With any potential sales impact offset by the potential for substantial average sales growth in the trade area over the next 15 years.

Overall, the development of the proposed local centre at Ascot is not expected to generate significant impacts for the surrounding centres network. The centres network is currently bereft of full line supermarket-based centres. This means that residents in the trade area are already bypassing the smaller local centres to access their convenience retail needs at centres further afield than they should have to travel.

# 6. PART B - BULKY GOODS

This section assesses the potential market demand for, and potential sustainability of proposed 'Other' Retail Bulky Goods Precinct at Ascot. This assessment is necessary to subsequently inform the assessment of potential impacts at existing and planned activity centres. The proposed bulky goods activity is considered an 'out of centre' development.

## 6.1 Market Share

Market share represents the proportion of resident spending generated from a trade area to the proposed centre. Market share is a measure of influence that a centre will have over customers in an area.

*Example:*

*Total annual retail spending generated by residents in a trade area is $100M p.a.*

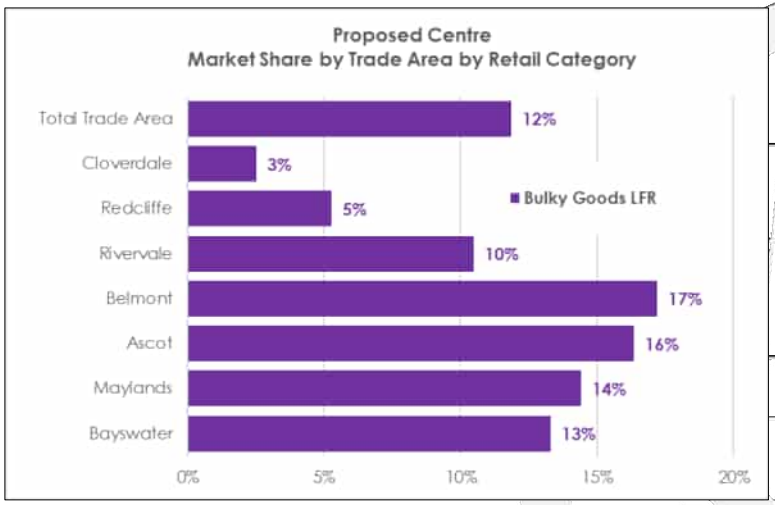
*A centre is capturing a market share of 20% of that retail spending*

*The centre therefore captures $20M p.a. in sales from the trade area*

The proposed bulky goods activity if developed by 2026, is estimated to capture:

- 12% of all bulky goods spending generated by residents across the total trade area.
- relatively consistent market capture between 13%-17% of all bulky goods retail spending from residents in Ascot, Belmont, Maylands, Bayswater and Rivervale.5% of all convenience/food/grocery/local spending generated by residents in Belmont, reflecting the propensity for residents to travel further to access this type of retail category.

FIGURE 17




*Taktics4 Retail Model*

## 6.2 Sales Potential

The Sales potential represents the total sales that a centre may be expected to capture based on achieving the estimated market share from each trade area. It is a measure of a centre's viability and sustainability. Sales potential is measured by either annual sales and/or by sales productivity. Sales productivity is the total annual sales of centre divided by the total retail floor space NLA of the centre.

*Example:*

*A centre captures total annual retail sales of $20M p.a.*

*The centre has a retail floor space of 4,000 sqm NLA.*

*The centre has a sales productivity of $20M p.a. divided by 4,000 sqm NLA = $5,000/sqm p.a.*

The proposed local centre if developed in 2026 is estimated to have the potential to generate:

$25.2M p.a. at $2,600/sqm p.a. by 2026

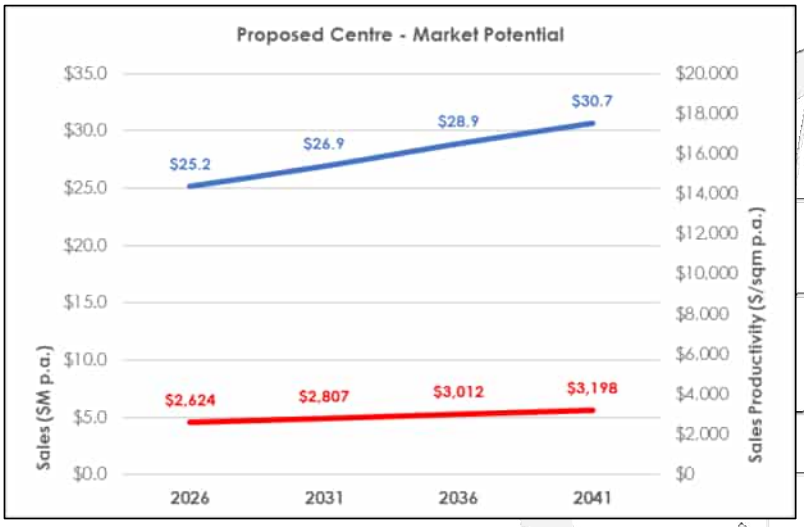
$26.9M p.a. at $2,800/m p.a. by 2031

$28.9M p.a. at $3,000/sqm p.a. by 2036

$30.7M p.a. at $3,200/sqm p.a. by 2041

The proposed bulky goods activity at Ascot has the potential to generate sufficient sales to be sustainable by 2026, satisfying industry measures conducive to a sustainable bulky goods activity. Be sustainable despite a potential market capture of only 12% of total bulky goods sales from resident spending in the total trade area, leaving 88% of bulky goods retail spending to be captured by existing and planned centres.

*FIGURE 18*




*Taktics4 Retail Model*

### 6.3 Sales Impact

Sales impact represents the potential loss of sales at a centre due to the development of another centre. Sales impact is measured by comparing the potential sales of a centre at a particular year/period with the other centre included and excluded from the equation/modelling. Sales impact may be measured by potential actual annual sales or a percentage of potential annual sales.

*Example*

*A centre is forecast to generate annual sales of $20M p.a. in 2026 without the proposed centre being developed by 2026.*

*The centre is forecast to generate annual sales of $18M p.a. in 2026 if the proposed centre is developed by 2026.*

*The centre is therefore estimated to experience a potential sales impact of $2M p.a. in 2026.*

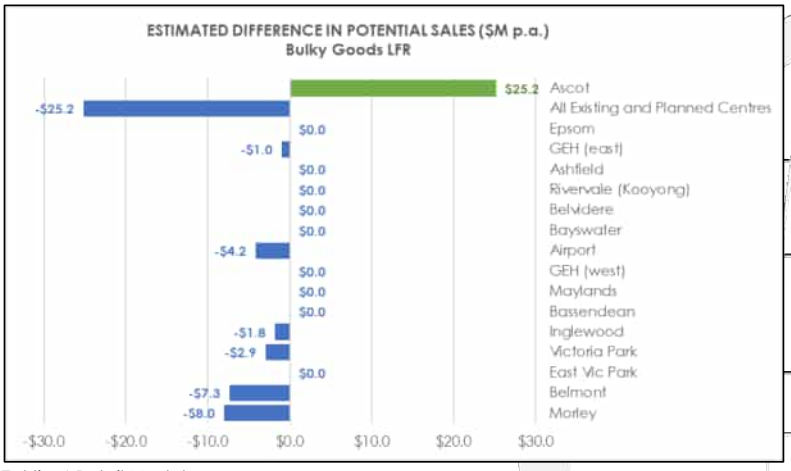
*The centre is estimated to subsequently experience a potential sales impact of 10% of its sales ($2M p.a. loss from its $20M p.a.)*

**Actual Sales**

The development/introduction of the proposed bulky goods activity in Ascot by 2026 will have the potential to capture $25.2M p.a. in retail sales that might otherwise be captured from existing or planned centres.

Over 81% of all retail sales generated by the proposed bulky goods activity to be captured from four centres including Belmont Centre (-$7.3M p.a.), Morley Centre (-$8.0M p.a.), Airport (-$-4.2M p.a.), and Victoria Park ($-2.9M p.a.).

*FIGURE 19*




*Taktics4 Retail Model*

**Percentage of Sales**

The modelling shows that upon trading in 2026, the retail sales captured by proposed bulky goods activity centre has the potential to impact the overall retail sales generated by residents in the trade area at:

Belmont

The public and private investment at Belmont Centre will not be impacted by the proposed local centre. The potential sales impact is forecast to be less than 4.2% which is classified as insignificant impact/risk. The potential sales impact at Belmont is in effect considerably less than 4.2% as the model only shows the potential loss in sales at Belmont from residents in the modelled trade area. The Belmont Centre generates sales from a more extensive trade area than the trade area for the proposed bulky goods activity at Ascot.

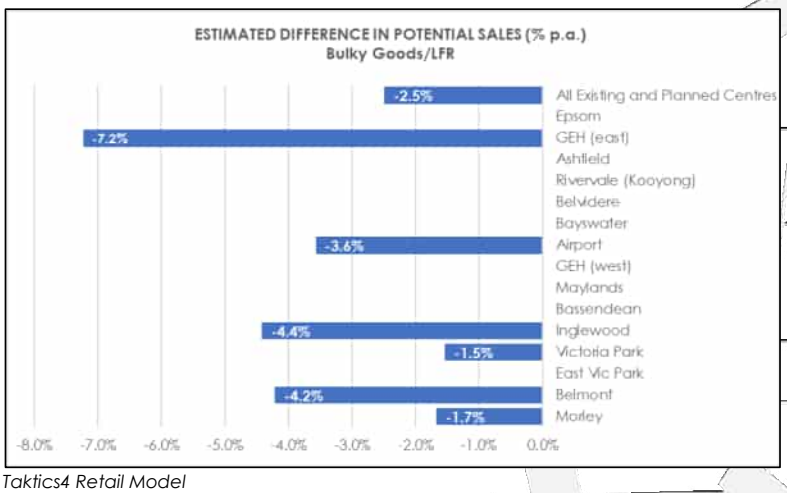
Morley

The public and private investment at Morley Centre will not be impacted by the proposed bulky goods activity. The potential sales impact is forecast to be less than 1.7% which is classified as insignificant impact/risk. The potential sales impact is in effect considerably less than 1.7% as the model only shows the potential loss in sales at Morley from residents in the modelled trade area. The Morley Centre generates sales from a more extensive trade area than the trade area for the proposed bulky goods activity at Ascot.

Airport

The public and private investment at the Airport will not be impacted by the proposed bulky goods activity. The potential sales impact is forecast to be less than 3.6% which is classified as insignificant impact/risk. The potential sales impact is in effect considerably less than 3.6% as the model only shows the potential loss in sales at the Airport from residents in the modelled trade area. The Airport generates sales from a more extensive trade area than the trade area for the proposed bulky goods activity at Ascot.

*FIGURE 20*




*Taktics4 Retail Model*

### 6.4 Sales Growth

Sales Growth represents the increase in retail sales that may be expected from a centre because of an increase in population growth in the trade area.

*For example:*

*A centre is currently capturing total retail sales of $20M p.a.*

*It achieves these sales by capturing 20% market share of all resident spending in the trade area.*

*Therefore, the trade area has a current resident retail spending capacity of $100M p.a.*

*Residential development occurs in the trade area at 10% growth over a five-year period.*

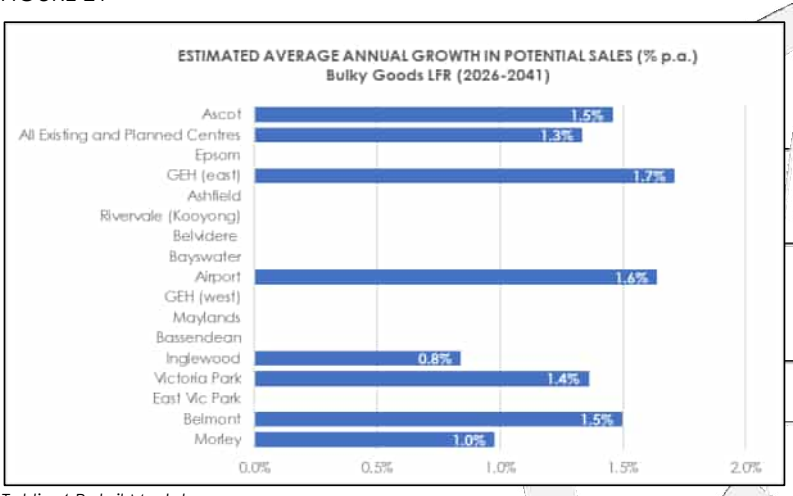
*In five years, the resident retail spending capacity in the trade area has increased to $110M p.a.*

*The sales potential for the centre is forecast to increase to $22M p.a. (in constant dollars) despite maintain the same market share within the trade area.*

*This potential sales growth across centres has the potential to offset any initial sales impact generated by the development of a proposed local centre.*

The population in the total trade area is expected to increase from 77,700 in 2026 to 93,500 in 2041. This population growth will result in an increase in resident retail spending capacity in the total trade area from $1,142M p.a. in 2026 to $1,374M p.a. in 2041. That represents an additional $232M p.a. in the total trade area for all centres to capture. The graph shows that beyond the development of the proposed bulky goods in 2026, all relevant centres in the trade area, or area of influence by the proposed bulky goods activity at Ascot is forecast to have the potential to experience an average annual growth in sales of between 1.0% and 2.0% p.a. over the subsequent 15 years.

*FIGURE 21*

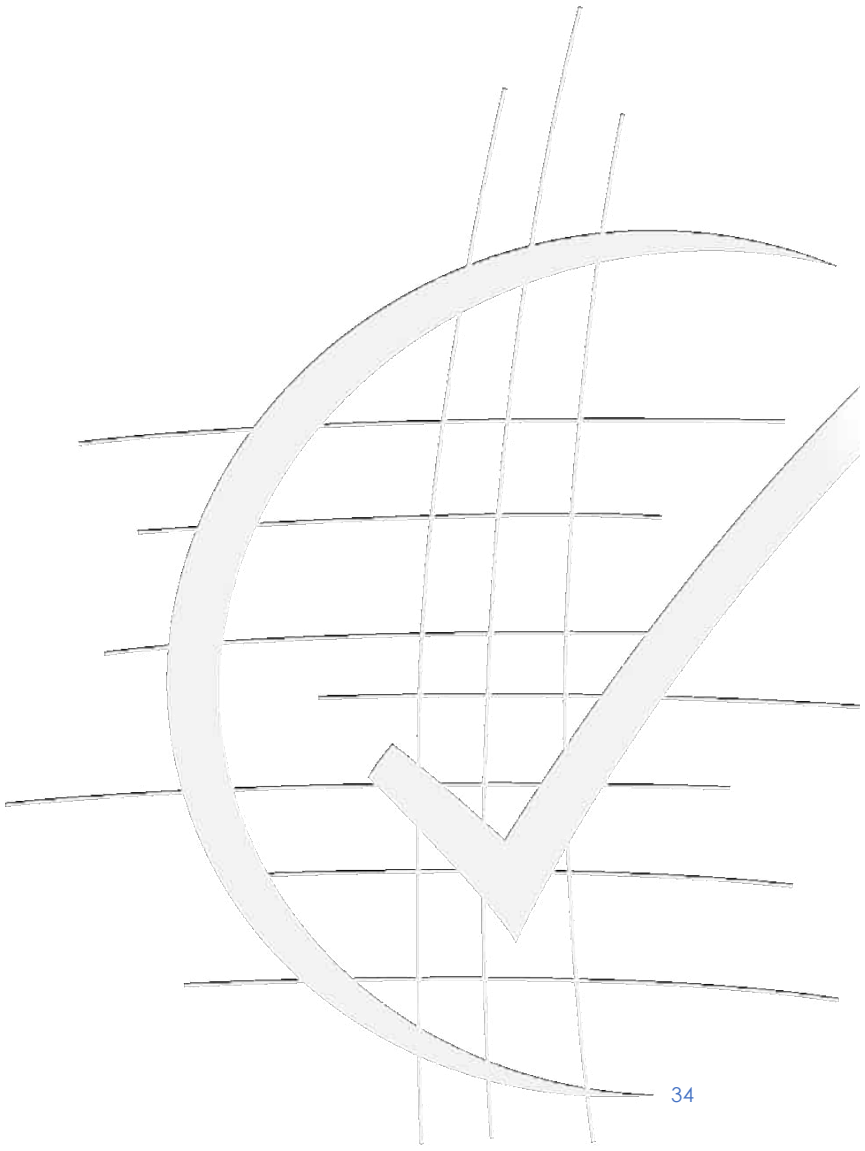



*Taktics4 Retail Model*

### 6.5 Summary

The findings in this Net Benefit Test confirm that proposed bulky goods activity at Ascot will.

- Result in insignificant/low risk impacts on the surrounding existing and planned activity centres network. With any potential sales impact offset by the potential for substantial average sales growth in the trade area over the next 15 years.
- Subsequently not have an unreasonable impact on the delivery and sustainability of private and public infrastructure at other activity centres.



# 7. NET BENEFIT TEST

When estimating benefits to the community, the Net Benefit Test should:

- Detail what benefit will occur due to the proposed development.
- Use existing data and standards to measure the size of the benefit and how important it will be to the community.
- Identify those in the community who will be likely to experience the benefit.
- Estimate how many individuals are expected to experience the benefit.
- Describe the degree of change expected due to the benefit.
- Determine the expected duration for which stakeholders are expected to experience the benefit.

SPP4.2 provides a guide to estimating/measuring the net benefit to the community including:

## 7.1 Employment

*Will the proposal provide new jobs in addition to any that may be lost elsewhere – net additional jobs?*

The proposed activity has the potential to create up to 205 Full Time Equivalent jobs including 85 in the shopping precinct and 120 in the bulky goods showroom precinct.

*FIGURE 22*

*TOTAL EMPLOYMENT OPPORTUNITIES*

| PLUC | Activity Type | Floor space (sqm NLA) | Ratio (FTE jobs/sqm) | FTE Jobs |
|---|---|---|---|---|
| PLUC 5 | Shops | 3,400 | 40 | 85 |
| PLUC 6 | Bulky Goods/Showroom | 9,600 | 80 | 120 |
| **Combined** | | **13,000** | **63** | **205** |

*Land Use and Employment Survey (WAPC 2017)*

*Will the proposed activity contribute to diversifying local jobs – creating more strategic employment versus population-driven employment?*

*Will the proposal have the potential to improve access to economic opportunity for minority and vulnerable groups?*

Employment in shop and bulky goods activity typically attracts residents which fit the following:

- Female labour force
- Part time labour force
- Young adult labour force
- Local labour force
- Labour force without access to a motor vehicle

| Gender | Employment Sector | |
|---|---|---|
| | Total Retailing | All Sectors |
| Male Employees | 34% | 43% |
| Female Employees | 66% | 57% |
| All Employees | 100% | 100% |

The proposed activity is conducive to the female employment labour force. Females on average represent 66% of all retail related jobs compared to 57% for all job sectors.

| Employment Status | Employment Sector | |
|---|---|---|
| | Total Retailing | All Sectors |
| Full Time Employment | 38% | 54% |
| Part time Employment | 62% | 46% |
| All Employment | 100% | 100% |

The proposed activity is conducive to the part time employment labour force. Part time employees represent 62% of all retail related jobs compared to 46% for all job sectors.

| Age of Employee | Employment Sector | |
|---|---|---|
| | Total Retailing | All Sectors |
| 15-19 years | 19% | 9% |
| All Ages | 100% | 100% |

The proposed activity is conducive to young adults in the labour force. Young adults represent 19% of all retail related jobs compared to 9% for all job sectors.

| Distance Travelled | Employment Sector | |
|---|---|---|
| | Total Retailing | All Sectors |
| less than 2.5 km | 15% | 10% |
| 2.5 km - 10 km | 42% | 32% |
| All Distances | 100% | 100% |

The proposed activity is conducive to residents who live within 2.5 km of the proposed activity. 15% of all residents in retail related jobs on average travel up to 2.5km from their home compared to 10% for all job sectors.

| Travel Mode | Employment Sector | |
|---|---|---|
| | Total Retailing | All Sectors |
| Car, as passenger | 9% | 6% |
| Bicycle | 1% | 0% |
| Walked only | 2% | 2% |
| Walked, Cycled, Passenger | 11% | 8% |
| All Modes | 100% | 100% |

The proposed activity is conducive to residents who do not have ready access to motor vehicle for travel to work. 11% of residents working in the retail sector cycle, walk or travel by passenger to work compared to 8% for all job sectors.

The impact assessment shows that all activity centres in the network have the potential to increase sales and subsequently not need to reduce employment levels. The proposed local centre is therefore expected to provide new local jobs for residents.

### 7.2 Impact

*How is the proposal expected to impact upon the current and expected turnover and role of relevant activity centres?*

The proposed activity is estimated to have an initial low / insignificant risk to activity centres in the network. Any impacts on these activity centres are likely to be temporary and have no long-term effects on the viability of individual activity centres. The initial impacts to activity centres are expected to be offset by future growth in sales from resident and spending growth.

*Will the proposal increase the choice and availability of goods and services in the area?*

Retail modelling confirms that the residents in Ascot and Belmont are the communities most likely to experience the benefit from the proposed activity. Residents in Ascot and Belmont are estimated to account for 60% of total sales / trips at the proposed activity confirming the importance of the proposed activity to these residents.

Ascot and Belmont trade area currently comprise 11,000 residents. Ascot and Belmont trade area resident population base will grow to 16,400 residents by 2041. Despite this population profile, residents in Ascot do not currently have access to a full line supermarket-based centre within 2.5 km. Ascot residents must therefore travel up to 2.5 km each way (5 km round trip) every time they access their full line supermarket needs.

The introduction of the proposed activity will fill an identified gap in the supply and demand of convenience-based activity in the Ascot and Belmont area.

### 7.3 Impact on Activity Centre Hierarchy

Retail modelling confirm that the proposed activity centre is sufficiently sized, located and configured to satisfy the local trade area needs without impinging on the trading potential of other centres. And that the proposed centre will not have a significant or long-term impact on any of the individual activity centres modelled as part of the centres network.

It therefore follows that the proposed activity centre will not create any unreasonable or detrimental impact on the role and function of the activity centre hierarchy and framework in the trade area.

All centres will have the opportunity to compete for the additional retails sales available through the increased retail spending capacity planned in the trade area. It will be up to each of the centres and their respective operators in the existing and planned network to establish plans and strategies to target that additional retail spending capacity.

The forecast population growth in the trade area will ultimately create the potential for all centres in the network to achieve an average increase in sales of between 1% and 3% per annum over the period between 2026 and 2041. This average sales growth will further offset the immediate impact experienced from the introduction of the proposed activity.

### 7.4 Compatibility

*Is the proposal compatible with surrounding land uses?*

The proposed activity will introduce proposed activity in the middle of a trade area which contains 11,000 – 16,400 residents within a 1.5 km radius of the proposed activity. This resident population is a significant base for a supermarket-based centre.

### 7.5 Environment

*Will there be an improvement in the level of amenity and vibrancy that benefits the wider community? Will the proposal include land uses such as healthcare, education, and community facilities? Will the proposal have an impact on overall vehicle trips? Will car-based net trips (by distance) increase or reduce because of the proposal?*

The proposed activity has the potential to create a community hub for the Ascot and Belmont communities. increasing a sense of place for residents. The proposed activity does not in itself create these facilities. However, some of these facilities will likely be attracted to the area because of the introduction of the proposed activity.

The proposed activity has the potential to reduce the amount of trip kilometres that Ascot and Belmont residents must travel each year to satisfy their daily/weekly shopping needs. As stated, the Ascot and Belmont resident population base represents 11,000 growing to 16,400 residents who will benefit directly from the proposed activity. Ascot and Belmont residents therefore have the potential to:

- reduce the amount of trip kilometres that Ascot and Belmont residents must travel each year to satisfy their daily/weekly shopping needs.
- save over 530,000 to 700,000 trips p.a. to centres outside their trade area
- save between 40 and 50 trips per person per annum.
- save between 2.7 M km p.a. and 3.5 M km p.a. of vehicular travel per annum

### 7.6 Infrastructure

*Is there significant government investment in services, infrastructure or development in the area or nearby centres that may be affected by the proposal? Will the proposal impact patronage/viability of the investment and what is the expected impact? Will the proposal include new, or improvements to existing transport infrastructure, particularly walking, cycling and public transport, that increases access and helps manage congestion? Will the proposal include enhancements to utilities that benefit the local area?*

As previously stated, the proposed activity has the potential to significantly reduce the number of trips/trip km by residents especially for residents in Ascot and Belmont. Residents in these areas will be far more likely to walk to the proposed activity than their current trip patterns to supermarket-based centres over 2 km from the proposed activity. The proposed activity has the potential to generate demand for enhancements to community and non-retail related to services in the local area.

### 7.7 Strategic Alignment

*Is the proposal consistent with the strategic planning for the area? Is it aligned with the relevant regional strategy and approved local planning strategy? Is the size and scale of the proposal consistent with the level of the hierarchy? What are the potential impacts on the activity centre hierarchy? Is the proposal consistent with the objectives and outcomes of SPP 4.2?*

The proposed activity is classified as a planned centre in an adopted planning instrument. The proposed activity is a size, scale, function, and role that is consistent with and complements the overall activity centre hierarchy. The proposed local centre activity is consistent with the City of Belmont's Activity Centre Planning strategy.

The proposed activity will not have a significant impact on any of the activity centres in the network. The proposed activity does not have the potential to result in the loss of or change the role and function of any activity centre in the network. As such the proposed activity is not have the potential to have any impact or change to the activity centre hierarchy.

The Net Benefit Test confirms that the proposed activity satisfies the criteria for assessing the benefits to the community and is therefore consistent with the objectives and outcomes of SPP4.2.

# ATTACHMENT 5

Transportation Noise Assessment

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# Transportation Noise Assessment

## Ascot Racecourse Structure Plan

**Reference: 23118540-01**

Prepared for:
Perth Racing C/- Davison Advisory Services

**Reference: 23118540-01**

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This report has been prepared in accordance with the scope of services described in the contract or agreement between Lloyd George Acoustics Pty Ltd and the Client. The report relies upon data, surveys, measurements and results taken at or under the particular times and conditions specified herein. Any findings, conclusions or recommendations only apply to the aforementioned circumstances and no greater reliance should be assumed or drawn by the Client. Furthermore, the report has been prepared solely for use by the Client, and Lloyd George Acoustics Pty Ltd accepts no responsibility for its use by other parties.

| Date | Rev | Description | Author | Verified |
|---|---|---|---|---|
| 16-Nov-23 | 0 | Issued to Client | Terry George | - |
| | | | | |

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## 1. INTRODUCTION

A Local Structure Plan (LSP) and Scheme Amendment are being prepared for landholdings in Ascot, referred to as the Ascot Racecourse Structure Plan (refer *Figure 1-1*). Parts of the site will be potentially impacted by road traffic noise, being the subject of this report, with consideration given to *State Planning Policy No. 5.4 Road and Rail Noise*, being the subject of this report.

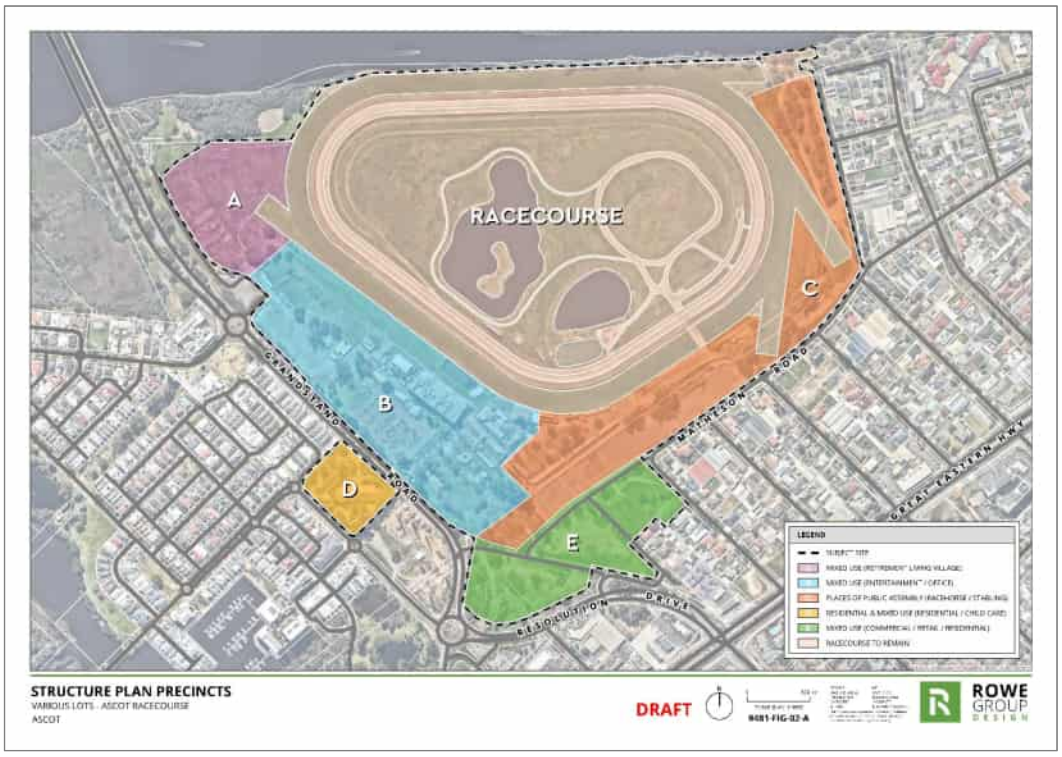



***Figure 1-1: Structure Plan Precincts***

*Appendix B* contains a description of some of the terminology used throughout this report.

## 2. CRITERIA

The criteria relevant to this project is provided in *State Planning Policy No. 5.4 Road and Rail Noise* (hereafter referred to as SPP 5.4) produced by the Western Australian Planning Commission (WAPC). SPP 5.4 is supported by the *Road and Rail Noise Guidelines* (the Guidelines) and the Department of Planning, Lands and Heritage mapping. The objectives of SPP 5.4 are to:

- Protect the community from unreasonable levels of transport noise;
- Protect strategic and other significant freight transport corridors from incompatible urban encroachment;
- Ensure transport infrastructure and land-use can mutually exist within urban corridors;
- Ensure that noise impacts are addressed as early as possible in the planning process; and
- Encourage best practice noise mitigation design and construction standards.

*Table 2-1* sets out noise targets that are to be achieved by proposals under which SPP 5.4 applies. Where the targets are exceeded, an assessment is required to determine the likely level of transport noise and management/mitigation required.

***Table 2-1: Noise Targets for Noise Sensitive Land-Use***

| Scenario | Outdoor Noise Target | | Indoor Noise Target | |
|---|---|---|---|---|
| Noise-sensitive land-use and/or development | 55 dB $L_{Aeq(Day)}$ | 50 dB $L_{Aeq(Night)}$ | 40 dB $L_{Aeq(Day)}$ (Living and Work Areas) | 35 dB $L_{Aeq(Night)}$ (Bedrooms) |

Notes:

- Day period is from 6am to 10pm and night period from 10pm to 6am.
- The outdoor noise target is to be measured at 1-metre from the most exposed, habitable[1] facade of a noise sensitive building.
- For all noise-sensitive land-use and/or development, indoor noise targets for other room usages may be reasonably drawn from Table 1 of Australian Standard/New Zealand Standard AS/NZS 2107:2016 *Acoustics – Recommended Design Sound Levels and Reverberation Times for Building Interiors* (as amended) for each relevant time period.
- Outdoor targets are to be met at all outdoor areas as far as is reasonable and practicable to do so using the various noise mitigation measures outlined in the Guidelines.

The application of SPP 5.4 is to consider anticipated traffic volumes for the next 20 years from when the noise assessment has been undertaken.

[1] *A habitable room is defined in State Planning Policy 3.1 as a room used for normal domestic activities that includes a bedroom, living room, lounge room, music room, sitting room, television room, kitchen, dining room, sewing room, study, playroom, sunroom, gymnasium, fully enclosed swimming pool or patio.*

## 3. METHODOLOGY

The site is within the trigger distance of Great Eastern Highway, considered to be a 'Strategic Freight/Major Traffic Route' as shown on the PlanWA Maps (refer *Table 1-1* and *Figure 3-1*).

***Table 3-1: Transport Corridor Classification and Trigger Distances***

| Transport Road Classification | Trigger Distance | Distance Measured From |
|---|---|---|
| **Strategic Freight and Major Traffic Routes**<br>Roads as defined by Perth and Peel Planning Frameworks and/or roads with either 500 or more Class 7 to 12 Austroads vehicles per day, and/or 50,000 per day traffic volume | 300 metres | Road carriageway edge |
| **Other Significant Freight/Traffic Routes**<br>These are generally any State administered road and/or local government road identified as being a future State administered road (red road) and other roads that meets the criteria of either ≥ 100 Class 7 to 12 Austroads vehicles daily or ≥ 23,000 daily traffic count (averaged equivalent to 25,000 vehicles passenger car units under region schemes) | 200 metres | Road carriageway edge |




***Figure 3-1: Subject Site Locality in Relation to Road (Source: DPLH PlanWA)***

The methodology used in this assessment is to follow the screening assessment procedure provided in the Guidelines. From *Table* 2 of the Guidelines (refer *Figure 3-2*), noise levels at the proposed site are up to 58 dB $L_{Aeq(Day)}$, with Great Eastern Highway being a total of 6 lanes and at its closest point at a distance of 130 metres.

The forecast levels provided in the Guidelines assume open and level ground. The Guidelines allow a 4 dB reduction in noise level where:

- an existing building or structure screens more than 50% of the most exposed part of the noise-sensitive land-use; or
- where a solid continuous minimum 1.8 metre noise wall/fence exists or is proposed; or
- through a combination of permanent structures and terrain so there is no direct line of sight.

In this project, the 4 dB reduction is applicable to the ground floor due to other buildings located between the subject site and road corridor.

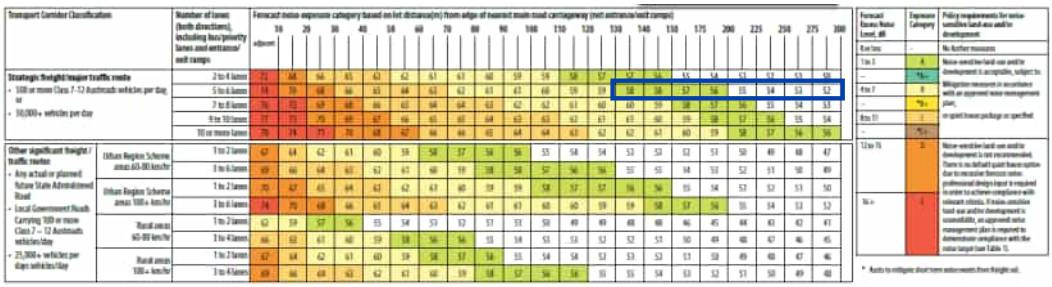


***Figure 3-2: Noise Exposure Forecast Table from Guidelines***

## 4. RESULTS

The results of the screening assessment are summarised as follows:

- Zone E is within 200 metres of Great Eastern Highway;
- Zone E is mixed use and therefore may have some noise sensitive (residential) uses subject to compliance with SPP 5.4;
- Zone E is no closer than 130 metres to Great Eastern Highway placing parts within Exposure A:
  - Due to the screening effect of existing buildings, any ground floor noise sensitive uses would be compliant with the outdoor noise target; and
  - Noise sensitive uses above ground floor and within 200 metres of Great Eastern Highway would be subject to Package A (refer *Appendix A*), including a notification on title. Alternatives to the Deemed to Comply Package A can be accepted if supported by a report from a suitably qualified acoustical consultant (member firm of the Association of Australasian Acoustical Consultants (AAAC)) once the specific plans are available.




***Figure 4-1: Exposure Levels to Upper Floors of Noise Sensitive Buildings***

## 5. CONCLUSION

The objectives of SPP 5.4 are to achieve:

- Indoor noise levels specified in *Table 2-1* in noise-sensitive areas (e.g. bedrooms and living rooms of houses); and
- A reasonable degree of acoustic amenity for outdoor living areas on each residential lot.

Where the outdoor noise targets of *Table 2-1* are achieved, no further noise controls are necessary. Based on the SPP 5.4 screening assessment procedure, any part of the development outside of 200 metres is compliant. Any ground floor noise sensitive development within 200 metres is also compliant.

The only area of potential exceedance, based on the screening assessment procedure of SPP 5.4 are upper residential floors within Zone E where a small area is shown to be in Exposure A. As the Structure Plan develops further, measurements could be undertaken to quantify actual noise levels from Great Eastern Highway, rather than using the screening assessment procedure. Alternatively given the relatively low impact, the screening assessment procedure can be adopted, applying Quiet House Package A to upper floors of noise sensitive dwellings within the marked area on *Figure 4-1*. Alternatives to the Deemed to Comply Package A can be accepted if supported by a report from a suitably qualified acoustical consultant (member firm of the Association of Australasian Acoustical Consultants (AAAC)) once the specific plans are available

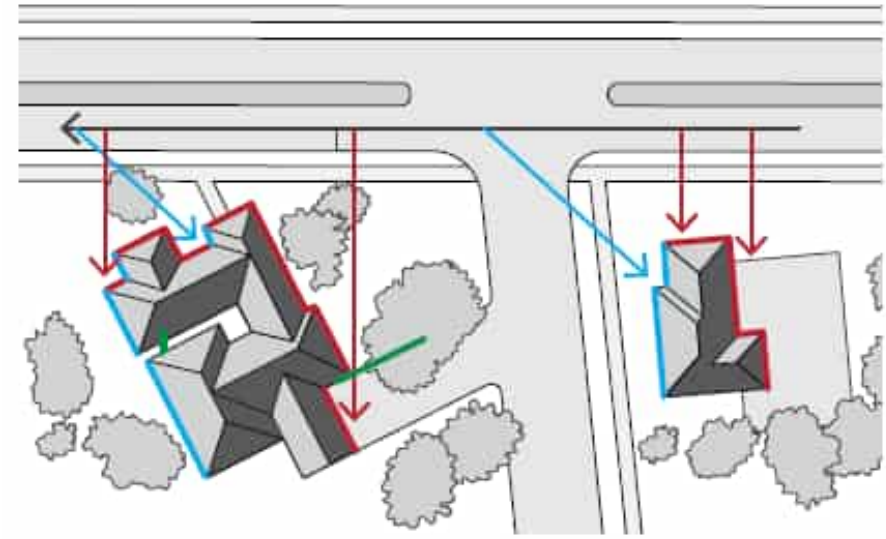
## Appendix A – Quiet House Packages

The packages and information provided on the following pages are taken from *Road and Rail Noise Guidelines* (September 2019).

Where outdoor and indoor noise levels received by a noise-sensitive land-use and/or development exceed the policy's noise target, implementation of quiet house requirements is an acceptable solution.

With regards to the packages, the following definitions are provided:

- **Facing** the transport corridor (red): Any part of a building façade is 'facing' the transport corridor if any straight line drawn perpendicular (at a 90 degree angle) to its nearest road lane or railway line intersects that part of the façade without obstruction (ignoring any fence).
- **Side-on** to transport corridor (blue): Any part of a building façade that is not 'facing' is 'side-on' to the transport corridor if any straight line, at any angle, can be drawn from it to intersect the nearest road lane or railway line without obstruction (ignoring any fence).
- **Opposite** to transport corridor (green): Neither 'side on' nor 'facing', as defined above.



# ATTACHMENT 6

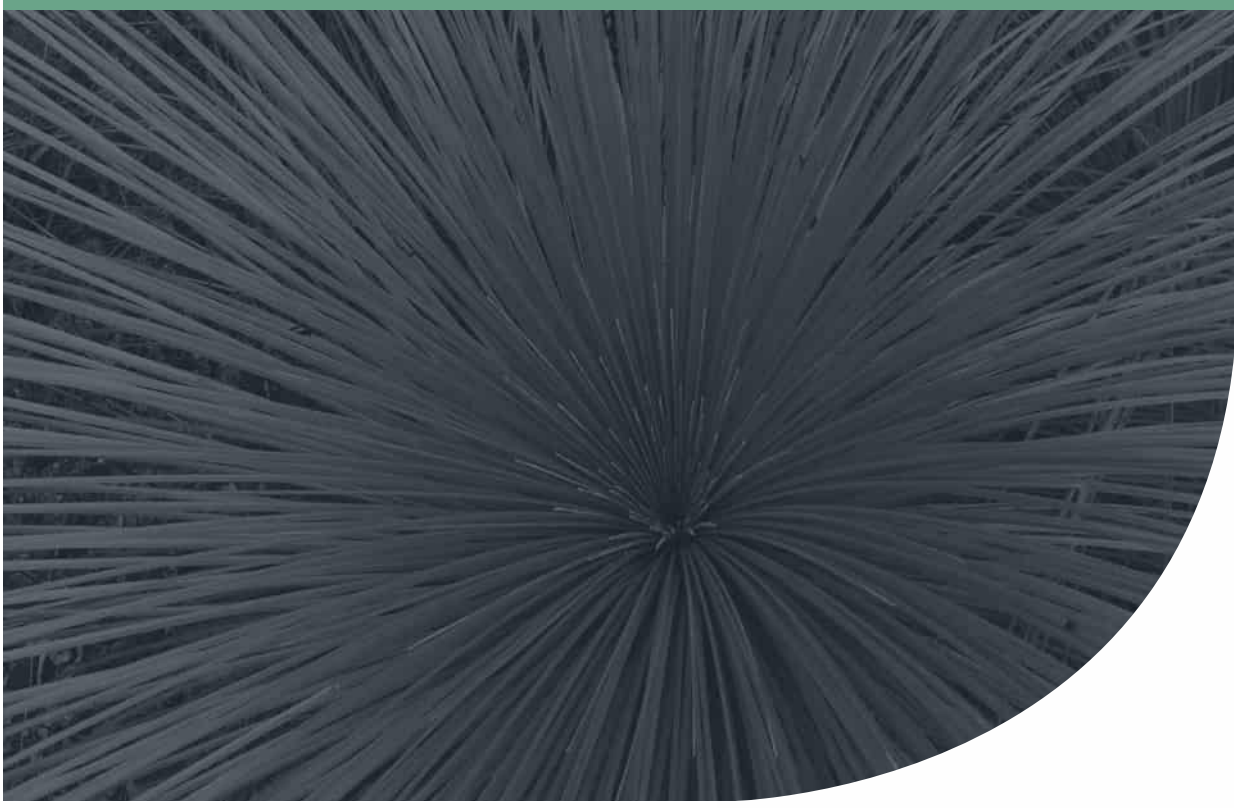
Environmental Assessment Report

# Environmental Assessment Report

## Ascot Racecourse Structure Plan

Project No: EP23-109(05)

**Prepared for Perth Racing**
**July 2024**



# Document Control

| Doc name: | Environmental Assessment Report<br>Ascot Racecourse Structure Plan | | | | |
|---|---|---|---|---|---|
| Doc no.: | EP23-109(05)—004 GAB | | | | |
| Version | Date | Author | | Reviewer | |
| 1 | May 2024 | Georgia Bayley | GAB | Jason Hick | JDH |
| | | Emma Bentley | EKB | | |
| | Submitted for client review. | | | | |
| A | July 2024 | Emma Bentley | EKB | Jason Hick | JDH |
| | Submitted for client review. | | | | |

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# Executive Summary

Perth Racing (the 'proponent') propose to progress a structure plan (SP) over an area of land in Ascot. The area is bounded by the Swan River to the north, Grandstand Road to the west and south, Matherson Road to the south and existing residential areas to the east, and is referred to herein as 'the site'. The site includes the Ascot Racecourse area. The site is located approximately 8.5km east of Perth central business district (CBD) and is approximately 62 ha in size, within the City of Belmont (CoB). The SP consists of six precincts: Precinct A, Precinct B, Precinct C, Precinct D, Precinct E, and the racecourse. The proponent additionally intends to progress a local planning scheme amendment for the site in parallel with the structure plan process.

The site is currently zoned 'Urban', 'Parks and Recreational', and 'Private Recreation' under the Metropolitan Regional Scheme (MRS). Under the Local Planning Scheme No. 15 (LPS 15), the site is currently zoned as 'Place of Public Assembly' and 'Mixed Use'. A small portion of the site is 'Parks and Recreation: water supply sewerage and drainage'.

This Environmental Assessment Report (EAR) supports the SP and is the principal supporting environmental document for the scheme amendment and SP process for the site. It includes a preliminary assessment of the proposed SP land uses, future management considerations and associated predicted environmental outcomes, against the applicable environmental factors as defined by the Environmental Protection Authority (EPA) policy framework.

The proponent has taken a range of measures to provide for the accommodation of environmental values within the Ascot SP. This is primarily achieved through the strategic location of public open space (POS) in the northern area of the site to retain intact native vegetation, as well as retention of existing wetland features located centrally within the site.

In this context, the SP has considered the identified environmental values within the site, including the proposed future retention of:

- Subtropical and temperate coastal saltmarsh TEC/PEC
- Native vegetation
- Fauna habitat.

As part of the future development process, considerations, approvals and management plans are likely to be necessary for individual proponents of development proposals within the Ascott SP, which would further minimise environmental impacts that have the potential to arise through development in accordance with the SP. The management framework and relevant considerations are summarised in **Table 1**.

*Table 1: Summary of environmental management framework and relevant considerations*

| Environmental Factor | Management Framework and considerations | | |
|---|---|---|---|
| | Local Structure Plan | Subdivision and/or Development | Construction |
| Flora and Vegetation | Environmental Assessment Report including preliminary investigations (Emerge Associates 2024a) (**Appendix D**). | • Native Vegetation Clearing permit pursuant to Part V of the EP Act if clearing is required within the SP area and clearing is not exempt.<br>• Preparation of a Conservation and Environment Management Plan (CEMP), where required. | Clearing Permit and compliance with approval conditions and management plans, in accordance with the EP Act. |
| Terrestrial Fauna | Environmental Assessment Report including preliminary investigations (Emerge Associates 2024a) (**Appendix D**). | • Potential impacts to MNES (listed black cockatoo species) in relation to the EPBC Act and the need to consider referral in accordance with the *Matters of National Environmental Significance Significant Impact Guidelines* (DotE 2013).<br>• Preparation of a fauna management plan, where required, to minimise impacts to fauna through the clearing and construction works. | Compliance with approval conditions and management plans, in accordance with the EP Act and EPBC Act, where required. |
| Acid Sulfate Soils | Environmental Assessment Report including preliminary investigations. | • Detailed ASS Investigation and Management Plan for intrusive works in areas mapped as 'Class 1: High to moderate risk' will likely be required in accordance with the WAPC's *Acid Sulfate Soils Planning Guidelines* (2008). | Implementation of ASS Management Plan. |
| Inland Waters | The LWMS prepared for the SP by Emerge Associates (2024b) (**Appendix E**). | • Detailed UWMPs will be required (most relevant to Precinct D) to support individual subdivision applications. Other precincts may be developed under Development Approval and therefore water management will likely be documented through Stormwater Management Plans (SMs). Both UWMPs and SMPs will be prepared in accordance with the *Better Urban Water Management* Framework.<br>• Protection of the Swan River and associated Conservation Category Wetland (CCW) through consideration of hydrological processes and water quality management into design of future development areas to protect the adjacent Swan River and associated values.<br>• Development Control Area (DCA) permit application for works within or affecting the DCA to the DBCA in accordance with the *Swan and Canning Rivers Management Act 2006* and the *Swan and Canning River Management Regulations 2007*. | Compliance with UWMP/SMP and DCA permit if necessary. |

*Table 1: Summary of environmental management framework and relevant considerations (continued)*

| Environmental Factor | Management Framework and considerations | | |
|---|---|---|---|
| | Local Structure Plan | Subdivision | Construction |
| Social Surroundings | Preliminary investigations for Aboriginal Cultural Heritage.<br><br>Transport Noise Assessment for the proposed SP (Lloyd George Acoustics 2023) in accordance with SPP 5.4. | • Detailed Acoustic Assessment and Management Plan (where required) or 'Quiet House Package A' implemented to upper floors of noise sensitive dwellings within Precinct E. | Section 18 approval may be required pursuant to the *Aboriginal Heritage Act 1972* prior to ground disturbing works.<br><br>Compliance with noise management plan and appropriate house packages applied where appropriate. |

Overall, a range of environmental impact mitigation measures (primarily impact avoidance and minimisation) are proposed within the SP layout and through the future environmental management framework. In this context, it is anticipated that implementation of the proposed SP can be suitably managed through future stages of the land use planning processes (including development) such that the EPA objectives for the relevant environmental factors can be achieved.

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# Appendices

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Ascot Racecourse Structure Plan (ROWE Group Design, 2024)

**Appendix B**

Ascot Racecourse Precinct Plan (ROWE Group Design, 2024)

**Appendix C**

Draft Master Plan Concept (ROWE Group Design, 2024)

**Appendix D**

Flora, Vegetation and Fauna Assessment (Emerge Associates 2024a)

**Appendix E**

Local Water Management Strategy (Emerge Associates 2024b)

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# Abbreviation Tables

*Table A1: Abbreviations – Organisations*

| Organisations | |
|---|---|
| CoB | City of Belmont |
| DEC | Department of Environment and Conservation (now DER) |
| DEP | Department of Environmental Protection (now DER) |
| DER | Department of Environment Regulation |
| DFES | Department of Fire and Emergency Services |
| DoE | Department of Environment (now DER) |
| DoW | Department of Water |
| DPLH | Department of Planning, Lands and Heritage |
| EPA | Environmental Protection Authority |
| WAPC | Western Australia Planning Commission |

*Table A2: Abbreviations – General terms*

| General terms | |
|---|---|
| AHEF | Aboriginal Heritage Enquiry Form |
| BPA | Bushfire prone area |
| CBD | Central Business District |
| CCW | Conservation category wetland |
| EAR | Environmental Assessment Report |
| ESA | Environmentally sensitive area |
| MUW | Multiple use wetland |
| PEC | Priority ecological community |
| P3 | Priority 3 |
| REW | Resource enhancement wetland |
| SP | Structure Plan |
| SPP | State Planning Policy |
| T | Threatened |
| TEC | Threatened ecological community |
| UFI | Unique feature identifier |

*Table A3: Abbreviations –Legislation*

| Legislation | |
|---|---|
| AH Act | *Aboriginal Heritage Act 1972* |
| BAM Act | *Biosecurity and Agriculture Management Act 2007* |
| CS Act | *Contaminated Sites Act 2003* |
| EP Act | *Environmental Protection Act 1986* |
| EPBC | *Environment Protection and Biodiversity Conservation Act 1999* |

*Table A4: Abbreviations – units of measurement*

| Units of measurement | |
|---|---|
| ha | Hectare |
| m | Metre |
| m AHD | m in relation to the Australian height datum |
| mBNS | m below natural surface |

# 1 Introduction

## 1.1 Background

Perth Racing (the proponent) proposes to progress a structure plan (SP) over an area of land in Ascot to support and guide future development (the Ascot SP; referred to herein as 'the SP'). The SP area includes the existing Ascot Racecourse and is bounded by the Swan River to the north, Grandstand Road to the west and south, Matherson Road to the south and existing residential areas to the east (referred to herein as 'the site'; see **Figure 1**). The site is located approximately 8.5 km east of Perth central business district (CBD) and is approximately 62 ha in size, within the City of Belmont (CoB). The SP layout is shown in **Appendix A** and consists of six precincts: Precinct A, Precinct B, Precinct C, Precinct D, Precinct E, and the racecourse, as demonstrated below on **Plate 1**, **Figure 1**, and provided in **Appendix B**.

The proponent additionally intends to progress a local planning scheme amendment as well as the structure planning process in parallel for the site. The site is currently zoned 'Urban', 'Parks and Recreation', and 'Private recreation' under the Metropolitan Regional Scheme (MRS). Under the Local Planning Scheme No. 15 (LPS 15), the site is currently zoned as 'Place of Public Assembly' and 'Mixed Use'.

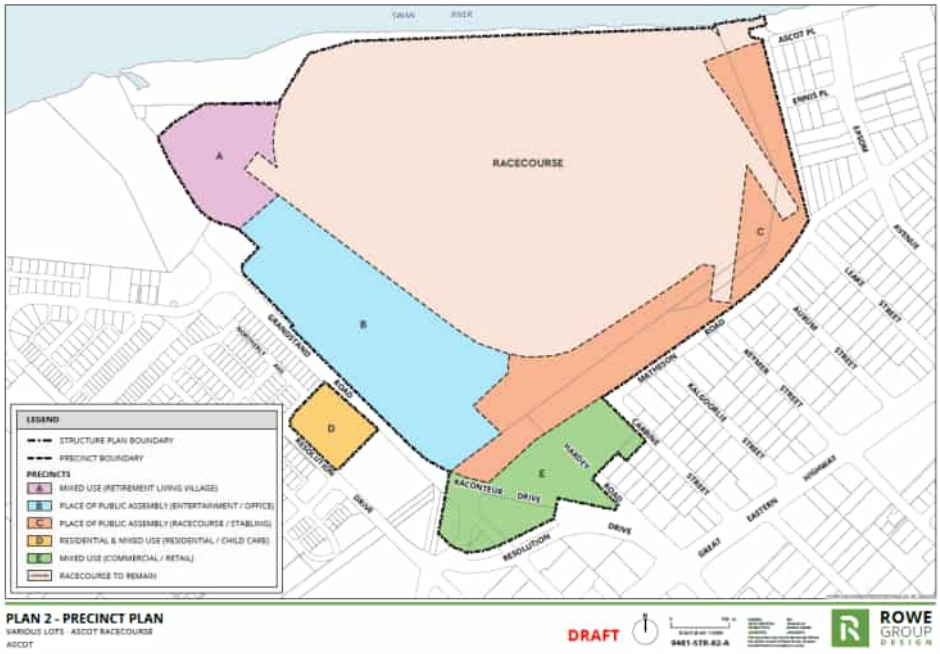



*Plate 1: Ascot Racecourse Precinct Plan with proposed uses (draft)*

## 1.2 Purpose of this report

The proponent engaged Emerge Associates (Emerge) to prepare an Environmental Assessment Report (EAR), with the intent to be the principal supporting environmental document for the local scheme amendment and SP process for the site. The EAR supports the structure planning process and provides a synthesis of information regarding the environmental values and attributes of the site. The EAR is consistent with the Western Australia Planning Commission's (WAPC) *Structure Plan Framework* (WAPC 2015) and:

- Identifies and assesses the existing environmental values and attributes of the site (**Section 2**).
- Discusses the land use planning context and the proposed SP, in the context of applicable statutory requirements under applicable legislation (**Section 3**).
- Provides an assessment of the proposed SP layout and land uses and predicted environmental outcomes against the applicable Environmental Protection Authority (EPA) environmental factors and objectives (**Section 4**).

## 1.3 Previous surveys and assessments

The following surveys, investigations and assessment reports were prepared to support preparation of the SP and are relevant to this EAR:

- Reconnaissance Flora, Vegetation, Fauna and Targeted Black Cockatoo Habitat Assessment (Emerge 2024a) (Appendix D)
- Ascot Racecourse Local Water Management Strategy (Emerge 2024b) (Appendix E)
- Transport Noise Assessment (Lloyd George Acoustics 2023).

An Environmental Report was prepared for the Draft Golden Gateway Local Structure Plan (LSP) in 2018 by Essential Environmental for the CoB (Essential Environmental 2018). The Draft Golden Gateway LSP is located immediately south of the site and is being progressed but has not been finalised. The Golden Gateway LSP no longer includes the site, and this SP is proposed to progress on Perth Racings landholdings exclusively. A review of the Golden Gateway LSP was undertaken as part of the preparation of this report to understand background information and context for the proposed SP.

The Draft Golden Gateway LSP provides contextual information for the proposed SP due to the proximity, and specifically through the following documents:

- Golden Gateway Bushfire Management Plan (Urbaqua 2018)
- Golden Gateway Local Structure Plan Environmental Report (Essential Environmental 2018)
- Golden Gateway Local Water Management Strategy (Essential Environmental 2018).

# 2 Existing Environment

The outcomes of desktop and site-specific investigations undertaken by Emerge and others have informed the identification and assessment of the existing environmental attributes and values within the site and are discussed in the below **Section 2.1** to **Section 2.8**.

The Environmental Protection Authority (EPA) identifies a number of environmental principles, factors and objectives within the *Statement of Environmental Principles, Factors and Objectives* (EPA 2018), which are used to guide the determination of significant environmental impacts and whether impacts can be appropriately mitigated or managed. Existing environmental values have been described according to the applicable EPA environmental factor (where applicable to the site), which include:

- Landforms
- Terrestrial environmental quality
- Flora and vegetation
- Terrestrial fauna
- Inland waters
- Social surroundings.

## 2.1 Landforms

### 2.1.1 Landform, soils and geology

The site occurs on the Swan Coastal Plain, the geomorphic unit that characterises much of the Perth metropolitan area. The site is within the Pinjarra System with a portion of the site within the Bassendean System. The Pinjarra System is described as *poorly drained coastal plain with variable alluvial and aeolian soils*, whilst the older Bassendean Dune system is characterised by lower relief, with variable depth to groundwater, consisting of lower sandy hills interspersed with permanent and seasonal wetlands (Churchward and McArthur 1980; Gozzard 2011).

*Geological Survey of Western Australia* (Gozzard 2007) indicates that the site lies within the Swan River Terraces system having Guildford formation of Alluvial and leached yellow sand. As shown on **Figure 2**, the site soil types include:

- **Ms2 –** Sandy Silt: Strong brown to mid grey, mottled, blocky, disseminated fine sand, hard when dry, variable clay content of alluvial origin.
- **Ms4 –** Sandy Silt: light yellow brown, blocky, mottled some some fine to medium sand, soft when moist, variable clay content.
- **S8 –** Sand: very light grey at surface, yellow at depth, fine to medium-grained, sub rounded quartz, moderately well sorted of eolian origin.

### 2.1.2 Topography

The site is generally flat with a slightly higher elevation in its eastern extent. The northern portion of the site, adjacent to the Swan River, lies at 0 m Australian Height Datum (mAHD). The remainder of the site is slightly elevated, ranging from 1 mAHD to the northwest to 7 mAHD to the east.

The topographic contours of the site are shown on **Figure 3**.

## 2.2 Terrestrial Environmental Quality

### 2.2.1 Acid sulfate soils

Acid sulfate soils (ASS) refers to naturally occurring soils and sediment containing iron sulphide (iron pyrite) materials. In their natural state, present in waterlogged and/or anoxic conditions, ASS generally do not present any risk to the environment. However, when oxidised, ASS can pose issues through sulphuric acid production, which can present a range of risks for the surrounding environment, infrastructure, and human health.

The Department of Water and Environmental Regulation (DWER) provides broad-scale mapping indicating areas of potential ASS risk (DWER 2023). A review of the DWER mapping indicates that the majority of the site is considered to have 'high to moderate' risk of ASS occurrence and a small portion in the south is considered to have 'moderate to low' risk of ASS occurring within the 3 m of the natural surface.

The DWER ASS risk mapping is shown on **Figure 4**.

### 2.2.2 Potential site contamination

A review of the publicly available DWER Contaminated Sites Database indicates that no areas within the site are registered as a 'contaminated site' pursuant to the *Contaminated Sites Act 2003*. A basic summary of records (BSR) of Lot 9002 on DP60342 was requested from DWER which shows that Lot 9002 (including the racecourse, Precinct A and Precinct B) is classified as "possibly contaminated – investigation required" and the extent of which is shown on **Figure 4**Figure 4. The contamination is associated with the sites historical land use for horse racing and runoff from animal storage on the site and agistment in the surrounding areas causing the potential for contamination, including nutrient runoff. Monitoring and investigation is required to be reviewed by DWER and potentially re-classified and the proponent has commenced investigations to address this. The BSR notes that if groundwater is to be abstracted, analytical testing should be undertaken to determine if groundwater is suitable for its intended use.

### 2.2.3 Historical context

Historical aerial images available from 1953 and onwards (Landgate 2023) were reviewed and show that Ascot Racecourse has existed since prior to 1953 (**Plate 2**) and the associated racecourse infrastructure, including grandstands and stables were established between 1953 and 1977. Residential development to the south east of the site steadily increased between 1953 to 1995 and majority of residential development to the south west occurred between 1995 and 2005 (see **Plate 2** to **Plate 4**).




*Plate 2: 1953 aerial (Landgate 2023)*



*Plate 3: 2005 aerial (Landgate 2023)*



*Plate 4: 2024 aerial (Landgate 2023)*

## 2.3 Flora and Vegetation

### 2.3.1 Regional Context

Native vegetation within the site can be classified based on regional vegetation mapping. Heddle *et al.* (1980) mapping shows the site as comprising the 'Guildford' complex , which is described as 'open forest to tall open forest and woodland'. The site is within 'Bassendean association 1009',typically comprising a combination of *Corymbia calophylla*, *Eucalyptus wandoo* and *Eucalyptus marginata (DPIRD 2021).* This association was determined to have 16.4% remaining of its original pre-European extent within the Swan Coastal Plain, of which 0.02% is protected for conservation purposes (Government of Western Australia 2019).

The EPA's *Environmental Guidance for Planning and Development Studies* (EPA 2008) states that the loss of biodiversity caused by habitat fragmentation is significantly greater once a habitat type falls below 30% of its original extent. The Guidance also references the biodiversity conservation national objective and target of retaining 30% of the original extent of each vegetation association, and the states' minimum target of 10% for constrained urban areas such as the Swan Coastal Plain. The percentage remaining of the Bassendean vegetation association (16.4%) is below the 30% retention objective but above the 10% minimum retention target for the Swan Coastal Plain.

Vegetation is typically considered to represent an intact occurrence of its overarching vegetation complex when it is in 'good' or better condition. As outlined in **Section 2.3.4**, vegetation in some portions of the site has been assessed to be in 'good' or 'very good' condition; therefore, this indicates that these areas of remnant native vegetation within the site, is consistent with vegetation associations of the 'Guildford' formation.

### 2.3.2 Site-specific investigations

Emerge completed a reconnaissance flora and vegetation survey for the site on 27 March 2023 in accordance with EPA's *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016; Emerge Associates 2024a). The survey boundary incorporated the entire site.

The survey included traversing the site on foot and recording composition and condition of vegetation. Photographs were taken during the survey to show particular site conditions. Prior to the field survey, information on the habitat preferences of threatened and priority flora species and communities were reviewed. Areas of potentially suitable habitat for threatened and priority flora species were opportunistically traversed along transects and searched for conservation significant species, as required.

The findings of the survey and the associated assessment report (Emerge Associates 2024a) is summarized below and is contained within **Appendix D.**

### 2.3.3 Vegetation units

Four vegetation units were identified within the site during the field survey and descriptions of each is provided below in **Table 2**. The associated vegetation mapping is shown in **Figure 5.**

*Table 2: Description and extent of vegetation type identified within the site*

| Vegetation Community | Description | Area (ha) |
|---|---|---|
| Er | Woodland *Corymbia calophylla* over closed grass/forbland of pasture weeds and scattered native species (or absent). | 1.12 |
| Cc | Woodland *Eucalyptus rudis* over closed grass/forbland of pasture weeds and scattered native species (or absent).. | 0.28 |
| ErJkSt | Open woodland Eucalyptus rudis and occasional Melaleuca raphiophylla over sedgeland Juncus kraussii and Schoenoplectus tabernaemontani over low shrubland Suaeda australis over forbland Apium prostratum subsp. prostratum var. prostratum and Heliotropium curassavicum over grassland *Avena sp., Cynodon dactylon and * Paspalum vaginatum (or absent). | 0.17 |
| To | Fringing rushland of *Typha orientalis*, with occasional planted native and non-native trees, shrubs and/or non-woody vegetation, over closed grass/forbland of pasture weeds. | 0.46 |
| Non-native | Heavily disturbed areas comprising bare ground and weeds with occasional native trees and forbs and/or sealed ground and buildings. | 56.62 |

### 2.3.4 Vegetation condition

The majority of the site was heavily disturbed with limited intact native vegetation present. The vegetation was therefore mostly determined to be in 'degraded – completely degraded' and 'completely degraded' condition with a small portion determined to be 'very good – good'. Vegetation condition is shown in **Figure 6** and detailed below in **Table 3**.

*Table 3: Vegetation condition categories within the site*

| Condition category (Keighery (1994)) | Size (ha) |
|---|---|
| Pristine | 0 |
| Excellent | 0 |
| Very good | 0 |
| Good – very good | 0.07 |
| Good | 0 |
| Degraded | 1.04 |
| Degraded – completely degraded | 0.98 |
| Completely degraded | 56.57 |

### 2.3.5 Threatened and Priority Ecological Communities

Threatened Ecological Communities (TECs) are recognised as ecological communities that are rare or under threat and therefore warrant special protection.

At a Commonwealth level, TECs are afforded statutory protection under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and at a State level, TECs are afforded statutory protection under the *Biodiversity Conservation Act 2016* (BC Act). Under both Acts, TECs are listed as either 'critically endangered', 'endangered' or 'vulnerable', noting listing status may be different between Commonwealth and State frameworks.

Ecological communities that are not listed as threatened, but are otherwise considered rare or under threat, may be added to the Department of Biodiversity, Conservation and Attractions (DBCA) priority list (DBCA 2022, 2023). PECs are classified as either 'priority 1' (P1), 'priority 2' (P2), 'priority 3' (P3) or 'priority 4' (P4). Whilst PECs are not afforded statutory protection under the BC Act, they are recognised and categorised by the DBCA and are considered through State environmental approval processes.

The 'subtropical and temperate coastal saltmarsh' ecological community is listed as a TEC ('vulnerable') under the EPBC Act and as a PEC (P3) under the BC Act. The TEC/PEC was identified within a portion of the ErJkSt vegetation unit, located in a small part of the site to the north (**Figure 7**). A total of 0.07 ha of this TEC/PEC was mapped within the site. Only part of the ErJkSt vegetation unit represents the TEC/PEC with the remaining ErJkSt vegetation unit representing canopy overhang into the site with limited to no understory vegetation, which is not characteristic of the TEC/PEC.

### 2.3.6 Conservation significant flora

Flora species that are considered to be rare or under threat warrant special protection under Commonwealth and/or State legislation. At a Commonwealth and State level, flora species may be listed as 'threatened' pursuant to the EPBC Act and BC Act. However, listing status may be different between Commonwealth and State levels. Flora species that are not listed as threatened, but are otherwise considered rare or under threat, may be added to the DBCA priority list (DBCA 2022, 2023). Priority flora are classified as either 'priority 1' (P1), 'priority 2' (P2), 'priority 3' (P3) or 'priority

4' (P4). Whilst priority flora are not afforded statutory protection under the BC Act, they are recognised and categorised by the DBCA and are considered through approval processes.

The desktop search results identified a total of 100 flora species including 25 threatened and 75 priority flora species as occurring or potentially occurring within a 9 km radius of the site. Of these, two priority flora species (*Angianthus micropodioides* (P3) and *Aponogeton hexatepalus* (P4)) were considered to have 'high' or 'moderate' likelihood of occurrence within the site (Emerge Associates 2024a).

No threatened or priority flora species were recorded during the survey and suitable habitat for threatened or priority species was not considered to be present (Emerge Associates 2024a). The two threatened and priority flora species identified in the desktop assessment were not considered likely to occur due to lack of suitable habitat.

### 2.3.7 Weeds

The term 'weed' can refer to any plant that requires some form of action to reduce its effect on the economy, the environment, human health and amenity. At a State level, a particularly invasive or detrimental weed species may be listed as a 'declared pest' pursuant to the *Biosecurity and Agriculture Management Act 2007* (BAM Act), indicating that it warrants special management to limit its spread. At a Commonwealth level, the Australian government has compiled a list of 32 Weeds of National Significance (WoNS) (DoEE 2019c).

A total of 58 weed species were recorded during the field survey. One weed species recorded, (**Tamarix aphylla* (athel pine)), is listed as a declared pest. Athel pine is listed in the exempt keeping category, meaning management is not obliged.

### 2.3.8 Environmentally Sensitive Areas

Environmentally sensitive areas (ESAs) are prescribed protection under the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* and have been identified to protect native vegetation values of areas surrounding significant, threatened or scheduled flora, vegetation communities or ecosystems.

Within an ESA, no exemptions under the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* apply and would indicate that the site is likely to support significant environmental values. However, exemptions under Schedule 6 of the *Environmental Protection Act 1986* (EP Act) apply, including any clearing in accordance with a subdivision approval under the *Planning and Development Act 2005* (a recognised exemption under the Schedule 6 of the *Environmental Protection Act 1986*).

The Swan River, located adjacent to the site, is also considered a "Conservation Category Wetland" and as such, a portion of the site (3.4 ha) is listed as an ESA (**Figure 8**).

A total of 1.10 ha of vegetation meeting the definition of 'native vegetation' pursuant to the EP Act occurs within the site, as shown in **Figure 7**. This is comprised of scattered flooded gum (*Eucalyptus rudis*) and marri (*Corymbia calophylla*) trees, and fringing vegetation (vegetation type ErJkSt).

### 2.3.9 Bush Forever

The Government of Western Australia's *Bush Forever Policy* (Government of WA 2000) is a strategic plan for conserving regionally significant bushland within the Swan Coastal Plain portion of the Perth Metropolitan Region. The objective of Bush Forever is to protect comprehensive representations of all original vegetation complexes by targeting a minimum of 10% of each for protection. Bush Forever areas represent regional ecosystems and habitat and have a vital role in conserving Perth's biodiversity.

No Bush Forever Sites occur within the site. The closest Bush Forever Site is Bush Forever Site 313 – Swan River Saltmarshes, Bayswater/Maylands, located approximately 100 m to the northwest of the site, separated by Grandstand and Garrett Road (see **Figure 8**).

### 2.3.10 Ecological linkages

Ecological linkages are linear landscape elements that allow the movement of fauna, flora and genetic material between areas of remnant habitat. The Perth Biodiversity Project, supported by the Western Australian Local Government Association have identified and mapped regional ecological linkages within the Perth Metropolitan Region (WALGA and PBP 2004). While the linkages generally align with areas of vegetation and Bush Forever areas, in many locations these linkages are not contiguous with vegetation coverage.

Ecological linkage ID 35 (Swan River) partially overlaps the northern portion of the site. However, most of the northern portion of the site does not support native vegetation due to historical clearing, and only a small portion remains within the northeast of the site.

Broadscale identified ecological linkages are shown in **Figure 8**.

### 2.3.11 City of Belmont Collective Local Biodiversity Strategy

In partnership with Town of Bassendean and City of Bayswater, the CoB developed a collective Local Biodiversity Strategy (LBS) as a commitment to the protection and enhancement of a network of local natural areas (LNAs).

LNAs across the three councils were ranked by viability using the Natural Area Initial Assessment templates detailed in the Local Government Biodiversity Planning Guidelines for the Perth Metropolitan Region (WALGA, 2004). The viability assessment was used to determine the reserves of high biodiversity value that would benefit from increased protection status. The highest viability areas within the CoB were as follows:

- Goodwood Parade Estuarine Dampland
- Signall Hill
- Tomato Lakes Bushland.

No reserves deemed to have high biodiversity value, as outlined in the LBS, were identified as occurring within the site. As such, no LNAs need to be considered as part of future development within the site.

## 2.4 Terrestrial Fauna

### 2.4.1 Site-specific surveys and investigations

In conjunction with the flora and vegetation assessment, Emerge Associates undertook a basic fauna and targeted black cockatoo survey, and the assessment boundary encompassed the entire site. The targeted black cockatoo survey extended beyond the SP area, and three potential habitat trees located adjacent to the site were identified outside the SP area. These trees are located beyond the SP area however the location of the trees are shown in Figure 7 of **Appendix D**.

Transects were traversed across the site, during the day, and the characteristics of fauna habitat and presence of fauna species was recorded. Microhabitats such as logs, rocks and leaf litter were investigated and evidence of species presence such as tracks, scats, skeletal remains, foraging evidence or calls was also noted. An opportunistic fauna species list was compiled and fauna habitat values were described, with particular reference to conservation significant fauna species that have the potential to occur within the site.

The findings of the survey and the associated assessment report (Emerge Associates 2024a) is summarised below and contained within **Appendix D.**

### 2.4.2 Fauna habitat

Emerge (2024) identified four habitat types within the site with most of the site (52.64 ha) described as 'cleared' (see **Table 4**). Habitat values in the site are limited by historical disturbance and are primarily suited to widespread fauna species with non-specific habitat requirements.

The fringing woodland fauna habitat, associated with the **ErJkSt** vegetation unit, was noted to provide a cover of native trees and understory cover of riparian vegetation that offers habitat for ground dwelling fauna. The fringing woodland is associated with the Swan River and extends into the northeast of the site. The scattered trees and shrubs habitat type comprised of large native trees was associated with vegetation units **Cc** and **Er** would provide value to native birds and other arboreal fauna (see **Figure 5**).

*Table 4: Fauna habitats identified within the site*

| Fauna habitat | Description | Area (ha) |
|---|---|---|
| **Fringing woodland** | Native fringing vegetation consisting of a native tree overstorey and an understorey of sedges/rushes. | 0.07 |
| **Wetland** | Wetland waterbodies and associated riparian sedgeland/rushland. | 3.72 |
| **Scattered trees and shrubs** | Scattered native and non-native trees and shrubs, providing habitat mainly for avifauna. | 5.45 |
| **Cleared** | Predominantly grassy weeds, bare ground and built form. | 52.64 |

Twenty-four fauna species were recorded within the site including two conservation significant fauna species.

### 2.4.3 Conservation significant fauna

Fauna species that are considered to be rare or under threat warrant special protection under Commonwealth and/or State legislation. At a Commonwealth and State level, fauna species may be listed as 'threatened' pursuant to the EPBC Act and BC Act, respectively. However, listing status may be different between Commonwealth and State levels. Fauna species that are not listed as threatened, but are otherwise considered rare or under threat, may be added to the DBCA priority list (DBCA 2022, 2023). Priority fauna are classified as either 'priority 1' (P1), 'priority 2' (P2), 'priority 3' (P3) or 'priority 4' (P4). Whilst priority fauna are not afforded statutory protection under the BC Act, they are recognised and categorised by the DBCA and are considered through environmental approval processes.

A total of 77 conservation significant fauna species were identified as occurring or potentially occurring within a 10 km radius of the site (Emerge Associates 2024a). Of these, 11 species were considered to have a 'moderate' or 'high' likelihood of occurrence within the site, including six migratory and/or specifically protected bird species, two threatened bird species, one priority bird species and two priority mammal species **Table 5**.

The field survey confirmed the 11 species identified from the desktop assessment have the potential to occur within the site. Based on observations of fauna habitat for migratory species, it was noted that occurrences of migratory species within the site are likely to be a flyover or for marginal foraging habitat due to the site and surrounding area lacking suitable habitat.

Rakali may utilise the Swan River and are likely to occasionally occur in the northern most portion of the site associated with the fringing woodland habitat type. Quenda may occur in understorey vegetation or where grasses provide dense cover.

One threatened species, *Zanda banksii naso* (forest red-tailed black cockatoo (FRTBC)) and one P4 species (*Oxyura australis* (blue-billed duck)) were recorded at the time of survey (Emerge Associates 2024a). FRTBC were observed foraging in the southern portion of the site in cape lilac (*Melia azedarach*), which were overhanging from adjacent private properties.

*Table 5: Conservation significant fauna species with potential to occur within the site*

| Taxa | Common name | Conservation Status | |
|---|---|---|---|
| | | EP Act | EPBC Act |
| **Birds** | | | |
| *Zanda banksii naso*[1] | Forest red-tailed black cockatoo | VU | VU |
| *Zanda latirostris*[2] | Carnaby's black cockatoo | EN | EN |
| *Oxyura australis* | Blue-billed duck | P4 | - |
| *Pandion haliaetus* | Osprey | MI | MI |
| *Apus pacificus* | Pacific swift | MI | MI |

[1] Previously *Calyptorhynchus*
[2] Previously *Calyptorhynchus*

*Table 5: Conservation significant fauna species with potential to occur within the site (continued)*

| Taxa | Common name | Conservation Status | |
|---|---|---|---|
| | | EP Act | EPBC Act |
| *Calidris ruficollis* | Red-necked stint | MI | MI |
| *Plegadis falcinellus* | Glossy Ibis | MI | MI |
| *Thalasseus bergii* | Crested tern | MI | MI |
| *Falco peregrinus* | Peregrine falcon | OS | - |
| **Mammals** | | | |
| *Hydromys chrysogaster* | Rakali | P4 | - |
| *Isoodon fusciventer* | Quenda | P4 | - |

#### 2.4.3.1 Black Cockatoos

Three threatened species of black cockatoo occur in the south-west of WA:

- *Zanda*[3] *latirostris* (Carnaby's black cockatoo) (CBC) which is listed as 'endangered' under the EPBC Act and the BC Act.
- *Zanda*[4] *baudinii* (Baudin's black cockatoo) (BBC) which is listed as 'endangered' under the EPBC Act and the BC Act.
- *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo) (FRTBC) which is listed as 'vulnerable' under the EPBC Act and the BC Act.

The site is within the modelled distribution of CBC and FRTBC (DAWE 2022) and are therefore these species have been considered further in this section. Additionally, FRTBC were observed during the survey, in cape lilac (*Melia azedarach*) overhanging the site boundary (Emerge Associates 2024a). The site does not lie within the modelled distribution of BBC and therefore, the species is not likely to occur and have not been considered further.

Black cockatoo habitat consists of breeding, roosting and foraging categories. Foraging and breeding habitat for CBC and FRTBC was identified. No roosts or evidence of roosts were observed. However, tall trees within the site have the potential to be roosting trees. Foraging and breeding habitat for CBC and FRTBC was identified.

Foraging habitat was identified and classified as either 'primary' or 'secondary' based on black cockatoo foraging preferences. Primary food plants were defined as those with historical and contemporary records of regular consumption by a black cockatoo species. Secondary food plants were defined as plant species that black cockatoo species have been recorded consuming occasionally or that, based on their limited extent or agricultural origin, should not be considered a sustaining resource.

A total of 1.27 ha of foraging habitat for CBC was recorded, of which 0.35 ha comprised primary foraging habitat. Primary foraging habitat included 0.28 ha of primary native foraging habitat

[3] Previously *Calyptorhynchus*
[4] Previously *Calyptorhynchus*

associated with *Corymbia calophylla,* 0.07 ha of primary non-native foraging habitat associated with *Pinus pinaster*. A total of 0.92 ha of secondary foraging habitat was recorded, including 0.41 ha of secondary native foraging habitat associated with *Acacia saligna*, *Jacksonia furcellata* and X*anthorrhoea* spp*.* and 0.51 ha of secondary non-native habitat associated with *Eucalyptus gomphocephala* (**Figure 9**).

A total of 0.84 ha of foraging habitat for FRTBC was recorded in the site, which comprises 0.28 ha of primary native habitat associated with *Corymbia calophylla,* 0.07 ha of secondary native foraging habitat associated with *Jacksonia furcellata* and 0.49 ha of non-native secondary habitat associated with *Eucalyptus gomphocephala* and *Eucalyptus camaldulensis* (see **Figure 10**).

The extent of foraging habitat by value category is detailed in **Table 6**.

*Table 6: Foraging habitat recorded within the site*

| Foraging habitat | Black cockatoo species and area of foraging habitat (ha) | |
|---|---|---|
| | Carnaby's | Forest red-tailed |
| Primary native | 0.28 | 0.28 |
| Primary non-native | 0.07 | 0 |
| Secondary native | 0.41 | 0.07 |
| Secondary non-native | 0.51 | 0.49 |
| **Total** | **1.27** | **0.84** |

Breeding habitat was identified through 'habitat trees' which are typically defined as a native eucalypt that is known to support (or with the potential to support) black cockatoo breeding. Habitat trees include species such as marri, jarrah, blackbutt, tuart, wandoo, salmon gum or to a lesser extent flooded gum, with a diameter at breast height (DBH) of greater than 50 cm (or DBH greater than 30 cm for wandoo or salmon gum). A total of 66 habitat trees were recorded during the fauna survey. Of these, 5 trees contained hollows potentially suitable for black cockatoo breeding and the remaining 61 habitat trees did not contain hollows potentially suitable for black cockatoo breeding. Hollow potential for breeding habitat was based on inspection from ground level, which could be further verified through more detailed hollow inspections (Emerge Associates 2024a). The location of the habitat trees within the site are shown on **Figure 11**.

## 2.5 Inland Waters

### 2.5.1 Surface water

The surface hydrology within the site is dominated by the Swan River, which is located adjacent to the site. During summer, the influence of the river is limited to the riverine fringe, while in winter levels rise and can extend inland. The 1 in 100-year flood and fringe level area (see **Figure 12**) shows that the north east corner and the north west corner of the site is within the floodway and the flood fringe area extends into the site.

Within the centre of the racecourse there are three lakes including an irrigation lake, a lined lake for overflow from the irrigation lake and a wetland lake, which is the largest lake and allows excess

water to flow under the grass track to the Swan River (Emerge Associates 2024b). The irrigation lake is filled from an adjacent production bore and provides irrigation for the racetrack and surrounding landscaped areas. The lined lake is sealed with a natural clay liner and is used to provide irrigation for landscaped areas and water features.

### 2.5.2 Groundwater

#### 2.5.2.1 Regional groundwater

The *Water Register* (DWER 2023) indicates that groundwater beneath the site is a multi-layered system comprised of the following:

- City of Bayswater – Perth Superficial Swan unconfined aquifer
- Perth South – Perth Leederville confined aquifer
- Perth South – Perth Yarragadee confined aquifer.

The Perth Groundwater Map indicates (DWER 2023) that the groundwater level sits at 0.5 mAHD across the site. The groundwater clearance from southeast to northwest of the site ranges from 6.5 m to 0.5 m (**Figure 12**).

#### 2.5.2.2 Site-specific groundwater monitoring

Groundwater monitoring has been undertaken within the SP area. There are two groundwater level and quality monitoring bores and one production bore within the Racecourse, which are monitored by Perth Racing.

Groundwater depth monitoring undertaken by D.C. Blandford & Associates Pty Ltd in 2001 (D.C Blandford & Associates 2001) indicated groundwater depths ranging between 2.03 mAHD to 0.16 mAHD at the site. Additional results from bore monitoring of the Ascot Racecourse undertaken by JDA in 2022 indicated that groundwater levels ranged from 2.06 m below natural surface (mBNS) to 0.34 mBNS.

Groundwater depth monitoring was undertaken within Precinct A where six monitoring wells were installed for the geotechnical investigation by Douglas Partners (2024). The groundwater depth varied from 1.09 m below ground level (mBGL) to 2.37 mBGL during January 2024 (Douglas Partners 2024). Groundwater depth monitoring was undertaken within Precinct D by Galt Geotechnics during the geotechnical investigation. The highest groundwater level was reported as 3.03 mBGL during February 2024 (Galt 2024).

Groundwater quality monitoring was also undertaken by D.C. Blandford & Associates Pty Ltd in 2001. Concentrations of total nitrogen, nitrate, total phosphorus, as well as pH indicated minor fluctuations throughout the year, but trends were generally consistent with previous results. Results indicated metals concentrations below laboratory detection limits, with the exception of one elevated nickel concentration detected.

Groundwater quality monitoring undertaken by JDA Consulting Hydrologists in 2022 (JDA 2022) indicated similar conditions to the 2001 results. Groundwater salinity and pH levels were below the trigger value and within the guideline limits. Concentrations of total nitrogen and total phosphorous were in exceedance but were generally consistent with historical trends at the site.

### 2.5.3 Wetlands

Wetlands include "*areas of seasonally, intermittently or permanently waterlogged soils or inundated land, whether natural or otherwise, fresh and saline, e.g. waterlogged soils, ponds, billabongs, lakes, swamps, tidal flats, estuaries, rivers and their tributaries*" (Wetlands Advisory Committee 1977). Wetlands can further be recognised by the presence of vegetation associated with waterlogging or the presence of hydric soils such as peat, peaty sand or carbonate mud (Hill *et al.* 1996).

Wetlands of international significance (such as Ramsar wetlands) are afforded protection under the EPBC Act. No such wetlands occur within or in close proximity to the site.

At a regional level, DBCA maintains the Geomorphic Wetlands of the Swan Coastal Plain dataset (DBCA 2023), which categorises wetland features into management categories to guide land use and conservation, as outlined in **Table 7**. Wetland types are based on landform shape and water permanence, whilst management categories of wetlands are determined based on hydrological, biological and human use features.

*Table 7: Geomorphic wetland management categories*

| Management Category | Description of wetland | Management objectives |
|---|---|---|
| Conservation Category Wetland (CCW) | Support high levels of attributes | Preserve wetland attributes and functions through reservation in national parks, crown reserves and state owned land. Protection provided under environmental protection policies. |
| Resource Enhancement Wetland (REW) | Modified or degraded but still supporting substantial attributes and functions | Restore wetland through maintenance and enhancement of wetland functions and attributes. Protection via crown reserves, state or local government owned land, environmental protection policies and sustainable management on private properties. |
| Multiple Use Wetland (MUW) | Few remaining important wetland attributes and functions but still provide important hydrological functions | Use, development and management considered in the context of water, town and environmental planning through land care. |

The Geomorphic Wetlands of the Swan Coastal Plain dataset indicates three Multiple Use Category Wetland (MUW) areas (UFI 8424, UFI 8425 and UFI 8426) and one Resource Enhancement Wetland (REW) area (UFI 8423 are present within the site. After review of local surface water hydrology, the Geomorphic Wetlands of the Swan Coastal Plain dataset mapping and field observations (refer to **Figure 5** and **Figure 6** of Emerge Associates 2024b), it was determined that the area designated as an REW in the Geomorphic Wetlands of the Swan Coastal Plain dataset does not accurately reflect the conditions observed on ground.

The Swan River Estuary, situated outside the northern boundary of the site, is recognised as a "Conservation Category Wetland" (CCW) (UFI 1316 - Estuary waterbody) within the Geomorphic Wetlands of the Swan Coastal Plain dataset and has additional significant ecological, cultural and heritage values (DEC 2011). The riparian vegetation identified in Emerge Associates (2024a) is associated with the Swan River and extends into the northeast of the site. Riparian vegetation would provide habitat for waterbirds, including birds which nest in dense stands of sedges and rushes and those waterbirds which forage in mud flats along the river. In addition, the fringing vegetation would

provide habitat for both terrestrial and aquatic fauna species, including reptiles, small mammals, fish and invertebrates.

The location of the geomorphic wetlands is shown on **Figure 12.**

### 2.5.4 Public drinking water source areas

DWER proclaims Public Drinking Water Source Areas (PDWSAs) to protect identified drinking water sources, including surface water and groundwater sources (DoW 2009). They are proclaimed under the *Metropolitan Water Supply, Sewerage and Drainage Act 1909* or the *Country Areas Water Supply Act 1947* as Water Reserves, Catchment Areas or Underground Water Pollution Control Areas.

No PDWSAs exist within or surrounding the site.

## 2.6 Social Surroundings

### 2.6.1 Aboriginal cultural heritage

An enquiry was submitted to the Department of Planning, Lands and Heritage (DPLH) through the Aboriginal Heritage Enquiry Form (AHEF), which identified Site 3753 partially intersects with the western edge of the site and Site 3756 is located immediately adjacent to the site (**Figure 13**). Details on these sites are shown below:

- Site ID 3753 – Registered site, Name: Perth, Type: Historical, mythological, hunting place, named place, natural feature.
- Site ID 3536 – Registered site, Name: Swan River, Type: Creation / Dreaming Narrative.

It should be noted that the Site 3753 boundary is a broader area and the exact area is not defined (**Figure 13**). Therefore, it is possible that the exact location of Site 3753 is outside the site boundary.

### 2.6.2 Non-Indigenous heritage

A review of the State Heritage Office database (Heritage Council WA 2022) was undertaken to determine presence of sites or features of non-indigenous heritage significance within the site at a federal, state and local government level.

The Ascot Racecourse Complex (place number 06123) is listed at a local level with the CoB and occurs across the racecourse itself, which is excluded from any development areas within the SP. A portion of the Ascot Racecourse Complex is also mapped across the site (Precinct A, B and C) and comprises original buildings and newly established buildings.

The following places occur in the surrounding area and are state or local listed places:

- Bristile Kilns (fmr), Belmont (place number 00868) (state)
- Garratt Road Bridge (place number 11342) (state)
- Ascot Residential & Stables Precinct (place number 16779) (local).

### 2.6.3 Surrounding land uses

The surrounding area is mostly residential, with the exception of commercial land and some public open space to the south and the Swan River and public open space to the north (**Figure 13**). A Parks and Recreation Reserve (reserved under the MRS), associated with the Swan River foreshore, extends along the northern boundary of the site and intersects with a portion of the site. This area includes part of the racecourse itself and vegetation within the northeast of the site. Both of these areas are planned to be retained as part of the SP.

No surrounding land uses are likely to cause amenity impacts associated with dust, gaseous or odour emissions.

Great Eastern Highway is less than 300 m south of the southern boundary of the SP which will require consideration of transport noise and management/mitigation in line with the State Planning Policy (SPP) 5.4 *Road and Rail Noise*. Precinct E falls within the SPP 5.4 area and requires further consideration regarding potential noise impacts.

## 2.7 Other Considerations

### 2.7.1 Bushfire hazards

Review of the Department of Fire and Emergency Services (DFES) Bushfire Prone Area (BPA) mapping (DFES 2021) indicated no Bushfire Prone Areas (BPA) within the site. The nearest BPA is greater than 500 m to the west of the site and therefore no further consideration to bushfire hazards is required.

## 2.8 Summary of Existing Environmental Values

**Table 8** below summarises the existing environmental values occurring within the site, as identified and discussed previously in **Sections 2.1** to **2.7**.

*Table 8: Summary of existing environmental values within the site relevant to EPA factors*

| EPA factor | Summary of existing environmental values within the site |
|---|---|
| Landforms | • No restricted landforms or unique geological features have been identified within the site.<br>• The Swan River is located adjacent to the site. |
| Terrestrial environmental quality | • The majority of the site is considered to have high to moderate risk of ASS occurrence and a small portion in the south is considered to have moderate to low risk of ASS occurring within the 3 m of the natural surface.<br>• Lot 9002 (including Precinct A and Precinct B) is classified as "possibly contaminated – investigation required" pursuant to the *Contaminated Sites Act 2003.* |

*Table 8: Summary of existing environmental values within the site relevant to EPA factors (continued)*

| EPA factor | Summary of existing environmental values within the site |
|---|---|
| Flora and vegetation | • No threatened or priority flora species were recorded in the site. The threatened and priority flora species identified in the desktop assessment are not considered to occur in the site due to lack of suitable habitat.<br>• The majority of the site is heavily disturbed (degraded to completely degraded) and limited native intact native vegetation is present.<br>• One small patch of vegetation (vegetation community type ErJkSt) was identified in 'good – very good' condition.<br>• A total of 0.07 ha of the 'subtropical and temperate coastal saltmarsh' TEC/PEC (listed as Vu under the EPBC Act and listed as P3 under the EP Act) occurs within the northern portion of the site adjacent to the Swan River.<br>• A total of 1.1 ha of native vegetation as classified under the EP Act was mapped within the site. |
| Terrestrial fauna | • Eleven conservation significant fauna species were considered to have a 'moderate' or 'high' likelihood of occurrence within the site including six migratory and/or specifically protected bird species, two threatened bird species, one priority bird species and two priority mammal species.<br>• One priority listed species, blue-billed duck (P4) was recorded during the survey (Emerge Associates 2024a).<br>• As a result of historical disturbance, the site contains limited fauna habitat and is likely only utilised by fauna traversing through the wider area, especially birds. However, the small patch of 'Fringing Woodland' in the site's northeast may provide habitat value for smaller ground-dwelling fauna.<br>**Black cockatoos**<br>• CBC (EN) and FRTBC (VU) have the potential to occur within the site based on the desktop assessment undertaken.<br>• FRTBC was observed foraging in the southern portion of the site in cape lilac (*Melia azedarach*), which were overhanging from adjacent private properties (Emerge Associates 2024a).<br>• 66 potential black cockatoo habitat trees were recorded within the site.<br>• A total of 1.27 ha of foraging habitat for CBC was recorded, of which 0.35 ha comprised primary foraging habitat.<br>• A total of 0.84 ha of foraging habitat for FRTBC was recorded, of which 0.28 ha comprised primary foraging habitat. |
| Inland waters | • No CCWs have been identified within the site; however, the Swan River is a CCW and occurs immediately north of the site.<br>• Three MUWs (UFI 8424, UFI 8425, UFI 8426) are mapped across the site.<br>• One REW (UFI 8423) is mapped across the site, however, after review of local surface water hydrology, the Geomorphic Wetlands of the Swan Coastal Plain dataset mapping and field observations (refer to **Figure 5** and Figure 6 of Emerge Associates 2024b), it was determined that the area designated as an REW in the Geomorphic Wetlands of the Swan Coastal Plain dataset does not accurately reflect the conditions observed on ground. |
| Social surroundings | • Aboriginal Cultural Heritage Site 3753 partially overlaps with a portion of the west of the site and Site ID 3536 (Swan River) is located immediately north of the site. These places are associated with creation/dreaming narrative and is also associated with a mythological value.<br>• The Ascot Racecourse Complex, place number 06123, occurs across the racecourse itself and Precinct A, B and C.<br>• Noise and acoustic impact from Great Eastern Highway must be considered for Precinct E residential development. |
| Other considerations | • No Bushfire Prone Areas exist within the site. |

# 3 Proposed Land Use and the Planning and Approval Framework

## 3.1 Ascot Racecourse Proposed Development

The proposed zoning for the SP is in line with existing zoning in adjacent areas and aims to provide a framework of what might be considered appropriate from a land use planning perspective, and provides a framework for the future land use, subdivision and development within the site. Additionally, a master plan has been prepared which provides a detailed conceptual layout for proposed residential and commercial areas, the road network, public open spaces and other facilities (**Appendix C**). The master plan (**Appendix C**) indicates the following future land use per precinct as:

- The racecourse is proposed to remain, within which there is expected to be minimal future additional development.
- Precinct A is proposed to include a retirement living village.
- Precinct B includes the existing car parking and racecourse grandstand and is proposed to include additional car parking spaces and provide new buildings for offices/hospitality.
- Precinct C includes proposed stables, horse float parking and car parking.
- Precinct D includes a proposed residential area and childcare centre.
- Precinct E includes proposed equine and jockey services, car parking and pad site and potential retail and bulky goods.

The SP has been developed through an iterative and collaborative design process involving a variety of stakeholders, including a multi-disciplinary design team providing expertise in the following fields:

- Town planning and urban design
- Environmental planning
- Aboriginal heritage
- Hydrology
- Civil and geotechnical engineering
- Traffic engineering
- Economic analysis.

### 3.1.1 Environmental considerations of the structure plan

Environmental values and considerations have been addressed as part of the SP design process, which has culminated in the proposed SP and master plan layout provided in **Appendix A** and **Appendix C**.

As outlined above, the primary structural basis of the SP layout has generally been informed by the location and extent of the various existing district-scale land uses. This has provided a level of restriction to the ability for the SP layout to strategically respond to environmental values within the site. Notwithstanding, the proponent has taken a range of measures to provide for the future retention of significant environmental values where possible (i.e. where there remains flexibility in the layout design process).

#### 3.1.1.1 Public Open Space

The area reserved for Parks and Recreation in the northern extent of the SP, along the foreshore of the Swan River, has been retained as Parks and Recreation as part of the proposed land uses within the SP. Retention of this vegetation avoids direct impacts to the 0.07 ha of subtropical and temperate coastal saltmarsh TEC/PEC. In addition, this vegetation was identified as being in good to very good condition with potential to provide canopy cover and habitat for avian species as well as riparian vegetation for ground dwelling fauna.

#### 3.1.1.2 Hydrology

To address the proximity of the Swan River and support the SP design and process, a Local Water Management Strategy (LWMS) has been prepared by Emerge Associates (2024b) to consider water sensitive urban design principles, flood storage requirements and a water conservation strategy. The principal management objective for hydrology within the site is to ensure that post-development environmental flows and/or hydrological cycles are maintained or improved upon pre-development conditions, especially regarding the Swan River located adjacent to the site and lake features within the site. Specifically, the LWMS has aimed to:

- Protect water quality in the Swan River by providing appropriate water quality treatment at source.
- Mitigate potential flooding within the SP area and immediate surrounds.
- Take account of existing drainage infrastructure capacity and ensure that sufficient land is set aside to manage stormwater.
- Provide a broad level stormwater management framework to support future urban development.
- Incorporate appropriate best management practices into the drainage systems that address the environmental and stormwater management issues identified.
- Minimise transport of nutrients/pollutants to groundwater.
- Develop a non-potable water conservation strategy that will accommodate existing groundwater allocation constraints for the area.
- Gain support from DWER, DBCA, CoB and Water Corporation for the proposed method to manage stormwater within the site.

#### 3.1.1.3 Wetlands

A total of three MUW as per the Geomorphic Wetlands of the Swan Coastal Plain dataset exist within the site, specifically within the boundary of the Ascot Racecourse track. No considerations are required for MUWs however the planning and design of the SP does not intend to disturb the MUW.

One REW (UFI 8423) is mapped across the site, however, after review of local surface water hydrology, the Geomorphic Wetlands of the Swan Coastal Plain dataset mapping and field observations (refer to **Figure 5** and Figure 6 of Emerge Associates 2024b), it was determined that the area designated as a REW is unlikely represent a REW. Regardless, the planning and design of the SP has avoided the REW and no disturbance to the REW is anticipated.

#### 3.1.1.4 Conservation significant fauna

The SP design retains the most suitable fauna habitat, the fringing woodland habitat type which is associated with the remnant vegetation along the foreshore reserve. This vegetation was noted to provide habitat for conservation significant fauna species, including rakali and will be retained in the current SP design.

The black cockatoo foraging habitat identified by the field survey is patchily distributed across the site and interspersed with plant species not used by CBC or FRTBC. No signs of use were identified during the targeted black cockatoo survey, such as chew marks, droppings or moulted feathers within any of the habitat trees with hollow(s) in the site.

The potential foraging habitat and habitat trees for CBC and FRTBC within the site is unlikely to represent critical foraging or breeding habitat, given its small extent within an urban setting with minimal potentially suitable hollows and no evidence of use by CBC or FRTBC. Potential black cockatoo habitat trees identified will be opportunistically retained. The potential foraging and breeding habitat in the SP occurs within the 'Place of public assembly,' where future development is permitted to occur. Black cockatoo habitat will need to be considered as part of future subdivision and development approvals.

#### 3.1.1.5 Aboriginal cultural heritage

Whilst not identified as occurring within the precinct areas, the Swan River (Site ID 3536) is a key Aboriginal cultural heritage site for consideration. The SP design retains the Parks and Recreation Reserve which excludes future development adjacent to the Swan River and protects this place of cultural heritage significance from potential development impacts.

No works associated with SP development are currently proposed to directly impact the Swan River, however, should any future proposed works impact the riverbank, foreshore or any other Aboriginal cultural heritage site, approval for the proposed works under Section 18 of the *Aboriginal Heritage Act 1972* would be required.

#### 3.1.1.6 Non-Indigenous heritage

The Ascot Racecourse Complex (place 06123) includes the racecourse itself and the surrounding proposed precincts, excluding Precinct D, as outlined in the SP. The SP design proposes to retain the racecourse itself and does not propose development within the racecourse. The remaining part of the Ascot Racecourse Complex (place 06123) is within Precinct A, B, C and E. The SP design for these precincts allows for the development of additional facilities and renovation of current facilities.

### 3.2 Future planning and environmental approvals process

A key component of implementing the future development of any area is the relevant environmental management framework. Subject to approval and endorsement of the structure plan by the WAPC, development of the site will be progressed through subdivision and/or development approval/s. Where required, the environmental management requirements can be implemented through

applicable subdivision and/or development approval conditions. The future planning and environmental approvals process is discussed in this section.

### 3.2.1 Metropolitan Region Scheme

The site is currently zoned a combination of 'Urban,' 'Private Recreation' and 'Parks and Recreation' under the Metropolitan Region Scheme (MRS). The majority of surrounding land is zoned as 'Urban,' and land abutting the Swan River reserved for 'Parks and Recreation'. The MRS zoning of Precinct A area is currently 'Private Recreation' and lodgment of an MRS amendment may be required with the Western Australian Planning Commission (WAPC) to rezone the Precinct A area from 'Private Recreation' to be consistent with finalised land uses.Correspondingly, LPS 15 could be amended either through a concurrent or subsequent local scheme amendment (see further details regarding LPS 15 in **Section 3.2.2**).

Any scheme amendment request received and initiated by the responsible authority (WAPC), would be formerly referred to the EPA under Section 48A of the EP Act (unless exempt under Section 48AAA of the EP Act). This is discussed further in **Section 3.2.4**.

### 3.2.2 Local Planning Scheme No. 15

The site is currently zoned 'Public place of assembly' and 'Mixed Use' under the CoB LPS 15. The existing Ascot Racecourse covers the majority of the site, which attributes the 'Place of public assembly' zoning and the south of the site within part of Precinct E is zoned 'Mixed Use'.

The current LPS 15 zonings are inconsistent with the proposed land uses within Precinct A and Precinct D. As such, a local scheme amendment will be required to rezone Precinct A from 'place of public assembly' to 'retirement living/mixed use' and to rezone Precinct D from 'Place of Public Assembly' to 'Mixed Use'.

The Swan River foreshore is also subject to the *City of Belmont Foreshore Precinct Plan* (CoB 2018) which guides the future use and management of the Belmont foreshore and the development interface with the Parks and Recreation reserve.

### 3.2.3 *Environmental Protection Act* 1986 - Section 38 proposals

Section 38 of the EP Act enables any person to refer a 'proposal' (as opposed to a planning scheme, as per Section 48) likely to have a significant impact on the environment to the EPA, who then decide whether or not to assess the proposal. The SP area, or part thereof, will need to be considered in relation to Section 38 of the EP Act.

A preliminary assessment of the anticipated environmental outcomes as a result of the anticipated future urban development (based on the SP layout) has been undertaken against relevant EPA factors and objectives, which is outlined in **Section 4**. Based on this assessment, it is not considered likely that any future development within the SP would require referral to the EPA pursuant to Section 38 of the EP Act.

### 3.2.4 *Environmental Protection Act 1986* - Section 48 scheme amendment referral

An amendment to a planning scheme (regional or local) is required to be referred to the EPA (unless exempt under Section 48AAA of the EP Act) to determine whether environmental assessment is required, pursuant to Section 48 of the EP Act. All amendments to a planning scheme are required to be referred to the EPA by the responsible authority (in this case, the WAPC) unless the amendment is exempt under Section 48AAA of the EP Act. Exemptions under Section 48AAA relate to amendments that seek changes to the planning scheme that do not relate to the environment and will not impact the environment and therefore do not require EPA consideration. Exemptions include:

- Amendments seeking to correct an administrative or minor error, amend a definition or correct a title in the planning scheme if it will not impact the operation of the scheme.
- Amendments seeking to classify an area of land as a reserve for Parks and Recreation or Regional Open Space.
- Amendments seeking to zone an area of land as a reserve if the land has been subdivided and developed by an approved redevelopment scheme and the redevelopment scheme no longer applies and the amendment is required to reflect a zone or reserve created in accordance with the approved redevelopment scheme.
- Amendments seeking to create, alter or remove a road reserve of a regional road if a clearing permit under Part V of the EP Act has been granted or if the impacts associated with construction of the road has been assessed under Part IV of the EP Act and a decision has been made that the proposal can be implemented.

The required scheme amendment for the SP will not be exempt under Section 48AAA of the EP Act. Upon referral on an amendment to a planning scheme, the EPA will make a decision on whether the proposed scheme amendment requires formal assessment and often consider significance in their assessment. The EPA may also provide informal advice on the proposed scheme amendment without formally assessing the scheme or determine that the proposed amendment is not capable of being environmentally acceptable. Areas of the SP area not assessed under Section 48A will need to be considered and referred under Section 38 of the EP Act if impacts to the environment are considered significant. As stated above, a preliminary assessment of the anticipated environmental outcomes as a result of the anticipated future urban development (based on the SP layout) has been undertaken against relevant EPA factors and objectives and is outlined in **Section 4**.

Section 48A outlines that any proposal likely to have a significant impact on the environment, but which is within an area and for a land use that is subject to an assessed scheme (i.e. a scheme for which a determination has been made by the EPA under Section 48A), is not required to be referred to the EPA under Section 38 of the EP Act.

Section 48A will only apply to the SP area which has undergone a scheme amendment (regional or local) through the Section 48A process and where the potential environmental impacts were considered by the EPA. The EPA may choose to provide advice at this time and defer assessment of environmental factors to subsequent stages of the planning process, which would mean Section 48A would not apply and referral under Section 38 would be required. Based on the assessment undertaken and the nature/layout of the SP it is unlikely that any future development within the SP extent would quire referral to the EPA pursuant to Section 38 of the EP Act.

### 3.2.5 Environmental Protection Act 1986 – Part V Clearing Permits

Where native vegetation is required to be cleared within the site, this will likely be undertaken in accordance with a subdivision approval and associated authorised subdivision works, which will provide an exemption from the requirements for a native vegetation clearing permit. Should bulk earthworks or any other works be commenced within the site that requires clearing of native vegetation before subdivision approvals are gained, a clearing permit pursuant to Part V of the EP Act will be required.

In addition, and as part of subdivision, the WAPC may include a standard condition (model subdivision condition EN2) which requires:

*Prior to the commencement of subdivisional works, measures being undertaken to identify any vegetation on the site worthy of retention, including any potential habitat or foraging trees for threatened fauna species, and protection measures implemented to ensure such vegetation is not impacted by subdivisional works (Local Government).*

This can be used to ensure that vegetation retention opportunities (likely to be limited to mature trees) are considered through the subdivisional works process.

### *3.2.6 Environment Protection and Biodiversity Conservation Act 1999*

The EPBC Act provides statutory protection for listed Matters of National Environmental Significance (MNES). The CBC is listed as endangered and FRTBC is listed as vulnerable under the EPBC Act. Any future development proposals within the SP should consider the requirements of the EPBC Act in relation to CBC and FRTBC and their habitat, which will primarily be in relation to the potential breeding habitat.

The subtropical and temperate coastal saltmarsh TEC is listed as vulnerable under the EPBC Act. TEC's listed in the vulnerable category are not considered matters of national environmental significance (MNES) for the purposes of Part 3 of the EPBC Act and therefore no further considerations to the TEC/PEC are required in relation to the EPBC Act.

Individual proponents of future development within the site will need to consider their obligations under the EPBC Act and the potential need to refer any proposed action that may have a significant impact on MNES. This would largely be limited to the consideration of potential impacts on listed black cockatoo species. While this would be considered on a proposal-by-proposal basis (and potentially progressed by different proponents), it is unlikely that the potential impacts on black cockatoo would be considered significant.

### 3.2.7 Swan and Canning River Development Control Area

The northern boundary of the site falls within the Swan Canning Development Control Area (DCA) (CoB 2018) and the Swan Canning River Park. Any proposed development on land adjacent to the river within the DCA and/or partly within DCA would be subject to assessment and approval by the DBCA through a permit application, under Part 5 of the *Swan and Canning Rivers Management Act 2006* and the *Swan and Canning River Management Regulations 2007*.

# 4 Assessment of Predicted Environmental Outcomes

The predicted environmental outcomes that will need to be accommodated in the implementation of the proposed SP, through future development, have been assessed against the EPA objectives for each environmental factor relevant to the site (as listed in **Section 2**).

This is provided in **Table 9**, which considers the spatial layout responses of the SP and provision of POS intended to provide for the protection and conservation of existing environmental assets within the site. In addition, **Table 9** also outlines the future management of environmental values or considerations that will require further specific attention as part of the future development of the site.

A range of environmental impact mitigation measures (primarily impact avoidance and minimisation) are proposed within the SP layout and through the future environmental management framework. In this context, it is anticipated that implementation of any future development within the proposed SP can be suitably managed through future stages of the land use planning processes (including subdivision and development) such that the EPA objectives for the relevant environmental factors can be achieved.

*Table 9: Summary of EPA environmental factors and objectives relevant to the proposed future land use*

| Environmental factor | EPA objective | Ascot Local Structure Plan spatial response | Future management considerations | Predicted environmental outcome |
|---|---|---|---|---|
| Landforms | To maintain the variety and integrity of distinctive physical landforms so that environmental values are protected. | The Swan River is located immediately adjacent to the north of the site. No development is proposed within the Swan River foreshore Reserve. Additionally, retention of the riparian vegetation associated with the Swan River in the northern portion of the site allows for protection of biological diversity and ecological integrity along the Swan River foreshore. Further responses associated with the Swan River in regard to hydrology are discussed below. | Future management considerations for the Swan River in regard to inland waters are discussed below. | No significant impacts likely |
| Terrestrial environmental quality | To maintain the quality of land and soils so that environmental values are protected. | There are no SP spatial responses to terrestrial environmental quality considerations, which primarily relate to ASS risk.<br><br>To address Lot 9002 which is classified as "potentially contaminated – investigation required", investigations have been commenced by the proponent in preparation of anticipated subdivision or development approval conditions. | To facilitate development within the site, ASS investigations and management considerations for the site will likely be required (as a portion of the site is mapped as Class 1 'high to moderate' risk of ASS occurring within 3 m of the natural soil surface). Given the relatively shallow depths to groundwater within portions of the site, any dewatering that may be required for development works would likely trigger the need for a dewatering and ASS management plan.<br><br>If required, any future ASS considerations will be identified and suitably managed by each proponent as part of the future development process in accordance with the WAPC's *Acid Sulfate Soils Planning Guidelines* (2008).<br><br>Any future development within Lot 9002 will need to resolve the current CS Act classification, and this would involve the completion of investigations and any remediation that is identified as being required. | Any potential impacts associated with ASS can be suitably minimised at future development stages within the site. If determined to be required, an ASS management plan and dewatering management plans would be prepared and implemented as part of any works associated with subdivision or development works.<br><br>Site contamination will be adequately investigated and remediation completed (if required) to resolve any site contamination risk. |

*Table 9: Summary of EPA environmental factors and objectives relevant to the proposed future land use (continued)*

| Environmental factor | EPA objective | Ascot Structure Plan spatial response | Future management considerations | Predicted environmental outcome |
|---|---|---|---|---|
| Flora and vegetation | To protect flora and vegetation so that biological diversity and ecological integrity are maintained. | The SP layout has been designed to maintain the northern vegetated area within Parks and Recreation Reserve. This includes 0.07 ha of the subtropical and temperate coastal saltmarsh TEC/PEC. Retention of this vegetation in the northern portion of the site allows for protection of flora, vegetation, biological diversity and ecological integrity along the Swan River foreshore.<br><br>Remaining vegetation within the site was recorded in 'degraded' to 'completely degraded' condition with minimal environmental value. As such, no additional SP vegetation retention provisions are considered necessary. | Should any works within the site that require clearing of native vegetation prior to subdivision approvals, a clearing permit pursuant to Part V of the EP Act will be required, unless otherwise exempt from a clearing permit. Subdivision approval and associated authorised subdivision works will provide an exemption from the requirements for a clearing permit. Future subdivision and/or development applications and approval conditions would consider vegetation retention where possible.<br><br>Conditions associated with subdivision and/or development approvals often require the preparation of a Conservation and Environment Management Plan, which would further minimise potential impacts to retained flora and vegetation values during proposed construction in development stages. | Overall, the SP layout responds to flora and vegetation values where possible, primarily associated with retention of established vegetation along the Swan River foreshore. Protection of an area of subtropical and temperate coastal saltmarsh TEC/PEC is also a key outcome of this response. |

*Table 9: Summary of EPA environmental factors and objectives relevant to the proposed future land use (continued)*

| Environmental factor | EPA objective | Ascot Structure Plan spatial response | Future management considerations | Predicted environmental outcome |
|---|---|---|---|---|
| Terrestrial fauna | To protect terrestrial fauna so that biological diversity and ecological integrity are maintained. | The SP layout has been designed to maintain the northern vegetated area within POS. Retention of this vegetation in the northern portion of the site allows for protection of biological diversity and ecological integrity along the Swan River foreshore.<br><br>A total of 66 habitat trees potentially suitable for black cockatoo breeding were identified within the site, of which five contain potentially suitable hollows for black cockatoo breeding habitat. A total of 1.27 ha and 0.84 ha of foraging habitat (primary and secondary) for CBC and FRTBC, respectively, was recorded within the site. Of this, primary foraging habitat (native and non-native) comprised a total of 0.35 ha and 0.27 ha for CBC and FRTBC, respectively. The remaining area consisted of secondary foraging habitat.<br><br>The foraging habitat is patchily distributed and is interspersed with plant species not used for CBC or FRTBC for foraging. No signs of use were identified during the targeted black cockatoo survey, such as chew marks, droppings or moulted feathers within any of the habitat trees with potential hollow(s).<br>The potential foraging habitat and habitat trees for threatened black cockatoo species mapped within the site are unlikely to represent critical foraging or breeding habitat, given its small extent within an urban setting with minimal potentially suitable hollows and no evidence of use by CBC or FRTBC. | Where future development works within the site will result in potential impacts to MNES (including CBC and FRTBC), proponents will need to consider their EPBC Act obligations and need for referral, based on the specific impacts of their proposed action. Individual proposed actions can be addressed through preliminary self-assessment against the *Matters of National Environmental Significance Significant Impact Guidelines* (DotE 2013) in relation to any potential impacts on MNES.<br><br>As part of future subdivision, there may be requirements to prepare a fauna management plan prior to works commencing for development involving clearing of native vegetation or any fauna habitat in order to minimise impacts to fauna during clearing and construction works. Fauna management plans can be prepared as required as part of future subdivision works and are often associated with conditions of subdivision and/or development approval.<br><br>Conditions associated with subdivision and/or development approvals often require the preparation of a Conservation and Environment Management Plan, which would further minimise potential impacts to fauna during proposed construction in development stages. | Overall, the SP layout responds to terrestrial fauna values, primarily associated with retention of intact native vegetation along the northern border of the site, providing potential habitat for terrestrial fauna. Notwithstanding, impacts to MNES such as CBC and FRTBC are possible and EPBC Act obligations will need to be considered by proponents before development, depending on the nature and extent of the development and magnitude of likely impacts. In general, the extent of impact on black cockatoo is not likely to be considered significant. |

*Table 9: Summary of EPA environmental factors and objectives relevant to the proposed future land use (continued)*

| Environmental factor | EPA objective | Ascot Local Structure Plan spatial response | Future management considerations | Predicted environmental outcome |
|---|---|---|---|---|
| Inland waters | To maintain the hydrological regimes of groundwater and surface water so that environmental values are protected. | The *State Water Strategy for Western Australia* (Government of WA 2003) and *Better Urban Water Management* (WAPC 2008) endorses the promotion of integrated water cycle management and application of water sensitive urban design (WSUD) principles to provide improvements in the management of stormwater, and to increase the efficient use of other existing water supplies. Whilst not a spatial response, a Local Water Management Strategy (LWMS) has been prepared by Emerge Associates for the site in line with water sensitive urban design principles, flood storage requirements and a water conservation strategy. The principal management objective for hydrology within the site is to ensure that post-development environmental flows and/or hydrological cycles are maintained or improved upon pre-development conditions, especially regarding the Swan River adjacent to the site and lake features retained within the site. Specifically, the LWMS has aimed to:<br>• Protect water quality in the Swan River by providing appropriate water quality treatment at source.<br>• Mitigate potential flooding within the SP area and immediate surrounds.<br>• Take account of existing drainage infrastructure capacity and ensure that sufficient land is set aside to manage stormwater.<br>• Provide a broad level stormwater management framework to support future urban development.<br>• Incorporate appropriate best management practices (BMPs) into the drainage systems that address the environmental and stormwater management issues identified. | A LWMS has been prepared to support the SP process. Detailed Urban Water Management Plans (UWMP) will be required in support of individual subdivision applications in accordance with the *State Water Strategy for Western Australia* (Government of WA 2003) and *Better Urban Water Management* (WAPC 2008). UWMPs will be most relevant most relevant to Precinct D. Other precincts may be developed under a Development Approval and therefore water management will likely be documented within a Stormwater Management Plan (SMP) also in accordance with *Better Urban Water Management* (WAPC 2008).<br><br>Should any future developments propose to impact the Swan River CCW and as such impact the mapped ESA associated with the Swan River, wetland buffers and separation distances should be implemented in accordance with the draft *Guideline for the Determination of Wetland Buffer Requirements* (WAPC 2005) for protection of wetland values, habitat protection, edge effects and water quality management with relevant guidelines to protect wetland values, habitat and water quality.<br><br>Where proposed development is within or adjacent to the Swan and Canning River Development Control Area (DCA), proponents will be required to submit a DCA permit application to the DBCA in accordance with the *Swan and Canning Rivers Management Act 2006* and the *Swan and Canning River Management Regulations 2007.* | The SP does not specifically respond to the inland waters environmental factor. However, the LWMS defines the intended hydrological management approach, which will be implemented during future development. |

*Table 9: Summary of EPA environmental factors and objectives relevant to the proposed future land use (continued)*

| Environmental factor | EPA objective | Ascot Local Structure Plan spatial response | Future management considerations | Predicted environmental outcome |
|---|---|---|---|---|
| Inland waters (continued) | To maintain the hydrological regimes of groundwater and surface water so that environmental values are protected (continued). | • Minimise transport of nutrients/pollutants to groundwater.<br>• Develop a non-potable water conservation strategy that will accommodate existing groundwater allocation constraints for the area.<br><br>Three MUWs and one REW will be retained in the current SP design. Although an REW is mapped within the site, after review of local surface water hydrology, aerial imagery and field observations (refer to Figure 5 and Figure 6 of Emerge Associates 2024b), it was determined that the area designated as an REW in the Geomorphic Wetlands of the Swan Coastal Plain dataset does not accurately reflect the conditions observed on ground. However, the REW will be retained in the current SP design.<br><br>The Swan River is a CCW and is located immediately adjacent to the site. The SP design avoids the CCW and associated ESA by retaining the Parks and Recreation Reserve which encompasses the CCW buffer area and values associated with the Swan River. | | |

*Table 9: Summary of EPA environmental factors and objectives relevant to the proposed future land use (continued)*

| Environmental factor | EPA objective | Ascot Local Structure Plan spatial response | Future management considerations | Predicted environmental outcome |
|---|---|---|---|---|
| Social Surroundings | To protect social surroundings from significant harm. | Aboriginal Cultural Heritage (ACH) site 3536 (Swan River) is located immediately north of the site and ACH Site3753 has a minor overlap with the western boundary of the site. These sites are not considered to be potentially impacted by the proposed SP layout. However, should any future development propose to impact these sites, further consultation and AH Act requirements would be required.<br><br>The Ascot Racecourse Complex (place 06123) is a non-indigenous heritage place, located within the site. The SP design proposes to retain the racecourse itself and excludes the racecourse from proposed development. The remaining part of the Ascot Racecourse Complex (place 06123) is within Precinct A, B and C. The SP design of these precincts allows for the development of additional facilities and renovation of current facilities.<br><br>No responses are required in regard to noise and acoustics. | The Swan River is associated with Site 3536 and as such any future proposed works that may impact the riverbank and/or the foreshore will require approval under Section 18 of the *Aboriginal Heritage Act 1972*. Further requirements and consultation would be required to identify the extent of Site 3753 within the SP area and if future consideration is required in accordance with the *Aboriginal Heritage Act 1972*.<br><br>Future development would need to consider the Ascot Racecourse Complex heritage site and can be addressed as part of any Development Approval process.<br><br>A Transport Noise Assessment for the proposed SP was undertaken by Lloyd George Acoustics in November 2023 (Lloyd George Acoustics 2023) to understand the spatial responses that might be required to address potential noise and acoustic impacts in the SP from the adjacent Great Eastern Hwy. Based on the results, future proponents undertaking noise sensitive development in Precinct E could undertake further noise assessments to quantify actual noise levels from Great Eastern Highway, rather than using the screening assessment criteria. Alternatively, the screening assessment procedure could be adopted, resulting in requirements for a 'Quiet House Package A' to upper floors of noise sensitive dwellings within Precinct E.<br><br>Future development would need to consider noise impacts from the racecourse and can be addressed as part of any Development Approval process. | Any potential impacts to social surroundings can be suitably mitigated through a range of impact avoidance and minimisation measures such that it is unlikely any significant residual impacts will occur. |

# 5 Conclusions

The proponent has taken a range of measures to provide for the future retention of relevant environmental values within the Ascot SP. This is primarily achieved through the strategic location of the Parks and Recreation Reserve in the northern area of the site to preserve intact native vegetation.

In this context, the SP has been designed to respond to the identified environmental values within the site where possible, including the proposed retention of:

- Subtropical and temperate coastal saltmarsh TEC/PEC
- Fauna habitat
- Native vegetation.

A local scheme amendment will be required to rezone Precinct A from 'place of public assembly' to 'retirement living/mixed use' and to rezone Precinct D from 'Place of Public Assembly' to 'Mixed Use'.

Considerations, approvals and management plans may be necessary for each individual proponent for future development works, which would further minimise environmental impacts through development within the SP area. Environmental factors and the management framework considerations are summarised in **Table 10.**

Overall, a range of environmental impact mitigation measures (primarily impact avoidance and minimisation) are proposed within the SP layout and through the future environmental management framework. In this context, it is anticipated that implementation of the proposed SP can be suitably managed through future stages of the land use planning processes (including development) such that the EPA objectives for the relevant environmental factors can be achieved.

*Table 10: Summary of Environmental Management Framework Considerations*

| Environmental Factor | Management Framework and considerations | | |
|---|---|---|---|
| | Local Structure Plan | Subdivision and/or Development Approval | Construction |
| Flora and Vegetation | Environmental Assessment Report including preliminary investigations (Emerge Associates 2024a) (**Appendix D**). | • Native Vegetation Clearing permit pursuant to Part V of the EP Act if clearing is required within the SP area and clearing is not exempt.<br>• Preparation of a Conservation and Environment Management Plan (CEMP), where required. | Clearing Permit and compliance with approval conditions and management plans. |
| Terrestrial Fauna | Environmental Assessment Report including preliminary investigations (Emerge Associates 2024a) (**Appendix D**). | • Potential impacts to MNES in relation to the EPBC Act and need to consider the need for referral in accordance with the *Matters of National Environmental Significance Significant Impact Guidelines* (DotE 2013).<br>• Preparation of a fauna management plan for any development within the SP area prior to works commencing for development involving clearing of native vegetation or any fauna habitat. | Compliance with approval conditions and management plans, in accordance with EPBC Act, where required. |
| Acid Sulfate Soils | Environmental Assessment Report including preliminary investigations. | • Detailed ASS Investigation and Management Plan for areas mapped as 'Class 1: High to moderate risk' will likely be required in accordance with the WAPC's *Acid Sulfate Soils Planning Guidelines* (2008). | Implementation of ASS Management Plan. |
| Inland Waters | The LWMS prepared for the SP by Emerge Associates (2024b) (**Appendix E**). | • Detailed UWMPs will be required (mostly relevant to Precinct D) to support individual subdivision applications. Other precincts may be developed under Development Approval and therefore water management will likely be documented through SMPs. Both UWMPs and SMPs will be prepared in accordance with the *Better Urban Water Management* Framework.<br>• Protection of the Swan River CCW and ESA through consideration of hydrological processed and water quality management into design of future development areas to protect the adjacent Swan River and associated values.<br>• DCA permit application for works within or affecting the DCA to the DBCA in accordance with the Swan and Canning Rivers Management Act 2006 and the Swan and Canning River Management Regulations 2007. | Compliance with UWMP/SMP and approved DCA permit. |

*Table 10: Summary of Environmental Management Framework Considerations (continued)*

| Environmental Factor | Management Framework and considerations | | |
|---|---|---|---|
| | Local Structure Plan | Subdivision and/or Development Approval | Construction |
| Social Surroundings | Preliminary investigations for Aboriginal Cultural Heritage.<br><br>Transport Noise Assessment for the proposed SP (Lloyd George Acoustics 2023) in accordance with SPP 5.4. | • Detailed Acoustic Assessment and Management Plan (where required) or 'Quiet House Package A' implemented to upper floors of noise sensitive dwellings within Precinct E.<br>• Completion of any contamination investigations and identification of any remediation requirements within Lot 9002. | Approval pursuant to Section 18 of the *Aboriginal Heritage Act 1972* will be required prior to ground disturbing works if impacts to known sites are likely.<br><br>Compliance with noise management plan and appropriate house packages applied where appropriate.<br><br>Completion of remediation works (if required) for Lot 9002. |

# 6 References

## 6.1 General references

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# Figures

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*Figure 3: Topographic Contours*

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*Figure 5: Vegetation Types*

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*Figure 11: Black Cockcatoo Habitat Trees*

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**Figure 1: Site Location**

**Project:** Environmental Assessment Report
Ascot Racecourse Structure Plan

**Client:** Perth Racing

**Plan Number:**
**EP23-109(05)--F06**
Drawn: WJC
Date: 03/04/2024
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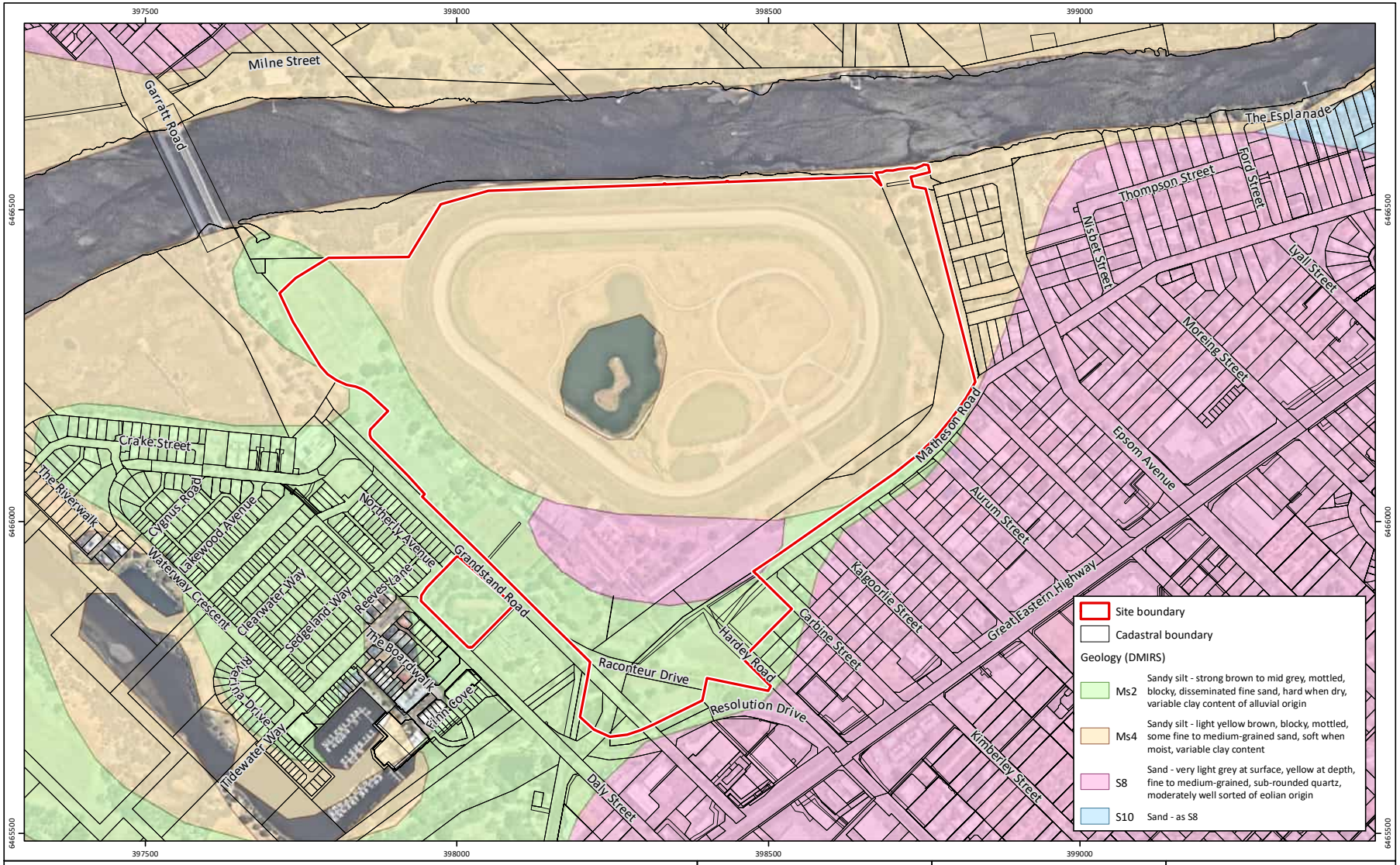



**Figure 2: Site Geology**

**Project:** Environmental Assessment Report
Ascot Racecourse Structure Plan

**Client:** Perth Racing

**Plan Number:** EP23-109(05)--F07
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**Figure 3:** **Topographic Contours**

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| **Client:** | Perth Racing |

**Plan Number:**
**EP23-109(05)--F08**

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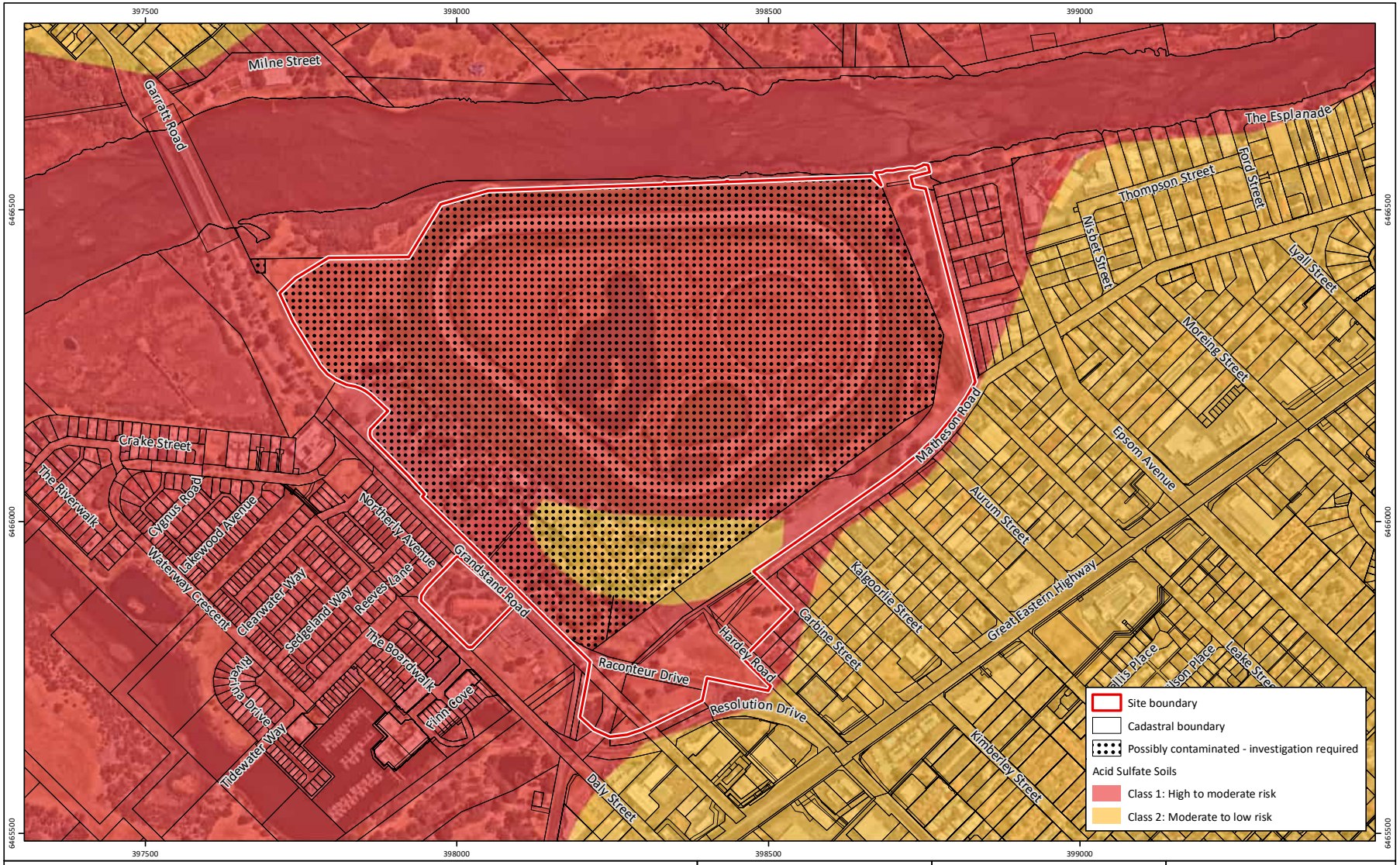



**Figure 4: Acid Sulfate Soils**

**Project:** Environmental Assessment Report
Ascot Racecourse Structure Plan

**Client:** Perth Racing

**Plan Number:**
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**Figure 5: Vegetation Types**

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**Plan Number:** EP23-109(05)--F10

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**Figure 6: Vegetation Condition**

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**Plan Number:** EP23-109(05)--F11

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**Figure 7:** **Threatened and Priority Ecological Community and Native Vegetation under the EP Act**

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| **Client:** | Perth Racing |

**Plan Number:**
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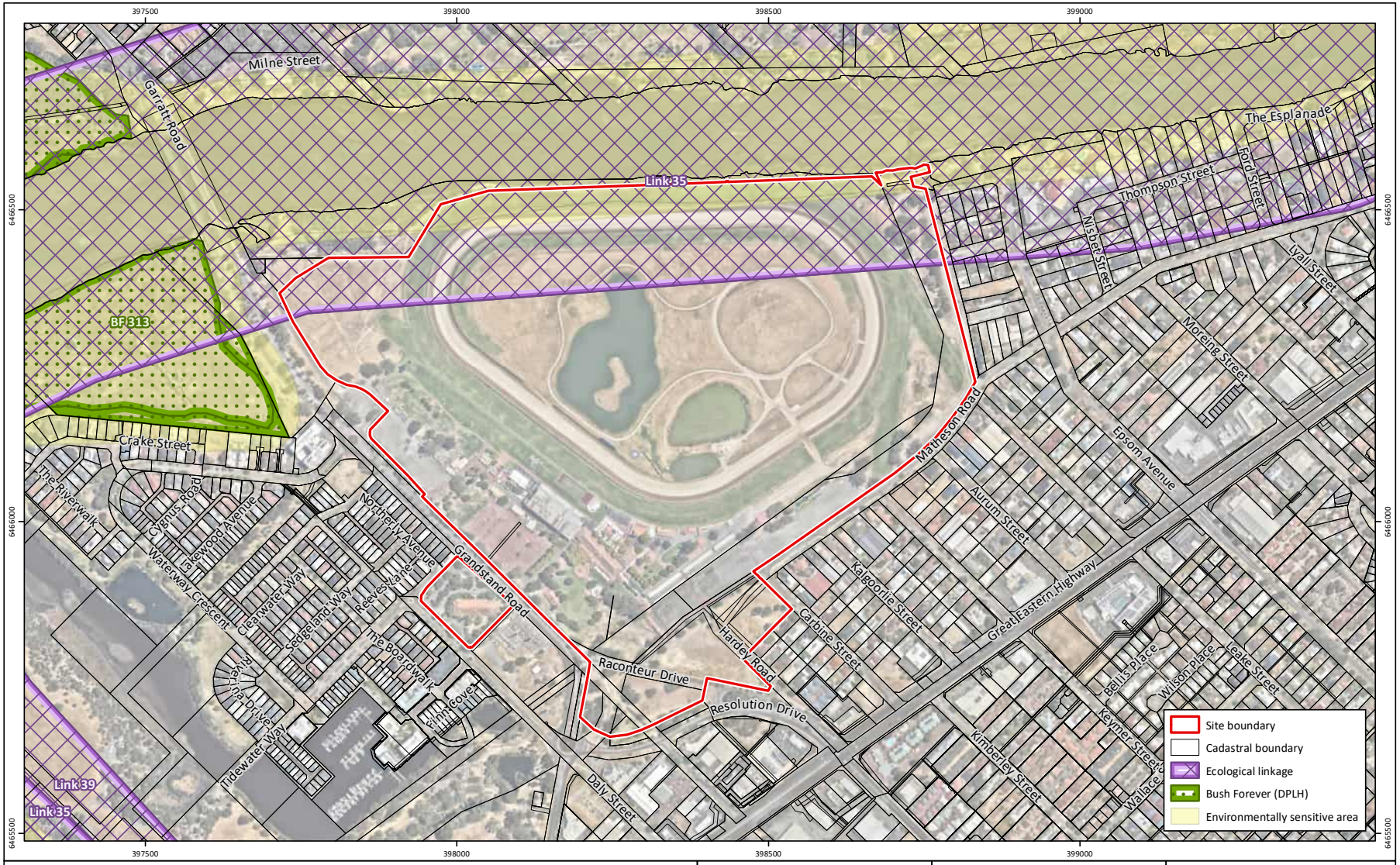



**Figure 8:** **Bush Forever, Ecological Linkages and Environmentally Sensitive Areas**

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| **Client:** | Perth Racing |

**Plan Number:**
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**Figure 9:** **Carnaby's Black Cockatoo Foraging Habitat**

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| **Client:** | Perth Racing |

**Plan Number:**
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**Figure 10: Forest Red-tailed Black Cockatoo Foraging Habitat**

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| **Client:** | Perth Racing |

**Plan Number:**
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**Figure 11: Black Cockatoo Habitat Trees**

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| **Client:** | Perth Racing |

**Plan Number:**
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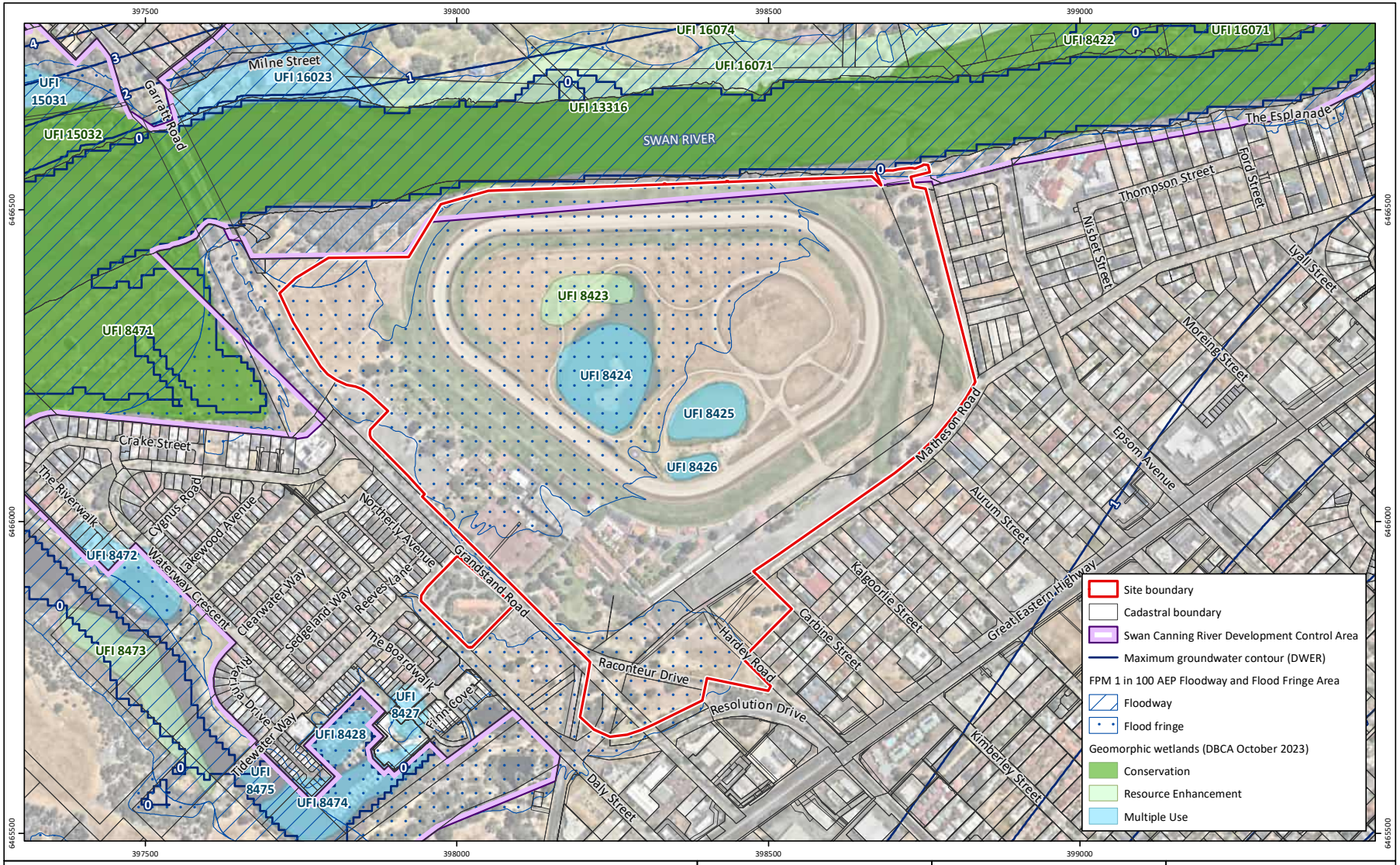



**Figure 12: Hydrological Features**

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| **Client:** | Perth Racing |

**Plan Number:**
**EP23-109(05)--F14**

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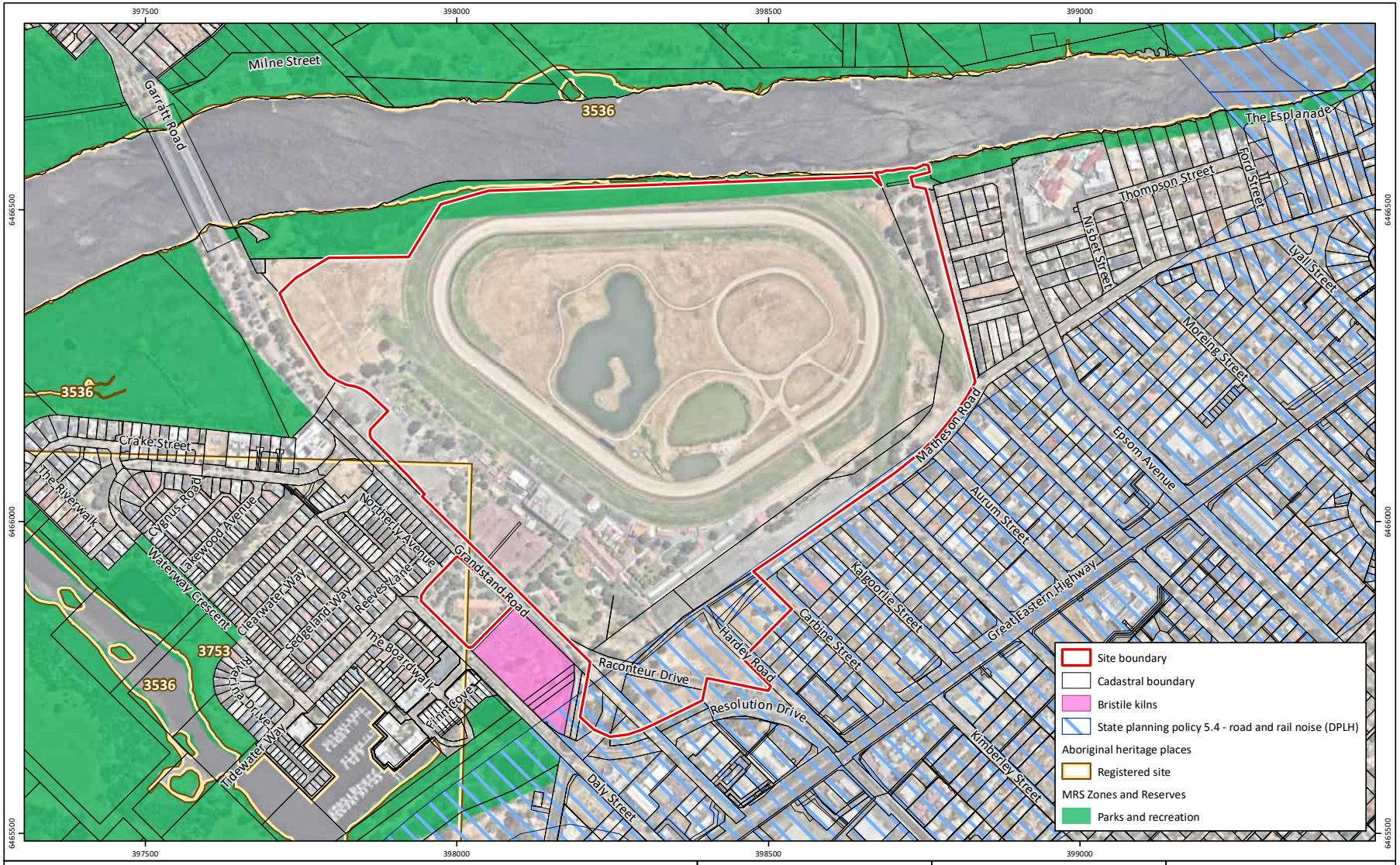



**Figure 13: Social Surroundings**

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| **Client:** | Perth Racing |

**Plan Number:** EP23-109(05)--F15a

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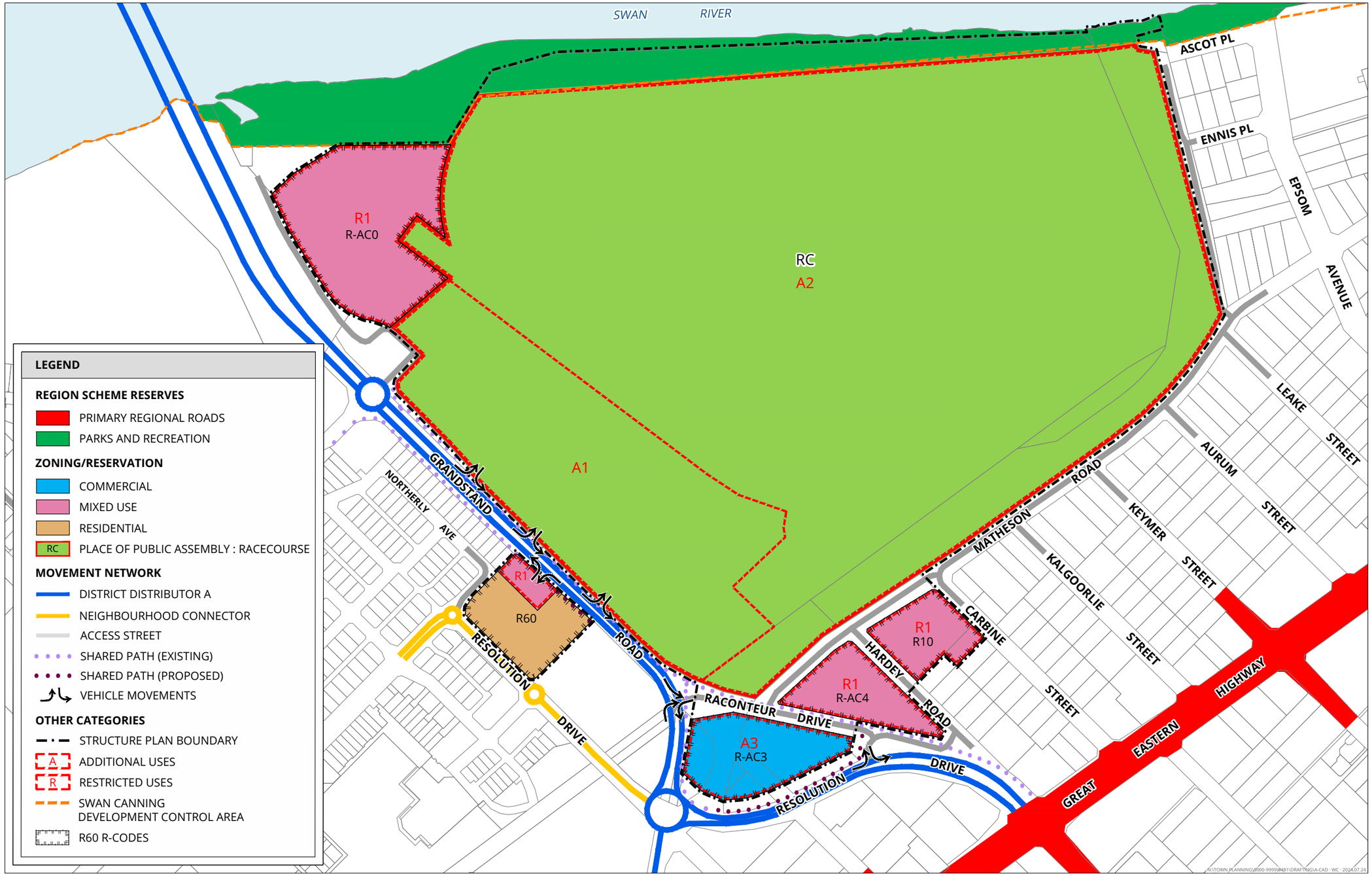
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GDA2020 MGA Zone 50

emerge ASSOCIATES

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# Appendix A

Ascot Racecourse Structure Plan (ROWE Group Design, 2024)




**PLAN 1 - STRUCTURE PLAN**
VARIOUS LOTS - ASCOT RACECOURSE
ASCOT

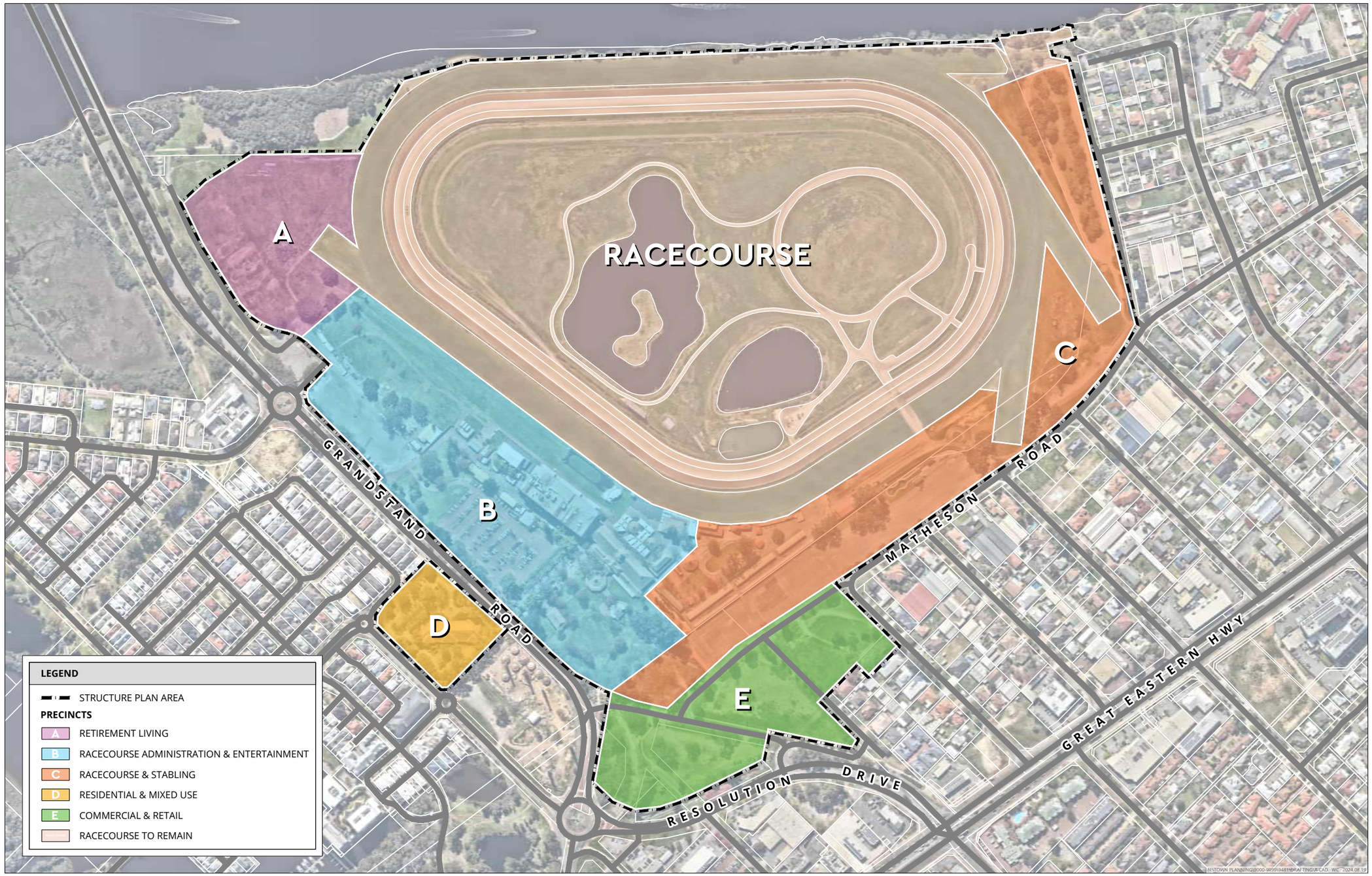
N
0 100 m
SCALE @ A3: 1:4000
**9481-STR-01-G**

DRAWN: WC
DATE CREATED: 2024.07.24
PROJECTION: MGA50 GDA94
CADASTRE: LANDGATE
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ROWE GROUP DESIGN

# Appendix B

Ascot Racecourse Precinct Plan (ROWE Group Design, 2024)




## STRUCTURE PLAN PRECINCTS

VARIOUS LOTS - ASCOT RACECOURSE
ASCOT

N
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SCALE @ A3: 1:4000
9481-FIG-02-C

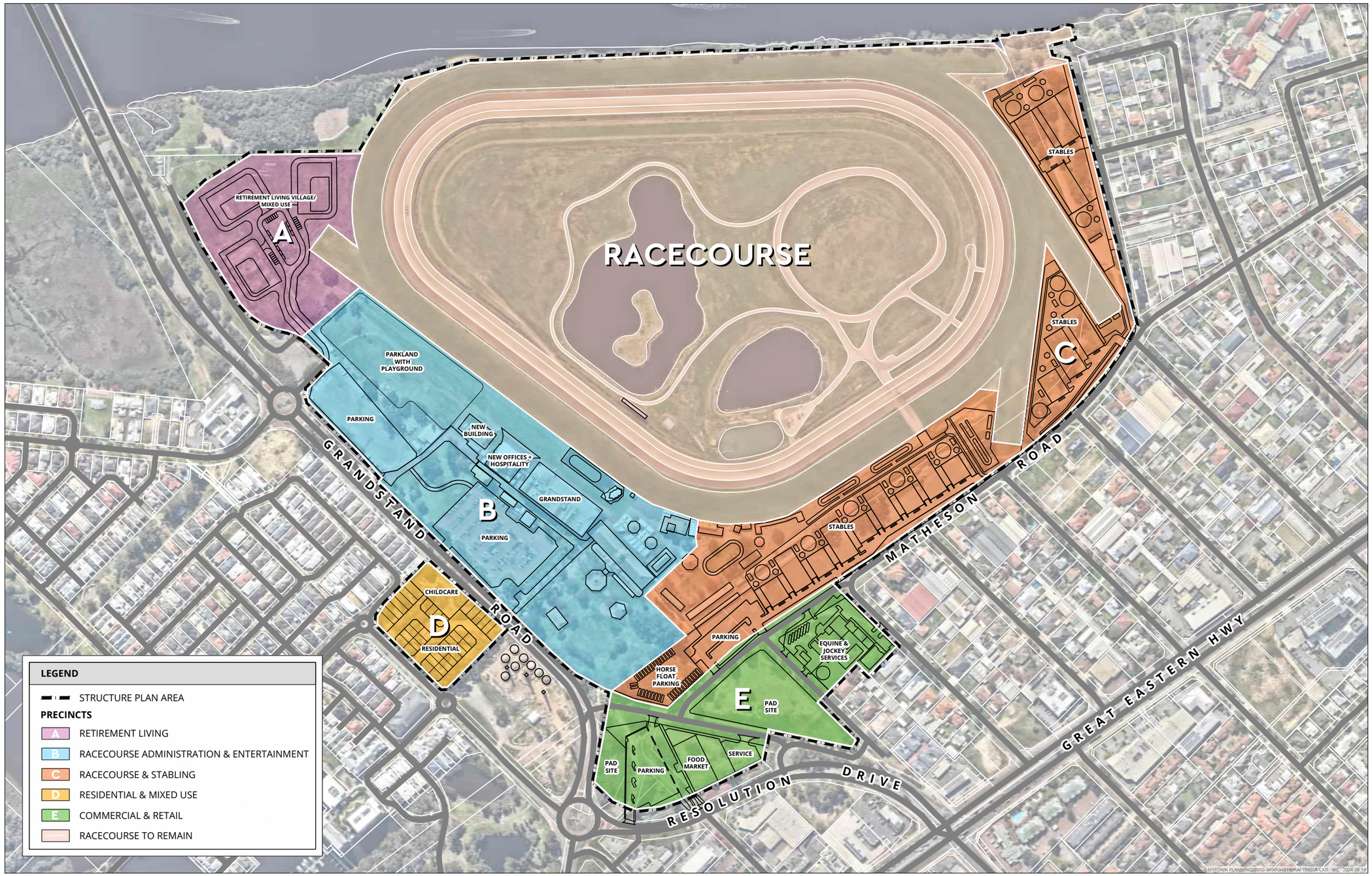
DRAWN: WC
DATE CREATED: 2024.08.19
PROJECTION: MGA50 GDA94
CADASTRE: LANDGATE
AERIAL: NEARMAP 20230831

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# Appendix C

Draft Master Plan Concept (ROWE Group Design, 2024)




**DRAFT MASTER PLAN CONCEPT**

VARIOUS LOTS - ASCOT RACECOURSE

ASCOT

N

0 100 m

SCALE @ A3: 1:4000

**9481-CON-01-D**

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DATE CREATED: 2024.08.19
PROJECTION: MGA50 GDA94
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# Appendix D

Flora, Vegetation and Fauna Assessment (Emerge Associates 2024a)

# TECHNICAL MEMORANDUM

## Flora, Vegetation and Fauna Assessment
## Various lots, Grandstand Rd and Raconteur Dr, Ascot

| | | | |
|---|---|---|---|
| **PROJECT NUMBER** | EP23-109(06) | **DOC. NUMBER** | EP23-109(06)—003A TDP |
| **PROJECT NAME** | Ascot Local Structure Plan | **CLIENT** | Perth Racing |
| **AUTHOR** | TDP/AJU | **REVIEWER** | RAW |
| **VERSION** | A | **DATE** | 11/07/2024 |

## 1. INTRODUCTION

### 1.1. Project background

Emerge Associates (Emerge) were engaged by Perth Racing to undertake a flora, vegetation and fauna assessment at Lots 1, 3, 13, 50, 452, 7705 and 9002 Grandstand Rd and Lots 51 and 100 Raconteur Dr, Ascot, in the City of Belmont (herein referred to as the 'site').

The site is located approximately 5.5 kilometres (km) east of the Perth Central Business District within the City of Belmont. The site extends over approximately 61.8 hectares (ha) and is bounded by Matheson Rd to the east, Grandstand Rd to the west, Resolution Dr to the south, and the Swan River to the north. The location of the site is shown in **Figure 1**.

### 1.2. Purpose and scope of work

The flora, vegetation and fauna assessment was required to support the development of a Local Structure Plan (LSP) within the site. Specifically, the scope of work was to provide sufficient detail on the flora, vegetation and fauna values within the site to inform this process.

As part of the scope of work the following tasks were completed:

- Desktop review of relevant background information pertaining to the site and surrounds, including database searches for conservation significant flora, fauna and communities.
- A field survey to record flora, vegetation and fauna values.
- Identification of potential habitat for conservation significant flora and vegetation.
- Documentation of the desktop assessment, methodology, field surveys and results into a report.

## 2. Desktop assessment

A search was conducted for threatened, specially protected and priority flora and fauna that may occur or have been recorded within a 10 km radius of the site using NatureMap (DBCA 2023), *Protected Matters Search Tool* (DCCEEW 2023), *Atlas of Living Australia* (ALA 2023) and the Department of Biodiversity, Conservation and Attraction's (DBCA) conservation significant fauna and flora databases (reference no. FAUNA#8125/53-0323FL).

## 2.1. Likelihood of occurrence method

### 2.1.1. Flora and vegetation

The distribution and habitat preferences of threatened flora species and ecological communities listed in **Section 2** were reviewed against site context information[1] and preliminary survey results. Likelihood of occurrence of threatened flora species and ecological communities within the site was classified as 'high', 'moderate', 'low' or 'negligible' as outlined below in **Table 1**.

*Table 1: Decision matrix for likelihood of occurrence of threatened and priority flora and ecological communities*

| | | Distribution[1] | |
|---|---|---|---|
| | | Reliable record within search area | No reliable record within search area (20 km) |
| Habitat | Suitable | High | Negligible |
| | Potentially suitable | Moderate | |
| | Unsuitable | Low | |

[1]Reliable record defined as validated, recent (within the last ~40 years) and spatially accurate (refer DBCA search meta data) in order to exclude unverified range or habitat projections.

### 2.1.2. Fauna

The distribution and habitat preferences of the threatened and specially protected fauna species identified from **Section 2** was reviewed against site context[1] information and preliminary survey results. Likelihood of occurrence of threatened and specially protected fauna species within the site was classified as 'high', 'moderate', 'low', 'negligible' or 'nil' as outlined in **Table 2**. Noting some marine species were excluded due to lack of suitable habitat.

*Table 2: Decision matrix for likelihood of occurrence of threatened, specially protected and priority fauna*

| | | Reliable record[1] | | Unreliable record[2] |
|---|---|---|---|---|
| | | Access to site not impeded | Access to site impeded | |
| Habitat | Suitable | High | Low | Nil |
| | Potentially suitable | Moderate | | |
| | Unsuitable | Negligible | | |

[1]Reliable record defined as DBCA or validated ALA record from the last ~20 years, [2]Unreliable record defined as record >20 years old or PMST prediction.

## 2.2. Likelihood of occurrence results

### 2.2.1. Threatened and priority flora

A total of 100 conservation significant flora species were identified from database searches as occurring or potentially occurring within 9km of the site. Based on background information available for the site and habitat preferences of the species, two priority flora species were considered to have a high or moderate likelihood of occurring within the site, as outlined in

[1] Including relevant Commonwealth documentation such as approved conservation advice, listing advice and other relevant literature.

Table 3. The complete likelihood of occurrence assessment is provided as **Appendix A**.

*Table 3: Threatened or priority flora species with a high or moderate likelihood occurrence in the site*

| Species | Status | | Life strategy | Flowering period |
|---|---|---|---|---|
| | WA | EPBC Act | | |
| *Angianthus micropodioides* | P | P3 | - | Nov-Dec or Jan-Feb |
| *Aponogeton hexatepalus* | P | P4 | - | Jul-Oct |

### 2.2.2. Vegetation

The database search results identified 13 TECs and 6 PECs as occurring or potentially occurring within a 10 km radius of the site. Information on these communities is provided in **Appendix C**.

Due to historical disturbance the likelihood of occurrence of any TEC or PEC was considered negligible.

### 2.2.3. Threatened, specially protected and priority fauna

A total of 77 conservation significant fauna species were identified from database searches as occurring or potentially occurring within 10 km of the site.

Two threatened, six specially protected and three priority species were classified as having a 'high' or 'moderate' likelihood of occurrence. The legislative or policy status and habitat preferences of these species are shown in **Table 4**.

The remainder of the conservation significant fauna species identified in the desktop assessment (66 species) were considered as having a 'low', 'negligible' or 'nil' likelihood of occurrence. Refer to **Table 4** and **Appendix D** for detail on individual species likelihood of occurrence.

*Table 4: Summary of conservation significant fauna species with potential to occur in the site*

| Species name | Common name | Status | | Habitat description |
|---|---|---|---|---|
| | | WA | EPBC Act | |
| **Birds** | | | | |
| *Apus pacificus* | Pacific swift | MI | MI | Aerial, migratory species that is most often seen over inland plains and sometimes above open areas, foothills or in coastal areas. Sometimes occurs over settled areas, including towns, urban areas and cities. |
| *Calidris ruficollis* | Red-necked stint | MI | MI | Tidal mudflats, saltmarshes, sandy or shelly beaches, saline and freshwater wetlands (coastal and inland), saltfields, sewage ponds. |
| *Calyptorhynchus banksii naso* | Forest red-tailed black cockatoo | VU | VU | Eucalypt and Corymbia forests, often in hilly interior. More recently also observed in more open agricultural and suburban areas including Perth metropolitan area. Attracted to seeding *Corymbia calophylla*, *Eucalyptus marginata*, introduced *Melia azedarach* and *Eucalyptus* spp. trees. |
| *Falco peregrinus* | Peregrine falcon | OS | - | Mainly found around cliffs along coasts, rivers, ranges and around wooded watercourses and lakes. |
| *Oxyura australis* | Blue-billed duck | P4 | - | Mainly deeper freshwater swamps and lakes; occasionally saltlakes and estuaries freshened by flood waters. |

| Species name | Common name | Status | | Habitat description |
|---|---|---|---|---|
| | | WA | EPBC Act | |
| *Pandion haliaetus* | Osprey | MI | MI | Coasts, estuaries, bays, inlets, islands, and surrounding waters; coral atolls, reefs, lagoons, rock cliffs, stacks. |
| *Plegadis falcinellus* | Glossy Ibis | MI | MI | Well-vegetated wetlands, wet pasture, ricefields, floodwaters, floodplains, brackish or occasionally saline wetlands, mangroves, mudflats and occasionally dry grassland. |
| *Thalasseus bergii* | Crested tern | MI | MI | Mainly blue-water seas (especially within 3 km of land), including southern estuaries in summer and autumn (when free of silt); also tidal creeks in north, but not penetrating far into larger estuaries. |
| *Zanda latirostris* | Carnaby's black cockatoo | EN | EN | Mainly proteaceous scrubs and heaths and adjacent eucalypt woodlands and forests; also plantations of *Pinus* spp. Attracted to seeding *Banksia* spp., *Hakea* spp., *Eucalyptus* spp., *Corymbia calophylla*, *Grevillea* spp., and *Allocasuarina* spp. |
| **Mammals** | | | | |
| *Hydromys chrysogaster* | Rakali | P4 | - | Areas with permanent water, fresh, brackish or marine. Likely to occur in all major rivers and most of the larger streams as well as bodies of permanent water in the lower south-west. Intact riparian vegetation and associated bank stability is critical to their survival. |
| *Isoodon fusciventer* | Quenda | P4 | - | Dense scrubby, often swampy, vegetation with dense cover up to one metre high. |

## 3. Methods

### 3.1.1. Vegetation

Vegetation units were identified from information collected during the field survey in January 2024. The vegetation was described according to the dominant species present using the structural formation descriptions of the *National Vegetation Inventory System* (NVIS) (NVIS Technical Working Group 2017). The identified vegetation units were mapped on aerial photography during the field survey and boundaries were interpreted from aerial photography and notes taken in the field. Vegetation condition was mapped on aerial photography based on notes recorded during the field survey to define areas with differing condition and using the Keighery (1994) scale **Table 5**.

*Table 5: Vegetation condition scale applied during the field assessment*

| Condition | Definition (Keighery 1994) |
|---|---|
| Pristine | Pristine or nearly so, no obvious signs of disturbance. |
| Excellent | Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. |
| Very good | Vegetation structure altered obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing |
| Good | Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation |

| Condition | Definition (Keighery 1994) |
|---|---|
| | structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and grazing. |
| Degraded | Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing. |
| Completely degraded | The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs. |

### 3.1.2. Threatened and priority ecological community

Areas of native vegetation potentially representing a TEC were assessed against key diagnostic characteristics and, if available, size and/or vegetation condition thresholds.

### 3.1.3. Native vegetation under the EP Act

Vegetation within the site that meets the definition of 'native vegetation' under the *Environmental Protection Act 1986* (EP Act) was mapped on aerial imagery.

### 3.1.4. Fauna habitat

Transects were traversed across the site, during the day, and the characteristics of fauna habitat and presence of fauna species was recorded. Microhabitats such as logs, rocks and leaf litter were investigated and secondary evidence of species presence such as tracks, scats, skeletal remains, foraging evidence or calls was also noted.

### 3.1.5. Black cockatoo habitat

Black cockatoo foraging, breeding and roosting habitat was assessed and mapped within the site.

Foraging habitat

Foraging habitat was identified by assessing vegetation in the site for plant species known to provide food for black cockatoos (Davies 1966; Saunders 1980; Johnstone and Storr 1998; Johnstone and Kirkby 1999; Groom 2011; Johnstone *et al.* 2011; DAWE 2022). Foraging habitat was classified as either 'native' or 'non-native' based on the predominant vegetation's naturalised status and in accordance with DAWE (2022).

It was also classified as either 'primary' or 'secondary' based on black cockatoo foraging preferences. Primary food plants were defined as those with historical and contemporary records of regular consumption by a black cockatoo species. Secondary food plants were defined as plants that black cockatoo species have been recorded consuming occasionally or that, based on their limited extent or agricultural origin, should not be considered a sustaining resource. A list of plant species classified as primary or secondary food plants is provided as **Appendix E**.

Each patch of foraging habitat was assigned a foraging value for each species of black cockatoo likely to occur within the site. As it is not always possible to separate out food plants from non-food plants,

mapped foraging habitat may also include vegetation comprising non-food plants. The proportion of non-food plants in mapped foraging habitat was minimised as far as practicable.

Evidence of black cockatoo foraging, such as chewed fruits, was searched for within the site and allocated to a black cockatoo species where possible.

Breeding habitat

Breeding habitat comprises 'habitat trees' which was defined as a native eucalypt that is typically known to support black cockatoo breeding such as marri, jarrah, blackbutt, tuart, wandoo, salmon gum or to a lesser extent flooded gum, with a DBH ≥50 cm or DBH ≥30 cm for wandoo or salmon gum.

All native eucalypts within the site that met the required DBH were recorded. Occasionally, native eucalypts were encountered that met DBH requirements but did not contain a trunk/branch of a sufficient size to support a hollow suitable for use by black cockatoos. For example, the tree may have been less than 3 m tall or had a trunk that forked between 1.3 m and 3 m in height and after the fork no limbs had a diameter of ≥50 cm or ≥30 cm for wandoo or salmon gum. These trees were not recorded as habitat trees as the likelihood they would form a suitable hollow was low.

Habitat trees were individually identified and the attributes outlined in **Table 6** were recorded for each tree.

*Table 6: Attributes recorded for each habitat tree in the site*

| Attribute | Description |
|---|---|
| GPS location | The location was recorded using a handheld GPS unit |
| Tree species | Species and common name were identified |
| Diameter at breast height (DBH) (cm) | DBH was measured at breast height (1.3 m) using a diameter tape |
| Hollows potentially suitable for breeding by a black cockatoo | Number of hollows potentially suitable for breeding by a black cockatoo recorded (assessed from ground level only) |

Each habitat tree was assigned to a category listed in **Table 7** based on current black cockatoo guidelines (DAWE 2022).

*Table 7: Habitat tree categories (DAWE 2022)*

| Category | Specifications |
|---|---|
| Known nesting tree | Trees (live or dead but still standing) which contains a hollow where black cockatoo breeding has been recorded or which demonstrates evidence of breeding (i.e. showing evidence of use through scratches, chew marks or feathers). |
| Suitable nesting tree | Trees with suitable nesting hollows present^, although no evidence of use. Note that any species of tree may develop suitable hollows for breeding. |
| Potential nesting tree | Trees that have a suitable DBH to develop a nest hollow, but do not currently have suitable nesting hollows. Trees suitable to develop a nest hollow in the future are 300-500 mm DBH. Note that many species of eucalypt may develop suitable hollows for breeding. |

^Hollow determined to be suitable for use as breeding habitat by black cockatoos.

Roosting habitat

If present, groups of tall native and non-native trees were assumed to provide roosting habitat. The presence of active or historical roosts in these trees was determined through evidence of roosting activity, such as branch clippings, droppings or moulted feathers.

## 4. Results

### 4.1. Flora

#### 4.1.1. Flora species inventory

A total of 58 weed species and 21 native species were recorded in the site during the field surveys. This comprises a total of 29 families and 60 genera. The dominant families containing native taxa were Myrtaceae (three native taxa) and Fabaceae (three native taxa). The family containing the most non-native taxa was Poaceae (thirteen non-native species).

A complete species list is provided in **Appendix B**.

#### 4.1.2. Threatened and priority flora

No threatened or priority flora were recorded and none are considered likely to occur in the site due to the lack of suitable habitat.

#### 4.1.3. Declared pests

One species listed as a declared pest (pursuant to s22(2) of the *Biosecurity and Agriculture Management Act 2007*), **Tamarix aphylla* (athel pine), was recorded within the site. Athel pine is listed in exempt keeping category meaning management is not obliged.

### 4.2. Vegetation

#### 4.2.1. Vegetation units

Four vegetation units were identified within the site: Cc, Er, ErJkSt, and non-native.

A description and the area of each vegetation unit is provided in **Table 8** and representative photographs of each are provided in **Plate 1** to **Plate 4**. The location of each vegetation unit is shown in **Figure 2**.

*Table 8: Vegetation unit present within the site*

| Vegetation Unit | Description | Area (ha) |
|---|---|---|
| **Er** | Woodland *Corymbia calophylla* over closed grass/forbland of pasture weeds and scattered native species (or absent) (**Plate 1**). | 1.12 |
| **Cc** | Woodland *Eucalyptus rudis* over closed grass/forbland of pasture weeds and scattered native species (or absent) (**Plate 2**). | 0.28 |
| **ErJkSt** | Open woodland *Eucalyptus rudis* and occasional *Melaleuca raphiophylla* over sedgeland *Juncus kraussii* and *Schoenoplectus tabernaemontani* over low shrubland *Suaeda australis* over forbland *Apium prostratum* subsp. *prostratum* var. *prostratum* and *Heliotropium curassavicum* over grassland **Avena* sp., *Cynodon dactylon* and **Paspalum vaginatum* (or absent) (**Plate 3**). | 0.17 |

| Vegetation Unit | Description | Area (ha) |
|---|---|---|
| **To** | Fringing rushland of *Typha orientalis*, with occasional planted native and non-native trees, shrubs and/or non-woody vegetation, over closed grass/forbland of pasture weeds. | 0.46 |
| **Non-native** | Heavily disturbed areas comprising bare ground and weeds with occasional native trees and forbs and/or sealed ground and buildings (**Plate 4**). | 56.62 |



*Plate 1: Vegetation unit **Er** in 'degraded' condition*



*Plate 2: Vegetation unit **Cc** in 'degraded' condition*



*Plate 3: Vegetation unit **ErJkSt** in 'good – very good' condition*



*Plate 4: Vegetation unit **Non-native** in 'completely degraded' condition*

### 4.2.2. Vegetation condition

The vegetation in the site occurred in 'good – very good', 'degraded', 'degraded - completely degraded' and 'completely degraded condition. The extent of vegetation by condition category is detailed in **Table 9** and shown in **Figure 3**.

*Table 9: Vegetation condition categories within the site*

| Condition category (Keighery (1994)) | Size (ha) |
|---|---|
| Pristine | 0 |
| Excellent | 0 |
| Very good | 0 |
| Good – very good | 0.07 |
| Good | 0 |
| Degraded | 1.04 |
| Degraded – completely degraded | 0.98 |
| Completely degraded | 56.57 |

#### 4.2.3. Threatened and priority ecological communities

The 'subtropical and temperate coastal saltmarsh' TEC which is listed as vulnerable under the EPBC Act was identified within a patch of ErJkSt the northern portion of the site as shown in **Figure 5**. A total of 0.07 ha of this TEC/PEC was mapped. Not all of the ErJkSt represents the TEC as some patches represent canopy overhang into the site with limited to no understory vegetation.

The 0.07 ha of coastal saltmarsh TEC vegetation mapped in the site also represents the State listed Priority 3 (P3) PEC of the same name.

#### 4.2.4. Native vegetation under the EP Act

A total of 1.10 ha of vegetation meeting the definition of 'native vegetation' pursuant to the EP Act occurs within the site, as shown in **Figure 4**. This comprises of scattered flooded gum (*Eucalyptus rudis*) and marri (*Corymbia calophylla*) trees, and fringing vegetation **ErJkSt** (**Table 8**).

### 4.3. Fauna

#### 4.3.1. Fauna habitat

Habitat values in the site are limited by historical disturbance and are primarily suited to widespread fauna species with non-specific habitat requirements.

The ErJkSt vegetation provides a cover of native trees and understory cover of riparian vegetation that would offer cover for ground dwelling fauna.

Large native trees associated with plant communities Cc and Er would also provide value to native birds and other arboreal fauna. The extent of fauna habitat is detailed in **Table 10** and shown in **Figure 5.**

*Table 10: Fauna habitats identified within the site*

| Fauna habitat | Description | Area (ha) |
|---|---|---|
| **Fringing woodland** | Native fringing vegetation consisting of a native tree overstorey and an understorey of sedges/rushes. | 0.07 |
| **Wetland** | Wetland waterbodies and associated riparian sedgeland/rushland. | 3.72 |

| | | |
|---|---|---|
| **Scattered trees and shrubs** | Scattered native and non-native trees and shrubs, providing habitat mainly for avifauna. | 5.45 |
| **Cleared** | Predominantly grassy weeds, bare ground and built form. | 52.64 |

### 4.3.2. Fauna species inventory

Twenty-four fauna species were recorded within the site:

- *Aix sponsa* (wood duck)
- *Anas gracilis* (grey teal)
- *Anas superciliosa* (Pacific black duck)
- *Anhinga novaehollandiae* (Australasian darter)
- *Cacatua sanguinea* (little corella)
- *Calyptorhynchus banksii* (forest red-tailed black cockatoo)
- *Columba livia* (feral pigeon)
- *Corvus coronoides* (Australian raven)
- *Cygnus atratus* (black swan)
- *Eolophus roseicapilla* (galah)
- *Equus ferus* (horse)
- *Fulica atra* (Eurasian coot)
- *Grallina cyanoleuca* (magpie-lark)
- *Gymnorhina tibicen* (Australian magpie)
- *Malacorhynchus membranaceus* (pink-eared duck)
- *Microcarbo melanoleucos* (little pied cormorant)
- *Oxyura australis* (blue-billed duck)
- *Pelecanus conspicillatus* (Australian pelican)
- *Phalacrocorax sulcirostris* (little black cormorant)
- *Porphyrio porphyria* (purple swamphen)
- *Rhipidura leucophrys* (willie wagtail)
- *Spilopelia chinensis* (spotted dove)
- *Tadorna tadornoides* (Australian shelduck)
- *Threskiornis moluccus* (Australian white ibis)
- *Trichoglossus moluccanus* (rainbow lorikeet)

### 4.3.3. Conservation significant fauna

One threatened (forest red-tailed black cockatoo, (VU)) and one priority (blue-billed duck, (P4)) fauna species were recorded at the time of survey.

*Zanda latirostris* (Carnaby's black cockatoo (EN)) is considered to have a high likelihood of occurring in this site and is discussed further below in **Section 4.3.4**. Six additional conservation significant bird species not recorded during the survey have potential to occur within the site:

*Apus pacificus* (Pacific swift (MI)), and *Falco peregrinus* (peregrine falcon (OS)) are both highly mobile species that are sometimes recorded over urbanised areas. Any occurrence of these species is likely

to be a flyover or brief forage as the site and surrounding area lacks suitable habitat for breeding or persistence of any other kind. *Calidris ruficollis* (red-necked stint (MI)), and *Thalasseus bergii* (crested tern (MI)) are both shorebirds which may briefly utilise the site as marginal foraging habitat. *Plegadis falcinellus* (glossy ibis (MI)) are known to forage in wet grassland areas when nearby to water sources but this type of habitat is likely to provide a marginal foraging resource. *Pandion haliaetus* (osprey (MI)), have been recorded nesting nearby and are therefore likely to forage near or within the site.

Two priority 4 mammal species not recorded during the survey, *Hydromys chrysogaster* (rakali) and *Isoodon fusciventer* (quenda), could also occur in the site. Rakali may utilise the Swan River and so could occasionally occur in the northern most portion of the site associated with the ErJkSt vegetation. Quenda commonly occur in urban areas, particularly where understorey vegetation or grasses provide dense cover.

#### 4.3.4. Black cockatoos

Forest red-tailed black cockatoo was observed foraging in the site in cape lilac (*Melia azedarach*) overhanging the site. The site lies within the modelled distribution of Carnaby's black cockatoo and therefore they may also occur. The site does not lie within the modelled distribution of Baudin's black cockatoo and therefore they are not likely to occur and have not been considered further.

##### 4.3.4.1. Breeding habitat

A total of 66 black cockatoo habitat trees were recorded, of which five contained hollows potentially suitable for black cockatoo breeding based on inspection from ground level. Internal hollow inspection using a camera pole or drone would be required to confirm if hollows are suitable for breeding by black cockatoos. The remaining 61 habitat trees did not contain hollows suitable for black cockatoo breeding.

The habitat trees comprised four tuarts, eight marris and 54 *Eucalyptus rudis* (flooded gum) trees.

A summary of the habitat trees recorded within the site is provided in **Table 11** and the locations of habitat trees are shown in **Figure 7**.

*Table 11: Habitat trees*

| Category | No. trees |
|---|---|
| Known nesting trees | 0 |
| Suitable nesting trees | 5 |
| Potential nesting trees | 61 |
| Total nesting trees | 66 |

##### 4.3.4.2. Roosting habitat

No roosts or evidence of roosting was observed in the site. Tall trees within the site represent potential roosting trees.

##### 4.3.4.3. Foraging habitat

A total of 1.27 ha of foraging habitat for Carnaby's black cockatoo was recorded in the site, which comprised 0.28 ha of primary native foraging habitat associated with *Corymbia calophylla,* 0.07 ha of

primary non-native foraging habitat associated with *Pinus pinaster*, 0.41 ha of secondary native foraging habitat associated with *Acacia saligna*, *Jacksonia furcellata* and *Xanthorrhoea* spp. and 0.51 ha of secondary non-native habitat associated with *Eucalyptus gomphocephala*.

A total of 0.84 ha of foraging habitat for forest red-tailed black cockatoo was recorded in the site, which comprises 0.28 ha of primary native habitat associated with *Corymbia calophylla,* 0.07 ha of secondary native foraging habitat associated with *Jacksonia furcellata* and 0.49 ha of non-native secondary habitat associated with *Eucalyptus gomphocephala* and **Eucalyptus camaldulensis.*

The extent of foraging habitat by value category is detailed in **Table 12** and shown in **Figure 8** and **Figure 9**.

*Table 12: Foraging habitat recorded within the site*

| Foraging habitat | Black cockatoo species and area of foraging habitat (ha) | |
|---|---|---|
| | Carnaby's | Forest red-tailed |
| Primary native | 0.28 | 0.28 |
| Primary non-native | 0.07 | 0 |
| Secondary native | 0.41 | 0.07 |
| Secondary non-native | 0.51 | 0.49 |
| Total | 1.27 | 0.84 |

## 5. CONCLUSIONS

Outcomes of the assessment include the following:

- No threatened or priority flora species were recorded in the site. None of the threatened and priority flora species identified in the desktop assessment are considered to occur in the site due to lack of suitable habitat and/or because they were not recorded during the field survey.
- The majority of the site is heavily disturbed (degraded to completely degraded) and limited native intact native vegetation is present. One small patch of vegetation (ErJkSt) is identified in 'good – very good' condition.
- A total of 0.07 ha of the 'subtropical and temperate coastal saltmarsh' TEC/PEC occurs within the northern portion of the site adjacent to the Swan River.
- One threatened, forest red-tailed black cockatoo (EN), and one priority, blue-billed duck (P4), species were recorded in the site. A further nine conservation significant fauna species also have potential to occur in the site.
- As a result of historical disturbance, the site contains limited high-quality fauna habitat and is likely only utilised by fauna traversing through the wider area, especially birds. However, the small patch of 'fringing woodland' fauna habitat in the site's northeast (associated with vegetation type ErJkSt) may provide value for smaller ground-dwelling fauna.
- A total of 66 black cockatoo habitat trees were recorded of which five contained hollows potentially suitable for breeding. Internal hollow inspection would be required to confirm if these hollows are suitable for black cockatoo breeding.
- No evidence of roosting was recorded in the site. Tall trees in the site may represent potential roosting trees.
- A total of 1.27 ha of foraging habitat for Carnaby's black cockatoo and 0.84 ha of foraging habitat for forest red-tailed black cockatoo exists in the site.

# 6. REFERENCES

## 6.1. General references

Atlas of Living Australia (ALA) 2023, *Atlas of Living Australia - Spatial Portal*, <http://www.ala.org.au/>.

Department of Biodiversity, Conservation and Attractions (DBCA) 2023, *NatureMap*, <https://static.dbca.wa.gov.au/pages/naturemap.html>.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) 2022, *Referral guideline for 3 WA threatened black cockatoo species*.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) 2023, *Protected Matters Search Tool*, <https://pmst.awe.gov.au/#/map>.

Keighery, B. 1994, *Bushland Plant Survey: A guide to plant community survey for the community*, Wildflower Society of WA (Inc), Nedlands.

NVIS Technical Working Group 2017, *Australian Vegetation Attribute Manual: National Vegetation Information System*, Department of the Environment and Energy, Canberra.

## 6.2. Online references

The online resources that have been utilised in the preparation of this report are referenced in **Section 6.1**, with access date information provided in **Table R 1**.

*Table R 1 Access dates for online references*

| Reference | Date accessed | Website or dataset name |
|---|---|---|
| DCCEEW (2023) | 24 January 2024 | Protected Matters Search Tool |
| DBCA (2023) | 28 March 2023 | NatureMap |
| ALA(2023) | 24 January 2024 | Spatial Portal - Atlas of Living Australia |

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# Figures

*Figure 1: Site Location*

*Figure 2: Vegetation Units*

*Figure 3: Vegetation Condition*

*Figure 4: Threatened Ecological Community*

*Figure 5: Native Vegetation Under the EP Act*

*Figure 6: Fauna Habitat*

*Figure 7: Black Cockatoo Habitat Trees*

*Figure 8: Carnaby's Black Cockatoo Foraging Habitat*

*Figure 9: Forest Red-tailed Black Cockatoo Foraging Habitat*




**Figure 1: Site Location**

| | |
|---|---|
| **Project:** | Flora, Vegetation and Fauna Assessment<br>Golden Gateway Structure Plan |
| **Client:** | Perth Racing |

**Plan Number:** EP23-109(06)--F01

| | |
|---|---|
| Drawn: | AS |
| Date: | 13/02/2024 |
| Checked: | AJU |
| Approved: | RAW |
| Date: | 08/04/2024 |

N

0 100 200
Metres

Scale: 1:8,000@A4

GDA2020 MGA Zone 50

emerge ASSOCIATES

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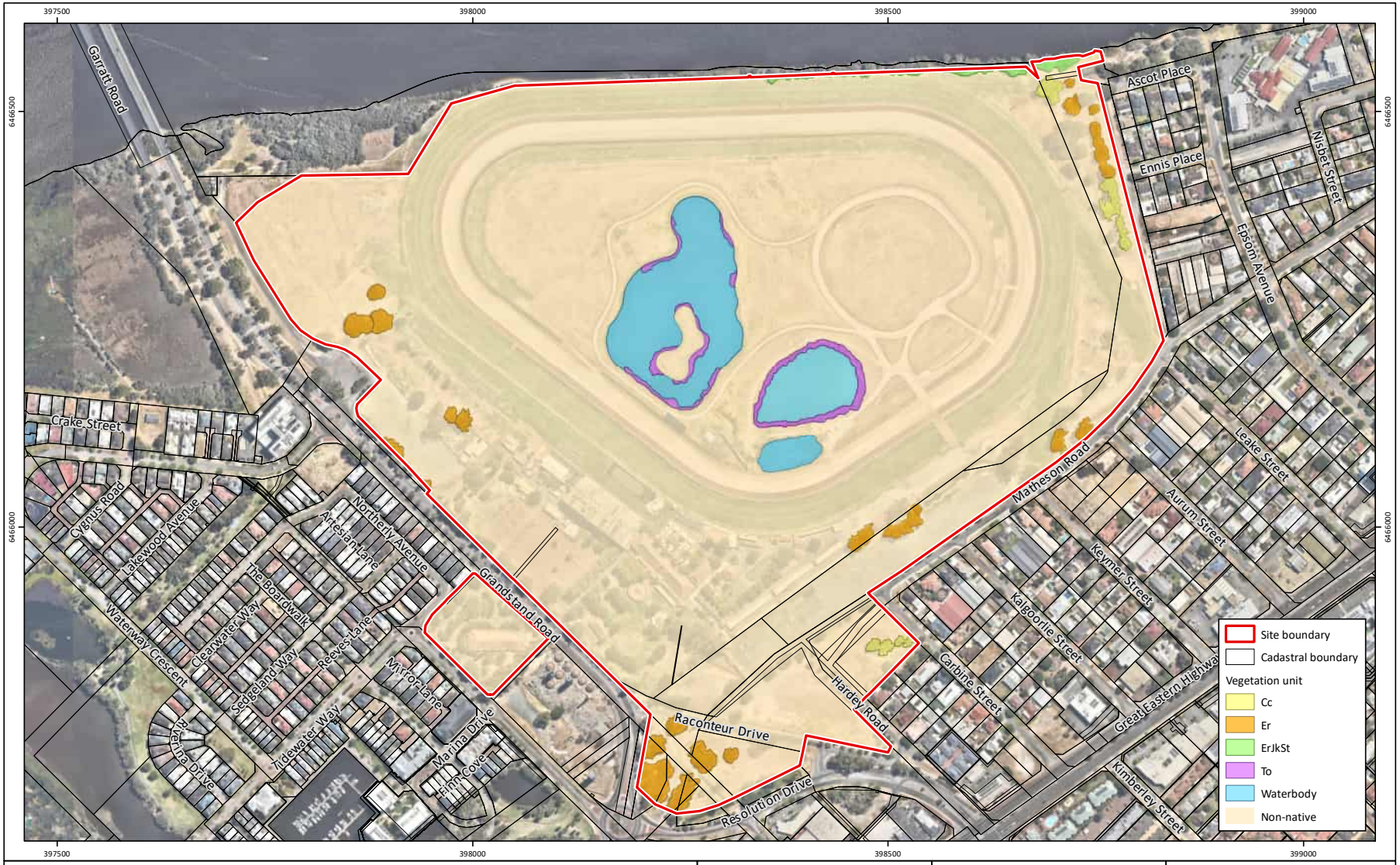



**Figure 2: Vegetation Units**

| | |
|---|---|
| **Project:** | Flora, Vegetation and Fauna Assessment<br>Golden Gateway Structure Plan |
| **Client:** | Perth Racing |

**Plan Number:** EP23-109(06)--F02

| | |
|---|---|
| Drawn: | AS |
| Date: | 13/02/2024 |
| Checked: | AJU |
| Approved: | RAW |
| Date: | 08/04/2024 |

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Metres

Scale: 1:6,000@A4

GDA2020 MGA Zone 50

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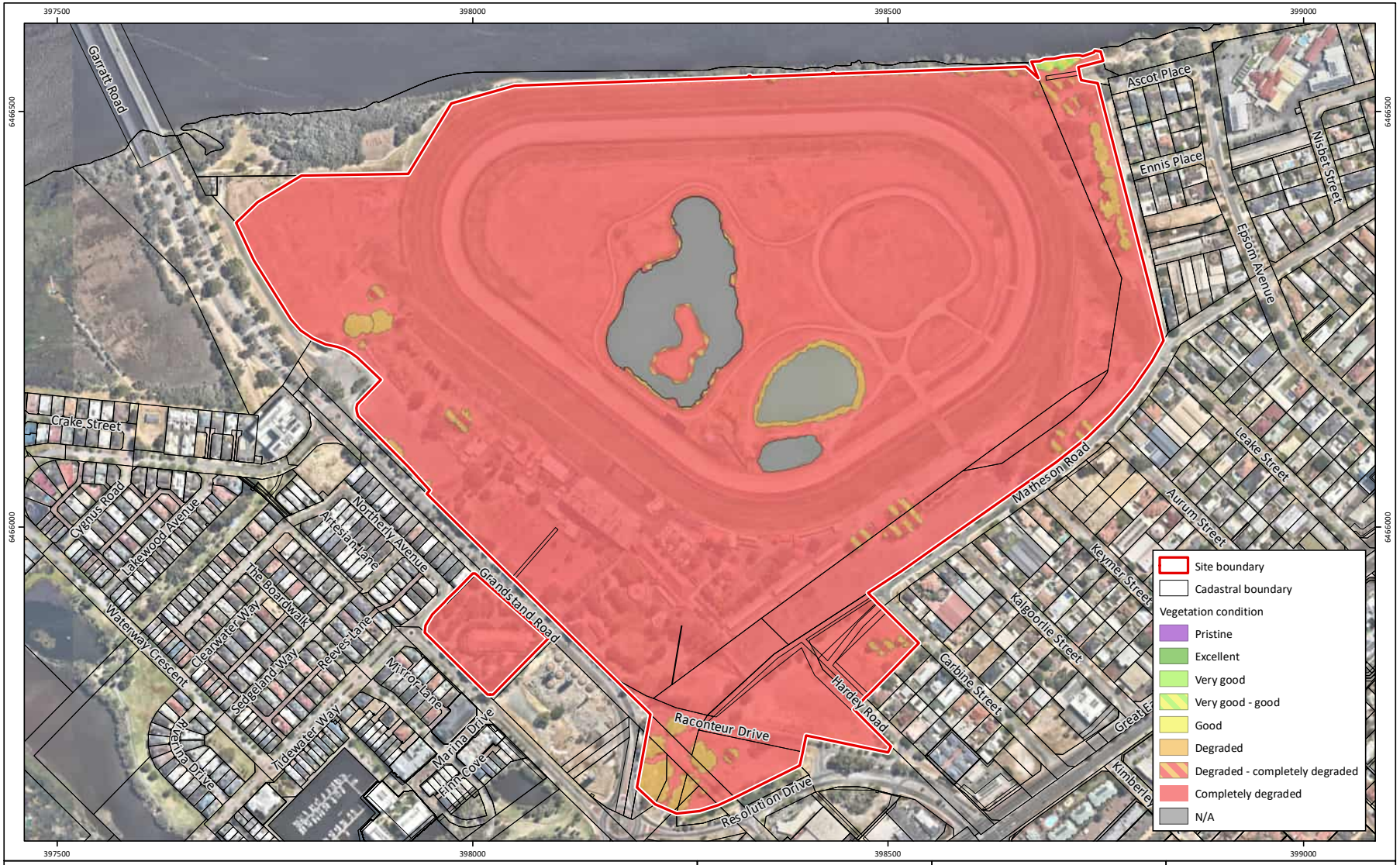



**Figure 3: Vegetation Condition**

| | |
|---|---|
| **Project:** | Flora, Vegetation and Fauna Assessment<br>Golden Gateway Structure Plan |
| **Client:** | Perth Racing |

**Plan Number:** EP23-109(06)--F03

| | |
|---|---|
| Drawn: | AS |
| Date: | 13/02/2024 |
| Checked: | AJU |
| Approved: | RAW |
| Date: | 08/04/2024 |

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Scale: 1:6,000@A4

GDA2020 MGA Zone 50

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**Figure 4: Threatened and Priority Ecological Community**

| | |
|---|---|
| **Project:** | Flora, Vegetation and Fauna Assessment<br>Golden Gateway Structure Plan |
| **Client:** | Perth Racing |

**Plan Number:**
**EP23-109(06)--F04**

| | |
|---|---|
| Drawn: | AS |
| Date: | 13/02/2024 |
| Checked: | AJU |
| Approved: | RAW |
| Date: | 08/04/2024 |

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Metres

Scale: 1:6,000@A4

GDA2020 MGA Zone 50

emerge ASSOCIATES

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**Figure 5: Native Vegetation Under the EP Act**

| | |
|---|---|
| **Project:** | Flora, Vegetation and Fauna Assessment<br>Golden Gateway Structure Plan |
| **Client:** | Perth Racing |

**Plan Number:**
**EP23-109(06)--F16**

| | |
|---|---|
| Drawn: | WJC |
| Date: | 04/04/2024 |
| Checked: | AJU |
| Approved: | RAW |
| Date: | 08/04/2024 |

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Metres
Scale: 1:6,000@A4
GDA2020 MGA Zone 50

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**Figure 6: Fauna Habitat**

| | |
|---|---|
| **Project:** | Flora, Vegetation and Fauna Assessment<br>Golden Gateway Structure Plan |
| **Client:** | Perth Racing |

**Plan Number:** EP23-109(06)--F05

| | |
|---|---|
| Drawn: | AS |
| Date: | 13/02/2024 |
| Checked: | AJU |
| Approved: | RAW |
| Date: | 08/04/2024 |

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Metres
Scale: 1:6,000@A4
GDA2020 MGA Zone 50

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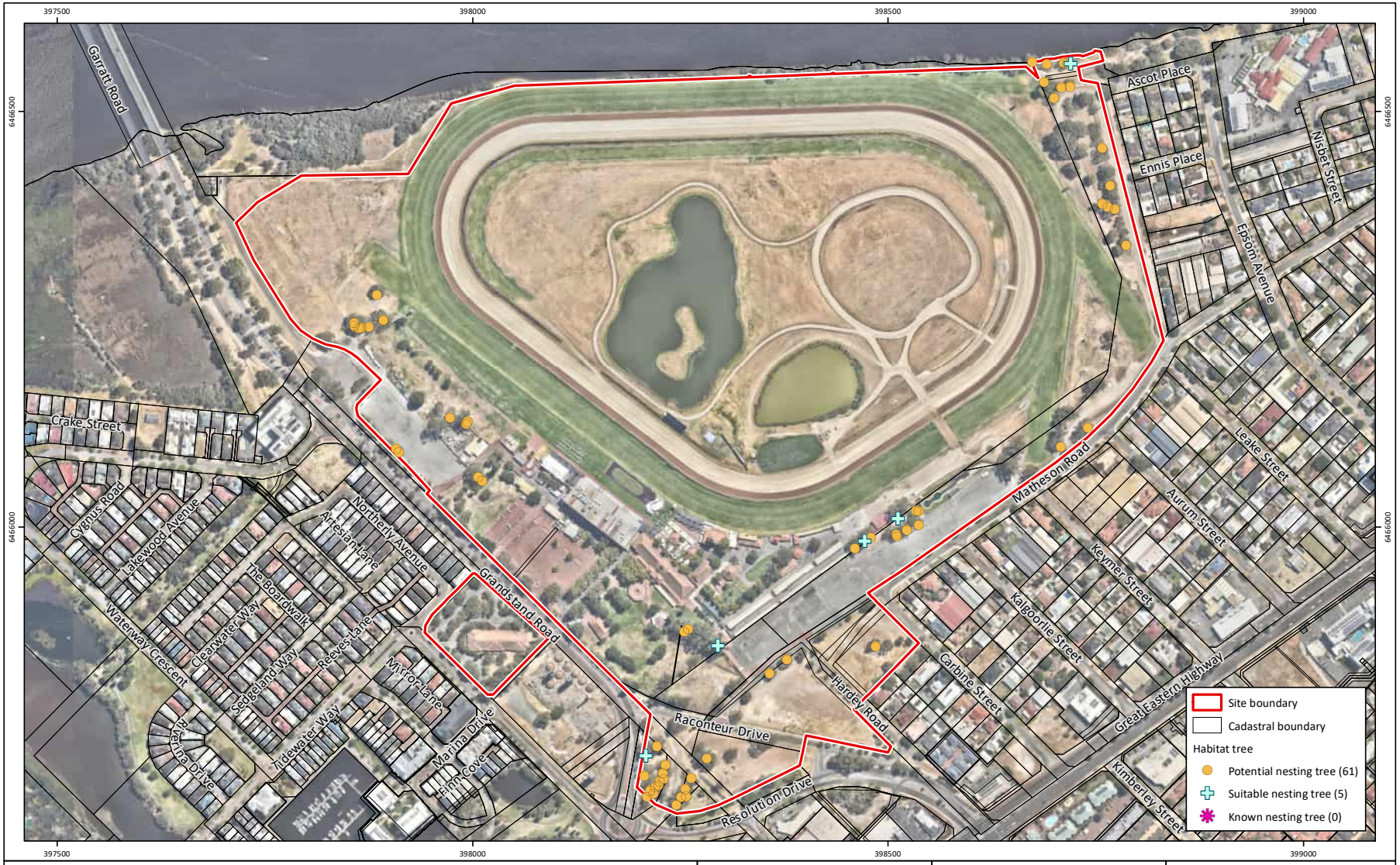



**Figure 7:** **Black Cockatoo Habitat Trees**

| | |
|---|---|
| **Project:** | Flora, Vegetation and Fauna Assessment<br>Golden Gateway Structure Plan |
| **Client:** | Perth Racing |

**Plan Number:** **EP23-109(06)--F19a**

| | |
|---|---|
| Drawn: | GAR |
| Date: | 28/06/2024 |
| Checked: | TDP |
| Approved: | RAW |
| Date: | 01/07/2024 |

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Metres

Scale: 1:6,000@A4

GDA2020 MGA Zone 50

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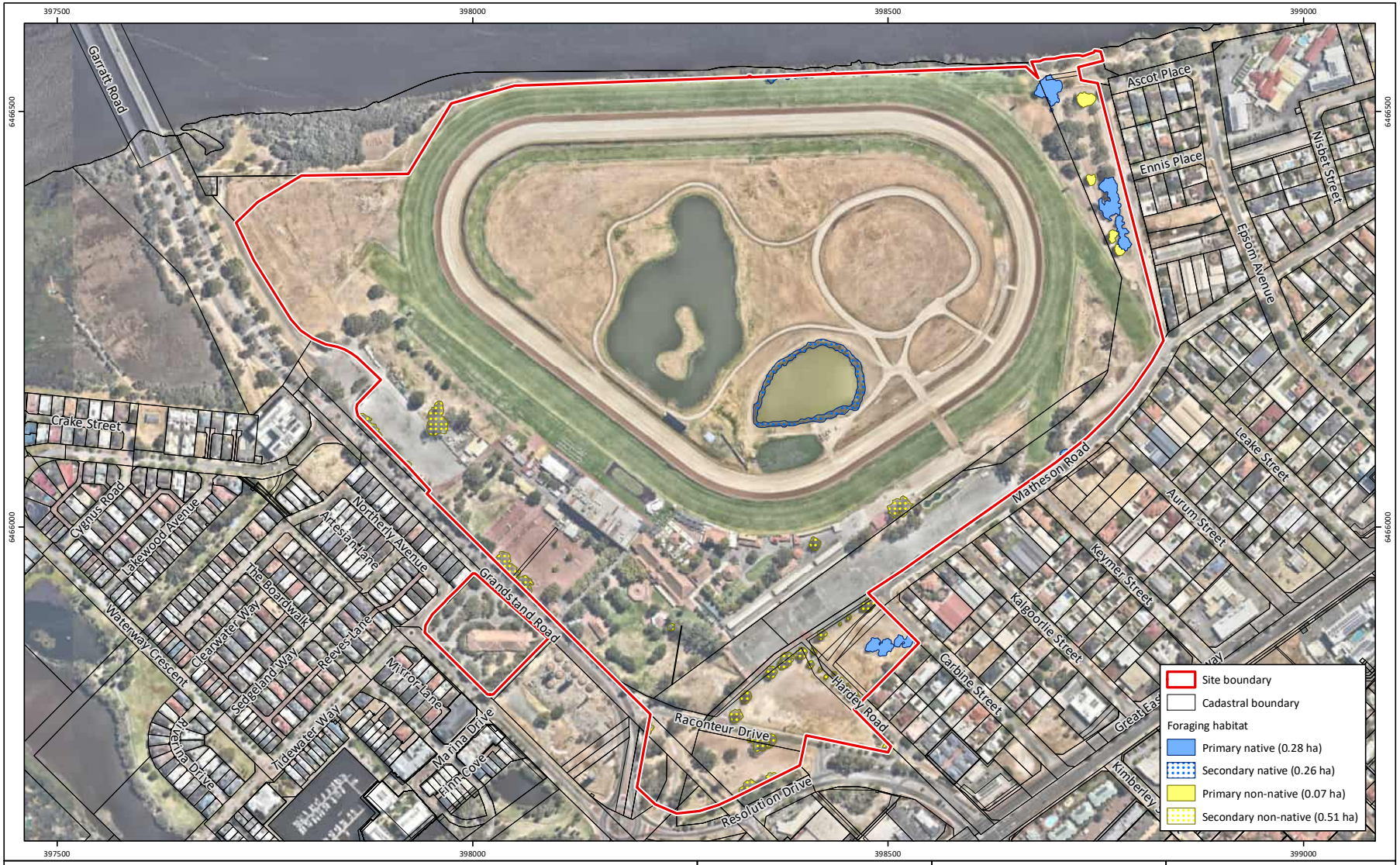



**Figure 8:** **Carnaby's Black Cockatoo Foraging Habitat**

**Project:** Flora, Vegetation and Fauna Assessment
Golden Gateway Structure Plan
**Client:** Perth Racing

**Plan Number:** EP23-109(06)--F17
Drawn: WJC
Date: 04/04/2024
Checked: AJU
Approved: RAW
Date: 08/04/2024

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0 100 200
Metres
Scale: 1:6,000@A4
GDA2020 MGA Zone 50

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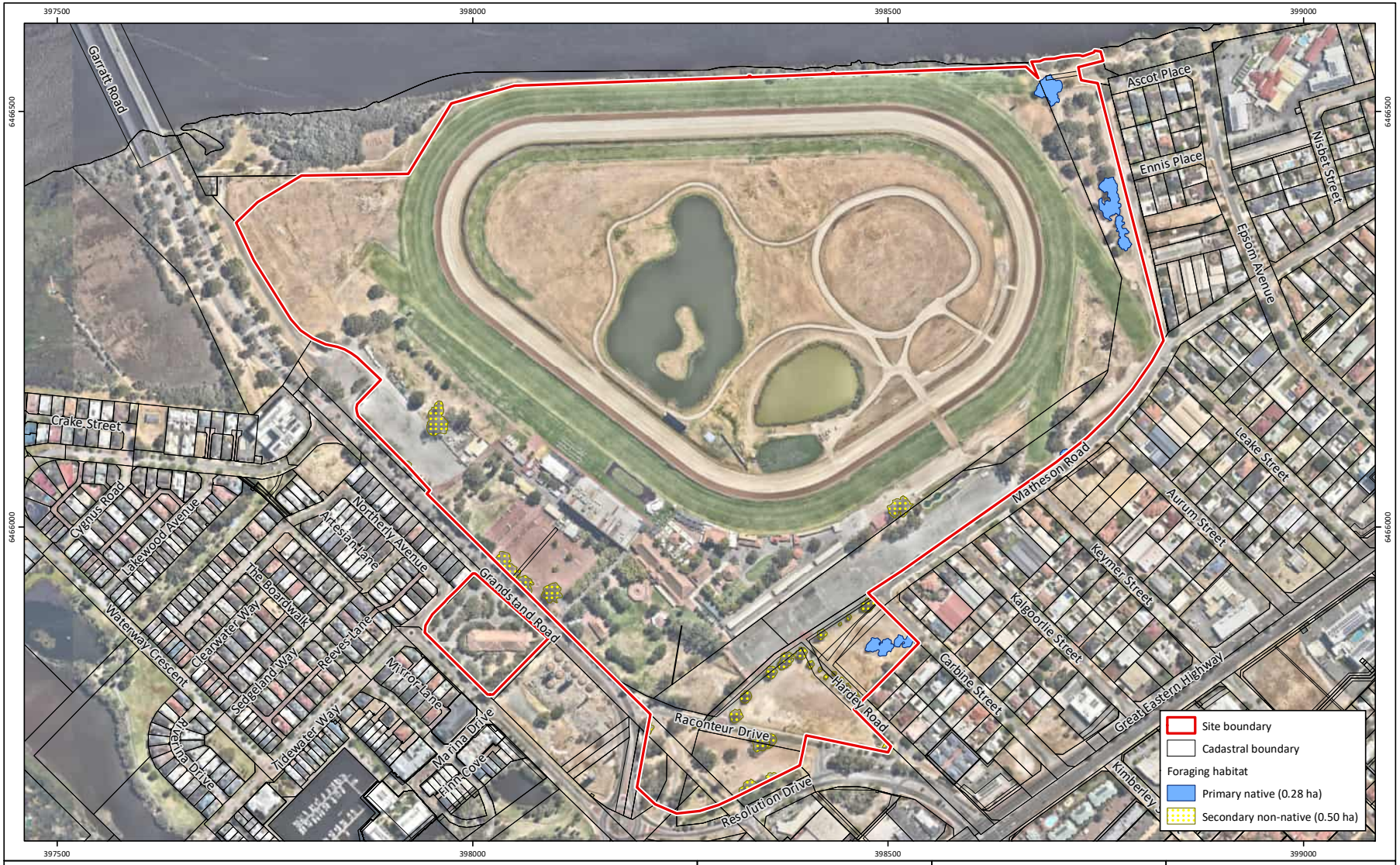



**Figure 9:** **Forest Red-tailed Black Cockatoo Foraging Habitat**

**Project:** Flora, Vegetation and Fauna Assessment
Golden Gateway Structure Plan
**Client:** Perth Racing

**Plan Number:** EP23-109(06)--F18
Drawn: WJC
Date: 04/04/2024
Checked: AJU
Approved: RAW
Date: 08/04/2024

N

0 100 200
Metres
Scale: 1:6,000@A4
GDA2020 MGA Zone 50

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# Appendix A

Conservation Significant Flora Likelihood of Occurrence

**Conservation Significant Flora Likelihood of Occurrence**
**Perth Racing Golden Gateway Structure Plan**



| Species name | Level of | | Life strategy | Habitat | Flowering period | Likelihood of occurrence |
|---|---|---|---|---|---|---|
| | WA | EPBC Act | | | | |
| *Calectasia cyanea* | CR | CR | P | Heathland on white sand or laterite gravel over laterite. Known only from one population near Albany. | Jun-Oct | Low |
| *Grevillea thelemanniana* | CR | CR | P | Sand, sandy clay. Winter-wet low-lying flats. | May-Nov | Low |
| *Synaphea sp. Fairbridge Farm (D. Papenfus 696)* | CR | CR | P | Low woodland on grey, clayey sand with lateritic pebbles (Pinjarra Plain) near winter wet flats. | Sep-Nov | Low |
| *Caladenia huegelii* | CR | EN | PG | Well-drained, deep sandy soils in lush undergrowth in a variety of moisture levels. | Sep-early Nov | Low |
| *Calytrix breviseta subsp. breviseta* | CR | EN | P | Seasonally wet sandy-clay soil on swampy flats | Oct-Nov | Low |
| *Drakaea elastica* | CR | EN | PG | Bare patches of sand within otherwise dense vegetation in low-lying areas alongside winter-wet swamps. Typically in banksia woodland or thickets of Kunzea glabrescens. | late Sep-Oct/Nov, survey Jul-Aug | Low |
| *Eucalyptus x balanites* | CR | EN | P | Light coloured sandy soils over laterite. Habitat consists of gently sloping heathlands; open mallee woodland over shrubland (Population 2) or heathland with emergent mallees (population 1) | Oct - Feb | Low |
| *Trithuria occidentalis* | CR | EN | A | Partly submerged on the edge of shallow winter-wet clay pans in very open shrubland. | Oct-Nov | Low |
| *Diuris purdiei* | EN | EN | PG | Sand to sandy clay soils in areas subject to winter inundation. | late September to mid-October, but only after a summer or early autumn fire (Brown et al., 1998) | Low |
| *Grevillea curviloba subsp. incurva* | EN | EN | P | Sand, sandy loam. Winter-wet heath. | Aug-Sep | Low |
| *Macarthuria keigheryi* | EN | EN | P | Low-lying winter-wet damp grey/white sands in open patches. | Sep-Dec or Feb-Mar | Low |

| | WA | EPBC Act | strategy | | period | occurrence |
|---|---|---|---|---|---|---|
| *Thelymitra stellata* | EN | EN | PG | Sandy loam, clay or gravel over laterite or gravel. | Sep-Nov | Low |
| *Andersonia gracilis* | VU | EN | P | Seasonally damp, black sandy clay flats near or on the margins of swamps. | Sep-Nov | Low |
| *Banksia mimica* | VU | EN | P | Flat to gentle slopes in grey and white sand in open woodlands. | Dec-Jan | Low |
| *Drakaea micrantha* | EN | VU | PG | Open sandy patches often adjacent to winter-wet swamps. | Sept- early Oct | Low |
| *Acacia denticulosa* | VU | VU | P | Sand, loam, clay. Granite outcrops, rarely on sandplains. | Sep-Oct | Low |
| *Anigozanthos viridis subsp. Terraspectans* | VU | VU | P | Grey sand, clay loam. Winter-wet depressions. | Aug-Sep | Low |
| *Conospermum undulatum* | VU | VU | P | Sand and sandy clay soils, on flat or gently sloping sites between the Swan and Canning Rivers | May-Oct | Low |
| *Diuris drummondii* | VU | VU | PG | In low-lying depressions in peaty and sandy clay swamps. | Nov-Jan | Low |
| *Diuris micrantha* | VU | VU | PG | Dark grey-black sandy clay-loam in winter wet depressions or swamps. Often in shallow standing water. | Aug/Sep- early Oct | Low |
| *Eleocharis keigheryi* | VU | VU | P | Clay or sandy loam in freshwater creeks and transient waterbodies such as seasonally wet clay pans. | Aug-Dec | Low |
| *Eucalyptus rhodantha var. rhodantha* | VU | VU | P | Grey/yellow/red sand over laterite. Undulating country, hillslopes. | Jul-Sep or Dec-Jan | Low |
| *Morelotia australiensis* | VU | VU | P | Sand over clay, winter wet depressions and drainage lines. | Nov-Dec | Low |
| *Eremophila glabra subsp. chlorella* | EN | - | P | Sandy clay. Winter-wet depressions. | Jul-Nov | Low |
| *Hypocalymma magnificum* | EN | - | P | Sandy loam, granite. | Aug-Nov (limited information) | Low |
| *Bolboschoenus fluviatilis* | P1 | - | P | Floodplain with grey/brown wet sand. | Nov | Moderate |
| *Calandrinia sp. Bayswater (C. Andrews s.n. 11/1902)* | P1 | - | Unknown | Unknown | Unknown | Low |

| | WA | EPBC Act | strategy | | period | occurrence |
|---|---|---|---|---|---|---|
| *Drosera patens* | P1 | - | P | Sandy soils on margins of winter-wet depressions, swamps and lakes. | Aug-Dec | Low |
| *Drosera x sidjamesii* | P1 | - | P | Along lake margins, close to winter high-water line | Nov-Dec or Jan-Mar | Low |
| *Haloragis scoparia* | P1 | - | P | Clay in winter-wet areas. | May | Low |
| *Hydrocotyle striata* | P1 | - | A | Sand and clay in springs and creeklines. | Nov | Low |
| *Levenhookia preissii* | P1 | - | A | Grey or black, peaty sand. Swamps | Sep-Dec/Jan | Low |
| *Ptilotus sericostachyus subsp. roseus* | P1 | - | P | Unknown. Seem to be associated with wetlands/rivers. | Sep-Dec | Moderate |
| *Senecio gilbertii* | P1 | - | P | Peaty sand in swamps and on slopes. | Sep-Nov | Low |
| *Thelymitra magnifica* | P1 | - | PG | Gravelly soil on stony ridges. | Sep-Oct | Low |
| *Typhonium peltandroides* | P1 | - | P | Shallow sand amongst rough sandstone, red clay. Sides of gorges, vine thickets, rocky sites or along watercourses. | Dec or Jan-Feb | Low |
| *Acacia benthamii* | P2 | - | P | Sand, typically on limestone breakaways | Aug - Sept | Low |
| *Calothamnus macrocarpus* | P2 | - | P | Rocky quartzite soils, sand. Slopes. | Feb or Aug-Dec | Low |
| *Chamelaucium floriferum subsp. diffusum* | P2 | - | P | Sand, clay. Frequently with outcropping granite. | Jan-Dec | Low |
| *Eucalyptus educta* | P2 | - | P | Shallow soils. Granite rocks. | Apr | Low |
| *Grevillea manglesii subsp. ornithopoda* | P2 | - | P | Red-brown loam over clay | Sep-Nov | Low |
| *Hypocalymma inopinatum* | P2 | - | P | White sand on laterite. Shallow sandy loam Slopes and rises (limited information). | Nov? (limited information | Low |
| *Johnsonia pubescens subsp. cygnorum* | P2 | - | P | Grey white yellow sands on flats and seasonally wet areas. | Sep | Low |
| *Lepyrodia curvescens* | P2 | - | P | Sand, laterite. Seasonally inundated swampland. | Sep-Nov | Low |
| *Melaleuca viminalis* | P2 | - | P | Sand, clay in creeklines and wetlands. | Oct-Dec | Moderate |
| *Phyllangium palustre* | P2 | - | A | Winter-wet claypans, low-lying seasonal wetlands on clay | Oct-Nov | Low |
| *Poranthera moorokatta* | P2 | - | A | Sandy or clay soils. Dampland or low sandy dunes. | Oct or Feb | Low |
| *Thelymitra variegata* | P2 | - | P | Sandy clay, sand, laterite. | Jun-Sep | Low |

| | WA | EPBC Act | strategy | | period | occurrence |
|---|---|---|---|---|---|---|
| *Thysanotus brachiatus* | P2 | - | P | Grey sand | Nov-Dec | Low |
| *Adenanthos cygnorum subsp. chamaephyton* | P3 | - | P | Grey sand, lateritic gravel. | Jul or Sep to Dec or Jan | Low |
| *Alyogyne sp. Great Victoria Desert (D.J. Edinger 6212)* | P3 | - | P | Unknown | Unknown | Low |
| *Angianthus micropodioides* | P3 | - | A | Saline sandy soils on edge of rivers, depressions and clay pans. | Nov-Dec or Jan-Feb | Moderate |
| *Babingtonia urbana* | P3 | - | P | Grey sand, lateritic gravel. | Jan-Mar | Low |
| *Banksia pteridifolia subsp. vernalis* | P3 | - | P | White/grey sand over laterite. | Sep-Oct | Low |
| *Beaufortia purpurea* | P3 | - | P | Lateritic or granitic soils on rocky slopes. | Oct-Feb | Low |
| *Byblis gigantea* | P3 | - | P | Sandy-peat swamps. Seasonally wet areas. | Sep-Jan | Low |
| *Carex tereticaulis* | P3 | - | P | Black peaty sand. | Sep-Oct | Low |
| *Conostylis bracteata* | P3 | - | P | Sand, limestone. Consolidated sand dunes | Aug-Sep | Low |
| *Cyathochaeta teretifolia* | P3 | - | P | Grey sand, sandy clay in swamps and creek edges. | Oct-Jan | Low |
| *Dampiera triloba* | P3 | - | P | Damp peat/loam soil. | Aug-Dec | Low |
| *Dicrastylis micrantha* | P3 | - | P | Red sand. Sandplains. | Sep-Dec | Low |
| *Eryngium sp. Subdecumbens (G.J. Keighery 5390)* | P3 | - | A | Clay in seasonal wetlands. | Sep-Nov | Low |
| *Haemodorum loratum* | P3 | - | P | Grey or yellow sand, gravel. | Nov | Low |
| *Halgania corymbosa* | P3 | - | P | Gravelly soils, soils over granite. | Aug-Nov | Low |
| *Hibbertia leptotheca* | P3 | - | P | Brown to white sand with limestone. | Aug-Sep | Low |
| *Hypocalymma quadrangulare* | P3 | - | P | Sandy loam in depressions (limited infroamtion) | Jul-Sep (limited information) | Low |
| *Isopogon autumnalis* | P3 | - | P | Yellow-grey sand. | Feb,Mar,Apr, May or June | Low |
| *Jacksonia gracillima* | P3 | - | P | Sand, often adjacent to winter wet areas | Sep-Dec | Low |
| *Lasiopetalum glutinosum subsp. glutinosum* | P3 | - | P | Brown clay loam on slopes | Sep-Dec | Low |
| *Lasiopetalum membranaceum* | P3 | - | P | Sand over limestone | Sep-Dec | Low |

| | WA | EPBC Act | strategy | | period | occurrence |
|---|---|---|---|---|---|---|
| *Meionectes tenuifolia* | P3 | - | P | Clay loam in seasonally wet areas. | Oct-Dec | Low |
| *Myriophyllum echinatum* | P3 | - | A | Clay in winter-wet flats. | Nov | Low |
| *Platysace ramosissima* | P3 | - | P | Sandy soils. | Oct-Nov | Low |
| *Schoenus benthamii* | P3 | - | P | White, grey ands, sandy clay in winter wet flats and swamps | Oct-Nov | Low |
| *Schoenus pennisetis* | P3 | - | A | Grey or peaty sand in swamps and winter-wet depressions. | Aug-Sep | Low |
| *Stylidium aceratum* | P3 | - | A | Sandy soils in swamp heathland. | Oct-Nov | Low |
| *Stylidium asteroideum* | P3 | - | P | Sand, clay, loam in winter wet areas. | Sep-Nov | Low |
| *Stylidium paludicola* | P3 | - | P | Peaty sand over clay. Winter wet habitats. Marri and Melaleuca woodland, Melaleuca shrubland | Oct-Dec | Low |
| *Styphelia filifolia* | P3 | - | P | Brown over pale yellow sand. | Feb-Apr | Low |
| *Thysanotus anceps* | P3 | - | P | White or grey sand, lateritic gravel, laterite. | Oct-Dec | Low |
| *Verticordia venusta* | P3 | - | P | Yellow sand, sandy gravel. Sandplains. | Sep-Dec or Jan | Low |
| *Aponogeton hexatepalus* | P4 | - | P | Mud. Freshwater: ponds, rivers, claypans. | Jul-Oct | Moderate |
| *Calothamnus accedens* | P4 | - | P | Sandy soils over laterite. | Sep-Jan | Low |
| *Calothamnus graniticus subsp. leptophyllus* | P4 | - | P | Clay over granite, lateritic soils. Hillsides. | Jun-Aug | Low |
| *Cyanothamnus tenuis* | P4 | - | P | Laterite, stony soils, granite. | Aug-Nov | Low |
| *Dodonaea hackettiana* | P4 | - | P | Sand, outcropping limestone. | Jul-Oct | Low |
| *Drosera occidentalis* | P4 | - | P | Flat, brown/white/yellow moist sand/clay/peat, often near swamps. | Oct-Dec/Jan | Low |
| *Eucalyptus caesia subsp. caesia* | P4 | - | P | Loam. Granite outcrops. | May-Sep | Low |
| *Eucalyptus caesia subsp. magna* | P4 | - | P | Loam. Granite outcrops. | May-Sep | Low |
| *Eucalyptus kruseana* | P4 | - | P | Sandy loam. Granite outcrops & hills. | Jun-Sep | Low |
| *Grevillea pimeleoides* | P4 | - | P | Gravelly soils over granite. Rocky hillsides. | May-Nov | Low |
| *Hydrocotyle lemnoides* | P4 | - | A | Floating in swamps. | Aug-Oct | Low |

| | WA | EPBC Act | strategy | | period | occurrence |
|---|---|---|---|---|---|---|
| *Jacksonia sericea* | P4 | - | P | Calcareous and sandy soils on Swan Coastal Plain | Dec-Feb | Low |
| *Lasiopetalum bracteatum* | P4 | - | P | Sandy clay, clay, lateritic gravel along drainage lines, creeks, gullies, granite outcrops. | Aug-Nov | Low |
| *Ornduffia submersa* | P4 | - | A | Sandy clay in inundated wetland/creek. | Aug-Nov | Low |
| *Schoenus griffinianus* | P4 | - | P | White sand | Sep-Oct | Low |
| *Schoenus natans* | P4 | - | A | Aquatic, in winter-wet depressions. | Oct | Low |
| *Stylidium longitubum* | P4 | - | A | Sandy clay, clay. Seasonal wetlands. | Oct-Dec | Low |
| *Stylidium striatum* | P4 | - | P | Brown clay over laterite on hill slopes. | Oct-Nov | Low |
| *Verticordia lindleyi subsp. Lindleyi* | P4 | - | P | Sand and sandy clay in winter wet areas. | May or Nov-Jan | Low |

Note: CR=critically endangered, EN=endangered, VU=vulnerable, P1=Priority 1, P2=Priority 2, P3=Priority 3, P4=Priority 4, P=perennial, PG=perennial geophyte, A=annual.

# Appendix B

Flora Species Inventory

**Flora Species List**
**Perth Racing Golden Gate Strucure Plan Support**



| Family | Status | Species |
|---|---|---|
| Amaranthaceae | | |
| | * | *Amaranthus viridis* |
| | * | *Atriplex prostrata* |
| | | *Suaeda australis* |
| Anacardiaceae | | |
| | * | *Schinus terebinthifolia* |
| Apiaceae | | |
| | | *Apium prostratum subsp. prostratum var. prostratum* |
| Araliaceae | | |
| | * | *Schefflera arboricola* |
| Araucariaceae | | |
| | * | *Araucaria heterophylla* |
| Arecaceae | | |
| | * | *Arecaceae sp.* |
| | * | *Phoenix canariensis* |
| | * | *Syagrus romanzoffiana* |
| | * | *Washingtonia filifera* |
| Asphodelaceae | | |
| | Pl | *Xanthhorrea sp.* |
| Asteraceae | | |
| | * | *Erigeron sp.* |
| | * | *Hypochaeris glabra* |
| | * | *Lactuca serriola* |
| | * | *Ursinia anthemoides* |
| Bignoniaceae | | |
| | * | *Jacaranda mimosifolia* |
| Boraginaceae | | |
| | | *Heliotropium curassavicum* |
| Casuarinaceae | | |
| | | *Casuarina ?cunninghamiana* |
| | | *Casuarina obesa* |
| | Pl | *Casuarina sp.* |
| Cyperaceae | | |
| | | *Bolboschoenus caldwellii* |
| | * | *Cyperus ?tenuiflorus* |
| | * | *Cyperus congestus* |
| | * | *Cyperus polystachyos* |
| | | *Lepidosperma longitudinale* |
| | | *Schoenoplectus tabernaemontani* |
| Fabaceae | | |
| | | *Acacia saligna* |
| | * | *Acacia iteaphylla* |
| | | *Kennendia prostrata* |
| | * | *Tipuana tipu* |
| | * | *Trifolium michelianum* |
| | | *Viminaria juncea* |
| Fabaeae | | |
| | * | *Erythrina indica* |

| | | |
|---|---|---|
| Juncaceae | | |
| | | *Juncus kraussii* |
| Malvaceae | | |
| | * | *Brachychiton populneus* |
| | * | *Malva sp.* |
| Moraceae | | |
| | * | *Ficus macrophylla* |
| Myrtaceae | | |
| | Pl | *Agonis flexuosa* |
| | Pl | *Callistemon sp.* |
| | | *Corymbia calophylla* |
| | * | *Corymbia citriodora* |
| | * | *Corymbia cladocalyx* |
| | * | *Eucalyptus ?leptopoda* |
| | * | *Eucalyptus botryoides* |
| | * | *Eucalyptus camaldulensis* |
| | * | *Eucalyptus cladocalyx* |
| | Pl | *Eucalyptus gomphocephala* |
| | * | *Eucalyptus grandis* |
| | * | *Eucalyptus leucoxylon* |
| | * | *Eucalyptus maculata* |
| | | *Eucalyptus rudis* |
| | * | *Eucalyptus sideroxylon* |
| | * | *Eucalyptus sp.* |
| | | *Melaleuca rhaphiophylla* |
| | * | Myrtaceae sp. |
| Onagraceae | | |
| | * | *Oenothera drummondii* |
| Pinaceae | | |
| | * | *Pinus sp.* |
| Plantaginaceae | | |
| | * | *Plantago lanceolata* |
| Plantanaceae | | |
| | * | *Platanus ×hispanica* |
| Poaceae | | |
| | * | *Avena barbata* |
| | * | *Bambusa sp.* |
| | * | *Briza maxima* |
| | * | *Cenchrus ciliaris* |
| | * | *Cortaderia selloana* |
| | * | *Cynodon dactylon* |
| | * | *Ehrharta calycina* |
| | * | *Ehrharta longiflora* |
| | * | *Ergagrostis curvula* |
| | * | *Melinis repens* |
| | * | *Paspalum dilatatum* |
| | * | *Paspalum vaginatum* |
| | * | *Setaria verticillata* |
| Polygonaceae | | |

| | | |
|---|---|---|
| | * | *Persicaria ?decipiens* |
| | * | *Polygonum aviculare* |
| Rosaceae | | |
| | * | *Rosa sp.* |
| Solanaceae | | |
| | * | *Solanum nigrum* |
| Tamaricaceae | | |
| | * | *Tamarix aphylla* |
| Typhaceae | | |
| | | *Typha sp.* |

*=non-native, Pl=planted

# Appendix C

Conservation Significant Communities Likelihood of Occurrence

**Conservation Significant Communities Likelihood of Occurrence**
**Perth Racing Golden Gateway Structure Plan**



| Code | Community name | TEC/ PEC | Level of significance | | Likelihood of occurrence |
|---|---|---|---|---|---|
| | | | State | EPBC Act | |
| SCP10a | Shrublands on dry clay flats (floristic community type 10a as originally described in Gibson et al. (1994)) | TEC | EN | CR | Low |
| SCP07 | Herb rich saline shrublands in clay pans (floristic community type 7 as originally described in Gibson et al. (1994)) | TEC | VU | CR | Low |
| Tuart woodlands | Tuart (Eucalyptus gomphocephala) woodlands and forests of the Swan Coastal Plain | TEC/ PEC | P3 | CR | Low |
| SCP3a | Corymbia calophylla - Kingia australis woodlands on heavy soils, Swan Coastal Plain (floristic community type 3a as originally described in | TEC | CR | EN | Moderate |
| SCP3c | Corymbia calophylla - Xanthorrhoea preissii woodlands and shrublands, Swan Coastal Plain (floristic community type 3c as originally described in in Gibson et al. (1994)) | TEC | CR | EN | Moderate |
| SCP20c | Shrublands and woodlands of the eastern side of the Swan Coastal Plain (floristic community type 20c as originally described in in Gibson et al. (1994)) | TEC | CR | EN | Low |
| SCP20b | Banksia attenuata and/or Eucalyptus marginata woodlands of the eastern side of the Swan Coastal Plain (floristic community type 20b as originally described in Gibson et al. (1994)) | TEC | EN | EN | Low |
| SCP20a | Banksia attenuata woodlands over species rich dense shrublands (floristic community type 20a as originally described in Gibson et al. (1994)) | TEC | EN | EN | Low |
| Muchea Limestone | Shrublands and woodlands on Muchea Limestone of the Swan Coastal Plain | TEC | EN | EN | Low |
| Banksia WL SCP | Banksia Woodlands of the Swan Coastal Plain ecological community | TEC/ PEC | P3 | EN | Low |
| Coastal Saltmarsh | Subtropical and Temperate Coastal Saltmarsh | TEC/ PEC | P3 | VU | High |
| SCP02 | Southern wet shrublands, Swan Coastal Plain (floristic community type 2 as originally described in Gibson et al. (1994) | TEC | EN | - | Low |
| SCP3b | Corymbia calophylla - Eucalyptus marginata woodlands on sandy clay soils of the southern Swan Coastal Plain (floristic community type 3b as originally described in Gibson et al. (1994)) | TEC | VU | - | Moderate |
| SCP22 | Banksia ilicifolia woodlands | PEC | P3 | - | Low |
| SCP21c | Low lying Banksia attenuata woodlands or shrublands | PEC | P3 | - | Low |
| SCP23b | Swan Coastal Plain Banksia attenuata - Banksia menziesii woodlands | PEC | P3 | - | Low |

Note: TEC=threatened ecological community, PEC=priority ecological community, CR=critically endangered, EN=endangered, VU=vulnerable, P3=priority 3

# Appendix D

Conservation Significant Fauna

| Species name | Common name | Level of | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|
| | | WA | EPBC Act | | |
| **Birds** | | | | | |
| *Actitis hypoleucos* | Common sandpiper | MI | MI | Edge of sheltered waters salt or fresh, e.g. estuaries, mangrove creeks, rocky coasts, near-coastal saltlakes (including saltwork ponds), river pools, lagoons, claypans, drying swamps, flood waters, dams and sewage ponds. Preferring situations where low perches are available (Johnstone & Storr 1998). | Nil |
| *Anous tenuirostris melanops* | Australian lesser noddy | EN | VU | Very common in blue-water seas around the Abrolhos (endemic to this area, accidental occurrences on lower west coast of Australia) (Johnstone and Storr 1998). | Nil |
| *Apus pacificus* | Pacific swift | MI | MI | Aerial, migratory species that is most often seen over inland plains and sometimes above open areas, foothills or in coastal areas. Sometimes occurs over settled areas, including towns, urban areas and cities (Pizzey & Knight 2012). | Moderate |
| *Botaurus poiciloptilus* | Australasian bittern | EN | EN | In or over water, in tall reedbeds, sedges, rushes, cumbungi, lignum. Also occurs in ricefields, drains in tussocky paddocks and occasionally in saltmarshes and brackish wetlands (TSSC 2019). | Negligible |
| *Cacatua pastinator pastinator* | Muir's corella | CD | - | Wheat and sheep farming country with remnant native forest. Species is restricted to the south-west corner of WA, near Lake Muir (DPaW 2015). | Nil |

| Species name | Common name | Level of | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|
| | | WA | EPBC Act | | |
| *Calidris acuminata* | Sharp-tailed sandpiper | VU (MI) | VU (MI) | Occurs in tidal mudflats, saltmarshes and mangroves, as well as, shallow fresh, brackish or saline inland wetlands. It is also known from floodwaters, irrigated pastures and crops, sewage ponds, saltfields (Pizzey & Knight 2012). | Nil |
| *Calidris alba* | Sanderling | MI | MI | Mainly steeply shelving sandy beaches exposed to ocean swell. Also sandy inlets, estuarine sandbanks and near-coastal saltlakes (including saltwork ponds) (Johnstone & Storr 1998). | Nil |
| *Calidris canutus* | Red knot | EN | EN (MI) | Mud and sand flats in estuaries and on sheltered coasts. Also near-coastal saltlakes, including saltwork ponds (Pizzey & Knight 2012). | Nil |
| *Calidris ferruginea* | Curlew sandpiper | CR | CR (MI) | Mainly shallows of estuaries and near-coastal saltlakes (including saltwork ponds) and drying near-coastal freshwater lakes and swamps. Also beaches and near-coastal sewage ponds (Johnstone & Storr 1988). | Negligible |
| *Calidris melanotos* | Pectoral sandpiper | MI | MI | Mainly fresh waters (swamps, lagoons, river pools, irrigation channels and sewage ponds); also samphire flats around estuaries and saltlakes (Johnstone & Storr 1998). | Nil |
| *Calidris ruficollis* | Red-necked stint | MI | MI | Tidal mudflats, saltmarshes, sandy or shelly beaches, saline and freshwater wetlands (coastal and inland), saltfields, sewage ponds (Pizzey and Knight 2012). | Moderate |

| Species name | Common name | Level of | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|
| | | WA | EPBC Act | | |
| *Calidris subminuta* | Long-toed stint | MI | MI | Mainly freshwater swamps (especially when drying and where vegetation is short), river pools, lagoons and claypans; also brackish pools, sewage ponds and samphire flats around estuaries and saltlakes (Johnstone & Storr 1988). | Nil |
| *Calidris tenuirostris* | Great knot | CR | CR (MI) | Mud or sand flats in estuaries and on sheltered coasts. Also near-coastal saltlakes, including saltwork ponds (Johnstone & Storr 1988). | Negligible |
| *Calyptorhynchus banksii naso* | Forest red-tailed black cockatoo | VU | VU | Eucalypt and Corymbia forests, often in hilly interior. More recently also observed in more open agricultural and suburban areas including Perth metropolitan area. Attracted to seeding Corymbia calophylla, Eucalyptus marginata, introduced Melia azedarach and Eucalyptus spp. trees (Johnstone et al. 2013). | High |
| *Charadrius leschenaultii* | Great sand plover | VU | VU (MI) | Wide sandy or shelly beaches, sandpits, tidal mudflats, reefs, sand cays, mangroves, saltmarsh, dune wilderness, bare paddocks, seldom far inland (Pizzey & Knight 2012). | Negligible |
| *Dasyornis longirostris* | Western bristlebird | EN | EN | Dense, low, closed coastal heaths. Open heaths with dense clumps of shrubs, eucalypt thickets and tall swampy heaths. Much reduced by fire, draining for agriculture, but may need fire for optimal status over 50-10+ years. Current range in WA confined to south coast from Albany to Hopetoun (Pizzey and Knight 2012). | Nil |

| Species name | Common name | Level of | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|
| | | WA | EPBC Act | | |
| *Diomedea amsterdamensis* | Amsterdam Island albatross | CR | EN (MI) | The Amsterdam albatross is a marine, pelagic seabird. It nests in open patchy vegetation (among tussocks, ferns or shrubs) near exposed ridges or hillocks (Weimerskirch et al. 1985). It sleeps and rests on ocean waters when not breeding (Marchant and Higgins 1990) | Nil |
| *Diomedea epomophora* | Southern royal albatross | VU | VU (MI) | Rare visitor to Western Australian seas; it breeds on subantarctic islands south of New Zealand (Johnstone and Storr 1998). | Nil |
| *Diomedea exulans* | Wandering albatross | VU | VU (MI) | Marine, pelagic and aerial species. It breeds on Macquarie Island and feeds in Australian portions of the Southern Ocean (DoE 2018). | Nil |
| *Elanus scriptus* | Letter-winged kite | P4 | - | Open to sparsely wooded country and grassland near tree-lined streams or watercourses (Johnstone and Storr 1998). | Nil |
| *Falco hypoleucos* | Grey falcon | VU | - | Species occurs in arid and semi-arid Australia, where it inhabits timbered lowland plains. In particular Acacia shrublands and that are crossed by tree-lined water courses. Species has also been observed hunting in treeless areas and frequenting tussock grassland and open woodlands (TSSC 2020). | Nil |
| *Falco peregrinus* | Peregrine falcon | OS | - | Mainly found around cliffs along coasts, rivers, ranges and around wooded watercourses and lakes (Johnstone and Storr 1998). | Moderate |

| Species name | Common name | Level of | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|
| | | WA | EPBC Act | | |
| *Hydroprogne caspia* | Caspian tern | MI | MI | Mainly sheltered areas, estuaries (when not laden with silt) and tidal creeks; occasionally near-coastal saltlakes (including saltwork ponds) and brackish pools in lower courses of rivers; rarely fresh waters (DCCEEW 2023). | Negligible |
| *Ixobrychus dubius* | Australian little bittern | P4 | - | Dense vegetation surrounding/within freshwater pools, swamps and lagoons, well screened with trees. Shelters in dense beds of Typha spp., Baumea spp. and tall rushes in freshwater swamps around lakes and along rivers (Johnstone and Storr 1998). | Negligible |
| *Ixobrychus flavicollis australis* | Black bittern | P2 | - | Freshwater pools, swamps and lagoons, well-screened with trees. Occasionally feeding by day but mainly sheltering in dense waterside vegetation (Melaleuca spp., Eucalyptus camaldulensis, Pandanus spp. and long grass) (Johnstone and Storr 1998). | Nil |
| *Leipoa ocellata* | Malleefowl | VU | VU | Scrubs and thickets of Eucalyptus spp., Melaleuca lanceolata and Acacia linophylla; also other dense litter-forming shrublands. Attracted to fallen wheat in stubbles and along roads (Johnstone and Storr 1998). | Nil |
| *Limosa lapponica* | Bar-tailed godwit | MI | MI | Estuarine sand and mudflats and sandy beaches with loads of seaweed; also reef flats and near-coastal saltlakes (including saltwork and sewage ponds) (Johnstone and Storr 1998). | Nil |

| Species name | Common name | Level of | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|
| | | WA | EPBC Act | | |
| *Limosa limosa* | Black-tailed godwit | EN<br>MI | EN (MI) | Tidal mudflats, estuaries, sewage ponds, shallow river margins, brackish or saline inland lakes, flooded pastures, airfields (Pizzey & Knight 2012). | Nil |
| *Macronectes giganteus* | Southern giant-petrel | MI | EN (MI) | Breeds on southern subantarctic and antarctic islands. May visit Western Australian waters from February to December (mostly June to September) (Johnstone and Storr 1998). | Nil |
| *Macronectes halli* | Northern giant petrel | MI | VU (MI) | Breeds on subantarctic islands. May visit Western Australian water from February to September (Johnstone and Storr 1998). | Nil |
| *Numenius madagascariensis* | Eastern curlew | CR | CR (MI) | Mainly tidal mudflats; also reef flats, sandy beaches and rarely near-coastal lakes (including saltwork ponds) (Johnstone and Storr 1998). | Nil |
| *Oxyura australis* | Blue-billed duck | P4 | - | Mainly deeper freshwater swamps and lakes; occasionally saltlakes and estuaries freshened by flood waters (Johnstone and Storr 1998). | High |
| *Pachyptila turtur subantarctica* | Fairy prion | - | VU | Breeds on subantarctic islands and is presumed to frequent subtropical waters during non-breeding period (TSSC 2015). | Nil |
| *Pandion haliaetus* | Osprey | MI | MI | Coasts, estuaries, bays, inlets, islands, and surrounding waters; coral atolls, reefs, lagoons, rock cliffs, stacks (Pizzey & Knight 2012). | High |

| Species name | Common name | Level of | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|
| | | WA | EPBC Act | | |
| *Phoebetria fusca* | Sooty albatross | EN | VU (MI) | Marine, pelagic species that tolerates a wide range of sea surface temperatures and salinities. breeds on subtropical and subantarctic islands in the Indian and Atlantic Oceans, on vegetated cliffs and steep slopes that are sheltered from prevailing winds, often amongst tussock grass (Pizzey & Knight 2012). | Nil |
| *Platycercus icterotis xanthogenys* | Western rosella (inland) | P4 | - | Open eucalypt woodlands with heath understorey (Pizzey & Knight 2012). | Negligible |
| *Plegadis falcinellus* | Glossy Ibis | MI | MI | Well-vegetated wetlands, wet pasture, ricefields, floodwaters, floodplains, brackish or occasionally saline wetlands, mangroves, mudflats and occasionally dry grassland (Pizzey & Knight 2012). | Moderate |
| *Pluvialis fulva* | Pacific golden plover | MI | MI | Estuaries, mudflats, saltmarshes, mangroves; rocky reefs and stranded seaweed on ocean shores; margins of shallow open inland swamps; sewage ponds, short-grass paddocks, sportsgrounds, airfields, ploughed land (Pizzey & Knight 2012). | Nil |
| *Pluvialis squatarola* | Grey Plover | VU (MI) | VU (MI) | Mudflats, saltmarsh, tidal reefs and estuaries, rarely inland (Pizzey and Knight 2012). | Negligible |
| *Rostratula australis* | Australian painted snipe | EN | EN | Mainly shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans (Marchant and Higgins 1993). | Negligible |
| *Sternula nereis nereis* | Australian fairy tern | VU | VU | Sheltered blue-water seas close to land, estuaries (when free of silt) and near-coastal lakes (Johnstone and Storr 1998). | Negligible |

| Species name | Common name | Level of | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|
| | | WA | EPBC Act | | |
| *Thalassarche cauta* | Shy albatross | VU | VU (MI) | Scarce visitor (late May to mid-October) to southwestern and western seas. Breeds on islands off Tasmania and south New Zealand (Johnstone and Storr 1998). | Nil |
| *Thalassarche impavida* | Campbell albatross | VU | VU (MI) | Scarce visitor to south-western and western Australian seas. Breeds on Campbell Island (Pizzey & Knight 2012). | Nil |
| *Thalassarche melanophris* | Black-browed albatross | EN | VU (MI) | Seas of south and west coasts. Visitor to Western Australian mainland from January to early November (mostly May to September). Breeds on southern subantarctic and Antarctic islands (Johnstone and Storr 1998). | Nil |
| *Thalassarche steadi* | White-capped albatross | VU | VU (MI) | Scarce visitor (late May to mid-October) to southwestern and western seas. Breeds on islands off Tasmania and south New Zealand (Johnstone and Storr 1998). | Nil |
| *Thalasseus bergii* | Crested tern | MI | MI | Mainly blue-water seas (especially within 3 km of land), including southern estuaries in summer and autumn (when free of silt); also tidal creeks in north, but not penetrating far into larger estuaries (DCCEEW 2023). | Moderate |
| *Tringa glareola* | Wood sandpiper | MI | MI | Mainly shallow fresh waters (lagoons, swamps, claypans, river pools, dams, bore overflows and sewage ponds); occasionally brackish swamps, rarely saltlakes and estuaries (Pizzey & Knight 2012). | Nil |

| Species name | Common name | Level of | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|
| | | WA | EPBC Act | | |
| *Tringa nebularia* | Common greenshank | EN (MI) | EN (MI) | Mudflats, estuaries, saltmarshes, margins of lakes, wetlands, claypans (fresh and saline), commercial saltfields, sewage ponds (Pizzey & Knight 2012). | Nil |
| *Tyto novaehollandiae novaehollandiae* | Australian masked owl | P3 | - | Forests, open woodlands, farmlands with large trees. E.g. river red gums, adjacent cleared country, timbered watercourses, paperbark woodlands and caves (Pizzey & Knight 2012). | Nil |
| *Zanda baudinii* | Baudin's black cockatoo | EN | EN | Mainly eucalypt forests. Attracted to seeding Corymbia calophylla, Banksia spp., Hakea spp., and to fruiting apples and pears (Johnstone and Storr 1998). | Negligible |
| *Zanda latirostris* | Carnaby's black cockatoo | EN | EN | Mainly proteaceous scrubs and heaths and adjacent eucalypt woodlands and forests; also plantations of Pinus spp. Attracted to seeding Banksia spp., Hakea spp., Eucalyptus spp., Corymbia calophylla, Grevillea spp., and Allocasuarina spp. (Johnstone and Storr 1998). | High |
| **Invertebrates** | | | | | |
| *Euoplos inornatus* | Inornate trapdoor spider | P3 | - | Has previously been recorded in jarrah forest, including near clay banks and granite outcrop. Most records are from the Darling scarp/Jarrah Forest Region, with limited records from the Swan Coastal Plain (DBCA 2020). | Nil |
| *Hylaeus globuliferus* | Woollybush bee | P3 | - | Males are territorial and may be found perched on the growing tips of Adenanthos sp., Banksia sp. or Jacksonia sp. Has also been recorded visiting the flowers of Grevillea sp. (PaDIL 2022). | Nil |

| Species name | Common name | Level of | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|
| | | WA | EPBC Act | | |
| *Idiosoma sigillatum* | Swan Coastal Plain shield-backed trapdoor spider | P3 | - | Widely distributed in sandy areas on the Swan Coastal Plain and on Rottnest Island (Prince 2003). Species predominantly recorded from remnant banksia woodland vegetation and heath on sandy soils (Rix et. al 2018). | Negligible |
| *Leioproctus contrarius* | a short-tongued bee | P3 | - | Life history and habits are poorly documented/ unknown. It has been recorded only on flowers of Goodeniaceae and possibly Lechenaultia stenosepala (Bamford 2003). | Nil |
| *Leioproctus douglasiellus* | a short-tongued bee | EN | CR | Life history and habits are poorly documented/ unknown. It has been recorded only on the flowers of Goodenia filiformis and Anthotium junciforme (Houston 2000). | Negligible |
| *Neopasiphae simplicior* | a short-tongued bee | EN | CR | This species of native bee has been collected on flowers of Goodenia filiformis, Lobelia tenuior, Angianthus preissianus and Velleia sp. (Houston 2000). | Nil |
| *Synemon gratiosa* | Graceful sun-moth | P4 | - | Coastal heathland on Quindalup dunes where it is restricted to secondary sand dunes due to the abundance of the preferred host plant Lomandra maritima. Banksia woodland on Spearwood and Bassendean dunes, where the second known host plant L. hermaphrodita is widespread (DEC 2011). | Negligible |

| Species name | Common name | Level of | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|
| | | WA | EPBC Act | | |
| *Westralunio carteri* | Carter's freshwater mussel | VU | VU | Occurs in greatest abundance in slower flowing streams with stable sediments that are soft enough for burrowing amongst woody debris and exposed tree roots. Also occupies lentic systems including large water supply dams and even on-stream farm dams. Salinity tolerance quite low (Morgan et al. 2011). | Nil |
| **Mammals** | | | | | |
| *Bettongia penicillata ogilbyi* | Woylie | CR | EN | Woodlands and adjacent heaths with a dense understorey of shrubs, particularly Gastrolobium spp. (TSSC 2018). | Nil |
| *Dasyurus geoffroii* | Chuditch | VU | VU | Wide range of habitats from woodlands, dry sclerophyll forests, riparian vegetation, beaches and deserts. Appears to utilise native vegetation along roadsides in the wheatbelt (DEC 2012). | Low |
| *Dasyurus hallucatus* | Northern quoll | EN | EN | Most abundant in rocky eucalypt woodland but occurs in range of vegetation types, mostly within 200 km of the coast (Menkhorst & Knight 2011). | Nil |
| *Falsistrellus mackenziei* | Western false pipistrelle | P4 | - | High rainfall forests dominated by jarrah, karri, marri, and tuart. Occupies hollow logs for breeding and resting (Van Dyck and Strahan 2008). Also known to utilise Banksia woodland on the Swan Coastal Plain (Hosken and O'Shea 1995). | Nil |

| Species name | Common name | Level of | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|
| | | WA | EPBC Act | | |
| *Hydromys chrysogaster* | Rakali | P4 | - | Areas with permanent water, fresh, brackish or marine. Likely to occur in all major rivers and most of the larger streams as well as bodies of permanent water in the lower south-west (Christensen et al. 1984). Intact riparian vegetation and associated bank stability is critical to their survival (DWER 2023). | Moderate |
| *Isoodon fusciventer* | Quenda | P4 | - | Dense scrubby, often swampy, vegetation with dense cover up to one metre high (DEC 2012) | Moderate |
| *Macrotis lagotis* | Bilby | VU | VU | Open tussock grassland on uplands and hills, mulga woodland/shrubland growing on ridges and rises and hummock grassland (spinifex) growing on sandplains and dunes, drainage systems, salt lake systems and other alluvial areas (DBCA 2017). | Nil |
| *Myrmecobius fasciatus* | Numbat | EN | EN | Generally dominated by Eucalyptus spp. that provide hollow logs and branches for shelter and termites for food (van Dyck & Strahan 2008). | Nil |
| *Notamacropus irma* | Western brush wallaby | P4 | - | Dry sclerophyll forest, Banksia spp. woodlands and shrublands, typically favouring dense low vegetation that provides dense cover (Christensen and Strahan 1983). | Negligible |
| *Phascogale tapoatafa wambenger* | South-western brush-tailed phascogale | CD | - | Dry sclerophyll forests and open woodlands that contain hollow-bearing trees but a sparse ground cover (Triggs 2003). | Negligible |

| Species name | Common name | Level of | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|
| | | WA | EPBC Act | | |
| *Pseudocheirus occidentalis* | Western ringtail possum | CR | CR | On the Swan Coastal Plain in Agonis flexuosa woodlands and Agonis flexuosa/ Eucalyptus gomphocephala forests. Also Eucalyptus marginata forests (DBCA 2017). | Nil |
| **Reptiles** | | | | | |
| *Ctenotus delli* | Dell's skink | P4 | - | Jarrah and marri woodland with a shrub dominated understorey, sheltering in dense vegetation, inside grass trees and beneath rocks, sometimes in burrows (Nevill 2005). | Nil |
| *Ctenotus gemmula* | - | P3 | - | Pale soils supporting heathlands and usually in association with Banksia spp. (Bush et al. 2010) | Nil |
| *Ctenotus ora* | Coastal plains skink | P3 | - | Sandy substrates with low vegetation (including heath) in open Eucalyptus spp. and Corymbia calophylla woodland over Banksia spp. (Kay and Keogh 2012). | Nil |
| *Lerista lineata* | Perth slider | P3 | - | Sandy coastal heath and low scrubland. Banksia spp. woodland, Eucalyptus gomphocephala open woodland over deep sands, and coastal dunes immediately adjacent to the beach (Wilson and Swan 2021). | Nil |
| *Neelaps calonotos* | Black-striped snake | P3 | - | Coastal and near-coastal dunes, sandplains supporting heathlands and Banksia spp. woodlands (Bush et al. 2010). | Negligible |
| *Pseudemydura umbrina* | Western swamp tortoise | CR | CR | Clay based ephemeral swamps (Bush et al. 2010). | Negligible |

| Species name | Common name | Level of | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|
| | | WA | EPBC Act | | |
| *Pseudonaja affinis exilis* | Rottnest Island dugite | P4 | - | Subspecies found on Rottnest Island. Found in a wide range of habitats including coastal dunes, heathlands, scrublands, and woodlands, but tend to prefer sandy areas. More urban spaces that have been degraded also make an attractive habitat for these shy reptiles, with golf courses, industrial parks and agricultural country among areas listed as potential home environments (Wilson and Swan 2021). | Nil |
| *Note: CR=critically endangered, EN=endangered, VU=vulnerable, CD=conservation dependent, MI=migratory, OS=other specially protected, P1=Priority 1, P2=Priority 2, P3=Priority 3, P4=Priority 4. Species with a high or moderate likelihood to occur within the site are shaded green.* | | | | | |

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# Appendix E

Black Cockatoo Foraging Plant Species List

**Black Cockatoo Foraging Plants**



| | | Foraging category as assigned by Emerge | | | |
|---|---|---|---|---|---|
| **Species name** | **Common name** | **CBC** | **BBC** | **FRTBC** | **Literature references** |
| *Acacia baileyana* | Cootamundra wattle | Secondary | - | - | Groom 2011 |
| *Acacia pentadenia* | Karri wattle | Secondary | - | - | Groom 2011 |
| *Acacia saligna* | Orange wattle | Secondary | - | - | Groom 2011 |
| *Agonis flexuosa* | Peppermint tree | Secondary | - | - | Groom 2011 |
| *Allocasuarina fraseriana* | Sheoak | Secondary | Secondary | Secondary | Johnstone & Storr 1998; Johnstone *et al.* 2010; Johnstone 2017; DoEE 2017 |
| *Allocasuarina spp.* | | Secondary | - | Secondary | Johnstone *et al.* 2010; Groom 2011; DSEWPaC 2012; DoEE 2017 |
| *Anigozanthos flavidus* | Tall kangaroo paw | - | Secondary | - | Johnstone *et al.* 2010; DSEWPaC 2012; DoEE 2017 |
| *Araucaria heterophylla* | Norfolk island pine | Secondary | - | - | Groom 2011; DoEE 2017 |
| *Banksia ashbyi* | Ashby's banksia | Primary | Secondary | - | Saunders 1980; Groom 2011; DoEE 2017 |
| *Banksia attenuata* | Slender banksia | Primary | Secondary | - | Saunders 1980; Johnstone *et al.* 2010; Groom 2011; DoEE 2017 |
| *Banksia baxteri* | Baxter's banksia | Primary | Secondary | - | Johnstone *et al.* 2010; Groom 2011; DoEE 2017 |
| *Banksia carlinoides* | Pink dryandra | Primary | Secondary | - | Johnstone *et al.* 2010; Groom 2011; DoEE 2017 |
| *Banksia coccinea* | Scarlet banksia | Primary | Secondary | - | Johnstone *et al.* 2010; Groom 2011; DoEE 2017 |
| *Banksia dallanneyi* | Couch honeypot dryandra | Primary | Secondary | - | Groom 2011; DoEE 2017 |
| *Banksia ericifolia* | Heath-leaved banksia | Primary | Secondary | - | Johnstone *et al.* 2010; Groom 2011; DoEE 2017 |
| *Banksia fraseri* | | Primary | Secondary | - | Johnstone *et al.* 2010; Groom 2011; DoEE 2017 |
| *Banksia gardneri* | Prostrate banksia | Primary | Secondary | - | Groom 2011; DoEE 2017 |
| *Banksia grandis* | Bull banksia | Primary | Secondary | - | Saunders 1980; Johnstone & Storr 1998; Johnstone *et al.* 2010; Groom 2011; DoEE 2017 |
| *Banksia hookeriana* | Hooker's banksia | Primary | Secondary | - | Johnstone *et al.* 2010; Groom 2011; DoEE 2017 |
| *Banksia ilicifolia* | Holly banksia | Primary | Secondary | - | Johnstone *et al.* 2010; Groom 2011; Johnstone & Storr 1998; DoEE 2017 |
| *Banksia kippistiana* | | Primary | Secondary | - | Groom 2011; DoEE 2017 |
| *Banksia leptophylla* | | Primary | Secondary | - | Groom 2011; DoEE 2017 |
| *Banksia lindleyana* | Porcupine banksia | Primary | Secondary | - | Johnstone *et al.* 2010; DoEE 2017 |

| | | Foraging category as assigned by Emerge | | | |
|---|---|---|---|---|---|
| **Species name** | **Common name** | **CBC** | **BBC** | **FRTBC** | **Literature references** |
| *Banksia littoralis* | Swamp banksia | Primary | Secondary | - | Saunders 1980; Groom 2011Johnstone & Storr 1998; Johnstone *et al.* 2010; DoEE 2017 |
| *Banksia menziesii* | Firewood banksia | Primary | Secondary | - | Saunders 1980; Johnstone *et al.* 2010; Groom 2011; DoEE 2017 |
| *Banksia mucronulata* | Swordfish dryandra | Primary | Secondary | - | Groom 2011; DoEE 2017 |
| *Banksia nivea* | Honeypot dryandra | Primary | Secondary | - | Saunders 1980; Groom 2011; DoEE 2017 |
| *Banksia nobilis* | Golden dryandra | Primary | Secondary | - | Saunders 1980; Groom 2011; DoEE 2017 |
| *Banksia praemorsa* | Cut-leaf banksia | Primary | Secondary | - | Saunders 1980; Johnstone *et al.* 2010; Groom 2011; DoEE 2017 |
| *Banksia prionotes* | Acorn banksia | Primary | Secondary | - | Johnstone *et al.* 2010; Groom 2011; DoEE 2017 |
| *Banksia prolata* | | Primary | Secondary | - | Johnstone *et al.* 2010; DoEE 2017 |
| *Banksia quercifolia* | Oak-leaved banksia | Primary | Secondary | - | Johnstone & Storr 1998; Johnstone *et al.* 2010; Groom 2011; DoEE 2017 |
| *Banksia sessilis* | Parrot bush | Primary | Secondary | - | Saunders 1980; Johnstone & Storr 1998; Johnstone *et al.* 2010; Groom 2011; DoEE 2017 |
| *Banksia speciosa* | Showy banksia | Primary | Secondary | - | Johnstone *et al.* 2010; Groom 2011; DoEE 2017 |
| *Banksia spp.* | | Primary | Secondary | - | Saunders 1979; DSEWPaC 2012; DoEE 2017 |
| *Banksia squarrosa* | Pingle | Primary | Secondary | - | Johnstone *et al.* 2010; Groom 2011; DoEE 2017 |
| *Banksia tricuspis* | Pine banksia | Primary | Secondary | - | Groom 2011; DoEE 2017 |
| *Banksia undata* | Urchin dryandra | Primary | Secondary | - | Groom 2011; DoEE 2017 |
| *Banksia verticillata* | Granite banksia | Primary | Secondary | - | Saunders 1980; Groom 2011; DoEE 2017 |
| *Brassica campestris* | Canola | Secondary | - | - | Groom 2011; DoEE 2017 |
| *Callistemon spp.* | | Secondary | Secondary | - | Johnstone *et al.* 2010; DoEE 2017 |
| *Callistemon viminalis* | Captain cook bottlebrush | Secondary | - | - | Groom 2011 |
| *Callitris sp.* | | Secondary | - | - | Johnstone *et al.* 2010; Groom 2011 |
| *Carya illnoinensis* | Pecan | Primary | Secondary | - | Johnstone *et al.* 2010; Groom 2011; Groom 2014; DoEE 2017 |
| *Casuarina cunninghamiana* | River sheoak | Secondary | - | - | Groom 2011 |
| *Citrullus lanatus* | Pie or afghan melon | Secondary | - | - | Johnstone *et al.* 2010; Groom 2011 |

| Species name | Common name | Foraging category as assigned by Emerge | | | Literature references |
|---|---|---|---|---|---|
| | | CBC | BBC | FRTBC | |
| *Corymbia calophylla* | Marri | Primary | Primary | Primary | Johnstone & Storr 1998; Johnstone & Kirkby 1999; Johnstone *et al.* 2010; DSEWPaC 2012; DoEE 2017; Johnstone 2017; Saunders 1979; Johnstone & Kirkby 2008 |
| *Corymbia citriodora* | Lemon scented gum | Secondary | Secondary | Secondary | Johnstone *et al.* 2010; DSEWPaC 2012; Groom 2011; Johnstone 2017 |
| *Corymbia ficifolia* | Red flowering gum | Secondary | - | - | Groom 2011 |
| *Corymbia haematoxylon* | Mountain marri | Secondary | - | Secondary | Groom 2011; DoEE 2012; DoEE 2017 |
| *Corymbia maculata* | Spotted gum | - | - | - | - |
| *Darwinia citriodora* | Lemon-scented darwinia | Secondary | Secondary | - | Groom 2011; Johnstone *et al.* 2010 |
| *Diospryros sp.* | Sweet persimmon | Secondary | Secondary | - | Johnstone *et al.* 2010; Groom 2011; DSEWPaC 2012; DoEE 2017 |
| *Eremophila glabra* | Tarbush | Secondary | - | - | Groom 2011 |
| *Erodium aureum* | | Secondary | - | - | Groom 2011 |
| *Erodium botrys* | Long storksbill | Secondary | Secondary | - | Groom 2011; Johnstone & Storr 1998; Johnstone *et al.* 2010 |
| *Erodium spp.* | | Secondary | Secondary | - | Johnstone *et al.* 2010; DoEE 2017 |
| *Eucalyptus caesia* | Silver princess | Secondary | - | Secondary | Johnstone *et al.* 2010; Groom 2011; DSEWPaC 2012; DoEE 2017; Johnstone 2017 |
| *Eucalyptus camaldulensis* | River red gum | - | - | Secondary | DoEE 2012; DoEE 2017 |
| *Eucalyptus decipiens* | Red heart/moit | - | - | Secondary | Johnstone 2017 |
| *Eucalyptus diversicolor* | Karri | - | - | Primary | Johnstone *et al.* 2010; DSEWPaC 2012; DoEE 2017; Johnstone & Storr 1998 |
| *Eucalyptus erythrocorys* | Illyarrie | Secondary | - | Secondary | DSEWPaC 2012; DoEE 2017; Johnstone 2017, Johnstone *et al.* 2010 |
| *Eucalyptus gomphocephala* | Tuart | Secondary | - | Secondary | Johnstone *et al.* 2010; Groom 2011; DSEWPaC 2012; DoEE 2017 |
| *Eucalyptus grandis* | Flooded gum, rose gum | - | - | Secondary | DoEE 2012; DoEE 2017 |
| *Eucalyptus lehmannii* | Bushy yate | - | - | Secondary | Johnstone 2017 |
| *Eucalyptus leucoxylon* | Yellow gum | Secondary | - | - | Groom 2014 |

| | | Foraging category as assigned by Emerge | | | |
|---|---|---|---|---|---|
| **Species name** | **Common name** | **CBC** | **BBC** | **FRTBC** | **Literature references** |
| *Eucalyptus loxophleba* | York gum | Secondary | - | - | Johnstone *et al.* 2010; Groom 2011; DSEWPaC 2012; DoEE 2017 |
| *Eucalyptus marginata* | Jarrah | Primary | Secondary | Primary | Saunders 1980; Johnstone *et al.* 2010; Groom 2011; DSEWPaC 2012; DoEE 2017; Johnstone & Storr 1998; Johnstone & Kirkby 1999; Johnstone 2017 |
| *Eucalyptus patens* | Blackbutt | Primary | - | Primary | Johnstone & Storr 1998; Johnstone & Kirkby 1999; Johnstone *et al.* 2010; DSEWPaC 2012; DoEE 2017; Johnstone 2017; Groom 2011 |
| *Eucalyptus pleurocarpa* | Tallerack | Secondary | - | - | Groom 2011 |
| *Eucalyptus preissiana* | Bell-fruited mallee | Secondary | - | - | Groom 2011 |
| *Eucalyptus robusta* | Swamp mahogany | Secondary | - | - | Johnstone *et al.* 2010; Groom 2011 |
| *Eucalyptus salmonophloia* | Salmon gum | Primary | - | - | Johnstone *et al.* 2010; Groom 2011; DSEWPaC 2012; DSEWPaC 2012; DoEE 2017 |
| *Eucalyptus staeri* | Albany blackbutt | - | - | Secondary | Johnstone & Storr 1998 |
| *Eucalyptus todtiana* | Coastal blackbutt | Secondary | - | - | Saunders 1980; Johnstone *et al.* 2010; Groom 2011; Johnstone & Kirkby 2008 |
| *Eucalyptus wandoo* | Wandoo | Primary | Secondary | Primary | Saunders 1980; Johnstone *et al* . 2010; Groom 2011; DSEWPaC 2012; DoEE 2017 |
| *Ficus sp.* | Fig | Secondary | - | - | Groom 2011 |
| *Grevillea armigera* | Prickly toothbrushes | Primary | - | - | Groom 2011 |
| *Grevillea bipinnatifida* | Fuschia grevillea | Primary | - | - | Groom 2011 |
| *Grevillea hookeriana* | Red toothbrushes | Primary | - | - | Groom 2011 |
| *Grevillea hookeriana subsp. apic* | Black toothbrushes | Primary | - | - | Groom 2011 |
| *Grevillea paniculata* | Kerosene bush | Primary | - | - | Groom 2011 |
| *Grevillea paradoxa* | Bottlebrush grevillea | Primary | - | - | Groom 2011 |
| *Grevillea petrophiloides* | Pink poker | Primary | - | - | Groom 2011 |
| *Grevillea robusta* | Silky oak | Primary | - | - | Johnstone *et al.* 2010; Groom 2011 |

| Species name | Common name | Foraging category as assigned by Emerge | | | Literature references |
|---|---|---|---|---|---|
| | | CBC | BBC | FRTBC | |
| *Grevillea spp.* | | Primary | - | - | Saunders 1979; Johnstone *et al.* 2010; DSEWPaC 2012; DoEE 2017 |
| *Grevillea wilsonii* | Native fuchsia | - | Secondary | - | Johnstone *et al.* 2010 |
| *Hakea auriculata* | | Primary | - | - | Saunders 1980; Groom 2011 |
| *Hakea candolleana* | | Primary | - | - | Groom 2011 |
| *Hakea circumalata* | Coastal hakea | Primary | - | - | Groom 2011 |
| *Hakea commutata* | | Primary | - | - | Groom 2011 |
| *Hakea conchifolia* | Shell-leaved hakea | Primary | - | - | Groom 2011 |
| *Hakea costata* | Ribbed hakea | Primary | - | - | Groom 2011 |
| *Hakea cristata* | Snail hakea | Primary | Secondary | - | Groom 2011; Johnstone *et al.* 2010 |
| *Hakea cucullata* | Snail hakea | Primary | - | - | Groom 2011 |
| *Hakea cyclocarpa* | Ramshorn | Primary | - | - | Saunders 1980; Groom 2011 |
| *Hakea eneabba* | | Primary | - | - | Groom 2011 |
| *Hakea erinacea* | Hedgehog hakea | Primary | Secondary | - | Johnstone *et al.* 2010; Groom 2011 |
| *Hakea falcata* | Sickle hakea | Primary | - | - | Groom 2011 |
| *Hakea flabellifolia* | Fan-leaved hakea | Primary | - | - | Groom 2011 |
| *Hakea gilbertii* | | Primary | - | - | Saunders 1980; Groom 2011 |
| *Hakea incrassata* | Golfball or marble hakea | Primary | - | - | Johnstone *et al.* 2010; Groom 2011 |
| *Hakea lasiantha* | Woolly flowered hakea | Primary | - | - | Johnstone *et al* . 2010; Groom 2011 |
| *Hakea lasianthoides* | | Primary | Secondary | - | Johnstone *et al.* 2010; Groom 2011 |
| *Hakea laurina* | Pin-cushion hakea | Primary | - | - | Johnstone *et al.* 2010; Groom 2011 |
| *Hakea lissocarpha* | Honeybush | Primary | Secondary | - | Saunders 1980; Johnstone *et al.* 2010; Groom 2011 |
| *Hakea marginata* | | - | Secondary | - | Johnstone *et al.* 2010 |
| *Hakea megalosperma* | Lesueur hakea | Primary | - | - | Groom 2011 |
| *Hakea multilineata* | Grass leaf hakea | Primary | - | - | Groom 2011 |
| *Hakea neospathulata* | | Primary | - | - | Groom 2011 |
| *Hakea obliqua* | Needles and corks | Primary | - | - | Saunders 1980; Groom 2011 |
| *Hakea oleifolia* | Dungyn | Primary | - | - | Groom 2011 |

| | | Foraging category as assigned by Emerge | | | |
|---|---|---|---|---|---|
| **Species name** | **Common name** | **CBC** | **BBC** | **FRTBC** | **Literature references** |
| *Hakea pandanicarpa subsp. crassifolia* | Thick-leaved hakea | Primary | - | - | Groom 2011 |
| *Hakea petiolaris* | Sea urchin hakea | Primary | - | - | Groom 2011 |
| *Hakea polyanthema* | | Primary | - | - | Groom 2011 |
| *Hakea preissii* | Needle tree | Primary | - | - | Groom 2011 |
| *Hakea prostrata* | Harsh hakea | Primary | Secondary | - | Saunders 1980; Johnstone *et al.* 2010; Groom 2011 |
| *Hakea psilorrhyncha* | | Primary | - | - | Groom 2011 |
| *Hakea ruscifolia* | Candle hakea | Primary | Secondary | - | Saunders 1980; Groom 2011; Johnstone *et al.* 2010 |
| *Hakea scoparia* | Kangaroo bush | Primary | - | - | Groom 2011 |
| *Hakea smilacifolia* | | Primary | - | - | Groom 2011 |
| *Hakea spp.* | | Primary | Secondary | - | Saunders 1979; DSEWPaC 2012; DoEE 2017 |
| *Hakea stenocarpa* | Narrow-fruited hakea | Primary | Secondary | - | Johnstone et al. 2010; Groom 2011 |
| *Hakea sulcata* | Furrowed hakea | Primary | - | - | Groom 2011 |
| *Hakea trifurcata* | Two-leaved hakea | Primary | Secondary | - | Saunders 1980; Johnstone *et al.* 2010; Groom 2011 |
| *Hakea undulata* | Wavy-leaved hakea | Primary | Secondary | - | Saunders 1980; Johnstone *et al.* 2010; Groom 2011 |
| *Hakea varia* | Variable-leaved hakea | Primary | Secondary | - | Saunders 1980; Groom 2011 |
| *Harpephyllum caffrum* | Kaffir plum | - | - | Secondary | Johnstone 2017 |
| *Helianthus annuus* | Sunflower | Secondary | - | - | Johnstone *et al.* 2010; Groom 2011 |
| *Hibiscus sp.* | Hibiscus | Secondary | - | - | Groom 2011 |
| *Isopogon scabriusculus* | | Secondary | - | - | Groom 2011 |
| *Jacaranda mimosifolia* | Jacaranda | Secondary | Secondary | - | Johnstone *et al.* 2010; Groom 2011 |
| *Jacksonia furcellata* | Grey stinkwood | Secondary | - | - | Groom 2011 |
| *Kingia australis* | Kingia | - | Secondary | - | Johnstone *et al.* 2010 |
| *Lambertia inermis* | Chittick | Secondary | - | - | Johnstone & Storr 1998; Groom 2011 |
| *Lambertia multiflora* | Many-flowered honeysuckle | Secondary | - | - | Saunders 1980; Groom 2011 |

| Species name | Common name | Foraging category as assigned by Emerge | | | Literature references |
|---|---|---|---|---|---|
| | | CBC | BBC | FRTBC | |
| *Liquidamber styraciflua* | Liquid amber | Primary | - | Secondary | Johnstone *et al.* 2010; Groom 2011; Groom 2014; Personal observation |
| *Lupinus sp.* | Lupin | Secondary | - | - | Saunders 1980; Groom 2011 |
| *Macadamia integrifolia* | Macadamia | Primary | Secondary | - | Johnstone *et al.* 2010; Grooms 2011; Groom 2014 |
| *Malus domestica* | Apple | Secondary | Secondary | - | Johnstone *et al* . 2010; Johnstone & Storr 1998; DSEWPaC 2012; DoEE 2017; Groom 2011 |
| *Melaleuca leuropoma* | | Secondary | - | - | Saunders 1980; Groom 2011 |
| *Melia azedarach* | Cape lilac or white cedar | Secondary | - | Primary | Johnstone *et al.* 2010; Groom 2011 |
| *Mesomeleana spp.* | | Secondary | - | - | Johnstone *et al.* 2010; Groom 2011 |
| *Olea europea* | Olive | - | - | Secondary | Johnstone 2017 |
| *Persoonia longifolia* | Snottygobble | - | - | Secondary | Johnstone & Storr 1998; Johnstone & Kirkby 1999; Johnstone *et al.* 2010; DSEWPaC 2012; DoEE 2017 |
| *Pinus canariensis* | Canary island pine | Primary | - | - | Johnstone *et al.* 2010; Groom 2011 |
| *Pinus caribea* | Caribbean pine | Primary | - | - | Johnstone *et al.* 2010; Groom 2011 |
| *Pinus pinaster* | Pinaster or maritime pine | Primary | - | - | Groom 2011 |
| *Pinus radiata* | Radiata pine | Primary | Secondary | - | Johnstone *et al.* 2010; Groom 2011 |
| *Pinus spp.* | | Primary | Secondary | - | Johnstone & Storr 1998; Saunders 1979; Johnstone *et al.* 2010; DSEWPaC 2012; DoEE 2017 |
| *Protea 'Pink Ice'* | | Secondary | - | - | Groom 2011 |
| *Protea repens* | | Secondary | - | - | Groom 2011 |
| *Protea spp.* | | Secondary | - | - | Johnstone *et al.* 2010 |
| *Prunus amygdalus* | Almond tree | Secondary | - | - | Johnstone & Storr 1998; Johnstone *et al.* 2010; Groom 2011; DoEE 2017 |
| *Pyrus communis* | European pear | - | Secondary | - | Johnstone & Storr 1998; Johnstone *et al.* 2010; DSEWPaC 2012; DoEE 2017 |
| *Quercus spp.* | Oak | - | Secondary | - | Johnstone *et al.* 2010 |

| Species name | Common name | Foraging category as assigned by Emerge | | | Literature references |
|---|---|---|---|---|---|
| | | CBC | BBC | FRTBC | |
| *Raphanus raphanistrum* | Wild radish | Secondary | - | - | Groom 2011; DoEE 2017 |
| *Reedia spathacea* | | - | Secondary | - | Johnstone *et al.* 2010 |
| *Rumex hypogaeus* | Doublegee | Secondary | - | - | Saunders 1980 |
| *Stenocarpus sinuatus* | | Secondary | - | - | Johnstone *et al.* 2010 |
| *Syzygium smithii* | Lilly pilly | Secondary | - | - | Groom 2014 |
| *Tipuana tipu* | Tipu or rosewood tree | Primary | - | - | Groom 2011, Groom 2014 |
| *Xanthorrhoea preissii* | Grass tree | Secondary | Secondary | - | Groom 2011; Johnstone *et al.* 2010 |
| *Xylomelum occidentale* | Woody pear | Secondary | - | - | Groom 2014 |

CBC=Carnaby's black cockatoo, BBC=Baudin's black cockatoo and FRTBC=Forest red-tailed black cockatoo

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# Appendix E

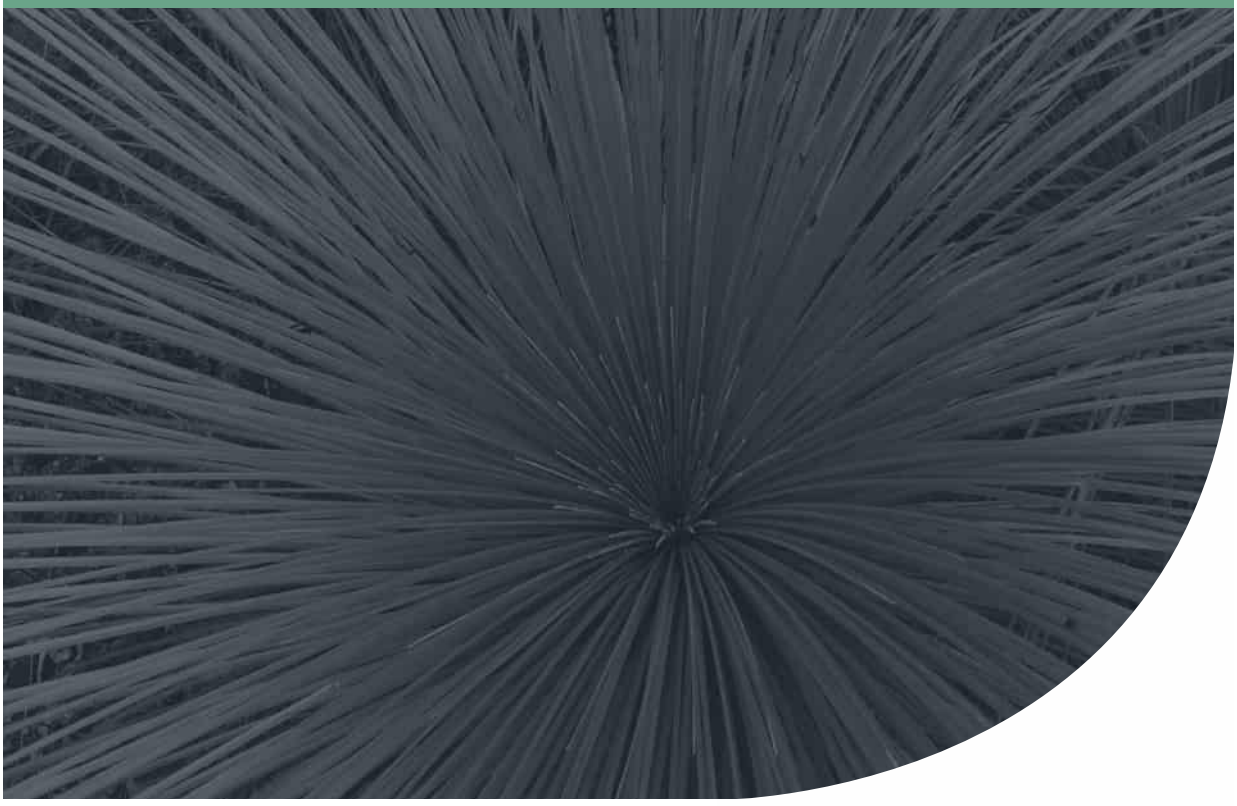
Local Water Management Strategy (Emerge Associates 2024b)

# Local Water Management Strategy

## Ascot Racecourse Local Structure Plan

Project No: EP23-109(03)

**Prepared for Perth Racing**
**July 2024**



# Document Control

| Doc name: | Local Water Management Strategy<br>Ascot Racecourse Local Structure Plan | | | | |
|---|---|---|---|---|---|
| Doc no.: | EP23-109(03)--001B JM | | | | |
| Version | Date | Author | | Reviewer | |
| 1 | May 2024 | Joyti Mabruk | JM | David Coremans | DPC |
| | For project team review | | | | |
| A | May 2024 | Joyti Mabruk | JM | David Coremans | DPC |
| | For submission to Agencies | | | | |
| B | July 2024 | Joyti Mabruk | JM | David Coremans | DPC |
| | For submission to Agencies | | | | |

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# Executive Summary

Perth Racing (the 'proponent') proposes to progress a local structure plan (LSP) over its landholdings in Ascot. The area is bounded by the Swan River to the North, Grandstand Road to the west and south, Matheson Road and Resolution Drive to the south and residential areas to the east, referred to herein as 'the site'. The structure plan area also includes the existing Ascot Racecourse. The site is located approximately 8.5 km east of Perth central business district (CBD) and is approximately 62 ha in size, within City of Belmont (CoB). The LSP consists of six precincts: Precinct A, Precinct B (largely unchanged form existing), Precinct C, Precinct D, Precinct E, and the racecourse. The layout of LSP and precinct plan is shown on **Figure 1** and provided in **Appendix A**. The site is currently zoned "Urban", "Parks and Recreation", and "Private Recreation" under the Metropolitan Regional Scheme (MRS) (WAPC 2023b). Under the Local Planning Scheme (LPS) No. 15 (WAPC 2023a), the site is zoned as "RC – Place of Public Assembly: Racecourse", Mixed Use", "Parks and Recreation" and "Parks and Recreation: Water Supply Sewerage and Drainage".

This Local Water Management Strategy (LWMS) outlines the water management approach as required for the site by *Better Urban Water Management* (WAPC 2008b) and supports the Ascot Racecourse Structure Plan. It is intended to satisfy the expectations of the Department of Water and Environmental Regulation (DWER) and City of Belmont (CoB). The LWMS also aids in achieving the goals and objectives outlined in the *Kep Katitjin – Gabi Kaadadjan – Waterwise Perth Action Plan 2* (DWER 2023d).

The first step in applying integrated water cycle management in urban catchments is to establish agreed environmental values for receiving environments. In summary, the environmental investigations conducted to date indicate that:

- The site is being used for horse racing, mixed uses (i.e. car park, stables and entertainment/hospitality venues, and commercial). Some portions of the site are only used infrequently (e.g. for parking or events).
- The site is located in an area of moderate to high rainfall, receiving 756.3 mm on average annually with the majority of rainfall received between June and August.
- The majority of the site has a relatively flat topography of 1 mAHD at the northwest (along the Swan River) and 2 mAHD to the south and rising to 7 mAHD to the east of the site.
- The site is within the Swan River Terraces system and displays Guildford formation soils of alluvial and leached yellow sand described as:
    - **Ms2 –** Sandy Silt: Strong brown to mid grey, mottled, blocky, fine sand, hard when dry, variable clay content of alluvial origin
    - **Ms4 –** Sandy Silt: light yellow brown, blocky, mottled some fine to medium sand, soft when moist, variable clay content
    - **S8 –** Sand: very light grey at surface, yellow at depth, fine to medium-grained, sub rounded quartz, moderately well sorted of eolian origin
- The groundwater depth below the surface of Precinct A varies from 1.09 m mBGL to 2.37 mBGL (Douglas Partners 2024).
- The highest groundwater level beneath the site is reported 3.03 mBGL during February 2024 (Galt 2024), located beneath Precinct D.

- Most of the site is considered to have a high to moderate risk of ASS occurring, however some portions of Precinct B, Precinct C and the Racecourse are considered to have a moderate to low risk of ASS occurring within the 3 m of the natural surface.
- The northern portion of the site along the Swan River is identified as an ESA.
- The entirety of the site is classified as a SSA and classified as:
  - a) Estuary catchments on the Swan and Scott Coastal Plains.
  - f) The area is <1 km up-groundwater-gradient and 250 m down-gradient of a significant wetland; or where the groundwater gradient is unknown within 1 km of the significant wetland.
- The following wetlands are located within the site and these are classified as:
  - Multiple Use category wetland (MUW) area (UFI 8424, UFI 8425, UFI 8426).
  - Resource Enhancement wetland (REW) area (UFI 8423).
- The dominant hydrological feature of the site is the Swan River estuary. The northern boundary of the site falls within the Swan Canning Development Control Area (DCA) (CoB 2018) and Swan Canning River Park.
- The floodway of the Swan River is immediately adjacent to but not within the site. The 1% AEP flood elevation of the Swan River adjacent to the site is 2.8 mAHD.
- There are two existing major drainage network systems within or adjacent to the site include:
  - The Central Belmont Main Drain (CBMD), managed by the Water Corporation. This currently receives runoff from Precinct C (via the CoB drainage network) and Precinct E.
  - The CoB local piped drainage network, which exists along Matheson Road, Grandstand Road and the northern portion of Resolution Drive.
- There are three lakes (Irrigation Lake, Lined Lake and Wetland Lake) located within the centre of the racecourse. These are understood to receive runoff from the Grandstand buildings in Precinct B and stables/buildings in Precinct C.
- The groundwater beneath the site is a multi-layered system consisting of the Superficial, Kings Park Formation, Leederville and Yarragadee aquifers.
- Regional groundwater mapping indicates that the groundwater levels across the site are at approximately 0.5 m AHD.
- Local groundwater level monitoring indicates that annual maximum groundwater levels (recorded in August 2022) were measured at 1.26 m AHD and 1.70 m AHD at Bore 1 and Bore 2 respectively. Groundwater levels in adjacent areas included Precinct A levels at 1.09 mBGL to 2.37 mBGL and Precinct D levels of approximately 3.03 mBGL.
- Water quality monitoring indicates that EC, TDS and pH values do not exceed guideline trigger values. However, TN and TP concentrations continually exceed the ANZECC guideline trigger value of 1.2 mg/L and 0.065 mg/L respectively.

The design criteria and the manner in which they are proposed to be achieved are presented in **Table E1**.

*Table E1: Water management criteria and compliance summary*

| Management Aspect | Criteria Number | Criteria Description | Manner in which compliance will be achieved | Responsibility for implementation | Timing of implementation |
|---|---|---|---|---|---|
| Water Conservation | WC1 | For residential dwellings consumption target of 60 kL/person/year scheme water. | Provide advice to Precinct A and Precinct D residents on water conservation measures | Proponent | Point of sale |
| | | | RWTs can be utilised for non-potable uses | Lot owner | Post-house construction |
| | | | Promotion and use of WWG in lots within Precinct D and other open spaces across all precincts | Proponent/Lot owner | Point of sale/Post-house construction |
| | | | Promotion and use of water efficient appliances within Precinct A and Precinct D | Proponent/Lot owner | Point of sale/Post-house construction |
| | | | Mandate water efficient fittings within Precinct A and Precinct D | CoB | Building approval |
| | WC2 | Ensure the efficient use of all water resources. | Use of waterwise landscaping principles in all open spaces and verges | Proponent | Landscape design |
| | | | Open spaces designed to use no more than allocated groundwater | | |
| | | | Minimise water requirements for open spaces and verge maintenance | | |
| | | | Use of water efficient appliances within Precinct A and Precinct D | Lot owner | Post-house construction |
| | | | Use of WWG principles within Precinct A and Precinct D | | |
| | WC3 | Non-potable irrigation water to be sourced from existing groundwater licences held over the area. | The proponent holds a groundwater Licence with an allocation of 347,000 kL per annum which will meet the irrigation requirements of the racecourse. | Proponent | Landscape design |

*Table E1: Water management criteria and compliance summary (Continued)*

| Management Aspect | Criteria Number | Criteria Description | Manner in which compliance will be achieved | Responsibility for implementation | Timing of implementation |
|---|---|---|---|---|---|
| Stormwater Management | SW1 | Retain and treat the first 15 mm of rainfall as close to source as possible | Lots within Precinct D and Precinct E to retain the first 15 mm of rainfall on lot in soakwells/soakage. Lot storage will be the responsibility of the lot owners. | Lot owner/developer | Construction |
| | SW2 | Retain up to 1% AEP rainfall event on-site. | Runoff up to the 1% AEP to be detained within the FSA in Precinct A. Precinct A and a portion of Precinct C will ultimately discharge to the centre of the track. | Proponent | Construction |
| | | | Runoff up to 1% AEP to be managed with the sub-surface storage in Precinct D. | Proponent | Construction |
| | SW3 | Post-development critical 1% AEP peak flows leaving the site to mimic pre-development peak flows. | Runoff up to 1% AEP event to be detained in the detention basin and subsurface storage which will maintain the pre-development peak flow of 0.95 $m^3/s$ from Precinct E and 0.463 $m^3/s$ from Precinct D respectively. | Proponent | Construction |
| | SW4 | Finished floor levels must have a minimum of 300 mm clearance above the 1% AEP TWL in the FSA. | It is anticipated that the FSA and detention basin invert will be set so that the Finished floor levels must have a minimum of 300 mm clearance above the 1% AEP TWL in the basins. | Proponent | Detailed drainage design |
| | SW5 | All lots must have a minimum of 500 mm clearance above the 1% AEP flood level in the Swan River. | The 1% AEP flood level in the Swan River is 2.8 mAHD. The preliminary bulk earthworks concept provided in shows that finished floor level will be at 4.0 mAHD. | Proponent | Detailed drainage design |
| | SW6 | Nutrient concentrations within surface water discharging from the site to the Swan River are to meet regional water quality targets. | BRA will be designed so that after treatment the nutrient concentrations within surface water meet the regional water quality target. | Proponent | Detailed drainage design |
| | SW7 | Reduce nutrient loads by applying appropriate non-structural measures | • Minimise use of fertilisers within POS and road verges.<br>• Street sweeping at regular intervals.<br>• Use of drought tolerant turf species.<br>• Education of residents regarding fertiliser use | Landscape/Maintenance Contactor/Proponent | Landscape Implementation/ Point of Sale |
| | SW8 | Design infiltration areas to avoid creating mosquito habitat | Stormwater infrastructure will be designed to ensure all runoff is infiltrated within 96 hours. | Proponent | Detailed drainage design |

*Table E1: Water management criteria and compliance summary (Continued)*

| Management Aspect | Criteria Number | Criteria Description | Manner in which compliance will be achieved | Responsibility for implementation | Timing of implementation |
|---|---|---|---|---|---|
| Groundwater Management | GW1 | Surface based infiltration should have 300 mm clearance above MGL. | Basin inverts will be set at 300 mm above the MGL, and subsoil drainage will be provided in the POS. | Proponent | Detailed drainage design |
| | GW2 | Finished floor levels should have a clearance to the MGL of at least 1.2 m. | Lots will be set at least 1.2 m above the MGL. | Proponent | Detailed drainage design |

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Concept plan

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Modelling Assumption Report

**Appendix E**

Central Belmont Main Drain Water Corporation

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# Abbreviation Tables

*Table A1: Abbreviations – Organisations*

| Organisations | |
|---|---|
| ANZECC | Australian and New Zealand Environment and Conservation Council |
| BoM | Bureau of Meteorology |
| DBCA | Department of Biodiversity, Conservation and Attractions |
| DWER | Department of Water and Environmental Regulation |
| EPA | Environmental Protection Authority |
| CoB | City of Belmont |
| WC | Water Corporation of Western Australia (Water Corp) |

*Table A2: Abbreviations – General terms*

| General terms | |
|---|---|
| AEP | Annual exceedance probability |
| ASS | Acid sulfate soils |
| CCW | Conservation category wetland |
| CEMP | Construction Environmental Management Plan |
| DCA | Development Control Area |
| DMP | Drainage management plan |
| EC | Electrical conductivity |
| FMP | Foreshore management plan |
| LWMS | Local Water Management Strategy |
| MGL | Maximum groundwater level |
| MRS | Metropolitan Region Scheme |
| NWQMS | National Water Quality Management Strategy |
| POS | Public open space |
| SCWQIP | Swan and Canning Water Quality Improvement Plan |
| SRA | Swan River Alluvium |
| TDS | Total dissolved solids |
| TEC | Threatened ecological community |
| TKN | Total Kjeldahl nitrogen |
| TN | Total nitrogen |
| TP | Total phosphorus |
| TSS | Total suspended solids |

| General terms | |
|---|---|
| TWL | Top water level |
| UFI | Unique feature identifier |
| UWMP | Urban Water Management Plan |
| WSUD | Water sensitive urban design |
| WWG | Water wise gardening |

*Table A3: Abbreviations – units of measurement*

| Units of measurement | |
|---|---|
| cm | centimetre |
| ha | hectare |
| m | metre |
| $m^2$ | square metre |
| $m^3$ | cubic metre |
| $m^3$ / s | cubic metres per second |
| mAHD | metres in relation to the Australian height datum |
| mBGL | metres below ground level |
| mm | millimetre |
| mS / cm | millisiemens per centimetre |
| µg/L | micrograms per litre |
| mg / L | milligrams per litre |

*Table A4: Terminology – design rainfall*

| Rainfall event | Annual exceedance probability (AEP) | Approximate equivalent average recurrence interval (ARI) |
|---|---|---|
| Small | 1 exceedance year (EY) event (frequent) | 1 in 1 year ARI event |
| Minor (residential purposes) | 20% AEP event | 1 in 5 year ARI event |
| Minor (commercial purposes) | 10% AEP event | 1 in 10 year ARI event |
| Major | 1% AEP event | 1 in 100 year ARI event |

# 1 Introduction

## 1.1 Background

Perth Racing (the 'proponent') proposes to progress a local structure plan (LSP) over its landholdings in Ascot. The area is bounded by the Swan River to the North, Grandstand Road to the west and south, Matheson Road and Resolution Drive to the south and residential areas to the east, referred to herein as 'the site'. The structure plan area also includes the existing Ascot Racecourse and Perth Racing Administration lot/building on Grandstand Road. The site is located approximately 8.5 km east of Perth central business district (CBD) and is approximately 62 ha in size, within City of Belmont (CoB). The LSP consists of six precincts: Precinct A, Precinct B, Precinct C, Precinct D, Precinct E, and the racecourse. The layout of LSP and precinct plan is shown on **Figure 1** and provided in **Appendix A**.

## 1.2 Town planning context

The site is currently zoned "Urban", "Parks and Recreation", and "Private Recreation" under the Metropolitan Regional Scheme (MRS) (WAPC 2023b). Under the Local Planning Scheme (LPS) No. 15 (WAPC 2023a), the site is zoned as "RC – Place of Public Assembly: Racecourse", Mixed Use", "Parks and Recreation" and "Parks and Recreation: Water Supply Sewerage and Drainage".

## 1.3 Purpose of this report

This Local Water Management Strategy (LWMS) outlines the water management approach as required for the site by *Better Urban Water Management* (WAPC 2008b) and supports the Ascot Racecourse Structure Plan. It is intended to satisfy the expectations of the Department of Water and Environmental Regulation (DWER) and CoB. The LWMS also aids in achieving the goals and objectives outlined in the *Kep Katitjin – Gabi Kaadadjan – Waterwise Perth Action Plan 2* (DWER 2023d).

## 1.4 Policy Framework

There are a number of State Government legislation and policies of relevance to the site. These policies include:

- *Kep Katitjin – Gabi Kaadadjan – Waterwise Perth Action Plan 2* (DWER 2023d)
- *Swan and Canning Rivers Management Act 2006* (Government of WA 2006)
- *Policy 49 – Planning for stormwater management affecting the Swan Canning Development Control Area* (DPaW 2016)
- *Local Planning Scheme No. 15 (City of Belmont)* (WAPC 2023a)
- *State Water Plan* (Government of WA 2007)
- *Draft State Planning Policy 2.9: Planning for Water Guidelines* (DPLH 2021)
- *State Planning Policy 2.10 Swan Canning River System* (WAPC 2006b)
- *Guidance Statement No. 33: Environmental Guidance for Planning and Development* (EPA 2008)
- *Liveable Neighbourhoods* (WAPC 2009a)
- *Planning Bulletin No. 64: Acid Sulfate Soils* (WAPC 2009b)

In addition to the above policies, there are a number of published guidelines and standards available that provide direction regarding the water management characteristics that urban developments should aim to achieve. These are key inputs that relate either directly or indirectly to the site and include:

- *Better Urban Water Management* (WAPC 2008b)
- *Urban Water Management Plans: Guidelines for Preparing Plans and for Complying with Subdivision Conditions* (DoW 2008)
- *National Water Quality Management Strategy (NWQMS)* (ANZECC 2000)
- *Australian Runoff Quality* (Wong et al. 2006)
- *National Water Quality Management Strategy* (ANZECC 2000)
- *Stormwater Management Manual for Western Australia* (DoW 2007)
- *Decision Process for Stormwater Management in Western Australia* (DWER 2017)
- *Australian Rainfall and Runoff* (Ball J et al. 2019)
- *Swan and Canning Water Quality Improvement Plan* (SCWQIP) (SWT 2009)
- *Swan and Canning Rivers Foreshore Assessment and Management Strategy* (SRT 2008)
- *Golden Gateway Structure Plan* (CoB 2019).

## 1.5 Previous Studies

### 1.5.1 Golden Gateway Local Water Management Strategy

The draft Golden Gateway LWMS (Essential Environmental 2018b) was prepared to support the Golden Gateway Structure Plan (CoB 2019) by Essential Environmental. The LWMS was prepared in consideration of *Better Urban Water Management* (WAPC 2008b) and *State Planning Policy 2.9: Water Resources* (WAPC 2006a). The key objectives and design criteria of the draft LWMS (Essential Environmental 2018b) included:

**Water Conservation:**

- Ensure the efficient use of all water resources in the redeveloped urban form and aim to achieve highest value use of fit-for-purpose water.
- Maintain opportunities for future generations by using water more efficiently.

**Stormwater management:**

- The first 15 mm of rainfall is to be retained within all lots through a combination of raingardens, water tanks and soakwell systems.
- Raingardens and tree-pits are to be installed in all new or upgraded streets to provide infiltration of the first 15 mm of rainfall.
- Minor event runoff from events larger than 15mm total depth are to be managed in accordance with serviceability requirements of the City of Belmont.
- Roads and public open spaces are to be designed to cater for the surface overflow for more severe storm events with habitable floors at least 0.3 m above the 1% AEP flood or storage level at any location.
- Habitable floors are to be constructed at least 0.5m above the 1% AEP flood level in the Swan River adjacent to the development area.

- Water quality treatment systems and stormwater management structures should be designed in accordance with the *Stormwater Management Manual for Western Australia* (DoW 2007) and *Australian Runoff Quality: A guide to water sensitive urban design* (Wong et al. 2006).

**Groundwater management:**

- Groundwater management systems are to be designed as free discharging under normal operating conditions.
- Flows from groundwater management systems are to be treated prior to discharge.

## 1.6 LWMS objectives

Whilst the criteria proposed in the Golden Gateway LWMS are relevant to some parts of the Ascot Racecourse structure plan area, it is not representative of all areas and site characteristics and therefore only partially applicable. This LWMS supports the Ascot Racecourse Structure Plan, which proposes an alternate layout (to the Golden Gateway Structure Plan) to some of the land uses surrounding the Ascot Racecourse. The design criteria and objectives proposed in this LWMS are generally based on those proposed in the Golden Gateway LWMS, though with additional consideration for site and Precinct- specific characteristics. This LWMS adopts the following major objectives:

- Protect water quality in the Swan River by providing appropriate water quality treatment at source.
- Mitigate potential flooding within the Structure Plan area and immediate surrounds.
- Take account of existing drainage infrastructure capacity and ensure that sufficient land is set aside to manage stormwater.
- Provide a broad level stormwater management framework to support future urban development.
- Incorporate appropriate best management practices (BMPs) into the drainage systems that address the environmental and stormwater management issues identified.
- Minimise development construction costs, which will result in reduced land costs for future home owners.
- Minimise transport of nutrients/pollutants to groundwater.
- Develop a non-potable water conservation strategy that will accommodate existing groundwater allocation constraints for the area.
- Gain support from DWER, DBCA, CoB and Water Corporation for the proposed method to manage stormwater within the site.

Detailed objectives for water management within the site are further discussed in **Section 4**.

# 2 Proposed Development

A total of approximately 62.0 ha is proposed to be developed as shown on **Figure 1**. The Ascot Racecourse Structure Plan proposes six precincts with different objectives and character, and these include:

- **Precinct A –** Approximately 3.0 ha for retirement living/village and mixed use purposes
- **Precinct B –** Approximately 9.3 ha for the use of public assembly (i.e. entertainment/office purposes)
- **Precinct C –** Approximately 8.0 ha for the use of public assembly (i.e. racecourse/stabling purposes)
- **Precinct D –** Approximately 1.5 ha for residential/childcare purposes
- **Precinct E –** Approximately 4.2 ha for mixed use (i.e. commercial/retail purposes)
- **The Racecourse –** Approximately 36.0 ha of retained 'Place of Public Assembly: Racecourse' uses.

The proposed land uses surrounding Ascot Racecourse will be integrated into the Racecourse Precinct. Management of surface and groundwater will take a water sensitive urban design (WSUD) approach that will integrate the management of water within the Precincts with the Racecourse and immediately surrounding infrastructure.

The WSUD measures that will be adopted within the Structure Plan area will include:

- Bio-retention areas (BRAs) to meet water quality treatment requirements
- Subsurface infiltration cells that will facilitate at-source infiltration
- Flood storage integrated into existing surface water bodies located centrally within the Racecourse
- Flood storage areas (FSAs) to provide flood detention, retention and infiltration as close to source as possible.

The WSUD approaches are further discussed in **Section 6**.The detailed concept plan and preliminary civil drawings are provided in **Appendix A** and **Appendix C**.

# 3 Pre-development Environment

## 3.1 Sources of information

The following sources of information were used to provide a broad regional environmental context for the site:

- *Geological Survey of Western Australia* (Gozzard 2007)
- *Map Viewer Plus* (Landgate 2023)
- *Water Register* (DWER 2024c)
- *Perth Groundwater Map* (DWER 2024a)
- *Weather and Climate Statistics Data* (BoM 2024)
- *Acid Sulfate Soil Mapping* (DWER 2023a)
- *Water Information Reporting* (DWER 2024b).

In addition to the above information, site-specific investigations have been conducted. These have aimed at providing more detail to the existing regional information. These site-specific investigations and information have been available from the following sources:

- *Draft Golden Gateway Structure Plan* (CoB 2019)
- *Draft Golden Gateway LWMS* (Essential Environmental 2018b)
- *Draft Golden Gateway Environmental Report* (Essential Environmental 2018a)
- *Draft Infrastructure Assessment Report : Golden Gateway Precinct* (Cardno 2017)
- *Swan and Canning Water Quality Improvement Plan* (SCWQIP) (SWT 2009)
- *Swan and Canning Rivers Foreshore Assessment and Management Strategy* (SRT 2008).

## 3.2 Land use context

The site has been used as the Ascot Racecourse since 1892 (Landgate 2023). The northeast portion of the site is being used for horse racing and training purposes and the surrounding area is being used for stabling, training and entertainment venues which support the above purposes. Some portions of the site are predominantly cleared (e.g. Precinct A, Precinct E) and are occasionally used for parking or other temporary uses. The Precinct D area is used for commercial purposes, being the current Perth Racing administration building.

## 3.3 Climate

The site experiences a dry Mediterranean climate of hot dry summers and cool wet winters and is located in an area of moderate to high rainfall, receiving 756.3 mm on average annually with the majority of rainfall received between June and August (BoM 2024). The region experiences rainfall for 84.8 days annually (on average).

## 3.4 Topography

The site is mostly flat with a slight downward slope from east to north and northwest, with a few low points. The variance in topography of the Precincts is described further as:

- The Racecourse slopes from Precinct C towards the Swan River with topography approximately 7 m Australian Height Datum (mAHD) to 1m AHD and from 7 mAHD (east) to 3 mAHD (west). There are a few local depressions (i.e., lakes and swale) observed within the centre of the racecourse.
- Precinct A has a generally flat topography of 2 mAHD with a high point of 3 mAHD to the west adjacent to Grandstand Road.
- Precinct B slopes from south to north (4 mAHD to 2 mAHD) and from west to east (3 mAHD to 2 mAHD). Precinct D and E are generally flat with a topography of 3 mAHD and 2 mAHD respectively.
- Parts of Precinct C (existing stables and buildings) drain towards the Racecourse, however most of Precinct C is currently carpark that drains towards Precinct E and the Southern Main Drain.
- Precinct D is generally flat with a topographic level 3 mAHD.
- Precinct E has a gentle slope from east to west. The topography of the precinct ranges from 4 mAHD to the east to 2 mAHD to the west.

The topographic contours of the site are shown on **Figure 2**.

## 3.5 Geotechnical conditions

### 3.5.1 Geology and soils

*The Perth Metropolitan Region 1:50,000 Environmental Geology Series* (Gozzard 1986) *and Sea to scarp - geology, landscape, and land use planning in the southern Swan Coastal Plain* (Gozzard 2011) describes that the site lies in the Swan River Terraces system, being underlain by the Guildford formation of alluvial and leached yellow sand. The regional geological mapping indicates that the site soils include:

- **Ms2 –** Sandy Silt: Strong brown to mid grey, mottled, blocky, fine sand, hard when dry, variable clay content of alluvial origin
- **Ms4 –** Sandy Silt: light yellow brown, blocky, mottled some fine to medium sand, soft when moist, variable clay content
- **S8 –** Sand: very light grey at surface, yellow at depth, fine to medium-grained, sub rounded quartz, moderately well sorted of eolian origin

The regional geological mapping is shown on **Figure 3**.

### 3.5.2 Precinct A geotechnical investigation

A detailed geological investigation has been carried out in January 2024 (Douglas Partners 2024) for Precinct A (see **Appendix B**). This investigation generally confirms the regional geological mapping, and the ground conditions of Precinct A are described as:

- Uncontrolled Fill
  - Granular FILL - SAND, Organic SAND, Gravelly SAND, Silty SAND and Sandy GRAVEL
  - Cohesive FILL - Clayey SAND, Sandy CLAY, CLAY
- Overlying natural soils includes
  - Clayey soils including Clayey SAND and CLAY
  - Sandy soils including SAND and Silty SAND

Douglas Partners (2024) concluded that if unmodified, Precinct A is considered unsuitable for on-site stormwater disposal due to the low permeability soils and shallow groundwater depth. To meet geotechnical requirements, stormwater should be managed by connecting to a suitable outflow (Douglas Partners 2024).

### 3.5.3 Precinct D geotechnical investigation

Galt has undertaken a geotechnical study in March 2024 (Galt 2024) for Precinct D (provided in **Appendix B**) and has described the Precinct D ground conditions as:

- **Surficial Topsoil** (in landscaped areas) up to 0.3 m thick and **Hardstand Fill Layers** (in carparks and access ways); overlying
- **FILL: SAND / SAND (SP)**, fine to medium grained, sub-rounded to sub-angular, yellow / brown / grey layers, includes trace gravel / Sandy GRAVEL layers, trace / with fines, some typically medium dense to dense, extending to depths of about 0.4 m to 0.9 m; overlying
- **In BH03 and BH04 only: Silty SAND / Clayey SAND (SM/SC)** fine to medium grained, sub-rounded to sub-angular, brown / grey, low to medium plasticity fines, some typically medium dense to dense, extending to depths of about 0.7 m to 1.2 m; overlying
- **Sandy CLAY / CLAY (CI)**, medium plasticity, brown / orange / grey, trace sand to sandy, trace gravel in some zones, desiccated, CPT traces indicate presence of occasional sand layers, typically very stiff to hard, extending to the maximum depth investigated of 10 m.

Whilst detailed geotechnical investigations have not been undertaken in each Precinct, it is expected that the soils encountered will be generally consistent with regional geological mapping and the investigations undertaken for Precincts A and D and will consist of generally shallow layers of sand overlying sandy clay of the Guildford formation. Such soils are unlikely to be suitable for onsite infiltration of all stormwater and onsite detention unless modified and stormwater management will need to be supplied with an outlet so that flood storage areas have a way to drain between storm events.

### 3.5.4 Acid sulfate soils

The acid sulfate soil (ASS) risk mapping (DWER 2023b) indicates that most of the site is considered to have a high to moderate risk of ASS occurring within the 3 m of the natural surface. Some portions of Precinct B, Precinct C and the Racecourse are mapped to have a moderate to low risk of ASS occurring within the 3 m of the natural surface.

The ASS risk mapping is shown on **Figure 4**.

## 3.6 Environmental assets

### 3.6.1 Environmentally sensitive area

The northern portion of the site (along the Swan River) is identified as an environmentally sensitive area (ESA). ESAs are shown on **Figure 5**.

### 3.6.2 Sewerage sensitive area

The entirety of the site is classified as a sewage sensitive area (SSA) by the *Government Sewerage Policy* (DPLH 2019). The two classifications of relevance to the site define a SSA as:

- a) Estuary catchments on the Swan and Scott Coastal Plains.
- f) The area is <1 km up-groundwater-gradient and 250 m down-gradient of a significant wetland; or where the groundwater gradient is unknown within 1 km of the significant wetland.

### 3.6.3 Geomorphic wetlands

The *Geomorphic Wetlands of the Swan Coastal Plain* dataset indicates the following wetlands within the site:

- Multiple Use Category Wetland (MUW) area (UFI 8424, UFI 8425, UFI 8426).
- Resource Enhancement Wetland (REW) area (UFI 8423)

The Swan River, situated immediately adjacent to the northern boundary of the site, is recognised as a "Conservation Category Wetland" (CCW) (UFI 1316 - Estuary waterbody) within the *Geomorphic Wetlands of the Swan Coastal Plain* dataset and has additional significant ecological, cultural and heritage values (DEC 2011).

The location of the geomorphic wetlands is shown on **Figure 5.**

## 3.7 Hydrology

### 3.7.1 Surface water

#### 3.7.1.1 Water Resources

The dominant hydrological feature of the site is the Swan River estuary. The estuary is subject to marked seasonality, which controls the salinity of the site, and particularly the foreshore area. This seasonality is a result of the short winter rainfall patterns, a small tidal range and the landform of the estuary (Hodgkin and John 1986).

The northern boundary of the site falls within the Swan Canning Development Control Area (DCA) (CoB 2018) and Swan Canning River Park (shown on **Figure 6**). Any proposed development on land adjacent river within the DCA and/or partly within DCA are subject to assessed and approved by the Department of Biodiversity, Conservation and Attraction (DBCA) under Part 5 of the *Swan and Canning Rivers Management Act 2006* and the *Swan and Canning River Management Regulations 2007* (CoB 2018).

Water management strategies will be needed to ensure protection (i.e. water quality improvement) of the Swan River. The catchments of the Swan Canning River system are the subject of the Swan Canning Water Quality Improvement Plan (SRT 2009) which contains catchment management measures and control actions.

The major event flood levels in the Swan River have been documented in recent studies undertaken on behalf of DWER (DWER 2023c).These flood levels, along with the extent of floodway/floodplain

are shown in the DWER online floodplain mapping tool. This tool indicates that the anticipated 1% AEP flood level adjacent to the site is 2.8 mAHD – noting that this level includes consideration for future climate change. The extent of floodway/floodplain from the Swan River adjacent to the site is shown on **Figure 6**.

#### 3.7.1.2 Lakes

There are three lakes within the racecourse including:

- **Irrigation lake** – located adjacent to the Production Bore 1 (PB01) and has a volume of 6,000 $m^3$ to 7,000 $m^3$. Water is pumped out from PB01 into the lake, and irrigation water is drawn from the Irrigation Lake. During winter the Irrigation Lake overflows into the adjacent Lined Lake. The current irrigation demand for the Racecourse is approximately 3,000 $m^3$/day, there is no shortage of irrigation water supply as the lake has sufficient storage capacity. The top water level (TWL) of the Irrigation Lake is approximately 3.1 mAHD.
- **Lined Lake** – this Lake is sealed with a natural clay liner and fed via a 225 mm overflow pipe from the Irrigation Lake. The Lined Lake overflows into the Wetland Lake. The elevation of the Lined Lake is approximately 2.1 mAHD.
- **Wetland lake** – is the largest of the three lakes and has approximately 2.6 ha of surface area. The Wetland Lake has a TWL of approximately 0.4 mAHD. Two overflow pipes at the northern end of the Wetland Lake allow excess water within the Lake to flow to the Swan River.

Peak water levels within the Lined Lake and Wetland Lake were predicted for a 10% AEP storm event (Evangelisti & Associates 1997). The peak water level for was 2.68 mAHD in the Lined Lake which then discharged to the Wetland Lake. The Wetland Lake discharged to the Swan River after reaching the peak water level of 0.53 mAHD. The lakes are connected by 450 mm RCP pipes. The outfall into the Swan River is directed via two pipes (450 mm RCP and 375 mm RCP). The pipes are fitted with headwall and tidal control gate to mitigate inundation from the Swan River (Evangelisti & Associates 1997).

The location of the lakes and overflow pipes are shown on **Figure 6**.

#### 3.7.1.3 Drainage network systems

The Central Belmont Main Drain (CBMD) is managed by the Water Corporation and is the regional drainage system and has a catchment area of 189 ha and which discharges into the Swan River. Catchment plans for the CBMD indicate that inflow from the site occurs in the southwestern corner of Precinct E, where an open drain connects to the CBMD at node CAN008 as shown in **Appendix E** and **Figure 6**.

The CoB has a local drainage piped network located beneath Hardey Road adjacent to Precinct C and which discharges to the CBMD within Precinct E. A larger local CoB network extends along Matheson Road to the East. This is currently connected to the 900 mm pipe that discharges northwards to the lined lake within the centre of the racecourse.

CoB local drainage pipes also exist beneath Grandstand Road adjacent to Precinct A however there is no current connection between Precinct A and the local drainage network. The same network also extends past/adjacent to Precinct D along the northern end of Resolution Drive, however there is no

current connection from Precinct D to the local pipe network. The pipe network along Resolution Drive includes a 450 mm and 525 mm pipe which are understood to discharges into the CBMD. Whilst the CoB catchment has not been modelled to determine peak flows under differing storm durations, an estimate can be made based on the capacity of the pipes which discharge to the CBMD. The combined capacity of the two existing pipes is estimated to be 0.62 $m^3/s$, and therefore the allowable discharge from Precinct C and Precinct E is estimated to be 0.33 $m^3/s$.

Within the Racecourse an existing swale is being used around the racecourse to convey water from the track into the central Wetland Lake.

The location of the swales within the Racetrack Precinct and outlet to Swan River from the Wetland Lake is shown on **Figure 6**.

### 3.7.2 Groundwater

#### 3.7.2.1 Groundwater Resource

The groundwater beneath the site is a multi-layered system comprised of the following:

**City of Bayswater – Perth Superficial Swan unconfined aquifer**. The Superficial Aquifer is approximately 20 m thick under the Ascot Racecourse, with the base of the aquifer under the racecourse at approximately - 20 mAHD (Davidson, 1995). The aquifer is recharged directly by rainfall and from the Swan River.

**King Park Aquifer**. The Kings Park Aquifer is 155 m thick starting from - 20 mAHD and is recharged laterally from the adjacent northern Mirrabooka Aquifer and Superficial Aquifer. The Kings Park Aquifer comprises 2 members: the Mullaloo Sandstone and Como Sandstone. Only the Mullaloo Sandstone member is present at the Ascot site (Davidson, 1995). The Mullaloo Sandstone member is underlain by the Kardinya Shale confining bed of the Osborne Formation.

The groundwater salinity in the aquifer in 1995 was mapped as 500 mg/L to 1,000 mg/L TDS (Davidson, 1995). However, data in recent years indicates the aquifer salinity levels are increasing due to saltwater intrusion.

**Perth South – Perth Leederville** confined aquifer is below -160 mAHD and is approximately 370 m thick. In the Ascot area the Leederville Aquifer is confined but further to the south and north of Perth it is hydraulically connected to the Superficial Aquifer. The Leederville Aquifer comprises of four formations under the Ascot Racecourse, namely Henley Sandstone, Pinjar Member, Wanneroo Member and the Mariginiup Member.

Groundwater flow is generally westwards through the Leederville Aquifer. Lateral discharge can occur to the Kings Park Aquifer but depends on levels of abstraction in the Leederville Aquifer adjacent to the discharge area.

Generally, groundwater salinity in the Leederville Aquifer can be divided into an upper and a lower zone. The upper zone is generally fresh with salinity ranging from 250 to 1,000 mg/L. Salinity in the lower zone (below -400 mAHD) ranges from 1,000 mg/L to greater than 3,000 mg/L.

Groundwater is abstracted from an artesian production bore (PB1) assigned to the Leederville Aquifer to meet the irrigation demand of the Racecourse and surrounds. The bore is located adjacent the Irrigation Lake at the south corner of the Ascot Racecourse track. The bore is screen in the upper Leederville Formation which extends between -160 mAHD and -400 mAHD.

The allocation status of aquifers is further discussed in **Section 5.1.2**.

### 3.7.2.2 Groundwater levels

Perth Groundwater Map indicates (DWER 2023e) that the regional groundwater level sits at 0.5 m AHD across the site. Therefore, the groundwater clearance from southeast to northwest of the site ranges from 6.5 m to 0.5 m.

There are two groundwater level and quality monitoring bores (Bore1 and Bore2) and one production bore (PB1) within the Racecourse (see **Figure 2**) which are monitored by Perth Racing. Groundwater levels in these are monitored monthly.

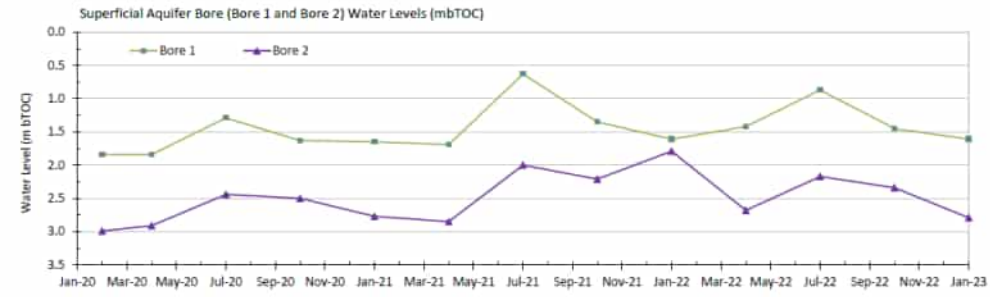



*Plate 1: Groundwater levels within the Superficial Aquifer at Bore1 and Bore2 (JDA 2023)*

**Plate 1** depicts the groundwater levels observed within the Racecourse which clearly indicates the rise and fall of groundwater levels seasonally. The peak groundwater level at Bore 1 and Bore 2 were recorded 1.26 m AHD and 1.70 m AHD respectively, during August 2022.

Monitoring has recently been undertaken within Precinct A. Six monitoring wells were installed for the Precinct A geotechnical investigation. The groundwater depth below the surface of the Precinct A (during January 2024) varied from 1.09 m below ground level (mBGL) to 2.37 mBGL (Douglas Partners 2024).

Monitoring has also recently been undertaken within Precinct D by Galt Geotechnics during the geotechnical investigation. The highest groundwater level beneath Precinct D is reported as 3.03 mBGL during February 2024 (Galt 2024).The various monitoring data/sources have been collated to prepare estimated maximum groundwater contours beneath the site. These have also considered the surface elevation of swales adjacent to the racetrack and the reported TWL of the Wetland Lake. The regional groundwater levels are shown in **Figure 2,** with spot heights recorded at the various locations also provided. It is noted that these do not necessarily represent the annual maximum groundwater levels at all parts of the site given the various timing of measurement of groundwater. Notwithstanding the variability of timing, it is likely that the management of stormwater (and in

particular infiltration) will more likely be influenced by localised soil conditions than seasonal peak groundwater levels in the superficial aquifer.

### 3.7.2.3 Groundwater quality

Water quality monitoring was conducted monthly at PB1 and quarterly at Bore1 (JDA 2023). Water quality parameters those were analysed during the monitoring period include:

**Monitoring Bore (Bore1)**

- EC
- pH
- TDS
- Total phosphorus (TP)
- Filterable Reactive Phosphorus or Phosphorus in Orthophosphate ($PO_4$-P)
- Total Nitrogen (TN)
- Nitrogen in Total Oxidised Nitrogen ($NO_x$-N)
- Nitrogen in Ammonia ($NH_3$-N)
- Total Kjeldahl Nitrogen (TKN)

**Production Bore (PB1)**

- Electrical conductivity (EC)
- pH
- Total Dissolved Solids (TDS)

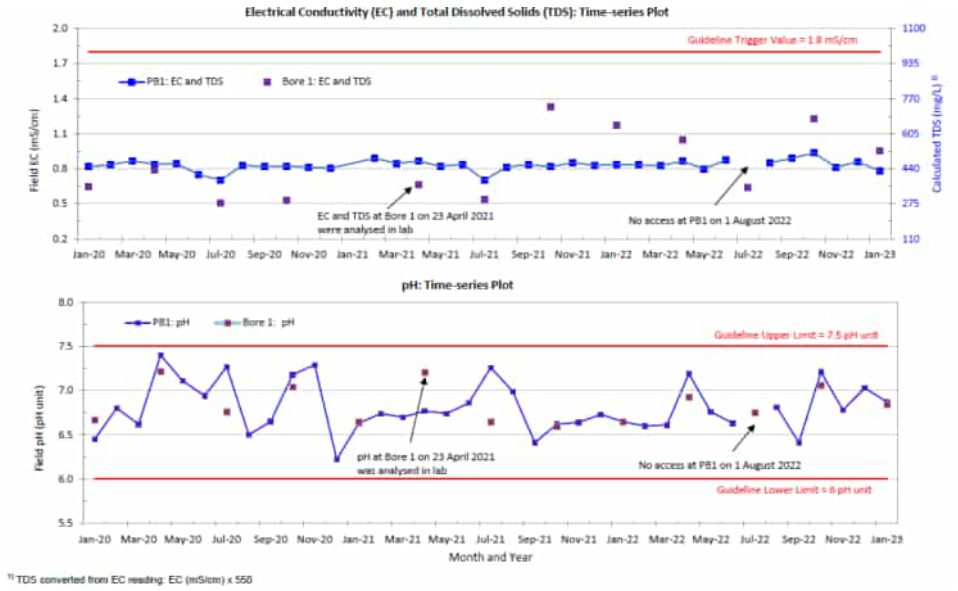



*Plate 2: Water Quality (EC, TDS and pH) Monitoring results* (JDA 2023)

**Plate 2** and **Plate 3** illustrate the water quality of the groundwater within the site is generally consistent over the monitoring periods with typically low variance in parameters tested. EC, TDS and

pH values did not display any exceedances of the trigger values. However, TN and TP regularly exceeded the ANZECC guideline trigger value of 1.2 mg/L and 0.065 mg/L (respectively). It is also noted a large exceedance in TN occurred in August 2022 however this does not appear to be representative of long-term values.




*Plate 3: Water Quality (TN and TP) Monitoring results (JDS 2023)*

## 3.8 Summary of existing environment

In summary, the environmental investigations conducted to date indicate that:

- The site is being used for horse racing, mixed uses (i.e. car park, stables and entertainment/hospitality venues, and commercial). Some portions of the site are only used infrequently (e.g. for parking or events).
- The site is located in an area of moderate to high rainfall, receiving 756.3 mm on average annually with the majority of rainfall received between June and August.
- The majority of the site has a relatively flat topography of 1 mAHD at the northwest (along the Swan River) and 2 mAHD to the south and rising to 7 mAHD to the east of the site.
- The site is within the Swan River Terraces system and displays Guildford formation soils of alluvial and leached yellow sand described as:
  - **Ms2 –** Sandy Silt: Strong brown to mid grey, mottled, blocky, fine sand, hard when dry, variable clay content of alluvial origin
  - **Ms4 –** Sandy Silt: light yellow brown, blocky, mottled some fine to medium sand, soft when moist, variable clay content
  - **S8 –** Sand: very light grey at surface, yellow at depth, fine to medium-grained, sub rounded quartz, moderately well sorted of eolian origin
- The groundwater depth below the surface of Precinct A varies from 1.09 m mBGL to 2.37 mBGL (Douglas Partners 2024).

- The highest groundwater level beneath Precinct D is reported 3.03 mBGL during February 2024 (Galt 2024).
- Most of the site is considered to have a high to moderate risk of ASS occurring, however some portions of Precinct B, Precinct C and the Racecourse are considered to have a moderate to low risk of ASS occurring within the 3 m of the natural surface.
- The northern portion of the site along the Swan River is identified as an ESA.
- The entirety of the site is classified as a SSA and classified as:
  - a) Estuary catchments on the Swan and Scott Coastal Plains.
  - f) The area is <1 km up-groundwater-gradient and 250 m down-gradient of a significant wetland; or where the groundwater gradient is unknown within 1 km of the significant wetland.
- The following wetlands are located within the site and these are classified as:
  - Multiple Use category wetland (MUW) area (UFI 8424, UFI 8425, UFI 8426).
  - Resource Enhancement wetland (REW) area (UFI 8423).
- The dominant hydrological feature of the site is the Swan River estuary. The northern boundary of the site falls within the Swan Canning Development Control Area (DCA) (CoB 2018) and Swan Canning River Park.
- The floodway of the Swan River is immediately adjacent to but not within the site. The 1% AEP flood elevation of the Swan River adjacent to the site is 2.8 mAHD.
- There are two existing major drainage network systems within or adjacent to the site include:
  - The CBMD, managed by the Water Corporation. This currently receives runoff from Precinct C (via the CoB drainage network) and Precinct E.
  - The CoB local piped drainage network, which exists along Mathieson Road, Grandstand Road and the northern portion of Resolution Drive.
- There are three lakes (Irrigation Lake, Lined Lake and Wetland Lake) located within the centre of the Racecourse. These are understood to receive runoff from the grandstand buildings in Precinct B and stables/buildings in Precinct C.
- Allowable discharge to the CBMD from the local drainage network is 0.95 $m^3/s$ based on Water Corporation modelling.
- The groundwater beneath the site is a multi-layered system consisting of the Superficial, Kings Park Formation, Leederville and Yarragadee aquifers.
- Regional groundwater mapping indicates that the groundwater levels across the site are at approximately 0.5 m AHD.
- Local groundwater level monitoring indicates that annual maximum groundwater levels (recorded in August 2022) were measured at 1.26 m AHD and 1.70 m AHD at Bore 1 and Bore 2 respectively. Groundwater levels in adjacent areas included Precinct A levels at 1.09 mBGL to 2.37 mBGL and Precinct D levels of approximately 3.03 mBGL.
- Water quality monitoring indicates that EC, TDS and pH values do not exceed guideline trigger values. However, TN and TP concentrations continually exceed the ANZECC guideline trigger value of 1.2 mg/L and 0.065 mg/L respectively.

# 4 Design Criteria and Objectives

This section outlines the objectives and design criteria that this LWMS and future management plans must achieve. The water management strategy includes water conservation, groundwater management and stormwater management.

## 4.1 Integrated water cycle management

*Better Urban Water Management* (WAPC 2008a) endorses the promotion of integrated water cycle management and application of WSUD principles to provide improvements in the management of stormwater, and to increase the efficient use of other existing water supplies.

The key principles of integrated water cycle management include:

- Considering all water sources, including wastewater, stormwater and groundwater
- Integrating water and land use planning
- Allocating and using water sustainably and equitably
- Integrating water use with natural water processes
- Adopting a whole catchment integration of natural resource use and management.

Integrated water cycle management addresses not only physical and environmental aspects of water resource use and planning, but also integrates other social and economic concerns. Water management design objectives should therefore seek to deliver better outcomes in terms of:

- Potable water consumption
- Stormwater quality management
- Groundwater management.

The first step in applying integrated water cycle management in urban catchments is to establish agreed environmental values for receiving environments. The existing environmental context of the site has been discussed in **Section 3** of this document. Guidance regarding environmental values and criteria is provided by a number of national and state policies/guidelines and site-specific studies undertaken in and around the site. These were detailed in **Section 1.4** and **Section 1.5** respectively.

## 4.2 Water conservation

This LWMS proposes the following water conservation criteria:

**Criteria WC1** For residential dwellings, consumption target of 60 kL/person/year.

**Criteria WC2** Ensure the efficient use of all water resources

**Criteria WC3** Non-potable irrigation water to be sourced from existing groundwater licences held over the area.

The manner in which this objective will be achieved is further detailed in **Section 5**.

## 4.3 Stormwater management

The principle behind stormwater management at the site is to mimic the pre-development hydrological conditions and utilise existing infrastructure where sensible to do so, as described in **Section 3.7**. This principle and the guidance documents discussed in **Section 1.4** and **Section 1.5** and have guided the stormwater management criteria.

**Criteria SW1** Retain and treat the first 15 mm of rainfall as close to source as possible and within site.

**Criteria SW2** Detain up to 1% AEP rainfall event on-site.

**Criteria SW3** Post-development critical 1% AEP peak flows leaving the site to mimic pre-development peak flows.

**Criteria SW4** Finished floor levels must have a minimum of 300 mm clearance above the 1 % AEP TWL in the FSA.

**Criteria SW5** All lots must have a minimum of 500 mm clearance above the 1 % AEP flood level in the Swan River.

**Criteria SW6** Nutrient concentrations within surface water discharging from the site to the Swan River are to meet regional water quality targets.

**Criteria SW7** Reduce nutrient loads by applying appropriate non-structural measures.

**Criteria SW8** Design infiltration areas to avoid creating mosquito habitat.

The manner in which these objectives will be achieved is further detailed in **Section 6**.

## 4.4 Groundwater management

The principle behind the groundwater management strategy is to maintain the existing groundwater hydrology. The groundwater management criteria for the site include:

**Criteria GW1** Surface based infiltration structures should have 300 mm clearance above the MGL.

**Criteria GW2** Habitable floor levels should have a clearance to the MGL of at least 1.2 m.

The manner in which the groundwater management objectives will be achieved is further detailed in **Section 7**.

# 5 Water Conservation Strategy

## 5.1 Fit for purpose water use

Conservation of water through fit-for-purpose use and best management practices is encouraged so that scheme water is not wasted. Fit-for-purpose describes the use of water that is of a quality suitable for the required use of the water. Fit-for-purpose principles have been utilised in the water conservation strategy for the site and will achieve **Criteria WC1**.

### 5.1.1 Scheme water supply

Scheme water will be supplied by the Water Corporation Integrated Water Supply System. Scheme water is proposed to be used for all potable uses. Scheme water will also service some external uses, where fit-for-purpose alternatives are not available.

### 5.1.2 Groundwater

As discussed in **Section 3.7.2.1**, the site is located beneath a multi-layered system comprising of the Superficial Swan, Kings Park Formation, Leederville and Yarragadee aquifers.

The proponent holds a groundwater allocation from the Perth South Leederville confined aquifer for the following:

- GWL 178519 - 347,000 kL

This licence will be used to meet the irrigation requirements for the Racecourse Precinct, Precinct A, Precinct B and part of Precincts C and E.

The above-mentioned measure will achieve **Criteria WC3**.

### 5.1.3 Rainwater tanks

Rainwater tanks (RWTs) can be used within private lots to harvest roof runoff. This water is considered non-potable but can be used to supplement non-potable water uses.

## 5.2 Lot scale water conservation measures

This LWMS proposes that the water conservation measures to be adopted would include RWTs, waterwise principles for lot scale gardens and within estate landscaping (WWG) and water efficient fixtures and appliances (WEFA) to ensure that the residential portion of the development minimises the use of water. These are summarised in the following sections.

### 5.2.1 Rainwater tanks

The use of RWTs will not be mandated, and the stormwater quantity management strategy does not rely on their use. They are therefore only considered to be a water conservation measure. Given that rainwater tanks will not be mandated or supplied by the proponent, it has been assumed that these would be implemented by 7.5% of households within Precinct D. Whilst they may be considered for

Precinct A they are not proposed to be taken up in other Precincts. The assumed uptake rate has been based on data obtained from the Australian Bureau of Statistics (ABS 2013). It is assumed (for the purposes of the water balance analysis) that all rainwater tanks have a capacity of 3 kL.

### 5.2.2 Water efficient fixtures and appliances

Water conservation strategy for the site proposes the use of WEFA. Water efficient fittings will be mandated through the building licence, while uptake of water efficient appliances can be encouraged by State and Local Government rebates in addition to education from the proponent at point of sale. WEFA are relevant to Precinct A and Precinct D. It is assumed that water efficient appliances will be implemented by 40% of households within Precinct A and Precinct D, which has been based on data obtained from the Australian Bureau of Statistics (ABS 2013, 2014).

### 5.2.3 Waterwise gardens

Landscape packages will not be provided as a part of the land sale contract. Lot scale waterwise gardening principles (WWG) are only relevant for Precinct D. These will be achieved by promoting Waterwise gardening principles (WWG) (WC 2003) at the time of sale of land within Precinct D. It is assumed that 75% of households in Precinct D will implement WWG principles within lot gardens (ABS 2013). WWG principles include:

- Soil to be improved with soil conditioner certified to Australian Standard (AS) 4454 to a minimum depth of 150 mm where turf is to be planted and a minimum depth of 300 mm for garden beds.
- The irrigation system shall be designed and installed according to best water efficient practices:
  - The controller must be 'hydrozoned'.
  - Emitters must disperse coarse droplets or be subterranean.
- Garden beds to be mulched to 75mm with a product certified to AS4454.
- Increasing community awareness of water conservation by promoting Waterwise practices, fixtures and fittings at the point of sale.

WWG principles will also be considered for Precinct A and Precinct E, however it is anticipated that these areas will have minimal irrigated landscaping to which this would apply. The current approach to irrigation within the Racecourse Precinct, Precinct B and Precinct C adopts a range of water conservation measures (including non-irrigated area and retention of existing trees/vegetation) to ensure that Perth Racing operates within the available groundwater allocation. This approach is not proposed to be significantly modified.

The above measures will assist in achieving **Criteria WC1** and **WC2**.

## 5.3 Water use analysis

### 5.3.1 Lot scale water use analysis

A water use analysis has been undertaken for Precinct D to estimate the expected individual residential lot water use to demonstrate the effectiveness of the water conservation strategy. The water use analysis has been based on the rates and calculation methodology presented in the Water

Corporation (2011) spreadsheet *AltWaterSupply_Water_Use_Model.xls*. This spreadsheet has been adapted to model the effects of using the water conservation measures proposed, and key assumptions include:

- Lot area has been based on a conceptual lot layout (see **Appendix A**).
- Average residency of 2.6 people per single lot dwelling. This value has been calculated from data provided by ABS for new housing developments in Perth (ABS 2022).
- Assumed up-take rates include:
  - 100% uptake of water efficient fittings
  - 40% uptake of water efficient appliances
  - 7.5% uptake of RWTs
  - 55% uptake of WWG principles.

The results of the water balance indicate that if households in Precinct A and Precinct D adopt the proposed water conservation measures (e.g. efficient fittings, RWT, WWG principals) at typical uptake rates they will use an average of 33.0 kL/year/person. This achieves the water target of no more than 60 kL/year/person of scheme water and satisfies **Criteria WC1**.

## 5.4 Wastewater management

The wastewater generated from the site will be managed by connecting the development to the Water Corporation deep sewer network.

## 5.5 Water conservation management criteria compliance

A summary of the proposed water conservation management criteria and how these are addressed is provided within **Table 1.**

*Table 1: Water conservation management criteria compliance*

| Criteria number | Criteria description | Manner in which compliance will be achieved |
|---|---|---|
| WC1 | Residential consumption target of 60 kL/person/year scheme water. | Provide advice to residents in Precinct A and Precinct D on water conservation measures |
| | | RWTs can be utilised for non-potable uses within Precinct D |
| | | Promotion and use of WWG in lots within Precinct D |
| | | Promotion and use of water efficient appliances to Precinct A and Precinct D |
| | | Mandate water efficient fittings within Precinct A and Precinct D |
| WC2 | Ensure the efficient use of all water resources. | Use of waterwise landscaping principles in open spaces |
| | | Open spaces designed to use no more than allocated groundwater |
| | | Minimise water requirements for open space and verge maintenance |
| | | Use of water efficient appliances within Precinct A and Precinct D |
| | | Use of WWG principles in lots in Precinct D |

*Table 2: Water conservation management criteria compliance (Continued)*

| Criteria number | Criteria description | Manner in which compliance will be achieved |
|---|---|---|
| WC3 | Non-potable irrigation water to be sourced from existing groundwater licences held over the area. | The proponent holds a groundwater Licence with an allocation of 347,000 kL per annum which will meet the irrigation requirements of the Racecourse and surrounding Precincts. |

# 6 Stormwater Management

The principle behind the stormwater management strategy for the site is to maintain the existing hydrology by detaining, retaining and treating runoff from the small rainfall event (i.e. first 15 mm) as close to source as possible and detaining/retaining the major event (1% AEP) on site prior to discharge to either the centre of the Racecourse (i.e. self-retained) or to the CBMD the pre-development outflow rates. Due to the existing soil conditions (See **Section 3.5**), the site is not well suited for structural controls utilising infiltration of stormwater unless modified. However, given that fill will be utilised to ensure that habitable floor levels are above the 1% AEP flood elevation of the Swan River, final elevations will be approximately 4 mAHD. Where fill is used to achieve this there will be sufficient clearance to MGL and permeability of soils to adopt WSUD measures which utilise infiltration.

WSUD measures proposed will vary across the Precincts and will include:

- BRAs to achieve water quality treatment (Precincts A, C, D and E)
- FSAs to detain runoff prior to discharge to the adjacent road network system
- Subsurface infiltration cells that will facilitate at-source infiltration (Precinct D)
- Flood storage integrated into existing surface water bodies located centrally within the Racecourse (for Precinct A and C)
- FSAs to provide flood detention and infiltration as close to source as possible (Precinct E).

The overall approach to precinct drainage is shown on **Figure 7**.

The WSUD measures that will be implemented as a part of the development are described in the following sections. Precinct B has been assumed to be self-retained and a portion of Precinct C (already connected to the Lakes in the centre of the track) has been assumed to be the same as it is now. Surface runoff modelling undertaken using XPSWMM has been used to inform the design of stormwater infrastructure as detailed in the following sections. Assumptions used to represent the post-development environment are provided in the modelling assumptions report in **Appendix D**.

## 6.1 Lot scale drainage measures

Lots within Precinct D and Precinct E will retain the first 15 mm rainfall event runoff within soakwells/soakage which will need a capacity of 150 $m^3$/ha. Lot storage is the responsibility of the lot owner and will be assessed as part of the building approval process prior to construction.

The use of soakwells/soakage areas will assist in achieving **Criteria SW1**.

## 6.2 Development drainage measures

### 6.2.1 Bio-retention areas

Runoff from the first 15 mm of rainfall will be captured and retained within a vegetated BRA located in open spaces. The BRA is assumed to have a depth of 500 mm with 1:3 side slopes. Treatment of

runoff will be provided through interaction with vegetation and adsorption to sand particles through infiltration prior to reaching groundwater.

The BRA will be underlain by material with an appropriate PRI (nominally a PRI of 20 at 150 mm or equivalent). It is acceptable for this to be achieved with a thicker layer of lower PRI soil (e.g. 300 mm of PRI 10). This will be finalised prior to detailed design. The location of the BRA will either be in a drainage reserve, an open space or they may be within the centre of the Racecourse as a separate treatment area (separate from the existing Lakes). The sizing and spatial requirements of BRAs will be confirmed in the detailed designs.

The use of BRA will assist in achieving **Criteria SW1, SW6,** and **SW8**.

### 6.2.2 Flood detention/storage

An FSA will be utilised to detain runoff above the first 15 mm and up to the 1% AEP rainfall event. To achieve this, the invert of the FSA will have sufficient clearance above groundwater 300 mm. FSAs are assumed to be 1.2 m depth with 1:6 side slope and will be integrated into POS or drainage reserve, and will overflow to the Water Corporation drainage network. The sizes and spatial requirements for the FSA will be confirmed in the detailed designs and development stages.

The use of an FSA will assist in achieving **Criteria SW1, SW2, SW4,** and **SW6.**

### 6.2.3 Subsurface storage

Surface runoff generated by lots, stables and hardstand/carpark areas will be directed into sub-surface storage. Precinct D will have an independent drainage pipe network within individual precincts which convey flows to downstream sub-surface retention structures.

These structures have been sized to accommodate up to the 1% AEP rainfall event and have been designed as a 1 m deep structure. The detailed configurations could be modified to suit site constraints. These will either be location beneath road reserve/verge or beneath an open space and will require an overflow connection to the local (CoB) drainage network to ensure that they can dry out. The sizes and spatial requirements for the subsurface storages are provided in **Table 2** and illustrated in **Figure 7A**: Precinct A Stormwater Management Plan

*Figure 7B: Precinct C Stormwater Management Plan*

Figure .

The use of the sub-surface storage will assist in achieving **Criteria SW1, SW2,** and **SW6.**

### 6.2.4 Lake storage

Precinct A and Precinct C (stables) will first direct runoff to a bio-retention areas, however overflow from these will be catered for in the Wetland Lake. In a 1% AEP storm event an additional 78 mm of depth will occur within the Wetland Lake from both Precincts.

As indicated in **Section 3.7.1.2**, the Wetland Lake is connected/discharges to the Swan River via a 375 mm and 450 mm culvert. These are not proposed to be modified. The combined nominal flow capacity of the 375 mm and 450 mm pipes is approximately 0.4 $m^3/s$. The inlet, length, grade, etc of

these pipes is not proposed to be modified and therefore the current overflow regime from the site to the Swan River will remain unchanged.

The use of the Wetland Lake storage will assist in achieving **Criteria SW1, SW2, SW3,** and **SW6.**

## 6.3 Precinct based drainage approach

### 6.3.1 Precinct A

There is no current connection point for drainage to be exported from site to the local CoB network. Runoff will therefore need to be managed within Precinct A and the Racecourse. Precinct A will require a single BRA that will address treatment of water quality; this will be located within Precinct A as close to source as possible. The BRA should have the following characteristics:

- Base will be vegetated with reeds/rushes as per a biofilter
- 1:3 side slopes
- Depth of 300 – 500 mm pending final design
- Volume of the BRA will need to achieve 194 $m^3$
- Nominal surface area of 450 $m^2$.

In addition to the volume achieved by the BRA, in a major (1% AEP) storm event a further 1,345$m^3$ of flood retention storage will be required. The proposed earthwork level of Precinct A (4.0 mAHD) means that it is possible to direct runoff exceeding BRA capacity to the Wetland Lake in the centre of the Racecourse. This approach will add approximately 52 mm to the central 2.6 ha Wetland Lake.

The volumes of storage required and locations of storage across the Precincts is summarised in **Table 2**. The approach to water management in Precinct A is shown in **Figure 7A**.

### 6.3.2 Precinct B and Racecourse

As indicate previously, there are no substantial changes proposed to Precinct B. Precinct B currently manages surface runoff within the precinct and adjacent Racecourse, largely via at source infiltration, swales around the perimeter of the track surface and the existing lake system Precinct B and the Racecourse are proposed to be retained largely as is.

As indicated in **Section 3**, the Wetland Lake currently has a piped overflow connection to the Swan River. This overflow pipe(s) reportedly rarely overflow and can be controlled via a structure at the outlet (which also prevents tidal influence on the Wetland Lake). The Wetland Lake has a 2.6 ha surface area, and therefore can provide significant volume of stormwater retention in the event of a major storm event. There are no new connections proposed to the Swan River and there are no changes proposed to the management approach currently taken for the Wetland Lake and the current piped outlets.

### 6.3.3 Precinct C

Precinct C is the existing stables area, adjacent carparks and future stables areas along the south and east of the Structure Plan area. The existing buildings currently either infiltrate runoff at source or

discharge to the Lined Lake in the centre of the Racecourse. This approach is proposed to be retained.

Surface runoff generated by hardstand/carpark areas of Precinct C will be directed and discharged towards Precinct E via the existing connections to the CoB drainage network along Matheson Road or via the existing pipe connection in the southwest of the Structure Planning area to the existing connection to the CBMD (Water Corporation drainage system) within Precinct E.

The drainage requirements for the southern (carpark) portion of Precinct C are therefore detailed with those proposed for Precinct E.

For the two currently undeveloped portions of Precinct C (future stables along the south and east of the Structure Plan area), the post-development drainage system will collect the runoff from these areas and direct them to the centre of the Racecourse. Initial treatment will be provided by a BRA which accommodates 418 $m^3$, with a nominal surface area of 924 $m^2$.

Runoff exceeding the capacity of the BRA (which will be 684 $m^3$) will be directed to the Wetland Lake. The direction of major event stormwater runoff to the Wetland Lake will add 26 mm to the top water level of the Wetland Lake.

The volumes required to be treated and for flood mitigation for Precinct C are summarised in **Table 2**. The approach to water management in Precinct A is shown in **Figure 7B**.

### 6.3.4 Precinct D

As indicated in **Section 6.1**, private lots and the childcare building within Precinct D are assumed to retain the first 15 mm within the lot boundary, most likely within soakwells, which should be appropriate given that some measure of imported fill will be required to meet clearance above regional flood levels. Based on the density of lots proposed in Precinct and lack of open space, this precinct will need 42 $m^3$ of subsurface storage to accommodate and detain the 1% AEP storm event to ensure that the post development peak flow rates will mimic the pre -development conditions. This is assumed to be located adjacent to Resolution Drive as shown in **Figure 7C**. The outflow from this Precinct will likely be predominantly overland flow once the first 15 mm of storage has reached capacity, however a low flow to ensure that these can adequately drain between storm events is recommended.

The volumes required to be treated and for flood mitigation for Precinct D are summarised in **Table 2**.

### 6.3.5 Precinct E

Surface runoff from across Precinct E (inclusive of Precinct C hardstand/carpark) will be conveyed via the drainage network firstly to a BRA for water quality treatment and then this will overflow to an FSA (detention drainage structure) at the south western corner of Precinct E for detention of the 1% AEP storm event. Overflow from Precinct E basin will discharge into the CBMD (Water Corporation drainage system) at existing flow rates. The Water Corporation surface runoff modelling of the CBMD indicates that the local drainage network contributes 0.95 $m^3/s$ at node CNA008. This is understood to be contributed to by existing 450 mm and 525 mm pipes beneath Resolution Drive and therefore it is assumed that 0.62 $m^3/s$ is taken up by the existing pipe network, and approximately 0.33 $m^3/s$ of

capacity is available to convey runoff from Precinct C, Precinct E and upstream contributing catchments.

The volumes required to be treated and for flood mitigation for Precinct E are summarised in **Table 2**. The approach to water management in Precinct E is shown in **Figure 7D**.

### 6.3.6 Precinct drainage summary

The requirements for water quality treatment within the Precincts is summarised in **Table 2**.

*Table 2: Precinct drainage summary*

| Precinct | First 15 mm requirement ($m^3$) | Location of first 15 mm | 1% AEP flood mitigation requirement ($m^3$) | Location of 1% AEP flood mitigation requirement | 1% AEP outflow from site |
|---|---|---|---|---|---|
| Precinct A | 194 | BRA located within Precinct A | 1,345 | Wetland Lake, centre of Racecourse | 0 |
| Precinct B | No change to existing | Precinct B | No change to existing | Precinct B | Self-retained |
| Precinct C (Stables) | 418 | BRA located in the centre of the Racecourse | 684 | Wetland Lake in centre of Racecourse | 0 |
| Precinct C (carpark) | Combined with Precinct E volumes | BRA in Precinct E | Combined with Precinct E volumes | FSA in Precinct E | |
| Precinct D | 28 | Subsurface storage cells beneath road reserve/drainage reserve | 42 | Subsurface storage cells beneath road reserve/drainage reserve | 0.402 $m^3/s$ to local drainage network/road pavement |
| Precinct E | 365 | Southwest corner of Precinct E, adjacent to FSA | 930 | South west corner of Precinct E | 0.32 $m^3/s$ to CBMD |

There will be no new connections to the Swan River or to the CBMD, and the existing flow regimes at these outlet points will be maintained. Specifically with regard to overflow from the Wetland Lake which occurs via gravity, the peak flow rates that the existing 375 mm and 450 mm pipes are capable of achieving (approximately 0.4 $m^3/s$) will not change given that the inlet, length, grade and outlet of these pipes is not proposed to be modified.

Precinct D will require a connection to the local drainage network, however the outflow rate will be nominal, and has not been accounted for when sizing the subsurface storage cells within Precinct D. The direction of runoff from Precinct A and a portion of Precinct C to the centre of the Racecourse will require a BRA with a surface area of 1,105 $m^2$ (for Precinct C) and will add a total of 78 mm depth to the top water levels within the Wetland Lake.

The precinct areas and a summary of the approach to surface water management are shown on **Figure 7**.

### 6.3.7 Non-structural measures

A number of non-structural measures will be implemented to help reduce nutrient loads within stormwater runoff. These measures include:

- Minimising fertiliser use to establish and maintain vegetation within POS and road verges.
- Street sweeping at regular intervals.
- Ongoing management of nutrient application to Precinct B and the Racecourse.
- Precinct A to adopt a similar nutrient application management regime as that currently applied to Precinct B.
- Minimising the use of turf within open spaces.
- Active management of equine waste within Precinct C and the Racecourse. This includes manual collection and remove of manure from site.
- Education of residents regarding fertiliser use and nutrient absorbing vegetation species within lots.

The above measures will assist in achieving **Criteria SW7**.

### 6.3.8 Earthwork levels

Finished floor levels of the entire development will be set at minimum of 4.0 mAHD (See **Appendix C**) which will assist in achieving **Criteria SW5**.

## 6.4 Stormwater criteria compliance

A summary of the proposed stormwater design criteria and how these are addressed is provided in **Table 3**.

*Table 3: Stormwater management criteria compliance*

| Criteria number | Criteria description | Manner in which compliance will be achieved |
|---|---|---|
| SW1 | Retain and treat the first 15 mm of rainfall as close to source as possible | Lots within Precinct D and Precinct E to retain the first 15 mm of rainfall on lot in soakwells/soakage. Lot storage will be the responsibility of the lot owners. |
| SW2 | Retain up to 1% AEP rainfall event on-site. | Runoff up to the 1% AEP to be detained within the FSA in Precinct A. Precinct A and a portion of Precinct C will ultimately discharge to the centre of the track. |
| | | Runoff up to 1% AEP to be managed with the sub-surface storage in Precinct D. |
| SW3 | Post-development critical 1% AEP peak flows leaving the site to mimic pre-development peak flows. | Runoff up to 1% AEP event to be detained in the detention basin and subsurface storage which will maintain the pre-development peak flow of 0.32 $m^3/s$ from Precinct E and 0.463 $m^3/s$ from Precinct D respectively. |
| SW4 | Finished floor levels must have a minimum of 300 mm clearance above the 1% AEP TWL in the FSA. | It is anticipated that the FSA and detention basin invert will be set so that the habitable floor levels must have a |

| | | |
|---|---|---|
| | | minimum of 300 mm clearance above the 1% AEP TWL in the basins. |
| SW5 | All lots must have a minimum of 500 mm clearance above the 1% AEP flood level in the Swan River. | The 1% AEP flood level in the Swan River is 2.8 mAHD. The preliminary bulk earthworks concept provided in shows that finished floor level will be at 4.0 mAHD. |
| SW6 | Nutrient concentrations within surface water discharging from the site to the Swan River are to meet regional water quality targets. | BRA will be designed so that after treatment the long term nutrient concentrations within surface water meet the regional water quality targets. |

*Table 4: Stormwater management criteria compliance (Continued)*

| Criteria number | Criteria description | Manner in which compliance will be achieved |
|---|---|---|
| SW7 | Reduce nutrient loads by applying appropriate non-structural measures | • Minimise use of fertilisers within open space and road verges.<br>• Street sweeping at regular intervals.<br>• Use of drought tolerant turf species.<br>• Education of residents regarding fertiliser use |
| SW8 | Design infiltration areas to avoid creating mosquito habitat | Stormwater infrastructure will be designed to ensure all runoff is infiltrated within 96 hours. |

# 7 Groundwater Management

## 7.1 Groundwater management approach

The principle behind groundwater management is to maintain the existing hydrology across the site, provide appropriate protection from groundwater inundation, and maintain or improve existing groundwater quality.

## 7.2 Groundwater level management

The regional groundwater map (DWER 2023e), localised measurement of groundwater and the surface contours of the site (see **Section 3.4** and **Figure 2**) indicate that there is sufficient clearance to groundwater beneath the site to facilitate infiltration of stormwater runoff, on the basis that fill is being imported to raise finished levels to 4.0 mAHD.

Whilst the underlying parent soils have demonstrated generally low permeability, the earthworks approach will require import of fill to 4.0 mAHD to achieve clearance above the 1% AEP flood level in the Swan River for Precinct A, Precinct D and Precinct E. Therefore, stormwater will be encouraged to infiltrate at source wherever possible to minimise stormwater runoff and to adopt an at-source approach to management of runoff where possible. This will occur within soakwells, permeable portions of lots and BRAs which will have at least 300 mm of clearance above the MGL. The above-mentioned measure will assist in achieving **Criteria GW1**.

For Precinct C (stables) runoff will be directed to the centre of the racetrack. The stables facilities do not require a specific separation from groundwater, and in order to accommodate equine uses the land between buildings/facilities should be as flat as possible. The most appropriate response is therefore to accommodate stormwater quality treatment and flood retention within the centre of the racetrack. Given the low permeability of soils in the centre of the racetrack, the BRA is unlikely to achieve separation from groundwater or the low permeability soil layer. This is however considered acceptable as it is consistent with the presence of the three Lakes currently within the centre of the racetrack.

The control of groundwater by subsoil drainage is not proposed due to requirements to provide adequate clearance above the 1% AEP flood levels and the proximity of the Swan River. Rather, groundwater separation requirements will be achieved by the use of imported fill as described above. The earthworks strategy provided in **Appendix C** shows that all habitable floor levels will be greater than 1.2 m above the MGL. The above-mentioned measure will assist in achieving **Criteria GW2**.

As previously discussed, there are no changes proposed to the form of development within Precinct B or to the Racecourse. These areas are currently managed by the swales aligned with the existing racetrack which control soil moisture conditions in these areas, and which discharge to the Wetland Lake. This approach will be retained in the post-development environment.

## 7.3 Groundwater quality management

Whilst not specified in a design criterion, the main objective for groundwater quality management is to maintain or improve the existing groundwater quality. This can be achieved by reducing the total nutrient load into the groundwater that originates from the site. Groundwater that originates from the site is surface runoff that has infiltrated into the soil profile. Therefore, improving groundwater quality can be achieved by treatment of the surface runoff prior to infiltrating to groundwater.

The reduction of nutrient load to the groundwater will be achieved by:

- Retention of existing trees within open spaces wherever possible.
- Directing stormwater to a vegetated (with native wetland species) BRA.
- The BRA will be underlain by material with an appropriate PRI (nominally a PRI of 20 at 150 mm or equivalent). It is acceptable for this to be achieved with a thicker layer of lower PRI soil (e.g. 300 mm of PRI 10).
- Minimise fertiliser use to establish and maintain vegetation within open space areas and road verges.
- Ongoing management of nutrient application to Precinct B and the Racecourse.
- Precinct A to adopt a similar nutrient application management regime as that currently applied to Precinct B.
- The use of turf will be minimised, however where adopted a drought tolerant turf species that require minimal water, and nutrients will be used.
- Roll-on turf will be used within the open space areas and road verges, to prevent the high nutrient input requirement during establishment of the turf.
- Garden beds should not be immediately adjacent to BRAs to reduce nutrient transportation into these infiltration areas.
- Active management of equine waste within Precinct C and the Racecourse. This includes manual collection and remove of manure from site.

The above measures will improve the quality of water prior to it infiltrating into the underlying groundwater.

## 7.4 Groundwater criteria compliance summary

A summary of the proposed groundwater quantity design criteria and how these are addressed within the site is provided in **Table 4**.

*Table 4: Groundwater criteria compliance summary*

| Criteria number | Criteria description | Manner in which compliances will be achieved |
|---|---|---|
| GW1 | Surface based infiltration should have 300 mm clearance above MGL. | Basin inverts will be set at 300 mm above the MGL, the exception being the BRA in the centre of the racetrack. |
| GW2 | Finished floor levels should have a clearance to the MGL of at least 1.2 m. | Lots will be set at least 1.2 m above the MGL. |

# 8 Subdivision and Urban Water Management Plans

The requirements to undertake preparation of more detailed water management plans to support subdivision is generally imposed as a condition of subdivision. This will be most relevant to Precinct D. Other precincts may be developed under a Development Approval and therefore water management will likely be documented within a Stormwater Management Plan (SMP). The development of future UWMP/SMPs should follow *Urban Water Management Plans: Guidelines for preparing plans and for Complying with Subdivision Conditions* (DoW 2008).

While strategies have been provided within this LWMS that address planning for water management within the site, it is a logical progression that future subdivision designs and the supportive UWMP/SMP will clarify details not provided within the LWMS. The main areas that will require further clarification within future UWMP/SMPs may include (pending which precinct is being addressed):

- Extent of land uses within Precincts
- Connection to local and Main Drainage networks
- Surface runoff modelling
- Implementation of water conservation strategies
- Non-structural water quality improvement measures
- Management and maintenance requirements
- Construction period management strategy.

These are further detailed in the following sections. As stated above, ongoing (post-development) monitoring of groundwater will be detailed in the UWMP/SPM, however in this LWMS is outlined broadly in **Section 9**.

## 8.1 Extent of land uses within Precincts

It is expected that the layout and extent of land uses within Precincts may evolve over time. Future water planning documents will need to be updated to align with the most up to date spatial plans for each Precinct. Changes to the spatial plans will likely have an implication on the size of stormwater infrastructure and possibly their location, and should be revised and clarified in future UWMP/SMPs.

## 8.2 Connection to local and Main Drainage networks

This LWMS has made assumptions regarding connectivity to the CoB local drainage network and to the Water Corporation's CBMD. These are assumptions are made based on the information available at the time of preparing this LWMS and may need to be revised pending feedback from these agencies. This could result in updates to surface runoff modelling (see **Section 8.3**).

## 8.3 Surface runoff modelling

It is acknowledged that the water management strategies documented in this LWMS are based upon broad-scale assumptions and to some extent regional data. These assumptions are considered

adequate for development of this LWMS and are of an appropriate level of detail. However, verification of proposed subdivision drainage designs will be undertaken once the specific basin designs and extent of inclusion of finer scale WSUD elements are confirmed.

It is expected that future UWMP/SMPs will update surface runoff modelling as appropriate, and this may result in evolution of the spatial layout of the structure plan/future subdivisions or detailed civil design approach.

## 8.4 Implementation of water conservation strategies

The non-potable water needs from the Precincts are to be accommodated from the existing groundwater allocation and therefore, track water usage is a significant consideration. Notwithstanding licensed volumes available, there is minimal new open space areas proposed within the Precincts that would demand significant additional groundwater allocation, and it is therefore anticipated that non-potable water needs can be met by the existing licence held by Perth Racing.

A number of potential measures to conserve water have been presented within this LWMS. These water conservation strategies will be incorporated into design and the on-going maintenance of the Precinct A, B and C open spaces and where relevant. Landscape concept design measures that will be incorporated into the water conservation strategy will be further detailed within the future UWMP/SMPs produced for the development.

The manner in which the developer intends to promote water conservation measures discussed in this LWMS to future lot owners will also be discussed within the future UWMP/SMPs.

## 8.5 Non-structural water quality improvement measures

Guidance for the development and implementation of non-structural water quality improvement measures is provided within the *Stormwater Management Manual for Western Australia* (DWER 2022). Some measures will be more appropriately implemented by CoB for local roads, such as street sweeping, however many can be implemented relatively easily within the design and maintenance of the subdivision and the open space areas. It is expected that any privately managed development areas (e.g. Precinct A, Precinct B and Precinct C) will be managed by Perth Racing or another appropriate management body, and that the management of areas exposed to equine uses (Precinct C and the Racecourse) will continue to adopt contemporary best practice nutrient management.

Future UWMP/SMPs will provide an implementation plan/timing/responsibility for measures such as street sweeping, public education (through measures such as signage that may be implemented to raise awareness), etc.

## 8.6 Management and maintenance requirements

The management measures to be implemented to address surface water quality (such as the use of vegetation within WSUD assets) will require ongoing maintenance. It is therefore expected that the future UWMP/SMPs will detail management and maintenance procedures that will set out required maintenance actions (e.g. gross pollutant removal), timing (e.g. how often it will occur), locations (e.g. exactly where it will occur) and responsibilities (e.g. who will be responsible for carrying out the

actions). Given that approval from the CoB will be sought for the proposed measures, it is anticipated that consultation will be undertaken and referral to guiding policies and documents will be made.

## 8.7 Construction period management strategy

It is anticipated that the construction stage will require some management of various aspects (e.g. soil erosion, sedimentation of downstream water bodies, dust, surface runoff, noise, traffic etc.). The management measures undertaken for construction management will be addressed either in the future UWMP/SMPs or a separate Construction Management Plan (CMP).

# 9 Monitoring

## 9.1 Post-development monitoring

The post-development monitoring of water quality should be undertaken within groundwater immediately upstream and downstream of BRAs within Precinct A, Precinct C and Precinct E. It should also be undertaken at the outlet to or adjacent to the subsurface detention system in Precinct D. This should be undertaken via shallow groundwater bores installed immediately upstream and immediately downstream based on local groundwater flow direction, based on information available at the time (or in the case of Precinct D it could be at the outlet from the subsurface storage cells).

The monitoring should also consider and be generally consistent in the approach with the monitoring undertaken to comply with conditions of Groundwater Licence GWL 178519.

The WSUD measures (BRAs) should also be monitored to ensure their continued effectiveness. This should occur at the outlets from BRAs prior to their discharge to the Wetland Lake. It is noted that this may be difficult to achieve as it will require a rainfall event > 15 mm and to be timed to occur when overflow is occurring or alternatively auto samplers could be employed.

Monitoring of the outlet to the Swan River from the Wetland Lake is not proposed to be undertaken given the infrequent nature of overflow from the Lake to the River. Further, the Lake intersects shallow groundwater and any discharge from the pipes to the River is likely to be influenced by local groundwater quality.

### 9.1.1 Trigger values

The water quality targets from the *National Water Quality Management Strategy* (ANZECC and ARMCANZ 2000) and the trigger criteria are acknowledged as long term targets for the site, being 1.2 mg/L for TN and 0.065 mg/L for TP. However, it is also recognised that recent site monitoring undertaken (and reported in **Section 3**) shows repeated exceedances of the NWQMS default trigger criteria. Therefore, short term trigger values are proposed based on the approximate average nutrient concentrations measured in groundwater, and these are shown in **Table 5**.

*Table 5: Post-development trigger values*

| Analyte | pH | EC (uS/cm) | TN (mg/L) | TP (mg/L) |
|---|---|---|---|---|
| Value | 6-7.5 | 1800 | 3.0 | 0.15 |

Monitoring should be undertaken on a quarterly basis and should include:

- pH
- Conductivity
- Dissolved oxygen
- Temperature
- Nutrients (TN, TP)
- Nutrient Species (Ammonium, $NH_4$, Oxides of nitrogen, $NO_x$ ortho-phosphorous (ORP))

### 9.1.2 Condition monitoring

It is proposed that the overall condition of the Precincts will be monitored on a bi-annual basis. This monitoring will be implemented after the completion of the civil and landscaping works and will continue for a period of two years.

A visual assessment will be undertaken to monitor the overall condition of the Precincts, with the aim to ascertain that the maintenance activities are achieving the overall management objectives for the development. The parameters that will be monitored include:

- Gross pollutants
- Terrestrial weeds
- Irrigation
- Vegetation density
- Paths, benches, walkways and other infrastructure.

The management and maintenance objectives will be detailed within future UWMPs along with details of the corresponding monitoring program.

### 9.1.3 Contingency Action Plan

If the results from the initial monitoring occasion indicate that nutrient concentrations exceed the nominated (short term) trigger values, a number of contingency measures may be employed.

The first action that should be undertaken if groundwater trigger criteria are exceeded is to repeat the monitoring to remove the potential for sampling error. If the repeat monitoring still shows results which breach the trigger value, the next action will be to compare the upstream (incoming) nutrient concentrations with the outgoing (downstream) nutrient concentrations. If the downstream nutrient concentrations are >50% higher than the upstream nutrient concentrations, the following actions should be undertaken:

- Review open space nutrient application practices to identify source if possible.
- Conduct surveillance of Precincts and drainage infrastructure to determine any other potential and obvious nutrient inputs.
- Remove source if possible (i.e. fertiliser input, etc.).
- Remove sediment–bound nutrients by removing basin sediments.
- Manual removal of plant material from BRAs to facilitate further nutrient uptake.

If the downstream nutrient concentrations are found to be generally consistent with the upstream concentrations the next action will be to conduct a site – specific comparison of long-term background data presented in this LWMS. There is some amount of variability (temporally) in nutrient concentrations experienced across the site, and this is the reason for the proposed short and long term trigger values. The comparison of measured values to trigger values and historical monitoring data should then be used as a management tool to determine if the trigger values should be revised.

Following the implementation of the above contingency measures the groundwater quality will be re – sampled. If the results of the analysis still show water quality characteristics which breach the trigger values an additional set of upstream/downstream monitoring bores may be installed. The

additional bores would be sampled as per the ongoing sampling regime already being undertaken for the first two bores. If the additional locations demonstrate results consistent with the initial monitoring, an assessment will be undertaken as to whether the results are representative of a broader site management concern, and whether any additional contingency actions need to be implemented onsite.

## 9.2 Reporting

A post-development monitoring report will be prepared on conclusion of the two-year monitoring period and will be provided to CoB on request. This will be undertaken per Precinct once development within the Precinct has occurred. Interim results (spreadsheet) can be provided to either CoB, DWER or DBCA on request during the monitoring program.

# 10 Implementation

## 10.1 Roles and responsibility

The LWMS provides a framework that the proponent can utilise to assist in establishing stormwater management methods that have been based upon site-specific investigations, are consistent with relevant State and Local Government policies and have been endorsed by DWER, DBCA and CoB. The responsibility for working within the framework established within the LWMS rests initially with the proponent, although it is anticipated that a future UWMP/SMP will be developed in consideration of other relevant policies and documents. A summary of roles and responsibilities relevant to the current and future planning stages and ongoing management of the site is summarised in **Table 6**.

*Table 6: Roles and responsibilities for various planning stages*

| Stakeholder | Perth Racing | City of Belmont | Water Corporation | DWER | DBCA | WAPC |
|---|---|---|---|---|---|---|
| LWMS preparation | √ | | | | | |
| LWMS review and advice | | √ | √ | √ | √ | |
| LWMS approval | | | | √ | | √ |
| UWMP/SMP & civil design preparation | √ | | | | | |
| UWMP/SMP review and approval | | √ | | | | |
| Precinct implementation | √ | | | | | |
| Post development Precinct management | √ | | | | | |
| Public roads/open space ongoing management | √ | √ | | | | |

## 10.2 Funding

The proponent will fund all subdivision, civil and landscape works within the public realm (roads and open spaces) and within Precincts that are being privately managed (Precinct A, Precinct B and Precinct C). Development of individual lots will be the responsibility of the lot owner at the lot-scale development application stage.

## 10.3 Review

It is not anticipated that this LWMS will be reviewed unless the Ascot Racecourse Structure plan undergoes significant change post-lodgement of the LWMS. If the proposed layout of the

development is substantially modified, the surface runoff modelling undertaken for this LWMS may need to be reviewed and the criteria revised to ensure that all are still appropriate.

The next stage of water management for most of the Precincts is UWMP preparation to support subdivision (relevant to Precinct D) or SMP preparation to support Development Approval (relevant to all other precincts). The UWMP/SMP is largely an extension of the LWMS, as it should provide detail to the designs proposed within this LWMS and will demonstrate compliance with the criteria proposed in **Section 4**. Regardless of whether a UWMP or SMP is prepared, these should be prepared as per *Better Urban Water Management*.

The next stage of development following the UWMP is single lot development. It is recognised that certain elements of the LWMS and the UWMP will not be implemented until this late stage, and that there is little or no statutory control that can be applied to ensure the implementation of any remaining measures. While the remaining measures are unlikely to be enforced at this stage their implementation could be encouraged by the CoB through policy (or modification of these where necessary), building licence or awareness programs (such as the Water Corporation Waterwise program).

# 11 References

## 11.1 General references

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## 11.2 Online references

The online resources that have been utilised in the preparation of this report are referenced in **Section 11.1**, with access date information provided in **Table R1**.

*Table R1 Access dates for online references*

| Reference | Date accessed | Website or dataset name |
|---|---|---|
| (ABS 2013) | 19/4/2024 | ABS: Water Use and Conservation Data |
| (ABS 2014) | 19/4/2024 | ABS: Energy Use and Conservation Data |
| (DWER 2023a) | 12/04/2024 | Acid Sulfate Soil Risk Map |
| (BoM 2024) | 12/04/2024 | Climate Data |
| (Landgate 2023) | 31/01/2024 | Landgate Map Viewer Plus |
| (WAPC 2023a) | 11/12/2023 | Local Planning Scheme No. 15 Map |
| (DWER 2024a) | 12/04/2024 | Perth Groundwater Map |
| (DWER 2024b) | 12/04/2024 | Water Information Reporting |
| (DWER 2024c) | 12/04/2024 | Water Register |
| (DWER 2023c) | 26/04/2024 | FPM Floodplain Area (DWER-020) |

# Figures

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*Figure 7B: Precinct C Stormwater Management Plan*

*Figure 7C: Precinct D Stormwater Management Plan*

*Figure 7D: Precinct E Stormwater Management Plan*




**Figure 1:** **Site Location**

**Project:** Local Water Management Plan
Golden Gateway Local Structure Plan
**Client:** Perth Racing

**Plan Number:** EP23-109(03)--F23
Drawn: WJC
Date: 26/04/2024
Checked: JM
Approved: DPC
Date: 17/05/2024

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Metres
Scale: 1:8,000@A4
GDA2020 MGA Zone 50

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**Figure 2:** **Topographic and Groundwater Contours**

**Project:** Local Water Management Plan
Golden Gateway Local Structure Plan

**Client:** Perth Racing

**Plan Number:**
**EP23-109(03)--F24**
Drawn: WJC
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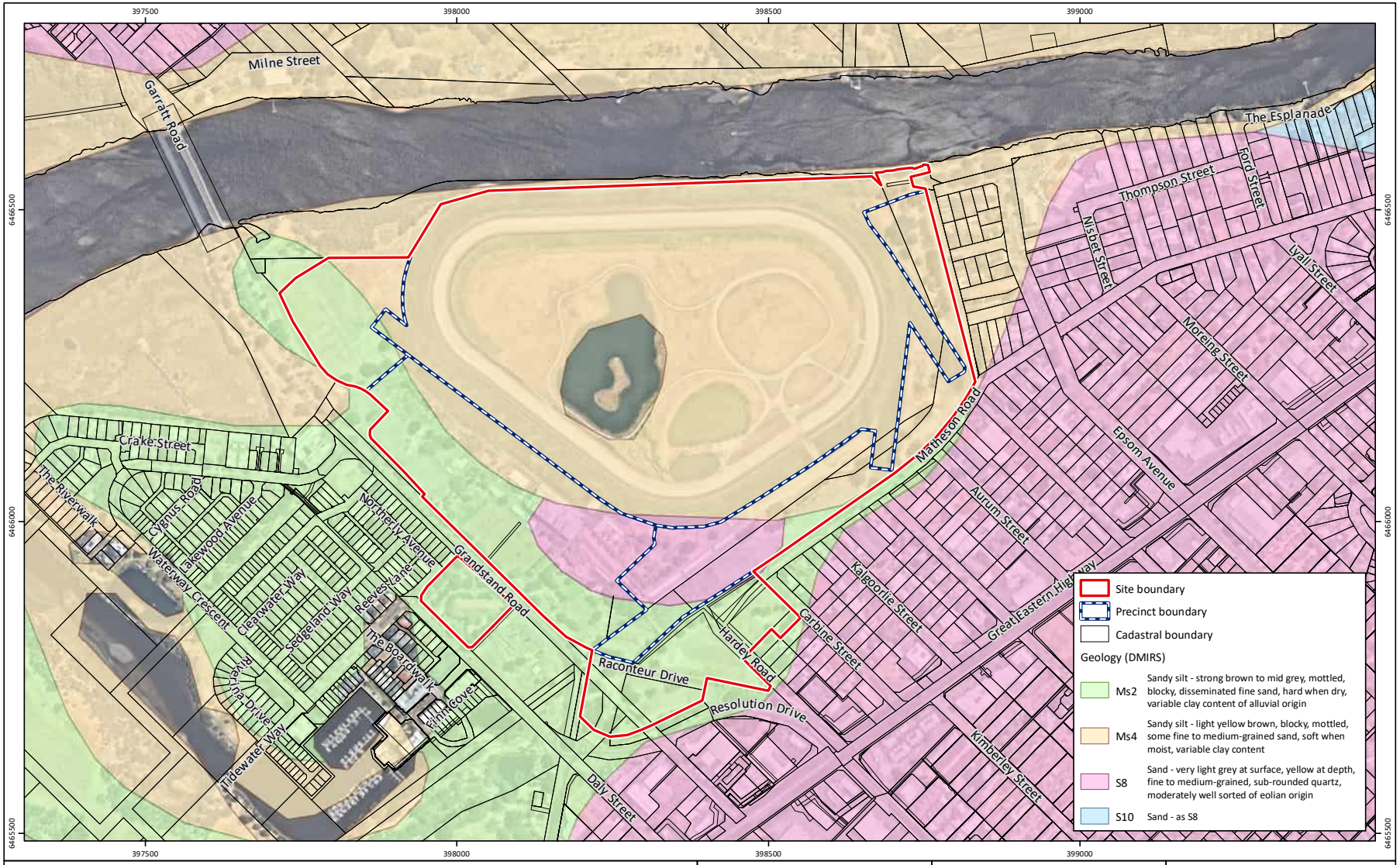



**Figure 3: Geological Mapping**

| | |
|---|---|
| **Project:** | Local Water Management Plan<br>Golden Gateway Local Structure Plan |
| **Client:** | Perth Racing |

**Plan Number:** EP23-109(03)--F25

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| Drawn: | WJC |
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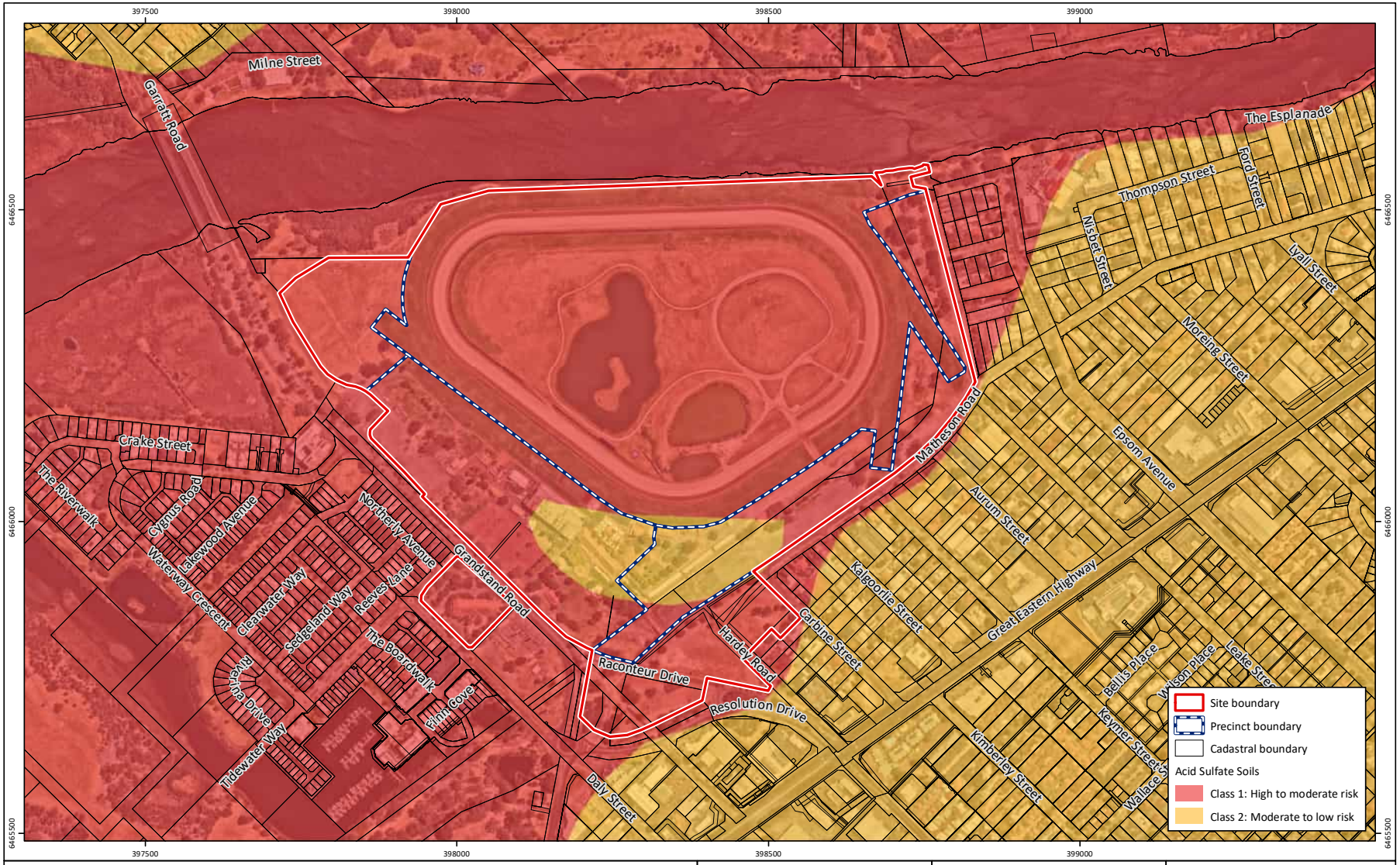



**Figure 4: Acid Sulfate Soil Mapping**

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|---|---|
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| **Client:** | Perth Racing |

**Plan Number:**
**EP23-109(03)--F26**

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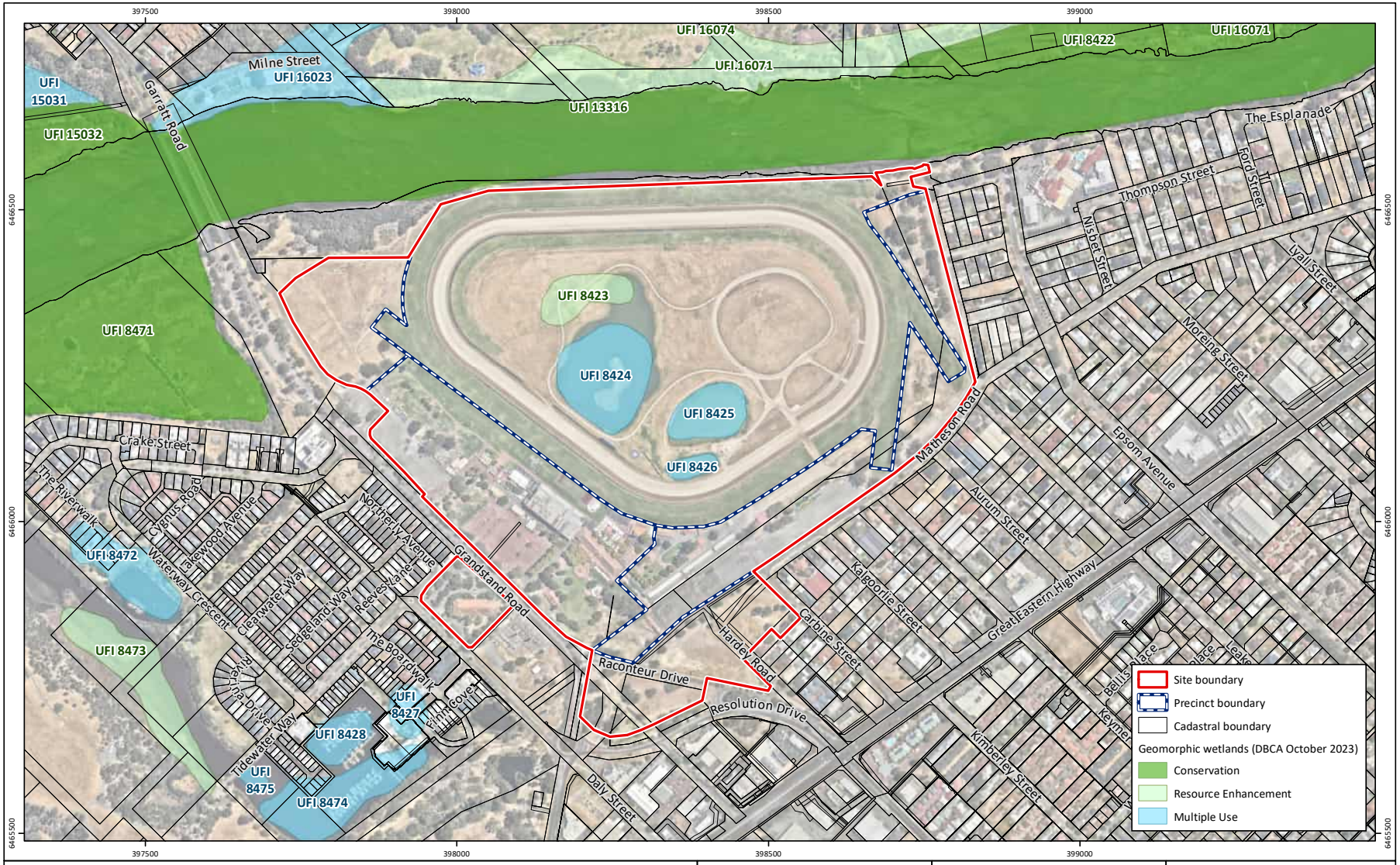



**Figure 5: Environmental Assets**

| | |
|---|---|
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| **Client:** | Perth Racing |

**Plan Number:**
**EP23-109(03)--F27**

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| Drawn: | WJC |
| Date: | 26/04/2024 |
| Checked: | JM |
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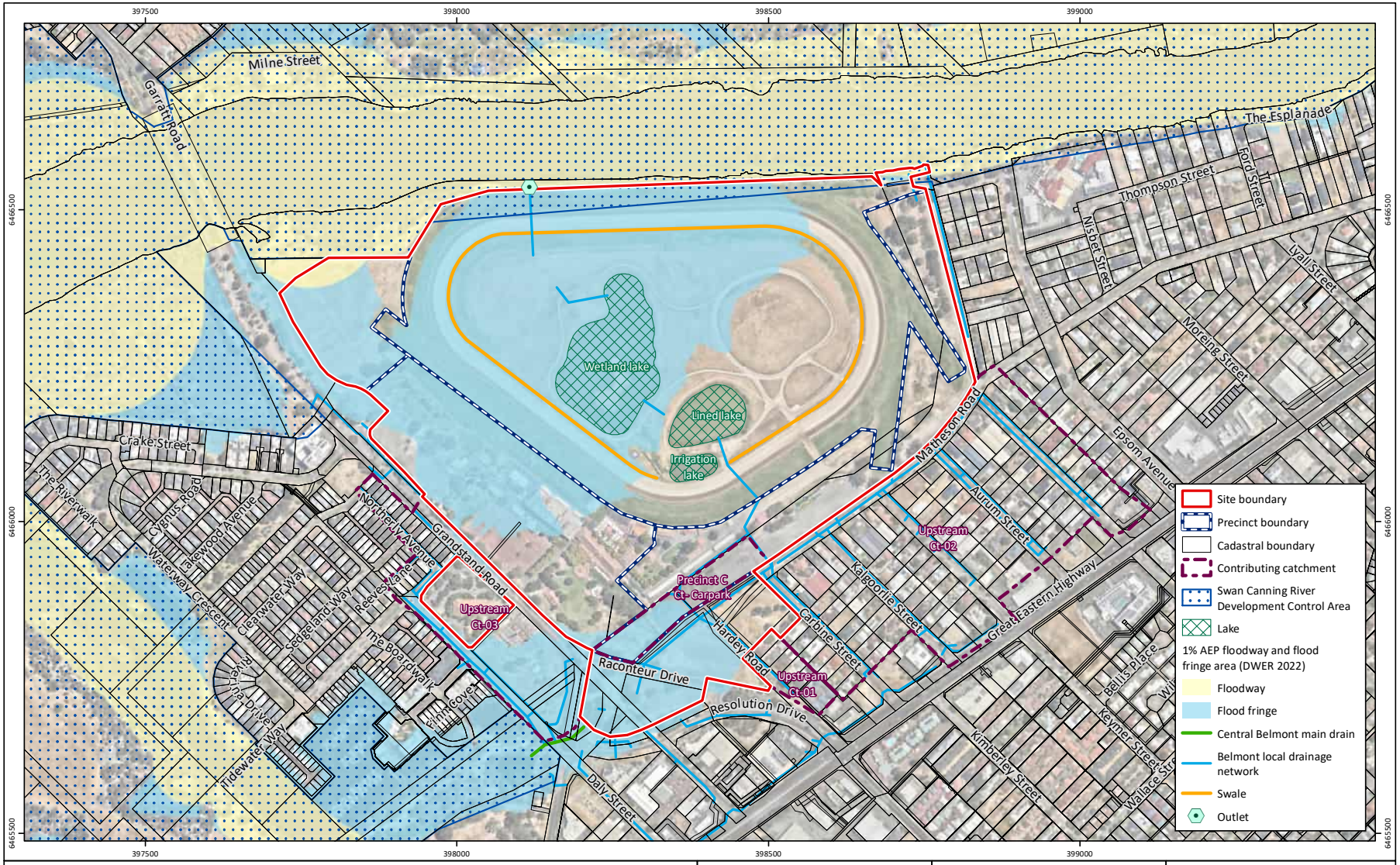



**Figure 6: Hydrological Features**

| | |
|---|---|
| **Project:** | Local Water Management Plan<br>Golden Gateway Local Structure Plan |
| **Client:** | Perth Racing |

**Plan Number:**
**EP23-109(03)--F28**

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| Drawn: | WJC |
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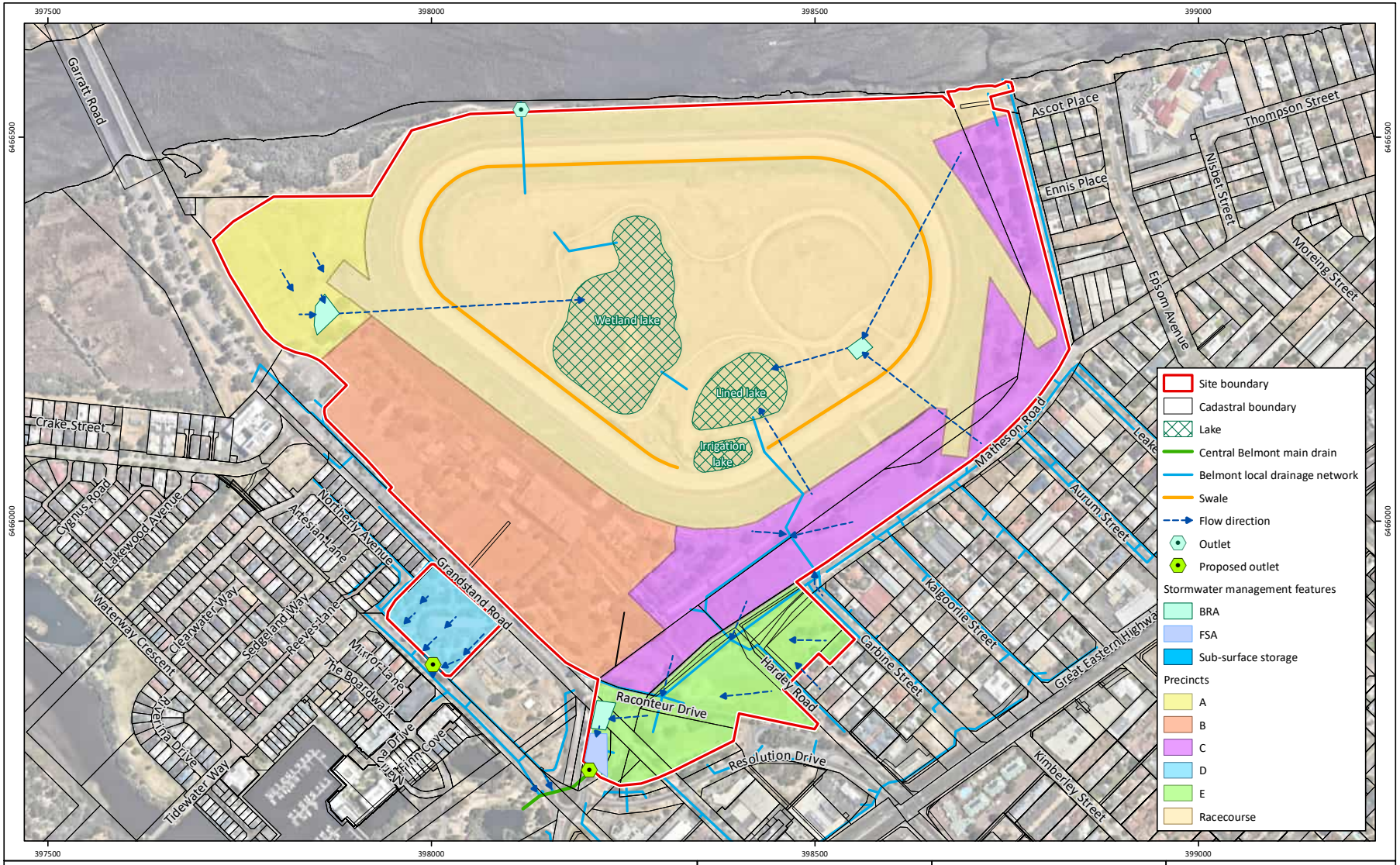



**Figure 7: Ascot LSP Precinct Plan**

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|---|---|
| **Project:** | Local Water Management Plan<br>Golden Gateway Local Structure Plan |
| **Client:** | Perth Racing |

**Plan Number:** EP23-109(03)--F29

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| Date: | 01/05/2024 |
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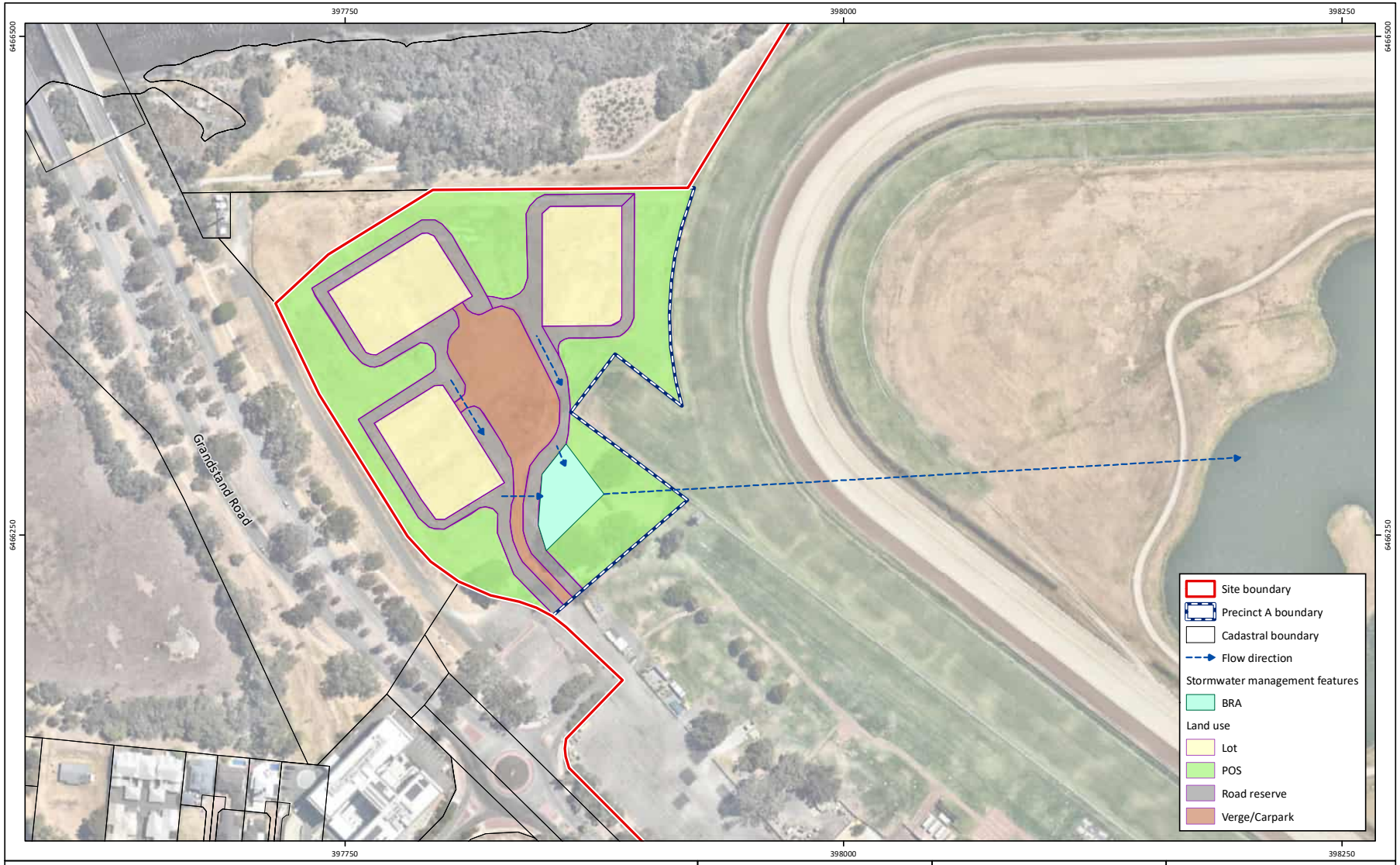



**Figure 7A: Precinct A Stormwater Management Plan**

**Project:** Local Water Management Plan
Golden Gateway Local Structure Plan
**Client:** Perth Racing

**Plan Number:**
**EP23-109(03)--F32**
Drawn: WJC
Date: 01/05/2024
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Date: 17/05/2024

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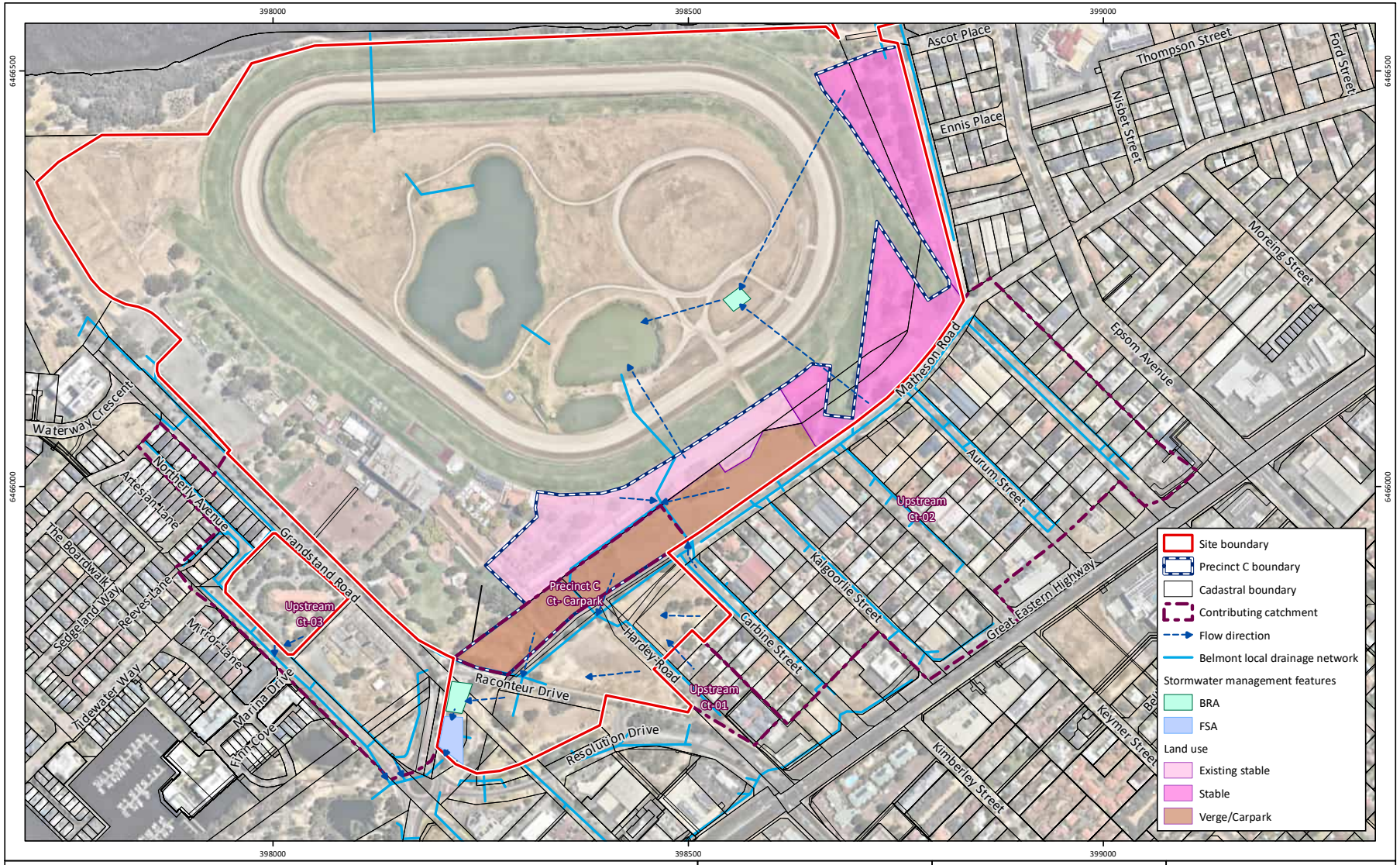



**Figure 7B: Precinct C Stormwater Management Plan**

| | |
|---|---|
| **Project:** | Local Water Management Plan<br>Golden Gateway Local Structure Plan |
| **Client:** | Perth Racing |

**Plan Number:** EP23-109(03)--F33

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| Drawn: | WJC |
| Date: | 01/05/2024 |
| Checked: | JM |
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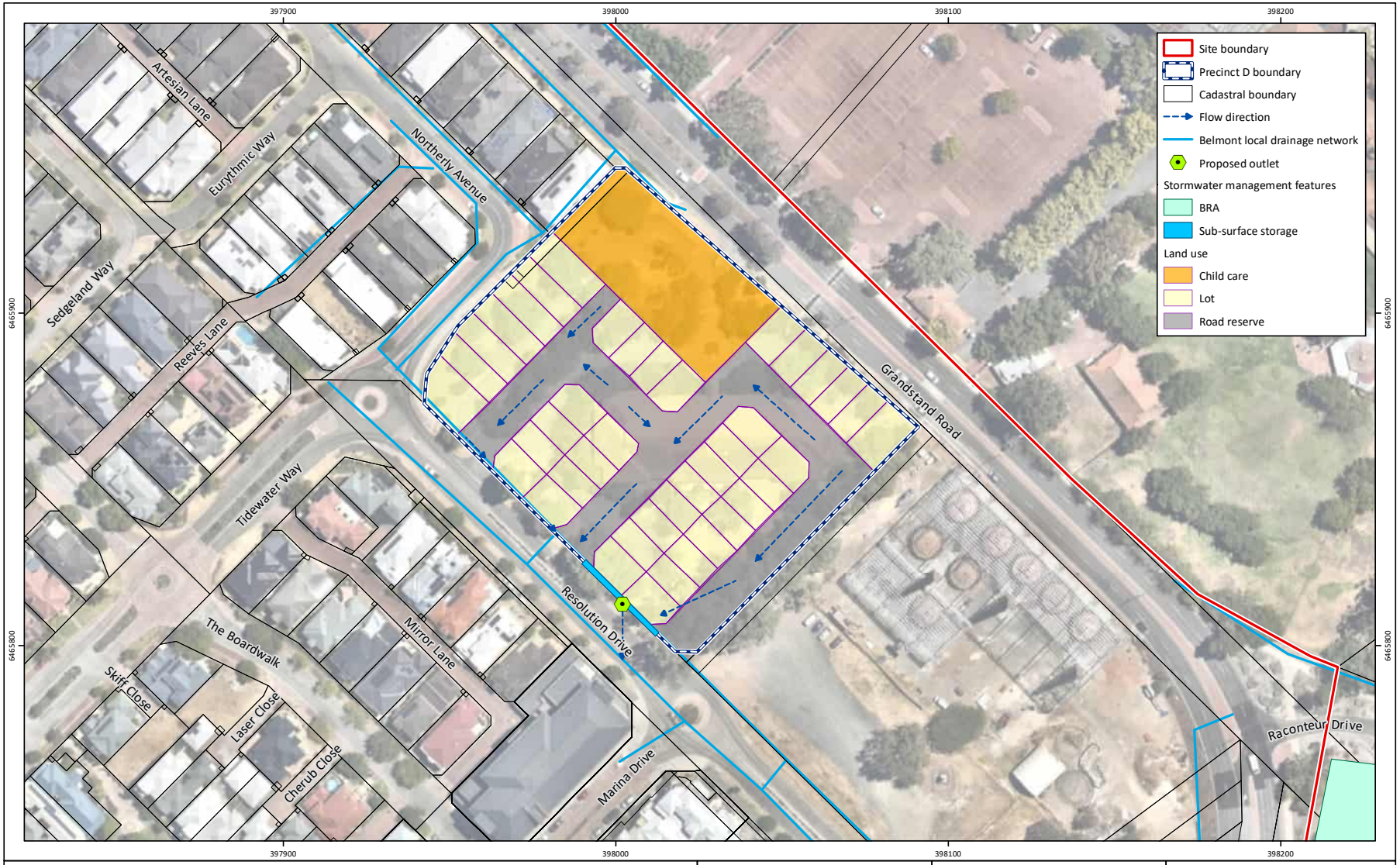



**Figure 7C: Precinct D Stormwater Management Plan**

| | |
|---|---|
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| **Client:** | Perth Racing |

**Plan Number:**
**EP23-109(03)--F34**

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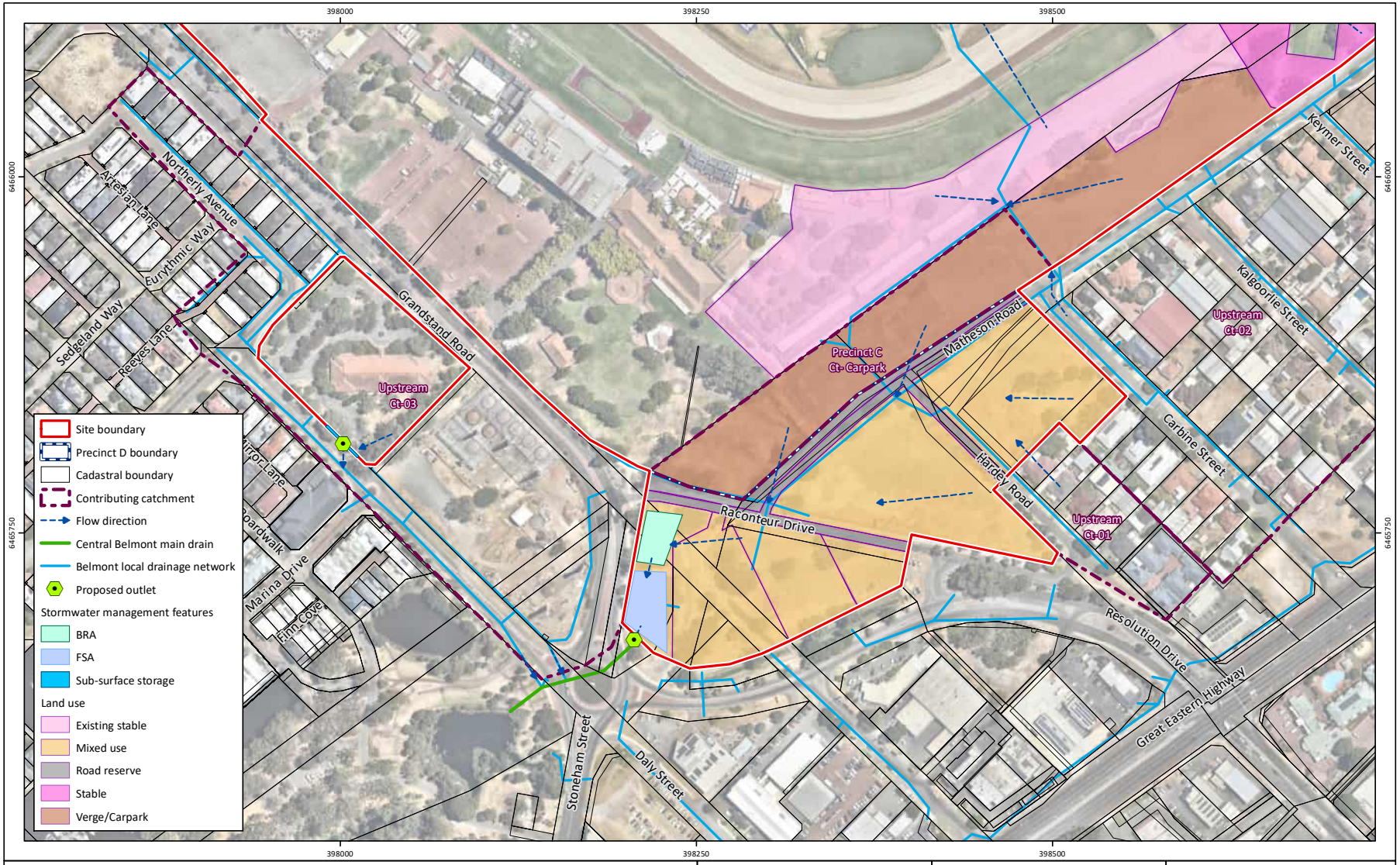



**Figure 7D: Precinct E Stormwater Management Plan**

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| **Client:** | Perth Racing |

**Plan Number:**
**EP23-109(03)--F35**

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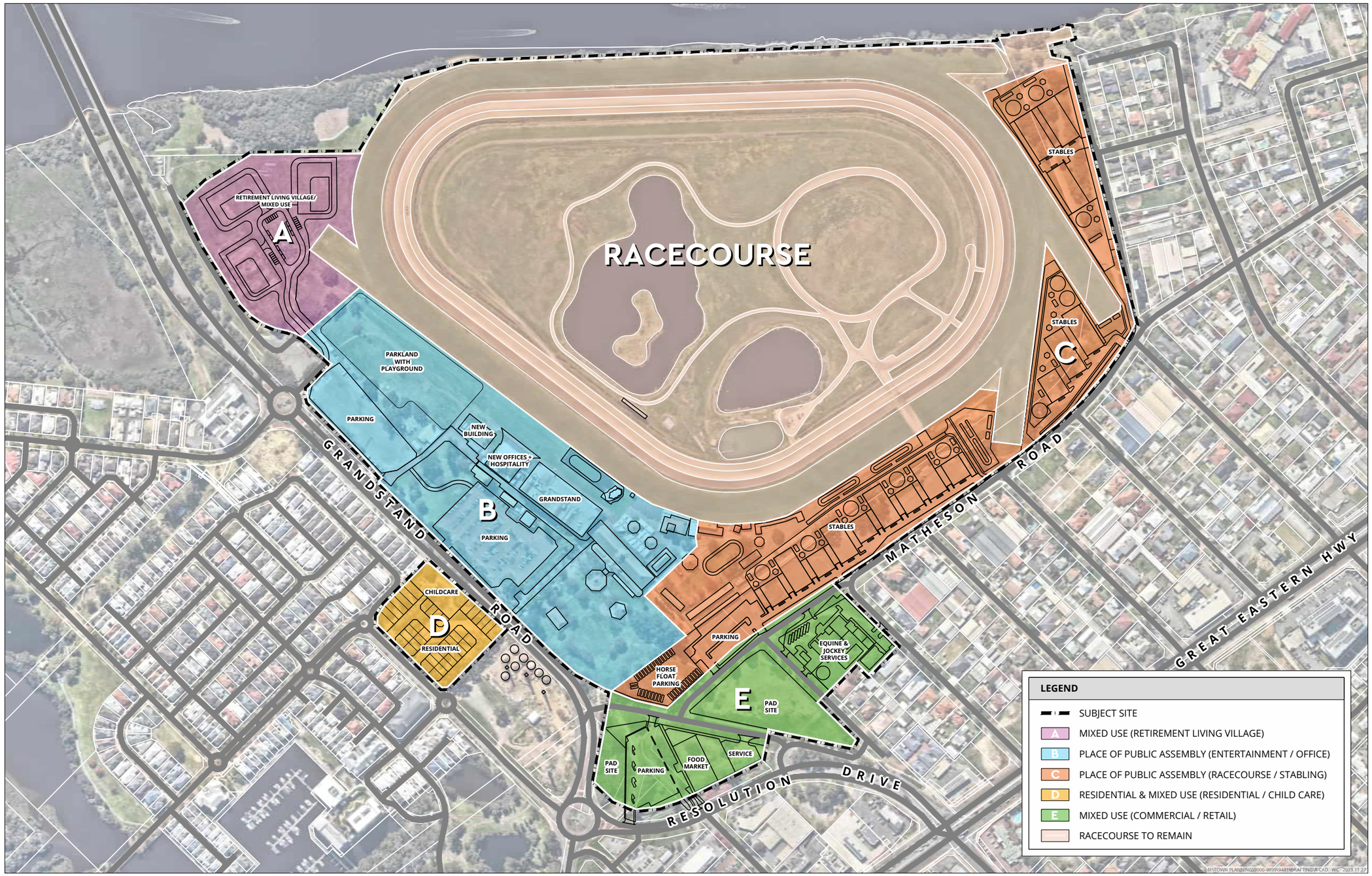
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# Appendix A

Concept plan

*ROWE Group Design (2023)*




**DRAFT MASTER PLAN CONCEPT**
VARIOUS LOTS - ASCOT RACECOURSE
ASCOT

DRAFT

N

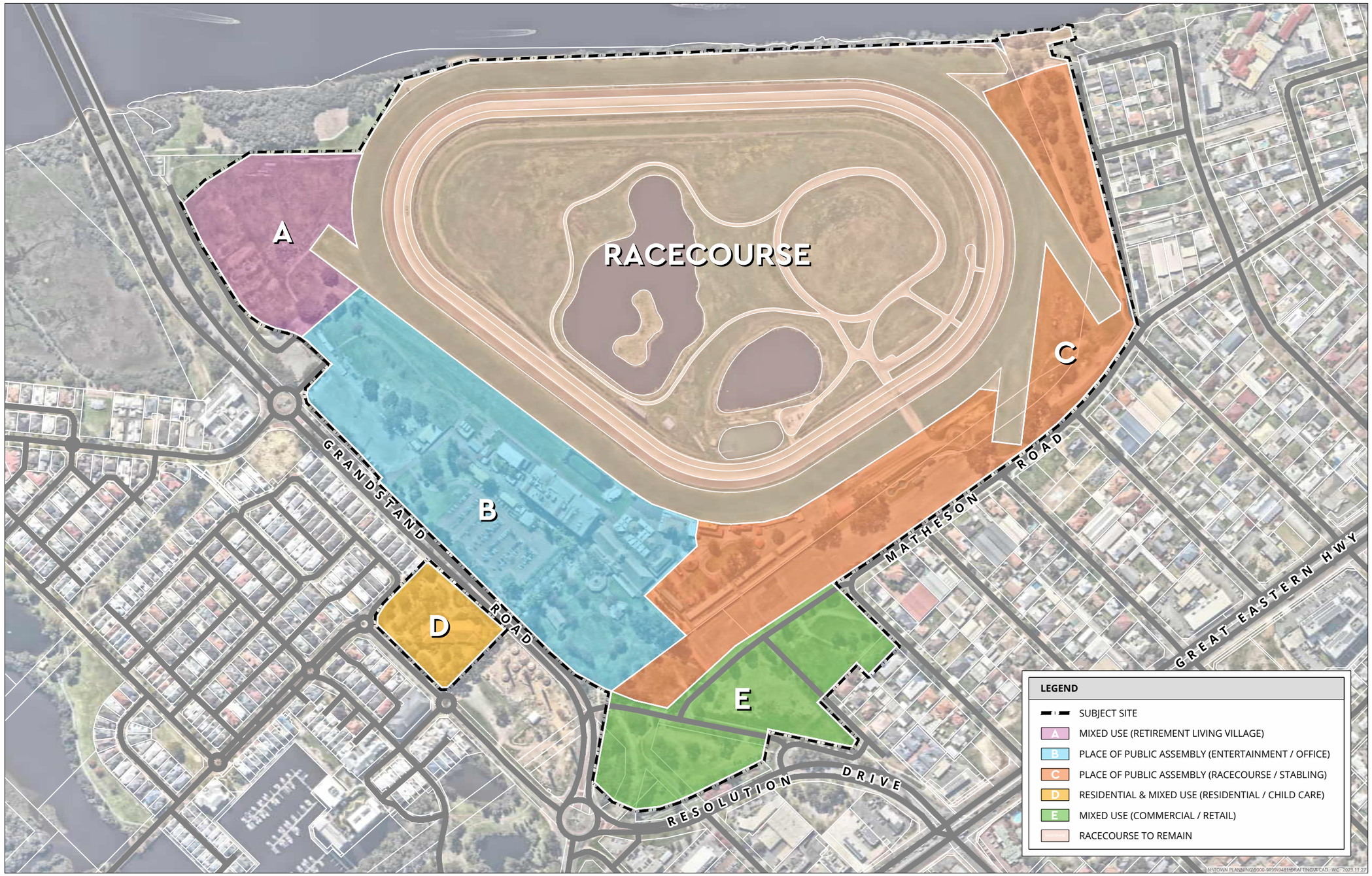
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**9481-CON-01-C**

DRAWN: WC
DATE CREATED: 2023.11.27
PROJECTION: MGA50 GDA94
CADASTRE: LANDGATE
AERIAL: NEARMAP 20230831

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ROWE GROUP DESIGN




**STRUCTURE PLAN PRECINCTS**
VARIOUS LOTS - ASCOT RACECOURSE
ASCOT

**DRAFT**

N

0 100 m
SCALE @ A3: 1:4000
**9481-FIG-02-B**

DRAWN: WC
DATE CREATED: 2023.11.27
PROJECTION: MGA50 GDA94
CADASTRE: LANDGATE
AERIAL: NEARMAP 20230831

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# Appendix B

Geotechnical Reports

*Precinct A – Douglas Partners 2024*

*Precinct D – Galt 2024*

Douglas PARTNERS

GROUNDED EXPERTISE

# Report on Preliminary Geotechnical Investigation

## Proposed Residential Development

## Part of Lot 9002 Grandstand Road, Ascot WA

## Prepared for Perth Racing

**Project 219164.03**

**25 January 2024**

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## Document History
## Details

| | |
|---|---|
| **Project No.** | 219164.03 |
| **Document Title** | Report on Preliminary Geotechnical Investigation |
| **Site Address** | Part of Lot 9002 Grandstand Road, Ascot WA |
| **Report Prepared For** | Perth Racing |
| **Filename** | 219164.03.R.001.Rev0 |

## Status and Review

| Status | Prepared by | Reviewed by | Date issued |
|---|---|---|---|
| Revision 0 | Venkat Vallurapalli/Brendan Divilly | Frederic Verheyde | 25 January 2024 |

## Distribution of Copies

| Status | Issued to |
|---|---|
| Revision 0 | Perth Racing |

The undersigned, on behalf of Douglas Partners Pty Ltd, confirm that this document and all attached drawings, logs and test results have been checked and reviewed for errors, omissions and inaccuracies.

| Signature | Date |
|---|---|
| **Author** | 25 January 2024 |
| **Reviewer** | 25 January 2024 |

FS604853

Douglas Partners acknowledges Australia's First Peoples as the Traditional Owners of the Land and Sea on which we operate. We pay our respects to Elders past and present and to all Aboriginal and Torres Strait Islander peoples across the many communities in which we live, visit and work. We recognise and respect their ongoing cultural and spiritual connection to Country.

Douglas PARTNERS | GROUNDED EXPERTISE

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# Report on Preliminary Geotechnical Investigation
# Proposed Residential Development
# Part of Lot 9002 Grandstand Road, Ascot WA

## 1. Introduction

This report presents the results of a preliminary geotechnical investigation undertaken for a proposed residential development across Part of Lot 9002 Grandstand Road, Ascot WA. The investigation was commissioned by Mr. James Oldring of Perth Racing in a signed order to proceed dated 8 August 2023 and was undertaken in accordance with Douglas' proposal dated 8 May 2023.

It is understood that Perth Racing is evaluating the feasibility of developing the northwest portion of Lot 9002 for possible residential use (the 'site').

The objective of the investigation is to assess the subsurface soil and groundwater conditions at across the site to provide preliminary comments on:

- The geotechnical suitability of the site for the proposed development.
- Geotechnical opportunities and constraints relevant to the proposed development.
- Areas of foundation risk including the presence of aggressive soils and strategies to address identified risks.
- Site preparation, including the possible reuse of existing soil as controlled fill.
- Excavation conditions.
- The likely site classification in accordance with the requirements of AS 2870-2011.
- Appropriate earthquake design factor for the site, in accordance with AS 1170.4-2007.
- Suitable foundation systems, including preliminary design parameters.
- Preliminary design parameters for the design of retaining structures and batter slopes.
- Depth to groundwater at the time of the investigation.
- Recommendations on additional geotechnical investigation at detailed design phase or to address specific ground conditions encountered.

The investigation included eight cone penetration tests, 16 test pits and one borehole excavated and drilled as a part of detailed site investigation (for contamination), and laboratory testing of selected samples. The details of the field work are presented in this report, together with comments and recommendations on the items listed above.

The investigation was conducted concurrently with a detailed site investigation (for contamination), which has been reported under separate cover (219164.01.R.001.Rev0). The detailed site investigation (for contamination) report should be read in conjunction with this report.

## 2. Site Description

The site comprises an irregular shaped area, approximately 36.2 ha in size, that covers a part of Lot 9002 Grandstand Road, within the Ascot Racecourse.

At the time of the field work, the majority of the site was vacant and vegetated with short grass. A few mature trees, about 5 m to 10 m in height, occupied the southern part of the site. A parking lot and small loading area were located at the south-western corner of the site. Some fly-tipped rubbish, including fences and posts, were observed at several locations across the site.

According to publicly available LiDAR data (DEM derived to 5 m), the topography across Lot 9002 is relatively flat with existing surface levels ranging from approximately RL 2 m relative to the Australian Height Datum (AHD) in the western part of the site to RL 3.5 in the north-eastern corner of the site.

The Perth 1: 50 000 Environmental Geology sheet indicates that shallow sub surface conditions beneath the western two thirds of the site comprise sandy silt of the Guildford Formation, and beneath the north-eastern corner and eastern corner of the site comprise alluvium.

The Perth Groundwater Atlas (2004) indicates that in May 2003, the groundwater level beneath the site was less than RL 1 m, or between approximately 1.0 m and 2.5 m below the existing surface level. The Atlas also indicates that the groundwater flow direction beneath the site in May 2003 was approximately northwest towards the Swan River.

The published acid sulfate soil risk mapping indicates that the site is located within an area which is mapped as "*high to moderate risk of acid sulfate soils occurring within 3 m of natural soil surface*".

## 3. Field Work Methods

Field work for the investigation was carried out between 11 October and 9 November 2023 and comprised:

- The excavation of 16 test pits.
- The drilling of one borehole.
- Perth sand penetrometer (PSP) or Dynamic cone penetrometer (DCP) testing adjacent to each test pit or borehole location.
- The performance of cone penetration tests at 8 locations (CPT24 to CPT31A). A total of 14 CPTs were undertaken after repeating CPTs at some locations in attempt to achieve greater testing depth following shallow refusal in uncontrolled fill.

The test pits (locations 7 to 22) were excavated using a 5-tonne excavator, equipped with 450 mm toothed bucket, and the borehole (location 23) was drilled using a 250 mm diameter power auger attached to the same excavator. The ground conditions at each test pit and borehole were logged in accordance with Australian Standard (AS 1726, 2017) by a geo-environmental engineer from Douglas. Soil samples were recovered from selected locations for subsequent laboratory testing.

Dynamic cone penetrometer (DCP) and Perth sand penetrometer (PSP) tests were undertaken adjacent to the test pit and borehole locations in accordance with Australian Standards (AS 1289.6.3.3, 1997; AS 1289.6.3.2, 1997) to assess the in-situ density of the shallow soils.

The CPTs use a 36 mm diameter instrumented cone with a following 130 mm long friction sleeve attached to rods of the same diameter, pushed continuously at a rate of 20 mm/sec into the soil by hydraulic thrust from a truck rig. Strain gauges in the cone and sleeve measure resistance to penetration and friction along the sleeve during penetration. This data is recorded on a computer and analysed to assess the type, properties and condition of the materials penetrated. The CPT's were pushed to termination depths of up to 20.2 m. Upon withdrawing the CPT probe, each test hole was dipped in an attempt to measure groundwater levels. CPTs were repeated at several test locations to attempt achieving greater testing depth following shallow CPT refusal on inferred hard foreign inclusions in the uncontrolled fill.

Test locations were determined using a handheld GPS and site features and are marked on Drawing 1, Appendix B. Surface elevations were recorded using a differential GPS with a reported accuracy of 0.1 m.

## 4. Field Work Results

### 4.1 Ground Conditions

The logs of the ground conditions and results of the field testing are presented in Appendix B, together with notes defining descriptive terms and classification methods, in Appendix A.

- **Uncontrolled FILL**
    - **Granular FILL - SAND, Organic SAND, Gravelly SAND, Silty SAND and Sandy GRAVEL (SP, SP-SM, SM and GP-GM)** – generally sandy fill (or gravelly material associated with pavement layers at location 23), uncontrolled (apart from the pavement layers), from surface to depths of between 0.6 m and 3.6 m depth, encountered at all locations. A layer of organic sandy fill layer was observed between 1.4 m and 1.8 m depth at location TP8. The sandy fill was generally loose to medium.
    - **Cohesive FILL - Clayey SAND, Sandy CLAY, CLAY (SM, SC, CI and CL-CI)** – generally stiff to very stiff, either underlying the aforementioned sandy fill material or interbedded within layers of sandy fill, encountered at test pit locations 9, 20, 21, 23, and CPT locations 24, 24A, 29 and 29A.

  A considerable amount of foreign inclusions such as fragments of brick, glass, timber, geo-fabric, concrete, plastic, rubber, scrap metal, terracotta pipes, redundant cables and PACMs were observed at all test pit locations, except location 22. A layer of asphalt was encountered at 0.95 m depth at TP9. The fill materials across the site are uncontrolled.

  It is noted that the fill extended below groundwater level at many locations.

Overlying natural soils including:

- **Clayey soils including Clayey SAND and CLAY** – ranging between very soft to soft and stiff to very stiff, encountered under the fill materials at CPTs 25, 30 and 31A to depths between 4.2 m and 14.9 m.
- **Sandy soils including SAND and Silty SAND** – underlying and interbedded within the above clayey soils at CPTs 25, 30 and 31A. The sand was generally very loose and loose to medium dense to depths between 10.5 m and 14.9 m, becoming medium dense and dense below.

### 4.2 Groundwater

Groundwater level observations between 18 September and 9 November 2023 are summarised in Table 1 and are shown on the logs in Appendix B.

The test holes were immediately backfilled following sampling, which precluded longer-term monitoring of groundwater levels. Six monitoring wells (MW01 to MW06) were installed as part of the preliminary environmental investigation (reported separately) and groundwater observations available from these wells at the time of report writing have been included in Table 1.

**Table 1: Summary of Groundwater Levels**

| Location | Date of Measurement | Ground Surface Level [1] (m AHD) | Groundwater Depth (m) | Groundwater Level [2] (RL m AHD) |
|---|---|---|---|---|
| MW01 | 18 September 2023 | 1.9 | 1.30 | 0.6 |
| MW02 | | 2.0 | 1.46 | 0.5 |
| MW03 | | 3.2 | 2.37 | 0.8 |
| MW04 | | 2.4 | 1.59 | 0.8 |
| MW05 | | 2.5 | 1.21 | 1.3 |
| MW06 | | 2.2 | 1.09 | 1.1 |
| TP7 | 9 November 2023 | 2.9 | 2.30 | 0.6 |
| TP9 | | 2.1 | 2.10 | 0.0 |
| TP12 | | 2.1 | 2.10 | 0.0 |
| TP13 | | 2.8 | 2.50 | 0.3 |
| TP15 | | 2.2 | 2.40 | -0.2 |
| TP16 | | 2.6 | 2.50 | -0.1 |
| TP17 | | 2.2 | 2.10 | 0.1 |
| TP19 | | 2.2 | 1.80 | 0..4 |
| TP20 | | 2.0 | 2.10 | -0.1 |
| TP21 | | 2.1 | 1.80 | 0.3 |
| TP22 | | 2.3 | 1.80 | 0.5 |
| BH23 | | 2.4 | 1.70 | 0.7 |
| CPT25 | 11 October 2023 | 3.4 | 3.00 | 0.4 |
| CPT28 | | 1.9 | 1.30 | 0.6 |
| CPT29A | | 2.3 | 2.20 | 0.1 |
| CPT30 | | 3.2 | 2.80 | 0.4 |
| CPT31A | | 2.1 | 2.00 | 0.1 |

Notes for Table 1: [1]: Surface level measured using a differential GPS.
[2]: Groundwater Level = Surface Level – Groundwater Depth.

It should be noted that groundwater levels are affected by climatic conditions and land usage and will therefore vary with time. In addition, owing to the proximity of the Swan River, the groundwater levels are expected to be impacted by the tidal river conditions and river flood levels.

## 5. Laboratory Testing

A geotechnical laboratory testing programme was carried out by a NATA accredited laboratory and comprised:

- the particle size distributions on seven samples;
- the Atterberg Limits and linear shrinkage on three samples; and
- the organic content on four samples.

Results of the laboratory testing are summarised in Tables 2. The test certificates are presented in Appendix C.

**Table 2: Results of Laboratory Testing for Soil Identification**

| Location | Depth (m) | Fines (%) | Sand (%) | Gravel (%) | LL (%) | PL (%) | PI (%) | LS (%) | OC (%) | Material |
|---|---|---|---|---|---|---|---|---|---|---|
| TP8 | 1.5 | 9 | 61 | 30 | - | - | - | - | 6.8 | FILL / Organic SAND SP-SM, with gravel and silt |
| TP13 | 1.5 | 4 | 95 | 1 | - | - | - | - | 1.6 | FILL / SAND SP, trace gravel and silt |
| TP19 | 2.5 | 5 | 83 | 12 | - | - | - | - | 1.5 | FILL / SAND SP, trace gravel and silt |
| TP21 | 2.0 | 40 | 51 | 9 | 37 | 24 | 13 | 8.5 | - | Sandy CLAY CI, medium plasticity, trace gravel |
| TP22 | 2.0 | 7 | 93 | 0 | NO | NP | NP | - | - | SAND SP-SM, with silt |
| TP23 | 2.0 | 45 | 48 | 7 | 44 | 22 | 22 | 9.5 | - | FILL / Sandy CLAY CI, medium plasticity, trace gravel |
| TP23 | 2.5 | 12 | 87 | 1 | - | - | - | - | 1.2 | FILL / SAND SP-SM, with silt, trace gravel |

Notes: Fines = Finer than 75 µm.
Sand = Between 2.36 mm and 75 µm.
Gravel = Larger than 2.36 mm.
LL – liquid limit PL – plastic limit PI – plasticity index LS – linear shrinkage
OC – organic content NO – not obtainable NP – non plastic

## 6. Proposed Development

At the time of preparing this report, the details for the proposed development were not yet available. Notwithstanding, it is understood that the proposed development is likely to be residential and, given the location, is presumed would likely be multistorey and possibly include a basement level.

## 7. Comments

### 7.1 Site Suitability

The investigation indicates that the site is generally underlain by uncontrolled fill overlying very soft to stiff clayey materials and very loose sandy soils becoming medium dense and dense with depth as described in Section 4.1 above.

From a geotechnical standpoint, there are several significant geotechnical constraints that will adversely impact on any development of the site including;

- Deep uncontrolled fill, unsuitable to support shallow foundations, and will impact on construction activities associated with deep piled foundations.
- Deep very soft and very loose natural soils under the uncontrolled fill, unsuitable to support shallow foundations.
- Shallow groundwater which will make earthworks across the site any possible remediation works of the above difficult. It should be noted that the abovementioned uncontrolled fill and soft soils both extend below groundwater.

Owing to the significant geotechnical constraints, any possible development will likely require a piled foundation solution into the medium dense and dense sandy soils, encountered below depths of approximately 10 m to 15 m. Additional geotechnical investigation will be required to confirm the foundation design and suitable pile design parameters. Also, noting that any proposed additional loading of the ground (for instance from the placement of fill to raise site levels, if proposed) would generate further consolidation of the soft soils underlying the site and cold result in some possible significant ground settlement. Therefore, surcharging areas (by placing temporary fill prior to construction of any structure) outside the proposed building envelopes might also be required during the site preparation to manage the risk of differential settlements between proposed buildings and adjacent ground, following their construction.

### 7.2 Site Classification

The shallow ground conditions beneath the site comprise uncontrolled fill materials and deep loose and soft soil deposits. Based on the results of the investigation and in accordance with Australian Standard (AS 2870, 2011), a site classification of 'Class P' applies to the site, owing to the presence of the uncontrolled fill and deep loose and soft soil.

### 7.3 Site Seismic Classification

Owing to the uncontrolled fill and deep very loose and very soft soil deposits across the site, an earthquake design soil sub-class of Ee is considered appropriate for this site in accordance with Australian Standard (AS 1170.4, 2007). The Hazard Factor (Z) for the site is 0.09, according to Australian Standard (AS 1170.4, 2007). Due to the deep loose soil below the water table, the site also has a significant potential for liquefaction. An assessment on the liquefaction potential of the site should be considered during any detailed investigation, when more details can be collected on the extent of deep loose soils.

### 7.4 Excavation Conditions

The encountered ground conditions generally comprise uncontrolled fill, with some large foreign inclusions within the fill, extending below groundwater. Conventional earthmoving equipment (such as large excavators, say at least 20 t) should be generally suitable for shallow excavations in the surficial uncontrolled fill. Shallow groundwater is likely to impact excavations across the site.

The majority of the uncontrolled fill encountered during this preliminary investigation is considered to be geotechnically unsuitable for re-use as structural fill in its current condition. Any further consideration to reuse the uncontrolled fill would require some specific geotechnical provisions, such as screening and disposing its unsuitable components. Separating the re-useable granular components (e.g. the sandy fill) from its cohesive components (e.g. clayey fill) might also prove to be practically difficult. Owing to the significant variability of uncontrolled fill materials across the site, any re-use potential from a geotechnical standpoint should be confirmed on-site by a geotechnical engineer. Some environmental considerations (i.e. contamination) are also anticipated to be required. Overall, at this stage of the study, the reuse of the encountered uncontrolled fill should be considered to be associated with some significant constraints that might preclude such reuse.

### 7.5 Slope Stability

During construction, it is recommended that temporary batter slopes across the site are maintained flatter than 2:1 (H:V) if not retained. This batter angle is valid provided no surcharge loads (including live loads such as vehicles and machinery) apply at the top of the slope. In uncontrolled fill materials, a safe batter angler not steeper than 3:1 (H:V) is recommended for design for slopes not greater than 3 m in height, however, owing to variability of the uncontrolled fill materials, this value should be adjusted during construction based on the encountered conditions.

The design of unpropped flexible or rigid walls should be undertaken using a triangular pressure distribution and the earth pressure parameters given in Table 4. In addition to the soil pressure, wall design should also allow for external loads such as buildings, live loads and hydrostatic pressure. Owing to the likely significant settlements associated with the uncontrolled fill and deep soft soils, the requirement to adopt a piles foundation system to support proposed retaining walls is anticipated.

**Table 4: Preliminary Soil Parameters for Earth Retaining Design**

| Soil Type and Density | Soil Unit Weight Above Water<br>$\gamma$<br>(kN/m$^3$) | Submerged Soil Unit Weight<br>$\gamma'$<br>(kN/m$^3$) | Drained Angle of Friction<br>$\Phi'$<br>(°) | Undrained Shear Strength<br>Cu<br>(kPa) | Coefficient of Earth Pressure – Active<br>$K_a$ | Coefficient of Earth Pressure – Passive<br>$K_p$ | Coefficient of Earth Pressure – at Rest<br>$K_o$ |
|---|---|---|---|---|---|---|---|
| Uncontrolled Fill Materials | 16 | 6 | 28 | - | 0.36 | 2.7 | 0.5 |

It should be noted that the passive earth pressure coefficient (second last column of Table 4) is an ultimate value and does not incorporate a factor of safety. Because the stress-strain relationship curve for lateral loading is not linear, relatively large strains are required to mobilise full passive pressure, but only relatively small strains are required to mobilise half the passive pressure, therefore it would be prudent to incorporate a factor of safety of at least 2 for uncontrolled fill materials, to derive design values from the ultimate values.

## 7.6 Foundation Options

Shallow footings are not considered suitable across this site, owing to the significant thickness of uncontrolled fill and deep loose and soft soils.

### 7.6.1 Piles

It is anticipated that a piled foundation system, with deep bored piles that penetrate the deep loose and soft soils into the medium dense and dense sandy soils at depth, would likely be required for any foundations on-site.

Bored piles will require temporary or permanent casing throughout the uncontrolled fill materials, noting that possible obstructions within the uncontrolled might cause some difficulties when driving the casing or drilling the pile hole. This pile type will involve soil excavation to target founding level and hence would produce spoil that needs to be handled and disposed of in a suitable manner, which will need to also be considered from an environmental standpoint.

Installation through the uncontrolled fill materials could be affected by the possible presence of large, hard inclusions and the design of the pile installation methodology should take this possibility into consideration.

The settlement of the uncontrolled fill will exert negative skin friction on the piles, which the piles will need to be designed to accommodate or be constructed in sleeves.

Additional deep geotechnical boreholes will be required across the site to inform on the pile design.

### 7.6.1 Controlled Modulus Columns

Controlled modulus columns could be installed as an alternative to conventional pile foundations, allowing shallow footings to be used whilst controlling settlements to acceptable limits.

Installation of controlled modulus columns involves displacing a column of material using a reverse flight auger, densifying the soil around the auger, and backfilling the resulting hole with cement ground under moderate pressure to create a 'hard' inclusion in the ground. The columns are typically 250 mm to 500 mm in diameter. Column spacings of columns typically 1.8 m to 2.5 m but would need input from a specialist ground improvement contractor. Columns can be installed to depths of up to 50 m, so could penetrate to the base of the uncontrolled fill and deep loose and soft soils. However, if large hard inclusions such as concrete slabs or beams, are encountered then the auger may experience refusal, as the CPTs did at several locations during the preliminary geotechnical investigation.

A load transfer platform, such as a granular, well compacted fill layer, possibly reinforced with geogrid or geotextile, would be needed to transfer loads from shallow foundations to the columns.

One main benefit of this ground improvement option (compared to piling) would be to minimise differential settlement across the site and notably between buildings and surrounding grounds. However, it would likely be limited to low level development (say 2 to 3 level buildings), and this option is anticipated to likely be prohibitively expensive, with likely significant mobilisation and installation costs. The advice of a specialist ground improvement contractor, such as Menard Oceania, is suggested to be sought to further assess the suitability of this ground improvement to the proposed development.

### 7.7 Pavement Construction

The uncontrolled fill across the site does not form a suitable subgrade material for pavement in its current condition. Depending on the expected loading of proposed pavement, the requirement for some over-excavation of uncontrolled fill is likely. Construction should involve the use of a geo-composite layer (such as Global Synthetics' Combigrid) across the base of the over-excavation, overlain by a 500 mm thick layer of compacted crushed limestone, placement of a layer of geogrid (such as Global Synthetics' Secugrid), and a further 500 mm of compacted sand fill. The base of the constructed floating pavement footprint should be at least 2 m wider on each side than the total pavement width (4 m wider in total) to account for a suitable batter and transfer of load. Standard flexible pavements could then be constructed on the 1 m thick raft of stiffened subgrade. Placement of the initial base layer of composite geogrid may be difficult across areas of exposed uncontrolled fill. As such, depending on the site conditions, a 300 mm thick capping layer of clean fill may be required.

Regardless of the above site preparation, some settlement of the pavement should be expected over its service life and should be considered in the selection of the pavement surfacing. The use of pavers should be considered as such surfacing treatment would deform without cracking. Alternatively, a bituminous seal should be preferred over say an asphalt, owing to greater flexibility and to decrease maintenance and repair requirements, noting however that seals are less resistant than asphalt to shearing forces from tyres of turning heavy vehicles. The use a specialised asphalt, such as a stone mastic asphalt, could also be considered, noting it would be less resistant to the risk of cracking than a seal. Some allowance for regular maintenance and repairs should be allowed during the serviceability of the pavement.

### 7.8 Stormwater Drainage

Owing to the occurrence of low permeability soils and groundwater at shallow depth, the site is considered unsuitable for on-site stormwater disposal. It is suggested that stormwater is controlled using positive drainage or a subsoil drainage network, connected to a suitable outflow.

### 7.9 Additional Geotechnical Investigation

Additional geotechnical investigation across the site, by way of deep geotechnical boreholes (as a minimum), further CPT and additional laboratory testing, should be undertaken to help refine the ground model, provide pile design parameters, confirm suitable bearing strata for piles, and assess the soil aggressivity and exposure classification for piles. It is recommended that the detailed investigation programme be developed once some details of the proposed development

are known, if possible, in order to target specific geotechnical issues associated with the development.

The investigation covered in this report should be considered preliminary and as noted in selected sections of the report, additional detailed geotechnical testing at a greater testing frequency is anticipated once the project design has progressed.

## 8. References

AS 1170.4. (2007). *Structural Design Actions, Part 4: Earthquake Actions in Australia.* Reconfirmed 2018. Incorporating Amendments 1 & 2: Standards Australia.

AS 1289.6.3.2. (1997). *Methods for testing soils for engineering purposes - Soil strength and consolidation tests - Determination of the penetration resistance of a soil - 9kg dynamic cone penetrometer test.* Reconfirmed 2013: Standards Australia.

AS 1289.6.3.3. (1997). *Methods for testing soils for engineering purposes - Soil strength and consolidation tests - Determination of the penetration resistance of a soil - Perth sand penetrometer test.* Reconfimed 2013: Standards Australia.

AS 1726. (2017). *Geotechnical Site Investigations.* Standards Australia.

AS 2159. (2009). *Piling - Design and Installation.* Standards Australia.

AS 2870. (2011). *Residential Slabs and Footings.* Standards Australia.

## 9. Limitations

Douglas Partners (DP) has prepared this report for this project at Part of Lot 9002 Grandstand Road, Ascot WA in accordance with DP's proposal dated 8 May 2023 and acceptance received from Mr James Oldring in a signed services order dated 8 August 2023. The work was carried out under DP's Engagement Terms. This report is provided for the exclusive use of Perth Racing for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

The results provided in the report are indicative of the sub-surface conditions on the site only at the specific sampling and/or testing locations, and then only to the depths investigated and at the time the work was carried out. Sub-surface conditions can change abruptly due to variable geological processes and also as a result of human influences. Such changes may occur after DP's field testing has been completed.

DP's advice is based upon the conditions encountered during this investigation. The accuracy of the advice provided by DP in this report may be affected by undetected variations in ground conditions across the site between and beyond the sampling and/or testing locations. The advice may also be limited by budget constraints imposed by others or by site accessibility.

The assessment of atypical safety hazards arising from this advice is restricted to the geotechnical components set out in this report and based on known project conditions and stated design advice and assumptions. While some recommendations for safe controls may be provided, detailed 'safety in design' assessment is outside the current scope of this report and requires additional project data and assessment.

This report must be read in conjunction with all of the attached and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by DP. This is because this report has been written as advice and opinion rather than instructions for construction.

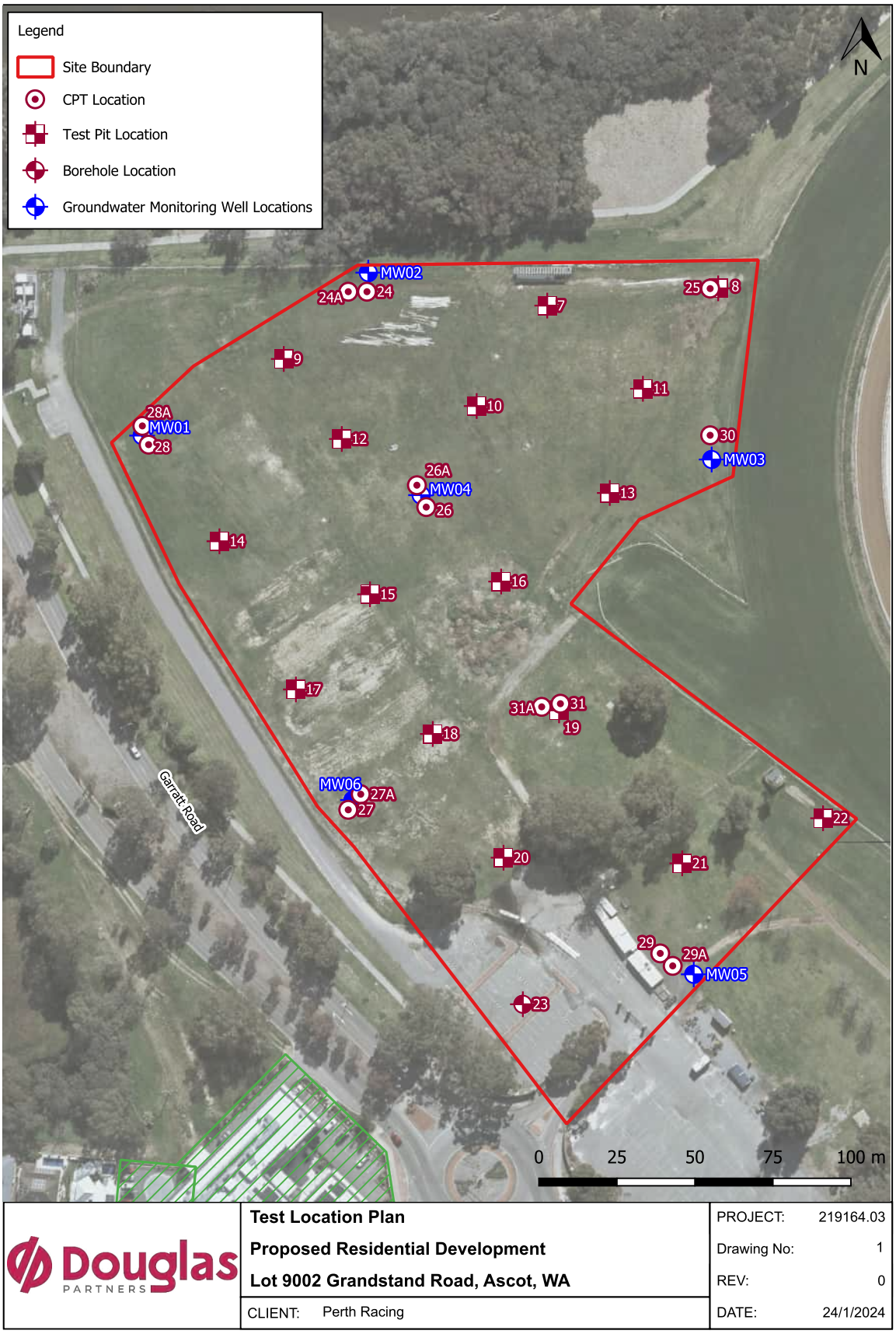
The scope of work for this investigation/report did not include the assessment of surface or sub-surface materials or groundwater for contaminants, within or adjacent to the site. Should evidence of fill of unknown origin be noted in the report, and in particular the presence of building demolition materials, it should be recognised that there may be some risk that such fill may contain contaminants and hazardous building materials.

**Appendix B**

Test Location Plan

Test Pit and Borehole Logs

CPT Results

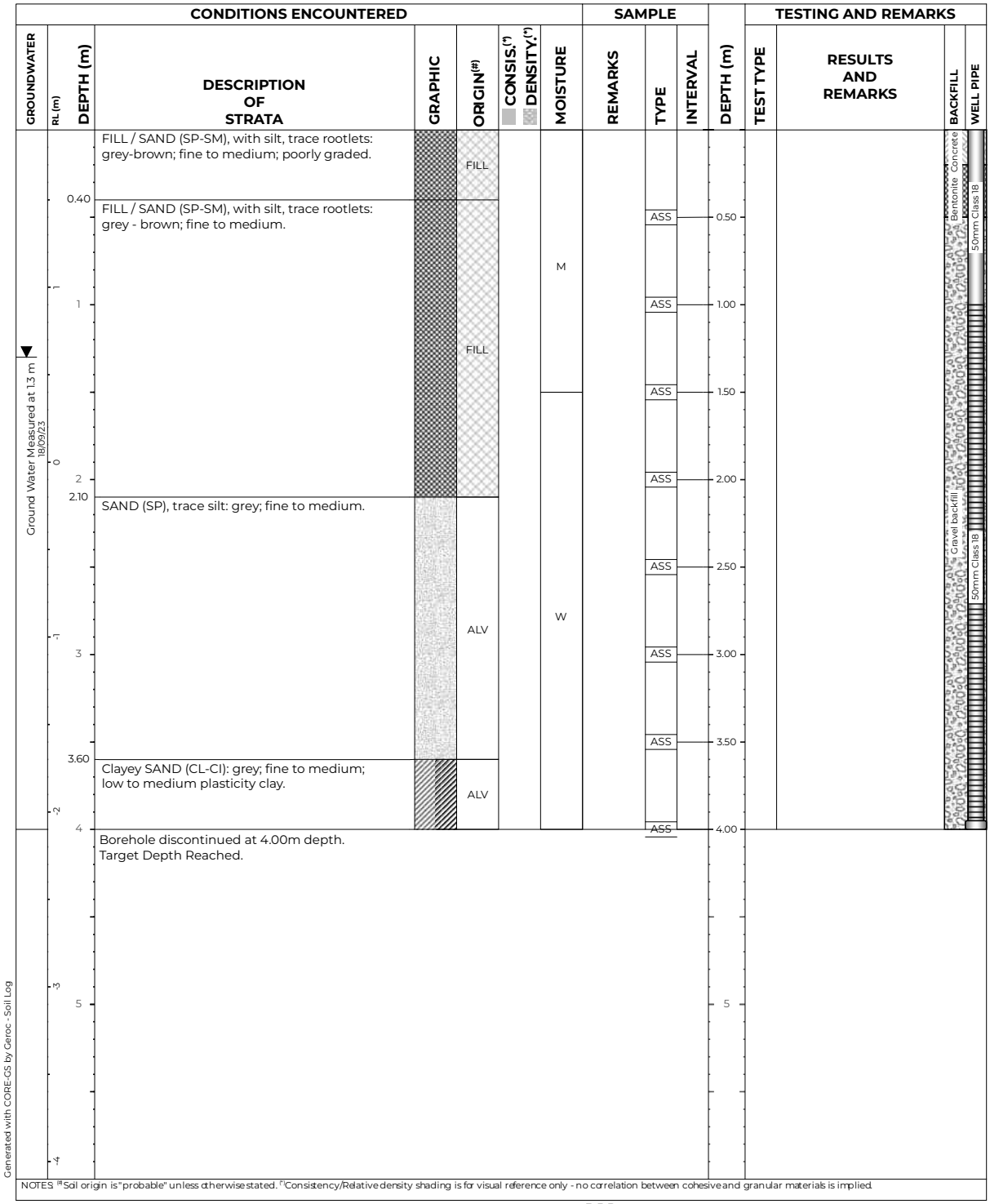

Legend
Site Boundary
CPT Location
Test Pit Location
Borehole Location
Groundwater Monitoring Well Locations
N
MW02
24A
24
25
8
7
9
11
10
28A
MW01
28
12
30
MW03
26A
MW04
26
13
14
16
15
17
31A
31
19
18
MW06
27A
27
Garratt Road
22
20
21
29
29A
MW05
23
0
25
50
75
100 m
Douglas
PARTNERS
Test Location Plan
Proposed Residential Development
Lot 9002 Grandstand Road, Ascot, WA
CLIENT: Perth Racing
PROJECT: 219164.03
Drawing No: 1
REV: 0
DATE: 24/1/2024

# BOREHOLE LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 1.9 AHD
**COORDINATE:** E:397722.0, N:6466365.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** MW 01
**PROJECT No:** 219164.01
**DATE:** 11/09/23
**SHEET:** 1 of 1




**PLANT:** Geoprobe 7822DT
**OPERATOR:** DPP
**LOGGED:** VV
**METHOD:** Direct Push Probing
**CASING:** Nil
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.

Refer to explanatory notes for symbol and abbreviation definitions

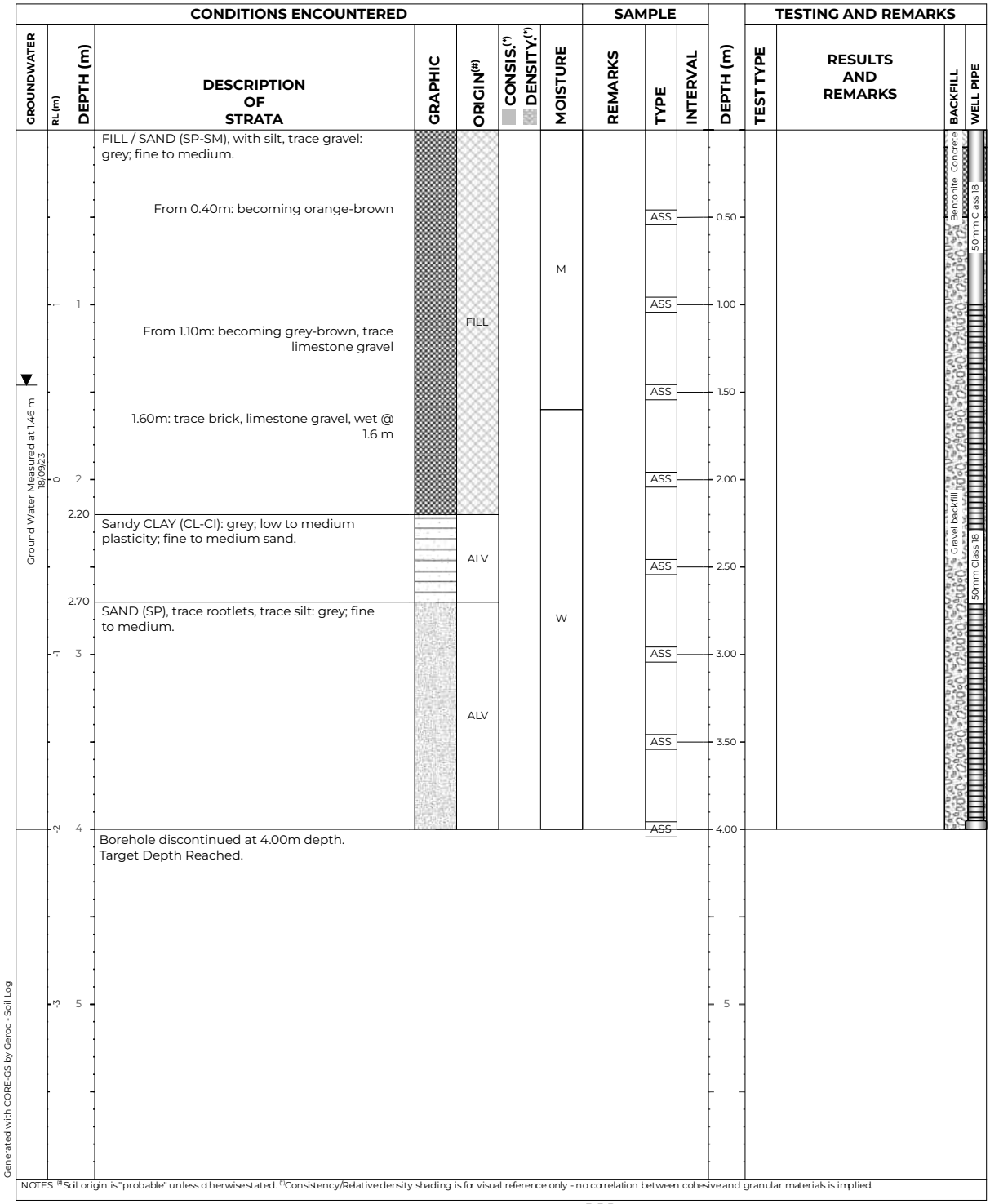
Douglas PARTNERS

# BOREHOLE LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.0 AHD
**COORDINATE:** E:397795.0, N:6466418.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** MW 02
**PROJECT No:** 219164.01
**DATE:** 11/09/23
**SHEET:** 1 of 1




**PLANT:** Geoprobe 7822DT
**OPERATOR:** DPP
**LOGGED:** VV
**METHOD:** Direct Push Probing
**CASING:** Nil
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE-GS by Geroc - Soil Log

# BOREHOLE LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 3.2 AHD
**COORDINATE:** E:397905.0, N:6466358.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** MW 03
**PROJECT No:** 219164.01
**DATE:** 11/09/23
**SHEET:** 1 of 1

| GROUNDWATER | RL (m) | DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN(#) | CONSIS.(†) DENSITY.(†) | MOISTURE | REMARKS | SAMPLE TYPE | SAMPLE INTERVAL | DEPTH (m) | TESTING AND REMARKS: TEST TYPE | RESULTS AND REMARKS | BACKFILL | WELL PIPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ground Water Measured at 2.37 m 18/09/23 | 3 | 0 | FILL / SAND (SP), trace silt: orange; fine to medium. | | FILL | | | | | | 0 | | | Bentonite Concrete | 50mm Class 18 |
| | | | From 0.30m: becoming grey, trace clay, limestone gravel | | | | | | | | | | | | |
| | 2 | 1 | | | | | | | | | 1 | | | Gravel backfill | |
| | | 1.60 | FILL / Clayey SAND (SC), trace gravel: grey; fine to medium; low to medium plasticity clay. | | FILL | | | | | | | | | | |
| | 1 | 2 | | | | | | | | | 2 | | | | |
| | | 2.20 | FILL / SAND (SP), trace silt: orange - grey; fine to medium. | | FILL | | | | | | | | | | |
| | 0 | 3 | 2.80m: trace brick | | | | | | | | 3 | | | | |
| | | 3.00 | FILL / Clayey SAND (SC): grey; fine to medium; low to medium plasticity clay. | | FILL | | | | | | | | | | |
| | | | 3.30m-3.50m: with bitumen layer | | | | | | | | | | | | |
| | -1 | 3.60 | FILL / CLAY (CL-CI), trace sand: grey - green; low to medium plasticity. | | FILL | | | | | | | | | | |
| | -2 | 4 | Borehole discontinued at 4.00m depth. Target Depth Reached. | | | | | | | | 4 | | | | |
| | | 5 | | | | | | | | | 5 | | | | |

NOTES: (#)Soil origin is "probable" unless otherwise stated. (†)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

Generated with CORE-GS by Geroc - Soil Log

**PLANT:** Geoprobe 7822DT
**OPERATOR:** DPP
**LOGGED:** VV
**METHOD:** Direct Push Probing
**CASING:** Nil
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

# BOREHOLE LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.4 AHD
**COORDINATE:** E:397812.0, N:6466346.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** MW 04
**PROJECT No:** 219164.01
**DATE:** 11/09/23
**SHEET:** 1 of 1

| GROUNDWATER | RL (m) | DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[^] / DENSITY.[^] | MOISTURE | REMARKS | SAMPLE TYPE | SAMPLE INTERVAL | DEPTH (m) | TESTING AND REMARKS: TEST TYPE | TESTING AND REMARKS: RESULTS AND REMARKS | BACKFILL | WELL PIPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 | | FILL / SAND (SP-SM), with silt, trace rootlets: orange grey; fine to medium. | | FILL | | | | ASS | | 0.50 | | | Bentonite Concrete | 50mm Class 18 |
| | | 0.60 | FILL / SAND (SP), with gravel, trace clay: grey; fine to medium; fine to medium gravel. | | | | | | ASS | | 1.00 | | | Gravel backfill | |
| | 1 | 1 | | | | | | | ASS | | 1.50 | | | | |
| ▼ | | | 1.50m: trace brick, wet | | | | | | | | | | | | |
| Ground Water Measured at 1.59 m 18/09/23 | 0 | 2 | 2.00m: trace brick | | FILL | | | | ASS | | 2.00 | | | | 50mm Class 18 |
| | | | | | | | | | ASS | | 2.50 | | | | |
| | | 3 | 3.00m: trace brick | | | | | | ASS | | 3.00 | | | | |
| | -1 | 3.20 | SAND (SP), trace silt: grey-orange; fine to medium. | | ALV | | | | | | | | | | |
| | | 3.40 | Clayey SAND (SC): orange-grey; fine to medium; low to medium plasticity clay. | | ALV | | | | ASS | | 3.50 | | | | |
| | | 3.60 | Sandy CLAY (CL): grey; low to medium plasticity; fine to medium sand. | | ALV | | | | | | | | | | |
| | | 4 | Borehole discontinued at 4.00m depth. Target Depth Reached. | | | | | | ASS | | 4.00 | | | | |
| | -2 | | | | | | | | | | | | | | |
| | | 5 | | | | | | | | | 5 | | | | |
| | -3 | | | | | | | | | | | | | | |

NOTES: [#]Soil origin is "probable" unless otherwise stated. [^]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

Generated with CORE-GS by Geroc - Soil Log

**PLANT:** Geoprobe 7822DT
**OPERATOR:** DPP
**LOGGED:** VV
**METHOD:** Direct Push Probing
**CASING:** Nil
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.

Refer to explanatory notes for symbol and abbreviation definitions

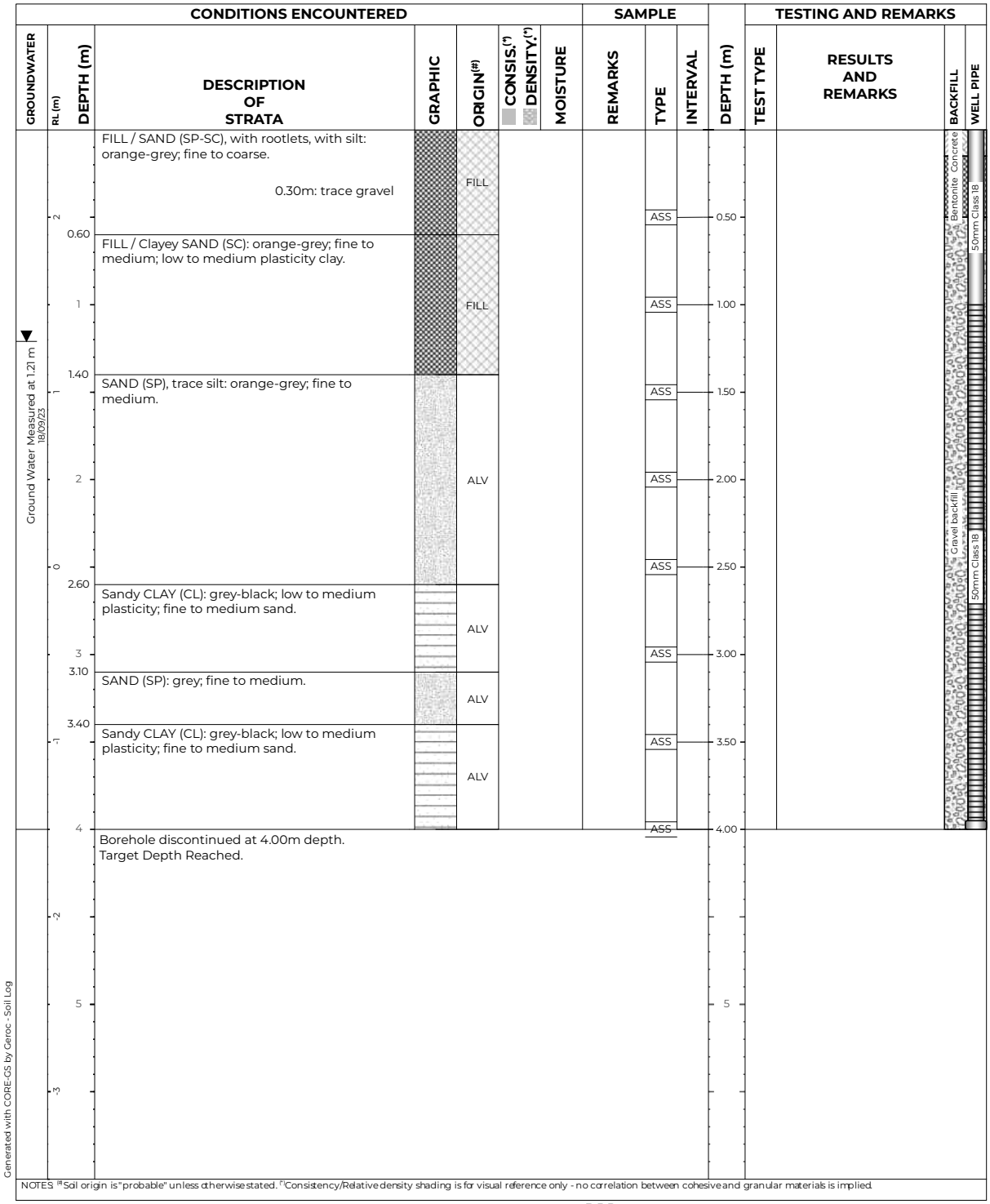
Douglas PARTNERS

# BOREHOLE LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.5 AHD
**COORDINATE:** E:397900.0, N:6466193.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** MW 05
**PROJECT No:** 219164.01
**DATE:** 11/09/23
**SHEET:** 1 of 1




**PLANT:** Geoprobe 7822DT
**OPERATOR:** DPP
**LOGGED:** VV
**METHOD:** Direct Push Probing
**CASING:** Nil
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.

Refer to explanatory notes for symbol and abbreviation definitions

# BOREHOLE LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.2 AHD
**COORDINATE:** E:397790.0, N:6466249.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** MW 06
**PROJECT No:** 219164.01
**DATE:** 11/09/23
**SHEET:** 1 of 1

| GROUNDWATER | RL (m) | DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN(#) | CONSIS.(^) / DENSITY.(^) | MOISTURE | REMARKS | SAMPLE TYPE | SAMPLE INTERVAL | DEPTH (m) | TESTING AND REMARKS: TEST TYPE | TESTING AND REMARKS: RESULTS AND REMARKS | BACKFILL | WELL PIPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 | | FILL / SAND (SP) : Sand, with rootlets, trace silt: orange-grey; fine to medium. | | FILL | | | | | | | | | Bentonite Concrete | |
| | | 0.40 | FILL / SAND (SP), with gravel: grey-brown; fine to medium. | | | | | | ASS | | 0.50 | | | | |
| | 1 | | From 0.80m: becoming grey, no gravel | | | | | | | | 1 | | | Gravel backfill | 50mm Class 18 |
| ▼ Ground Water Measured at 1.09 m 18/09/23 | | | From 1.10m: becoming orange-grey | | FILL | | | | | | | | | | |
| | 0 | | From 1.80m: becoming grey and trace brick | | | | | | | | 2 | | | | |
| | | 2.20 | FILL / Clayey SAND (CL): grey; fine to medium; low to medium plasticity clay; may be natural. | | FILL | | | | | | | | | | |
| | | 2.60 | SAND (SP): grey; fine to medium. | | ALV | | | | | | 3 | | | | 50mm Class 18 |
| | -1 | 3.10 | Sandy CLAY (CL): dark grey; low to medium plasticity; fine to medium sand. | | ALV | | | | | | | | | | |
| | | 4 | Borehole discontinued at 4.00m depth. Target Depth Reached. | | | | | | | | 4 | | | | |
| | -2 | | | | | | | | | | | | | | |
| | -3 | 5 | | | | | | | | | 5 | | | | |

NOTES: (#)Soil origin is "probable" unless otherwise stated. (^)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

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**PLANT:** Geoprobe 7822DT
**OPERATOR:** DPP
**LOGGED:** VV
**METHOD:** Direct Push Probing
**CASING:** Nil
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.9 AHD
**COORDINATE:** E:397852.9, N:6466410.7
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP07
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | DEPTH (m) / RL (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN(#) | CONSIS.(†) / DENSITY.(†) | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 0 / 2 | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium. From 0.17m: becoming orange. 0.54m: trace geo-fabric | | FILL | MD to VD | D to M | | ES | | 0.10 | PID | <1ppm |
| | | | | | | | | ES | | 0.40 | PID | <1ppm |
| | 0.60 / 1.90 | FILL / Sandy GRAVEL (GP-GM), with silt: grey; medium to coarse, angular to sub-angular; fine to medium sand. 0.84m: trace geo-fabric | | FILL | | | | | | 0.50 | | |
| | 0.90 / 1 | FILL / GRAVEL (GP-GM) : Gravel, with mulch, with sand: dark brown and dark grey-brown; with silt. | | FILL | | | | ES | | 1.00 | PID | <1ppm |
| | | | | | | | | | | 1.10 | | |
| | 1.40 / 0.5 | FILL / SAND (SP-SM), with silt: dark grey; fine to medium. 1.50m: trace PACM fragment. From 1.60m-2.60m: with fragments of bricks, concrete and metal roofing sheetings | | FILL | ND | M | ASB9, ASB10, AF/FA | D | | 1.50 | PID | <1ppm |
| | | | | | | | | ES | | 1.60 | | |
| | 2 / 0 | | | FILL | | | | ES | | 2.00 | PID | <1ppm |
| | | | | | | | | | | 2.10 | | |
| 09/11/23 | | | | | | W | | ES | | 2.50 | PID | <1ppm |
| | | Test Pit discontinued at 2.60m depth. (Collapsing conditions). | | | | | | | | 2.60 | | |

DCP9/150: 5 | 10 | 15





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NOTES: (#) Soil origin is "probable" unless otherwise stated. (†) Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 2.3 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 3.6 AHD
**COORDINATE:** E:397905.7, N:6466414.7
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP08
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) / DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[*] / DENSITY.[*] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 3 | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium. | | | VD | | | ES | | 0.10 | PID | <1 ppm |
| | | From 0.43m: becoming pale grey, trace gravel | | FILL | | | | ES | | 0.50<br>0.60 | PID | <1 ppm |
| | 1 | From 1.20m: becoming grey | | | | M | | ES | | 1.00<br>1.10 | PID | <1 ppm |
| | 1.40 | FILL / organic SAND (SP-SM), with silt, with gravel: dark grey-brown; fine to medium; trace fragments of brick and concrete. | | FILL | ND | | AF/FA<br>ASB 8 | D<br>ES<br>MAT | | 1.50<br>1.60 | PID | <1 ppm |
| | 2 | 1.55m-2.00m: with fragments of brick, concrete and PVC | | | | | | | | | | |
| | 1.80 | FILL / SAND (SP), trace gravel, fragments of brick and concrete, trace silt: dark grey; fine to medium. | | | | | | D<br>ES | | 2.00<br>2.10 | PID | <1 ppm |
| | | 2.20m: trace metal sheet, PVC | | FILL | | | | | | | | |
| | | 2.40m: trace rubber pipe, metal bar | | | | | | ES | | 2.50<br>2.60 | PID | <1 ppm |
| | | Test Pit discontinued at 2.70m depth. (Test Pit terminated due to slow digging). | | | | | | | | | | |

PSP/150: 5, 10, 15, Refusal 20





NOTES: [#] Soil origin is "probable" unless otherwise stated. [*] Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

Generated with CORE-GS by Geroc - Soil Log with Photo

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
No free groundwater observed.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.1 AHD
**COORDINATE:** E:397768.9, N:6466392.5
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP09
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| GROUNDWATER | RL (m) | DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN(#) | CONSIS.(*) DENSITY.(*) | MOISTURE | REMARKS | SAMPLE TYPE | SAMPLE INTERVAL | DEPTH (m) | TESTING AND REMARKS: TEST TYPE | RESULTS AND REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 | | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium. | | FILL | D to VD | D to M | | ES | | 0.10 | PID | <1ppm |
| | | 0.45 | FILL / Clayey SAND (SC): orange-brown; fine to medium; low to medium plasticity clay. | | FILL | | | | D<br>ES | | 0.50<br>0.60 | PID | <1ppm |
| | | 0.95<br>0.98 | FILL / ASPHALTIC CONCRETE: black, 7 mm sized nominal aggregate. | | | | | | | | | | |
| | 1 | | FILL / Silty SAND (SM): brown; fine to medium. From 1.15m: becoming grey-brown<br>From 1.20m: with fragments of brick, concrete slab of 0.4 m in thickness, geo-fabric, metal bar and terracotta pipe<br>1.40m: trace metal sheet | | FILL | ND | M | | ES | | 1.00<br>1.10<br>1.50<br>1.60 | PID | <1ppm |
| 09/11/23 | 0 | 2 | 1.90m-2.10m: trace pockets of Clayey SAND SC | | | | | | ES | | 2.00<br>2.10 | PID | <1ppm |
| | | | Test Pit discontinued at 2.30m depth. (Collapsing conditions). | | | | W | | | | | | |

PSP/150: 5, 10, 15; REFUSAL 25 25





NOTES: (#)Soil origin is "probable" unless otherwise stated. (*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

Generated with CORE-GS by Geroc - Soil Log with Photo

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 2.1 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.4 AHD
**COORDINATE:** E:397829.1, N:6466375.7
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP10
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) / DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[^] / DENSITY.[^] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 2 | FILL / SAND (SP-SM), with silt, trace rootlets: bands of grey, orange-brown and pale grey; fine to medium. | | FILL | MD to D | | DUP 2 | ES | | 0.10 | PID | <1ppm |
| | | 0.70m: trace geo-fabric | | | | | | ES | | 0.50 | PID | <1ppm |
| | 0.80 | FILL / Sandy GRAVEL (GP-GM), with silt: grey; medium to coarse, angular to sub-angular; fine to medium sand. | | FILL | | | | | | 0.60 | | |
| | 1 | | | | | | | ES | | 1.00 | PID | <1ppm |
| | 1.20 | FILL / SAND (SP), trace rootlets, trace silt: grey -brown; fine to medium. | | FILL | ND | | | | | 1.10 | | |
| | | From 1.40m-1.80m: with fragments of brick and concrete | | | | | | ES | | 1.50 | PID | <1ppm |
| | | From 1.80m: becoming dark grey, trace fragments of brick and concrete | | | | | | | | 1.60 | | |
| | 2 | | | | | | | ES | | 2.00 | PID | <1ppm |
| | | Test Pit discontinued at 2.15m depth. (Test Pit terminated due to slow digging). | | | | | | | | 2.10 | | |
| | 0 | | | | | | | | | | | |

PSP/hr





NOTES: [#] Soil origin is "probable" unless otherwise stated. [^] Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

Generated with CORE-GS by Geroc - Soil Log with Photo

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
No free groundwater observed.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 3.1 AHD
**COORDINATE:** E:397881.2, N:6466387.1
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP11
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) / DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[^] / DENSITY.[^] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 3 | FILL / SAND (SP-SM), with silt: grey and orange-brown; fine to medium. | | | VD | D to M | | ES | | 0.10 | PSP/150 | 5 10 15 REFUSAL 25 25 |
| | | From 0.35m: becoming grey | | | | | | ES | | 0.50<br>0.60 | | |
| | 1 | | | FILL | | | DUP 3 | D<br>ES | | 1.00<br>1.10 | | |
| | 2 | | | | ND | M | | | | | | |
| | | From 1.60m: becoming dark grey, trace fragments of brick | | | | | | D<br>ES | | 1.60<br>1.70 | | |
| | | From 1.70m-2.40m: with fragments of brick and concrete | | | | | | | | | | |
| | 2 | 1.80m: piece of concrete boulder (1 m x 0.5 m) observed | | | | | | ES | | 2.00<br>2.10 | | |
| | 1 | 2.10m: trace plastic bottle, glass bottle, concrete rubble | | | | | | | | | | |
| | | 2.30m: trace fragments of wooden plank and timer | | | | | | D | | 2.30 | | |
| | | Test Pit discontinued at 2.40m depth.<br>(Test Pit terminated due to slow digging). | | | | | | | | | | |





NOTES: [#]Soil origin is "probable" unless otherwise stated. [^]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
No free groundwater observed.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

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# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.1 AHD
**COORDINATE:** E:397785.4, N:6466366.6
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP12
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | DEPTH (m) / RL (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN(#) | CONSIS.(*) DENSITY.(*) | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 0 / 2 | FILL / SAND (SP-SM), with silt, trace gravel and rootlets: grey; fine to medium. | | FILL | D to VD | D to M | | ES | | 0.10 | PID | <1ppm |
| | | From 0.20m: becoming yellow-brown | | | | | | | | | | |
| | | | | | | | | ES | | 0.50 | PID | <1ppm |
| | | | | | | | | | | 0.60 | | |
| | 0.85 / 1.25 | FILL / Sandy GRAVEL (GP-GM), with silt: grey; medium to coarse, angular to sub-angular; fine to medium sand. | | FILL | | | | D | | 1.00 | PID | <1ppm |
| | 0.90 / 1.2 | FILL / SAND (SP), trace fragments of brick, scrap metal, timber and rubber cable, trace silt: dark grey-brown; fine to medium. | | FILL | ND | M | AF/FA, ASB 6, ASB 7 | ES | | 1.10 | | |
| | | 1.30m-1.80m: with fragments of plastic waste, insulation material, terracotta pipes and concrete, trace PACM fragments | | | | | | ES | | 1.50 | PID | <1ppm |
| | | | | | | | | | | 1.60 | | |
| | | From 1.90m: becoming green-grey, trace pockets of CLAY CL-CI | | | | | | B | | 2.00 | PID | <1ppm |
| ▼ 09/11/23 | 2 / 0 | | | | | W | | ES | | 2.10 | | |
| | | Test Pit discontinued at 2.30m depth. (Collapsing conditions). | | | | | | | | | | |

PSP/HSP: 5 10 15 25





NOTES: (#) Soil origin is "probable" unless otherwise stated. (*) Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

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**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 2.1 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.8 AHD
**COORDINATE:** E:397872.7, N:6466350.7
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP13
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| GROUNDWATER | RL (m) | DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[^] / DENSITY.[^] | MOISTURE | REMARKS | SAMPLE TYPE | SAMPLE INTERVAL | DEPTH (m) | TESTING AND REMARKS: TEST TYPE | RESULTS AND REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium; 10% non-plastic fines. From 0.15m: becoming orange | | FILL | D to VD | D to M | | ES | | 0.10 | PID | <1ppm |
| | | | 0.70m: trace geo-fabric | | | | | | D | | 0.50 | PID | <1ppm |
| | | | | | | | | | ES | | 0.60 | PSP/150 | 5 10 15 25 |
| | | 0.75 | FILL / Sandy GRAVEL (GP-GM), with silt: grey; medium to coarse, angular to sub-angular; fine to medium sand. | | FILL | | | | ES | | 1.00 | PID | <1ppm |
| | | | 1.20m: trace geo-fabric | | | | | | | | 1.10 | | |
| | | 1.30 | FILL / SAND (SP), trace gravel, fragments of brick and concrete, trace silt: dark grey; fine to medium. 1.50m-2.40m: with fragments of bricks and concrete slab | | | ND | M | | D | | 1.50 | PID | <1ppm |
| | | | | | | | | | ES | | 1.60 | | |
| | | | | | FILL | | | | ES | | 2.00 | PID | <1ppm |
| | | | | | | | | | | | 2.10 | | |
| 09/11/23 | | | | | | | W | | ES | | 2.50 | PID | <1ppm |
| | | | | | | | | | | | 2.60 | | |
| | | | Test Pit discontinued at 2.70m depth. (Collapsing conditions). | | | | | | | | | | |





NOTES: [#]Soil origin is "probable" unless otherwise stated. [^]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

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**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 2.5 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.2 AHD
**COORDINATE:** E:397745.6, N:6466334.5
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP14
**PROJECT No:** 219164.01
**DATE:** 08/11/23
**SHEET:** 1 of 1

| GROUNDWATER | RL (m) | DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[^] / DENSITY.[^] | MOISTURE | REMARKS | SAMPLE TYPE | SAMPLE INTERVAL | DEPTH (m) | TESTING AND REMARKS: TEST TYPE | RESULTS AND REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 | 0.25 | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium. | | FILL | D to VD | D to M | | ES | | 0.10 | PID | <1ppm |
| | | | FILL / Silty SAND (SM): brown and grey-brown; weakly to moderately cemented. | | | | | | | | | DCP9/150 | 29 |
| | | | | | | | | | | | | | 30 |
| | | | | | | | | | D | | 0.50 | | |
| | | | | | | | | | ES | | 0.60 | PID | <1ppm |
| | | | 0.65m: trace fragments of brick and glass | | | | | | | | | | |
| | | | 0.72m-2.00m: with framgnes of brick, metal sheet and insulation material | | | | | | | | | | |
| | 1 | | 0.92m: trace fragments of plastic waste, glass and limestone boulders | | | | | | ES | | 1.00 | PID | <1ppm |
| | | | | | | | | | | | 1.10 | | |
| | | | | | FILL | ND | M | | ES | | 1.50 | PID | <1ppm |
| | | | | | | | | | | | 1.60 | | |
| | 2 | | 2.00m: becoming gren-grey, trace fragments of timber, brick and concrete blocks, with pockets of Clayey SAND SC | | | | | | ES | | 2.00 | PID | <1ppm |
| | 0 | | | | | | | | | | 2.10 | | |
| | | | From 2.20m: with fragments of brick and scrap metal | | | | | | D | | 2.40 | | |
| | | | Test Pit discontinued at 2.50m depth. (Test Pit terminated due to slow digging). | | | | | | | | | | |





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NOTES: [#]Soil origin is "probable" unless otherwise stated. [^]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
No free groundwater observed.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.2 AHD
**COORDINATE:** E:397794.3, N:6466319.4
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP15
**PROJECT No:** 219164.01
**DATE:** 08/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) / DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[^] / DENSITY.[^] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 0 | FILL / SAND (SP-SM), with silt, trace gravel and rootlets: orange-brown; fine to medium. | | FILL | VD | D to M | | ES | | 0.10 | PID | <1ppm |
| | | From 0.24m: becoming grey | | | | | | | | | DCP9/150 | |
| | | From 0.42m: becoming pale grey | | | | | | D | | 0.50 | PID | <1ppm |
| | | | | | | | | ES | | 0.60 | | |
| | 0.75 | FILL / Sandy GRAVEL (GP-GM), with silt: dark brown and grey; medium to coarse, angular to sub-angular; fine to medium sand. | | FILL | ND | | | | | | | 22 |
| | 0.95 | FILL / SAND (SP), with fragments of brick and concrete, trace silt: grey; fine to medium. | | | | | | D | | 1.00 | PID | <1ppm |
| | 1 | | | | | | | ES | | 1.10 | | |
| | | 1.20m: trace fragments of timber, terracotta pipe and scrap metal | | | | | | | | | | |
| | | 1.50m: trace redundant cable | | | | M | | ES | | 1.50 | PID | <1ppm |
| | | | | | | | | | | 1.60 | | |
| | | From 1.80m: becoming orange-brown | | FILL | ND | | | | | | | |
| | 2 | 2.00m: trace PACM pipe | | | | | AF/FA, ASB 5 | ES | | 2.00 | PID | <1ppm |
| | | 2.10m: trace fragments of timer | | | | | | | | 2.10 | | |
| ▼ 08/11/23 | | From 2.40m: becoming dark grey | | | | W | | | | | | |
| | | | | | | | | ES | | 2.50 | | |
| | | | | | | | | | | 2.60 | | |
| | | Test Pit discontinued at 2.70m depth. (Test Pit flooded with water seepage). | | | | | | | | | | |





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NOTES: [#] Soil origin is "probable" unless otherwise stated. [^] Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 2.4 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.4 AHD
**COORDINATE:** E:397837.5, N:6466321.2
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP16
**PROJECT No:** 219164.01
**DATE:** 08/11/23
**SHEET:** 1 of 1

| GROUNDWATER | RL (m) | DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[^] / DENSITY.[^] | MOISTURE | REMARKS | SAMPLE TYPE | SAMPLE INTERVAL | DEPTH (m) | TESTING AND REMARKS: TEST TYPE | TESTING AND REMARKS: RESULTS AND REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 | 0.34 | FILL / SAND (SP-SM), with silt, trace gravel and rootlets: grey; fine to medium. | | FILL | | | | ES | | 0.10 | PID | <1ppm |
| | | | FILL / Sandy (GP-GM), with silt: grey; fine to medium sand. | | FILL | ND | D to M | | ES | | 0.50<br>0.60 | PID | <1ppm |
| | | 0.84 | 0.80m: trace fragments of plastic waste | | | | | | | | | | |
| | 1 | | FILL / SAND (SP), with fragments of brick and concrete, trace silt: grey; fine to medium. | | | | | | ES | | 1.00<br>1.10 | PID | <1ppm |
| | | | 1.50m: trace fragments of plastic waste | | FILL | MD to D | M | | D<br>ES | | 1.50<br>1.60 | PID | <1ppm |
| | 0 | 2 | 2.00m: trace metal plate (0.5 m x 0.5 m)<br>2.10m: with limestone boulders | | | ND | | | ES | | 2.00<br>2.10 | PID | <1ppm |
| 08/11/23 | | | | | | | W | | D<br>ES | | 2.50<br>2.60 | PID | <1ppm |
| | | | Test Pit discontinued at 2.60m depth. (Collapsing conditions). | | | | | | | | | | |

DCP9/150: 5, 10, 15





NOTES: [#] Soil origin is "probable" unless otherwise stated. [^] Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

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**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 2.5 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.2 AHD
**COORDINATE:** E:397775.7, N:6466289.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP17
**PROJECT No:** 219164.01
**DATE:** 08/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | DEPTH (m) / RL (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[^] / DENSITY.[^] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 0.15 / 2 | FILL / SAND (SP-SM), with silt, trace rootlets: orange - grey; fine to medium. | | FILL | | | | ES | | 0.10 | PID | <1ppm |
| | | FILL / Sandy GRAVEL (GP-GM), with fragments of concrete, with silt: grey; medium to coarse, angular to sub-angular; fine to medium sand. | | FILL | L to VD | D to M | | | | | DCP9/150 | 5 10 15 25 |
| | | | | | | | | ES | | 0.50 / 0.60 | PID | <1ppm |
| | 0.90 / 1 | FILL / SAND (SP), with fragments of brick and concrete, trace silt: grey; fine to medium. | | | | | | ES | | 1.00 / 1.10 | PID | <1ppm |
| | | 1.10m: trace fragments of plastic waste | | | ND | M | | | | | | |
| | | 1.60m: trace metal sheets | | FILL | | | ASB 3 | ES | | 1.50 / 1.60 | PID | <1ppm |
| | | 1.90m: piece of concrete block observed | | | | | ASB 4 | ES | | 2.00 / 2.10 | PID | <1ppm |
| 08/11/23 | 2 / 0 | | | | | W | | | | | | |
| | | Test Pit discontinued at 2.50m depth. (Collapsing conditions). | | | | | | | | | | |





NOTES: [#]Soil origin is "probable" unless otherwise stated. [^]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 2.1 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

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# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.2 AHD
**COORDINATE:** E:397816.0, N:6466272.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP18
**PROJECT No:** 219164.01
**DATE:** 08/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) / DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[^] / DENSITY.[^] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 2 | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium; weakly cemented. | | FILL | | D to M | | ES | 0.10 | 0.10 | PID | <1ppm |
| | 0.26 | FILL / Sandy GRAVEL (GP-GM), with silt: grey; medium to coarse, angular to sub-angular; fine to medium sand. | | FILL | ND | | | | | | | |
| | 0.45 | FILL / SAND (SP), with fragments of brick and concrete, with clay: grey; fine to medium. | | | | | ASB 1 | ES | 0.50<br>0.60 | 0.50 | PID | <1ppm |
| | | 0.50m-1.50m: with fragments of tile and brick, trace PACM fragments<br>0.75m: trace metal bar | | | MD to VD | | | | | | DCP9/150 | 5 10 15 |
| | 1 | 1.00m: trace fragments of redundant cables, glass, geo-fabric and limestone blocks | | FILL | | M | | D<br>ES | 1.00<br>1.10 | 1.00 | PID | <1ppm |
| | | From 1.20m: with limestone boulders | | | ND | | | | | | | |
| | | | | | | | | ES | 1.40<br>1.50 | 1.40 | PID | <1ppm |
| | 2 | Test Pit discontinued at 1.50m depth.<br>(Test Pit terminated due to slow digging). | | | | | | | | 2 | | |





NOTES: [#] Soil origin is "probable" unless otherwise stated. [^] Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
No free groundwater observed.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

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# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.2 AHD
**COORDINATE:** E:397856.8, N:6466280.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP19
**PROJECT No:** 219164.01
**DATE:** 08/11/23
**SHEET:** 1 of 1

| GROUNDWATER | RL (m) | DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[^] / DENSITY.[^] | MOISTURE | REMARKS | SAMPLE TYPE | SAMPLE INTERVAL | DEPTH (m) | TESTING AND REMARKS: TEST TYPE | RESULTS AND REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 | 0.20 | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium. | | FILL | | | DUP 1 | ES | | 0.10 | PID | <1ppm |
| | | | FILL / Sandy GRAVEL (GP-GM), with silt: orange-brown; medium to coarse; fine to medium sand; Gravel is crushed limestone. | | FILL | ND | D | | D | | 0.50 | PID | <1ppm |
| | | | | | | | | | ES | | 0.60 | | |
| | | 0.70 | FILL / SAND (SP-SM), with silt, trace gravel: grey-brown; fine to medium. | | | | | | | | | | |
| | | | 0.75m: trace concrete slab, fragments of brick and terracotta pipes | | | | | | | | | | |
| | 1 | | From 0.90m: with fragments of brick | | | MD | | | ES | | 1.00 | PID | <1ppm |
| | | | From 1.20m: becoming grey, trace fragments of timber | | FILL | | M | | | | 1.10 | | |
| | | | From 1.60m: becoming grey-brown | | | | | | ES | | 1.50 | PID | <1ppm |
| 09/11/23 | | | | | | | | | | | 1.60 | | |
| | | 1.90 | FILL / SAND (SP), trace roots, trace silt: dark grey; fine to medium. | | | ND | | | ES | | 2.00 | PID | <1ppm |
| | 2 | | | | FILL | | W | | | | 2.10 | | |
| | 0 | | 2.40m: trace fragments of sea shells | | | | | | D | | 2.50 | PID | <1ppm |
| | | | | | | | | | ES | | 2.60 | | |
| | | | Test Pit discontinued at 2.60m depth. (Collapsing conditions). | | | | | | | | | | |

PSM 150





NOTES: [#]Soil origin is "probable" unless otherwise stated. [^]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

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**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 1.8 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.0 AHD
**COORDINATE:** E:397838.6, N:6466231.5
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP20
**PROJECT No:** 219164.01
**DATE:** 08/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | DEPTH (m) / RL (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[^] / DENSITY.[^] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 0.05 | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium. | | FILL | MD to VD | D to M | | ES | | 0.10 | PID | <1ppm |
| | 0.34 | FILL / Sandy GRAVEL (GP-GM), with silt: yellow-brown; medium to coarse; fine to medium sand. | | | | | | | | | | |
| | | FILL / SAND (SP-SM), with silt, trace gravel: grey and orange-brown; fine to medium. 0.50m: with fragments of brick and concrete | | | | | | ES | | 0.50 | PID | <1ppm |
| | | 0.80m: trace fragments of rubber waste and scrap metal | | | | | | | | 0.60 | | |
| | 1 | | | FILL | | | | D | | 1.00 | PID | <1ppm |
| | | | | | | | | ES | | 1.10 | | |
| | | From 1.20m: becoming dark grey, with fragments of brick | | | | M | | | | | | |
| | | 1.30m-2.10m: with hydrocarbon odour | | | | | | | | | | |
| | | 1.50m: with pockets of Clayey SAND SC | | | | | | D | | 1.50 | PID | 9.4ppm |
| | 1.80 | | | | | | | ES | | 1.60 | | |
| | | FILL / Clayey SAND (SC): dark grey; fine to medium; low to medium plasticity clay. | | | ND | | | | | | | |
| 08/11/23 | 2 | From 2.10m: becoming green-grey | | FILL | | W | | ES | | 2.00 | PID | 1.4ppm |
| | | | | | | | | | | 2.10 | | |
| | | | | | | | | ES | | 2.50 | PID | 1.1ppm |
| | | Test Pit discontinued at 2.60m depth. (Collapsing conditions). | | | | | | | | 2.60 | | |

PSP/hr





NOTES: [#]Soil origin is "probable" unless otherwise stated. [^]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

Generated with CORE-GS by Geroc - Soil Log with Photo

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 2.1 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.1 AHD
**COORDINATE:** E:397896.5, N:6466231.5
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP21
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) / DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[^] / DENSITY.[^] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 2 | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium. | | FILL | | | | ES | | 0.10 | PID | <1ppm |
| | 0.17 | FILL / Sandy GRAVEL (GP-GM), with silt: grey; fine to coarse; fine to medium sand; Gravel is crushed limestone. | | FILL | MD to D | D to M | | ES | | 0.50 | PID | <1ppm |
| | 0.70 | FILL / SAND (SP-SM), with fragments of brick and concrete, with silt: grey; fine to medium. | | | | | | | | 0.60 | | |
| | 1 | 1.20m: trace fragments of rubber waste and scrap metal | | FILL | ND | M | | ES | | 1.00 | PID | <1ppm |
| 08/11/23 | | From 1.80m: trace pockets of CLAY CL-CI | | | | | | | | 1.10 | | |
| | 1.90 | FILL / Sandy CLAY (CI), trace fragments of brick and timber, trace gravel: dark grey; medium plasticity; fine to medium sand. | | FILL | | w>PL | | D | | 1.50 | PID | <1ppm |
| | 2 | Test Pit discontinued at 2.10m depth. (Collapsing conditions). | | | | | | ES | | 1.60 | | |
| | | | | | | | | B | | 2.00 | PID | <1ppm |
| | | | | | | | | ES | | 2.10 | | |

DCP 9/150

NOTES: [#]Soil origin is "probable" unless otherwise stated. [^]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

Generated with CORE-GS by Geroc - Soil Log with Photo

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 1.8 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.3 AHD
**COORDINATE:** E:397941.6, N:6466244.9
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP22
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) / DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[^] / DENSITY.[^] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 2 | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium. | | | | D to M | | ES | | 0.10 | PID | <1ppm |
| | | From 0.22m: becoming orange | | | | | | | | | | |
| | | From 0.40m: becoming brown | | | MD | | | ES | | 0.50 | PID | <1ppm |
| | | From 0.70m: becoming dark grey-brown | | FILL | | | | | | 0.60 | | |
| | 1 | | | | | M | | ES | | 1.00 | PID | <1ppm |
| | 1 | | | | | | | | | 1.10 | | |
| | 1.40 | SAND (SP-SM), with silt: pale yellow-brown; fine to medium. | | | | | | ES | | 1.50 | PID | <1ppm |
| 09/11/23 | | From 1.70m: becoming orange-grey | | possibly ALV | ND | | | | | 1.60 | | |
| | 2 | | | | | W | | B | | 2.00 | PID | <1ppm |
| | | | | | | | | ES | | 2.10 | | |
| | 0 | Test Pit discontinued at 2.20m depth. (Collapsing conditions). | | | | | | | | | | |

PSP/hr





NOTES: [#]Soil origin is "probable" unless otherwise stated. [^]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

Generated with CORE-GS by Geroc - Soil Log with Photo

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 1.8 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

# BOREHOLE LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.4 AHD
**COORDINATE:** E:397844.9, N:6466181.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP23
**PROJECT No:** 219164.01
**DATE:** 08/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) / DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[^] / DENSITY.[^] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 0.05 | ASPHALT: black, 7 mm sized nominal aggregate. | | FILL | | D | | | | | | |
| | 0.15 | FILL / Sandy GRAVEL (GP-GM), with silt: grey; medium to coarse, angular to sub-angular; fine to medium sand; BASECOURSE, gravel is crushed rock. | | FILL | ND | | | | | | | |
| | 0.30 | FILL / Sandy GRAVEL (GP-GM), with silt: red-brown; medium to coarse, angular to sub-angular; fine to medium sand; SUB-BASE, gravel is granitic and lateritic. | | FILL | | M | | ES | | 0.50<br>0.60 | PID | <1ppm |
| | 0.65 | FILL / Silty SAND (SM), trace gravel: brown; fine to medium; with pockets of Clayey SAND SC. 0.90m: trace fragments of brick | | | MD to D | | | | | | | |
| | 1 | FILL / Clayey SAND (SC): orange-grey; fine to medium; low to medium plasticity clay. | | FILL | | M | | D<br>ES | | 1.00<br>1.10 | PID | <1ppm |
| 08/11/23 | 1.40 | FILL / SAND (SP), trace silt: grey; fine to medium; trace pockets of Clayey SAND SC. 1.80m: trace fragments of brick | | FILL | | | | ES | | 1.50<br>1.60 | PID | <1ppm |
| | 1.90 | FILL / Sandy CLAY (CI), trace gravel: dark grey; medium plasticity; fine to medium sand. | | FILL | ND | W | | D<br>ES | | 2.00<br>2.10 | PID | <1ppm |
| | 2.20 | FILL / SAND (SP-SM), with silt: dark grey; fine to medium. | | FILL | | | | D<br>ES | | 2.50<br>2.60 | PID | <1ppm |
| | | Borehole discontinued at 2.60m depth. (Collapsing conditions). | | | | | | | | | | |

DCP9/150: 5, 10, 15





NOTES: [#] Soil origin is "probable" unless otherwise stated. [^] Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

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**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**CASING:** Nil

**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 1.7 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

## Appendix C

Geotechnical Laboratory Test Certificates

WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

**TEST REPORT - ASTM D2974-14 (Test Method C)**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18256-18262_1_ORG |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18256-18262 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | Various See Below | *Date Tested:* | 15/11/2023 |

## TEST RESULTS - Organic Content

**Sampling Method:** Sampled by Client, Tested as Received

**Testing Completed By:** WGLS-LC

**Furnace Temperature (°C):** 440

| Sample Number | Sample Identification | Ash Content (%) | Organic Content (%) |
|---|---|---|---|
| WG23.18256 | TP13/1.5 | 98.4 | 1.6 |
| WG23.18257 | TP8/1.5 m | 93.2 | 6.8 |
| WG23.18258 | TP19/2.5 | 98.5 | 1.5 |
| WG23.18262 | BH23/2.5 m | 98.8 | 1.2 |

***Comments:***

**Approved Signatory:** Coneill

**Name:** Cody O'Neill

**Date:** 16/November/2023

NATA **Accreditation No. 20599**

**Accredited for compliance with ISO/IEC 17025 - Testing**

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SOIL | AGGREGATE | CONCRETE | CRUSHING

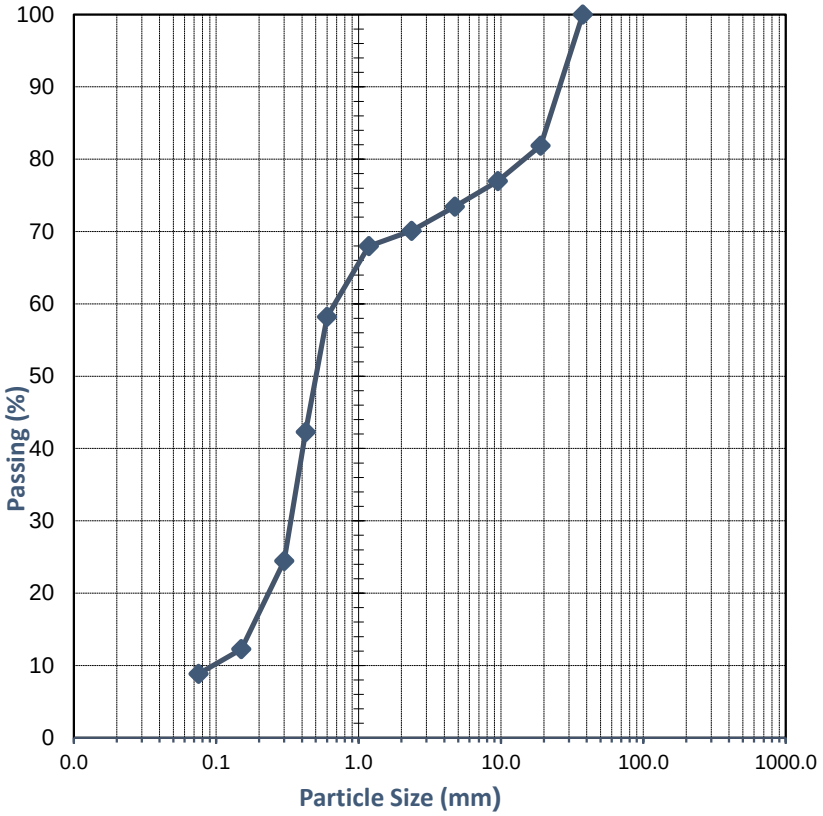
**TEST REPORT - AS 1289.3.6.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18257_1_PSD |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18257 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | TP8/1.5 m | *Date Tested:* | 16/11 - 17/11/2023 |

## TEST RESULTS - Particle Size Distribution of Soil

**Sampling Method:** Sampled by Client, Tested as Received

| Sieve Size (mm) | Percent Passing Sieve (%) |
|---|---|
| 150.0 | |
| 100.0 | |
| 75.0 | |
| 37.5 | 100 |
| 19.0 | 82 |
| 9.5 | 77 |
| 4.75 | 73 |
| 2.36 | 70 |
| 1.18 | 68 |
| 0.600 | 58 |
| 0.425 | 42 |
| 0.300 | 24 |
| 0.150 | 12 |
| 0.075 | 9 |




*Comments:*

**Approved Signatory:**

**Name:** Cody O'Neill

**Date:** 17/November/2023

**Accreditation No. 20599**
**Accredited for compliance with ISO/IEC 17025 - Testing**

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SOIL | AGGREGATE | CONCRETE | CRUSHING

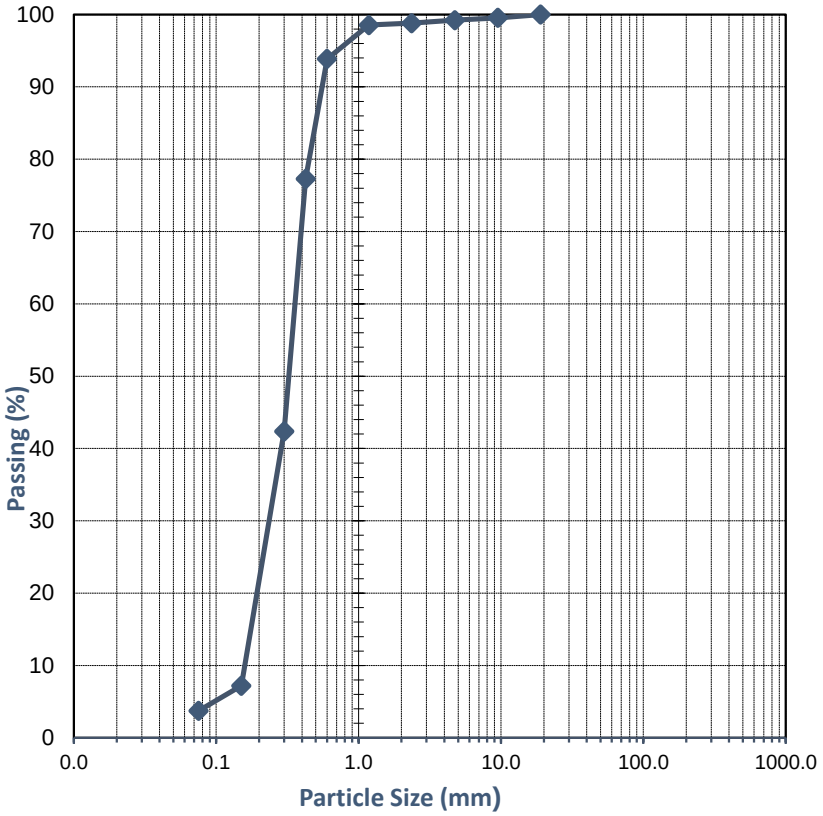
**TEST REPORT - AS 1289.3.6.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18256_1_PSD |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18256 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | TP13/1.5 | *Date Tested:* | 16/11 - 17/11/2023 |

## TEST RESULTS - Particle Size Distribution of Soil

**Sampling Method:** Sampled by Client, Tested as Received

| Sieve Size (mm) | Percent Passing Sieve (%) |
|---|---|
| 150.0 | |
| 100.0 | |
| 75.0 | |
| 37.5 | |
| 19.0 | 100 |
| 9.5 | 100 |
| 4.75 | 99 |
| 2.36 | 99 |
| 1.18 | 99 |
| 0.600 | 94 |
| 0.425 | 77 |
| 0.300 | 42 |
| 0.150 | 7 |
| 0.075 | 4 |




*Comments:*

**Approved Signatory:** Cody O'Neill

**Name:** Cody O'Neill

**Date:** 17/November/2023

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SOIL | AGGREGATE | CONCRETE | CRUSHING

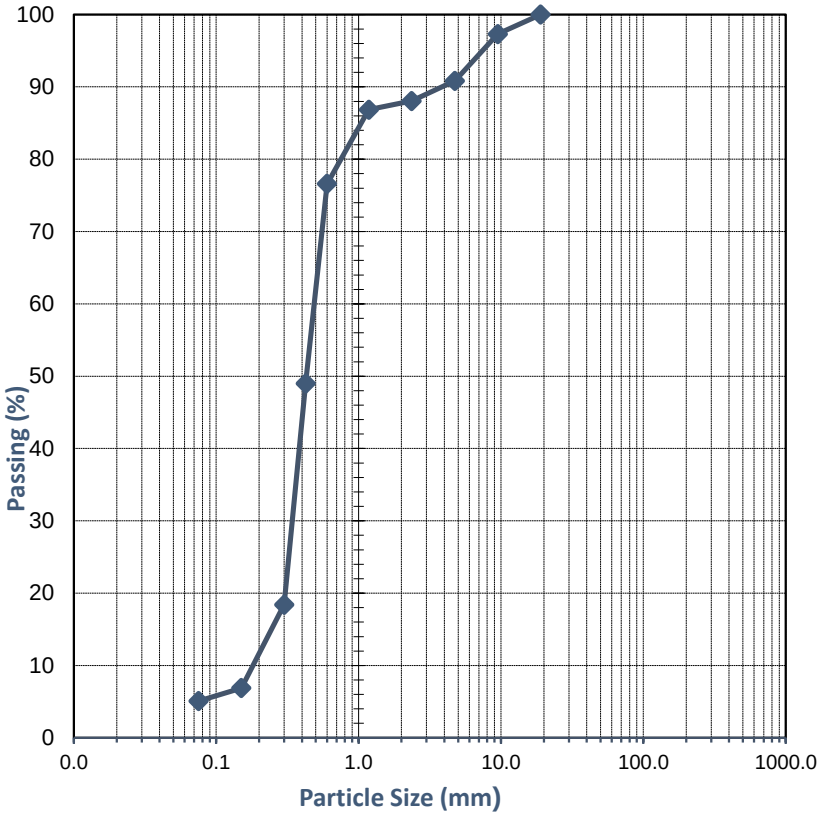
**TEST REPORT - AS 1289.3.6.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18258_1_PSD |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18258 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | TP19/2.5 | *Date Tested:* | 16/11 - 17/11/2023 |

## TEST RESULTS - Particle Size Distribution of Soil

**Sampling Method:** Sampled by Client, Tested as Received

| Sieve Size (mm) | Percent Passing Sieve (%) |
|---|---|
| 150.0 | |
| 100.0 | |
| 75.0 | |
| 37.5 | |
| 19.0 | 100 |
| 9.5 | 97 |
| 4.75 | 91 |
| 2.36 | 88 |
| 1.18 | 87 |
| 0.600 | 77 |
| 0.425 | 49 |
| 0.300 | 18 |
| 0.150 | 7 |
| 0.075 | 5 |




*Comments:*

**Approved Signatory:** Cody O'Neill

**Name:** Cody O'Neill

**Date:** 17/November/2023

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SOIL | AGGREGATE | CONCRETE | CRUSHING

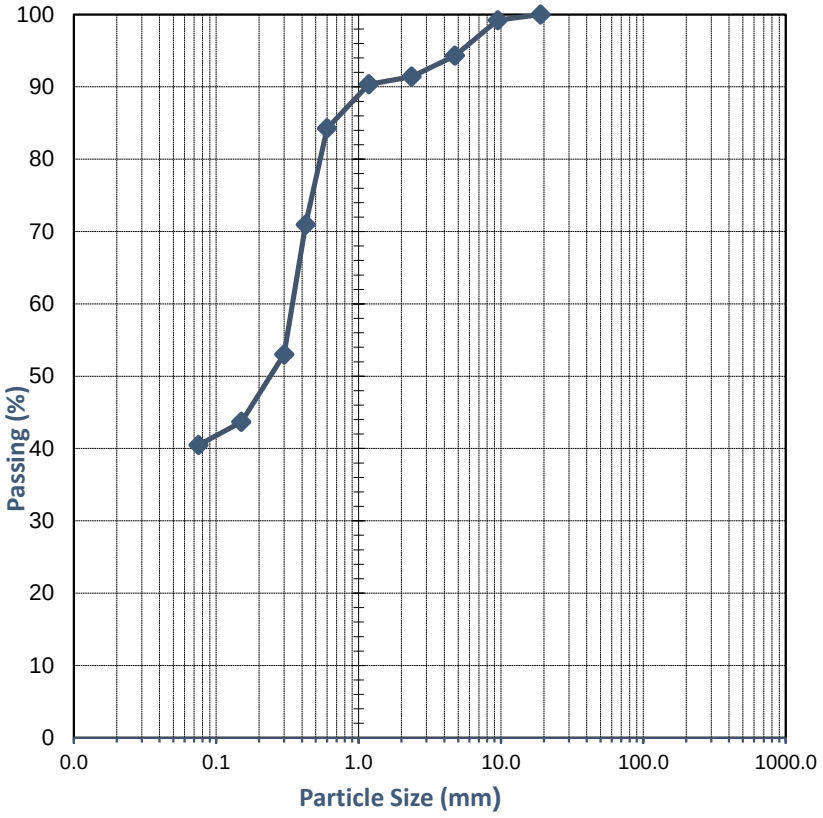
**TEST REPORT - AS 1289.3.6.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18259_1_PSD |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18259 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | TP21/2.0 m | *Date Tested:* | 16/11 - 17/11/2023 |

## TEST RESULTS - Particle Size Distribution of Soil

**Sampling Method:** Sampled by Client, Tested as Received

| Sieve Size (mm) | Percent Passing Sieve (%) |
|---|---|
| 150.0 | |
| 100.0 | |
| 75.0 | |
| 37.5 | |
| 19.0 | 100 |
| 9.5 | 99 |
| 4.75 | 94 |
| 2.36 | 91 |
| 1.18 | 90 |
| 0.600 | 84 |
| 0.425 | 71 |
| 0.300 | 53 |
| 0.150 | 44 |
| 0.075 | 40 |




*Comments:*

**Approved Signatory:** Cody O'Neill

**Name:** Cody O'Neill

**Date:** 17/November/2023

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SOIL | AGGREGATE | CONCRETE | CRUSHING

**TEST REPORT - AS 1289.3.1.1, 3.2.1, 3.3.1 & 3.4.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18259_1_PI |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18259 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | TP21/2.0 m | *Date Tested:* | 17/11/2023 |

## TEST RESULTS - Consistency Limits (Casagrande)

| | |
|---|---|
| **Sampling Method:** | **Sampled by Client, Tested as Received** |
| **History of Sample:** | **Oven Dried <50°C** |
| **Method of Preparation:** | **Dry Sieved** |

| | | |
|---|---|---|
| **AS 1289.3.1.1** | **Liquid Limit (%)** | **37** |
| **AS 1289.3.2.1** | **Plastic Limit (%)** | **24** |
| **AS 1289.3.3.1** | **Plasticity Index (%)** | **13** |
| **AS 1289.3.4.1** | **Linear Shrinkage (%)** | **8.5** |
| **AS 1289.3.4.1** | **Length of Mould (mm)** | **250** |
| **AS 1289.3.4.1** | **Condition of Dry Specimen:** | **Curled** |

***Comments:***

**Approved Signatory:**

**Name:** Madhav Basnet

**Date:** 20/November/2023

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SOIL | AGGREGATE | CONCRETE | CRUSHING

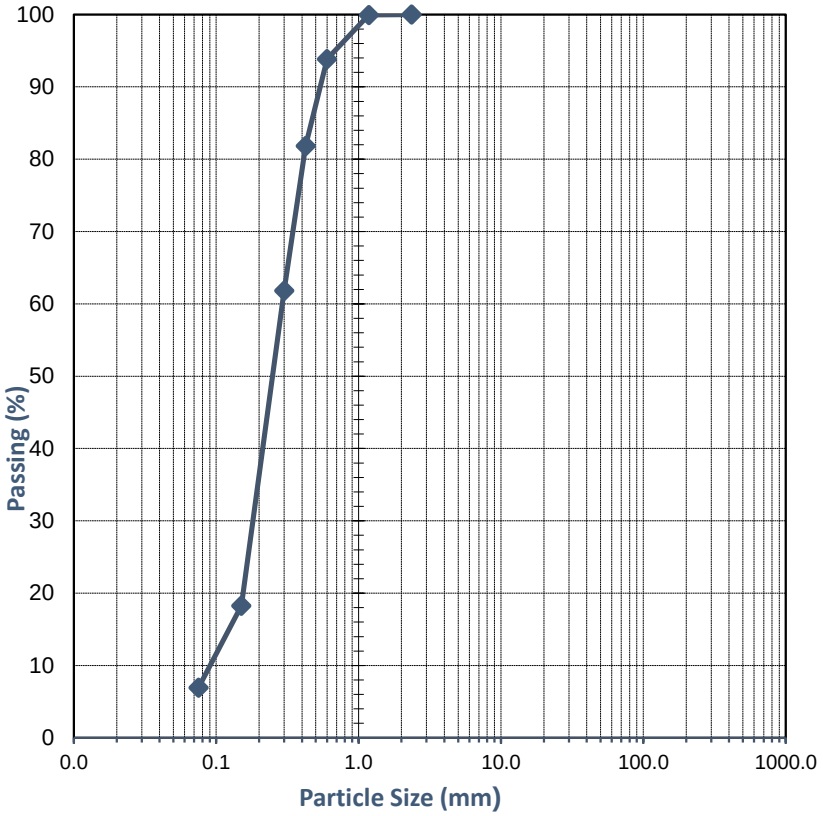
**TEST REPORT - AS 1289.3.6.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18260_1_PSD |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18260 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/2023 |
| *Sample Identification:* | TP22/2.0 | *Date Tested:* | 22/11 - 23/11/2023 |

## TEST RESULTS - Particle Size Distribution of Soil

**Sampling Method:** Sampled by Client, Tested as Received

| Sieve Size (mm) | Percent Passing Sieve (%) |
|---|---|
| 150.0 | |
| 100.0 | |
| 75.0 | |
| 37.5 | |
| 19.0 | |
| 9.5 | |
| 4.75 | |
| 2.36 | 100 |
| 1.18 | 100 |
| 0.600 | 94 |
| 0.425 | 82 |
| 0.300 | 62 |
| 0.150 | 18 |
| 0.075 | 7 |




*Comments:*

**Approved Signatory:**

**Name:** Natasha Bielawski

**Date:** 23/November/2023

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SOIL | AGGREGATE | CONCRETE | CRUSHING

**TEST REPORT - AS 1289.3.1.1, 3.2.1, 3.3.1 & 3.4.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18260_1_PI |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18260 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | TP22/2.0 | *Date Tested:* | 23/11/2023 |

## TEST RESULTS - Consistency Limits (Casagrande)

| | |
|---|---|
| **Sampling Method:** | **Sampled by Client, Tested as Received** |
| **History of Sample:** | **Oven Dried <50°C** |
| **Method of Preparation:** | **Dry Sieved** |

| | | |
|---|---|---|
| **AS 1289.3.1.1** | **Liquid Limit (%)** | **Not Obtainable** |
| **AS 1289.3.2.1** | **Plastic Limit (%)** | **Non-Plastic** |
| **AS 1289.3.3.1** | **Plasticity Index (%)** | **Non-Plastic** |
| **AS 1289.3.4.1** | **Linear Shrinkage (%)** | **0.0** |
| **AS 1289.3.4.1** | **Length of Mould (mm)** | **250** |
| **AS 1289.3.4.1** | **Condition of Dry Specimen:** | **-** |

***Comments:***

**Approved Signatory:**

**Name:** Matthew Lichon

**Date:** 24/November/2023

NATA

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WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

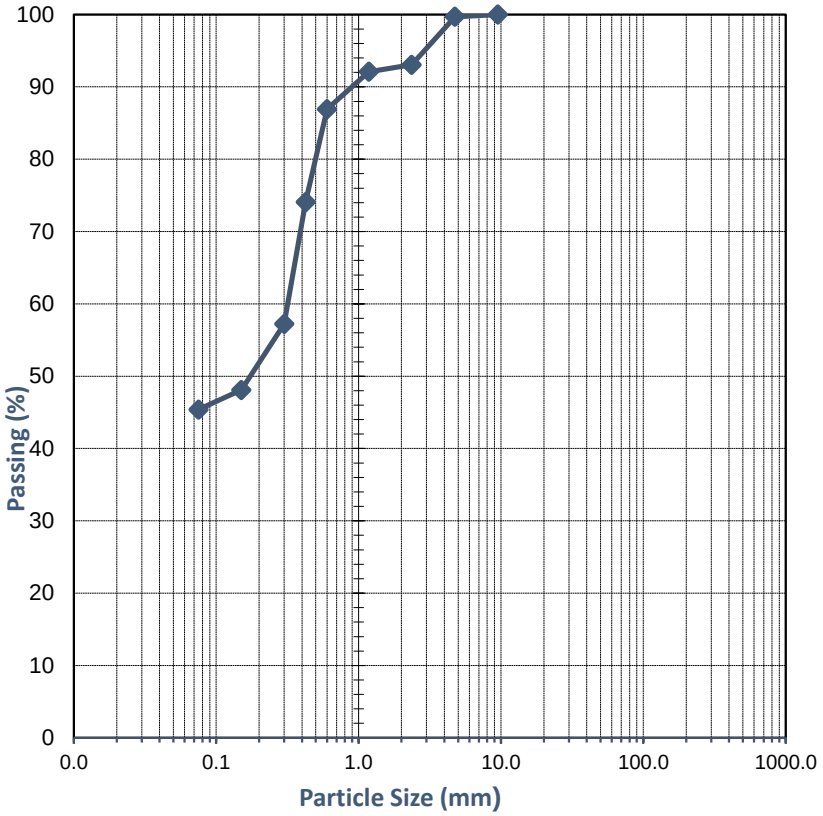
**TEST REPORT - AS 1289.3.6.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18261_1_PSD |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18261 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | BH23/2.0 m | *Date Tested:* | 16/11 - 17/11/2023 |

## TEST RESULTS - Particle Size Distribution of Soil

**Sampling Method:** Sampled by Client, Tested as Received

| Sieve Size (mm) | Percent Passing Sieve (%) |
|---|---|
| 150.0 | |
| 100.0 | |
| 75.0 | |
| 37.5 | |
| 19.0 | |
| 9.5 | 100 |
| 4.75 | 100 |
| 2.36 | 93 |
| 1.18 | 92 |
| 0.600 | 87 |
| 0.425 | 74 |
| 0.300 | 57 |
| 0.150 | 48 |
| 0.075 | 45 |




*Comments:*

**Approved Signatory:** Cody O'Neill

**Name:** Cody O'Neill

**Date:** 17/November/2023

NATA **Accreditation No. 20599**
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WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

**TEST REPORT - AS 1289.3.1.1, 3.2.1, 3.3.1 & 3.4.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18261_1_PI |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18261 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | BH23/2.0 m | *Date Tested:* | 17/11/2023 |

## TEST RESULTS - Consistency Limits (Casagrande)

| | |
|---|---|
| **Sampling Method:** | **Sampled by Client, Tested as Received** |
| **History of Sample:** | **Oven Dried <50°C** |
| **Method of Preparation:** | **Dry Sieved** |

| | | |
|---|---|---|
| **AS 1289.3.1.1** | **Liquid Limit (%)** | **44** |
| **AS 1289.3.2.1** | **Plastic Limit (%)** | **22** |
| **AS 1289.3.3.1** | **Plasticity Index (%)** | **22** |
| **AS 1289.3.4.1** | **Linear Shrinkage (%)** | **9.5** |
| **AS 1289.3.4.1** | **Length of Mould (mm)** | **250** |
| **AS 1289.3.4.1** | **Condition of Dry Specimen:** | **Curled** |

***Comments:***

**Approved Signatory:**

**Name:** Madhav Basnet

**Date:** 20/November/2023

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SOIL | AGGREGATE | CONCRETE | CRUSHING

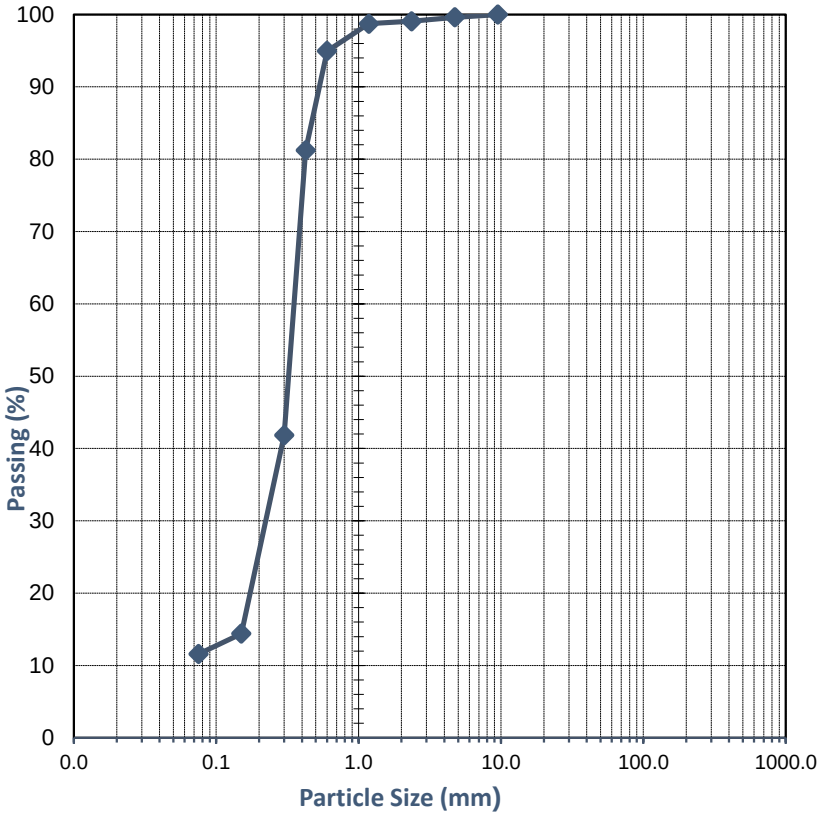
**TEST REPORT - AS 1289.3.6.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18262_1_PSD |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18262 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | BH23/2.5 m | *Date Tested:* | 16/11 - 17/11/2023 |

## TEST RESULTS - Particle Size Distribution of Soil

**Sampling Method:** Sampled by Client, Tested as Received

| Sieve Size (mm) | Percent Passing Sieve (%) |
|---|---|
| 150.0 | |
| 100.0 | |
| 75.0 | |
| 37.5 | |
| 19.0 | |
| 9.5 | 100 |
| 4.75 | 100 |
| 2.36 | 99 |
| 1.18 | 99 |
| 0.600 | 95 |
| 0.425 | 81 |
| 0.300 | 42 |
| 0.150 | 14 |
| 0.075 | 12 |




*Comments:*

**Approved Signatory:** Cody O'Neill

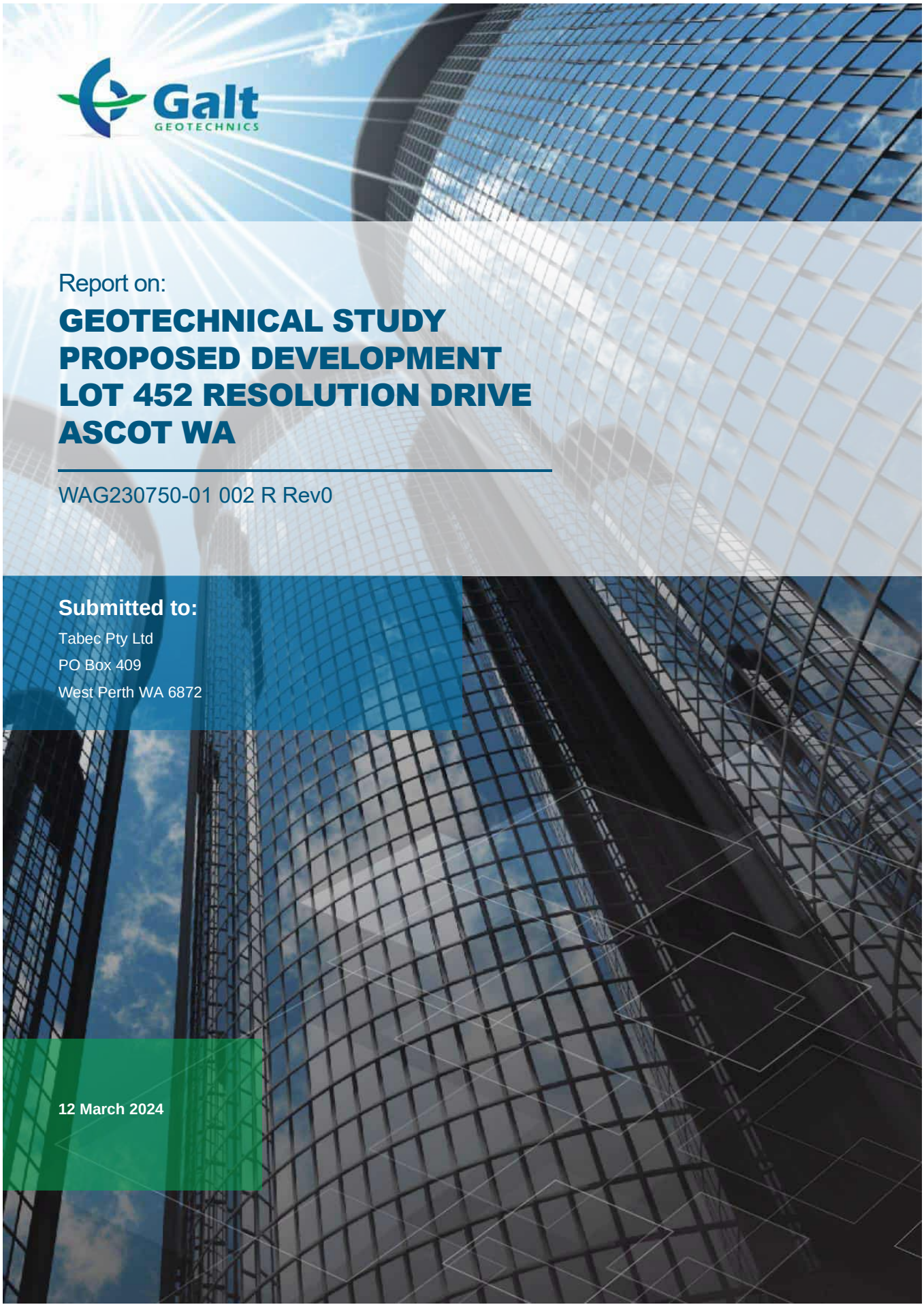
**Name:** Cody O'Neill

**Date:** 17/November/2023

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Galt GEOTECHNICS

Report on:

# GEOTECHNICAL STUDY PROPOSED DEVELOPMENT LOT 452 RESOLUTION DRIVE ASCOT WA

WAG230750-01 002 R Rev0

**Submitted to:**

Tabec Pty Ltd
PO Box 409
West Perth WA 6872

**12 March 2024**

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Standard Geotechnical Definitions, Recommendations, Requirements and Limitations

# 1. INTRODUCTION

This report presents the outcomes of Galt Geotechnics' (Galt's) geotechnical study for the proposed development at Lot 452 Resolution Drive, Ascot ("the site").

This report is to be read in conjunction with the appended "Geotechnical Definitions, Recommendations, Requirements and Limitations". 'Clause GDR1', etc. refer to this Appendix, found at the back of this report.

# 2. KEY FINDINGS

## Site Description

*Table 1: Summary of Site*

| Item | Comment |
|---|---|
| Site Extent | Refer Figure 1. |
| Site Area | About 1.14 Ha. |
| Current Site Surface Levels[1] | About RL 3 m AHD. |
| Vegetation | Mature trees, shrubs and lawn in landscaped areas covering a large portion of the site. |
| Existing Infrastructure | Single Storey building (used by Perth Racing Security Services) with surrounding accessways, car parking and landscaped areas. |
| Site History[2] | **Prior to 1953**: two residences in northern portion of site. Remainder of site relatively clear.<br>**1953 to 1985**: Relatively unchanged. Undeveloped portion of site used as laydown area, car park area, and to stockpile materials at different times.<br>**1989**: Existing Perth Racing Security Services development (as described above) is present<br>**1989 to Present**: Site relatively unchanged. |

***NOTES:*** ***1.*** *Site level based on correspondence with client.*

***2.*** *Site history based on aerial imagery (Landgate).*

# 3. PROPOSED DEVELOPMENT

*Table 2: Summary of Proposed Development*

| Item | Comment |
|---|---|
| Proposed Development | Unknown, assumed subdivision for commercial/residential purposes. |
| Proposed Finished Level | Assumed within about 1 m of current ground levels. |
| Cut/Fill | Assumed ± 1 m with up to 5 m excavation to connect development to existing sewer. |
| Assumed Foundation Type | Shallow Footings. |
| Assumed Retaining Walls | Gravity walls up to 1 m in height. |
| Assumed Stormwater Disposal | Off site into council network. |
| Assumed Sewage Disposal | Off site via reticulated sewer. |

***NOTES:*** ***1.*** *FFL – finished floor level*

***2.*** *Proposed development details based on supplied information.*

# 4. PROJECT OBJECTIVES

The objectives of the study were to:

- Assess the geotechnical suitability of the site for the proposed development;

- Geotechnical opportunities and constraints relevant to the proposed development;
- Areas of foundation risk including the presence of aggressive soils and strategies to address identified risks;
- Site preparation including possible reuse of existing soil as controlled fill;
- Excavation conditions;
- The likely site classification;
- Suitable foundation systems including preliminary design parameters;
- Preliminary design parameters for the design of retaining structures and batter slopes;
- Depth to groundwater at time of investigation; and
- Recommendations on additional geotechnical investigation at detailed design phase or to address specific ground conditions encountered.

# 5. FIELDWORK

Fieldwork was carried out in the presence of a representative from Galt between the 8 and 14 February 2024 and comprised:

*Table 3: Summary of Field Data*

| Type | Results Appendix | Summary | GDR Clause | Equipment Used | No. Tests | Depth Range (m) |
|---|---|---|---|---|---|---|
| Site Plan | Figure 1 | - | - | Hand held GPS[1] | - | - |
| Photographs | A | - | - | - | - | - |
| Cone Penetration Tests (CPTs) | B | Section 8 | GDR3.2 | 14-tonne truck | 5 | 1.6 to 10.1 |
| Machine Auger Boreholes (BH) | C | Section 8 | GDR3.3 | AMS Power Probe | 4 | 0.7 to 6.5 |
| Monitoring Well (MW) | C | Section 8 | GDR3.3 | AMS Power Probe | 1 | 6.0 |

***NOTES:*** ***1.*** *Hand held GPS is accurate to ±5 m.*

# 6. LABORATORY TESTING

Laboratory test certificates are presented in Appendix D, and summarised in Attached Tables 1 and 2.

# 7. SITE CONDITIONS

## 7.1. Geology

*Table 4: Summary of Geology Mapping*

| Map Sheet | Map Scale | Mapped Soils | Typical Site Findings |
|---|---|---|---|
| Perth | 50K | Guildford Formation, described as: *"SANDY SILT - strong brown to mid grey, mottled, blocky, disseminated fine sand, hard when dry, variable clay content of alluvial origin."* | **Thin topsoil** (landscaped areas) **and pavement materials** (car parks / access ways) **over FILL: SAND / SAND** to about 0.4 m to 0.9 m depth, **over Sandy CLAY / CLAY**. |

## 7.2. Groundwater

*Table 5: Summary of Groundwater Levels*

| Item | Date | Depth Range (m) | Elevation Range (m AHD) | Comment |
|---|---|---|---|---|
| Perth Groundwater Atlas | 1997 | - | 3.0 | Historical maximum |
| Department of Water and Environmental Regulation (DWER) Flood Mapping | - | - | 2.7 to 2.9 (DWER mapped 1% AEP flood event level) | Portion of site along southern and south western site boundaries, and the northern side of Grandstand road are mapped as being part of flood fringe by DWER. **Advice on development within the defined flood event (DFE) floodplain is provided by DWER on a case by case basis. DWER recommends a minimum building floor level of 0.50 metres above this level (RL 3.4 m AHD).** |
| Site observations in MW01 | February 2024 | 3.03 | - | Based on highest recorded water levels in monitoring well. |
| Site observations in CPT test probes | February 2024 | 1.90 to 2.80 | - | CPT probes may not have had sufficient time to recharge to hydrostatic levels. |
| Recommended Design | - | - | 2.7 to 2.9 | Groundwater likely to perch on clay soils at site. Proposed development must be designed for DWER DFE flood event. |

***NOTES:*** ***1.*** *Depths for site observations based on the site surface level at the time of investigation.*

# 8. GROUND MODEL

The encountered subsurface conditions are summarised as comprising:

- **Surficial Topsoil (in landscaped areas)** up to 0.3 m thick **and Hardstand Fill Layers** (in carparks and access ways); **overlying**
- **FILL: SAND / SAND (SP)**, fine to medium grained, sub-rounded to sub-angular, yellow / brown / grey layers, includes trace gravel / Sandy GRAVEL layers, trace / with fines, some typically medium dense to dense, extending to depths of about 0.4 m to 0.9 m; overlying
- **In BH03 and BH04 only: Silty SAND / Clayey SAND (SM/SC)** fine to medium grained, sub-rounded to sub-angular, brown / grey, low to medium plasticity fines, some typically medium dense to dense, extending to depths of about 0.7 m to 1.2 m; overlying
- **Sandy CLAY / CLAY (CI)**, medium plasticity, brown / orange / grey, trace sand to sandy, trace gravel in some zones, desiccated, CPT traces indicate presence of occasional sand layers, typically very stiff to hard, extending to the maximum depth investigated of 10 m.

Geotechnical design parameters for the generalised subsurface units described above are presented in Table 6.

*Table 6: Geotechnical Model Units and Design Parameters*

| Unit Name | $\gamma_{bulk}$ (kN/m$^3$) | $\phi'$ (°) | c' (kPa) | $S_u$ (kPa) | $E_v$ (MPa) | $\nu$ | $k_0$ | Wall Friction=0 | | Wall Friction=0.5$\phi$ | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | $k_a$ | $k_p$ | $k_a$ | $k_p$ |
| Compacted Approved FILL | 18 | 36 | - | - | 50 | 0.25 | 0.41 | 0.26 | 3.85 | 0.22 | 6.54 |
| SAND / Silty SAND / Clayey SAND | 18 | 35 | - | - | 25 | 0.3 | 0.43 | 0.27 | 3.69 | 0.24 | 6.08 |
| Sandy CLAY / CLAY | 18 | 21 | 0 to 5 | 150 | 30 | 0.45 | Earth pressure coefficients can be calculated for undrained or drained conditions as outlined in GDR11.2.2 using Firm parameters (undrained) or Fines Content >35% & PI 40% (drained). | | | | |

***NOTES:***

1. *These units are a generalization of results from individual tests, which should be referred to for more information.*
2. *Conditions at CPT locations below depth of soil sample recovery are inferred (refer to clause GDR3.2)*
3. *Surficial topsoil and hardstand layers are not included as discrete units.*
4. *Compacted approved fill is as described in Table 7.*
5. *For all earth pressure coefficients (retaining wall design) refer to clause GDR11.2 for more detail and interpretation. Unit weights for retaining structure design should be as per GDR11.2 or 1 kN/m$^3$ greater than the values in the table above.*

*$\gamma_{bulk}$ – bulk unit weight*
*$\phi'$ – effective friction angle*
*$S_u$ – undrained shear strength*
*c'– effective cohesion*
*$E_v$ – vertical elastic modulus*
*$\nu$ – Poisson's Ratio*
*$k_a$ – coefficient of active earth pressure (Coulomb – AS4678-2002, Appendix E)*
*$k_p$ – coefficient of passive earth pressure (Coulomb – AS4678-2002, Appendix E)*
*$k_0$ – coefficient of at-rest earth pressure (Jaky)*

# 9. GEOTECHNICAL ASSESSMENT

## 9.1. Summary

*Table 7: Summary of Geotechnical Assessment*

| Type | Clause | Parameter | Comment |
|---|---|---|---|
| Site Suitability | - | - | We consider the site to be geotechnically suitable for the proposed subdivision development. Standard site preparation measures will apply. However, groundwater could impact construction if it occurs during winter. Flood levels will impact site levels (refer Table 5). |
| Construction Methodology and Suitability | - | - | Shallow footings in accordance with AS2870-2011 will be suitable for this site. Mass retaining will be suitable for retaining however, must be designed for potential flooding of the site. Stormwater disposal via infiltration is **not** suitable. |
| Site Classification (AS2870) | GDR5 | S | Where **no less than 0.7 m of sand** (including insitu silty sand and clayey sand layers encountered in BH03 and BH04) is present **over in situ CLAY / Sandy CLAY.** |
| Site Subsoil Class (AS1170.4) | - | Ce | Base of superficial formation mapped to be about 25 m below ground. |
| Site Preparation | GDR6 | - | **GDR6.2.1 Common Measures** followed by **GDR6.2.4 Clayey Sites** followed by **GDR6.2.5 Sand Topping Layer.** |
| Approved Fill | GDR8 | - | **Approved Fill** for this site is to comprise **Permeable Sand**.<br>Only relatively thin surficial layers of sand at the site (excluding topsoil) are suitable as approved fill. If additional fill is required, imported **Permeable Sand** will be needed.<br>Although not classed as 'approved fill', where clay is encountered in trench excavations, this material could possibly be reused to backfill the same portion of the trench (excluding any special fill materials required around buried elements). However, this material will be difficult to work and moisture condition to near optimum (particularly if removed from below the groundwater table). |
| Compaction Control | GDR7 | - | A PSP may be used for compaction control on **Permeable Sand.** Deemed to comply values for 'Tamala' sand in GDR7.4 are applicable.<br>Where filling with clay is done (in trenches, etc), compaction control must be done with the NDG as outlined in GDR7.3 Nuclear Density Gauge. |
| Shallow Footings | GDR9 | $q_{all}$ = 100 kPa to 250 kPa | Design tables for shallow footings are presented in Section 9.2. Estimated settlements are not considered excessive. 70% of the settlement is expected to occur during construction. |
| Earth Pressure Coefficients | GDR11 | Table 6 | Earth pressure coefficients are presented in Table 6. |
| Unsaturated Hydraulic Conductivity | GDR13 | - | On site disposal of stormwater unlikely to be suitable due to shallow depth to clay and potential for flooding adjacent the site. Off site disposal of stormwater likely to be required. |
| Pavement Subgrade CBR | GDR16 | CBR = 10% | Subgrade to comprise compacted **Approved Fill no less than 0.6 m thick.** |
| Soil Aggressivity | GDR17 | - | Refer Section 9.3 |
| Batters | GDR12 | **Temporary:**<br>Sand: 1V:2H<br>Clay: 1V:1H<br>**Permanent:**<br>1V:3H | Batter angles apply to soil units (refer Table 6) above the water table, as per GDR12.3. Dewatering and possibly retention (i.e. shoring) required below the groundwater table. |
| Excavations | GDR12.1 | 20 Ton Excavator | Potential for obstructions (buried concrete, Soakwells etc…), cemented soils and surficial pavement layers must be considered when selecting earthmoving plant. |

**NOTES:**
1. $q_{all}$ – allowable bearing pressure (maximum for all footings, refer to footing tables for further details)

## 9.2. Shallow Footings

*Table 8: Isolated Pad Footing Allowable Bearing Pressures and Estimated Settlements*

| $d_e$ (m) | b (m) | $q_{all}$ (kPa) | s (mm) |
|---|---|---|---|
| 0.5 | 0.5 | 120 | < 5 |
| 0.5 | 1.0 | 130 | < 5 |
| 1.0 | 1.0 | 240 | 5 - 10 |
| 1.0 | 2.0 | 250 | 10 - 15 |
| 1.0 | 3.0 | 250 | 20 - 25 |

**NOTES:**
1. $d_e$ – minimum embedment depth (below finished ground level or floor slab)
2. b – Footing breadth (footings assumed approximately square)
3. $q_{all}$ – allowable bearing pressure (peak). Limited to keep estimated settlements less than 25 mm. Higher $q_{all}$ may be possible if higher settlements can be tolerated – refer queries to us.
4. s – estimated settlement (excludes shrink/swell from site class)
5. Refer to GDR9
6. Groundwater assumed to be at ground level.

*Table 9: Isolated Strip Footing Allowable Bearing Pressures and Estimated Settlements*

| $d_e$ (m) | b (m) | $q_{all}$ (kPa) | s (mm) |
|---|---|---|---|
| 0.5 | 0.5 | 100 | < 5 |
| 0.5 | 1.0 | 130 | 5 - 10 |
| 1.0 | 1.0 | 190 | 10 - 15 |
| 1.0 | 2.0 | 250 | 20 - 25 |

**NOTES:**
1. $d_e$ – minimum embedment depth (below finished ground level or floor slab)
2. b – Footing breadth (footings assumed long relative to breadth)
3. $q_{all}$ – allowable bearing pressure (peak). Limited to keep estimated settlements less than 25 mm. Higher $q_{all}$ may be possible if higher settlements can be tolerated – refer queries to us.
4. s – estimated settlement (excludes shrink/swell from site class)
5. Refer to GDR9
6. Groundwater assumed to be at ground level.

## 9.3. Soil Aggressivity

Results of aggressivity testing on clay samples is summarised in Attached Table 2. The results indicate the clay is 'non aggressive' to concrete and steel (in accordance with AS2159-2009) with a AS3600-2009 classification of 'A1'.

Based on regional experience, we anticipate the sand will have the same aggressivity classifications as the underlying clay where above the groundwater. However, for concrete in sand below the water table, an AS2159-2009 'mild' classification, and AS3600-2009 'A2' classification is appropriate.

Groundwater was not tested.

# 10. CLOSURE

**GALT GEOTECHNICS PTY LTD**





Owen Woodland CPEng
*Geotechnical Engineer*

Tyrone Mardesic CPEng
*Geotechnical Engineer*

https://galtgeo.sharepoint.com/sites/wag230750/shared documents/01 tabec si/03 correspondence/wag230750-01 002 r rev0.docx

*Attached Table 1: Summary of Geotechnical Index Test Results*

| Test Name | Sample Depth (m) | Soil Class (AS1726 2017) | Fines (%) | Sand (%) | Gravel (%) | LL (%) | PI (%) | LS (%) |
|---|---|---|---|---|---|---|---|---|
| BH03 | 1.5 - 2.2 | CLAY (CI) | 89 | 11 | 0 | 46 | 28 | 12.5 |
| BH04 | 1.0 - 1.3 | Sandy CLAY (CI) | 54 | 43 | 3 | 34 | 20 | 8.5 |

***Notes***

1. *Particle size distribution (by mass)*
   *Gravel: 2.36 mm – 63 mm* *Sand: 0.075 mm – 2.36 mm* *Fines: <0.075 mm*
2. *Atterberg Limits*
   *LL: Liquid limit* *PI: Plasticity index* *LS: Linear shrinkage*
   *NO: Not obtainable* *NP: Non-plastic*

*Attached Table 2: Summary of Chemical Test Results and Exposure Classification*

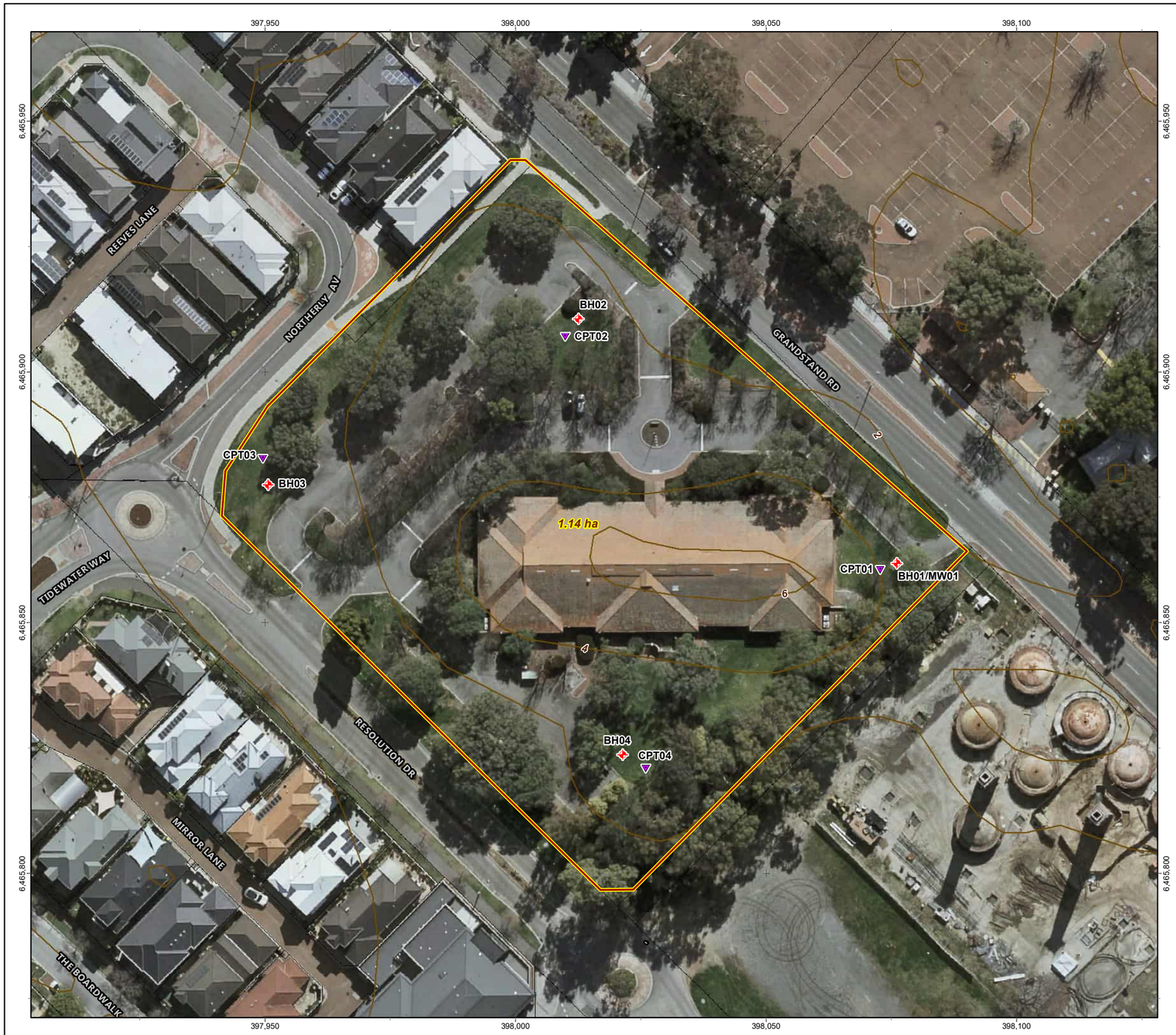
| Location | Sample Depth (m) | Soil Description | Soil Condition | pH | $SO_4$ (ppm) | Cl (ppm) | AS2159 Steel EC | AS2159 Concrete EC | AS3600 Concrete EC |
|---|---|---|---|---|---|---|---|---|---|
| BH03 | 1.5 - 2.2 | CLAY (CI) | B | 8.8 | 100 | 210 | Non-Aggressive | Non-Aggressive | A1 |
| BH04 | 1.0 - 1.3 | Sandy CLAY (CI) | B | 7.5 | 170 | 94 | Non-Aggressive | Non-Aggressive | A1 |

***NOTES:***

1. *Soil condition*
   *A – high permeability soils (sands and gravels) which are below water table.* *B – Low permeability soils (silts and clays) and all soils above water table*
2. *Sulfate expressed as $SO_4$*
3. *Cl – Chloride*
4. *ER – Electrical Resistivity*
5. *EC – Exposure Classification*
5. *Exposure Classification for AS2159-2009 (for steel and concrete piles)*
   *[Exposure Classification for AS3600-2009 (for buried concrete structures)]*

| *Non-aggressive [A1]* | *Mild [A2]* | *Moderate [B1]* | *Severe [B2]* | *Very Severe [C2]* |
|---|---|---|---|---|

# Figures







**Legend**

- Site Boundary
- Borehole
- Cone Penetration Test

N

0 10 20 30 40 50
Meters

***NOTES***
*Aerial Imagery and Cadastre sourced from Landgate/SLIP*




| | |
|---|---|
| SCALE | 1:750 (A3) |
| DRAWN | CED |
| DATE DRAWN | 13/2/2024 |
| CHECKED | _ |
| DATE CHECKED | _ |
| PROJECTION | GDA 1994 MGA Zone 50 |

Galt Geotechnics Pty Ltd
ACN : 138 490 865
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| | |
|---|---|
| CLIENT | **TABEC CIVIL ENGINEERING CONSULTANTS** |
| PROJECT | PROPOSED DEVELOPMENT |
| LOCATION | LOT 452 RESOLUTION DRIVE ASCOT |
| TITLE | SITE & LOCATION PLAN |
| Job No | WAG230750-01 |
| Fig No | FIGURE 1 |
| Rev | **A** |

*O:\Projects\WAG\230750\01\04 MXD\WAG230750-01-001-G01.mxd (claire.doyle) 13/2/2024 7:09:09 AM*


Appendices

# Appendix A: Site Photographs

*Photograph 1: Near CPT02 facing south*



*Photograph 2: Near CPT02 facing south west*



*Photograph 3: Site photo from near northern portion of site*



# Appendix C: Machine Borehole and Monitoring Well Logs

# EXPLANATORY NOTES TO BE READ WITH BOREHOLE AND TEST PIT REPORTS

## METHOD OF DRILLING OR EXCAVATION

| | | | | | |
|---|---|---|---|---|---|
| AC | Air Core | E | Excavator | PQ3 | PQ3 Core Barrel |
| AD/T | Auger Drilling with TC-Bit | EH | Excavator with Hammer | PT | Push Tube |
| AD/V | Auger Drilling with V-Bit | HA | Hand Auger | R | Ripper |
| AT | Air Track | HE | Hand Excavation | RR | Rock Roller |
| B | Bulldozer Blade | HQ3 | HQ3 Core Barrel | SON | Sonic Rig |
| BH | Backhoe Bucket | N | Natural Exposure | SPT | Driven SPT |
| CT | Cable Tool | NMLC | NMLC Core Barrel | WB | Washbore |
| DT | Diatube | PP | Push Probe | X | Existing Excavation |

## SUPPORT

| | |
|---|---|
| T | Timbering |

## PENETRATION EFFORT (RELATIVE TO THE EQUIPMENT USED)

| | | | | | |
|---|---|---|---|---|---|
| VE | Very Easy | E | Easy | F | Firm |
| H | Hard | VH | Very Hard | | |

## WATER

| | | | |
|---|---|---|---|
| ► | Water Inflow | ▼ | Water Level |
| ◄ | Water Loss (complete) | | |
| ◁ | Water Loss (partial) | | |

## SAMPLING AND TESTING

| | | | |
|---|---|---|---|
| B | Bulk Disturbed Sample | P | Piston Sample |
| BLK | Block Sample | PBT | Plate Bearing Test |
| C | Core Sample | U | Undisturbed Push-in Sample |
| CBR | CBR Mould Sample | | U50: 50 mm diameter |
| D | Small Disturbed Sample | SPT | Standard Penetration Test |
| ES | Environmental Soil Sample | | Example: 3, 4, 5 N=9 |
| EW | Environmental Water Sample | | 3,4,5: Blows per 150 mm |
| G | Gas Sample | | N=9: Blows per 300 mm after |
| HP | Hand Penetrometer | | 150 mm seating interval |
| LB | Large Bulk Disturbed Sample | VS | Vane Shear; P = Peak |
| M | Mazier Type Sample | | R = Remoulded (kPa) |
| MC | Moisture Content Sample | W | Water Sample |

## ROCK CORE RECOVERY

TCR = Total Core Recovery (%) $= \frac{CRL}{TCL} \times 100$

RQD = Rock Quality Designation (%) $= \frac{ALC>100}{TCL} \times 100$

| | |
|---|---|
| TCL | Length of Core Run |
| CRL | Length of Core Recovered |
| ALC>100 | Total Length of Axial Lengths of Core Greater than 100 mm Long |

# METHOD OF SOIL DESCRIPTION
# BOREHOLE AND TEST PIT REPORTS

Galt GEOTECHNICS

## GRAPHIC LOG & SOIL CLASSIFICATION SYMBOLS

| Graphic | USCS | Soil Name |
|---|---|---|
| | | FILL (various types) |
| | | COBBLES / BOULDERS |
| | GP | GRAVEL (poorly graded) |
| | GW | GRAVEL (well graded) |
| | GC | Clayey GRAVEL |
| | GM | Silty GRAVEL |
| | SP | SAND (poorly graded) |
| | SW | SAND (well graded) |
| | SC | Clayey SAND |

| Graphic | USCS | Soil Name |
|---|---|---|
| | SM | Silty SAND |
| | ML | SILT (low liquid limit) |
| | MH | SILT (high liquid limit) |
| | CL | CLAY (low plasticity) |
| | CI | CLAY (medium plasticity) |
| | CH | CLAY (high plasticity) |
| | OL | Organic SILT (low liquid limit) |
| | OH | Organic SILT (high liquid limit) |
| | Pt | PEAT |

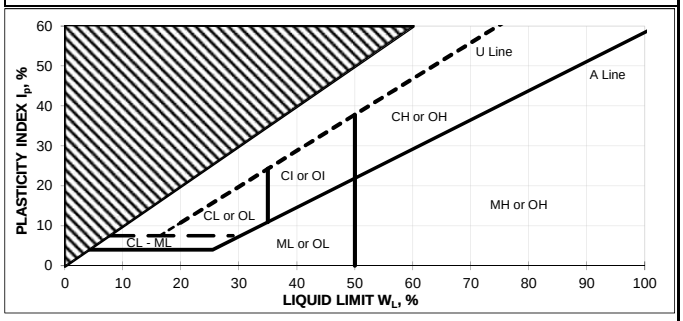
NOTE: Dual classification given for soils with a fines content between 5% and 12%.

## SOIL CLASSIFICATION AND INFERRED STRATIGRAPHY

Soil descriptions are based on AS1726-2017. Material properties are assessed in the field by visual/tactile methods in combination with field and laboratory testing techniques (where used).
NOTE: AS 1726-2017 defines a fine grained soil where the total dry mass of fine fractions (<0.075 mm particle size) exceeds 35%.

| PARTICLE SIZE | | |
|---|---|---|
| **Soil Name** | | **Particle Size (mm)** |
| BOULDERS | | >200 |
| COBBLES | | 63 to 200 |
| GRAVEL | Coarse | 19 to 63 |
| | Medium | 6.7 to 19 |
| | Fine | 2.3 to 6.7 |
| SAND | Coarse | 0.6 to 2.36 |
| | Medium | 0.21 to 0.6 |
| | Fine | 0.075 to 0.21 |
| FINES | SILT | 0.002 to 0.075 |
| | CLAY | <0.002 |

**PLASTICITY - MODIFIED CASAGRANDE CHART - AS1726-2017**




| RESISTANCE TO EXCAVATION | | |
|---|---|---|
| **Symbol** | **Term** | **Description** |
| VE | Very easy | All resistances are relative to the selected method of excavation |
| E | Easy | |
| F | Firm | |
| H | Hard | |
| VH | Very hard | |

| MOISTURE CONDITION | |
|---|---|
| **Symbol** | **Term** |
| D | Dry |
| M | Moist |
| W | Wet |

| CEMENTATION | |
|---|---|
| **Cementation** | **Description** |
| Weakly cemented | Soil may be easily disaggregated by hand in air or water |
| Moderately cemented | Effort is required to disaggregate the soil by hand in air or water |

| CONSISTENCY | | |
|---|---|---|
| **Symbol** | **Term** | **Undrained Shear Strength (kPa)** |
| VS | Very Soft | 0 to 12 |
| S | Soft | 12 to 25 |
| F | Firm | 25 to 50 |
| St | Stiff | 50 to 100 |
| VSt | Very Stiff | 100 to 200 |
| H | Hard | >200 |

| ORGANIC SOILS | |
|---|---|
| **Material** | **Organic Content % of dry mass** |
| Inorganic soil | <2% |
| Organic soil | 2% to 25% |
| Peat | >25% |

| DENSITY | | |
|---|---|---|
| **Symbol** | **Term** | **Density Index (%)** |
| VL | Very Loose | <15 |
| L | Loose | 15 to 35 |
| MD | Medium Dense | 35 to 65 |
| D | Dense | 65 to 85 |
| VD | Very Dense | >85 |

O:\Administration\Standard Forms and Documents\PMP17 Method of Soil Description-Rev6

Galt Form PMP17
December 2017

Galt

# REPORT OF BOREHOLE: BH01/MW01

| | | | | | |
|---|---|---|---|---|---|
| Job No | : WAG230750-01 | Easting | : 0.00 | Sheet | : 1 OF 1 |
| Client | : Tabec | Northing | : 0.00 | Logged | : MDS |
| Project | : Proposed Development | UTM | : | Logged Date | : 08/02/2024 |
| Location | : Lot 452 Resolution Drive, Ascot | Drill Rig | : AMS Super Rig | Checked | : TM |
| Contractor | : Galt Geotechnics | Inclination | : -90 deg | Checked Date | : 25/02/2024 |

**General comments: Monitoring Well Installed at this location**

| Drilling Method | Depth (m) | Water | Classification Code | Soil Origin | Graphic Log | Consistency/Density | Moisture | Material Description | Structural and Additional Observations | Well Diagram |
|---|---|---|---|---|---|---|---|---|---|---|
| 90mm Solid Auger | 0.3 | | SP | Natural | | | D | Natural SAND: dark brown and black, fine to coarse grained, with low plasticity clay, (trace organics present in upper 200mm). | (trace organics present in upper 200mm) | Backfill (Drill Spoil) |
| | 0.45 | | SP | Natural | | MD-D | | Natural SAND: pale yellow, fine to coarse grained, trace low plasticity clay. | | 50mm PVC Solid |
| | | | SP | Natural | | | | Natural SAND: dark brown and black, fine to coarse grained, trace low plasticity clay. | | Bentonite (Sealed above Slotted PVC) |
| | 0.9 | | | | | | | | | |
| | 1 | | Cl | Natural | | VSt-H | | Natural Sandy CLAY: medium plasticity, brown and pale orange, fine grained sand, inorganic, clay is highly desiccated. | Clay is highly desiccated | |
| | 2 | | | | | | | | | |
| | 2.3 | | | | | | | | | |
| | 2.5 | | SC | Natural | | | | Natural Clayey SAND: low plasticity clay, brown and dark brown, fine to coarse grained, trace fine to medium sized gravel. | | Filter Pack (Gravel Filter Medium Installed) |
| | | | Cl | Natural | | VSt-H | | | Clay is desiccated at shallower depths | |
| | 3 | ▼ | | | | | | Natural CLAY: medium plasticity, brown and pale orange, trace fine to medium grained sand, inorganic, clay is desiccated at shallower depths. | | |
| | 4 | | | | | | | | | 50mm PVC Slotted |
| | 5 | | | | | | | | | |
| | 6 | | | | | | | **BH01/MW01 Terminated at 6m (Target Depth GW @3.03m)** | | |
| | 7 | | | | | | | | | |
| | 8 | | | | | | | | | |



Galt

# REPORT OF BOREHOLE: BH02

| | | | | | |
|---|---|---|---|---|---|
| Job No | : WAG230750-01 | Easting | : 0.00 | Sheet | : 1 OF 1 |
| Client | : Tabec | Northing | : 0.00 | Logged | : MDS |
| Project | : Proposed Development | UTM | : | Logged Date | : 08/02/2024 |
| Location | : Lot 452 Resolution Drive, Ascot | Drill Rig | : AMS Super Rig | Checked | : TM |
| Contractor | : Galt Geotechnics | Inclination | : -90 deg | Checked Date | : 25/02/2024 |

| Drilling Method | DCP graph | Water | Depth (m) | Soil Origin | Graphic Log | Classification Code | Material Description | Moisture | Consistency/Density | Remarks | Sample |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 90mm Solid Auger | | | | Natura | | SP | Natural SAND: dark grey and black, fine to coarse grained, trace low plasticity clay, (trace organics present in upper 200mm). | M-D | MD-D | | |
| | | | 1 | | | | **BH02 refusal at 0.7m (Refusal on Desiccated Clay Groundwater not encountered)** | | | | |
| | | | 2 | | | | | | | | |
| | | | 3 | | | | | | | | |
| | | | 4 | | | | | | | | |
| | | | 5 | | | | | | | | |
| | | | 6 | | | | | | | | |
| | | | 7 | | | | | | | | |
| | | | 8 | | | | | | | | |

Page 1 of 1

Galt

# REPORT OF BOREHOLE: BH03

| | | | | | |
|---|---|---|---|---|---|
| Job No | : WAG230750-01 | Easting | : 0.00 | Sheet | : 1 OF 1 |
| Client | : Tabec | Northing | : 0.00 | Logged | : PA |
| Project | : Proposed Development | UTM | : | Logged Date | : 14/02/2024 |
| Location | : Lot 452 Resolution Drive, Ascot | Drill Rig | : AMS Super Rig | Checked | : TM |
| Contractor | : Galt Geotechnics | Inclination | : -90 deg | Checked Date | : 25/02/2024 |

| Drilling Method | DCP graph | Water | Depth (m) | Soil Origin | Graphic Log | Classification Code | Material Description | Moisture | Consistency/Density | Remarks | Sample |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 90mm Solid Auger | | | 0.1 | Topsoil | | SP | Topsoil SAND: dark grey, fine to medium grained, trace medium plasticity clay, with roots / organics. | D | | | |
| | | | 0.25 | Fill | | SP | Fill SAND: brown, medium dense to dense, fine to medium grained, trace low plasticity clay. | | MD-D | | |
| | | | 0.4 | Fill | | GP | Fill Sandy GRAVEL: grey, medium dense to dense, fine to medium sized, fine to medium grained sand, trace low to medium plasticity clay. | | | | |
| | | | | Natural | | SM | Natural Silty SAND: grey brown, fine to medium grained. | | | | |
| | | | 0.7 | Natural | | Cl | Natural CLAY: medium plasticity, grey, with fine to medium grained sand, inorganic, trace organics, clay is desiccated at shallow depths. | | VSt-H | | |
| | | | 1 | | | | | | | | |
| | | | 1.5 | Natural | | Cl | As above, brown, trace organics. | | | | |
| | | | 2 | | | | | | | | |
| | | | 3 | | | | | | | | |
| | | | 4 | Natural | | Cl | As above. | M | | | |
| | | | 5 | | | | | | | | |
| | | | 6 | | | | **BH03 Terminated at 6m (Target depth. Groundwater not encountered)** | | | | |
| | | | 7 | | | | | | | | |
| | | | 8 | | | | | | | | |



Page 1 of 1

Galt

# REPORT OF BOREHOLE: BH04

| | | | | | |
|---|---|---|---|---|---|
| Job No | : WAG230750-01 | Easting | : 0.00 | Sheet | : 1 OF 1 |
| Client | : Tabec | Northing | : 0.00 | Logged | : PA |
| Project | : Proposed Development | UTM | : | Logged Date | : 14/02/2024 |
| Location | : Lot 452 Resolution Drive, Ascot | Drill Rig | : AMS Super Rig | Checked | : TM |
| Contractor | : Galt Geotechnics | Inclination | : -90 deg | Checked Date | : 25/02/2024 |

| Drilling Method | DCP graph | Water | Depth (m) | Soil Origin | Graphic Log | Classification Code | Material Description | Moisture | Consistency/Density | Remarks | Sample |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 90mm Solid Auger | | | 0.25 | Topsoil | | SP | Topsoil SAND: grey, fine to medium grained, trace medium plasticity clay, trace / with organics. | D | | | |
| | | | 0.5 | Fill | | SP | Fill SAND: brown, fine to medium grained, trace low plasticity clay. | | | | |
| | | | 1 | Natural | | SC | Natural Clayey SAND: medium plasticity clay, brown, fine to medium grained. | | | | |
| | | | 1.2 | Natural | | Cl | Natural Sandy CLAY: medium plasticity, brown mottled red, fine to medium grained sand, trace fine to medium sized gravel, inorganic, clay is desiccated. | | VSt-H | | |
| | | | 1.5 | Natural | | Cl | Natural CLAY: medium plasticity, brown, with fine to medium grained sand, inorganic, clay is desiccated at shallow depths. | | | | |
| | | | 3 | Natural | | Cl | As above. | M | | | |
| | | | 4.5 | Natural | | Cl | As above. | W | | | |
| | | | | | | | **BH04 Terminated at 6.5m (Target depth. Groundwater possibly at 4.5 m depth)** | | | | |

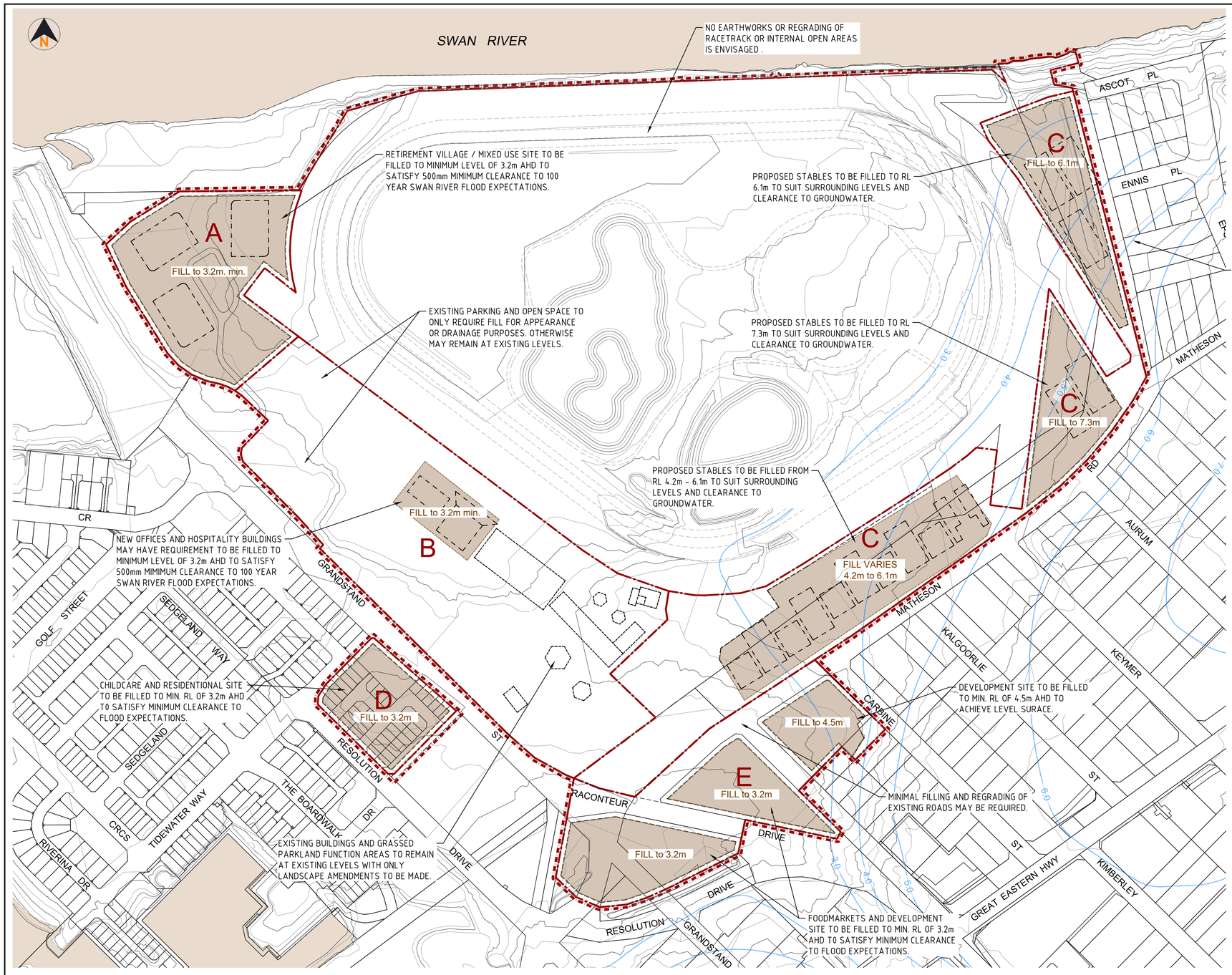


Page 1 of 1

# Appendix C

Preliminary Civil Drawing

Tabec 2024




WAPC No.

A1

| No. | DATE | DRAWN | APPROVED | AMENDMENT |
|---|---|---|---|---|
| C | 21.06.24 | PK | JZ | MINIMUM FILL LEVELS AMENDED IN LINE WITH THE LWMS |
| B | 18.06.24 | PK | JZ | PRELIMINARY ISSUE FOR INFORMATION ONLY |
| A | 24.01.24 | PK | JZ | PRELIMINARY ISSUE FOR REVIEW |

FOR INFORMATION

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COLOUR
This drawing is required to be printed in full colour. Failure to do so may result in loss of information.

CLIENT: PERTH RACING

| DESIGNED | CHECKED | APPROVED |
|---|---|---|
| PK | JZ | |
| DRAWN | CHECKED | DATE |
| PK | JZ | |

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t 08 9425 5900 e info@tabec.com.au
www.tabec.com.au

PROJECT: ASCOT RACECOURSE - LOCAL STRUCTURE PLAN

TITLE: EARTHWORKS CONCEPT PLAN

DRAWING NUMBER: 2541-00-100

ISSUE: C

Plotted By: pkeenan Plot Date: 21/06/24 - 14:47 Cad File: C:\JOBS\Admin\TB-JOBS\2541 - Ascot Racecourse LSP_JOY\CAD\CAD\2541-100\2541-100.dwg

# Appendix D

Modelling Assumption Report

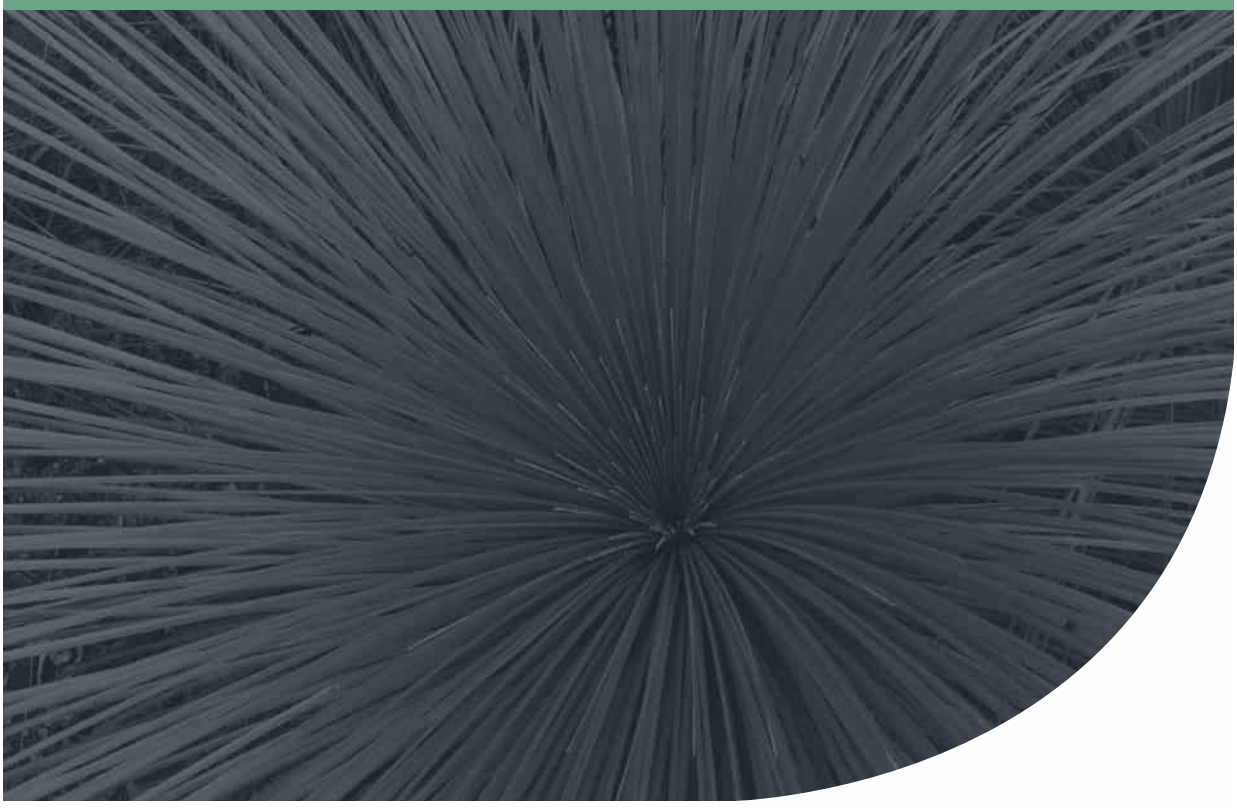
Emerge Associates 2024

# Modelling Assumptions Report

## Golden Gateway Local Structure Plan

Project No: EP23-109(03)

**Prepared for Perth Racing**
**May 2024**



# Document Control

| Doc name: | Modelling Assumptions Report<br>Golden Gateway Local Structure Plan | | | | |
|---|---|---|---|---|---|
| Doc no.: | EP23-109(03)--008 JM | | | | |
| Version | Date | Author | | Reviewer | |
| 1 | May 2024 | Joyti Mabruk | JM | David Coremans | DPC |
| | Appendix to the LWMS | | | | |

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**2 Methodology ..... 2**

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**3 Post-development model ..... 4**

**4 References ..... 7**

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Table 2: Post-development catchment areas (ha) ..... 5

# 1 Background

Perth Racing (the 'proponent') proposed to progress a local structure plan (LSP) over its landholdings in Ascot. The area is bounded by the Swan River to the North, Grandstand Road to the west and south, Matheson Road and Resolution Drive to the south and residential areas to the east, referred to herein as 'the site'. The structure plan area also includes the Ascot Racecourse area. The site is located approximately 8.5 km east of Perth central business district (CBD) and is approximately 62 ha in size, within City of Belmont (CoB). The LSP consists of six precincts: Precinct A, Precinct B, Precinct C, Precinct D, Precinct E, and the racecourse.

# 2 Methodology

XPSWMM hydrologic and hydraulic modelling software (v21.3) was used to calculate the surface water runoff volumes within the road reserves and lots associated with the development of Ascot Racecourse.

The hydrologic component of the software uses the Laurenson non-linear runoff-routing method to simulate runoff from design storm events. Key assumptions regarding the hydrologic model include:

- Runoff is proportional to slope, area, infiltration and percentage of imperviousness of a catchment.
- Sub-catchment areas and slopes are determined from surveyed topographical data and earthworks plans.
- Infiltration rates and percentage imperviousness have been selected based on experience with model preparation for similar soil conditions.

Runoff from each sub-catchment is routed through the catchment using the hydraulic component of XPSWMM. Generally, assumptions associated with the hydraulic component of the model include:

- Virtual links (i.e. purely for model construction, not equivalent to flow path onsite) between nodes within a sub-catchment are given the length of 10 m and slope of 0.05 to minimise the lag time of conveying the water from a sub-catchment node to a 'storage' node, a 'dummy intermediate' node or a conduit/link.
- Links between sub-catchment storages act as conveyance channels (e.g. sheet flow within roads in a 1% annual exceedance probability (AEP)). These links are given lengths and slopes that are representative of the site conditions and actual pathway lengths between catchments.
- All channels are designed with a width of 5 m, roughness of 0.014 (Manning's n) and are trapezoidal in shape. This allows for easy conveyance and represents concrete pipes and road surfaces within the model.
- Where relevant median swales, bio-retention areas (BRAs), and flood storage areas (FSAs) are modelled as nodal-reservoirs with infiltration depth-rating curves to account for differential infiltration rates with changing depth.

## 2.1 Rainfall

The ensemble temporal patterns obtained from the Australian Rainfall and Runoff (AR&R) Data Hub (AR&R 2019) were used for the rainfall analysis.

Durations ranging between 15 min and 72 hours were tested, with the peak flood elevation being assessed as the determining result.

Following the process suggested by AR&R (Ball J et al. 2019), the highest mean duration was selected as the critical duration. AR&R also recommends that when it is not practical to run the entire ensemble array, the ensemble that produces the result closest to the mean (for the critical duration) should be adopted and provided in **Table 1**.

*Table 1: Critical Duration Analysis*

| Catchment | Critical Duration (20% AEP) | Critical Duration (10% AEP) | Critical Duration (1% AEP) |
|---|---|---|---|
| Precinct A | 3 hour duration ensemble 4 | 3 hour duration ensemble 1 | 3 hour duration ensemble 1 |
| Precinct C | 30 min duration ensemble 6 | 30 min duration ensemble 7 | 30 min duration ensemble 8 |
| Precinct D | 1 hour duration ensemble 1 | 30 min duration ensemble 5 | 30 min duration ensemble 1 |
| Precinct E | 45 min duration ensemble 6 | 30 min duration ensemble 5 | 30 min duration ensemble 8 |

# 3 Pre-development model

The catchment parameters determined for Precinct D within the LWMS for the initial loss – continuous loss model have been adopted to account for catchment losses. The pre-development loss parameters used are given in **Table 2**.

*Table 2: Pre-development loss parameters*

| Land type | Initial loss (mm) | Continual loss (mm) | Roughness |
|---|---|---|---|
| Existing residential/Carpark | 15 | 0.1 | 0.014 |

Catchment analysis for pre-development scenario was based on topographic contour data, site visit and aerial photography. Pre-development catchment area within Precinct D is 1.145 ha.

# 4 Post-development model

An initial loss continuing loss model was adopted to account for post-development catchment losses. The post-development catchment area, land types and loss values were based on the structure plan design, typical infiltration rates for the soils which occur onsite and based on project team experience. Post-development catchment areas and land types within the site were informed by sub-division plan provided by LPD surveyors. **Table 3** summarises the loss parameters used within the post-development model.

*Table 3: Post-development loss parameters*

| Land type | Initial loss (mm) | Continual loss (mm) | Roughness |
|---|---|---|---|
| Road Surface | 1 | 0.1 | 0.02 |
| Road Verge | 9 | 1.5 | 0.05 |
| Fully Impervious | 1 | 0.1 | 0.02 |
| Roof | 1 | 0.1 | 0.02 |
| Lot IMP | 1 | 0.1 | 0.02 |
| Gardens | 25 | 2 | 0.05 |
| POS | 25 | 2 | 0.05 |
| Precinct E Lots | 15 | 0.1 | 0.014 |

A summary of post-development catchment information is provided in **Table 4** with the catchment plan and basin location shown in Figure 08 of the LWMS.

*Table 4: Post-development catchment areas (ha)*

| Road reserve | Lots | Road Reserve | POS | Fully Impermeable | Child Care |
|---|---|---|---|---|---|
| Precinct A | 0.714 | 0.606 | 1.360 | 0.330 | - |
| Precinct C | - | 5.903 | - | - | - |
| Precinct D | 0.526 | 0.421 | - | - | 0.199 |
| Precinct E | 3.622 | 0.365 | 0.219 | - | - |

The following assumptions were incorporated into the model:

- Precinct A
  - Lots will have 100% roof areas and road reserve contains 5% pervious verge and 95% impervious bitumen areas.
  - POS will be 100% pervious.
  - There is no current connection point for drainage to be exported from Precinct A.
  - 1 single basin/Flood storage area (FSA) for both treatment and flood mitigation.
  - Base of the FSA will need to be vegetated with reeds/rushes as per a biofilter.
  - FSA will have 1:6 side slopes and maximum depth 1.2m in a 1% AEP – to avoid the need for fencing or access control.

- A hydraulic conductivity of 1m/day is assumed.

- Precinct C
  - The existing portion of Precinct C already connected to the centre of the track (existing buildings and stables) and no change has been assumed.
  - Rest of the Precinct C were modelled as two separate catchments i.e., carpark and stables which are 95% impervious and 5% pervious.
  - 1m deep sub-surface storage has been designed to accommodate 1% AEP event.
  - A hydraulic conductivity of 1m/day is assumed.
  - The storage configuration could be changed/modified to suit site layout/constraints.
  - The carpark in Precinct C that discharges to the southwest will discharge to Precinct E.

- Precinct D
  - Lots will have 50% roof areas, 45% paved areas and 5% pervious garden areas, the childcare has roof areas and Road reserve contains 20% pervious verge and 80% impervious bitumen areas.
  - 1m deep sub-surface storage has been designed to accommodate and detain upto 1% AEP events that will mimic pre-development flow of 0.4.
  - A hydraulic conductivity of 1m/day is assumed.
  - The storage configuration could be changed/modified to suit site layout/constraints.

- Precinct E
  - The carpark in Precinct C discharges to Precinct E.
  - Outflow of pre-development Water Corporation (WC) drain is 0.95 $m^3/s$ as per WC modelling.
  - All lots of Precinct E retain 15mm of rainfall.
  - Runoff above 15 mm rainfall up to the 1% AEP will be managed by a detention basin which will mimic pre-development 1% AEP peak flow of 0.463 $m^3/s$.
  - The basin will have 1:6 side slopes and maximum depth 1.2m in a 1% AEP – to avoid the need for fencing or access control.
  - A hydraulic conductivity of 1m/day is assumed.

# 5 References

## 5.1 General references

The references listed below have been considered as part of preparing this document.

Ball J, Babister M, Nathan R, Weeks W, Weinmann E, Retallick M and Testoni I (Editors) 2019, *Australian Rainfall and Runoff: A Guide to Flood Estimation*, Commonwealth of Australia (Geoscience Australia).

## 5.2 Online references

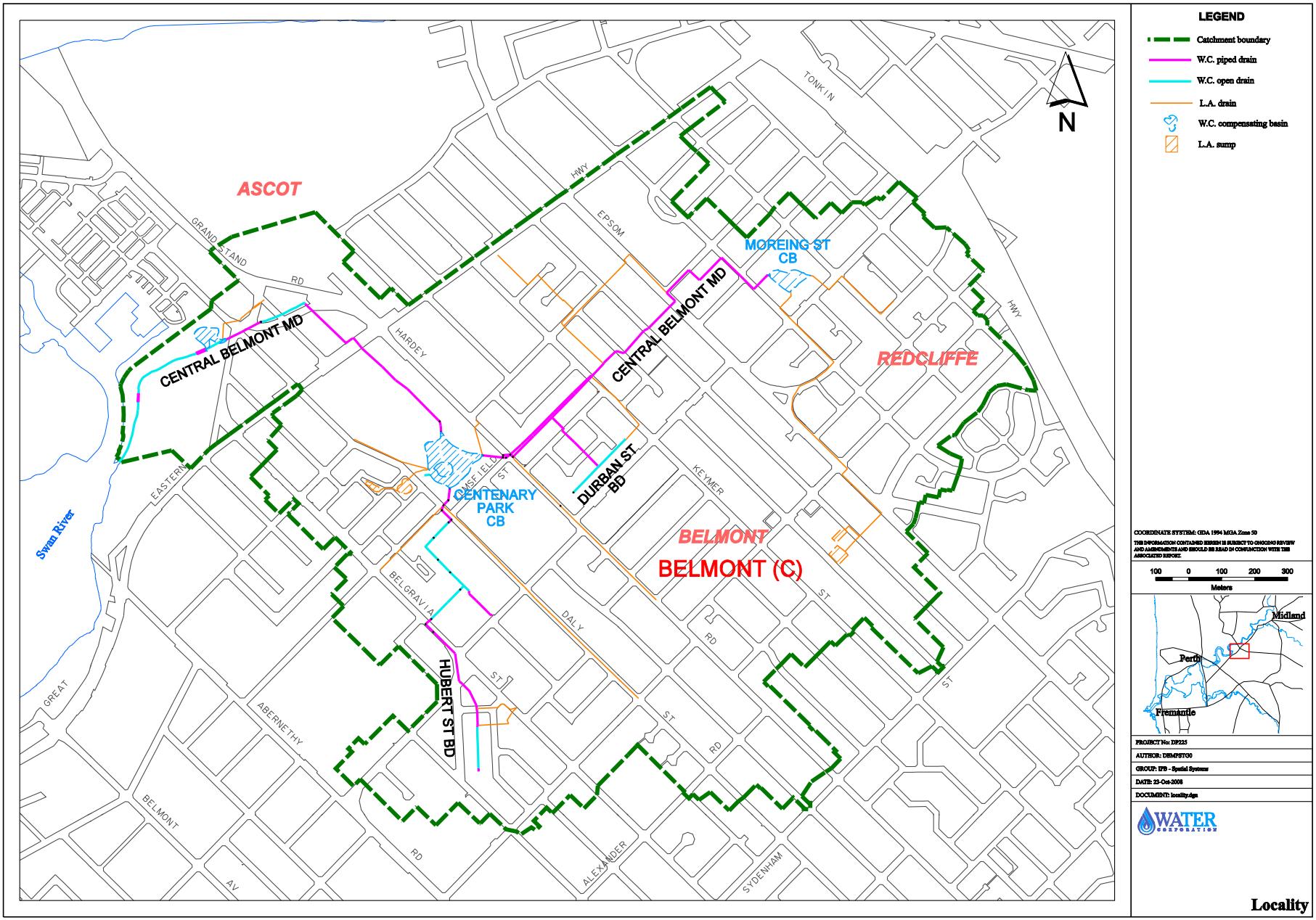
Australian Rainfall and Runoff (AR&R) 2021, ARR Data Hub, viewed 1 December 2021, Available from: <https://data.arr-software.org/>.

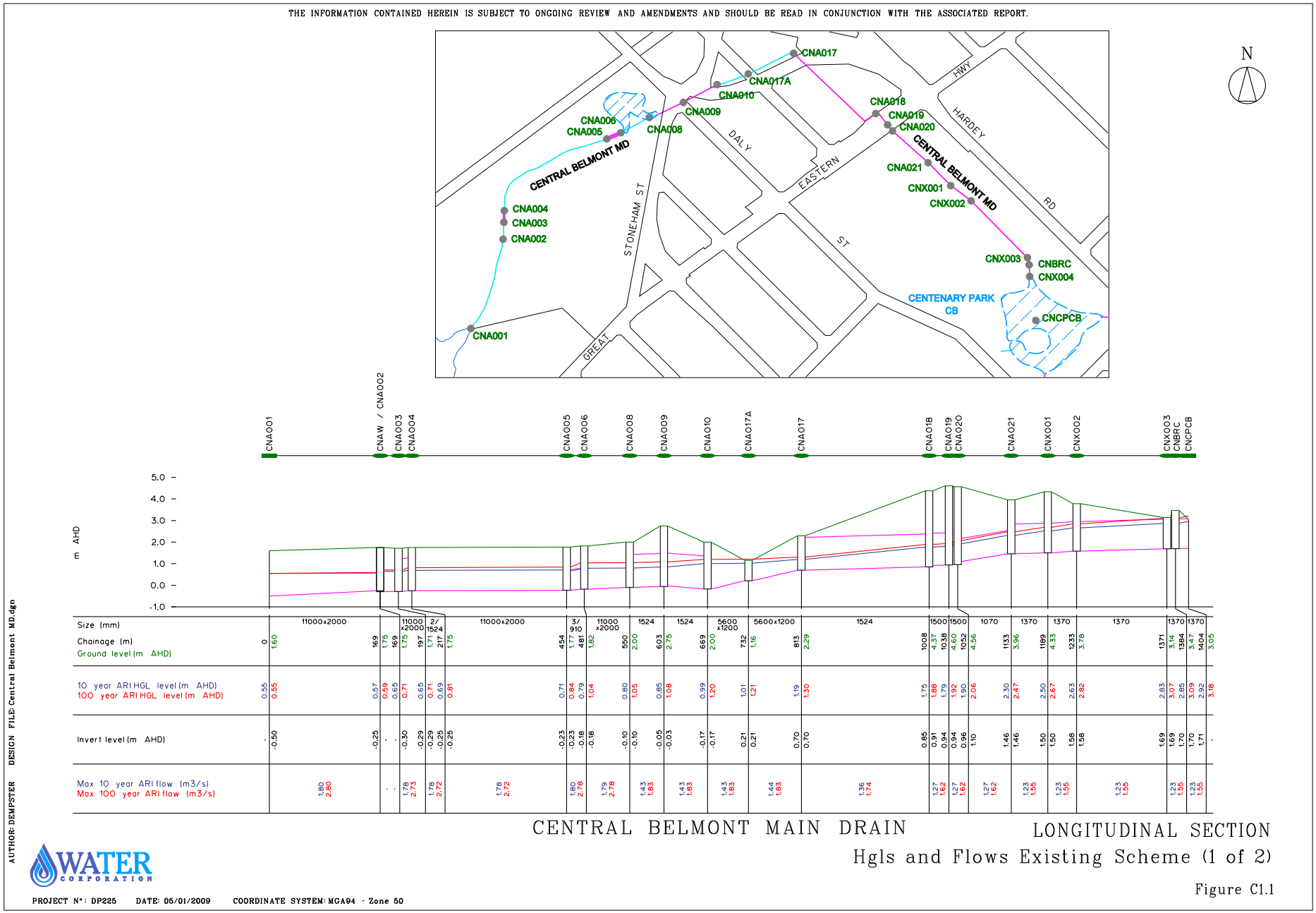
Bureau of Meteorology (BoM) 2021a, Climate Data Online, viewed 1 December 2021, Available from, <http://www.bom.gov.au/water/designRainfalls/revised-ifd/>.

Bureau of Meteorology (BoM) 2021b, Design Rainfall Data System (2016), viewed 1 December 2021, Available from, <http://www.bom.gov.au/water/designRainfalls/revised-ifd/>.

# Appendix E

Central Belmont Main Drain Water Corporation


ASCOT
REDCLIFFE
BELMONT
BELMONT (C)
CENTRAL BELMONT MD
CENTRAL BELMONT MD
MOREING ST CB
CENTENARY PARK CB
DURBAN ST BD
HUBERT ST BD
Swan River
GRAND STAND RD
HARDEY
EPSOM
TONKIN HWY
HWY
EASTERN
CHESTFIELD ST
KEYMER ST
BELGRAVIA
DALY
RD
ST
GREAT
ABERNETHY
BELMONT
AV
ALEXANDER
SYDENHAM
N
LEGEND
Catchment boundary
W.C. piped drain
W.C. open drain
L.A. drain
W.C. compensating basin
L.A. sump
COORDINATE SYSTEM: GDA 1994 MGA Zone 50
THE INFORMATION CONTAINED HEREIN IS SUBJECT TO ONGOING REVIEW AND AMENDMENTS AND SHOULD BE READ IN CONJUNCTION WITH THE ASSOCIATED REPORT.
100 0 100 200 300
Meters
Midland
Perth
Fremantle
PROJECT No: DP225
AUTHOR: DEMPSTOO
GROUP: IPD - Spatial Systems
DATE: 23-Oct-2008
DOCUMENT: locality4ga
WATER CORPORATION
Locality
Figure 1.1


THE INFORMATION CONTAINED HEREIN IS SUBJECT TO ONGOING REVIEW AND AMENDMENTS AND SHOULD BE READ IN CONJUNCTION WITH THE ASSOCIATED REPORT.
N
CNA017
CNA017A
CNA010
CNA009
CNA018
CNA019
CNA020
CNA021
CNX001
CNX002
CNX003
CNBRC
CNX004
CNCPCB
CENTENARY PARK
CB
CNA006
CNA005
CNA008
CNA004
CNA003
CNA002
CNA001
CENTRAL BELMONT MD
STONEHAM ST
DALY
EASTERN
HARDEY
HWY
RD
ST
GREAT
m AHD
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
Size (mm)
Chainage (m)
Ground level (m AHD)
10 year ARI HGL level (m AHD)
100 year ARI HGL level (m AHD)
Invert level (m AHD)
Max 10 year ARI flow (m3/s)
Max 100 year ARI flow (m3/s)
CENTRAL BELMONT MAIN DRAIN
LONGITUDINAL SECTION
Hgls and Flows Existing Scheme (1 of 2)
Figure C1.1
AUTHOR: DEMPSTER DESIGN FILE: Central Belmont MD.dgn
PROJECT N°: DP225 DATE: 05/01/2009 COORDINATE SYSTEM: MGA94 - Zone 50

# ATTACHMENT 7

Engineering Servicing Report


TABEC
Civil Engineering Consultants
ASCOT RACECOURSE
Engineering Infrastructure Report
June 2024

**CLIENT:** **PERTH RACING C/O DAVISON ADVISORY**

**PROJECT:** **ASCOT RACECOURSE – LOT 9002 GRANDSTAND ROAD, ASCOT**

**TITLE:** **ENGINEERING INFRASTRUCTURE REPORT**

| **DOCUMENT REVIEW** | | | | |
|---|---|---|---|---|
| Revision | Date Issued | Written By | Reviewed By | Approved By |
| REV A | 5/06/2024 | J. ZIELINSKI | B. SMITH | B. SMITH |
| REV 0 | 4/07/2024 | J. ZIELINSKI | B. SMITH | B. SMITH |
| | | | | |

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# 1 INTRODUCTION

This report has been prepared by TABEC Pty Ltd to provide broad servicing and infrastructure advice for the Ascot Racecourse and surrounding sites located at Lot 9002 Grandstand Road, Ascot.

The report provides civil engineering advice on the capability and future requirements of the development plan area to support the proposed residential and commercial land uses and the civil engineering influences on the development form. This report has been based on the civil engineering aspects, including earthworks, roads, drainage, wastewater and utility services required to support the development.

The investigation and preparation of the report are based on preliminary advice from the various service Authorities, desktop reviews and site investigations where appropriate. The report is supported by additional consultants and their inputs which are listed in the references. The information is current as of June 2024 and is subject to change as development proceeds around the subject land.

Figure 1 illustrates the location of the site, identified on the aerial image.




Figure 1 – Site Location and Aerial Image (2024 MNG Access)

## 2 THE STUDY AREA

The Ascot Racecourse is situated within the City of Belmont and is located in the proximity of Grandstand Road, Resolution Drive, Matheson Road, Ennis Place and the Swan River. The existing racecourse and its surrounding facilities are currently operational.

The subject site has been split into five precincts to assist with differentiating the various proposed uses across the lots. TABEC's understanding of these five precincts has been included below:




Figure 2 - Preliminary Structure Plan (Rowe Group Design)

| | |
|---|---|
| Precinct A | • Retirement Living Village/Mixed Use – Apartments and a café (300m2)<br>• 3 buildings, which will cater for a total of 330-390 dwellings. |
| Precinct B | • Racecourse Administration Office and Entertainment (No change to current zoning)<br>• Office space – 680m2 NLA<br>• Upper floor will be hospitality venue – 1000m2 in size |
| Precinct C | • Racecourse and on-course stabling facility (No change to current zoning)<br>• Existing Racecourse to remain<br>• 3 new on-course stabling complexes providing ~400 stables |
| Precinct D | • Childcare and residential (R60)<br>• Childcare site – 2100m3 for 70-90 children.<br>• Residential development will yield ~41 lots |
| Precinct E | • Approx 3,400m² retail floorspace<br>• Approx 7000m² of non-retail commercial floorspace<br>• Equine welfare centre |

Whilst Precincts A, B and C are adjacent to the racecourse, Precinct D (Lot 452) and Precinct E are located outside of the racecourse lot 9002. Precinct D is surrounded by existing residential land use, and to the southeast, interfaces to the heritage-listed Ascot Kilns.

Precinct E is currently fragmented and consists of multiple lots and road reserve corridors. The Resolution Drive and Grandstand Rd road reserves within the subject site are not currently being utilised as public access streets, however, the existing reserve along the south boundary of the site and Lot 51 is a drainage reserve and is to remain, hence being excluded from the assembly development proposal.




Figure 3 - Precinct E Land Assembly (Rowe Group)

## 2.1 Landform / Topography

In reviewing the available Water Corporation contour information, the Ascot Racecourse Course (Lot 9002) has its lowest elevation of approximately 2mAHD at the northwest area of the site (Precinct A), which is adjacent to the Swan River and foreshore reserve. The Ascot Racecourse lot grades up to its highest elevation of approximately 7.5mAHD at the east corner of the site (Precinct C) adjacent to Matheson Road. The existing levels of Precinct C grade from this high point, down to approximately 3mAHD at the west interface near Raconteur Drive.

The existing internal surface levels of Precinct B within Lot 9002 range between 4mAHD at the south, to 2mAHD near Precinct A. Whilst no survey data is available for the adjacent road reserves, Precinct B is anticipated to be higher than the adjacent road levels at Grandstand Road, which then grades down to approximately 2mAHD towards to track.

The centre of the racetrack of Lot 9002 is generally lower than the surrounding racecourse site, with the levels and aerial imagery showing localized depressions with multiple lakes. Drawings from Evangelisti & Associates Engineering Drawings, dated 1997, show the depths of existing drainage Lake 1 (Wetland) and Lake 2 (Lined) being RL 1.0m and RL -0.75m respectively, with the top of lake water level ranging from RL 0.4m and 2.1m. The third existing lake does not serve a drainage purpose but serves as a source of irrigation water, with this overtopping into the drainage lakes at a top of water level of 3.1mAHD.

The Swan River Foreshore Reserve is located along the northern boundary of Lot 9002, and the levels steeply grade away from the track edge from approximately 3mAHD to 0mAHD at the northern boundary.

In reviewing contour information available from Water Corporation at Lot 452 Grandstand Road (Precinct D), the existing levels increase from 3.0mAHD to approximately 4.0mAHD closer to the centre of the lot at the existing building location, with the surrounding road reserve levels ranging between 2.5mAHD and 3mAHD. This site currently has existing mature trees and shrubs located across the Lot.

Fragmented areas of Precinct E have approximate levels grading from 4mAHD near the east at Raconteur Drive entry, down to approximately 2mAHD at the west. The site is generally flat with some trees and vegetation, however, there is an existing swale within the reserve south of the site along Resolution Drive with its swale base closer to 1.0mAHD. The perimeter of this swale is currently fenced onsite.

Contours of the site have been included below in Figure 4.

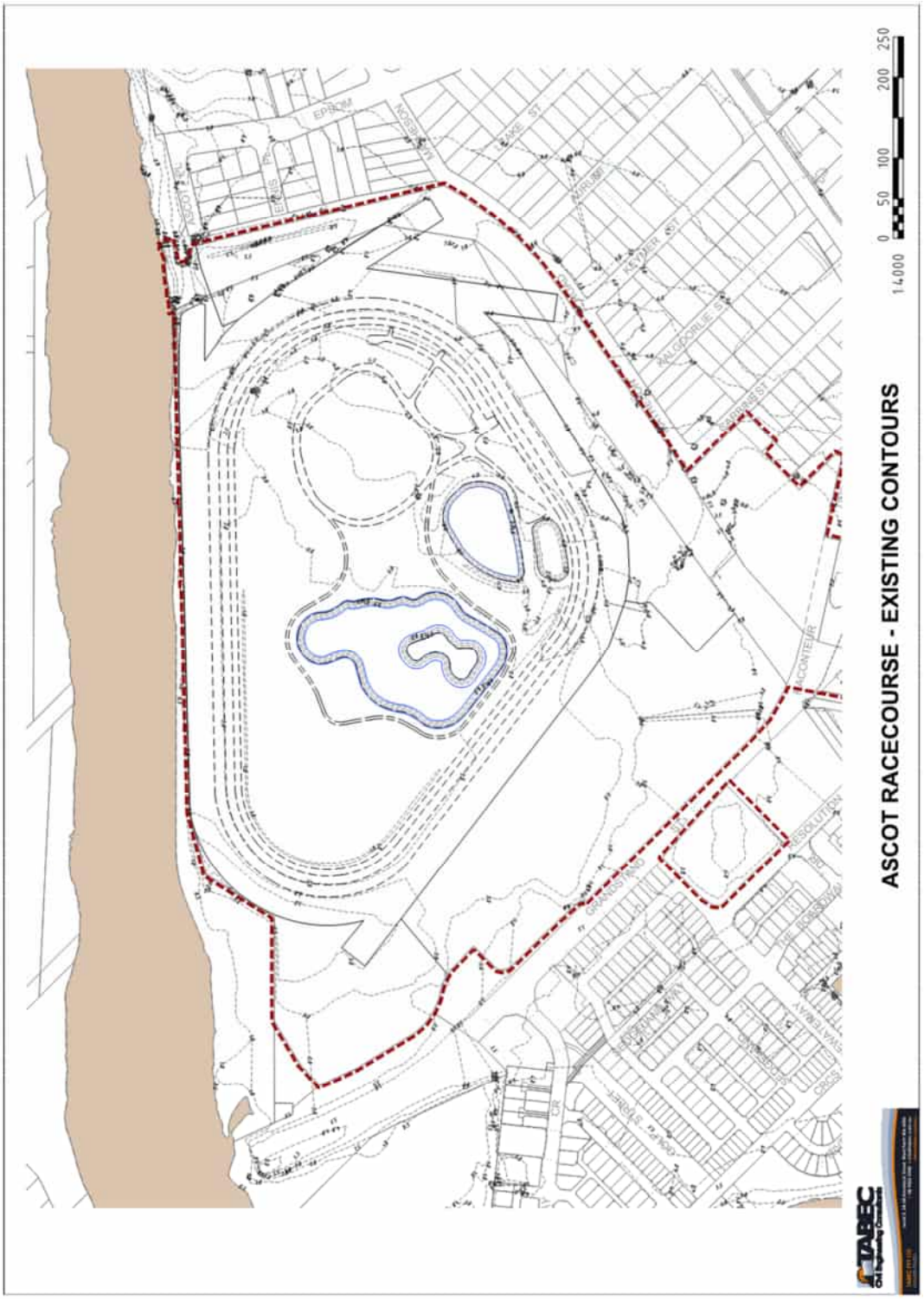



Figure 4 – Existing ground contours (TABEC 2024)

## 2.2 Ground Conditions and Ground Water

Geology mapping for the area has been identified as Pinjarra System, with poorly drained coastal plains and variable alluvial and aeolian soils.

Generally, the historical maximum groundwater contours are published by the Department of Water and Environment Regulation (DWER). The Golden Gateway Local Structure Plan Draft document (Essential Environmental 2018) shows maximum groundwater level (MGL) contours ranging from approximately 5mAHD located at the southeast area of the site, and generally fall to approximately 0.5mAHD along the Swan River and northwest of the site.

It is anticipated that there may be insufficient clearance above the published groundwater contours to development levels, and additional fill may be required to satisfy minimum groundwater clearance of 1.2m above MGL at Precinct A, Precinct D and Precinct E for residential and commercial purposes. This would be subject to further investigation on final development requirements and land uses.

Flood levels due to the Swan River have been previously investigated by DWER, with online floodplain mapping indicating flood levels in proximity to the Swan River at 2.8mAHD. All lots must have a minimum 500mm elevation above this Swan River flood level and a minimum of 300mm clearance above the 1% AEP top of water level of drainage basins.

Further geotechnical investigations have been undertaken across Precinct A, C and Precinct D to better understand the subsurface soil and groundwater conditions across the various sites, with this summarised below.

Precinct A

Douglas Partners carried out a site geotechnical investigation at Precinct A in January 2024 (Report reference 219164.03). From the field works, the subsurface conditions of this site were found to comprise uncontrolled fill, made up of sandy gravel material, loose sands, and clay, with the inclusion of foreign unsuitable materials such as brick, glass, scrap metals, concrete, rubber, pipes, and potential asbestos containing materials. In some locations, this uncontrolled fill extended below the groundwater level.

Natural materials found at the site underneath the uncontrolled fill, ranged from clayey sand, between depths of 4.2m to 14.9m, and sandy soils between 10.5m and 14.9m. Both materials ranged from very soft or loose, to dense and stiff.

Given the shallow ground conditions at Precinct A consisting of uncontrolled fill and deep loose and soft soils, the current site classification is Class P. Douglas Partners have therefore suggested shallow footings are not suitable and have anticipated a piled foundation system into deeper insitu soils would be necessary.

Groundwater levels at various locations within Precinct A have been measured over September, October and November 2023. From the assessment, the groundwater level ranged from -0.2m AHD (November) at the centre of the site, to 1.3m AHD (September) located at the site's southern boundary. The groundwater fluctuated inconsistently throughout the site, and these findings are not a clear representation of the maximum groundwater level.

Precinct B

Whilst no geotechnical investigation has been undertaken for Precinct B, the underlying material is anticipated to be consistent with those underlying ground conditions found at Precinct A and Precinct C. Based on adjacent geotechnical investigations at nearby Precincts, it could be anticipated that silty sand,

clay and clayey sands existing beneath surface level. Further geotechnical assessment will be required to ensure adequate treatment of ground conditions before further development within Precinct B, and to check conditions relating to uncontrolled fill, which is evident at Precinct A and Precinct C.

Precinct C

Douglas Partners carried out a site geotechnical assessment at Precinct C in December 2023 (Report reference 219164.02) for the proposed stables at Ascot Racecourse.

From the investigation, ground conditions differ depending on the test location within the site. Generally, uncontrolled fill was uncovered at most test locations with this depth ranging between 0.25m and 2.5m. Some test locations also observed unsuitable foreign materials such as plastic wrap, concrete and brick fragments. Sand and silty-sand can be uncovered below the uncontrolled fill to a depth of 2.5m, along with clayey sand and clay.

The uncontrolled material across Precinct C has led Douglas Partners to suggest piled foundations, with the site Classification currently Class P. Details of piled foundations can be found within the geotechnical report.

Notwithstanding, the site can be re-classified to Class S, provided that the site preparation is undertaken with the geotechnical recommendations. Areas of over-excavation to achieve Class S may uncover groundwater, and therefore dewatering may be required for earthworks and site preparation.

Groundwater levels at Precinct C have been measured onsite in September 2023, with the depth of groundwater fluctuating at each location. From the assessment, the groundwater level ranged considerably from 0.4m AHD (MW51) at the site near Aurum Street, to 5.6m AHD (BH39) located approximately 100m from the MW51 test pit, and therefore does not provide a clear and consistent overview of the groundwater throughout this area.

Precinct D

Galt Geotechnics carried out a site geotechnical assessment at Precinct D Lot 452 Resolution Drive, in March 2024 (REF WAG230750-01 002 R1) for the proposed residential and commercial development site.

The subsurface soil profile from the testing found sand fill to a depth of 0.4m to 0.9m depth, over sandy clay and clay material. At boreholes BH03, and BH04, layers of silty sand and clayey sand up to 0.7m thick extending to 1.2m depths were also found.

The site classification is considered Class S, where no less than 0.7m of sand and clayey sand layers are present over insitu clay and sandy clay.

Groundwater at the site in February 2024 was found to be approximately 1.9m to 3.03m depth below surface. Galt has suggested there is perched ground water between 2.7mAHD and 2.9mAHD. Whilst that the design level be 0.5m above DWER flood level events, which is a finished level of 3.4m AHD, adequate clearance would still need to be managed to groundwater.

Precinct E

No geotechnical investigation has been undertaken within Precinct E to confirm underlying soil conditions; however, it is anticipated ground conditions would be consistent with the natural material from the geotechnical investigations, and geological mapping.

## 2.3 Acid Sulfate Soils

The Ascot Racecourse and surrounding land are mapped as having a known high risk of encountering potential acid sulfate soils. As indicated in Figure 5, there is a reference to higher-risk areas in red within the site at depths within 3m of the surface. No acid sulfate soils were discovered during geotechnical testing at Precincts A, Precinct C, or Precinct D.

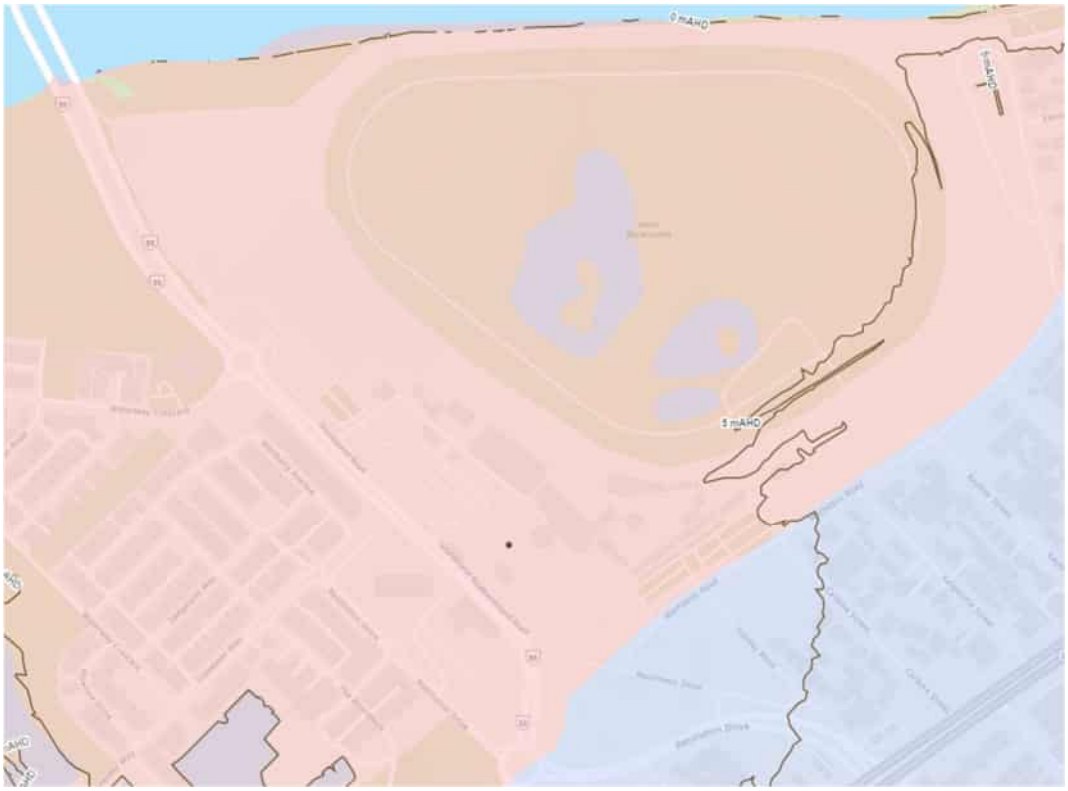


Figure 5 – MNG Access - Acid Sulfate Soils Risk Mapping (2024)

# 3 SITEWORKS

Siteworks for the development generally comprise the clearing of existing vegetation, stripping of topsoil and pavement, and the earth working of the existing ground surface to facilitate a required form of development.

The siteworks at Precinct A will be subject to the footing requirements due to the existing loose soils and uncontrolled fill beneath the surface. Due to groundwater conditions, remediation works may be difficult, therefore a pile foundation system has been suggested within the geotechnical report which may remove the requirement to remove underlaying uncontrolled fill. However, due to the settlement that may occur due to the soft and loose materials, it is anticipated that surcharging of the site may be necessary to reduce differential ground settlement, which could be carried out through temporary fill.

To achieve Class S at Precinct C, which will allow light-loaded structures to be constructed with shallow footings, site preparation will include 0.15m topsoil stripping and grubbing of existing vegetation, and over-excavation earthworks to achieve a minimum of 0.8m of sand separation above reactive clayey soils.

It is also important that there are no loose underlying soils to a depth not less than 1.5m below the foundation level to avoid settlement of the development.

## 3.1 Demolition and Remediation

Precinct A is free from structures and therefore demolition works are not anticipated to be required.

Depending on the final scope for Precinct B, Precinct C and Precinct E, demolition of existing car parking pavement and redundant asphalt roads within these areas may be required.

The demolition of the existing buildings, pavements and associated infrastructure within Precinct D will be required to enable the proposed residential and commercial development at this location. Whilst no asbestos was detected in any of the geotechnical samples at Precinct D, it should be noted that the adjacent northern road reserve, Northerly Ave, has been identified as remediated for restricted use, which may suggest potential asbestos-impacted fill below the surface.

# 4 EARTHWORKS

The preliminary earthwork pad levels have been reviewed by TABEC to demonstrate how the proposed development levels may be accommodated, given constraints due to groundwater, flooding and interface levels. Generally, earthworking of all proposed precincts will be required, whether this is in the form of remediation works due to subsurface soils or import fill to lift the development levels. Each precinct site will require site preparation, potential demolition, and stripping of existing pavements, vegetation and topsoil, after which the exposed ground will be proof compacted.

Due to existing groundwater hydrology and flood levels, which are discussed further in the LWMS prepared by Emerge (EP23-109, May 2024), the report recommends:

- Surface-based infiltration structures have a minimum 300mm clearance above the maximum groundwater level (MGL)
- Habitable floor levels should have a clearance to a maximum groundwater level (MGL) of at least 1.2m
- Finished floor levels must have a minimum 300mm clearance above the 1% AEP event, top of water level at storage basins.
- All lots to have a minimum of 500mm clearance above the 1% AEP flood level in the Swan River.

These drainage requirements and minimum flood elevation requirements will likely govern the finished floor-level requirements of the five Precincts. TABEC concept earthworks levels have been provided in Figure 6, with these levels to be refined during detailed design.

Precinct A

It is anticipated that the existing surface levels of Precinct A will be lifted to accommodate clearance to flooding, with the minimum finished levels at this location being approximately 3.2mAHD. With existing surface levels surrounding Precinct A being in the order of 2mAHD, the development will require further consideration on how the additional ~1-2m level difference may be accommodated and whether retaining walls are required, or if there is sufficient area to enable battering. Precinct A has a road reserve on the western boundary, and foreshore on the northern boundary, so any batter encroachment into these lots will require further discussion and approval with the relevant authorities.

Precinct B

As existing levels within Precinct B currently look to be conveying overland drainage towards the racecourse, any changes in levels are only anticipated to be those to lift new offices and hospitality levels. In Figure 6, TABEC has nominated the future building floor level at RL3.2 to satisfy flood levels.

Precinct C

Finished development levels at Precinct C will vary as it will be subject to tying into the existing road network at Raconteur Drive, Matheson Road, Ennis Place and the existing levels at the racecourse. Given the purposes of Precinct C, steep grades and level differences/retaining will likely need to be designed out to serve its purposes as on-course stabling and to facilitate horse movements.

It is anticipated that the future stable finish levels will be at approximately 4m AHD at the west and grade up to 6m AHD to the east in the proximity of Keymer Road, which is consistent with the grade of Matheson Road. These levels also tie in with the existing levels of the internal racecourse.

The private internal access road between the proposed stables and Matheson Road will be marginally lower than the stables floor levels by approximately 200mm, and grade consistently with the stable level steps.

The proposed stables to the east near Leake Street will need to be a minimum of 6.9m AHD, which will allow for internal sewer servicing of the site, and also provide clearance to groundwater levels. To tie in with the existing road reserve on Matheson Road, it is expected that these stables and the internal road will grade to approximately 7.4m AHD to the east.

The northeast development area of Precinct C adjacent to an existing reserve, will match in with existing interface levels. To satisfy sewer servicing and flood levels, it is anticipated that the level of this area of Precinct C will be approximately 6.1m AHD.

Precinct D

It is anticipated that additional sand fill will be required for Precinct D ensure sufficient separation for flood levels, and ground water levels. Precinct D will need to satisfy as a minimum habitable floor level of 3.2mAHD, however, the geotechnical investigation by GALT (February 2024) has identified perched ground water between 2.7mAHD and 2.9mAHD. Emerge Associates have recommended 1.2m clearance above maximum ground water level (MGL) to finish floor level which may increase the habitable floor level higher than the flooding requirements to approximately 4.0m AHD.

Further review of these finish levels will be required on further investigation of the maximum ground water, and drainage and subsoil drainage design which would ultimately determine the finish development levels.

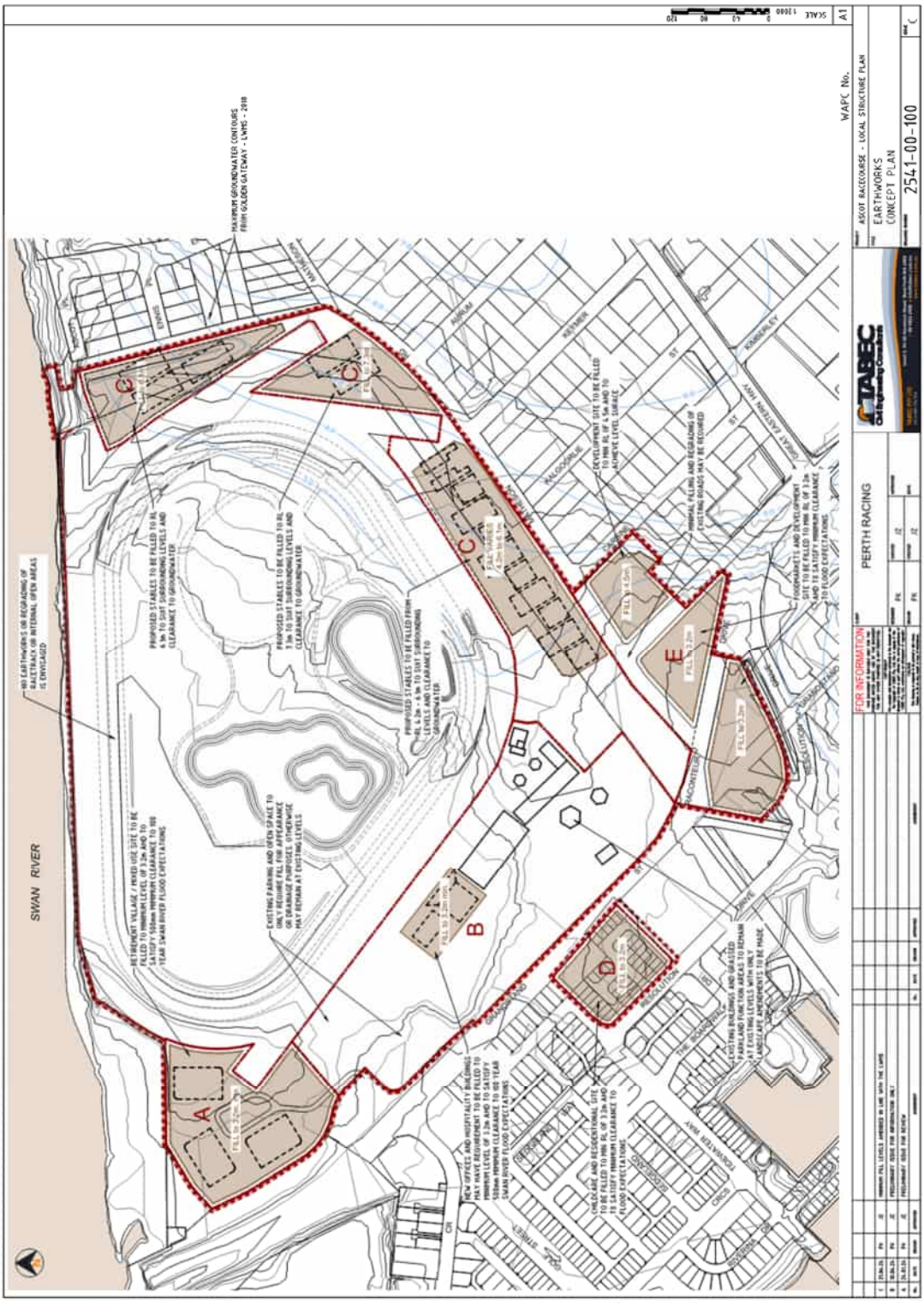



Figure 6 – TABEC Concept Earthwork levels for precincts (June 2024)

# 5 ROADS AND TRAFFIC

## 5.1 Existing Road Network

Surrounding Lot 9002 and Precincts A, B and C, are existing roads that are suitable to provide future access for these proposed developments. Lot 9002 is surrounded by Grandstand Road (Distributor A), Raconteur Drive (Access Road) and Matheson Road (Access Road). The Main Roads WA (MRWA) road database shown in Figure 7, indicates that Grandstand Road is operated and maintained by the MRWA with a speed limit of 60km/hr, with the other access roads being controlled by the City of Belmont. Whilst the east boundary of the site is located against a road reserve, no road currently exists with this being a sand/limestone track.

The existing roundabout at Grandstand Road and Waterway Cres currently provides access to Precincts A and B, and the existing car parks. There is also gated access from Grandstand Drive into Precinct B car parks at three other locations before reaching the Raconteur Drive intersection.

Matheson Road will remain as it currently is, and serve as the primary access for Precinct C, however, access to the northeast stables will be solely from Ennis Place as the only sealed road entry to this location.

Lot 100, located in Precinct E, currently has multiple private roads through this site. Raconteur Drive off Grandstand Road can provide vehicle access through to Resolution Drive, however this does have vehicle gates to restrict access at both boundaries. The intersection of Grandstand Road and Raconteur Drive is currently a left in, left out, however, does allow a right turn in from vehicles travelling north via a split in the median island. Two other existing roads within Lot 100 are fenced to reduce unauthorised access, with these being extensions of Matheson Road and Hardey Road.

Precinct D is located between Grandstand Road and Resolution Drive (Local Distributor), with access to the existing admin building being located at both Grandstand Road as a left in, left out, or via Resolution Drive. The existing median island on Grandstand Road restricts those vehicles travelling south from turning onto the car park.




Figure 7 – Main Roads WA GIS Road Hierarchy (MRWA 2024)

The land assembly at Precinct E as per Figure 3, will require further consideration for access to future commercial development. Resolution Drive has a raised centre median between the roundabout to Great Eastern Highway which currently restricts vehicle movements. This section of Resolution Drive is a Distributor A road and is controlled by Main Roads WA, with direct development access onto this road requiring MRWA approval.

## 6 STORMWATER DRAINAGE

Details of the stormwater and drainage strategy, flooding, and water treatments have been detailed within the LWMS prepared by Emerge Associates (EP23-109, 2024).

There are predominantly two significant drainage systems to convey stormwater within the LSP area to the Swan River. The first is the Central Belmont Main Drain which is managed by Water Corporation, and the second is the local drainage system located near Matheson Road, which conveys water from the surrounding road reserves into the lake system at the centre of the race course via a 900mm pipe.

The lakes system is interconnected, with flows discharging from this into the Swan River via a 450mm and 375mm concrete pipe at peak water level within the wetland lake of 0.53mAHD (Evangelisti & Associate 1997). The outlet is controlled to restrict tidal influence on the internal lake systems.

Whilst Grandstand Road has a pit and pipe network consisting of 450mm and 525mm concrete pipes, Precinct A does not currently have access to a stormwater connection, and as part of future development, it would be anticipated that drainage from this site would need to be treated and captured within Precinct A and the racecourse. Infiltration rates at Precinct A are low due to existing soils, however, with the increased level of the site and import fill to achieve flood level requirements, this may allow for some storage and bio-retention swale to infiltrate at source.

Precinct B currently captures and infiltrates water at source, with overland flow being graded towards the existing track. There was no evidence of Precinct B overflowing into the existing road reserve at Grandstand Road.

Consistent with the current drainage design onsite, the proposed stables and car park at Precinct C are anticipated to be a combination of infiltration at source where levels and soil conditions allow, and discharge to the lake system. The geotechnical assessment (Douglas Partners 2024) suggests this site is unsuitable for on-site stormwater disposal due to the shallow clay which may be impervious for drainage purposes. It could be expected that this clayey sub-surface will pond, and water will move laterally on this surface. Further investigation is required as part of the detailed design on the infiltration opportunities and discharge locations, and requirements for bio-retention swales to treat stormwater. The proposed car parks to the southwest of Precinct C are likely to flow towards the Water Corporation drainage system in Precinct E due to the low levels of the area being unable to convey stormwater to the lakes.

Precinct E, adjacent to Water Corporation's Belmont Main Drain, is anticipated to be treated via bio-retention swale before overflowing to a proposed detention basin storage for the 1% AEP event. Overflow from this basin will be into the Water Corporation's drainage system. (Emerge Associates 2024)

Whilst Precinct D has an existing 525mm and 300mm drainage pipe network along Resolution Drive, it is anticipated that there will be stormwater storage and infiltration at the site, with a 1% AEP event discharging into the local drainage network on Resolution Drive. Further investigation will be required during design to determine the final location for stormwater detention before entering Resolution Drive, as no POS has been identified for Precinct D.

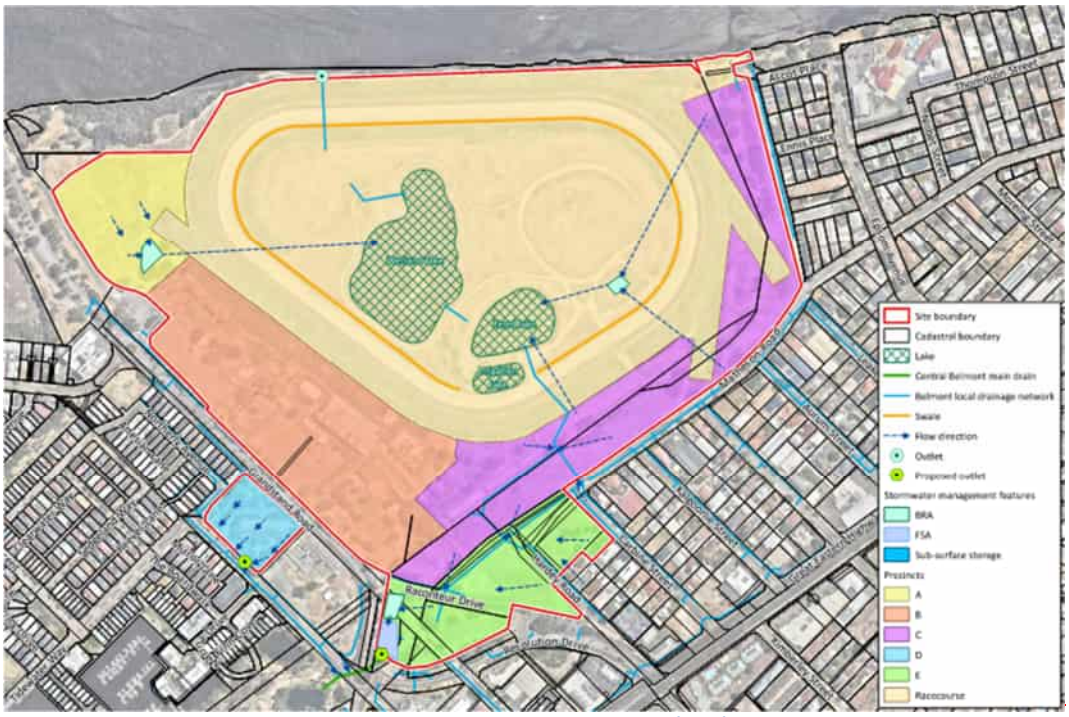



Figure 8 – Emerge Associates - Concept Drainage Catchments and Lake System (2024)

## 7 WASTEWATER

Water Corporation planning information was requested for the five precincts at Ascot Racecourse.

Precinct A

Precinct A is located off the existing Grandstand Service Road in proximity to the Waterway Cres roundabout. Whilst there is an existing sewer in proximity to Precinct A located at Waterway Cres, it is anticipated that this existing pipe network will not have sufficient cover below finish ground levels to extend from its current location, across Grandstand Road, and into the development. Therefore, alternative options have needed to be considered for wastewater servicing.

The first possible option would be to convey wastewater away from Precinct A and the future aged care site to the existing wastewater pump station to the east located on Ascot Place. This would require a private pump station within Precinct A, and approximately 950m of DN100 pressure main through the Ascot Racecourse lot adjacent to the Swan River and into a new gravity pipe system which would then discharge into the pump station. Given the pressure main would be crossing lot boundaries between Precinct A, and Ascot Racecourse, this would need to be reviewed further with Water Corporation to ensure the proposal is acceptable, and that the relevant easements/agreements are in place to protect these new sewer assets.

Alternatively, there is an opportunity to extend the 225mm sewer up Grandstand Road from the Marina Drive/Resolution Drive roundabout. This existing sewer is at RL-2.09m, and therefore should have sufficient depth to be extended and still service Precinct A if the development is earthworked higher closer to approximately 4m AHD. The connection to this wastewater catchment would trigger downstream upgrades due to capacity issues, with the existing 225mm sewer on Great Eastern Highway requiring an upgrade to a 300mm sewer as per Figure 10.




Figure 9 – Existing Gravity Wastewater Reticulation Services (Water Corporation)

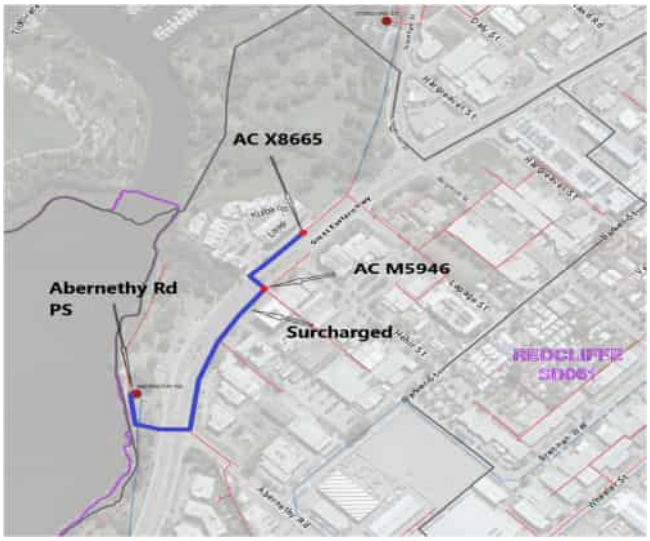



Figure 10 – Existing Gravity Wastewater Reticulation Services (Water Corporation)

Precinct B

In reviewing existing internal sewer plumbing for Lot 9002 (Ascot Racecourse), there is an existing sewer connection located at Raconteur Drive, at Access Chamber T3030. The sewer connection at this location currently services Precinct B, and a portion of the proposed Precinct C area. Whilst these two precincts are currently connected to the sewer at Raconteur Drive, Water Corporation has advised that there is no record of this connection, and the wastewater flows from this precinct have not been included in their planning assumptions. If wastewater flows from Precincts B and C are substantially increasing, further discussions are likely required to identify the increased flow of wastewater anticipated from the new developments.

According to the sewer flimsy as-cons acquired from Building and Energy Western Australia, the private sewer pipework from Precinct B to the existing Water Corporation main is located partially through Precinct E, Lots 13, and Lot 100 as per Figure 12. At the time of this report, all three lots are owned by the same entity. If the Precinct E land assembly proceeds and/or ownership of any of these lots is transferred, it may be necessary to divert the internal plumbing out of Lot 100 or Lot 13. In this instance, the Water Corporation sewer main may need to be extended to provide a sewer service connection that does not traverse other private lots.

Precinct C

Precinct C for the proposed on-course stabling facilities, will cover the outer edge of the Ascot Racecourse, from Raconteur Drive through to Ascot Place near the existing waste water pump station site. Due to this distance, multiple sewer connections will be required to adequately service the site as shown on Figure 11, with the service boundaries being subject to detailed design and finish levels.

Subject to Water Corporation's acceptance of private sewer crossing lot boundaries with the same ownership and final levels, the west portion of Precinct C (C1) between Kalgoorlie Street and Raconteur Drive will likely be conveyed to the west to the existing internal sewer. This is due to the existing levels of the site and Matheson Road, which generally grade lower as the site gets closer to Raconteur Drive.

There is an existing sewer connection available from Kalgoorlie Street with a connection invert level of 3.48m AHD, which is anticipated to service C2 with sufficient cover to finish levels.

New sewer lot connections will be required for both C3 and C4 areas within Precinct C, with the sewer invert levels into the site anticipated to be in the order of 3.30m AHD and 2.3m AHD respectively. The existing levels within C3 grade from approximately 6.5m to 7.2m AHD at the eastern boundary of C3. The C4 area has an existing surface level of approximately 5.6m AHD, which will likely require sand structural fill to approximately 6.1mAHD to be serviced with sewer.




Figure 11 – Existing Gravity Wastewater Reticulation Services (Water Corporation)

Precinct D

There is an existing sewer main located on the southern corner of Precinct D, located near the intersection of Marina Drive and Resolution Drive. Water Corporation has advised that a sewer connection to this existing 225mm PVC main is possible for the proposed residential development. The levels of this existing main are at an invert level -2.09mAHD and has sufficient depth to service the site.

The existing sewer junction to Lot 452 is anticipated to service the existing building within the lot, and will likely require removal as part of the development of Precinct D.

Precinct E

There is an existing 225mm PVC sewer south of Precinct E, located along Resolution Drive which ranges from approximately -0.02m AHD to 0.49m AHD at access chamber T3030 located at Raconteur Drive Link. The existing sewer main continuing northeast from this access chamber is located within Lot 100 which is private land. Whilst no easement currently exists over this portion of the Water Corporation pipe, it could be anticipated that this would be required as part of future amalgamation or development in the future.

The depth of this existing sewer should be sufficient to service the future development at Precinct E subject to the final lot layout allowing access to this existing main. As seen from Figure 12, Lots 51 and Lot 100 can be serviced from the existing main, however, the existing drainage reserve R45069 will require consideration when extending the sewer to service Lot 51.

The wastewater servicing of Lot 1 will require further investigation, but the Water Corporation sewer main could likely need to be extended to this site, possibly from Lot 52 at Resolution Drive.

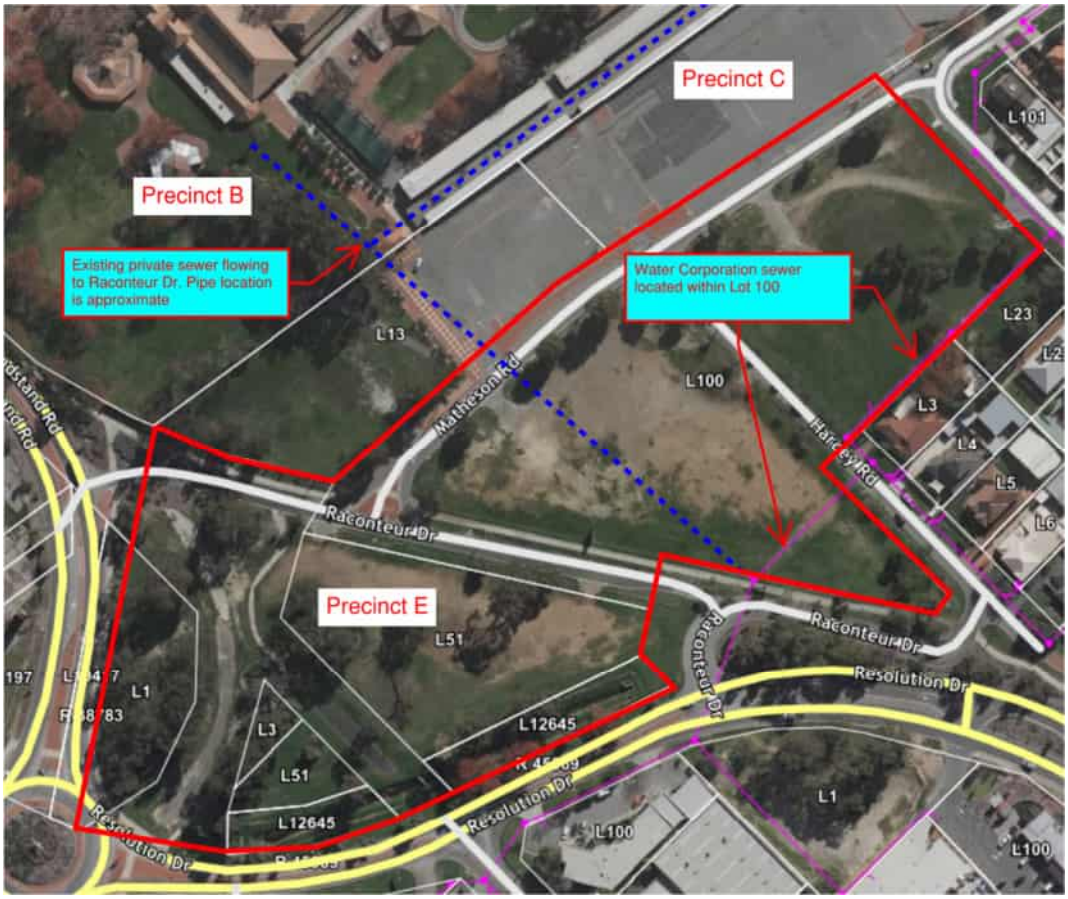



Figure 12 – Existing Gravity Wastewater Reticulation Services (Water Corporation)

Notwithstanding the advice outlined above, if the developer intends to upgrade or extend the sewer reticulation for any reason, they will be responsible for funding reticulation extensions to service the proposed lot with a gravity connection, which shall be designed and constructed to Water Corporation specifications. Standard Water Corporation infrastructure contributions will apply on a per-lot basis.

## 8 WATER SUPPLY

Advice was sought from Water Corporation regarding the established water reticulation system within the area and if service upgrades are required for the proposed development. Water Corporation has advised that the existing water reticulation in the area may be utilised to service the proposed Precincts depending on final water usage requirements, however, it should be noted that Precincts B and C are not currently included within the current Water Corporation planning assumptions.

Precinct A and Precinct B

Depending on the potable water capacity requirements for Precinct A, the existing 200dia water main located in the western verge of Waterway Cres and Grandstand roundabout should provide adequate supply to the proposed high-density developments. This 200mm water main would need to be extended to the development site from Grandstand Road to provide supply.

According to Water Corporation's database, Precinct B has an existing 100mm diameter water main feeding into the site with a 100mm meter and multiple existing 100mm fire services. The existing water main size along Grandstand Rd is 100mm PVC, therefore, if additional water is required and the supply needs to increase, an upgrade of this existing 100mm water main would be required which would require further investigation by Water Corporation.




Figure 13 - Existing Water Mains in proximity of Precincts

Precinct C and D

Precinct C has access to an existing 100mm water main located along the south verge of Matheson Road which has been constructed of varying materials (PVC, Asbestos Concrete, Cast Iron, Steel). Access to this main is readily available, however, if greater supply is required above what the 100mm diameter pipework supplied within the area, further investigation would be required with Water Corporation to increase the size of the water main to Precinct C.

Precinct D has an existing 150mm water main on the west verge of Resolution Drive, and a 100mm main on Grandstand Road, both of these providing adequate opportunity for connection and water supply.

Precinct E

There is an existing DN915mm steel water distribution main located along the eastern verge of Grandstand Road on the 2.1m alignment which also runs through the centre of Precinct E within the existing road reserve. A smaller existing DN100mm cast iron water main also conveys potable water through Precinct E within this road reserve corridor, with these mains being built in 1949 and 1987 respectively. Depending on the final use of Precinct E, it could be expected that as part of assembling the

lots in Precinct E, the Distribution Water Main and the DN100 CI main, may need to be relocated outside of the proposed lots, and reinstalled on their ultimate alignment within remaining road reserves. If these water main assets are to remain in their current location, Water Corporation would need to accept an easement over these assets with the DN915 and 100CI mains requiring 10 and 5m easements respectively.

It is anticipated that the existing DN100 cast iron water main will be suitable for water servicing. The existing DN915 steel distribution main located on the northern verge of Grandstand Road, and through Precinct E, would not be available for connection to the proposed development.

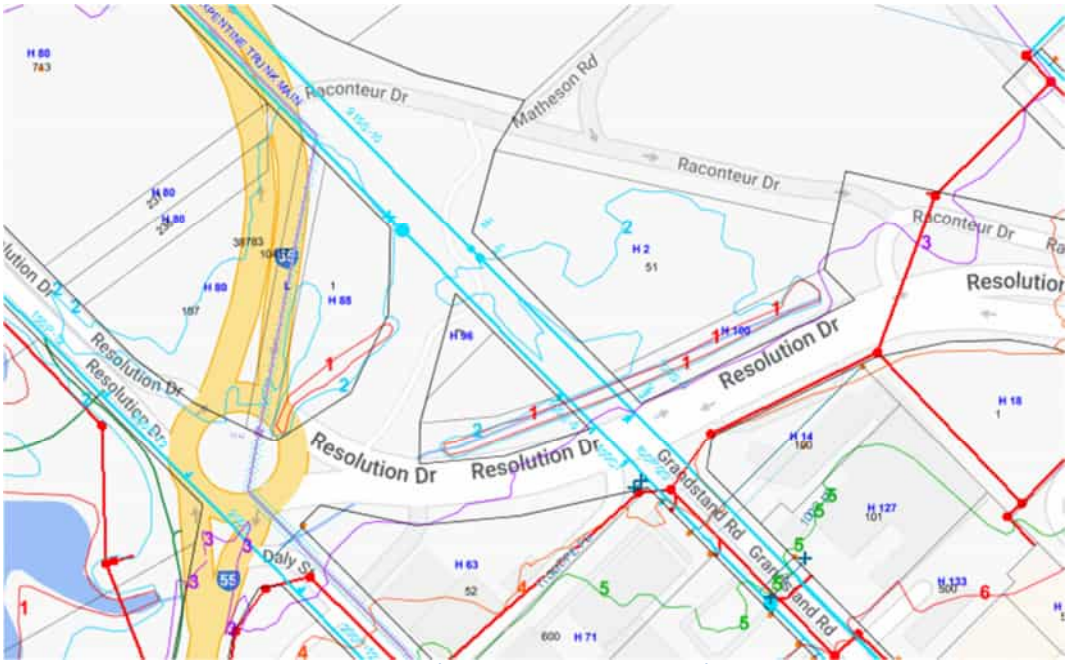



Figure 14 - Existing Water reticulation in Precinct E (Water Corporation Esinet 2024)

Whilst Water Corporation did not advise TABEC of any necessary upgrade of the old water pipe network, any modification to these existing pipes may result in the requirement to upgrade old cast iron water mains. Final upgrade requirements of the existing infrastructure will be clarified once water usage requirements are understood, and modelling has been undertaken by Water Corporation.

# 9 POWER SUPPLY

## 9.1 Power Requirements

The preliminary power requirements have been reviewed based on the proposed development at each of the precincts. It is estimated that the development equates to a total power requirement of 5.4MVA, with the new proposed developments within the precincts requiring the additional 4.2MVA. The existing developments within the precincts are estimated to be using 80% of the 1.5MVA currently available.

| Load Type | Anticipated HV infrastructure required |
|---|---|
| Precinct A | 1 x 1000kVA Transformer |
| Precinct B | **Existing** 1000kVA transformer and switchgear may be adequate<br>**Existing** 500kVA transformer located near the grassed parkland function area may be adequate |
| Precinct C | **Existing** may be adequate subject to further review. |
| Precinct D | 1 x 315kVA transformer |
| Precinct E | 2 x 1000kVA and 1 x 315kVA transformers |

The estimated load summary has been calculated as follows:

| Precinct | Development Type | Approx. sqm / No. of Units | Average kVA / sqm | Approx Total kVA | |
|---|---|---|---|---|---|
| Precinct A | Retirement Living | 390 | 3.1 | 1209 | |
| | Commercial | 300 | 140 | 42 | **1251** |
| Precinct B | Office | 680 | 140 | 95.2 | |
| | Hospitality | 1000 | 140 | 140 | **235.2** |
| Precinct C | Stables | 6400 | 10 | 64 | **64** |
| Precinct D | Childcare | 2100 | 75 | 157.5 | |
| | Residential | 41 | 4.7 | 192.7 | **350.2** |
| Precinct E | Site 1 Retail | 3400 | 140 | 476 | |
| | Site 1 Office | 2500 | 140 | 350 | |
| | Site 1 Parking | 5500 | 10 | 55 | **881** |
| | Site 2 retail | 7100 | 140 | 994 | |
| | Site 2 Parking | 3500 | 10 | 35 | **1029** |
| | Site 3 Equine | 5000 | 75 | 375 | **410** |
| **Total** | | | | **4185.4** | **kVA** |
| | | | | **5822.76** | **Amps** |

The anticipated additional power demand from the development is estimated to be in the order of 4.2MVA (4,200kVA).

## 9.2 Feeder Capacity

Western Power's (WP) Network Capacity Mapping tool indicates that the area is serviced by the Belmont Zone Substation and has more than 30MVA of power available on the network. Note that this information is unconfirmed by Western Power until such time as an application is being made to WP for connection.

To access the additional capacity in the network supplied at the Belmont Zone Substation, it is anticipated that 2 additional power feeders may need to be installed, 2.5km from the Belmont Substation Site to the development to adequately service the ultimate required supply.

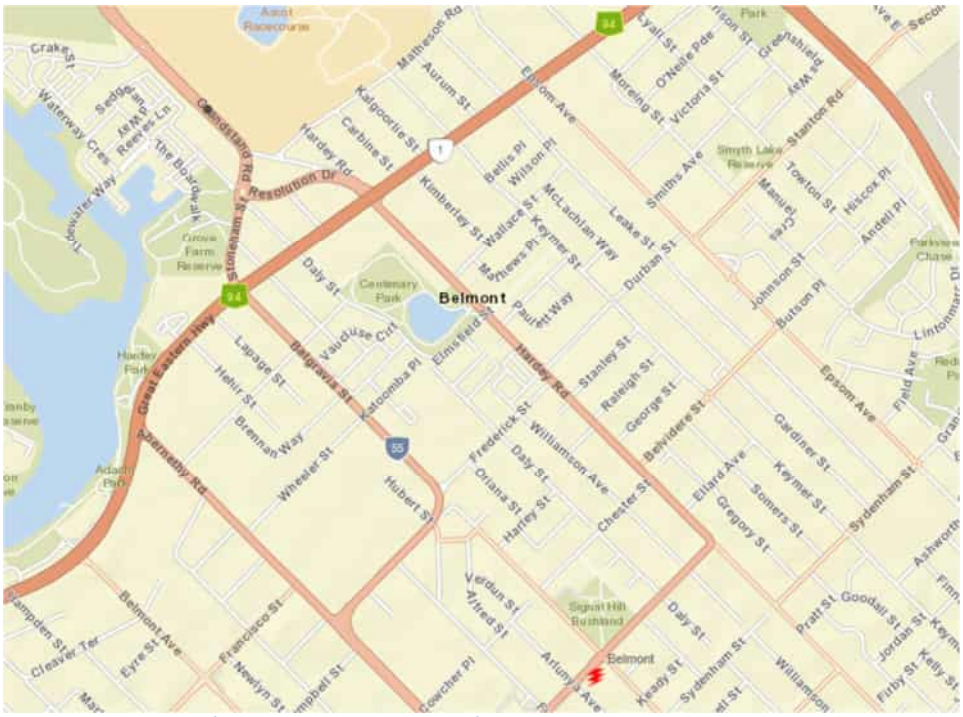



Figure 15 - WP Substation Site (Western Power Mapping 2024)

## 9.3 Existing Distribution Power Network

The Western Power Network Mapping tool (NCMT) and DBYD has indicated that there is high voltage (HV) servicing this development area. Existing 132kV overhead power is also located along Matheson Road, and along the east of Lot 9002.

There are also high voltage distribution cables surrounding the sites, with these being overhead power along Matheson Road, which transitions to underground at Resolution Drive, and north up Grandstand Road as seen within Figure 16.

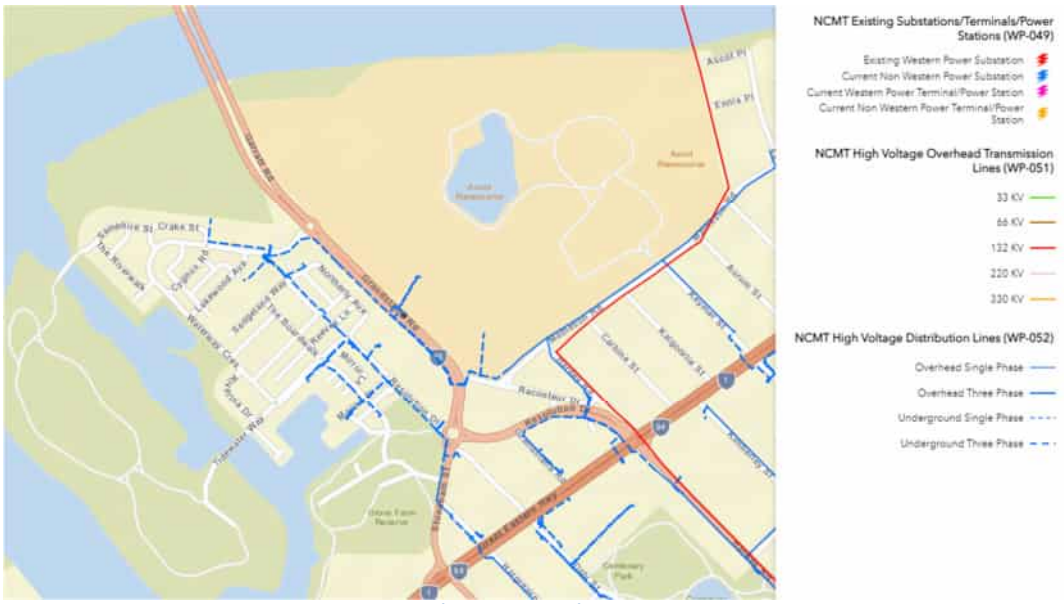



Figure 16 – NCMT Network Existing Power Services (Western Power)

## 10 COMMUNICATIONS

Ascot Racecourse is currently surrounded by NBN service in the area with FTTN Technology. It is expected with new developments or upgrades, that FTTP will be available.

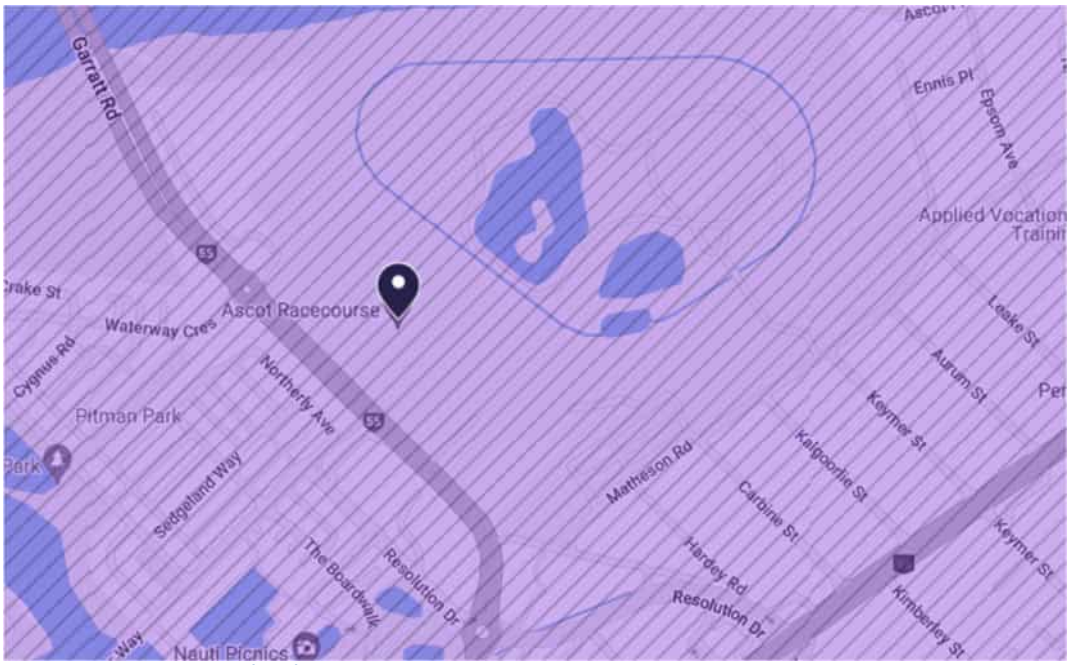



Figure 17 - NBN Rollout Map (NBN) – Fixed Line available

The Dial Before you Dig information shows Precinct D has existing Optus fibre optic assets within the site, which have been installed within the north west boundary of the lot. Precinct D also has Telstra and Vocus assets entering the lot from Grandstand Road and from Resolution Drive respectively.

Further discussion will required with the communication providers to determine whether these existing comms assets will impede the proposed development at this site, and whether relocation or removal of this asset is required.

## 11 GAS SUPPLY

There is existing medium pressure 155 PVC 1.5 ( MAOP 70kPa) gas mains located along Matheson Road and up Grandstand Road until Precinct D which are available for connection to Precinct C, Precinct D and Precinct E if required.

ATCO has completed high level modelling based on similar business connection types as those nominated developments within each precinct. The modelling was based on:

- Connection to MAOP 70kPa network
- MP Metro 25 – Severe Winter
- Full load at 350scmh (≈12000MJ/hr)
- Full connection by 2025
- Potential mains extension required for connections to Precinct A and B

Based on this modelling, the existing gas mains adjacent to Precinct D and Precinct E should be sufficient to service these residential and commercial developments.

Precinct A will require a gas mains extension to the retirement village if this development is to utilise gas, however, ATCO have not expressed any concerns with servicing capacity issues.

The supply of gas is not a WAPC subdivision condition and there is no obligation on the developer to install gas as part of the development.



Figure 18 – Existing ATCO Gas Network map (ATCO Gas)

In reviewing the Dial Before You Dig information, an existing 150 PVC gas main traverse through Precinct D, along the south east boundary. From the information available, this pipe does not look to be

operational, however, further discussions with ATCO Gas are required on whether this needs to be relocated, or removed.

## 12 CONCLUSION

Based on the infrastructure review, there does not appear to be engineering-related constraints preventing the development of the five precincts. Notwithstanding, there are a number of design issues and construction challenges to be resolved in further detail within the next phases of development.

The advice received from servicing authorities and investigations to date indicate each aspect can be resolved to support the development proposal.

## 13 RECOMMENDATIONS

Since this report is based on preliminary servicing advice and investigations, it is recommended that each Authority be kept informed as the planning progresses and concept engineering designs are refined. Communicating the proposed time frames for the precinct development is also important.

There are a number of project-related issues and challenges that require further consideration, with some of these to be assessed as part of the next phase, such as:

- further investigation and discussion on the preferred Precinct A sewer servicing methodology;
- the upgrade/relocation requirements of existing water mains if deemed necessary for Precinct E or to provide adequate servicing to Precinct B or C. If required, early engagement with Water Corporation is recommended to coordinate scope within Water Corporations capital works program;
- bio-retention locations within the centre racecourse for Precincts A, and C;
- drainage basin/storage location at Precinct D;
- existing communications assets removal or relocation within Precinct D;
- power servicing to each development sites with overlapping lots and boundaries
- understanding development timeframes for precincts, due to the limited power capacity within the existing network prior to additional HV feeders being required to the site.

The information contained within the report is preliminary in nature, has been completed based on a high-level desktop assessment, and has relied on preliminary planning advice from servicing authorities where appropriate. There are no site investigations, reports or other consultants' input unless stated within the report, which would ordinarily provide a more substantial servicing review for the purpose of supporting subdivision applications.

## 14 REFERENCES

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Western Power, Network Capacity Mapping Tool. April 2024

# 15 APPENDIX A – DBYD INFORMATION

Job No 36962243

byda.com.au

## Contact Details

| Contact | Contact number | Company | Enquirer ID |
|---|---|---|---|
| Justin Zielinski | 0420 304 451 | - | 3140642 |

**Email**
jzielinski@tabec.com.au

**Address**
54 Havelock Street
West Perth WA 6005

## Job Site and Enquiry Details

**WARNING:** The map below only displays the location of the proposed job site and does not display any asset owners' pipe or cables. The area highlighted has been used only to identify the participating asset owners, who will send information to you directly.

| Enquiry date | Start date | End date | On behalf of | Job purpose | Locations | Onsite activities |
|---|---|---|---|---|---|---|
| 21/06/2024 | 24/06/2024 | 24/06/2024 | Private | Design | Both Road | Planning & Design |




Check that the location of the job site is correct. If not, you must submit a new enquiry.

If the scope of works change or plan validity dates expire, you must submit a new enquiry.

Do NOT dig without plans. Safe excavation is your responsibility. If you don't understand the plans or how to proceed safely, please contact the relevant asset owners.

| User Reference | Address | Notes/description |
|---|---|---|
| Precinct E | 2 Raconteur Drive<br>Ascot WA 6104 | - |

## Your Responsibility and Duty of Care

- **Lodging an enquiry does not authorise project commencement.** Before starting work, you must obtain all necessary information from all affected asset owners.
- If you don't receive plans within 2 business days, contact the asset owner & quote their sequence number.
- Always follow the 5Ps of Safe Excavation (page 2), and locate assets before commencing work.
- Ensure you comply with State legislative requirements for Duty of Care and safe digging.
- If you damage an underground asset, you MUST advise the asset owner immediately.
- By using the BYDA service, you agree to the Privacy Policy and Term of Use.
- For more information on safe digging practices, visit www.byda.com.au

## Asset Owner Details

Below is a list of asset owners with underground infrastructure in and around your job site. It is your responsibility to identify the presence of these assets. Plans issued by Members are indicative only unless specified otherwise. Note: not all asset owners are registered with BYDA. You must contact asset owners not listed here directly.

| Referral ID (Seq. no) | Authority Name | Phone | Status |
|---|---|---|---|
| 240900614 | ATCO Gas Australia | 1300 926 755 | NOTIFIED |
| 240900610 | NBN Co (WA) | 1800 687 626 | NOTIFIED |
| 240900607 | Optus (WA) | 1800 505 777 | NOTIFIED |
| 240900612 | Telstra (WA) | 1800 653 935 | NOTIFIED |
| 240900609 | TPG Telecom (WA) | 1800 786 306 | NOTIFIED |
| 240900608 | Vocus (WA) | 1800 262 663 | NOTIFIED |
| 240900613 | Water Corporation | 13 13 95 | NOTIFIED |
| 240900611 | Western Power | 13 10 87 | NOTIFIED |

END OF UTILITIES LIST

**Lodge your FREE enquiry online any time at byda.com.au**

# ATCO UNDERGROUND ASSET DETAILS ASSETS AFFECTED
GAS DIVISION

**ASSETS AFFECTED – see accompanying Plan**

**Job No:** **36962243**
**Sequence No:** **240900614**
Date of Issue: 21 June 2024
Phone: **1300 926 755**

**Justin Zielinski**
**ATCO Gas Australia**
54 Havelock Street
West Perth
WA 6005

**BYDA Utility Registration Name:** Private
**BYDA Location:** **2 Raconteur Drive Ascot WA 6104**

**ATTENTION:** This response to your enquiry has been interpreted from details in your requested DBYD picture location request only (not any street address you gave). It is your duty to ensure the accompanying plan/s match your geographical area of works.

**IF YOU SEE, HEAR, SMELL OR OTHERWISE DETECT GAS,**
**LEAVE THE IMMEDIATE AREA AND THEN CALL 13 13 52**

Our records indicate that ATCO gas infrastructure ***IS PRESENT*** in the vicinity of and/or surrounding area of the above enquiry. This response relates only to ATCO assets. Your Duty of Care requires that personnel **Must** at all times comply with, and have on site, this information sheet and the accompanying plan(s). All plans are subject to this information sheet. You should refer to the ATCO Self-service Portal (Link Here) or if unsure, contact ATCO on **1300 926 755** during business hours.

All information provided is to be used as a guide only (see Disclaimer item **5**). It does not absolve you or third parties from your Duty of Care obligations, including to take additional precautions where work has the potential to impact on gas assets, public safety or the environment, or from your duties at law (including Reg 3.21 of the Occupational Safety and Health Regulations 1996).

## WARNINGS

- No works of any type within 15 metres of any **CRITICAL GAS ASSET** infrastructure without prior approval from ATCO
- **NO HOT WORK** within 15 metres of any gas infrastructure except in compliance with applicable laws & *Australian Standard 1674.* **Do Not** let heat sources or hot works impact on any gas infrastructure and take into consideration that the ground or adjacent structures may also be capable of transmitting heat so as to circumvent protection afforded by a heat shield or barrier
- **DANGER** - Gas can cause asphyxiation and is flammable. Keep all ignition sources well away (e.g., flames, matches/ lighters, sparks, electrical devices, vehicles or engines, mobile phones, cameras)
- Gas pipes **Must Not** be unsupported or left without adequate cover or protection without prior approval from ATCO
- Damage to the pipe coating or pipe itself can be very dangerous if not given immediate attention. Report any damage to ATCO immediately on **13 13 52**. **Do Not** attempt to repair any damaged gas infrastructure
- No alteration or removal of live or abandoned gas infrastructure without prior written approval from ATCO
- Any abandoned or proposed gas infrastructure indicated on the gas plans **Must** be treated as live
- Never assume the location or depth of any gas infrastructure. Pipes may not follow straight lines or maintain a constant depth. Always check carefully (e.g., by careful hand digging of potholes)
- Unauthorised repairs or tampering with gas infrastructure may result in prosecution under the *Energy Operators (Powers) Act 1979*. ATCO Gas Australia reserves all rights to recover compensation for loss or damage to its gas infrastructure or other property including for indirect or consequential losses.

**PLANS:**

Plans provided are current for **30 days only** from date of request. You must use current plans at all times.

Plans do not show all gas service lines (which connect gas mains to individual meter positions). See condition **3.c)** below.

If plan shows **additional detail** symbols ( * ) or ( ) in the area of proposed works it is **your duty** to obtain that further detail from the number below.

Plans (including the location of pipes, services, infrastructure and boundaries) are **approximate only**. You **Must** use safe and proper procedures – including **potholing** (see condition **4** below).

Plans are not a guide as to gas availability for connection purposes.

**To call ATCO:** **Weekdays from 7.30am to 3.30pm, call – 1300 926 755 After hours, weekends and emergencies, call – 13 13 52**

**CONDITIONS FOR WORKS IN THE VICINITY OF ATCO ASSETS**

**1. Compliance with Warnings**

You **Must** comply with the Warnings contained in this information sheet and the accompanying plan(s).

**2. Compliance with 'Working around Gas Infrastructure' Document (Link Here) applicable laws and duty of care**

All work (including but not limited to using Excavator's Augers, Directional, drilling machines, 'Ditch Witch' type trenching machine, Loader, Dozer, Skid Steer (Bob Cat)) **Must** comply with all applicable requirements in the 'Working around Gas Infrastructure' Document and with all applicable laws and Australian Standards. All due care must be exercised to locate any gas infrastructure in the vicinity and when conducting any works near them.

**3. All Gas Infrastructure**

All work that may have any impact upon any gas infrastructure (see **3.a)**, **b)** and **c)** below for examples) should be carefully planned with notification to ATCO well in advance of commencement. Contact ATCO on **1300 926 755** or visit Atco's online self-service portal (Link Here). Amongst other things, this includes excavation of or near gas pipelines, boring/drilling, crossings of pipelines (including by other underground infrastructure e.g. drains, power cables, etc.), road works and structural installations. In addition:

a) Critical Asset

No works of any type are permitted within 15 meters of these pipelines without prior approval from ATCO. For approvals contact ATCO on **1300 926 755** or visit the Atco online Self-service portal (Link Here)

You **Must** ascertain the location of any Critical Asset, in relation to your proposed work by:

- Locating a straight line between two marker danger signs, and
- Assessing the distance from this line to your proposed work area.

ATCO may require stand-by supervision during your works and will advise of attendance requirements.

b) Non Critical Assets

These pipelines are installed in most streets throughout the Perth metro area and several country centers. Main valves, regulator sets, and test points also exist at intervals along these pipelines. Where work may impact upon these pipelines or assets then ATCO **Must** be contacted as per item **3** above.

c) Gas Services and Meters

If a gas meter is installed on a property, an underground gas service pipe will run from the meter position to the gas main in the street. Plans do not show all gas service lines (with the exception of Critical Assets), but their presence must be anticipated. Most gas meter boxes installed since 1996 will include a sticker giving approximate guidelines for the gas service line location. All due care must be exercised to locate any gas services in the vicinity and when conducting any works near them.

**4. Compliance with Safe Work Practices**

It is your responsibility to have and comply with adequate safe work practices and procedures. Without limiting your obligations:

**PLAN** The complete & current Before you Dig Australia documentation and plans must always be on site & referred to for the duration of work. Refer to regulation 3.21 of the Occupational Safety and Health Regulations 1996 and the Utility Providers "Code of Practice" for further useful information.

**PREPARE** Prepare by reviewing the Before you Dig Australia Documentation and contacting ATCO if you need assistance. Look for onsite ATCO asset and infrastructure clues such as pit lids, marker posts and meters. No works of any type are permitted within 15 meters of a **CRITICAL ASSET** without prior approval from ATCO. For approvals contact ATCO on **1300 926 755** or visit the Atco website Self Service portal (Link Here) and allow suitable

processing time. Atco recommends engaging a BYDA Certified Locator which includes undertaking electronic location prior to potholing.

**POTHOLE** Using current Before you Dig Australia plans, all gas pipes should be located (including any deviation in the direction of a gas pipe) by exposing them by careful digging using a HAND SHOVEL. Where the proposed work is parallel to a gas pipeline, pothole every 10 meters along the entire route. Damage to the pipe coating or to the pipe itself can create a very dangerous situation if not given immediate attention. If damage does occur, it **Must** be reported to ATCO immediately on Ph. **13 13 52**.

**PROTECT** Supervise and monitor all excavations near gas infrastructure using a dedicated spotter. Where any gas infrastructure is required to be exposed, adequate protection of the gas infrastructure is required to prevent potential damage. Also implement appropriate controls when conducting 'hot work' (in accordance with AS 1674) in the vicinity of the ATCO infrastructure such as; isolation; separation distance; the placement of an effective non-combustible barrier of sufficient size and thermal resistance for the intensity, type and duration of heat exposure; gas monitoring; monitoring the environment surrounding the ATCO infrastructure to ensure it is not being impacted by the work, and other controls as necessary.

**PROCEED** You should **only proceed** with your excavation work after you have planned, prepared, potholed (unless prohibited) and have protective measures in place. All locations markers/pegs are to be removed on completion of works. If you are unsure, **DO NOT** Proceed. Call ATCO on **1300 926 755**

**5. Disclaimer and Further Terms**

a) Nothing in this document, any accompanying plan or the 'Additional Information for Working around Gas Infrastructure' (AGA-O&M-PR24) (together called "**Documents**") purports to exclude or modify any term, condition or warranty to the extent that by law it cannot lawfully be excluded or modified by agreement or notice, including but not limited to those contained in Schedule 2 of the *Competition and Consumer Act* 2010 (Cth) and corresponding provisions of any state legislation.

b) If any of ATCO, or their respective related entities, officers, employees, agents, contractors or advisers (together called "**Associates**") is liable for a breach of a term, condition or warranty described in paragraph **5.a)** above, its liability is, to the fullest extent permitted by law, limited to any one or more of the following as it determines in its absolute discretion:

i) in relation to goods supplied by them, replacing or repairing the goods, supplying an equivalent item, paying the cost of replacing or repairing the goods or paying the cost of acquiring or hiring an equivalent item; and

ii) in relation to services supplied by them, the re-supply of the services or the payment of the cost of having the services re-supplied.

c) Subject to paragraphs **5.a)** and **b)**, but otherwise despite any other provision in the Documents, no representation or warranty is made or given (whether expressly or by implication) by any of ATCO or their respective Associates in respect of any information contained or referred to in any of the Documents or in any other communication from ATCO concerning any of the Documents or the subject matter of any of the Documents ("Information"). In particular, but without limiting the generality of the foregoing limitation, none of ATCO or their respective Associates makes any warranty or representation as to the truth, accuracy, completeness, reliability, currency, timeliness, quality or fitness for any purpose of or the standard of care taken in the preparation of any Document or Information (including, but not limited to, the accuracy of the scale of, or the location of anything or symbol shown on, any plan or diagram).

d) Subject to paragraphs **5.a)** and **b)**, to the maximum extent permitted by law, none of ATCO or their respective Associates is liable to any person or other body ("**Recipient**") who receives or otherwise obtains access to all or any part or parts of the Documents or Information, in any way (including, but not limited to, liability for negligence, breach of statutory duty or lack of care) in respect of any cost, expense, damages, loss or liability, including, but not limited to:

i) any financial or economic loss, cost, expense or damage, including but not limited to loss of production, loss of profit, loss of revenue, loss of use, loss of contract, loss of goodwill or loss of business opportunity;

ii) any new or increased costs or expenses, including but not limited to financing or operating costs;

iii) any failure to achieve any actual or anticipated saving in respect of any cost or expense;

iv) any cost, expense, damage or loss resulting from any liability of the Recipient to any other person or body howsoever and whensoever arising, suffered or incurred by the Recipient in relation to, or in connection with, the disclosure to them of, or use of, or reliance on, all or any

part or parts of the Documents or Information.

e) By using any Document or Information, each Recipient is taken to represent and warrant to ATCO that the Recipient will comply with the conditions and other terms referred to in the Documents or Information, including but not limited to conditions that:

i) the Recipient **Must** comply with the conditions in numbered paragraphs **1** to **4** above and this paragraph **5**;

ii) as between ATCO and each Recipient, ATCO owns the Information and all rights and title in and to the Information are to remain vested in ATCO;

iii) no Recipient has any right, title or interest in the Information or, except as expressly provided for in the Documents, any license or right to copy, alter, modify, publish or otherwise use or deal with the Information without prior written approval from ATCO;

iv) ATCO makes no representation and gives no warranty as to its right to disclose any Information;

v) the Recipient relies on any Information entirely at its own risk and expense;

vi) the Recipient **Must** undertake its own independent due diligence and investigations in relation to the Information;

vii) none of ATCO or their respective Associates owes the Recipient any duty of care in respect of the Information; and

viii) none of ATCO or their respective Associates is under any obligation to correct, update or revise any Documents or Information.

**GAS MAIN AND SERVICE IDENTIFICATION**

**LEGEND**

1. Critical Asset (See **WARNINGS** page 1)
2. Pipe Diameter (millimetres)
3. Pipe Material
   CI = Cast Iron PE = Polyethylene
   GI = Galvanised Iron PVC = PVC
   ST = Steel
4. Alignment (in metres from property line)
5. Pressure in main (MP 70 kPa = Medium Pressure and MAOP (Maximum Allowable Operating Pressure)
6. Off-line Service – service may not be straight line to meter. (**WARNING – OLS may not always be shown on plan**. See item **Error: Reference source not found** above)
7. Service Valve in the vicinity
   (**NOTE:** Service Valve may be **"BURIED"**)
8. Pre-laid Service laid in Common Trench
9. Main Status: (See **WARNINGS** page 1)
   9a. AB = Abandoned Mains
   9b. PROP = Proposed Mains
10. Customer Connection: Does not indicate actual location of Meter Position
    D2 (D = Domestic & 2 = Number of Meters)
    C1 (C = Commercial & 1 = Number of Meters)
11. **Additional detail available and Must be obtained if within area of proposed works – see page 2 above.**
12. Depth of Cover (DOC) in metres.



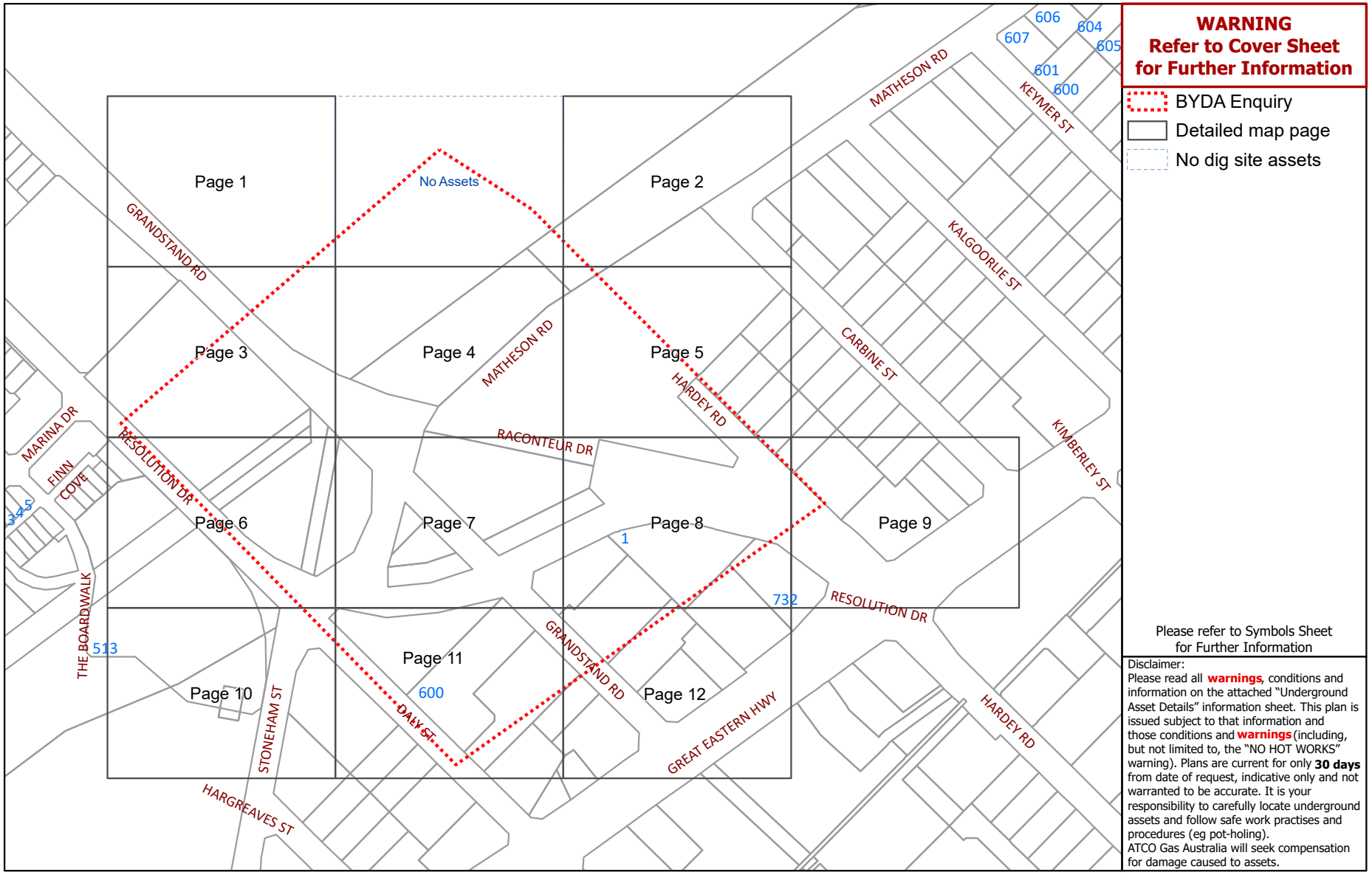

IF UNSURE, PLEASE CONTACT ATCO ON **1300 926 755**

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ABN: 90 089 531 975

Date: 21/06/24 (valid for 30 days)
Index Sheet

Seq # 240900614
Job # 36962243

BYDA Location: 2 Raconteur Drive Ascot 6104
Scale: 1:3,500




**WARNING**
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BYDA Enquiry
Detailed map page
No dig site assets

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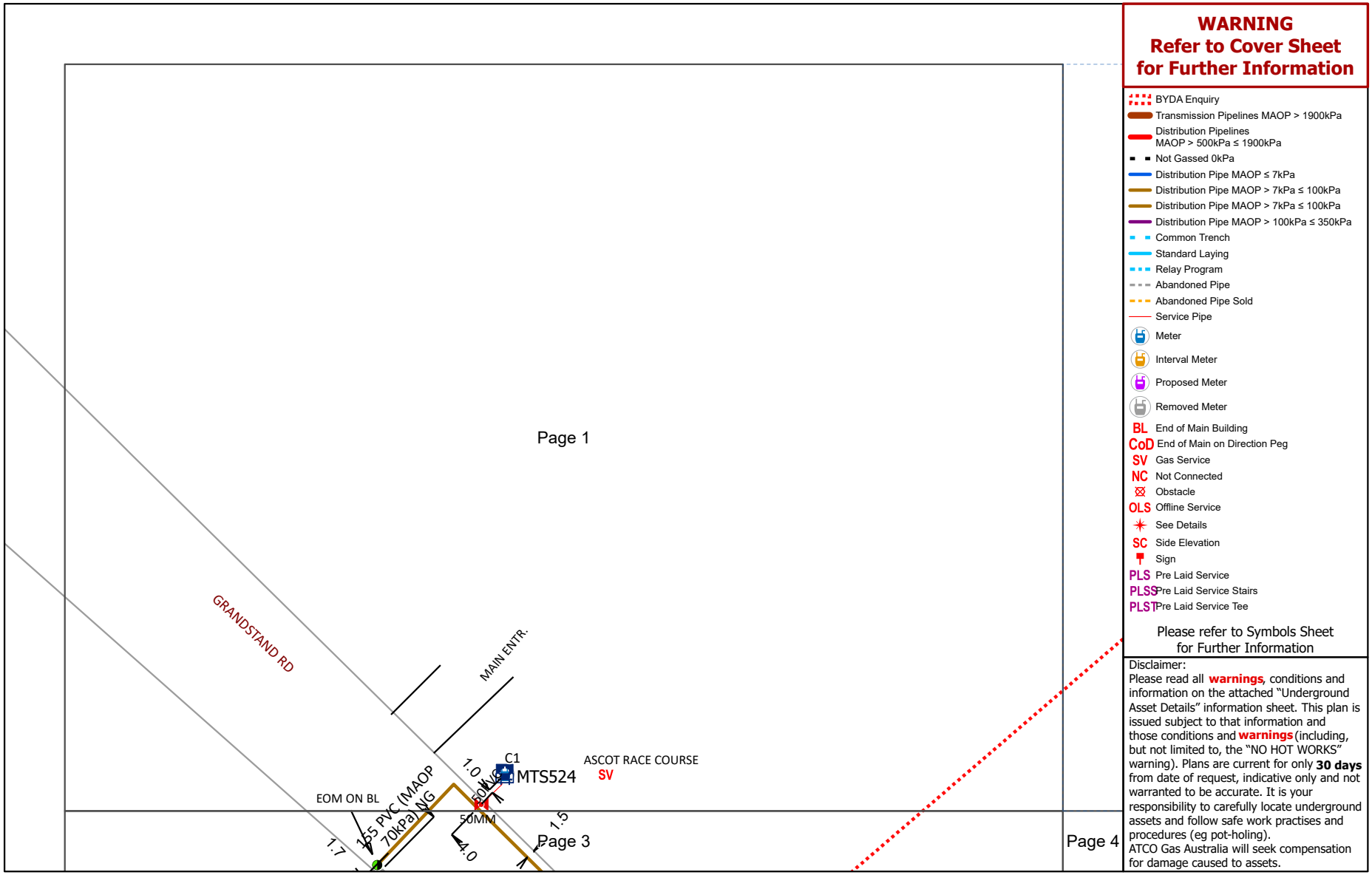
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Seq # 240900614
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BYDA Location: 2 Raconteur Drive Ascot 6104
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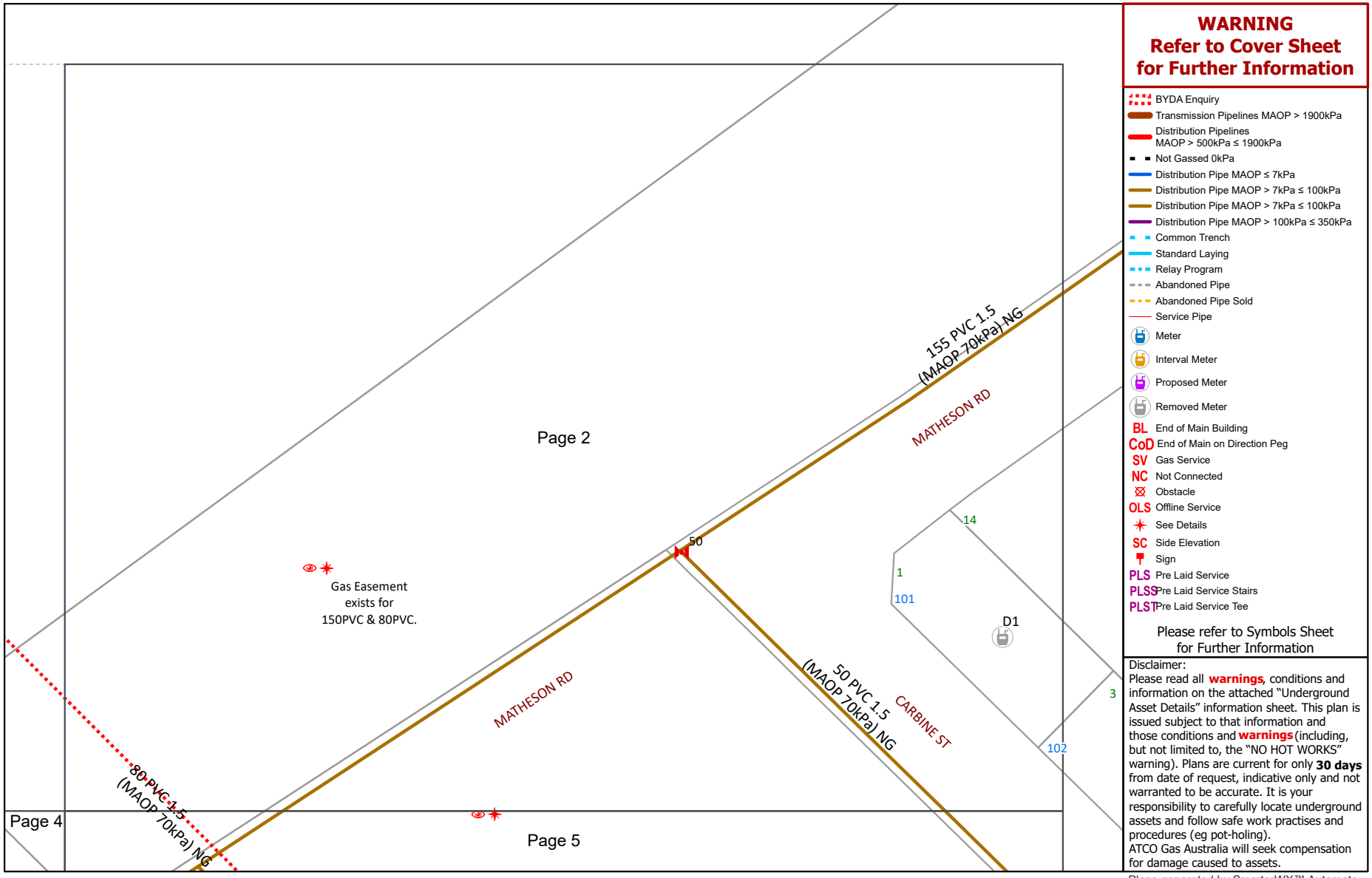
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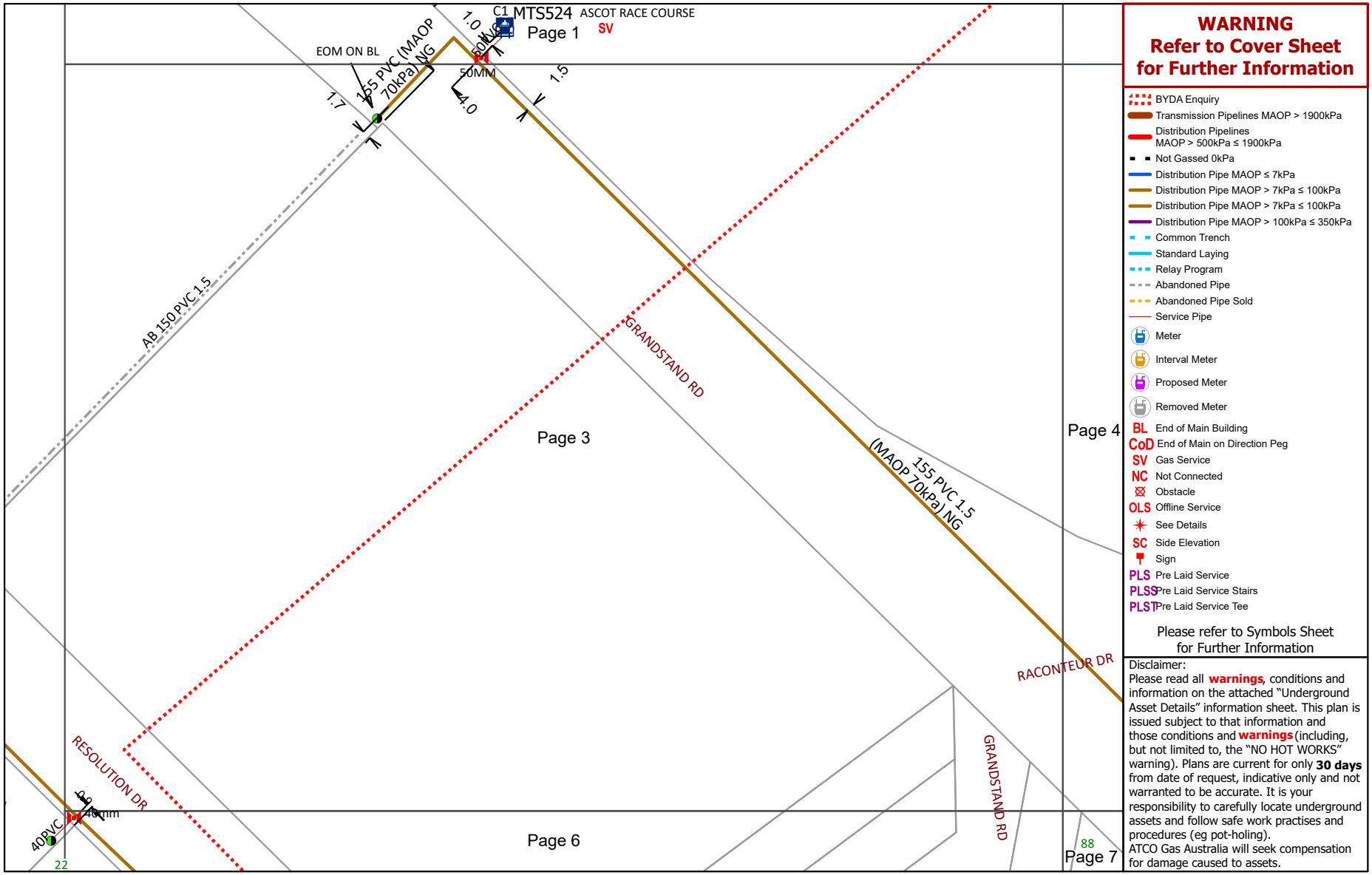
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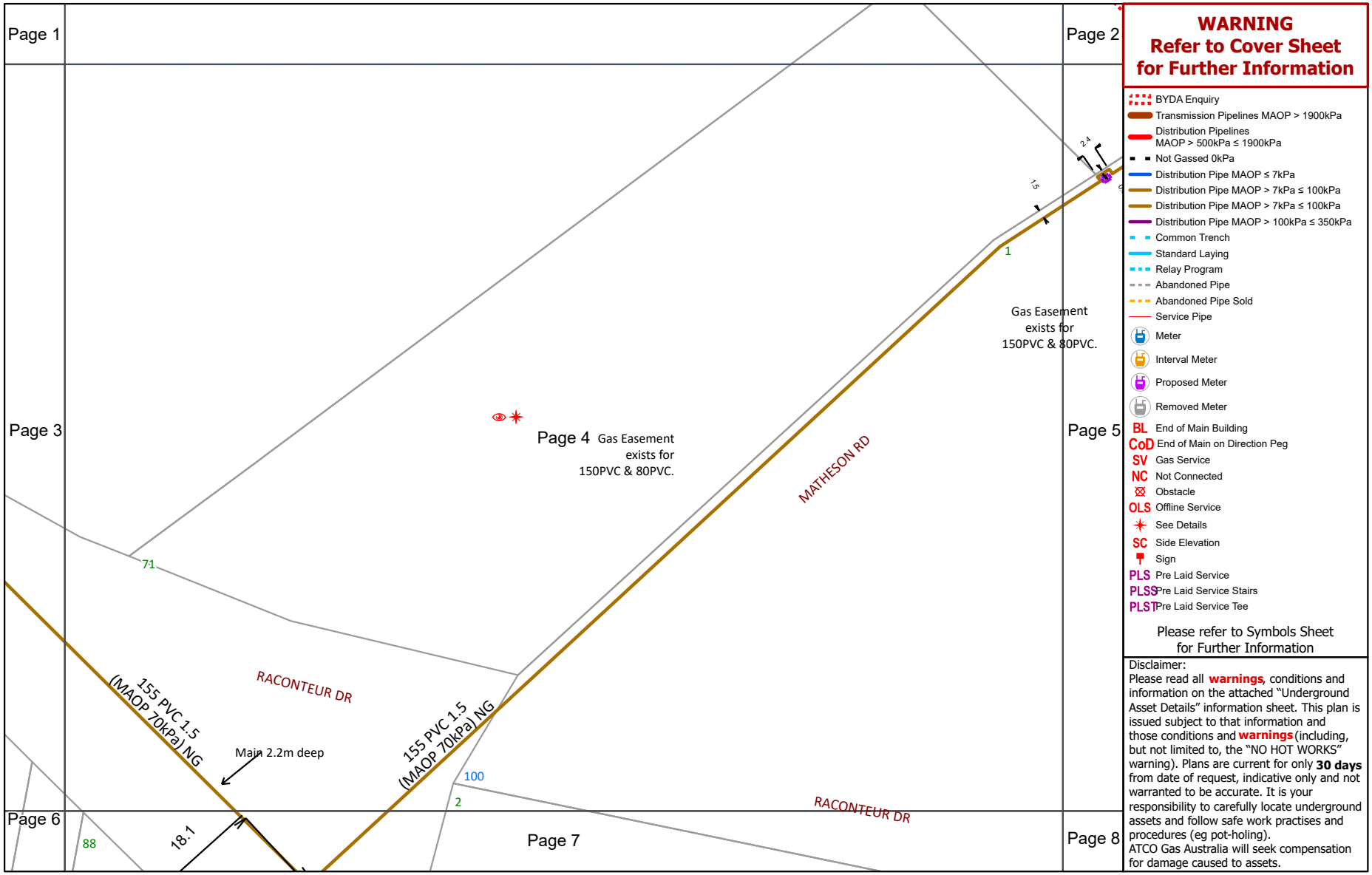
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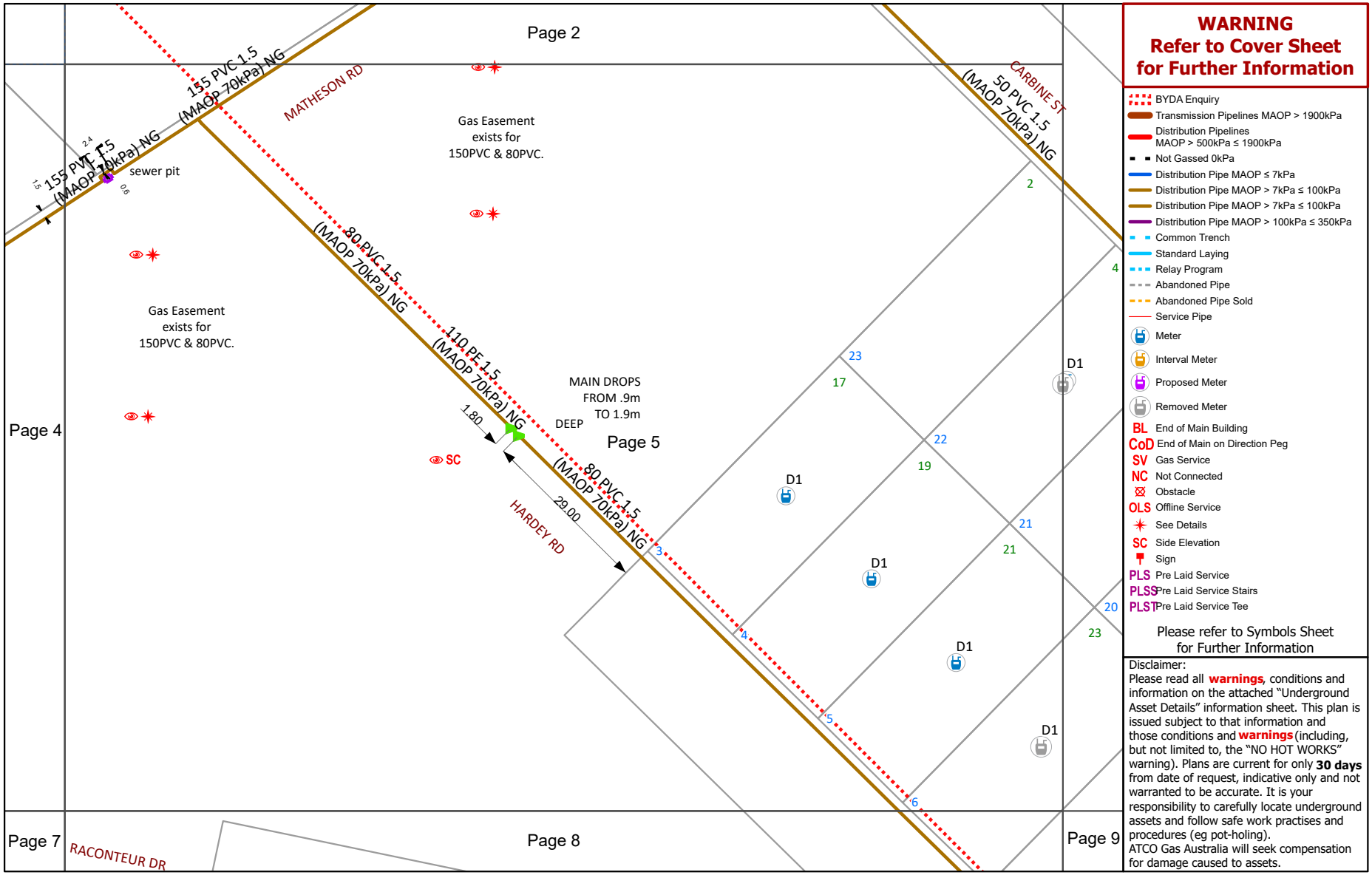
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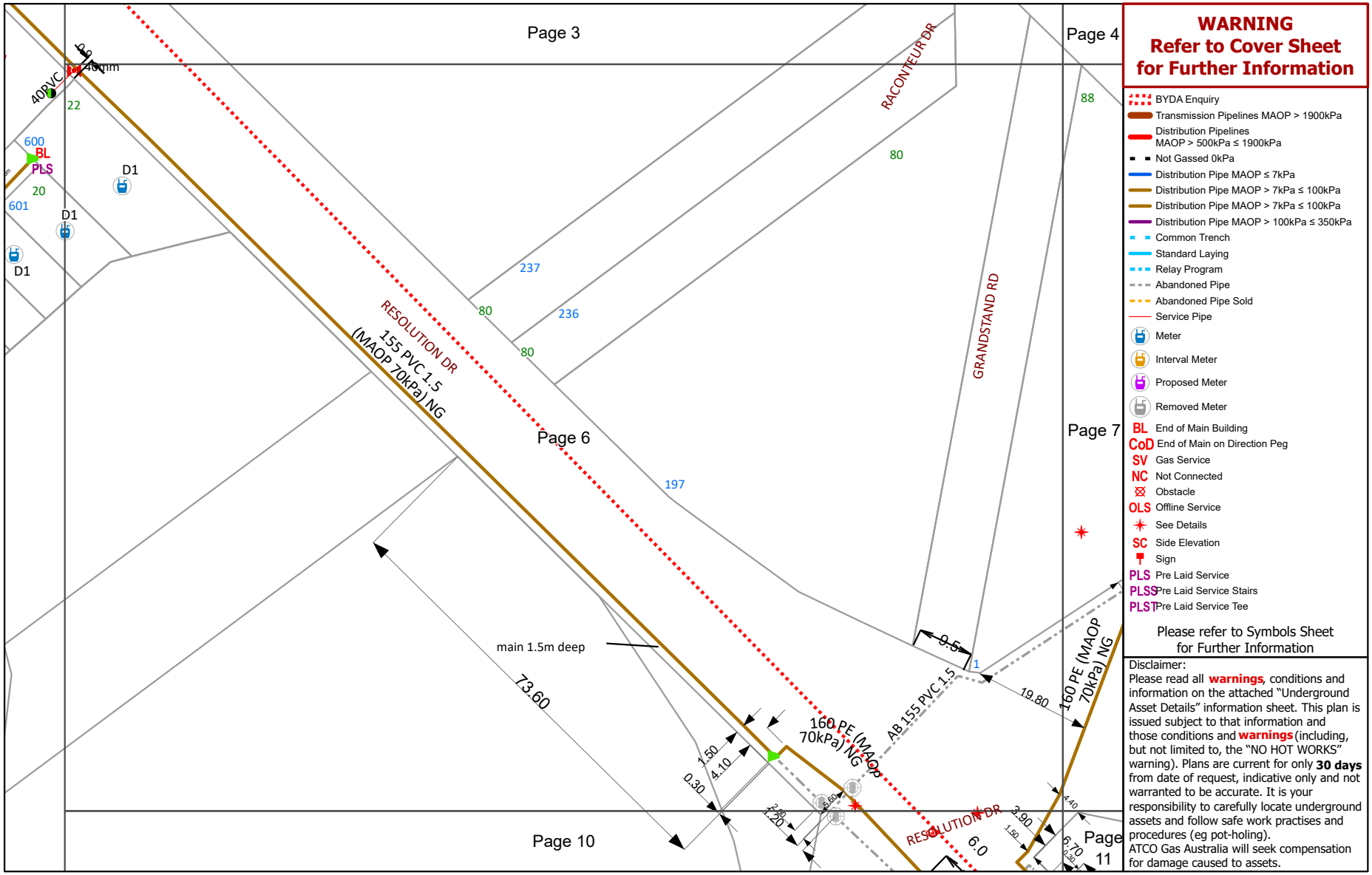
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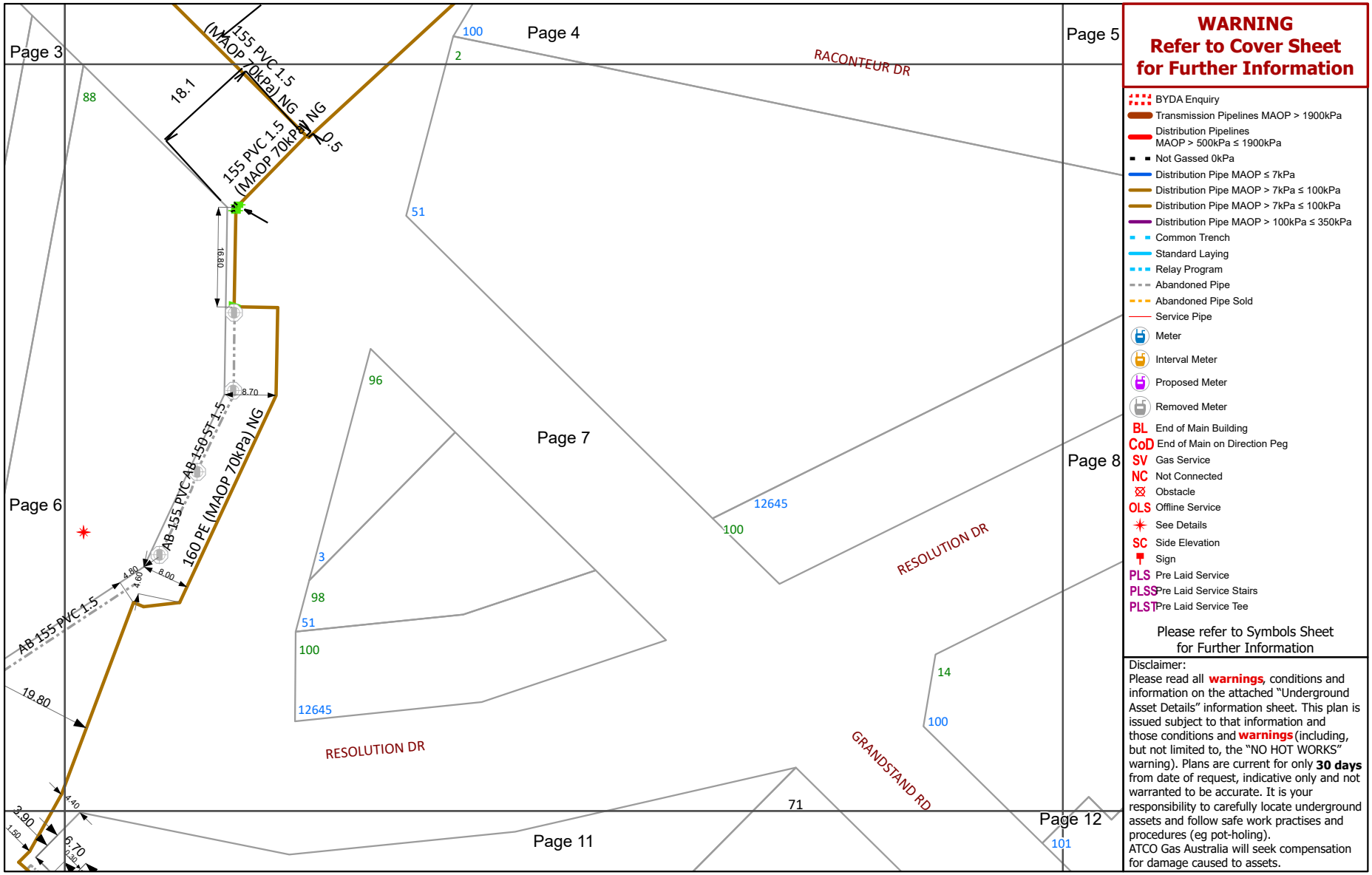
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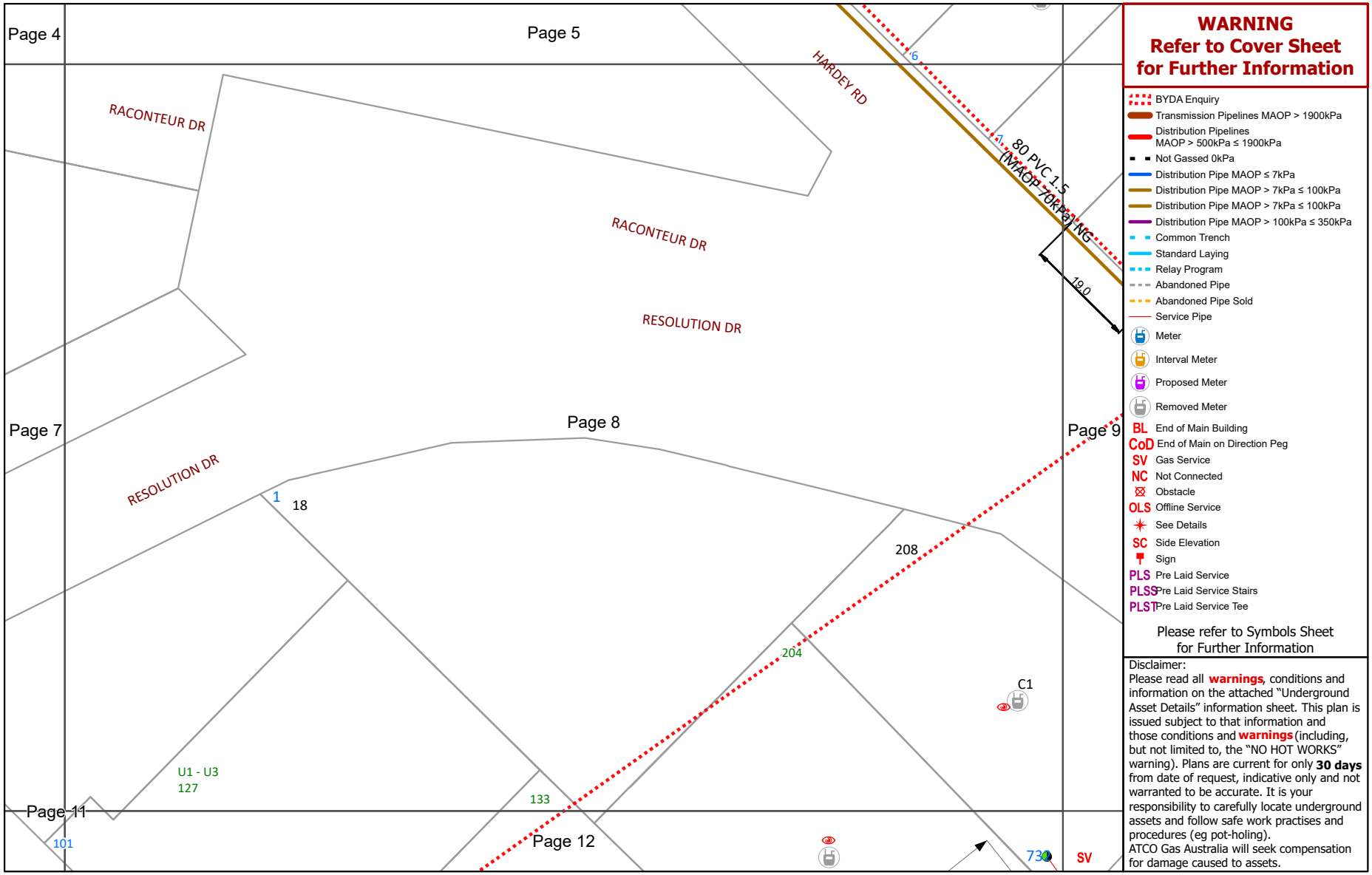
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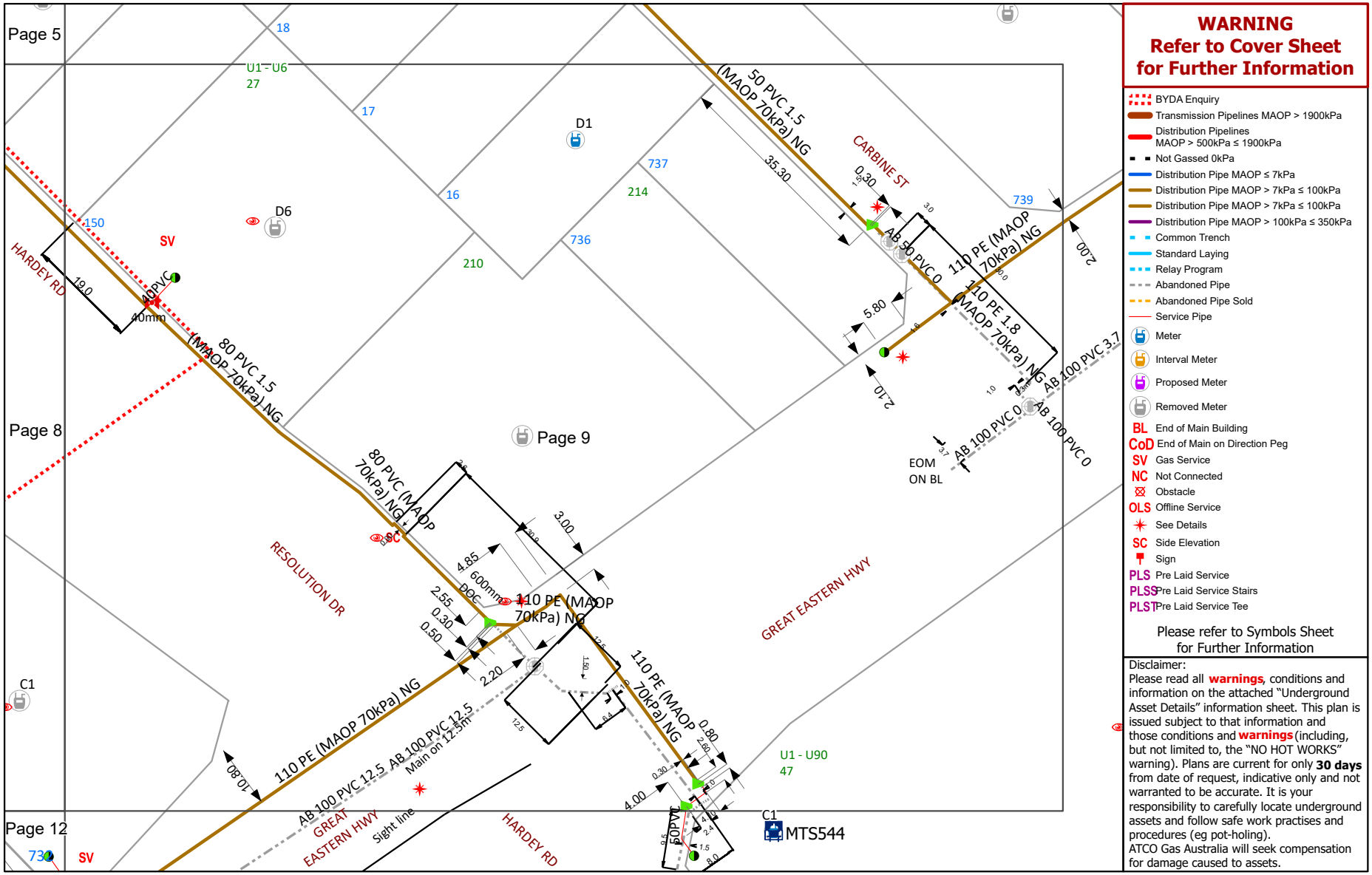
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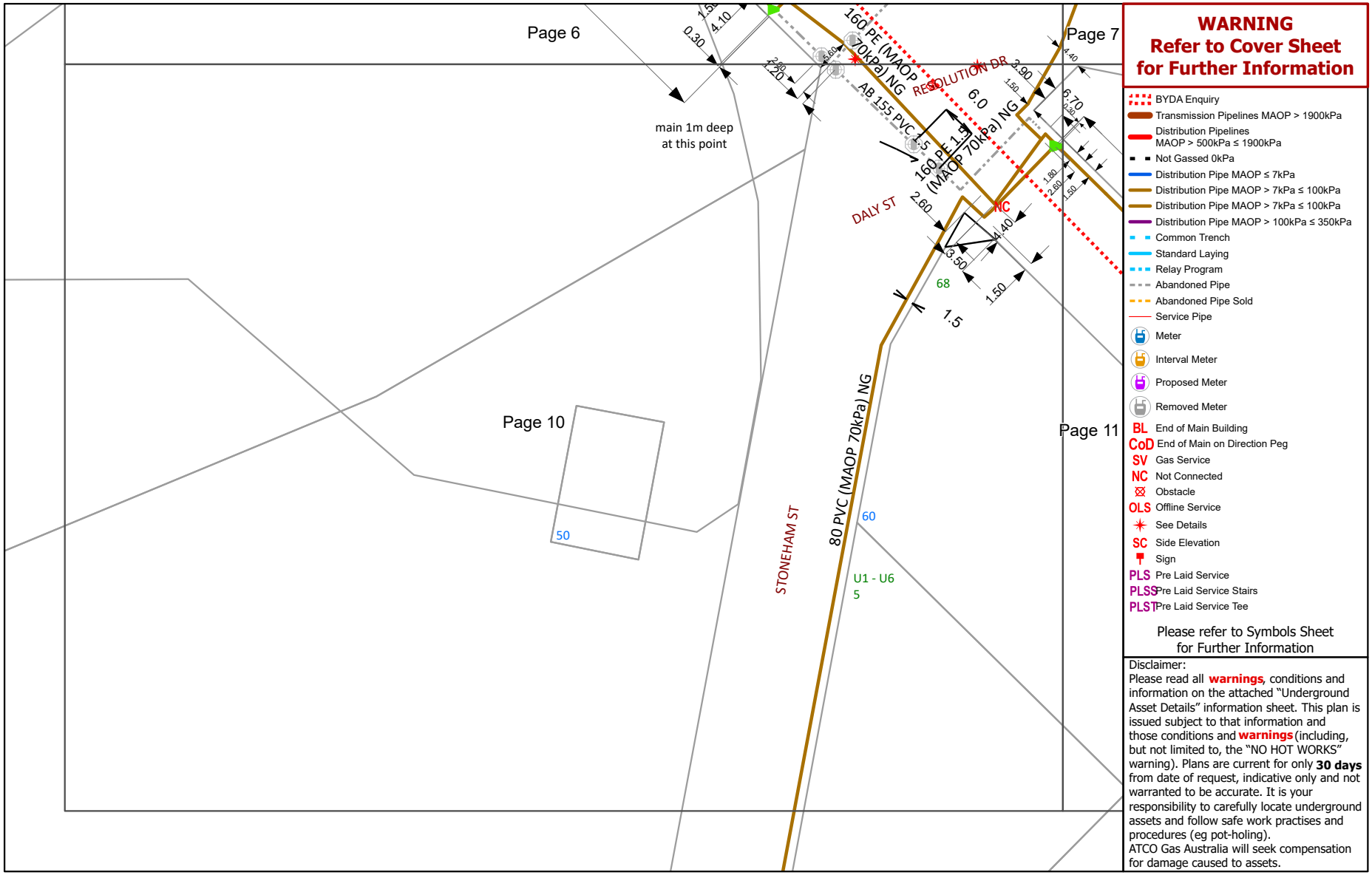
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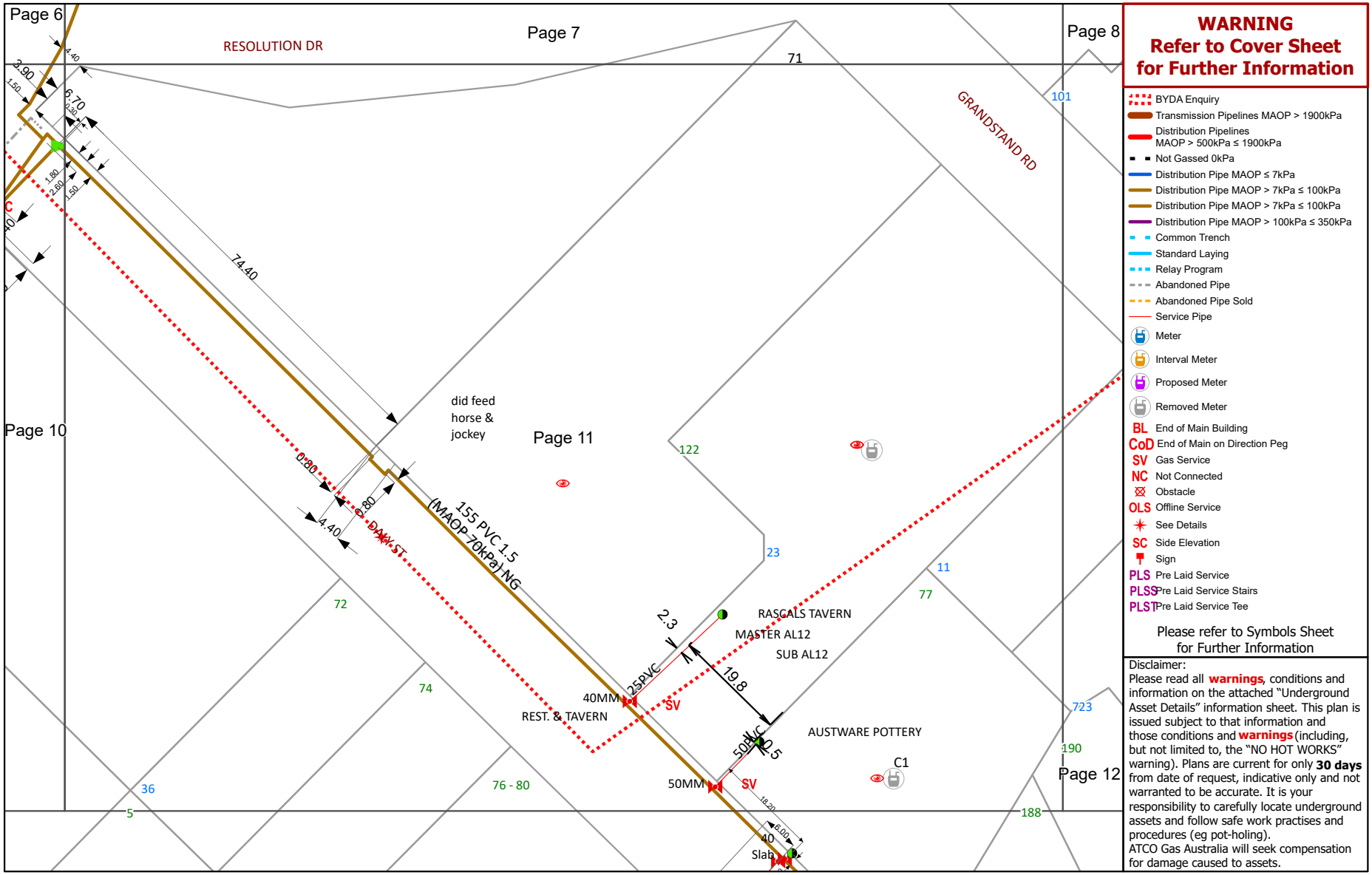
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Plans generated by SmarterWX™ Automate

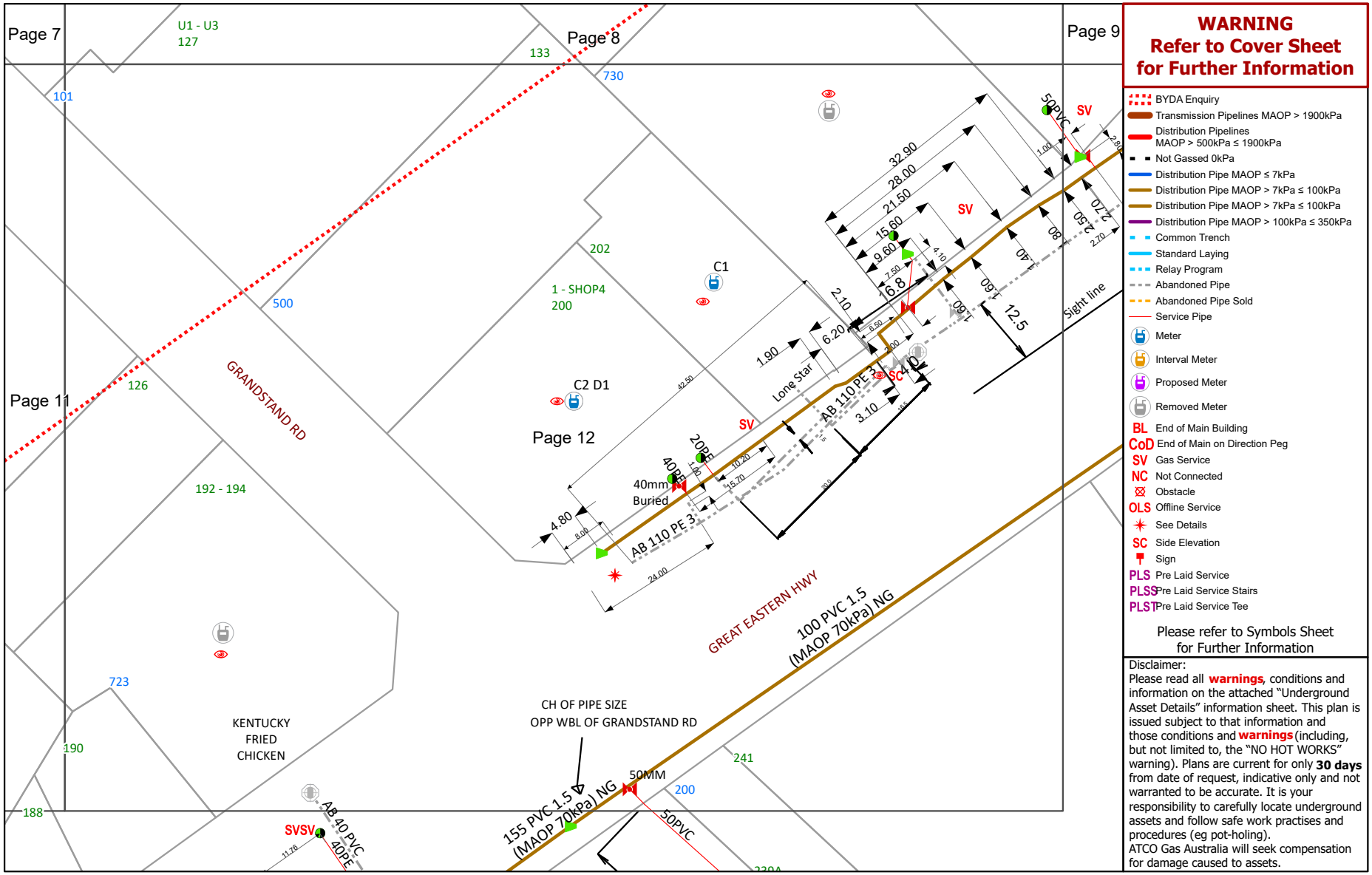
ATCO

©ATCO Gas Australia Pty LTD
ABN: 90 089 531 975

Date: 21/06/24 (valid for 30 days)

Seq # 240900614
Job # 36962243

BYDA Location: 2 Raconteur Drive Ascot 6104
Scale: 1:800




**WARNING**
**Refer to Cover Sheet for Further Information**

- BYDA Enquiry
- Transmission Pipelines MAOP > 1900kPa
- Distribution Pipelines MAOP > 500kPa ≤ 1900kPa
- Not Gassed 0kPa
- Distribution Pipe MAOP ≤ 7kPa
- Distribution Pipe MAOP > 7kPa ≤ 100kPa
- Distribution Pipe MAOP > 7kPa ≤ 100kPa
- Distribution Pipe MAOP > 100kPa ≤ 350kPa
- Common Trench
- Standard Laying
- Relay Program
- Abandoned Pipe
- Abandoned Pipe Sold
- Service Pipe
- Meter
- Interval Meter
- Proposed Meter
- Removed Meter
- BL End of Main Building
- CoD End of Main on Direction Peg
- SV Gas Service
- NC Not Connected
- Obstacle
- OLS Offline Service
- See Details
- SC Side Elevation
- Sign
- PLS Pre Laid Service
- PLSS Pre Laid Service Stairs
- PLST Pre Laid Service Tee

Please refer to Symbols Sheet for Further Information

Disclaimer:
Please read all **warnings**, conditions and information on the attached "Underground Asset Details" information sheet. This plan is issued subject to that information and those conditions and **warnings** (including, but not limited to, the "NO HOT WORKS" warning). Plans are current for only **30 days** from date of request, indicative only and not warranted to be accurate. It is your responsibility to carefully locate underground assets and follow safe work practises and procedures (eg pot-holing).
ATCO Gas Australia will seek compensation for damage caused to assets.

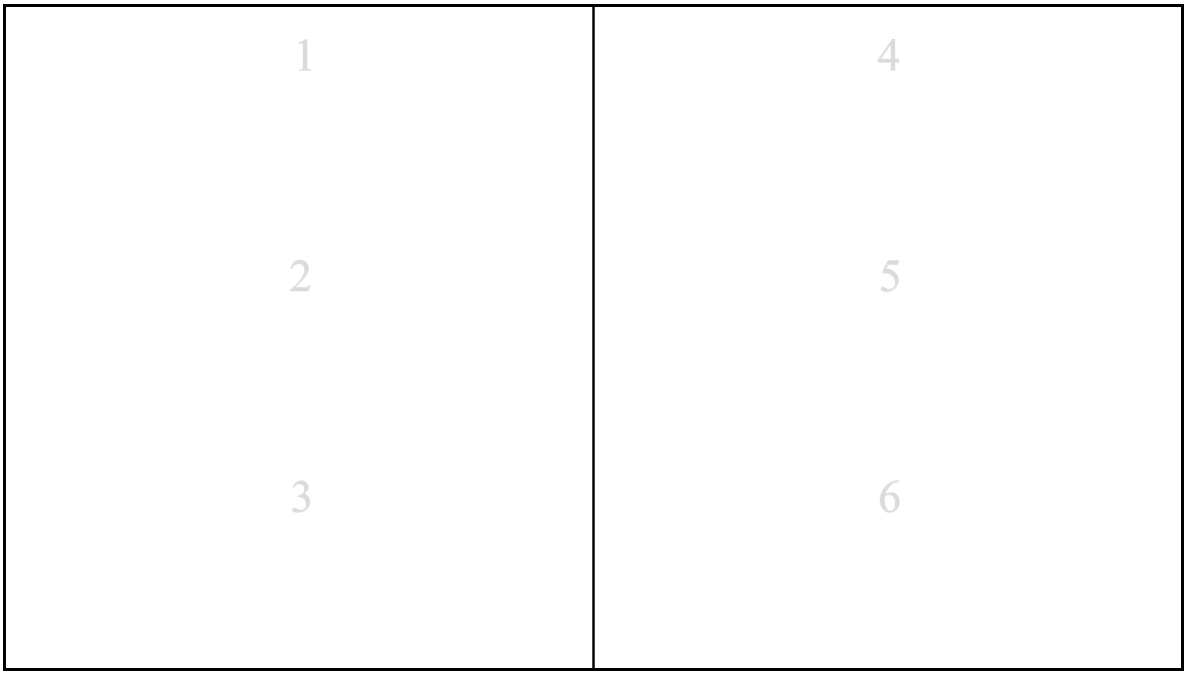
© Western Australian Land Information Authority trading as Landgate. Based on information provided by and with the permission of the Western Australian Land Information Authority trading as Landgate

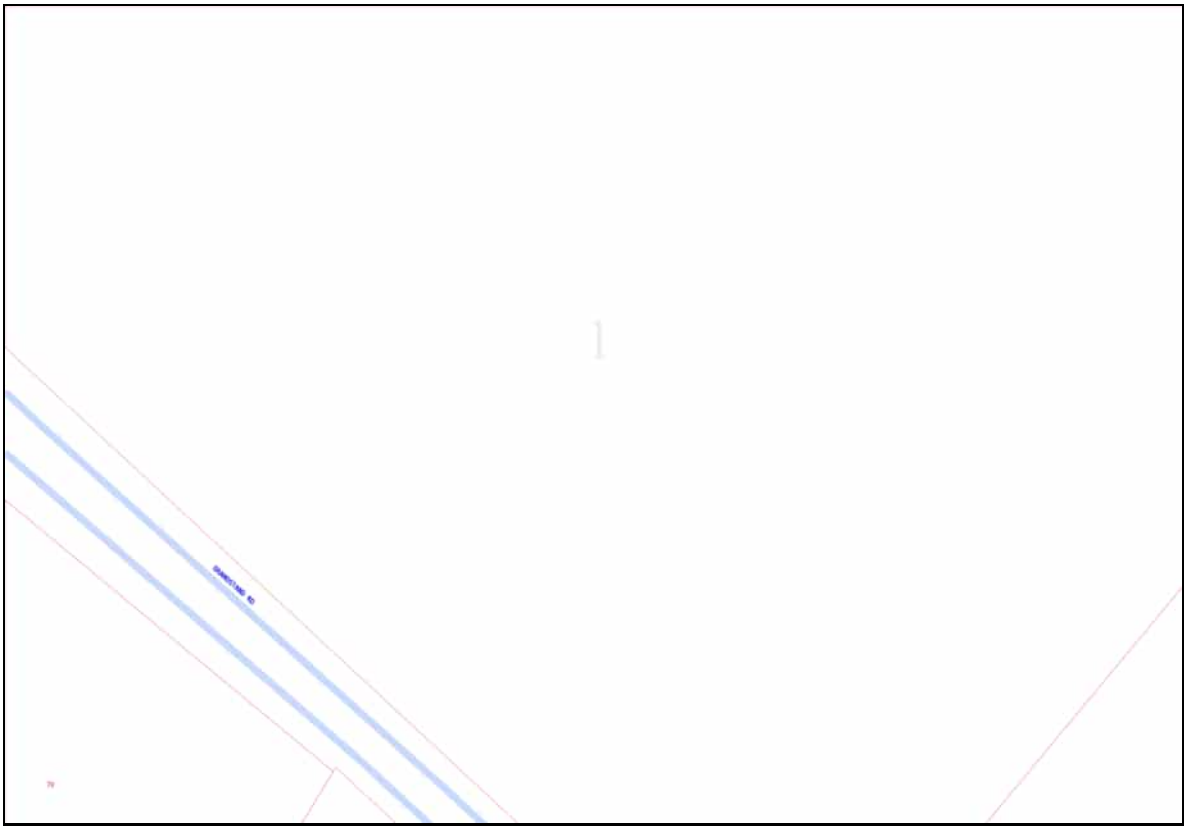
Plans generated by SmarterWX™ Automate

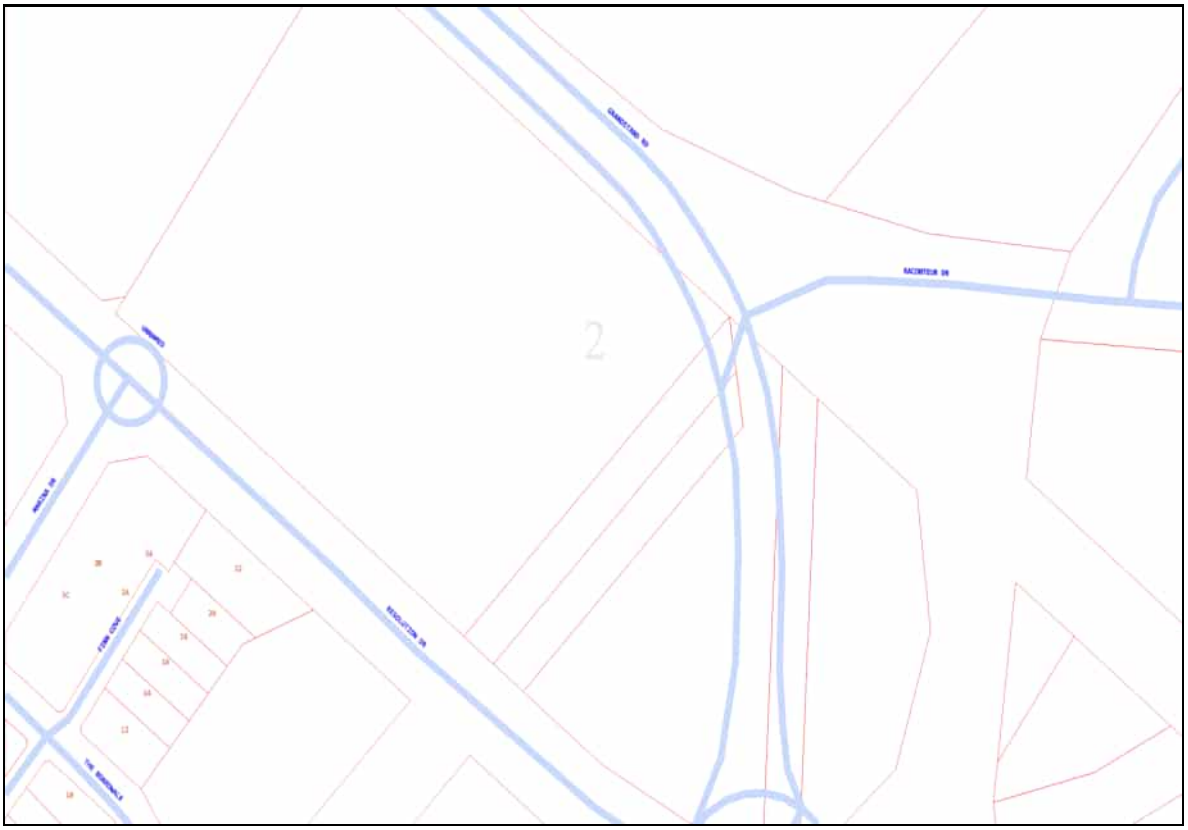
| | |
|---|---|
| **To:** | Justin Zielinski |
| **Phone:** | Not Supplied |
| **Fax:** | Not Supplied |
| **Email:** | jzielinski@tabec.com.au |

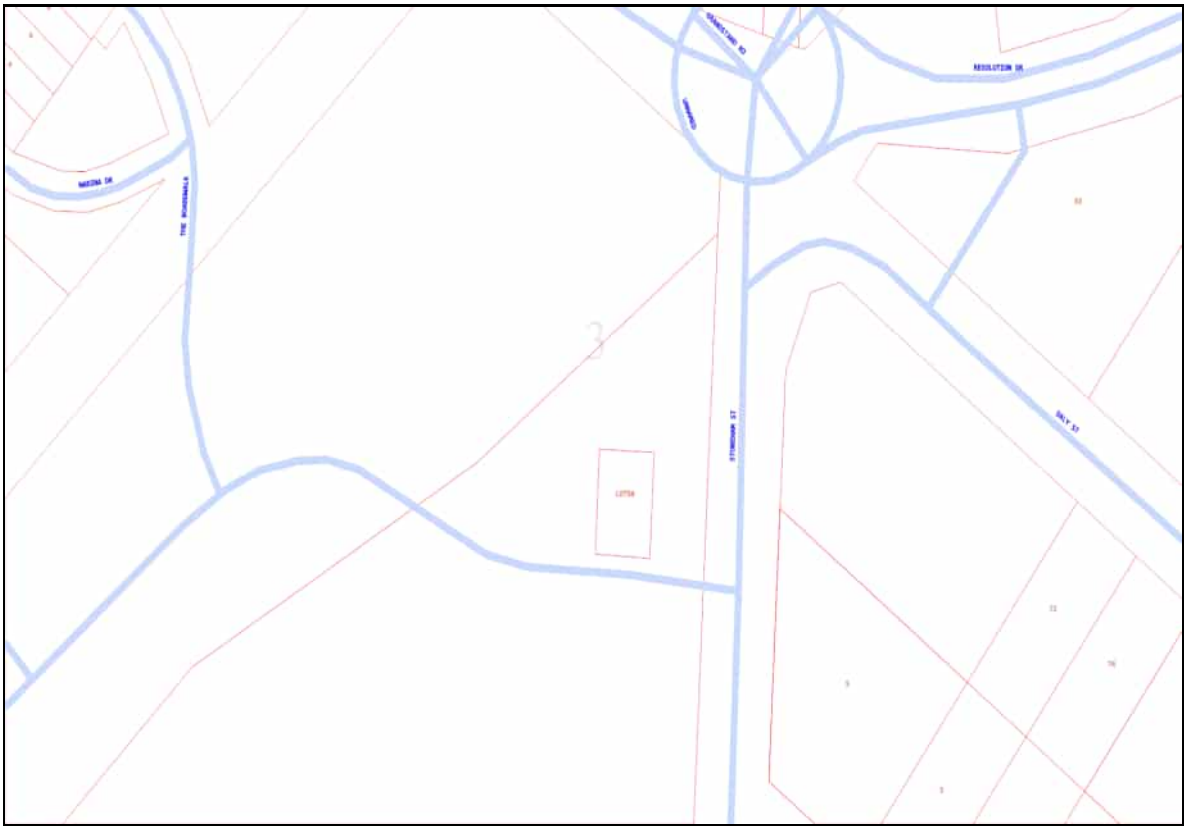
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| **Dial before you dig Job #:** | 36962243 |
| **Sequence #** | 240900610 |
| **Issue Date:** | 21/06/2024 |
| **Location:** | 2 Raconteur Drive , Ascot , WA , 6104 |

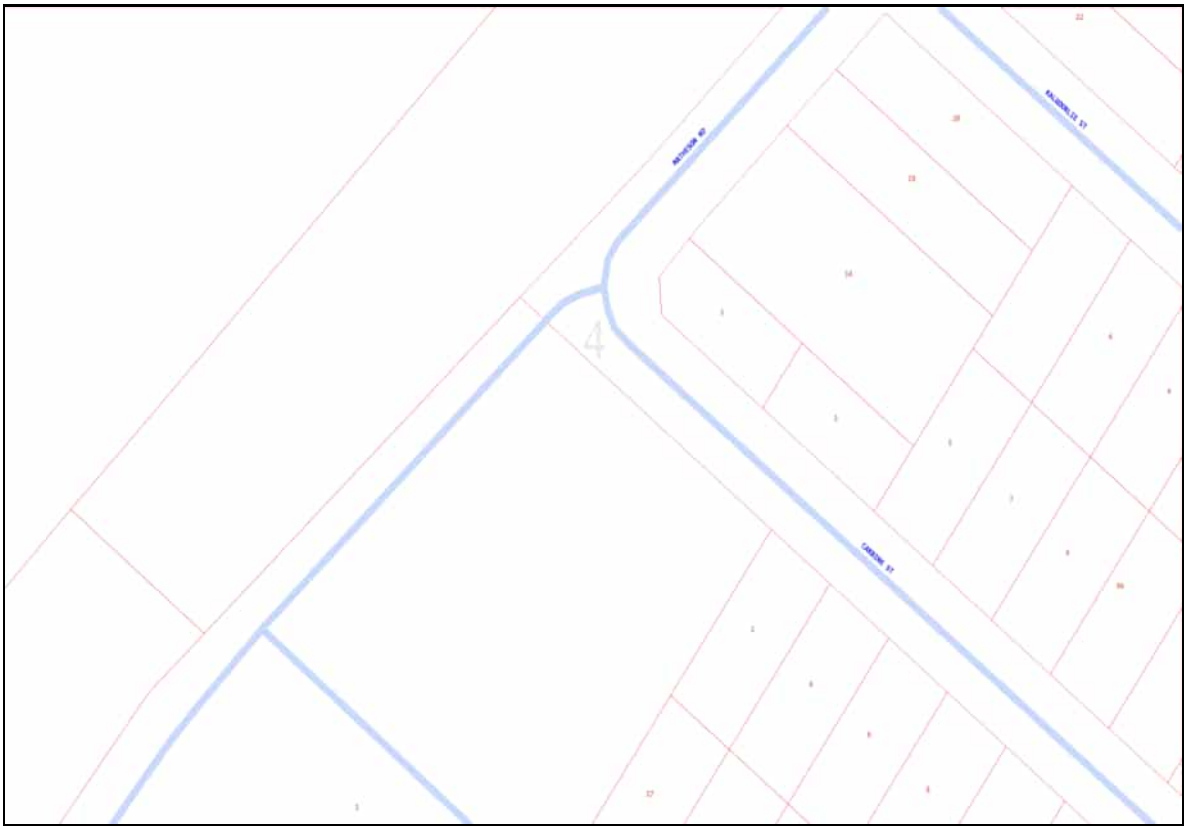
## Indicative Plans are tiled below to demonstrate how to layout and read nbn asset plans

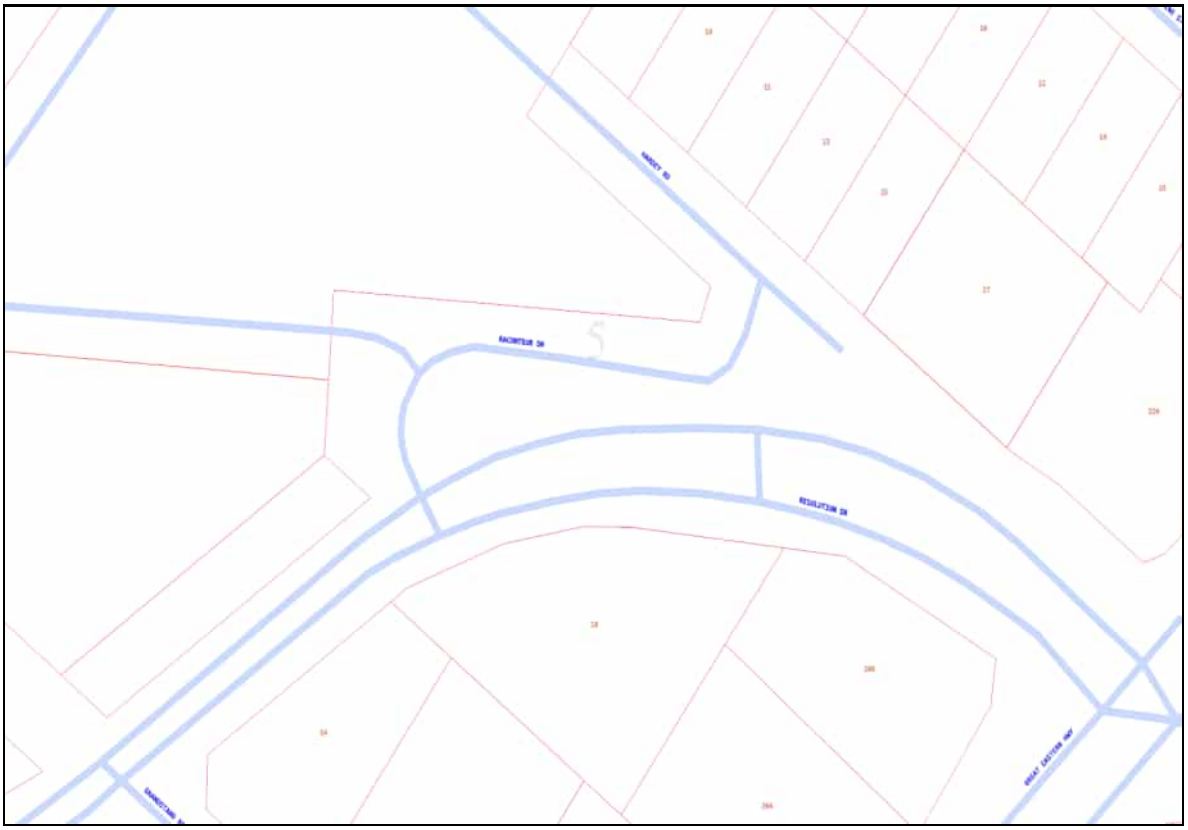


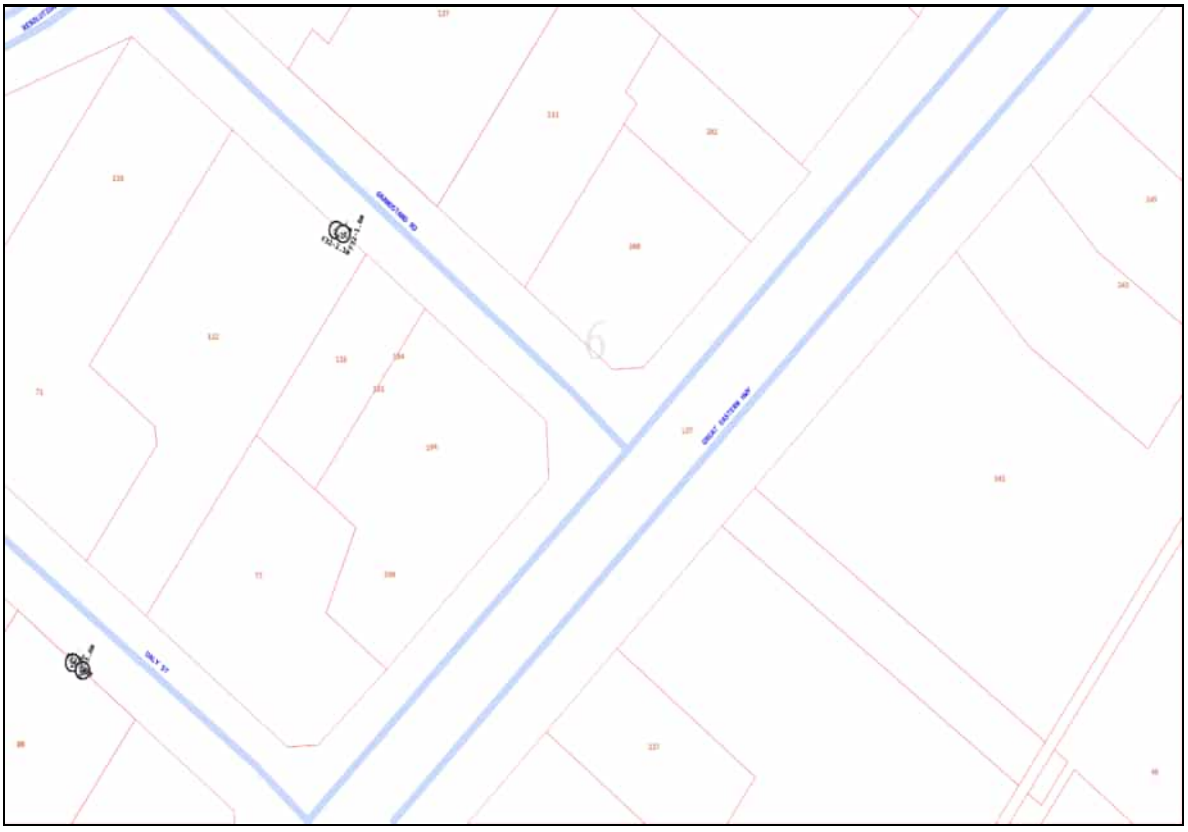












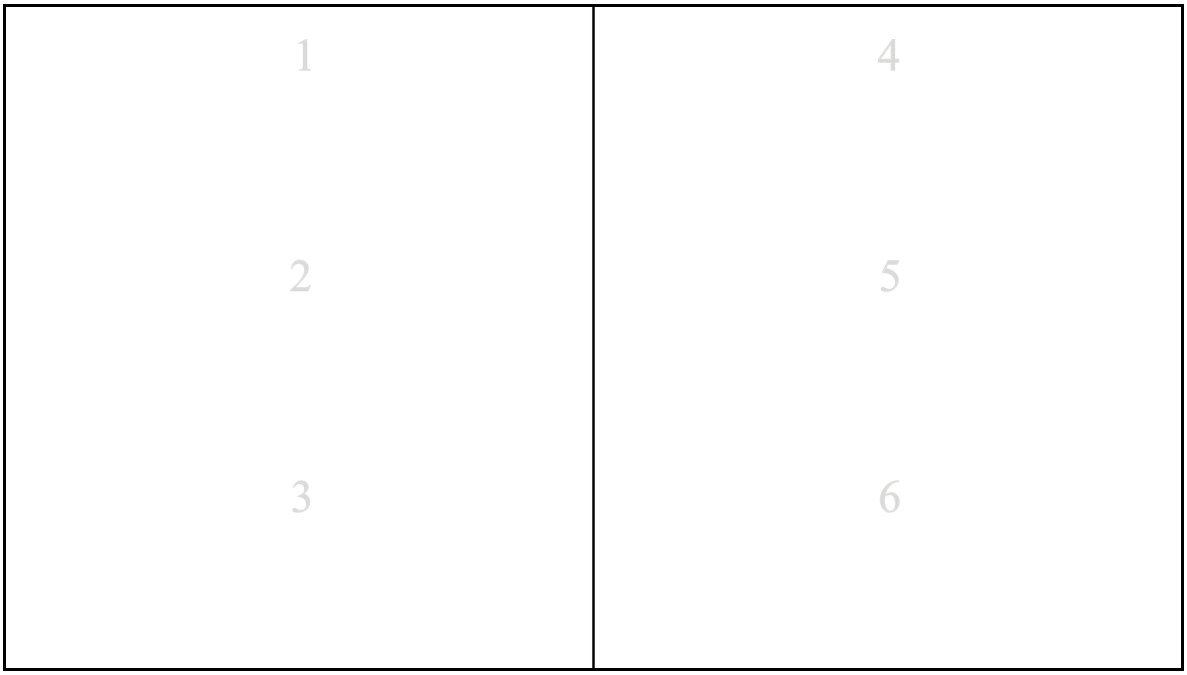
## Emergency Contacts

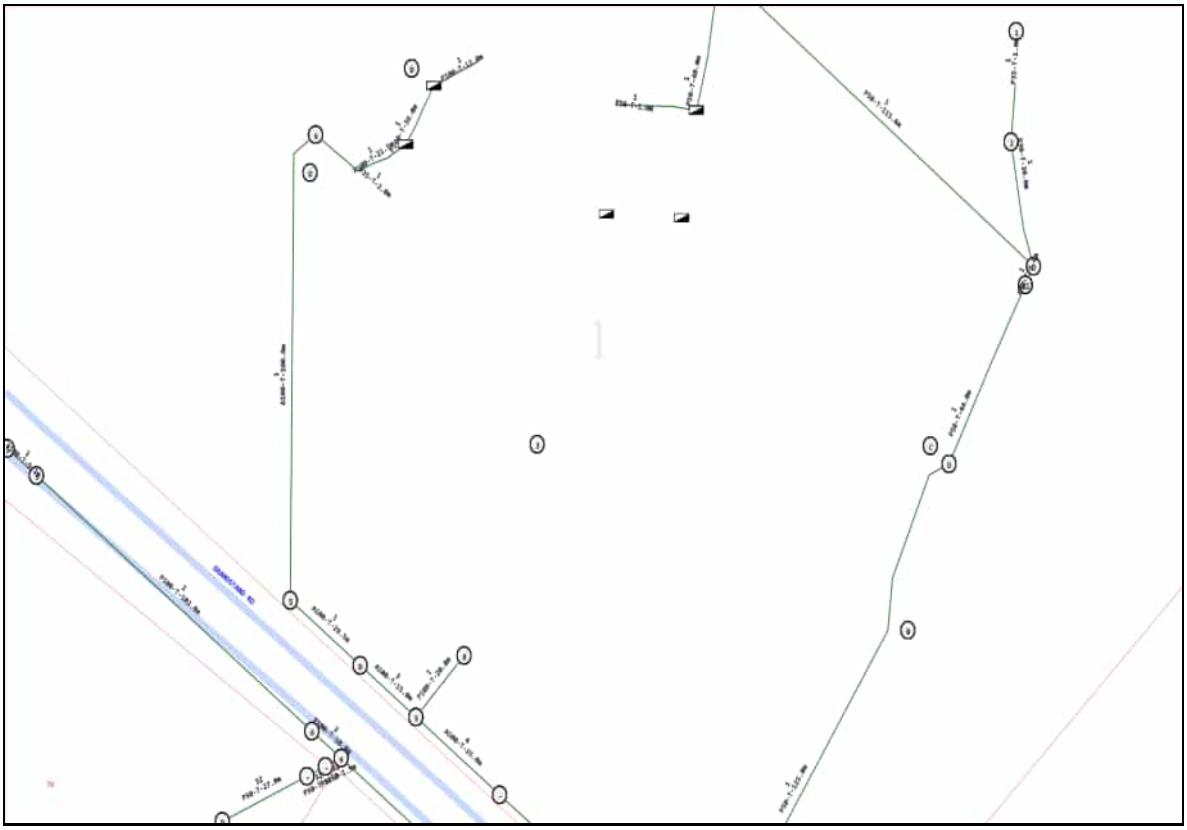
You must immediately report any damage to the **nbn™** network that you are/become aware of. Notification may be by telephone - 1800 626 329.

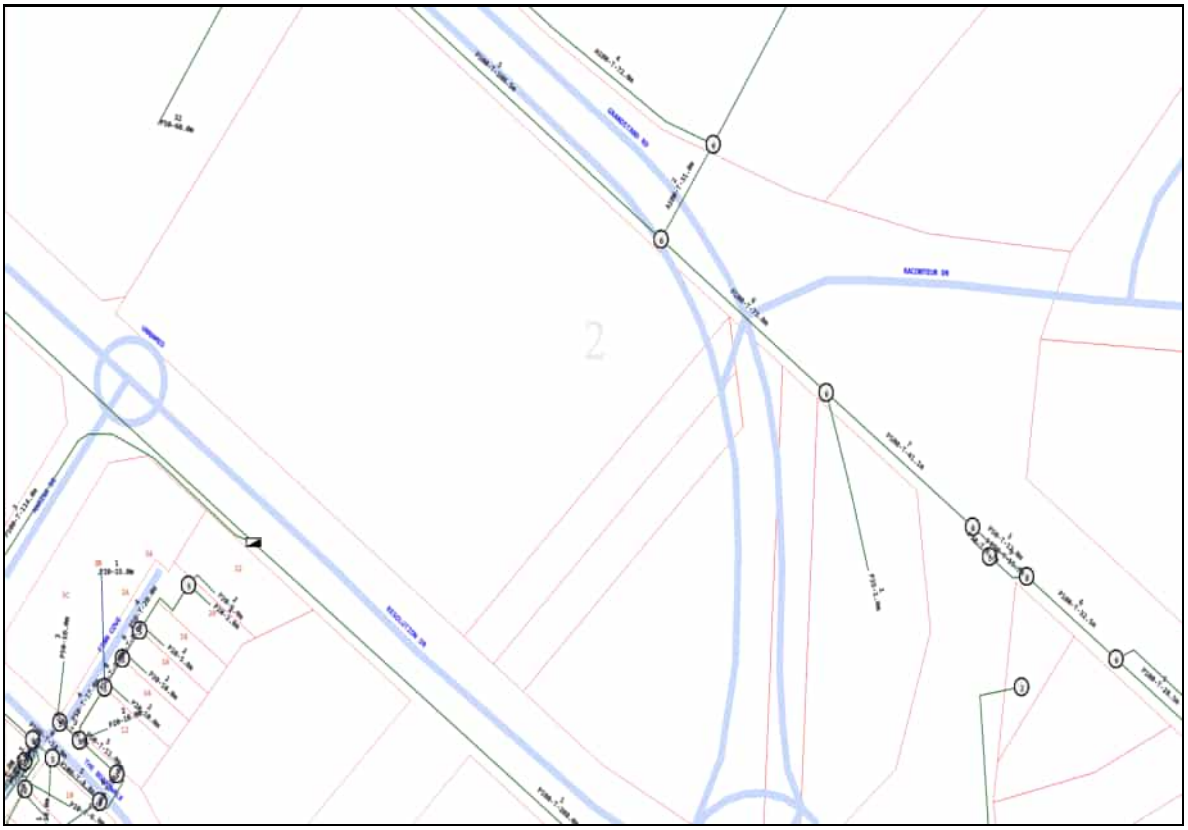
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|---|---|
| **To:** | Justin Zielinski |
| **Phone:** | Not Supplied |
| **Fax:** | Not Supplied |
| **Email:** | jzielinski@tabec.com.au |

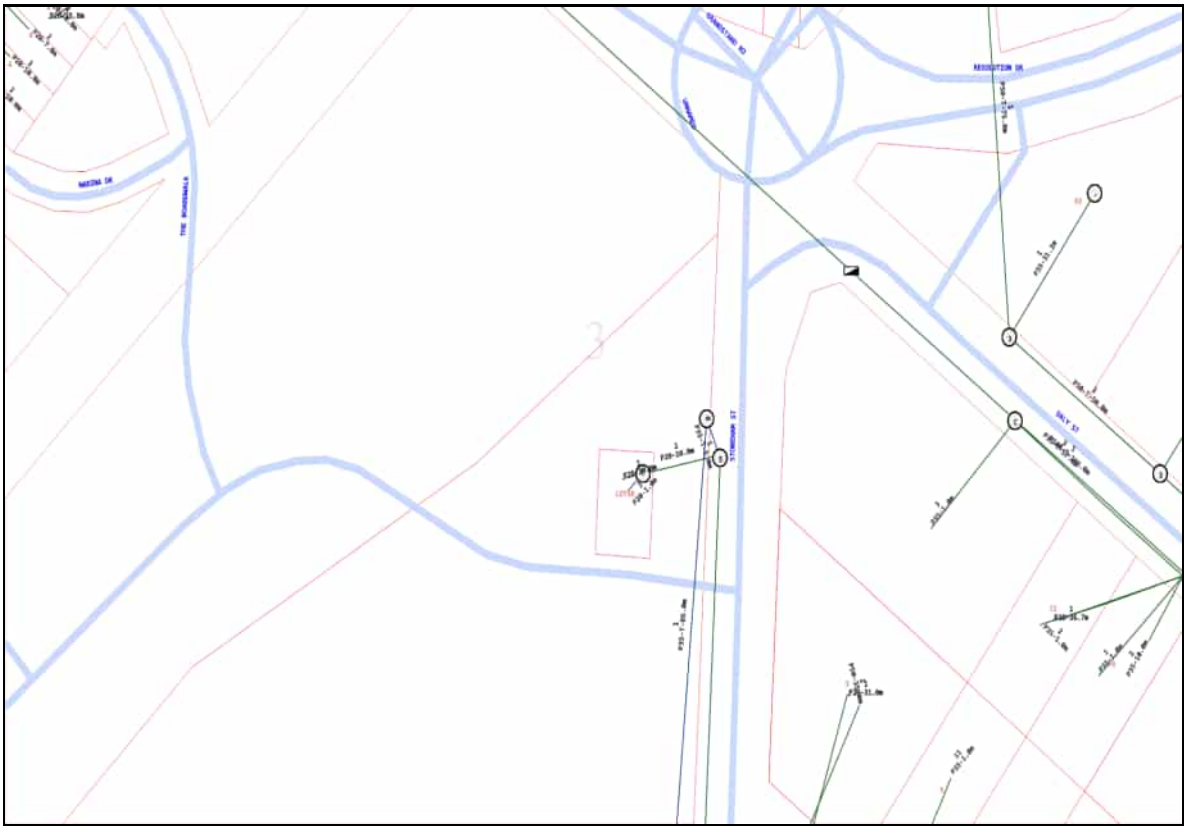
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| **Dial before you dig Job #:** | 36962243 |
| **Sequence #** | 240900610 |
| **Issue Date:** | 21/06/2024 |
| **Location:** | 2 Raconteur Drive , Ascot , WA , 6104 |

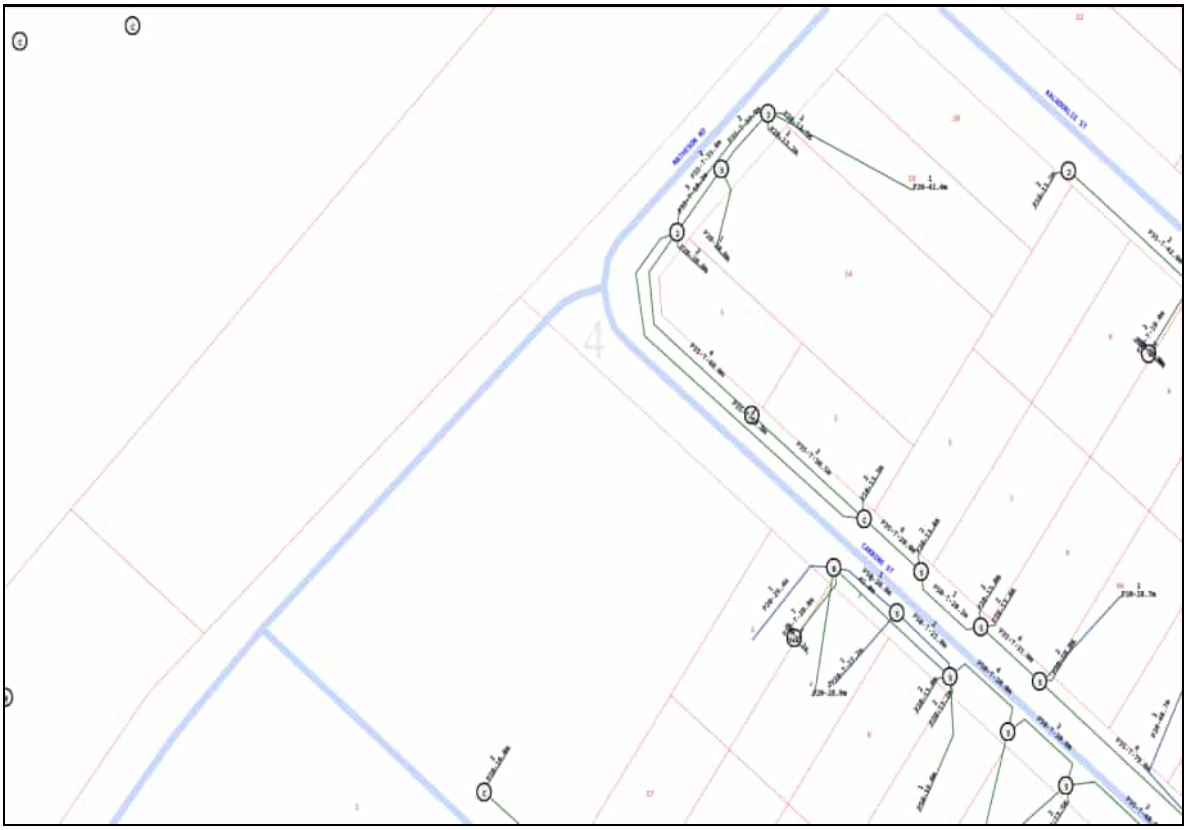
## Indicative Plans are tiled below to demonstrate how to layout and read nbn asset plans

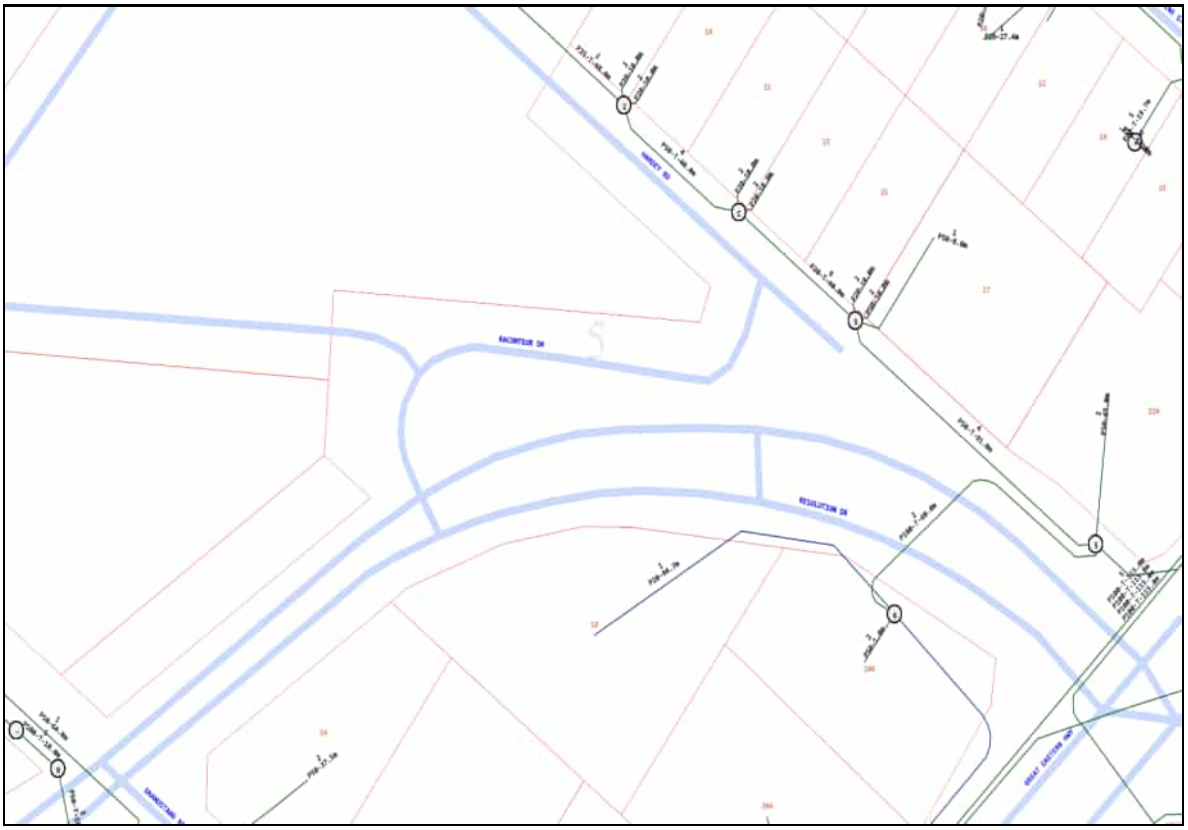


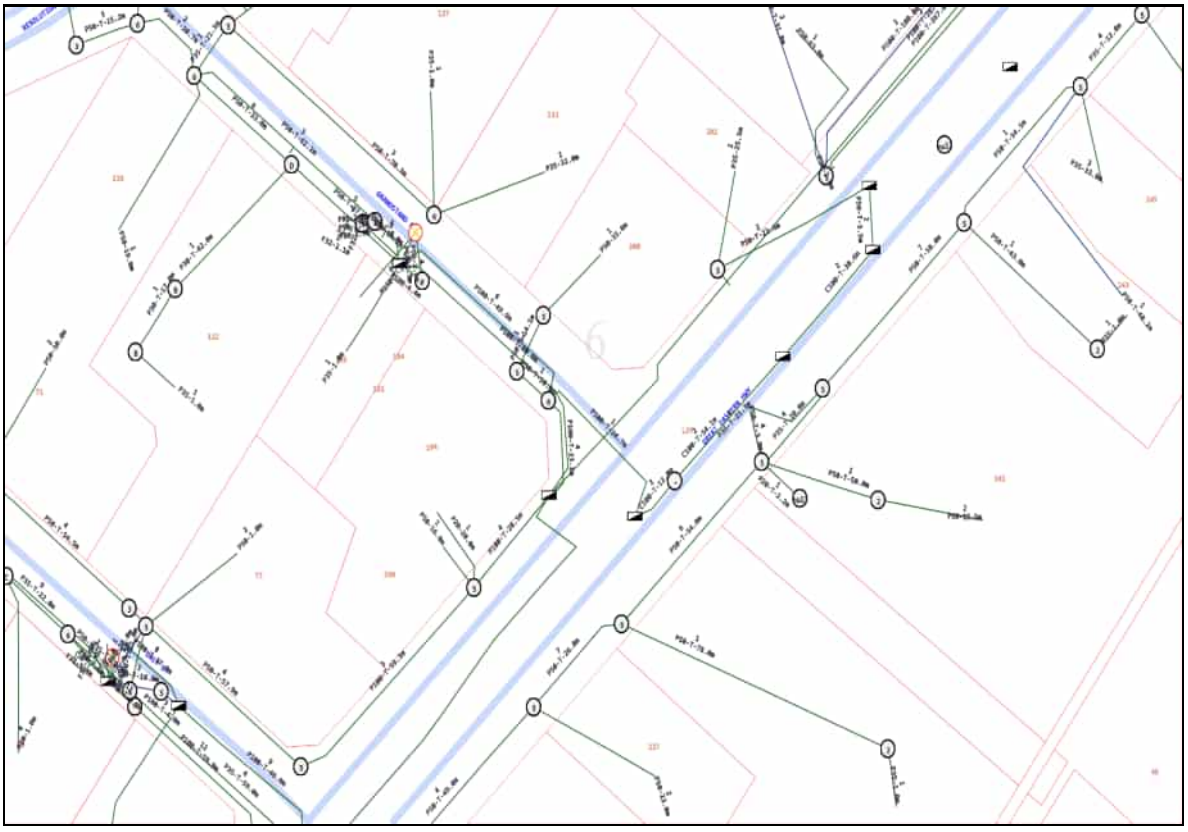






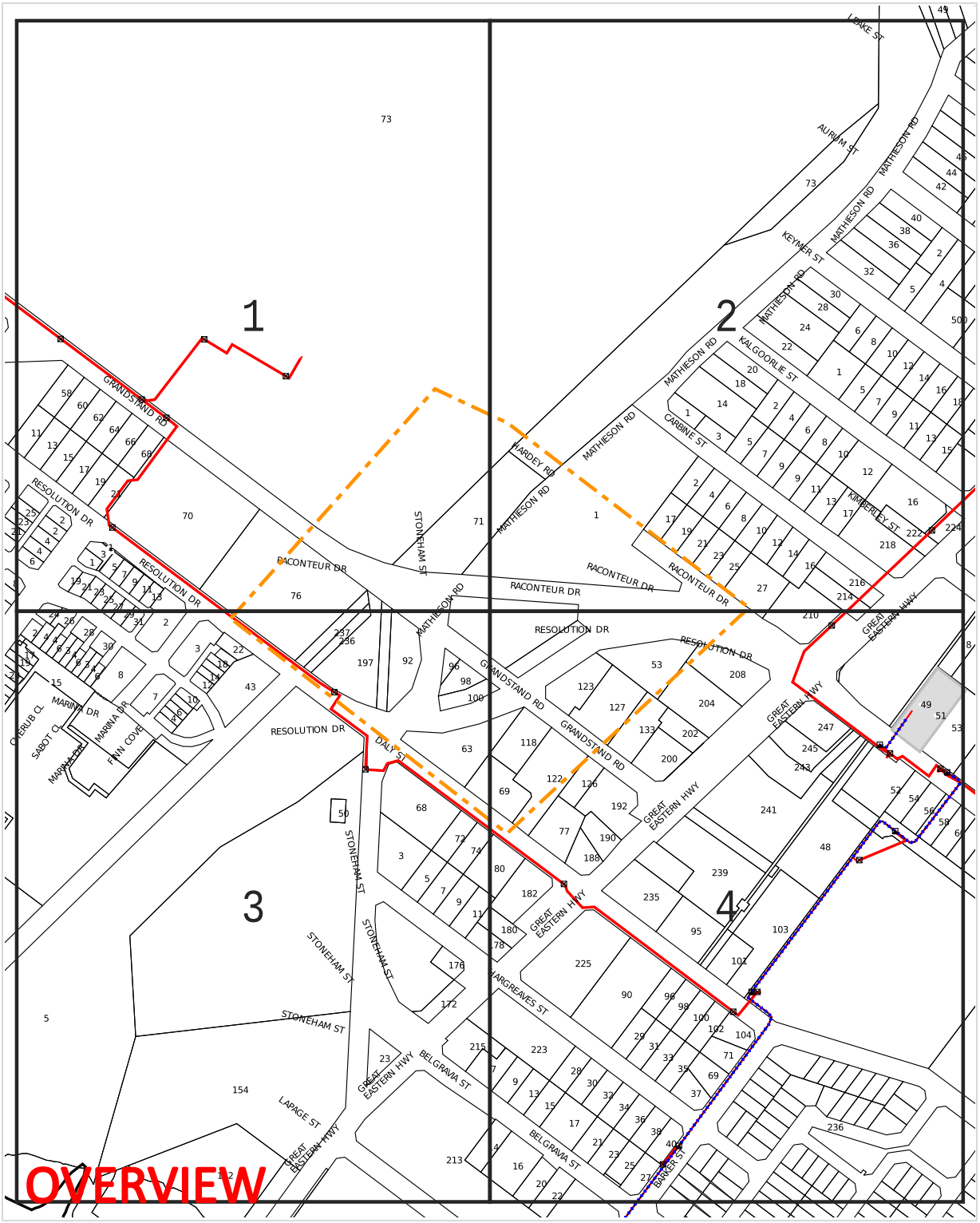






## Emergency Contacts

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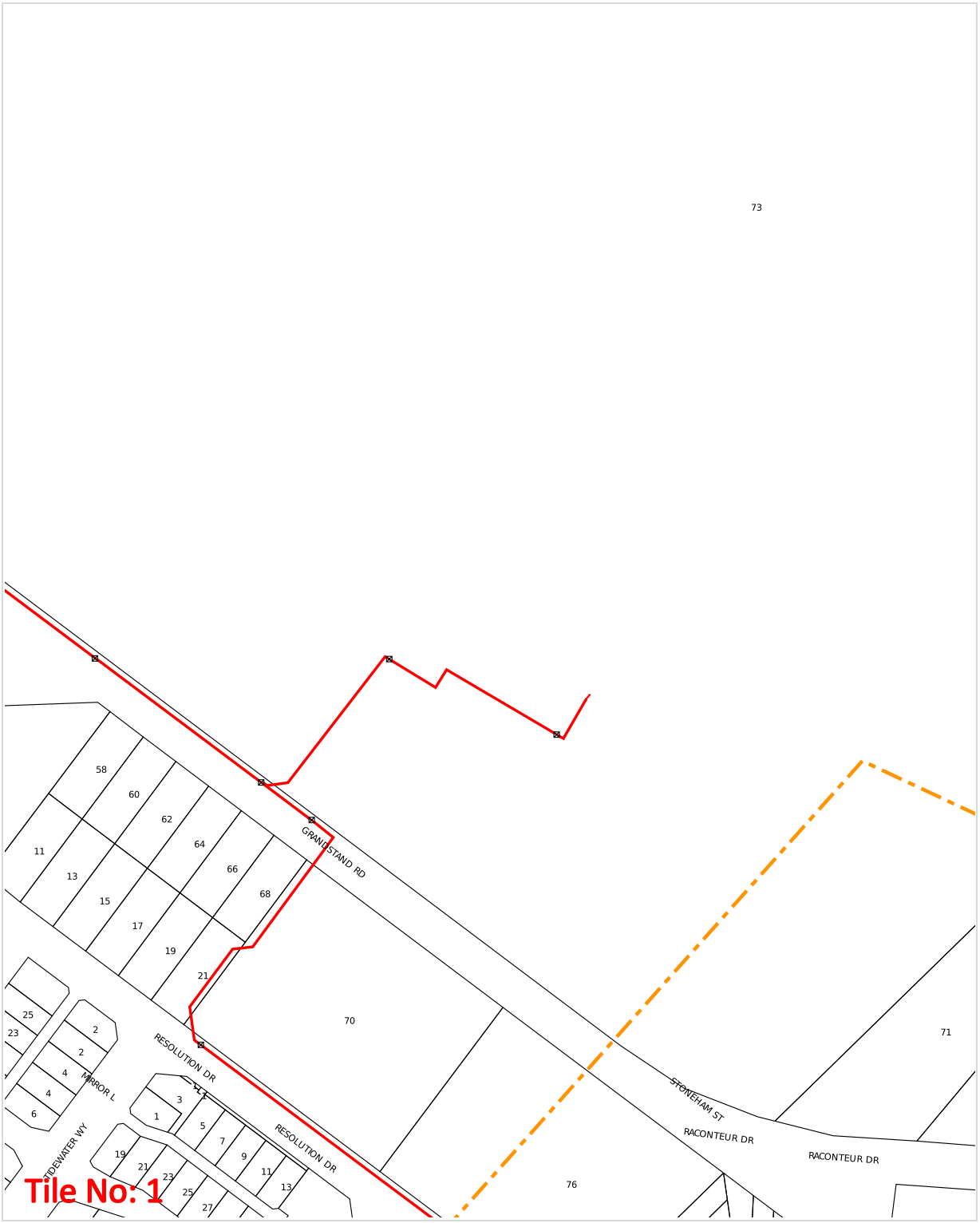

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Sequence Number: 240900607

Date Generated: 21 Jun 2024

For all Optus DBYD plan enquiries –
Email: Fibre.Locations@optus.net.au
For urgent onsite assistance contact 1800 505 777
Optus Limited ACN 052 833 208

Plans generated 21 Jun 2024 by Pelicancorp TicketAccess Software | www.pelicancorp.com




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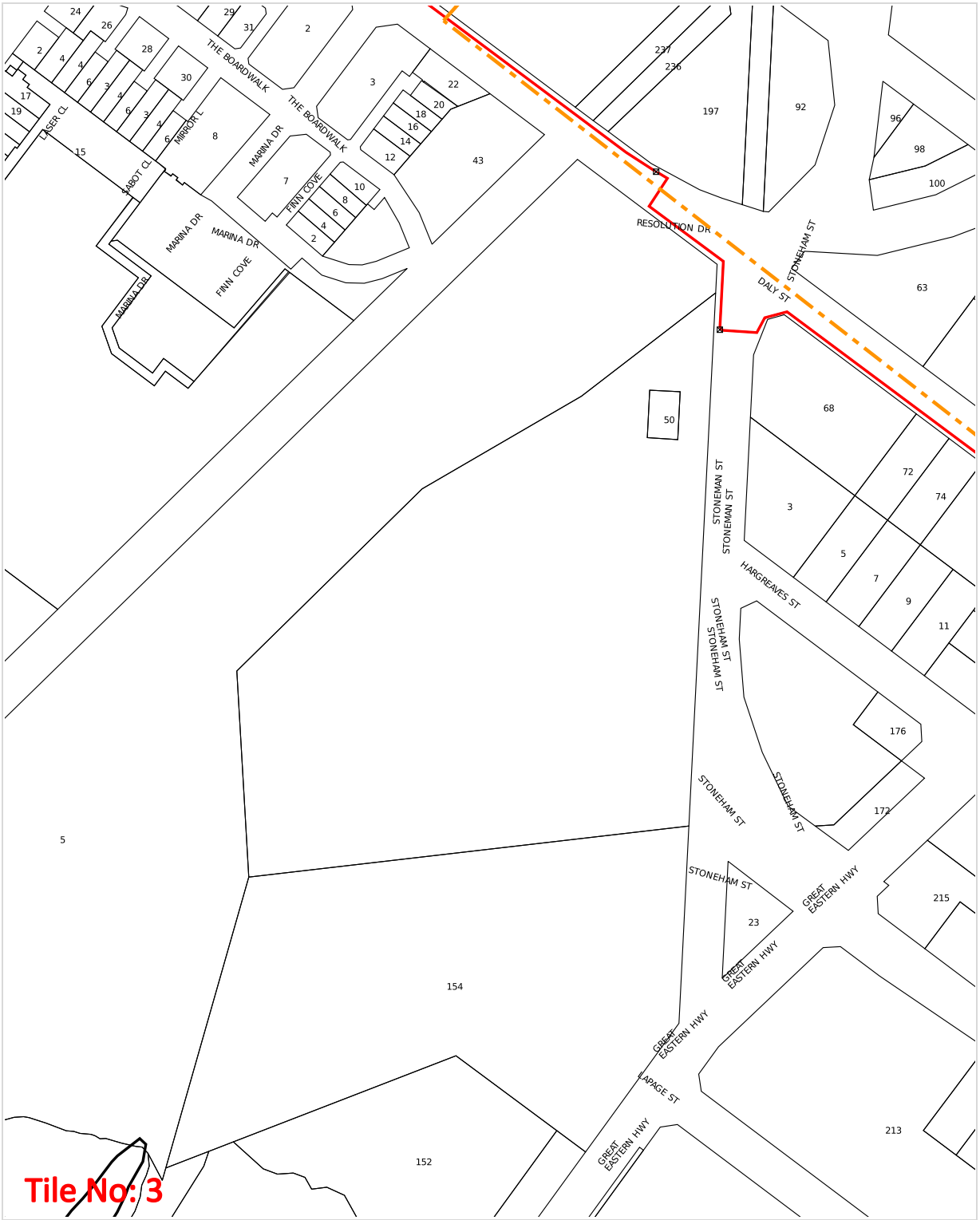

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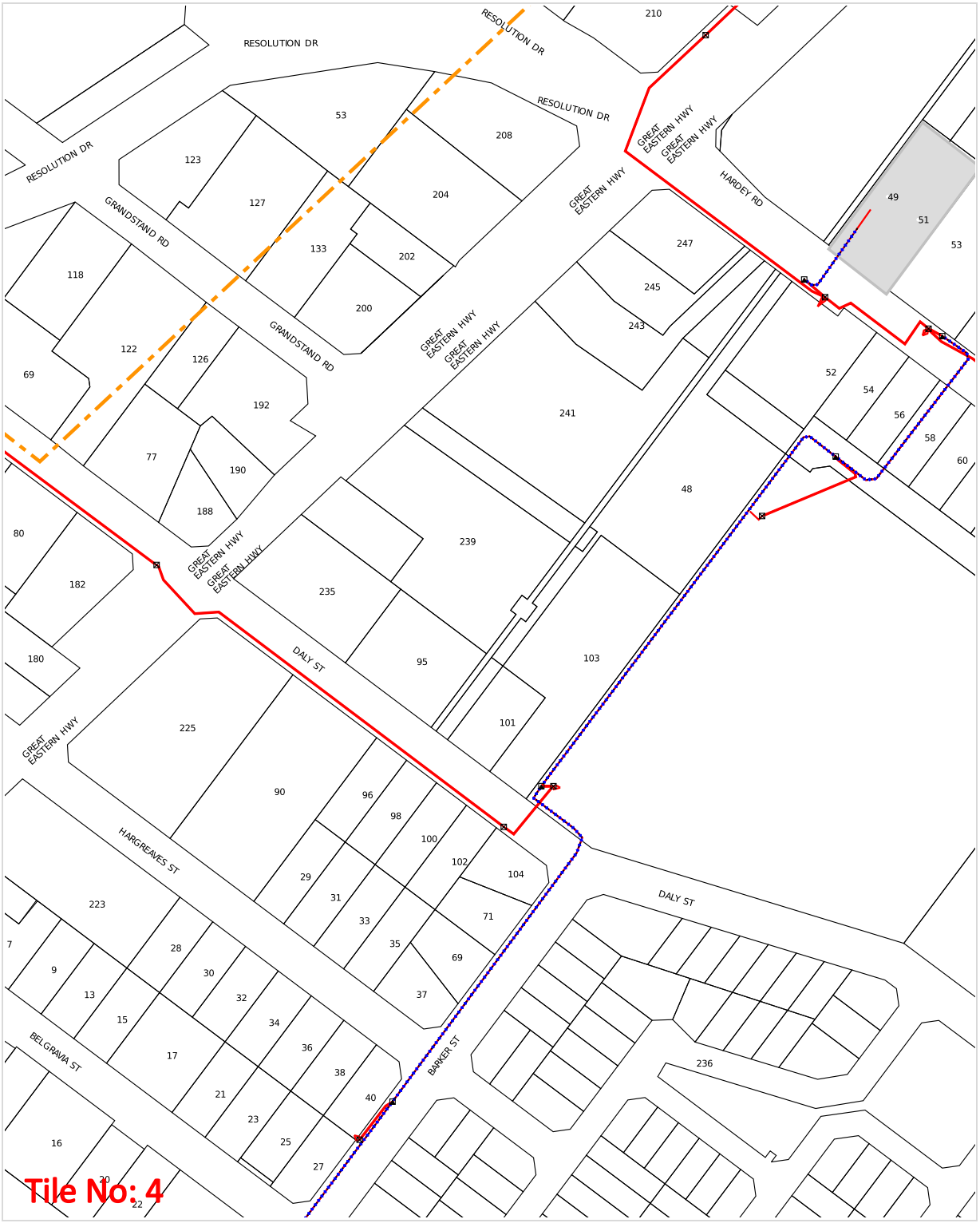

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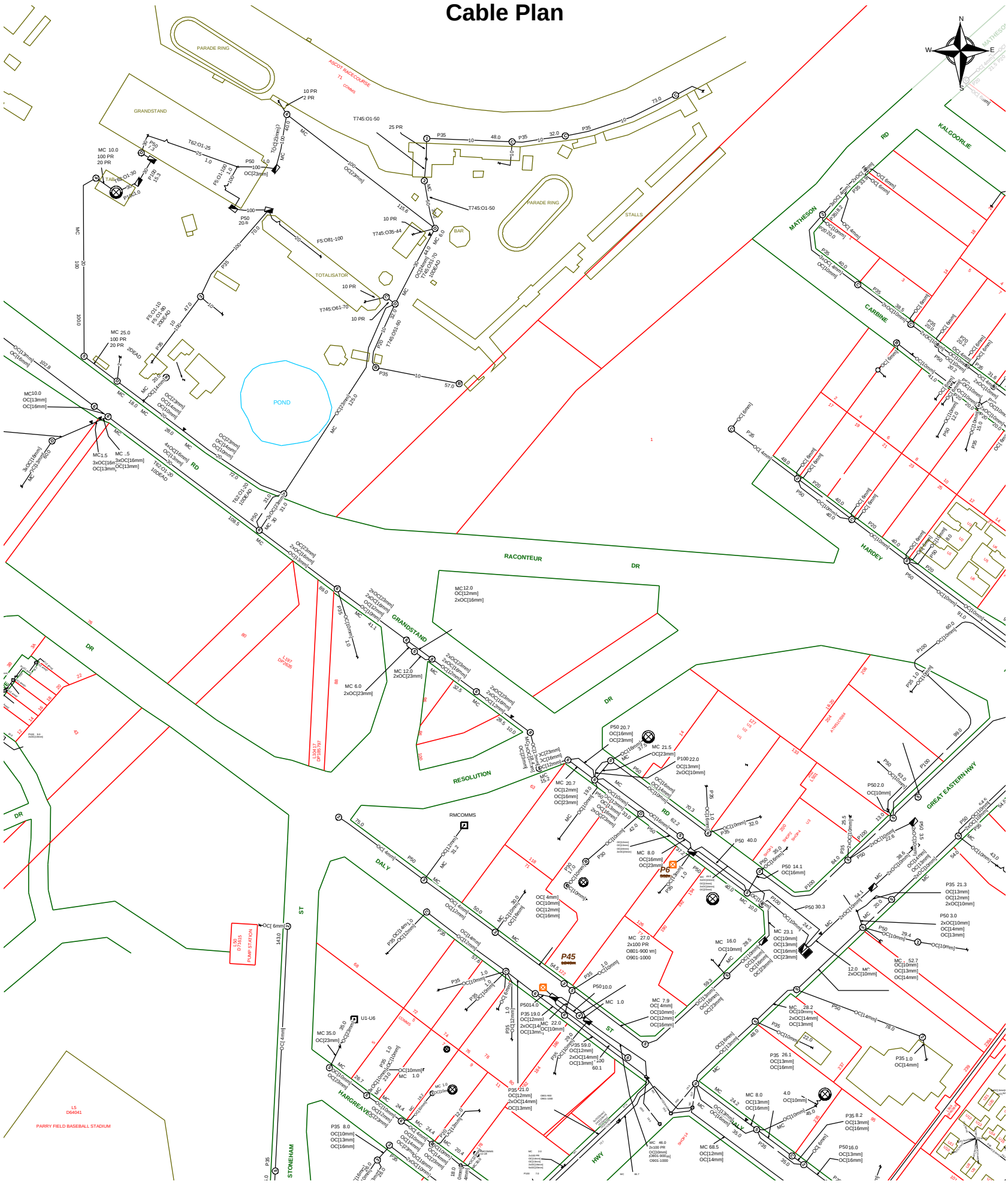
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Date Generated: 21 Jun 2024

For all Optus DBYD plan enquiries –
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For urgent onsite assistance contact 1800 505 777
Optus Limited ACN 052 833 208

Plans generated 21 Jun 2024 by Pelicancorp TicketAccess Software | www.pelicancorp.com

# Cable Plan



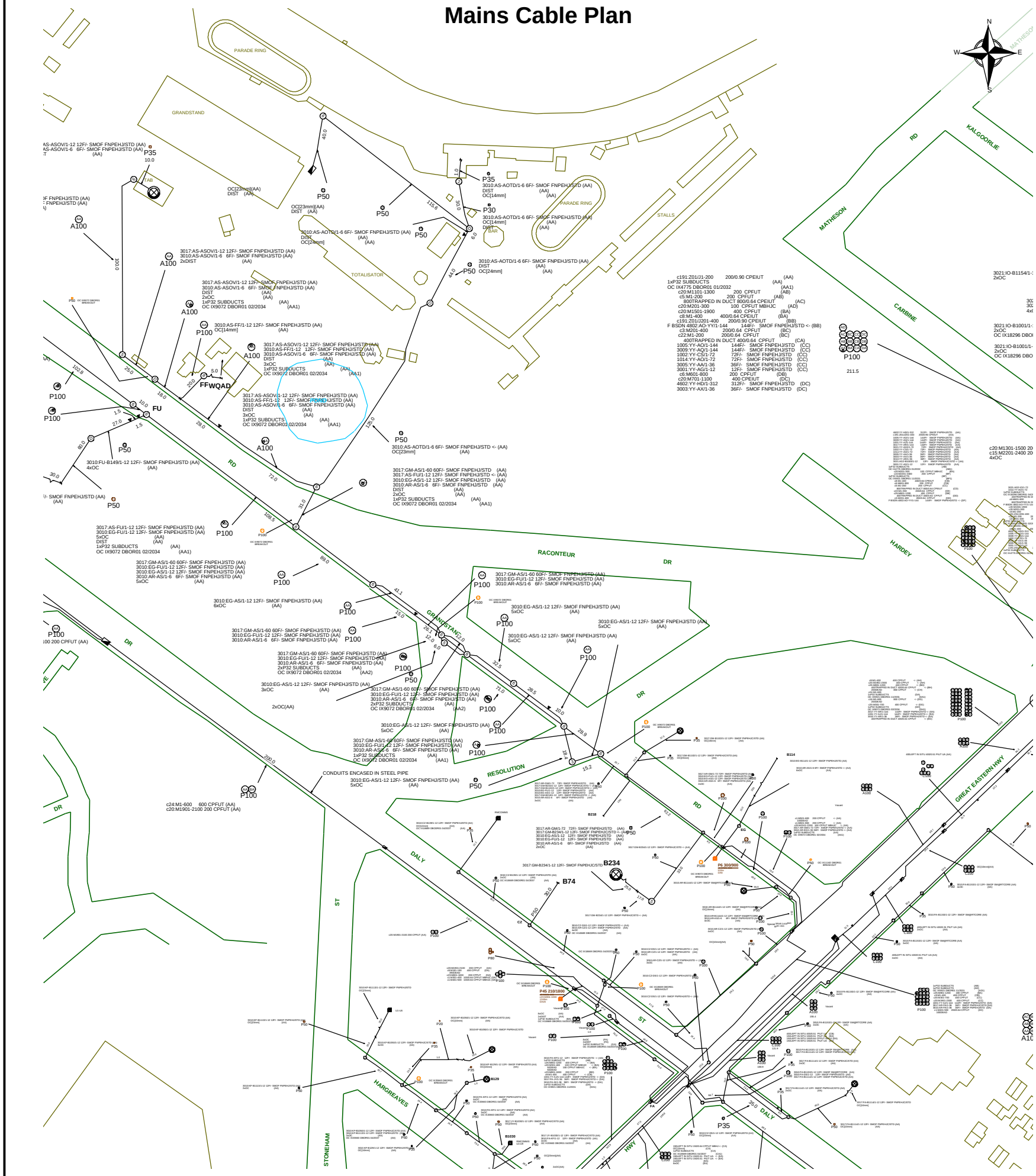

| | |
|---|---|
| Report Damage: https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment<br>Ph - 13 22 03<br>Email - Telstra.Plans@team.telstra.com<br>Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries | Sequence Number: 240900612 |
| TELSTRA LIMITED A.C.N. 086 174 781 | CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance. |
| Generated On 21/06/2024 19:05:39 | |

The above plan must be viewed in conjunction with the Mains Cable Plan on the following page

WARNING
Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information.
As such,Telstra supplied location information is indicative only.Spatial accuracy is not applicable to Quality Level D.
Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it.
Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy.
Further on site investigation is required to validate the exact location of Telstra plant prior to commencing construction work.
A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works.

See the Steps- Telstra Duty of Care that was provided in the email response.

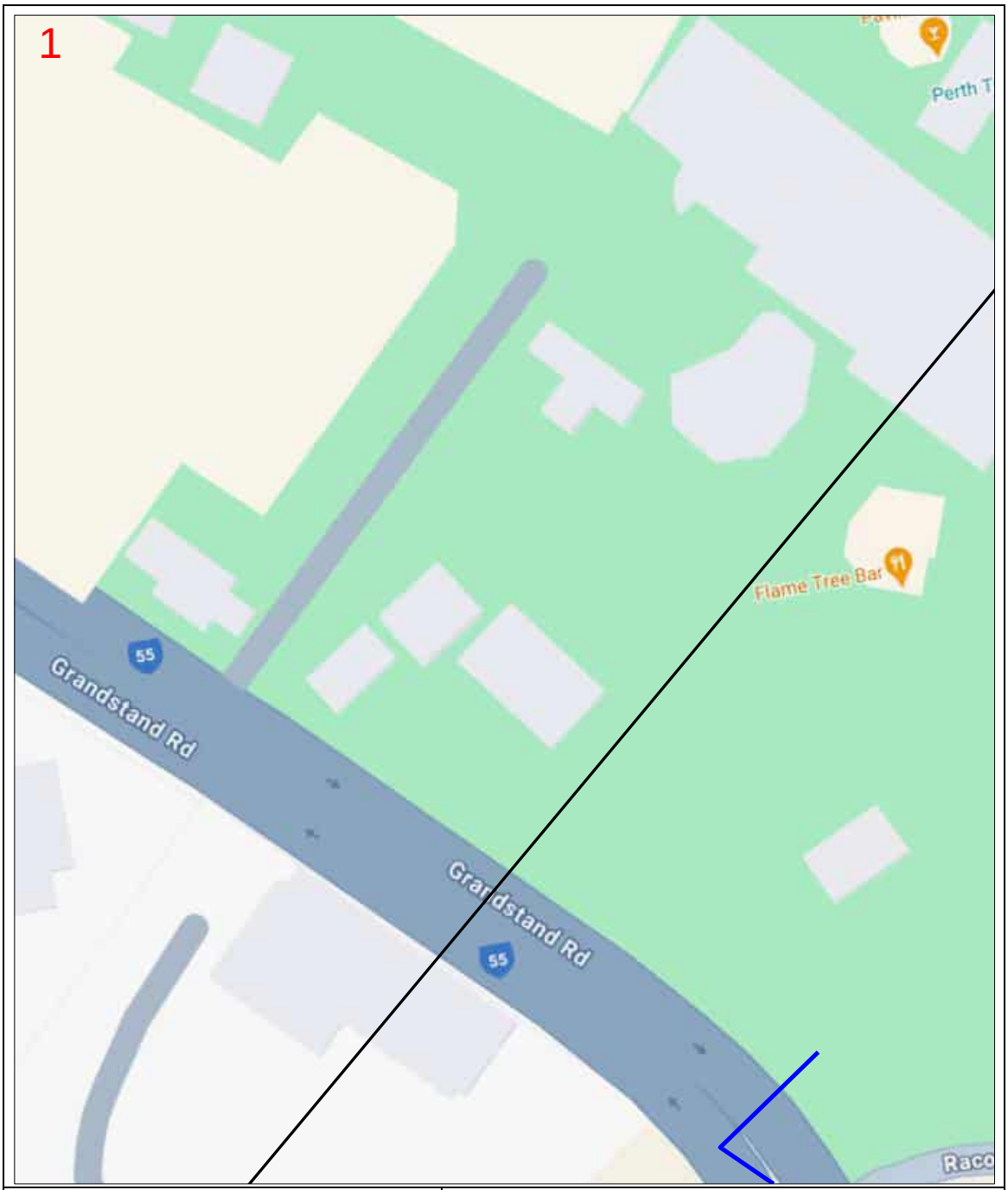
# Mains Cable Plan




| | |
|---|---|
| Report Damage: https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment<br>Ph - 13 22 03<br>Email - Telstra.Plans@team.telstra.com<br>Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries | Sequence Number: 240900612 |
| TELSTRA LIMITED A.C.N. 086 174 781 | CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance. |
| Generated On 21/06/2024 19:05:45 | |

WARNING
Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information.
As such,Telstra supplied location information is indicative only.Spatial accuracy is not applicable to Quality Level D.
Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it.
Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy.
Further on site investigation is required to validate the exact location of Telstra plant prior to commencing construction work.
A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works.

See the Steps- Telstra Duty of Care that was provided in the email response.




**Enquiry Number:** 240900609

**Map Sheet:** 1

**Scale:** 1: 750

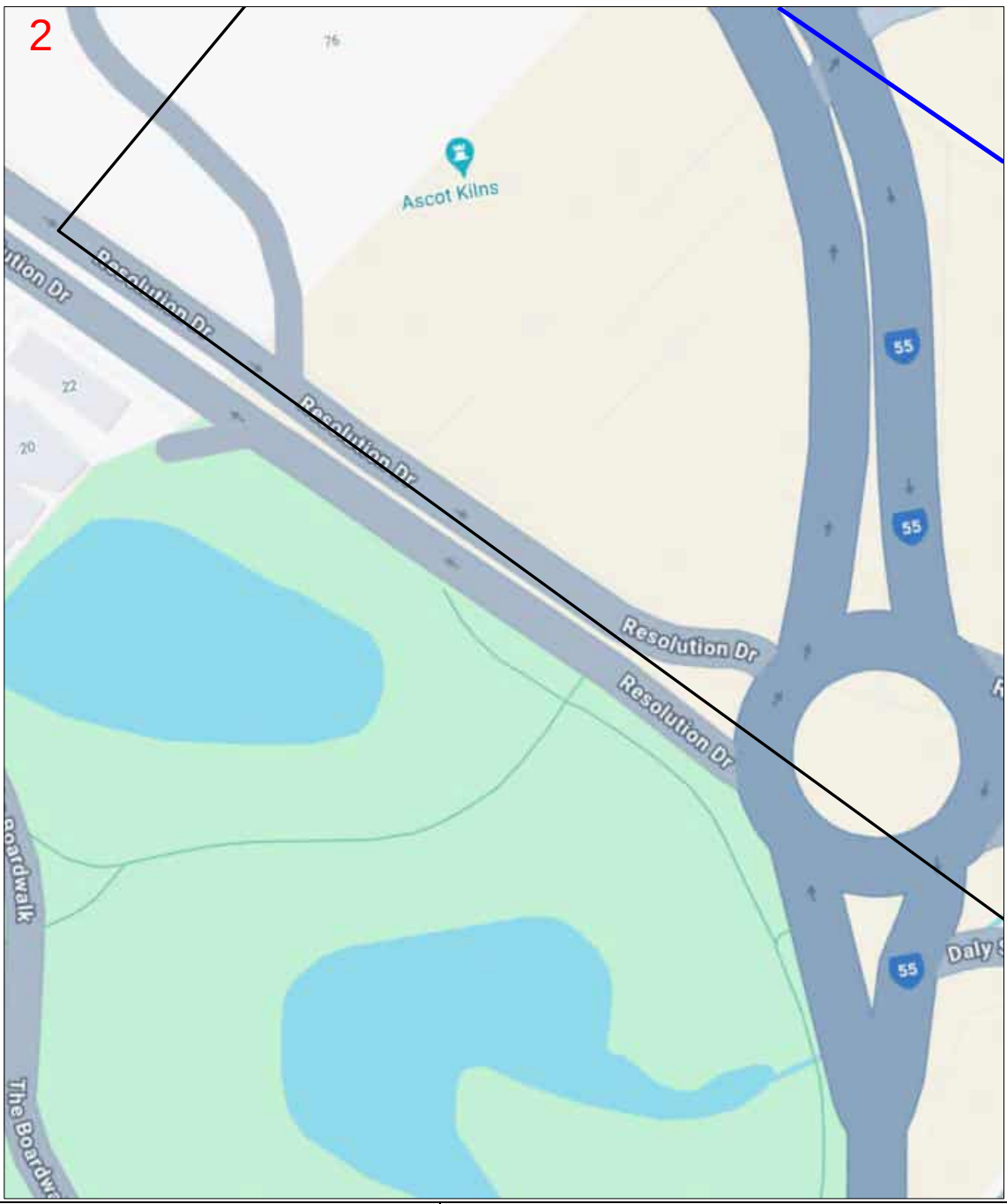
0 0.008km

N

LEGEND

| | | | |
|---|---|---|---|
| BYDA Work Area | | | |
| AAPT/PowerTel Pit | | TransACT Pit | |
| AAPT/PowerTel Duct | | TransACT Duct | |
| DDA Pit | | SOUL Pattinson Telecoms Pit | |
| DDA Duct | | SOUL Pattinson Telecoms Duct | |
| Agile/Adam Pit | | PIPE Networks Pit | |
| Agile/Adam Duct | | PIPE Networks Duct | |

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**Enquiry Number:** 240900609

**Map Sheet:** 2

**Scale:** 1: 750

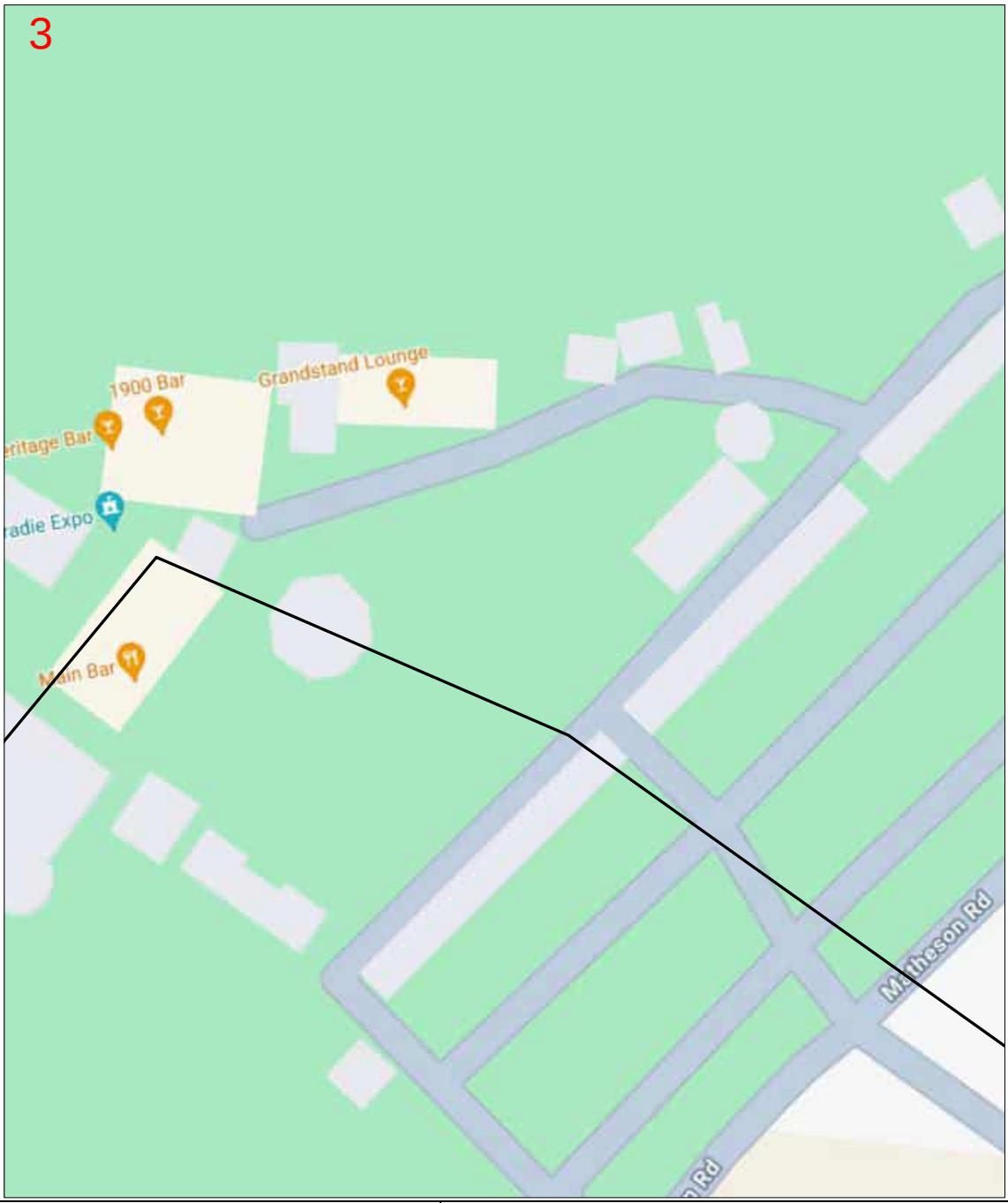
0 0.008km

N

**LEGEND**

| | |
|---|---|
| BYDA Work Area | |
| AAPT/PowerTel Pit | TransACT Pit |
| AAPT/PowerTel Duct | TransACT Duct |
| DDA Pit | SOUL Pattinson Telecoms Pit |
| DDA Duct | SOUL Pattinson Telecoms Duct |
| Agile/Adam Pit | PIPE Networks Pit |
| Agile/Adam Duct | PIPE Networks Duct |

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**Enquiry Number:** 240900609

**Map Sheet:** 3

**Scale:** 1: 750

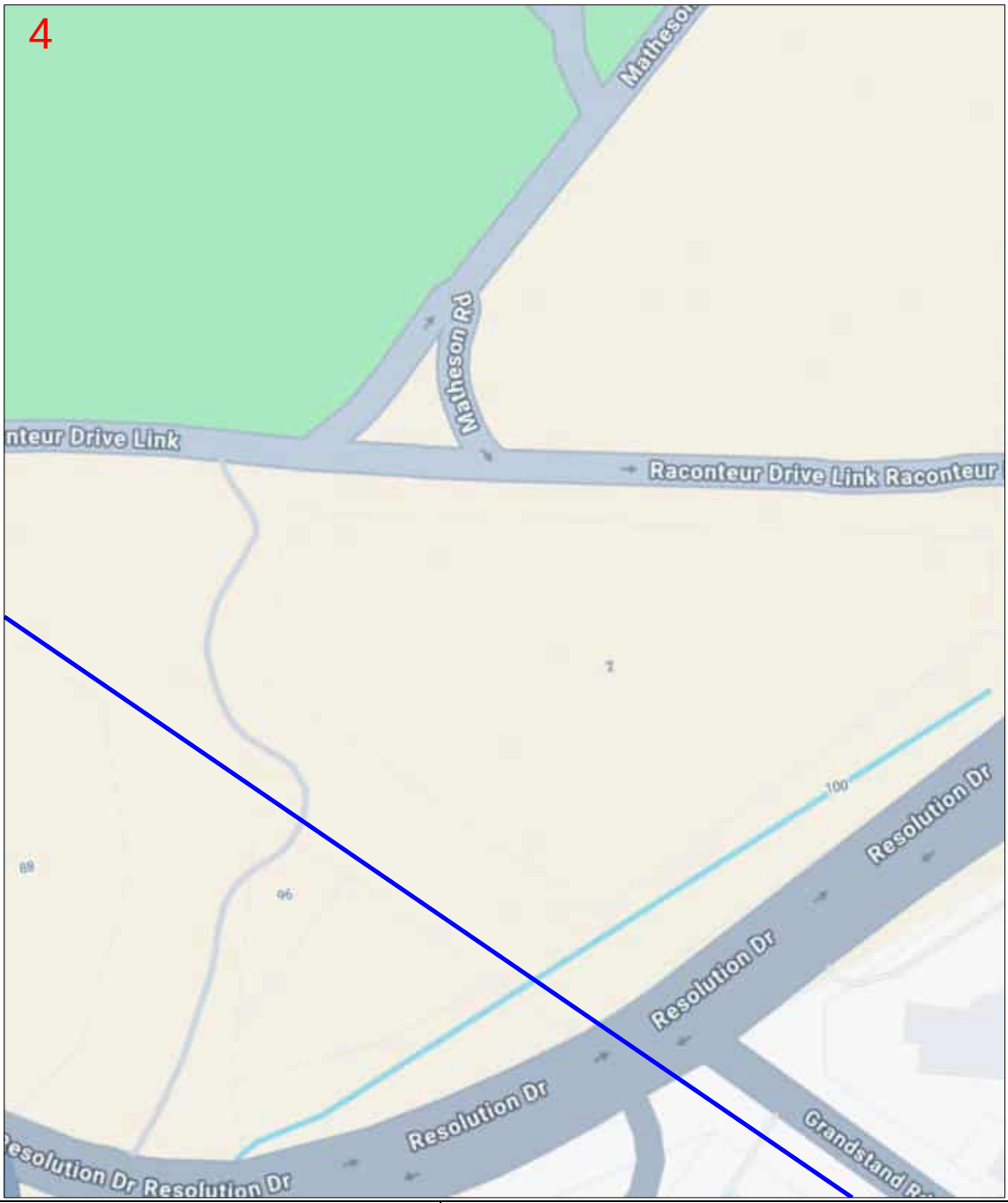
0 0.008km

N

LEGEND

| | |
|---|---|
| BYDA Work Area | |
| AAPT/PowerTel Pit | TransACT Pit |
| AAPT/PowerTel Duct | TransACT Duct |
| DDA Pit | SOUL Pattinson Telecoms Pit |
| DDA Duct | SOUL Pattinson Telecoms Duct |
| Agile/Adam Pit | PIPE Networks Pit |
| Agile/Adam Duct | PIPE Networks Duct |

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**Enquiry Number:** 240900609

**Map Sheet:** 4

**Scale:** 1: 750

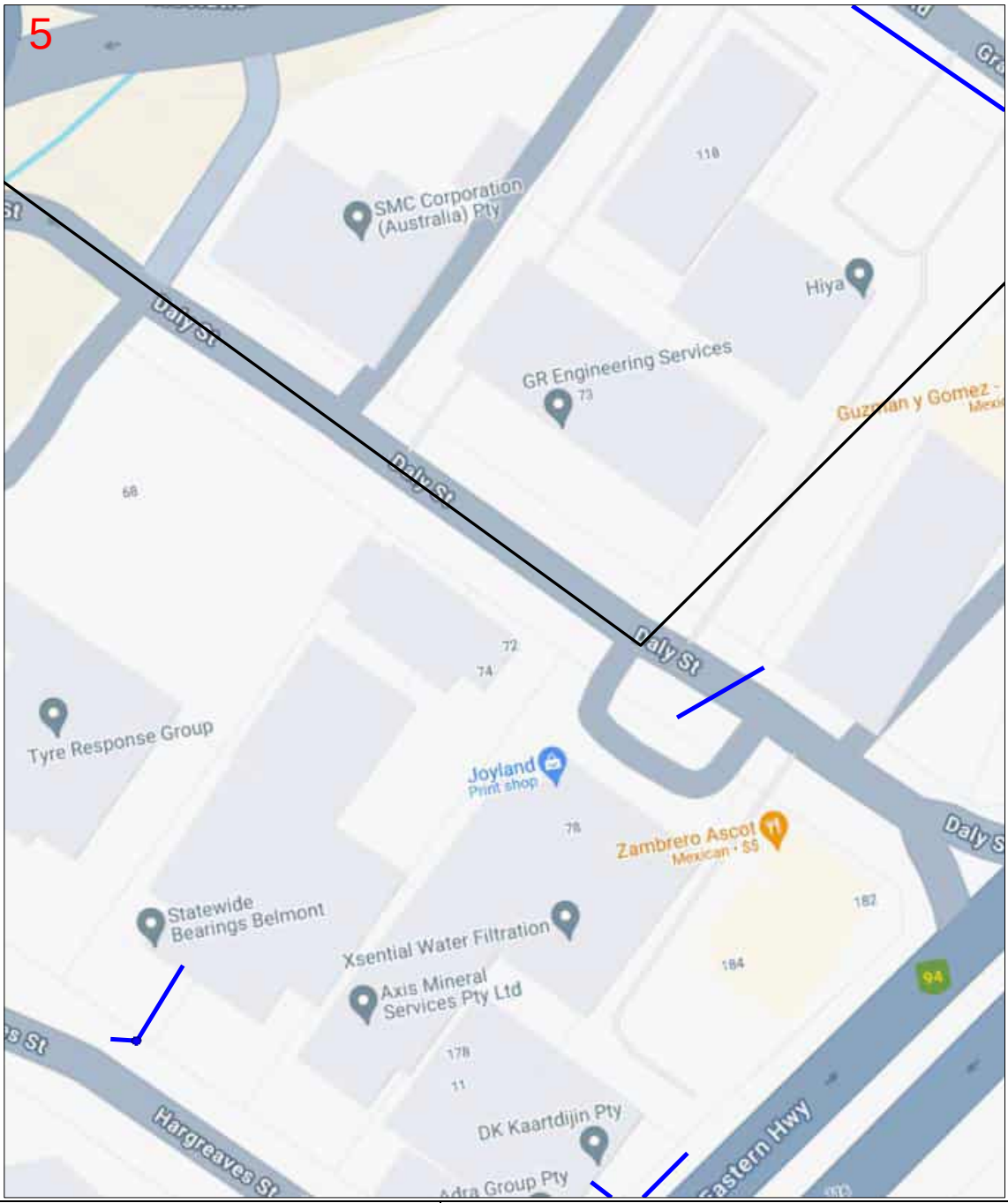
0 0.008km

N

**LEGEND**

| | |
|---|---|
| BYDA Work Area | |
| AAPT/PowerTel Pit | TransACT Pit |
| AAPT/PowerTel Duct | TransACT Duct |
| DDA Pit | SOUL Pattinson Telecoms Pit |
| DDA Duct | SOUL Pattinson Telecoms Duct |
| Agile/Adam Pit | PIPE Networks Pit |
| Agile/Adam Duct | PIPE Networks Duct |

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**Enquiry Number:** 240900609

**Map Sheet:** 5

**Scale:** 1: 750

0 0.008km

N

**LEGEND**

BYDA Work Area

| | |
|---|---|
| AAPT/PowerTel Pit | TransACT Pit |
| AAPT/PowerTel Duct | TransACT Duct |
| DDA Pit | SOUL Pattinson Telecoms Pit |
| DDA Duct | SOUL Pattinson Telecoms Duct |
| Agile/Adam Pit | PIPE Networks Pit |
| Agile/Adam Duct | PIPE Networks Duct |

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**Enquiry Number:** 240900609

**Map Sheet:** 6

**Scale:** 1: 750

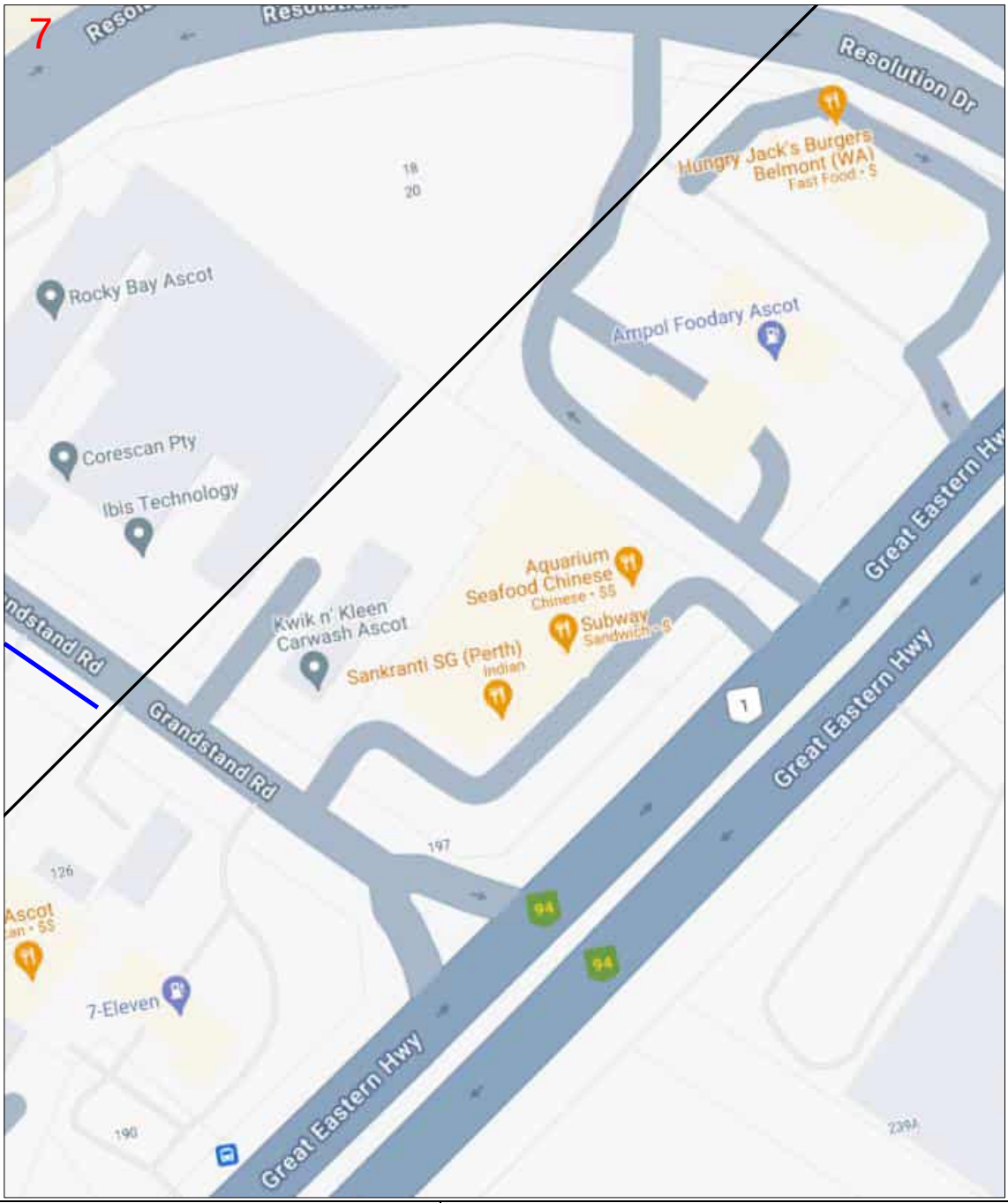
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N

***LEGEND***

| | |
|---|---|
| BYDA Work Area | |
| AAPT/PowerTel Pit | TransACT Pit |
| AAPT/PowerTel Duct | TransACT Duct |
| DDA Pit | SOUL Pattinson Telecoms Pit |
| DDA Duct | SOUL Pattinson Telecoms Duct |
| Agile/Adam Pit | PIPE Networks Pit |
| Agile/Adam Duct | PIPE Networks Duct |

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**Enquiry Number:** 240900609

**Map Sheet:** 7

**Scale:** 1: 750

0 0.008km

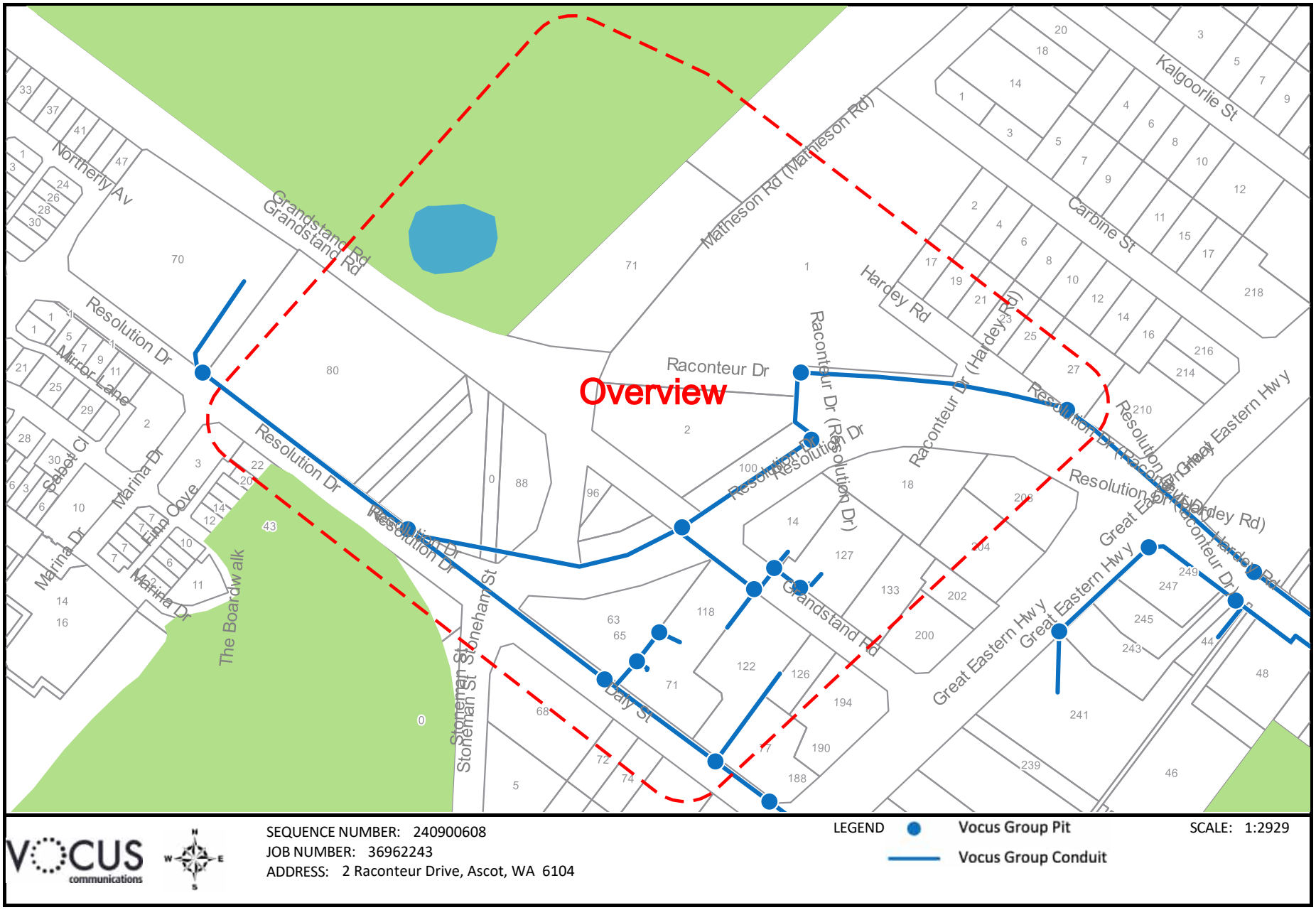
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**LEGEND**

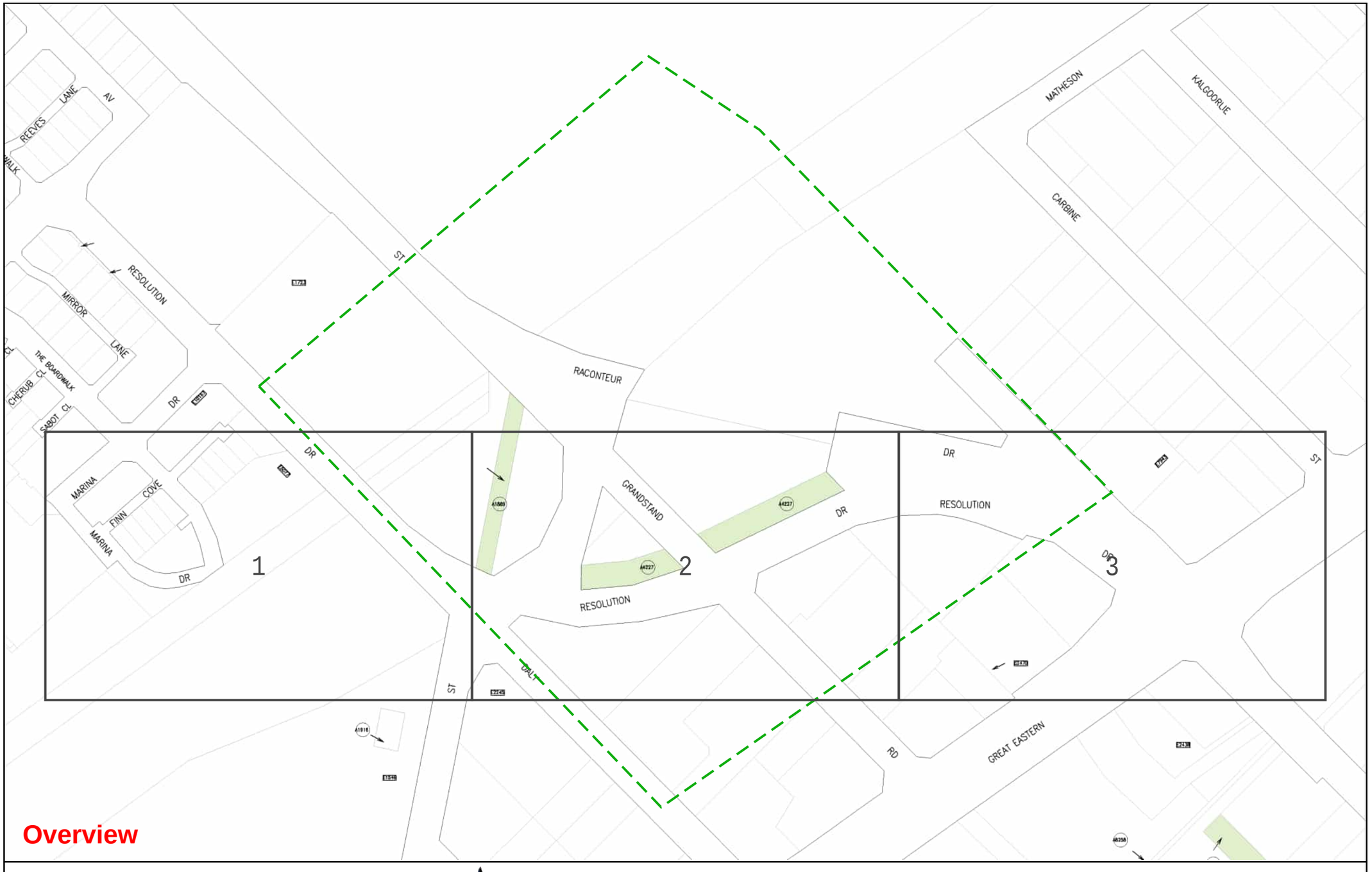
BYDA Work Area

| | |
|---|---|
| AAPT/PowerTel Pit | TransACT Pit |
| AAPT/PowerTel Duct | TransACT Duct |
| DDA Pit | SOUL Pattinson Telecoms Pit |
| DDA Duct | SOUL Pattinson Telecoms Duct |
| Agile/Adam Pit | PIPE Networks Pit |
| Agile/Adam Duct | PIPE Networks Duct |

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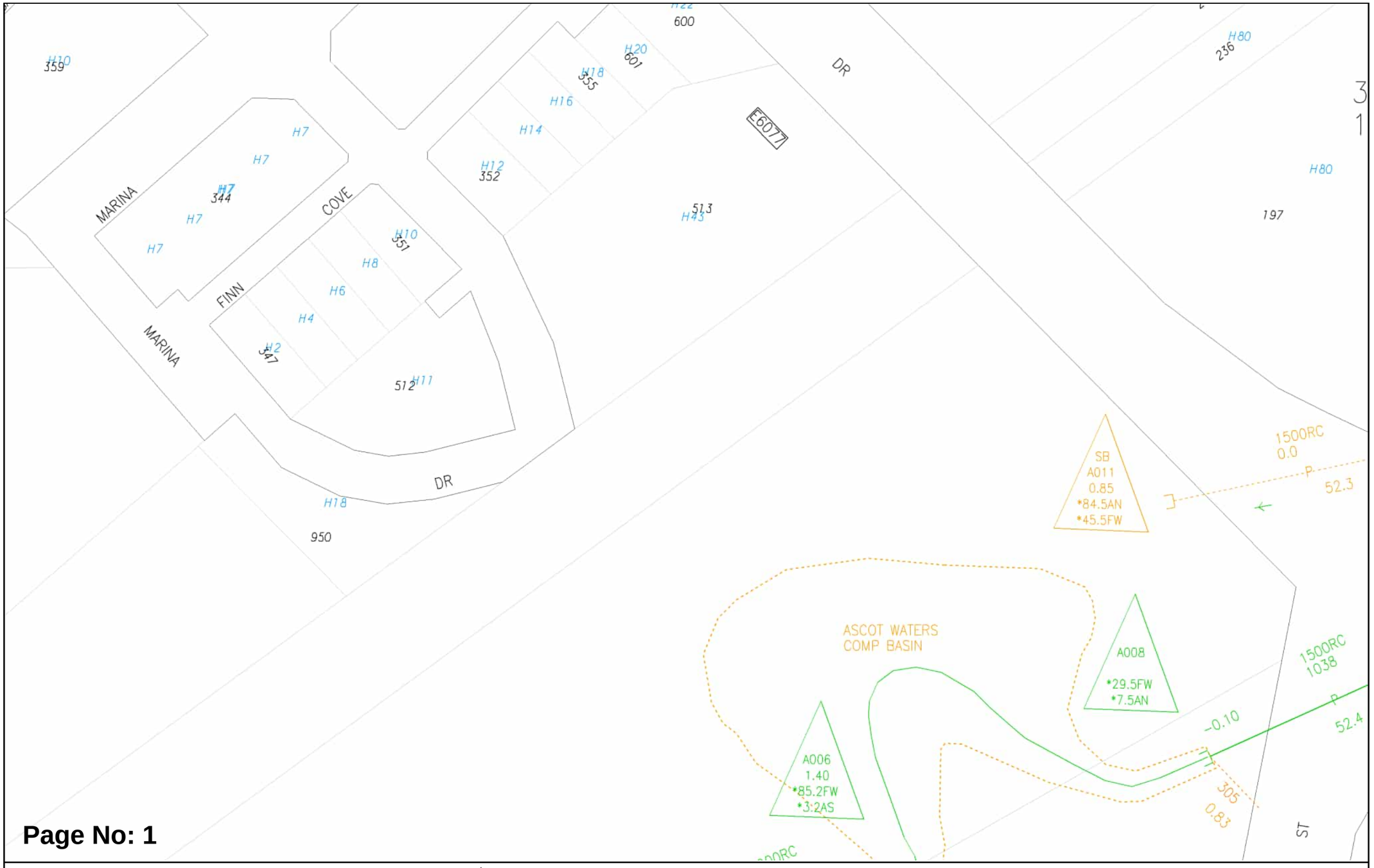

WATER CORPORATION

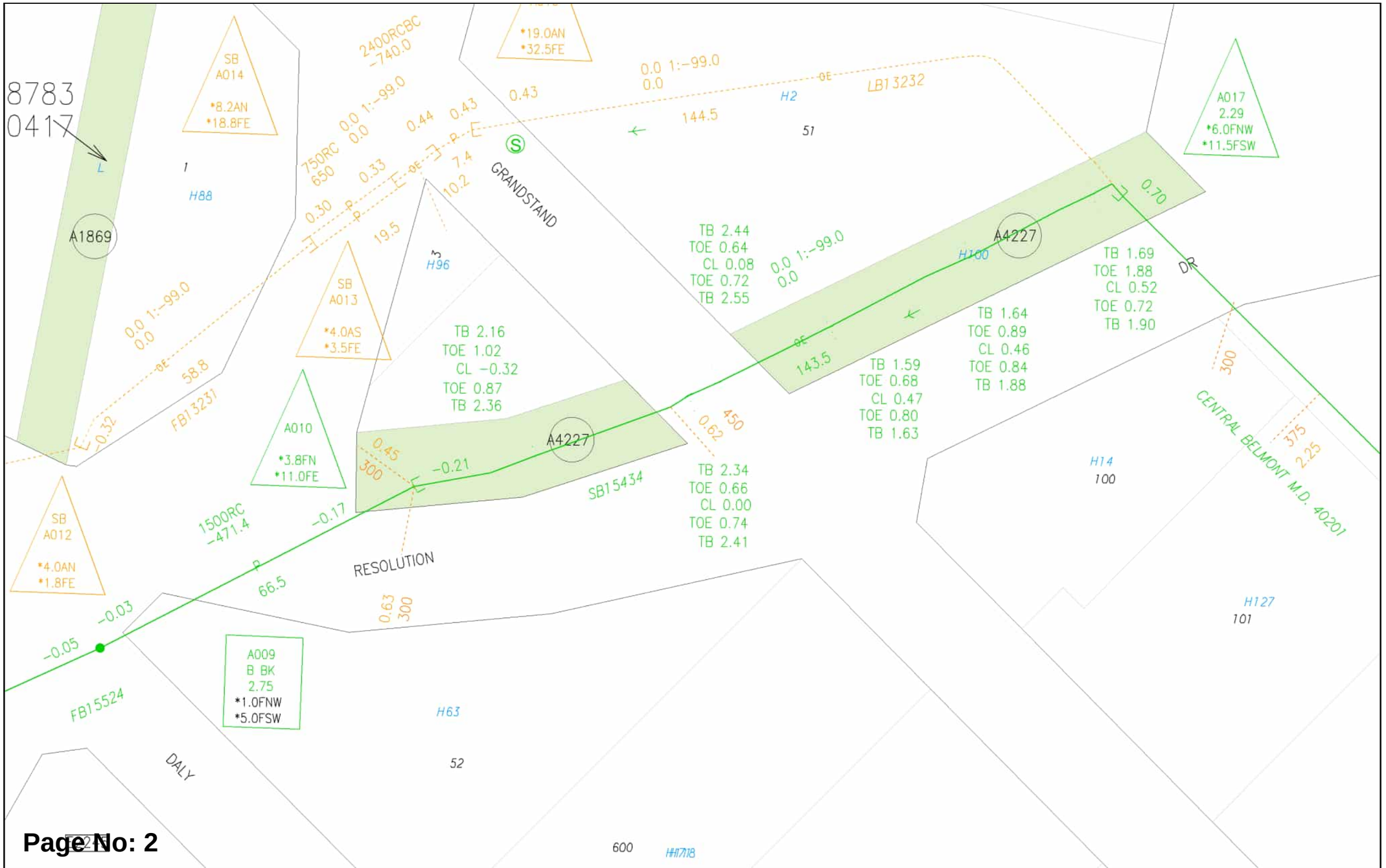
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| Job No.: | 36962243 |
| Sequence No.: | 240900613 |
| Print Date: | 21 Jun 2024 |

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**Drainage**

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MARINA
COVE
FINN
MARINA
DR
DR
H7
H7
H7
H7
H7
344
H10
359
H10
351
H8
H6
H4
H2
347
H18
950
H11
512
H12
352
H14
H16
H18
355
H20
601
600
H22
E6077
513
H43
H80
236
H80
197
SB
A011
0.85
*84.5AN
*45.5FW
1500RC
0.0
P
52.3
ASCOT WATERS
COMP BASIN
A008
*29.5FW
*7.5AN
A006
1.40
*85.2FW
*3.2AS
1500RC
1038
P
52.4
-0.10
305
0.83
ST
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WATER CORPORATION
Scale: 1:750
Job No.: 36962243
Sequence No.: 240900613
Print Date: 21 Jun 2024
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Drainage
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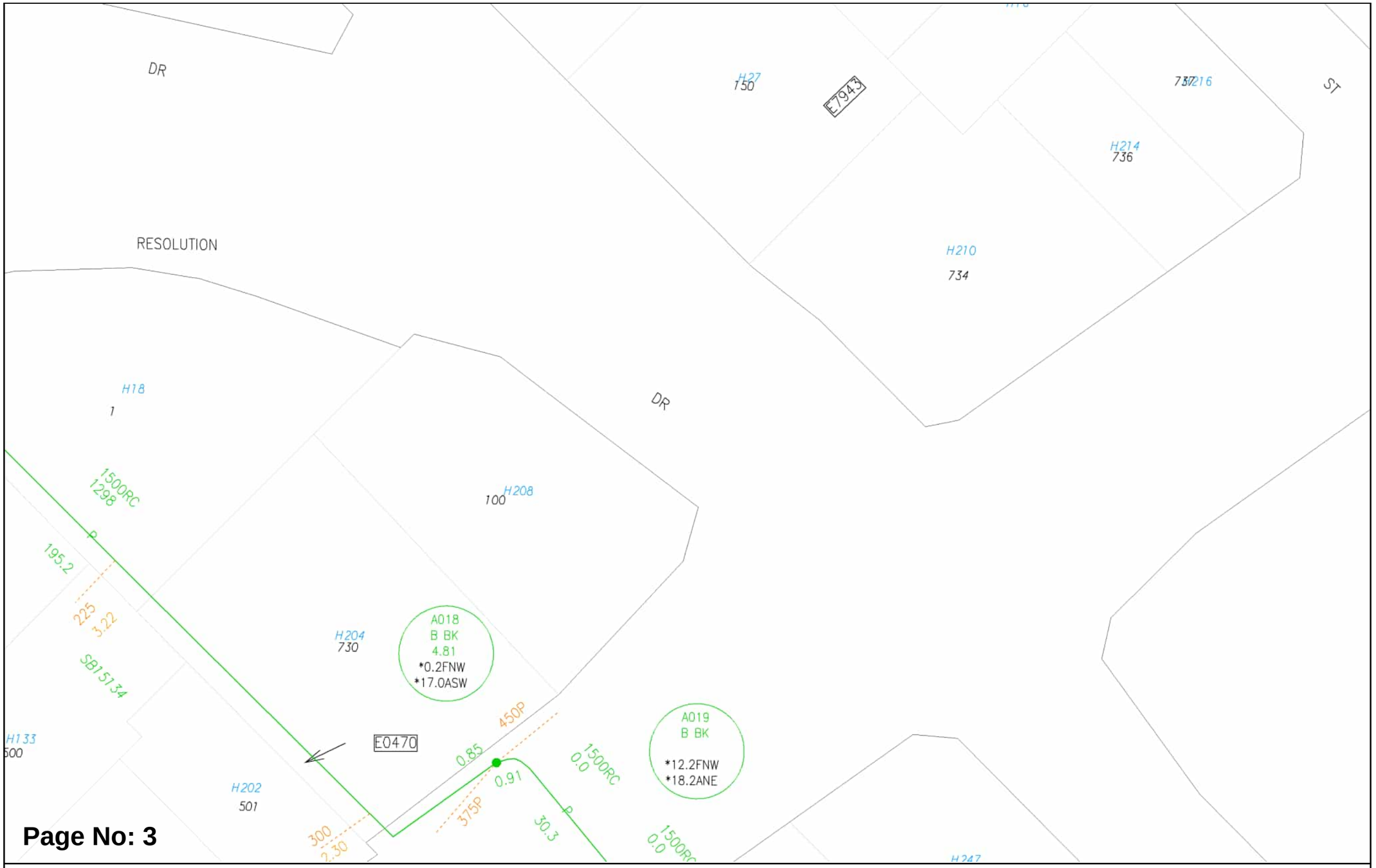

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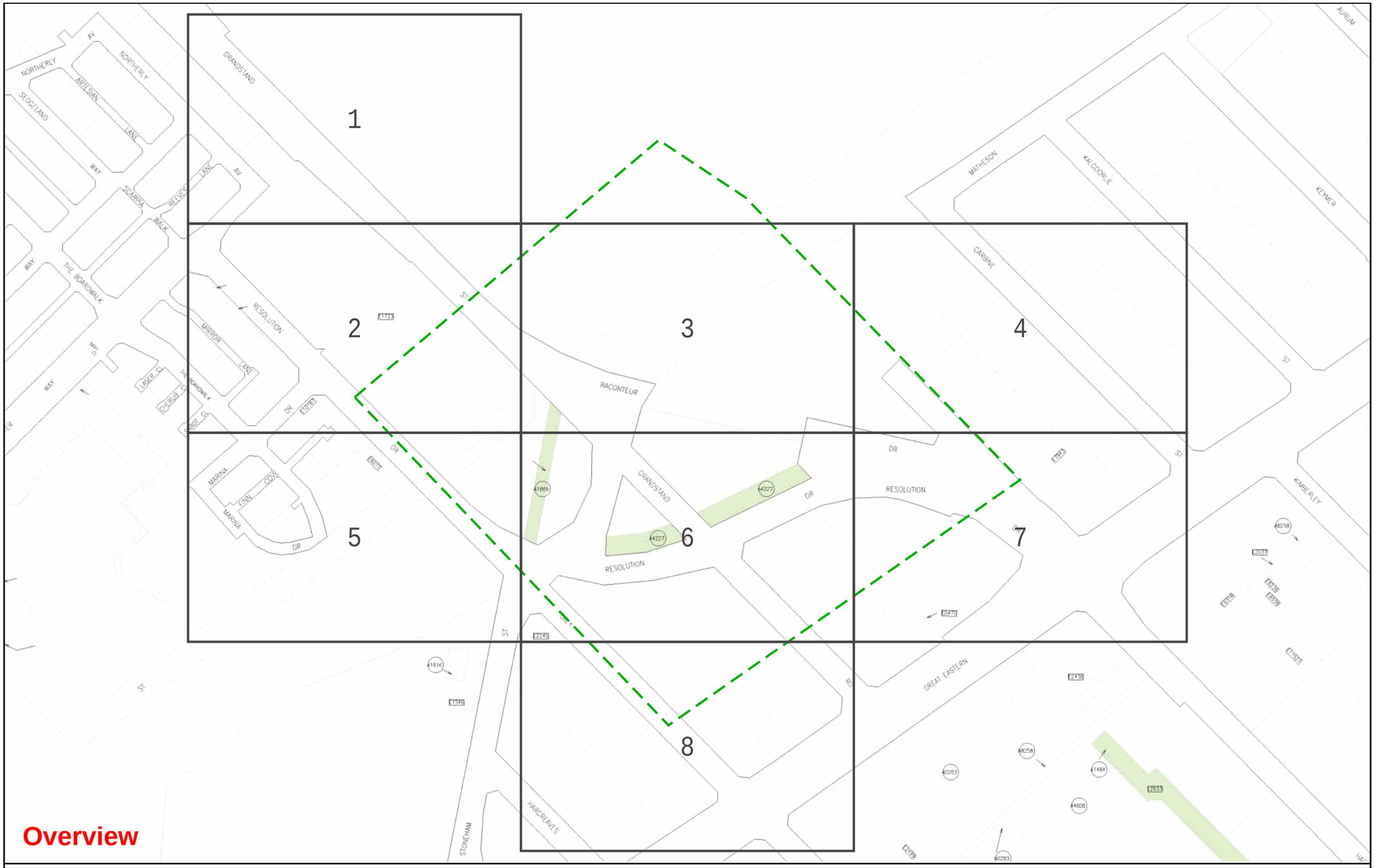
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| Job No.: | 36962243 |
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DR
H27
150
E7943
737
H216
ST
H214
736
RESOLUTION
H210
734
H18
1
DR
1500RC
1288
H208
100
195.2
225
3.22
SB15134
H204
730
A018
B BK
4.81
*0.2FNW
*17.0ASW
H133
500
E0470
450P
0.85
0.91
375P
30.3
1500RC
0.0
A019
B BK
*12.2FNW
*18.2ANE
H202
501
300
2.30
1500RC
0.0
H247
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Scale: 1:750
Job No.: 36962243
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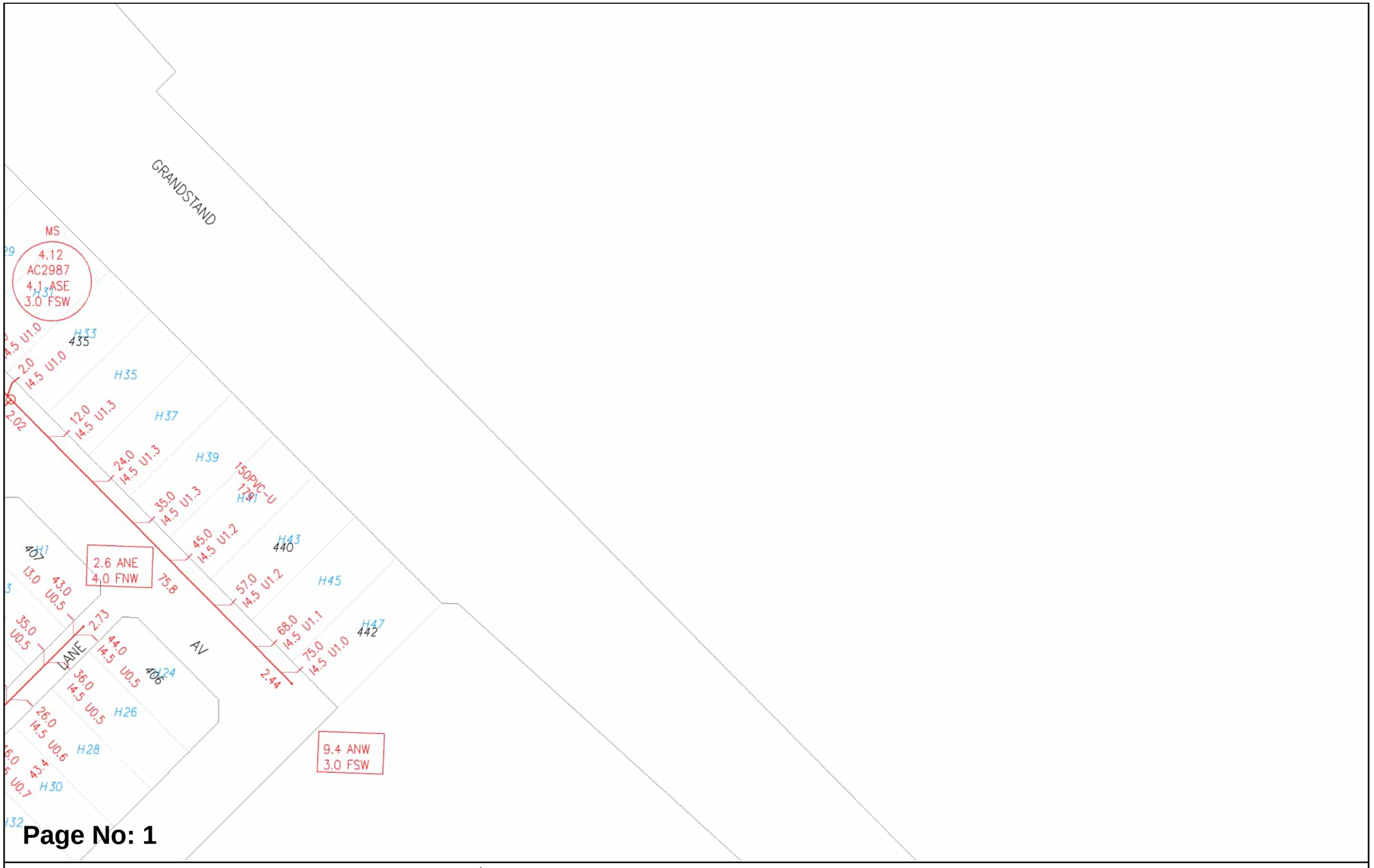

WATER CORPORATION

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| Print Date: | 21 Jun 2024 |

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**Sewer**

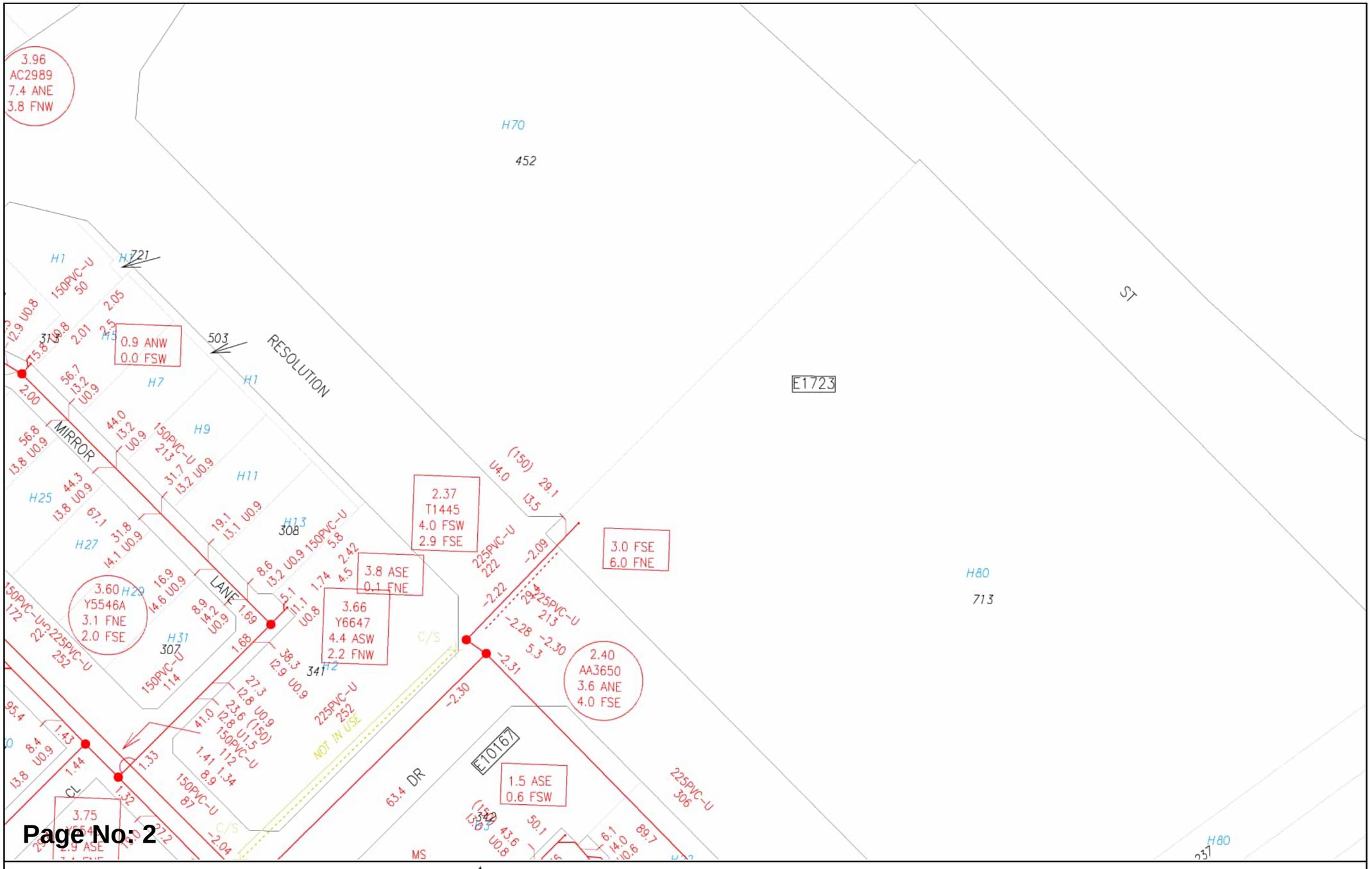
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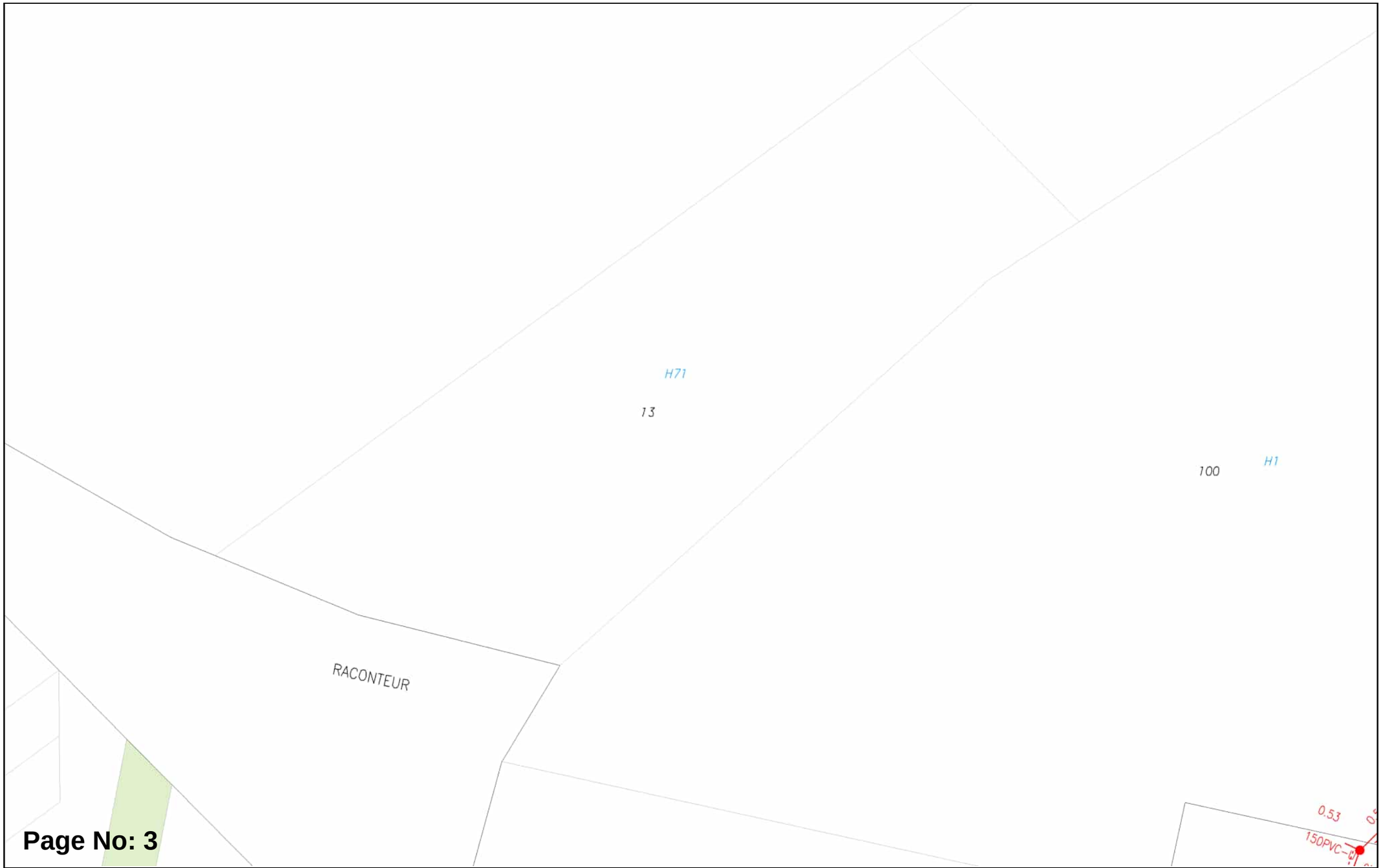



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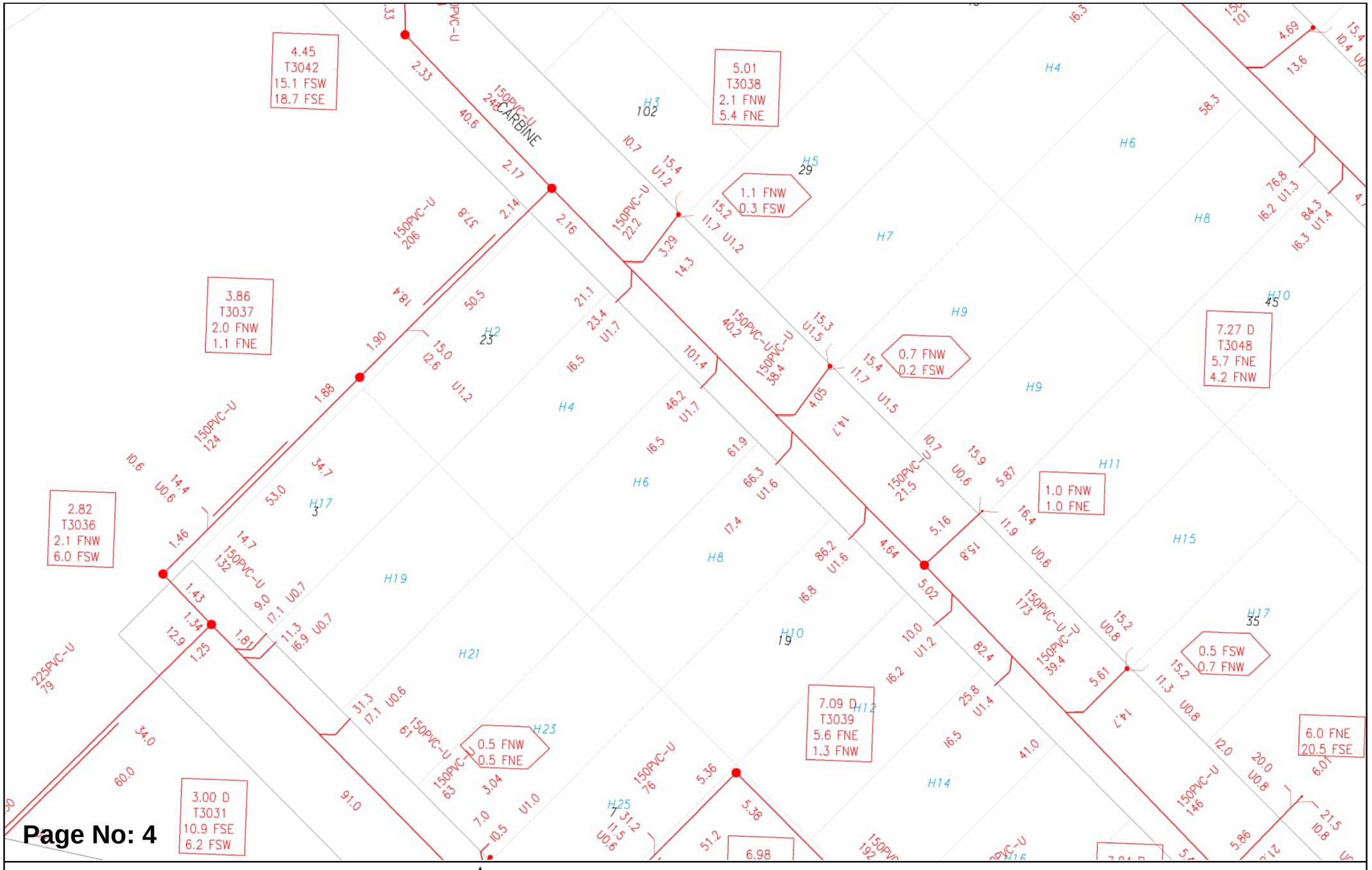
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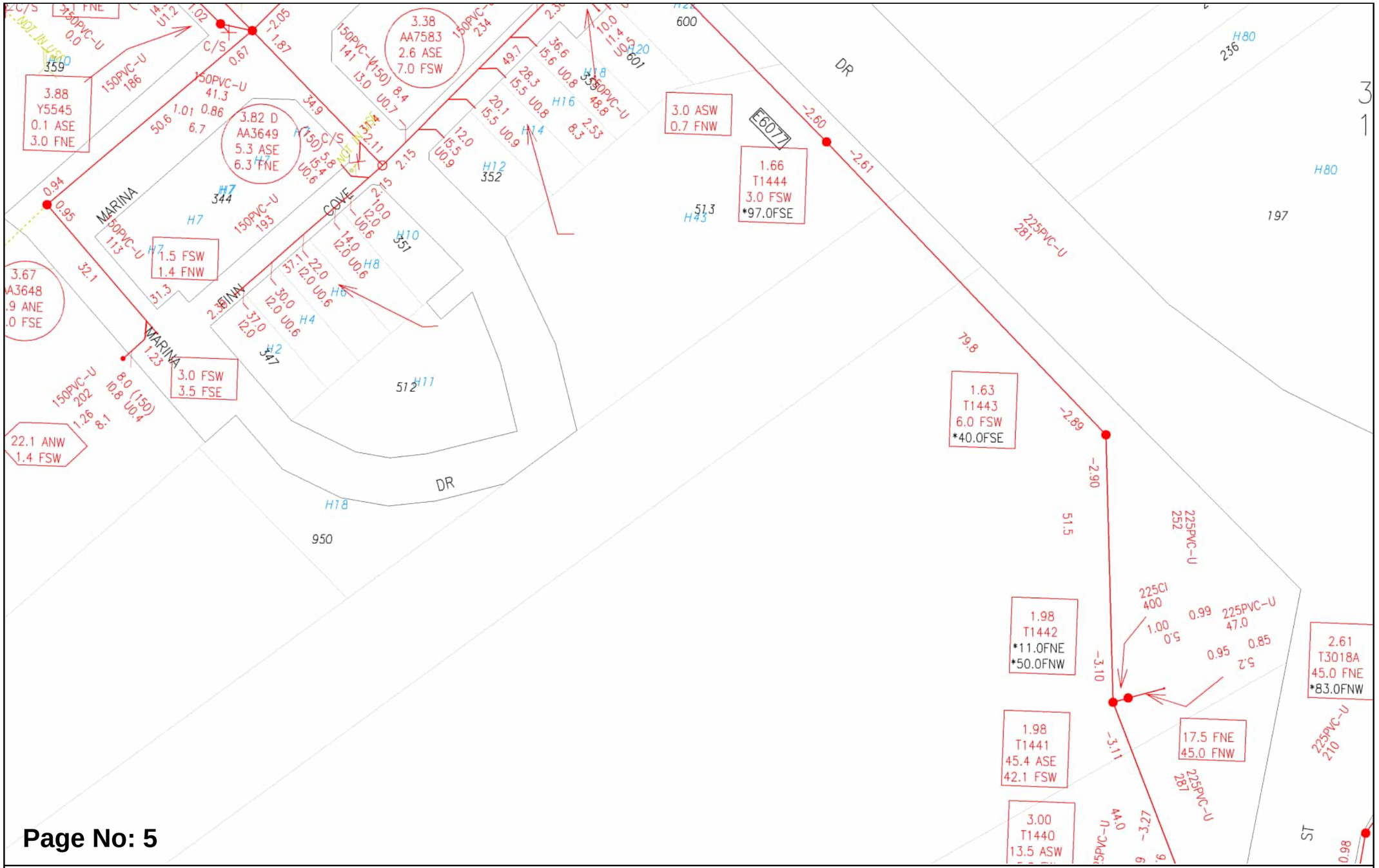
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4.45
T3042
15.1 FSW
18.7 FSE
5.01
T3038
2.1 FNW
5.4 FNE
1.1 FNW
0.3 FSW
3.86
T3037
2.0 FNW
1.1 FNE
0.7 FNW
0.2 FSW
7.27 D
T3048
5.7 FNE
4.2 FNW
1.0 FNW
1.0 FNE
2.82
T3036
2.1 FNW
6.0 FSW
0.5 FSW
0.7 FNW
7.09 D
T3039
5.6 FNE
1.3 FNW
6.0 FNE
20.5 FSE
3.00 D
T3031
10.9 FSE
6.2 FSW
0.5 FNW
0.5 FNE
6.98
150PVC-U
225PVC-U
CARBINE
H1
H2
H3
H4
H5
H6
H7
H8
H9
H10
H11
H12
H14
H15
H17
H19
H21
H23
H25
Page No: 4
Scale: 1:750
Job No.: 36962243
Sequence No.: 240900613
Print Date: 21 Jun 2024
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Sewer
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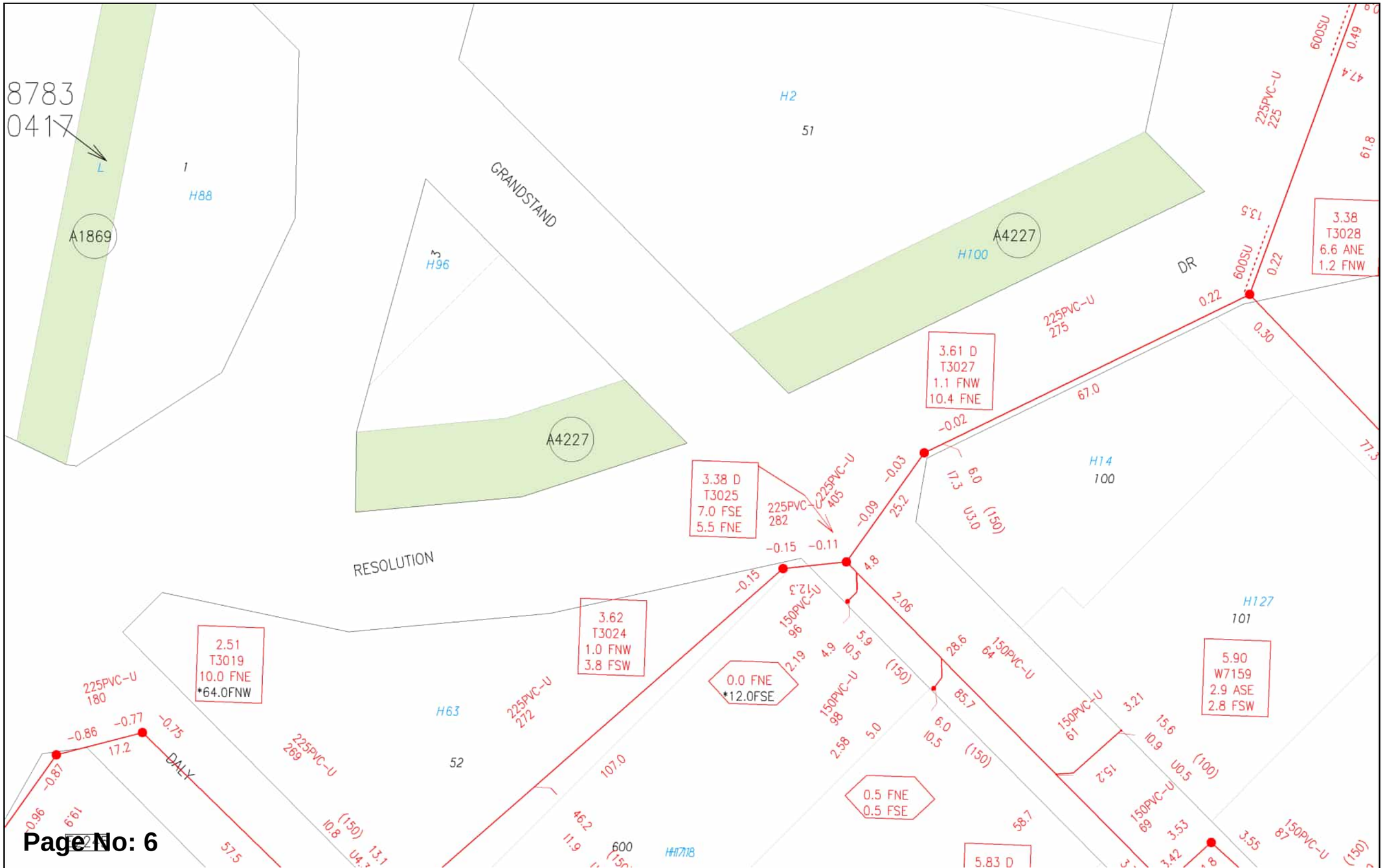

WATER CORPORATION

Scale: 1:750
Job No.: 36962243
Sequence No.: 240900613
Print Date: 21 Jun 2024

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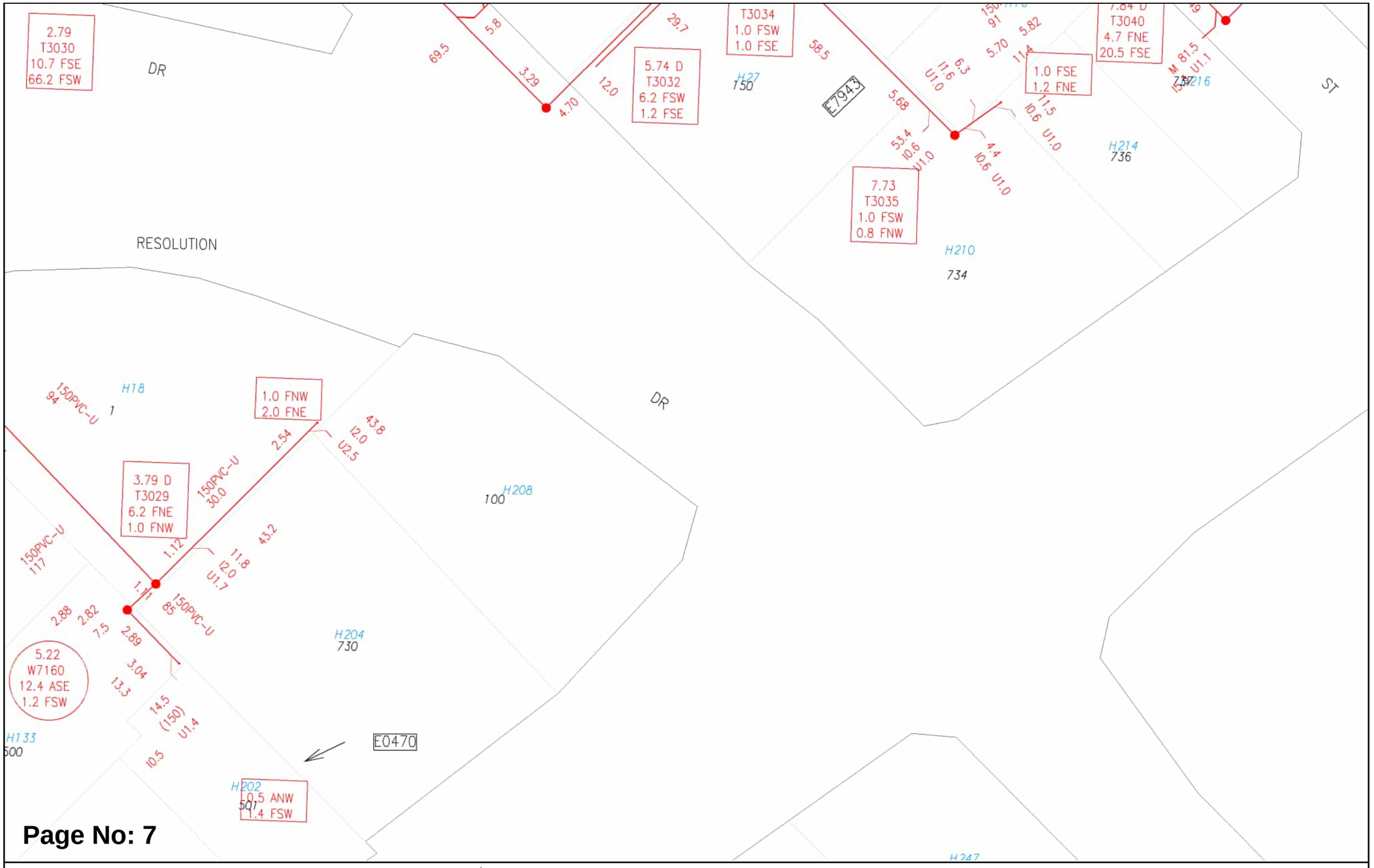
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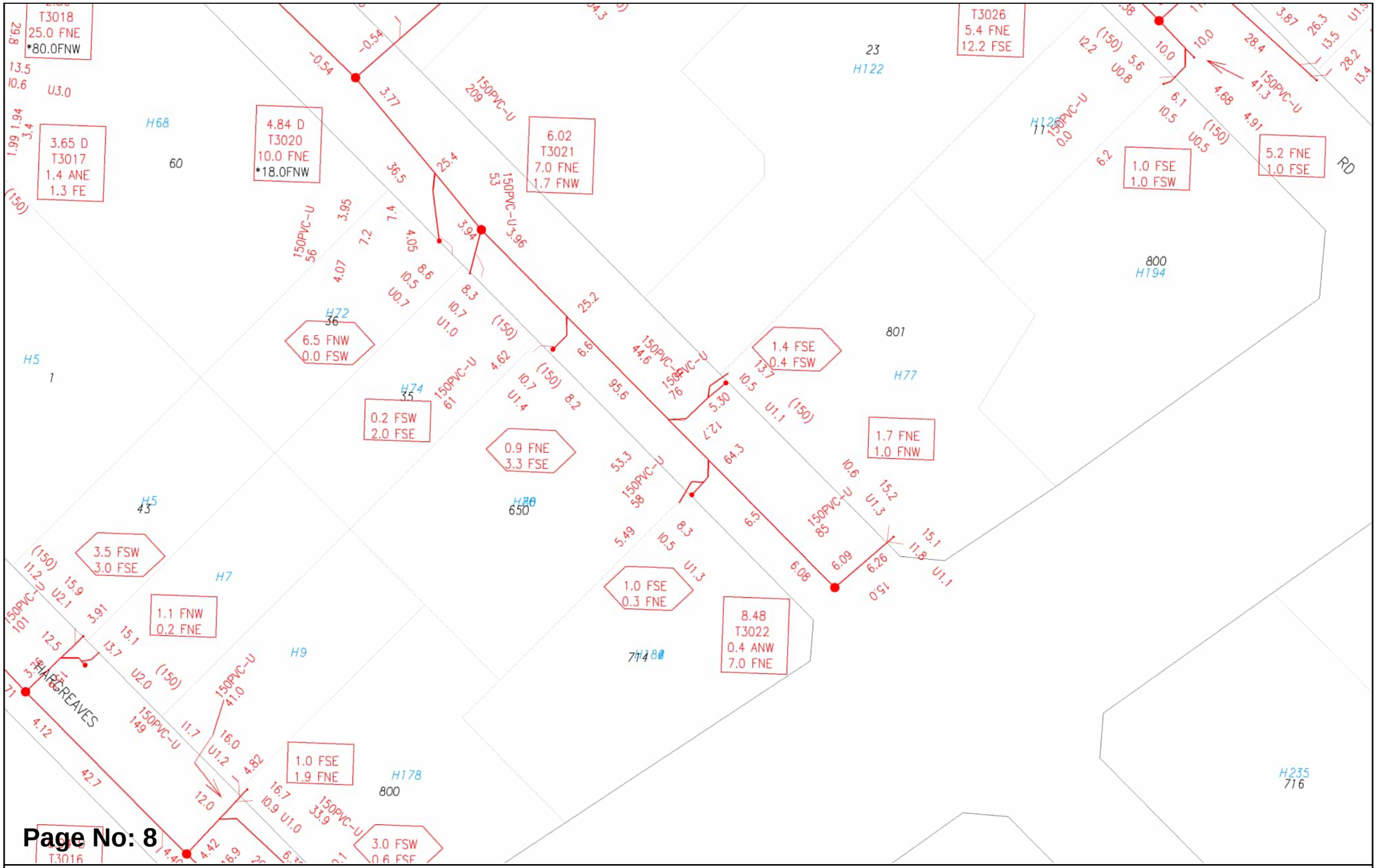
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| Job No.: | 36962243 |
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2.79
T3030
10.7 FSE
66.2 FSW
DR
RESOLUTION
DR
ST
T3034
1.0 FSW
1.0 FSE
5.74 D
T3032
6.2 FSW
1.2 FSE
H27
150
E7943
7.84 D
T3040
4.7 FNE
20.5 FSE
1.0 FSE
1.2 FNE
H214
736
7.73
T3035
1.0 FSW
0.8 FNW
H210
734
H216
H18
1
1.0 FNW
2.0 FNE
3.79 D
T3029
6.2 FNE
1.0 FNW
150PVC-U
H208
100
H204
730
5.22
W7160
12.4 ASE
1.2 FSW
H133
500
E0470
H202
0.5 ANW
1.4 FSW
501
H247
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Scale: 1:750
Job No.: 36962243
Sequence No.: 240900613
Print Date: 21 Jun 2024
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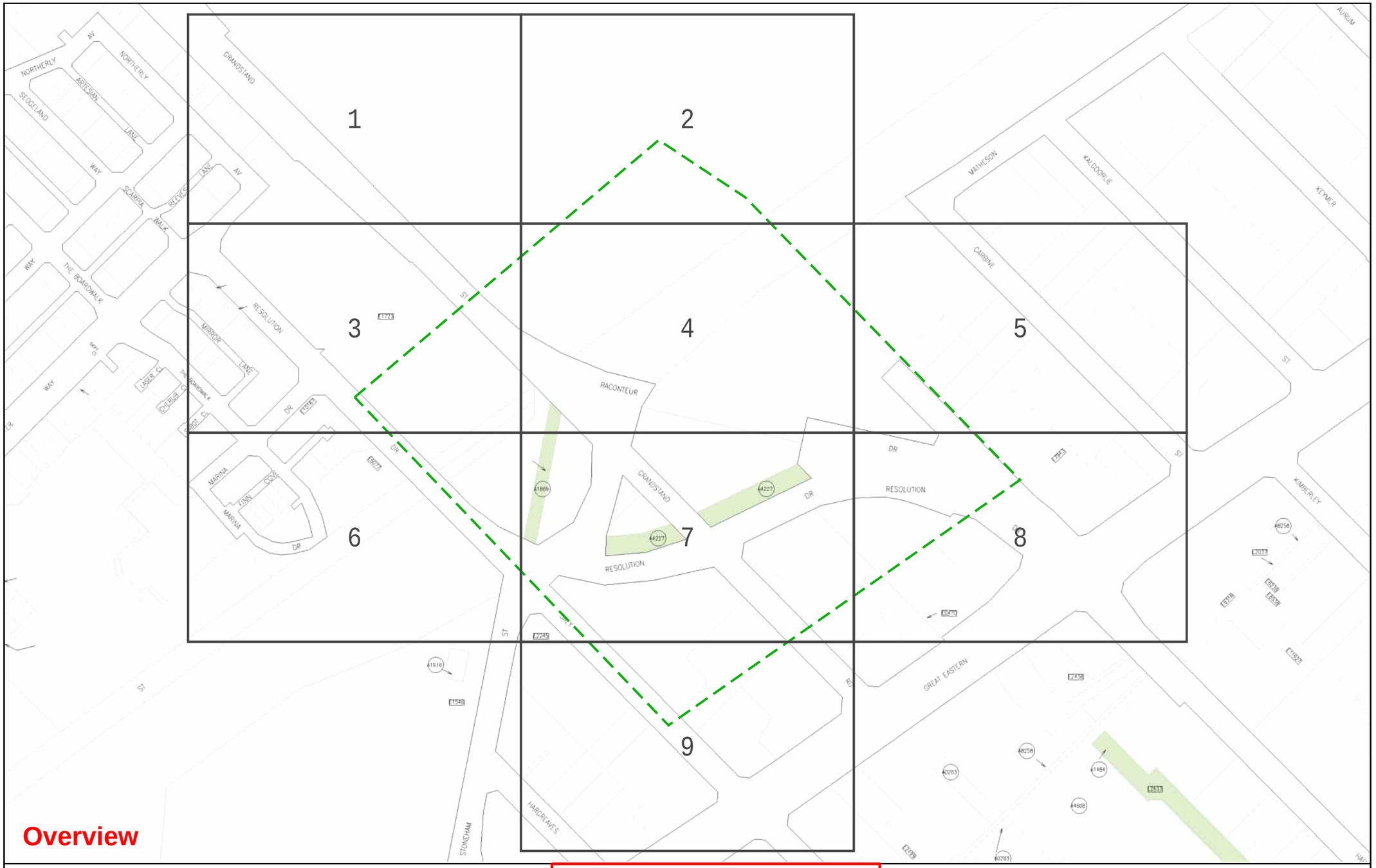
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WATER CORPORATION

Scale: 1:3075
Job No.: 36962243
Sequence No.: 240900613
Print Date: 21 Jun 2024

Water

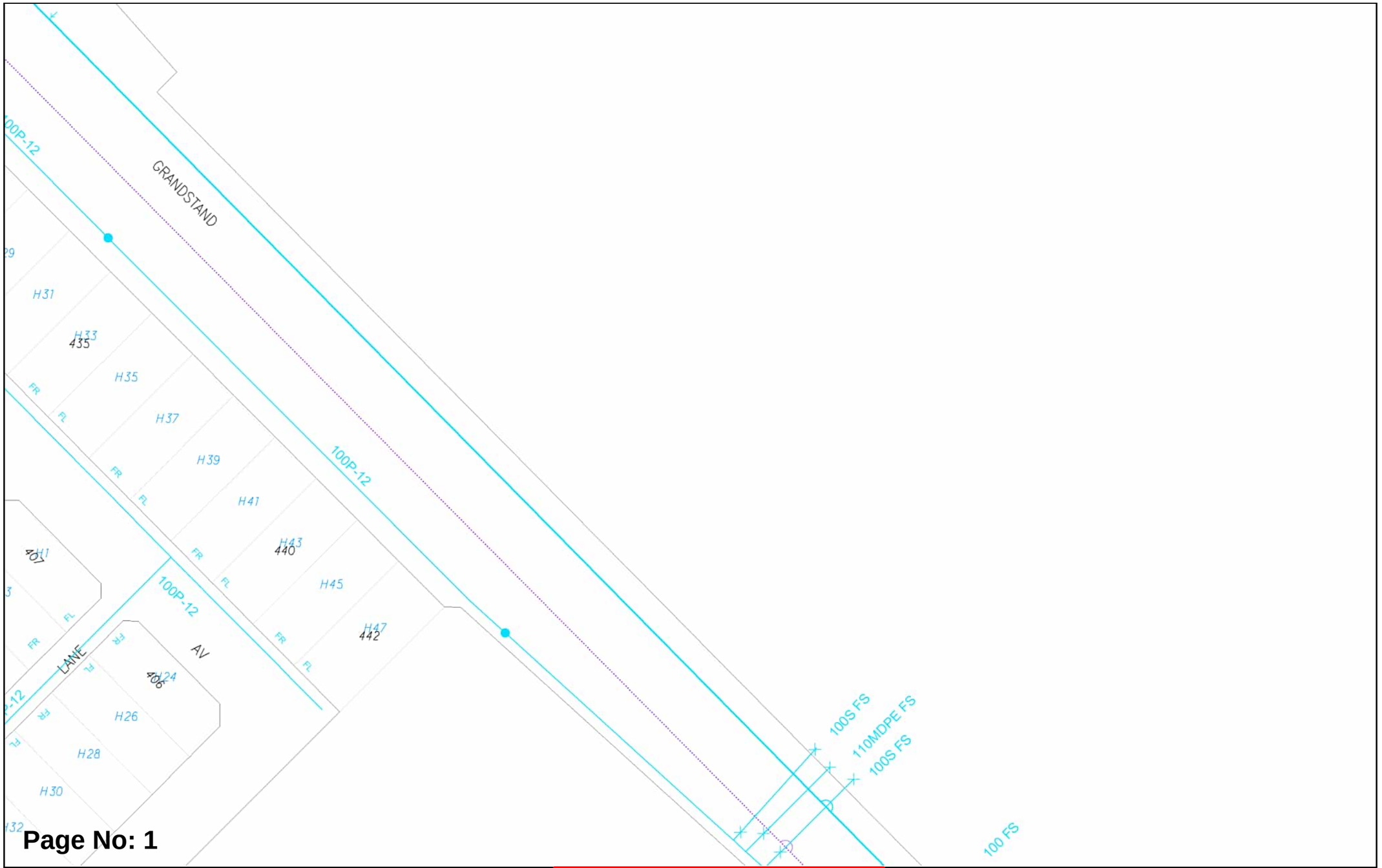
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**Page No: 1**

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| WATER CORPORATION | Scale: | 1:750 | |
| | Job No.: | 36962243 | |
| | Sequence No.: | 240900613 | |
| | Print Date: | 21 Jun 2024 | |

N

**Water**

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WATER CORPORATION

Scale: 1:750
Job No.: 36962243
Sequence No.: 240900613
Print Date: 21 Jun 2024

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Water

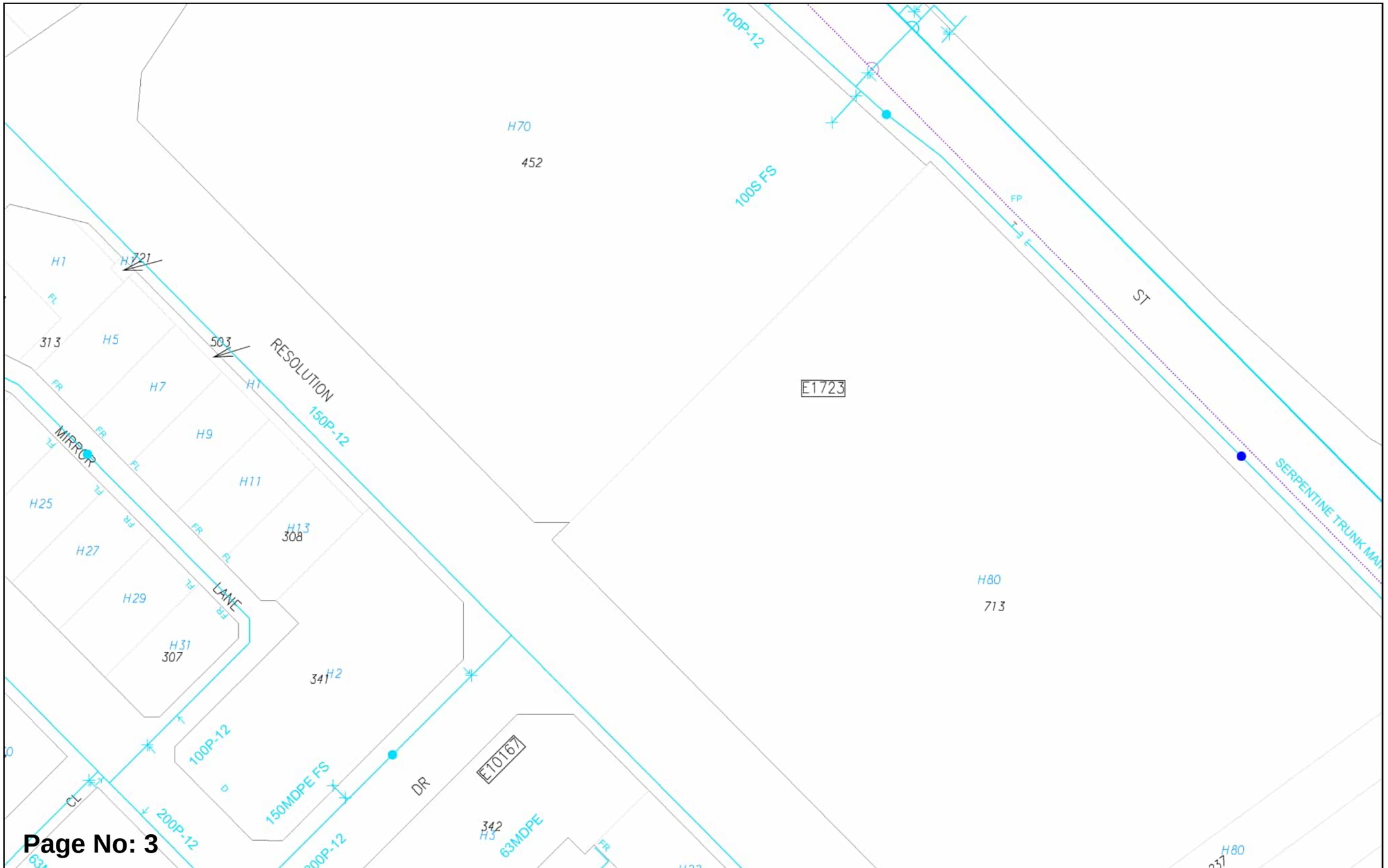
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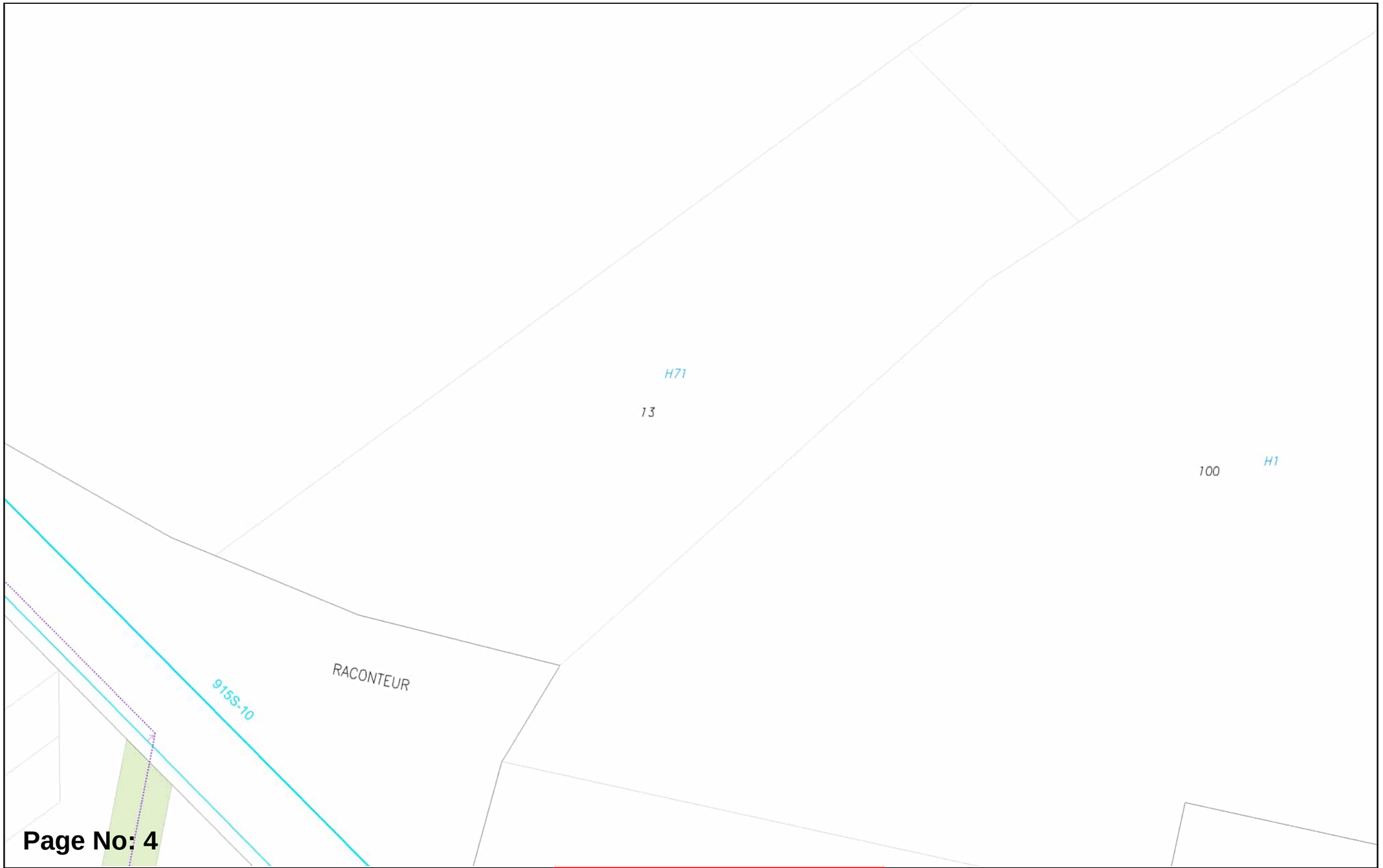
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WATER CORPORATION

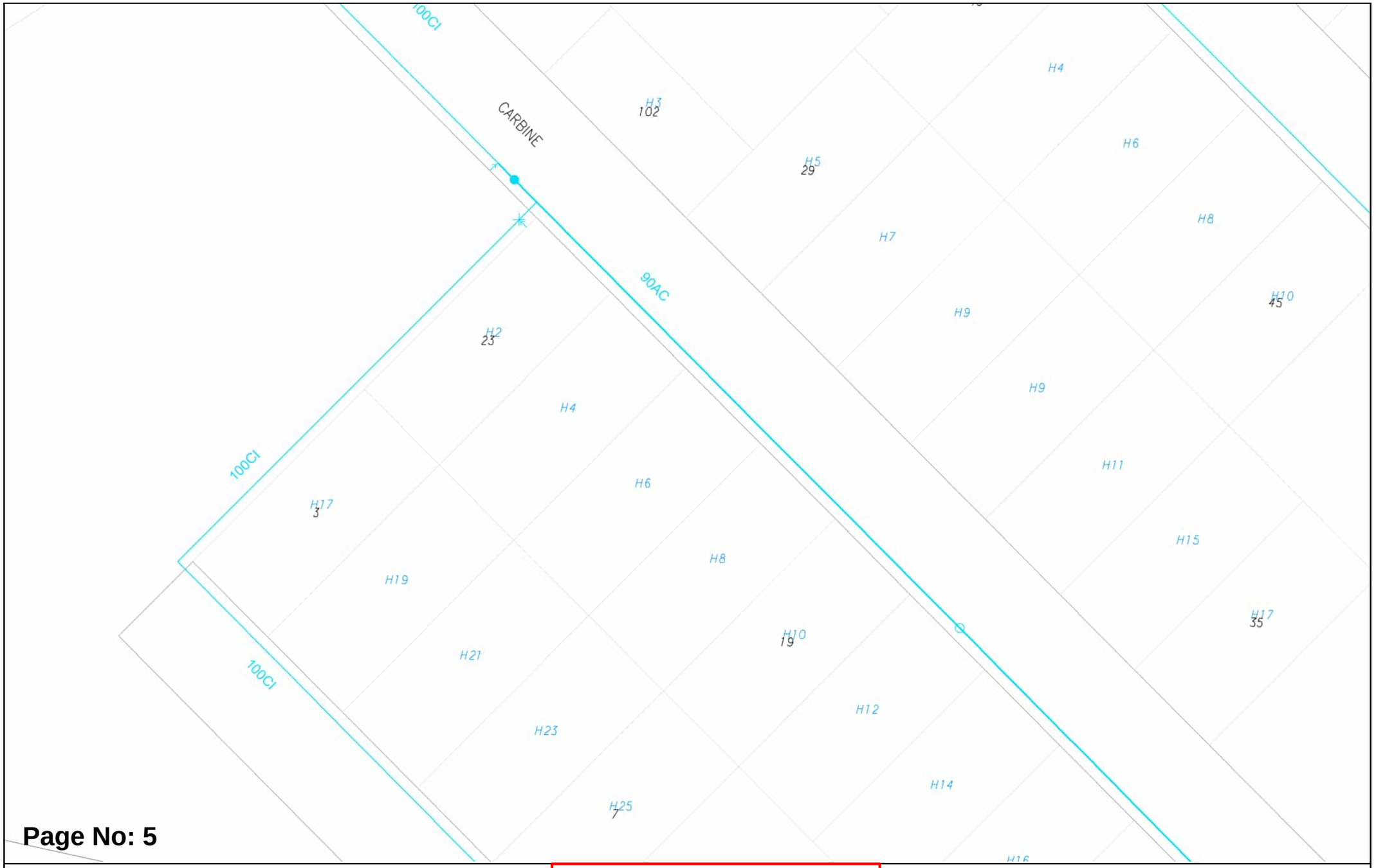
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Job No.: 36962243
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Water

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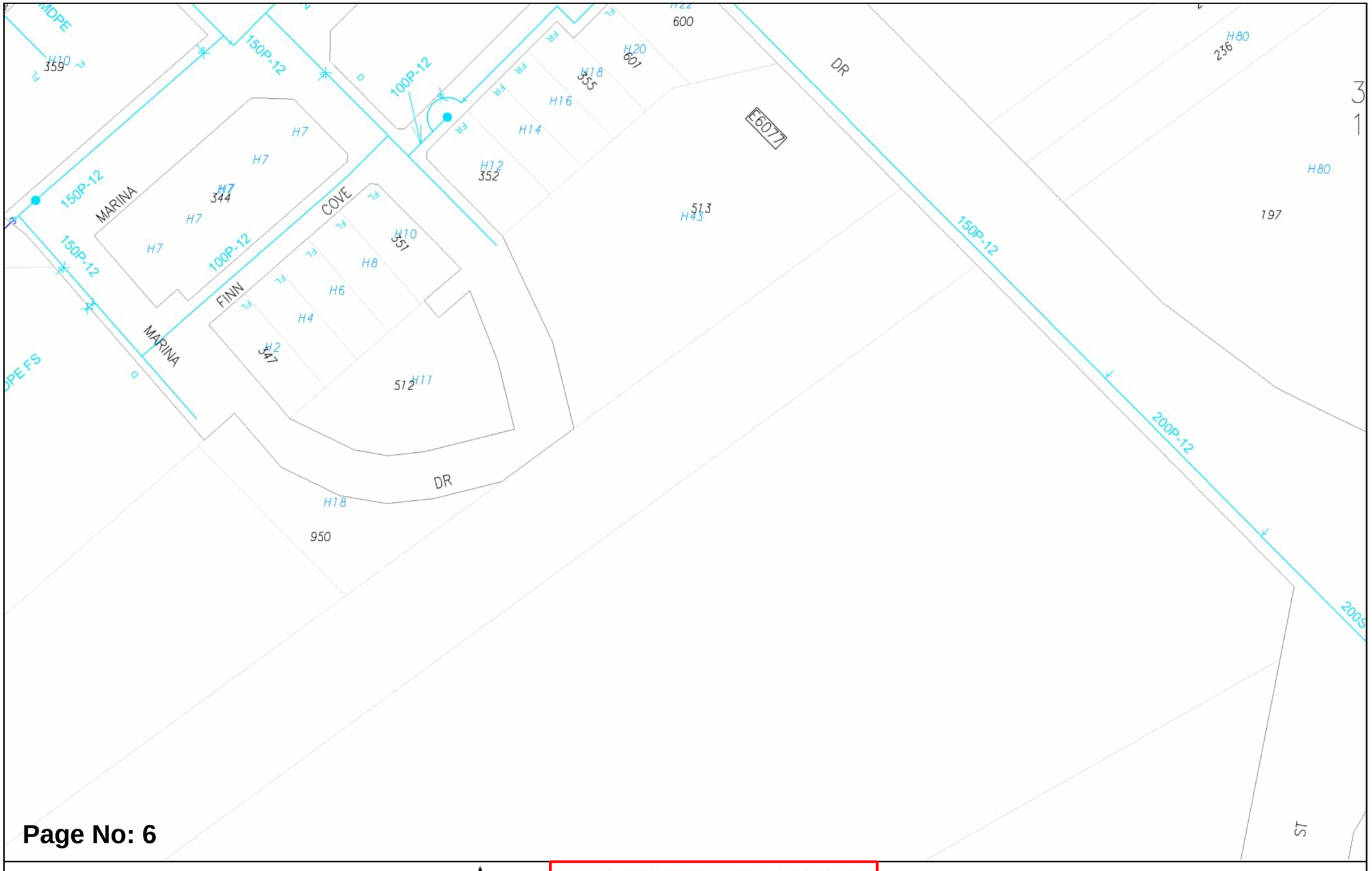
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Scale: 1:750
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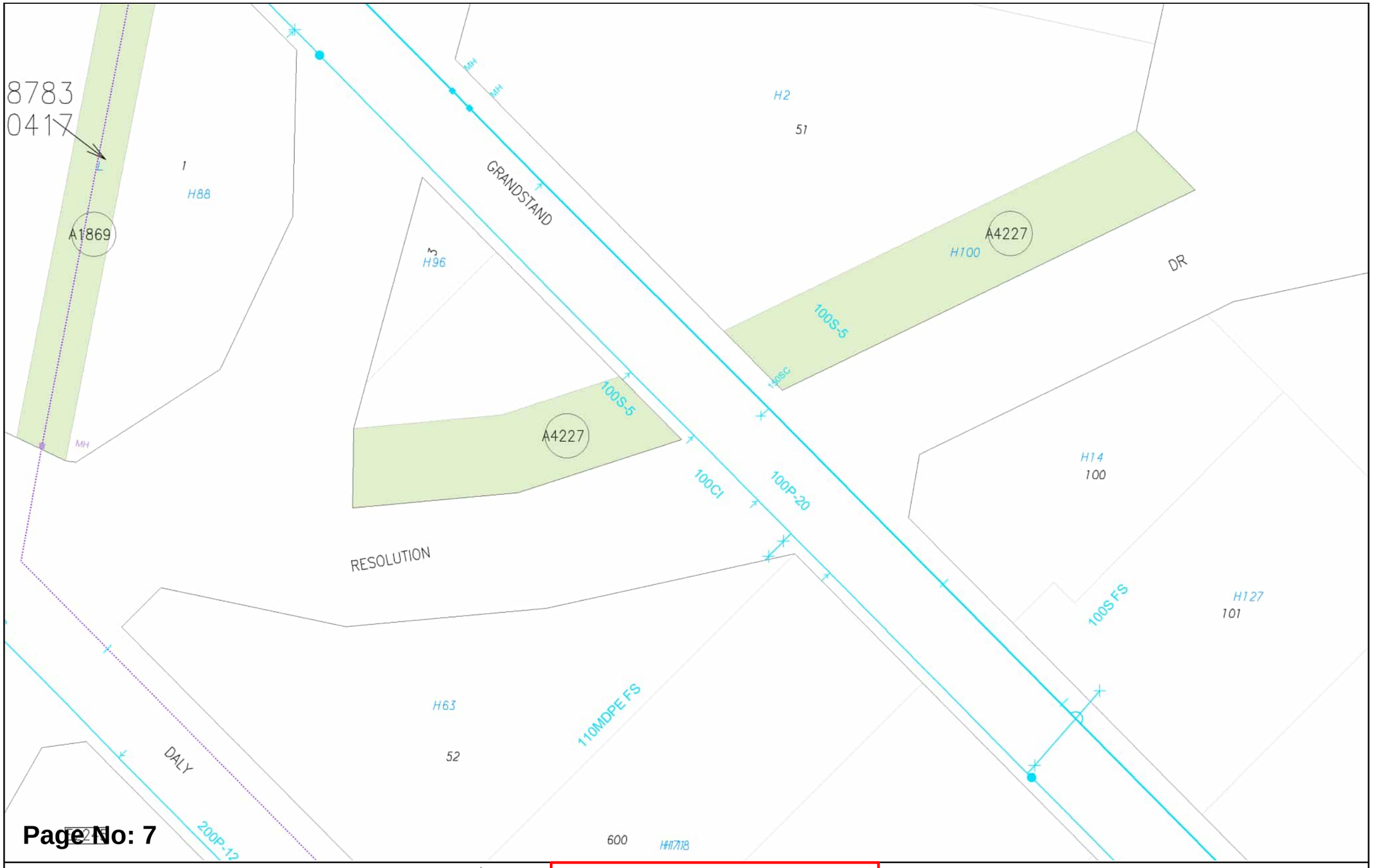
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WATER CORPORATION

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Water

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WATER CORPORATION

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Water

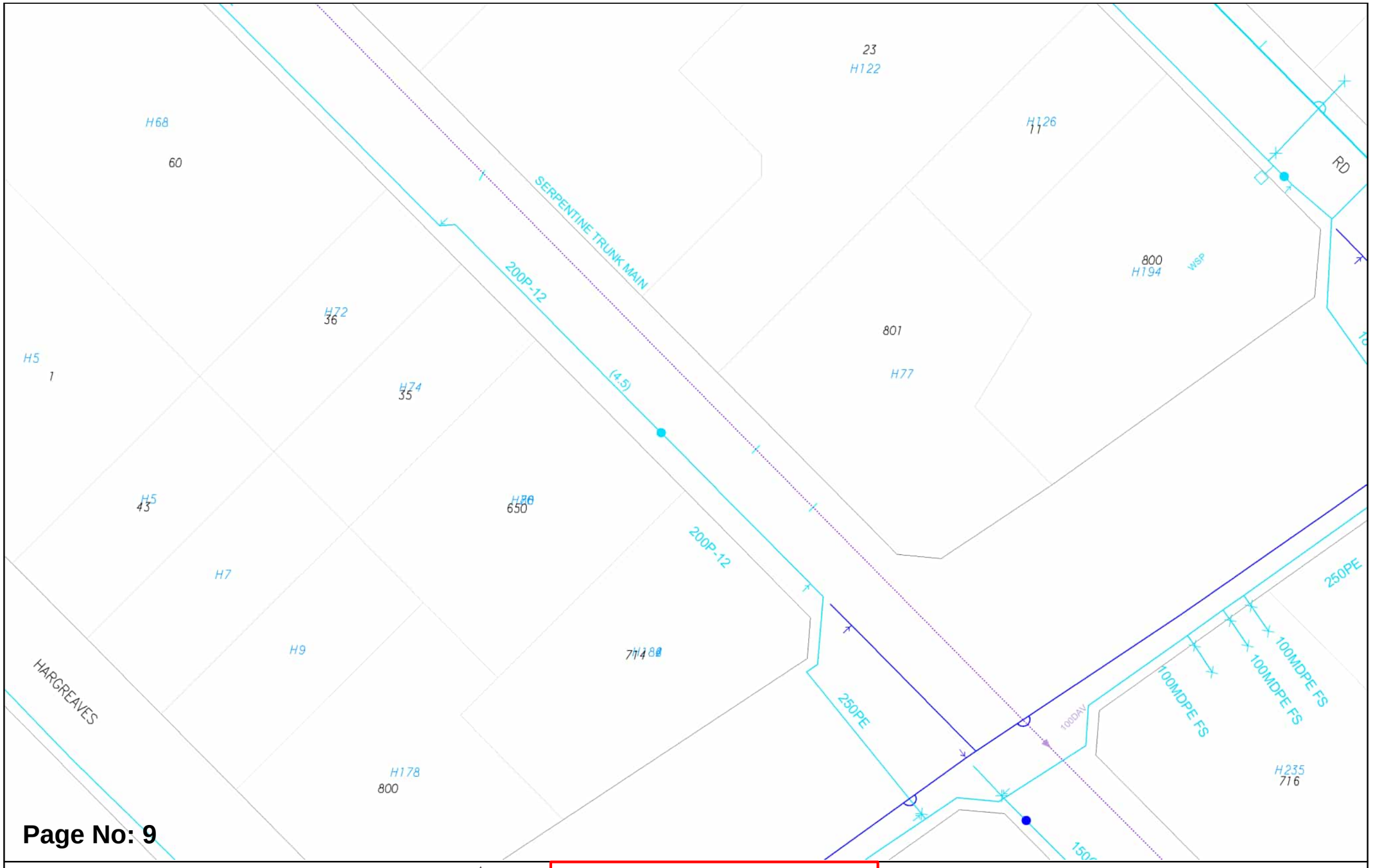
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Apply for approval to work near our assets at:

Working near assets (watercorporation.com.au)

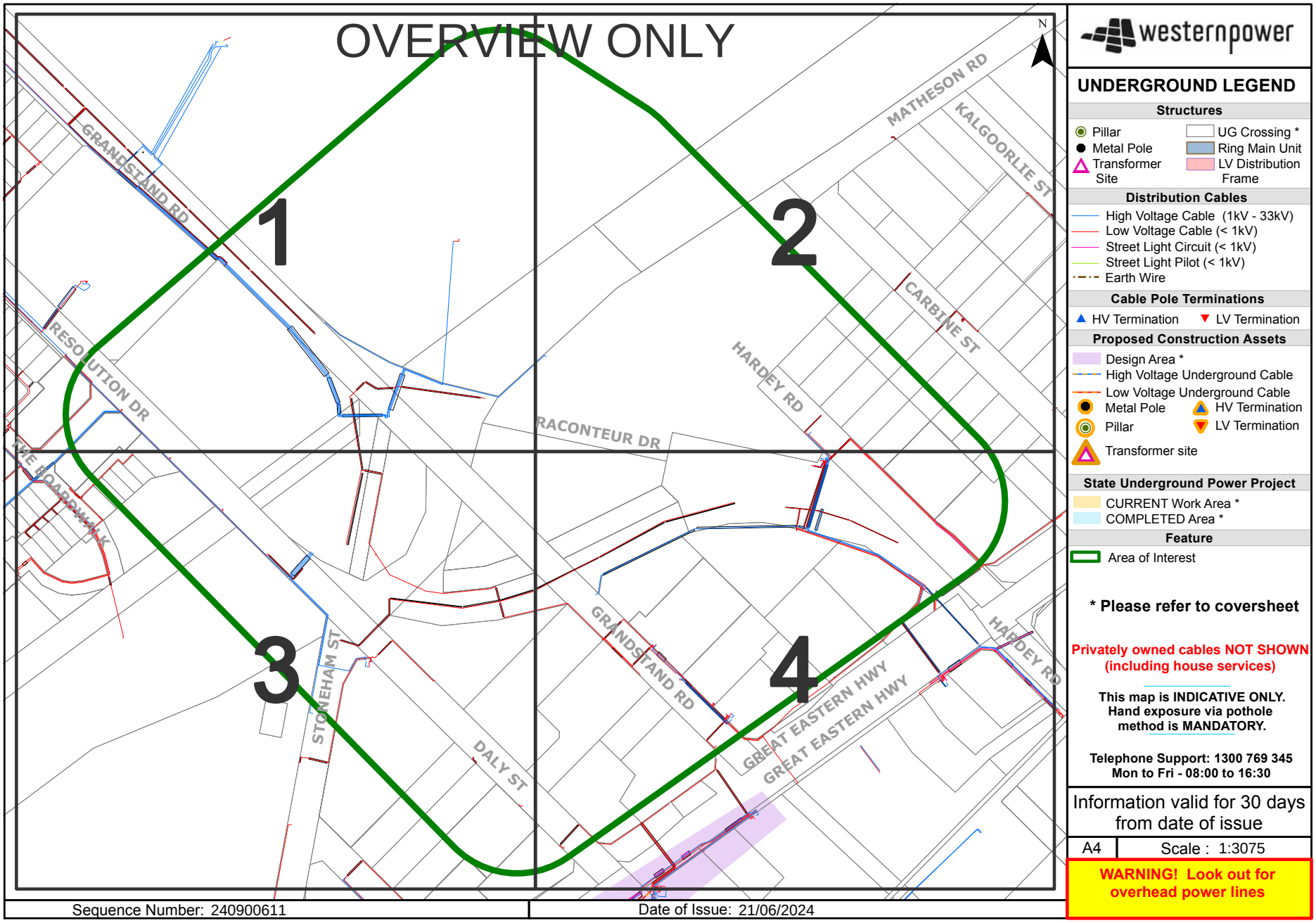
Unauthorised work within prescribed proximities of Water Corporation Assets is prohibited.

The Water Corporation has taken due care in the preparation of this map but accepts no responsibility for any inaccuracies or inappropriate use. This plan may be reproduced in its entirety for the purpose of site work planning but shall not otherwise be altered or published in any form without the permission of the Water Corporation. The Water Corporation may need to be advised of any planned ground disturbing activities near facilities on this map. Refer to Brochure - "Protecting Buried Pipelines". Please report any inaccuracies to Asset Registration Team by email to asset.registration@watercorporation.com.au.




Plans generated 21 Jun 2024 by PelicanCorp TicketAccess Software | www.pelicancorp.com

Water Corp - Critical Plan.docx (21 May 2024)




westernpower

**UNDERGROUND LEGEND**

**Structures**

- Pillar
- Metal Pole
- Transformer Site
- UG Crossing *
- Ring Main Unit
- LV Distribution Frame

**Distribution Cables**

- High Voltage Cable (1kV - 33kV)
- Low Voltage Cable (< 1kV)
- Street Light Circuit (< 1kV)
- Street Light Pilot (< 1kV)
- Earth Wire

**Cable Pole Terminations**

- HV Termination
- LV Termination

**Proposed Construction Assets**

- Design Area *
- High Voltage Underground Cable
- Low Voltage Underground Cable
- Metal Pole
- Pillar
- Transformer site
- HV Termination
- LV Termination

**State Underground Power Project**

- CURRENT Work Area *
- COMPLETED Area *

**Feature**

- Area of Interest

*** Please refer to coversheet**

**Privately owned cables NOT SHOWN (including house services)**

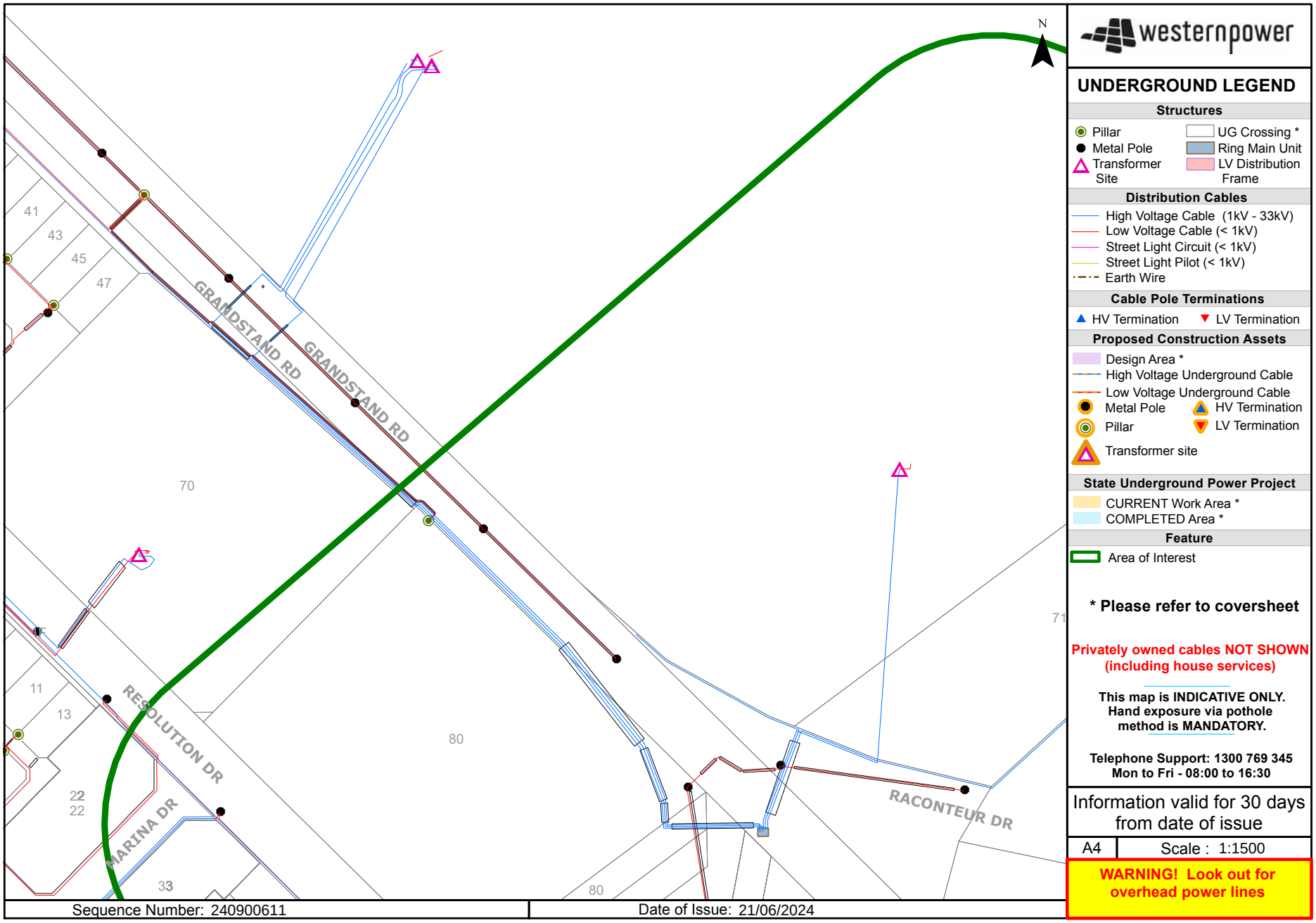
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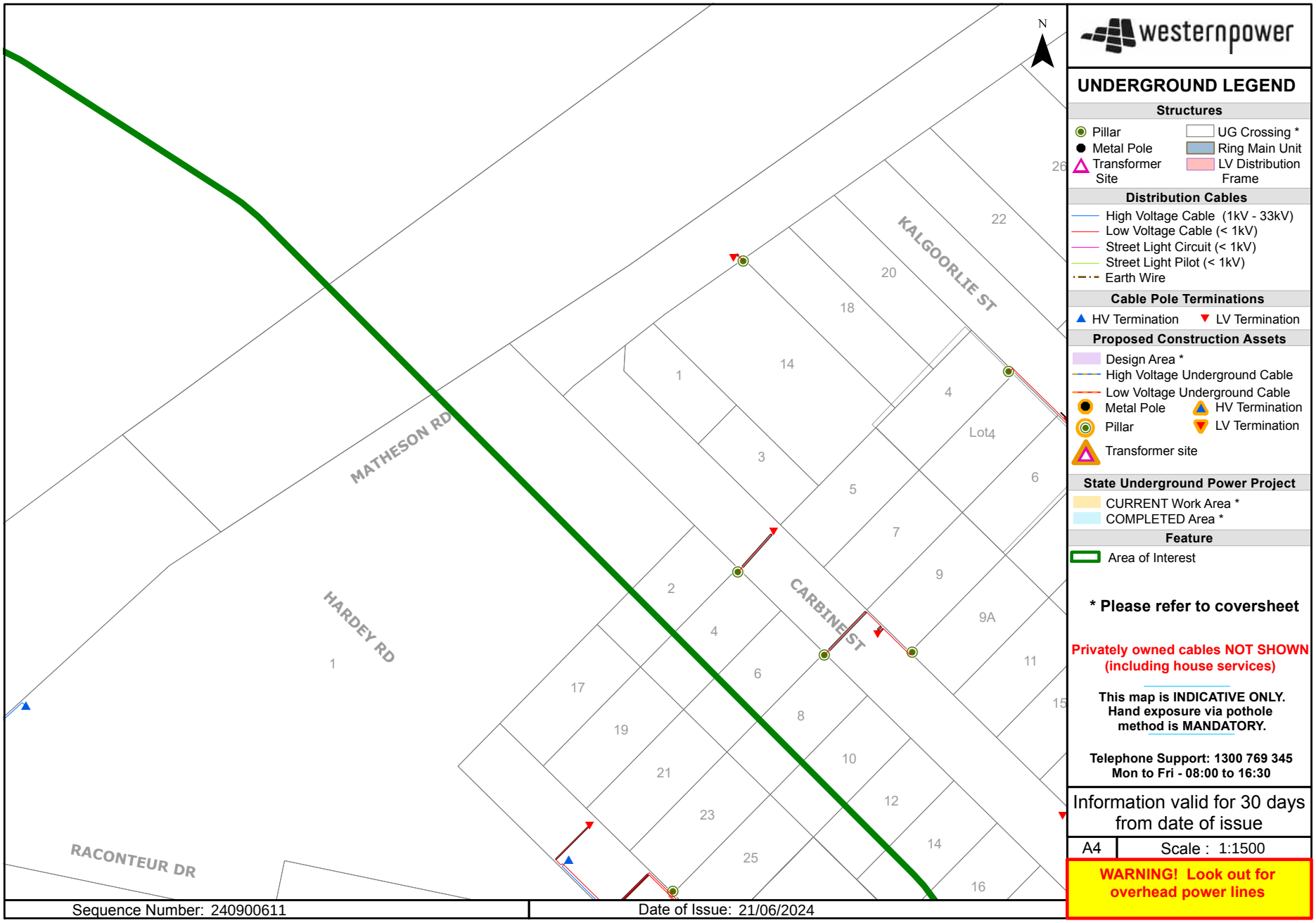
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**Mon to Fri - 08:00 to 16:30**

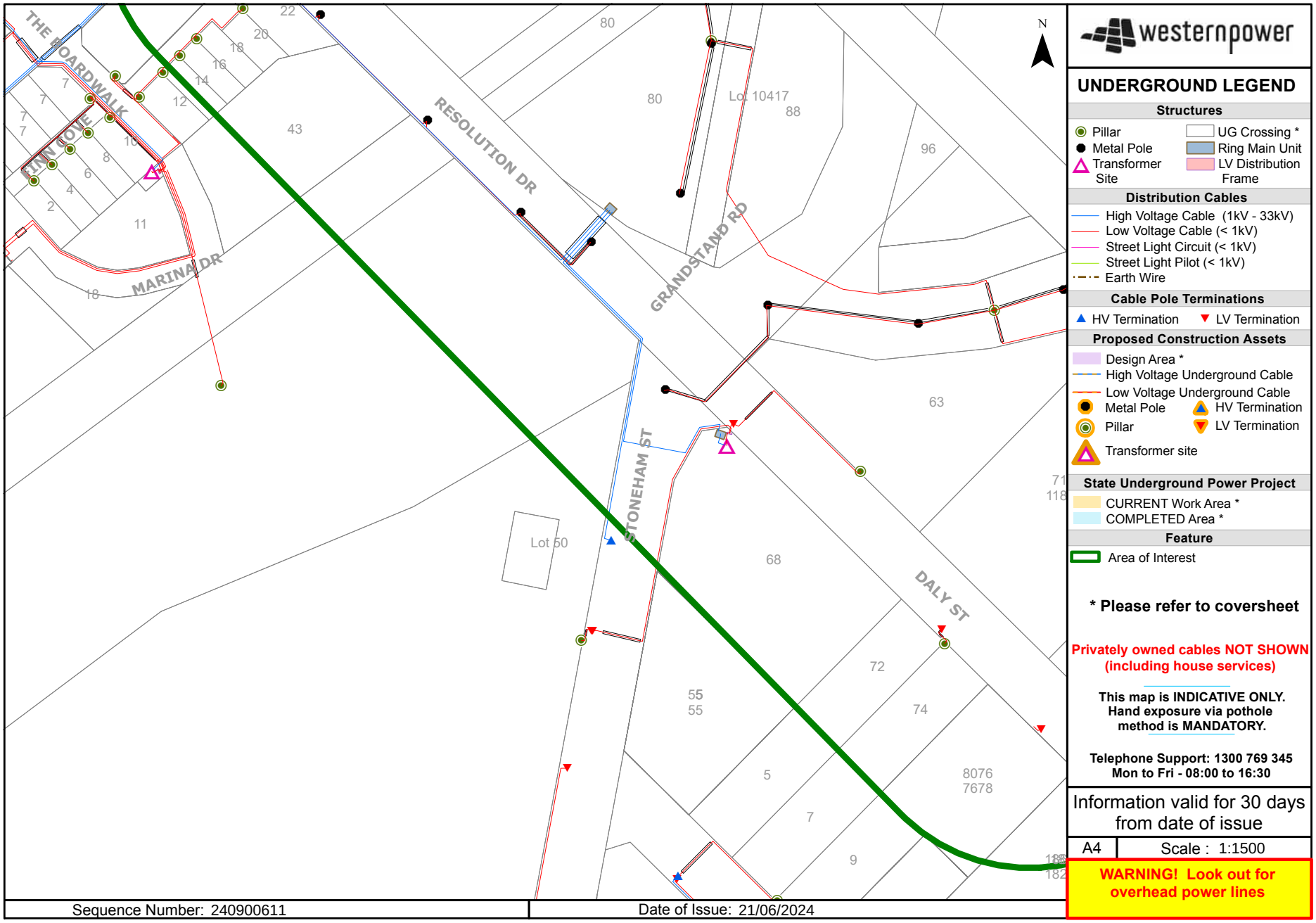
Information valid for 30 days from date of issue

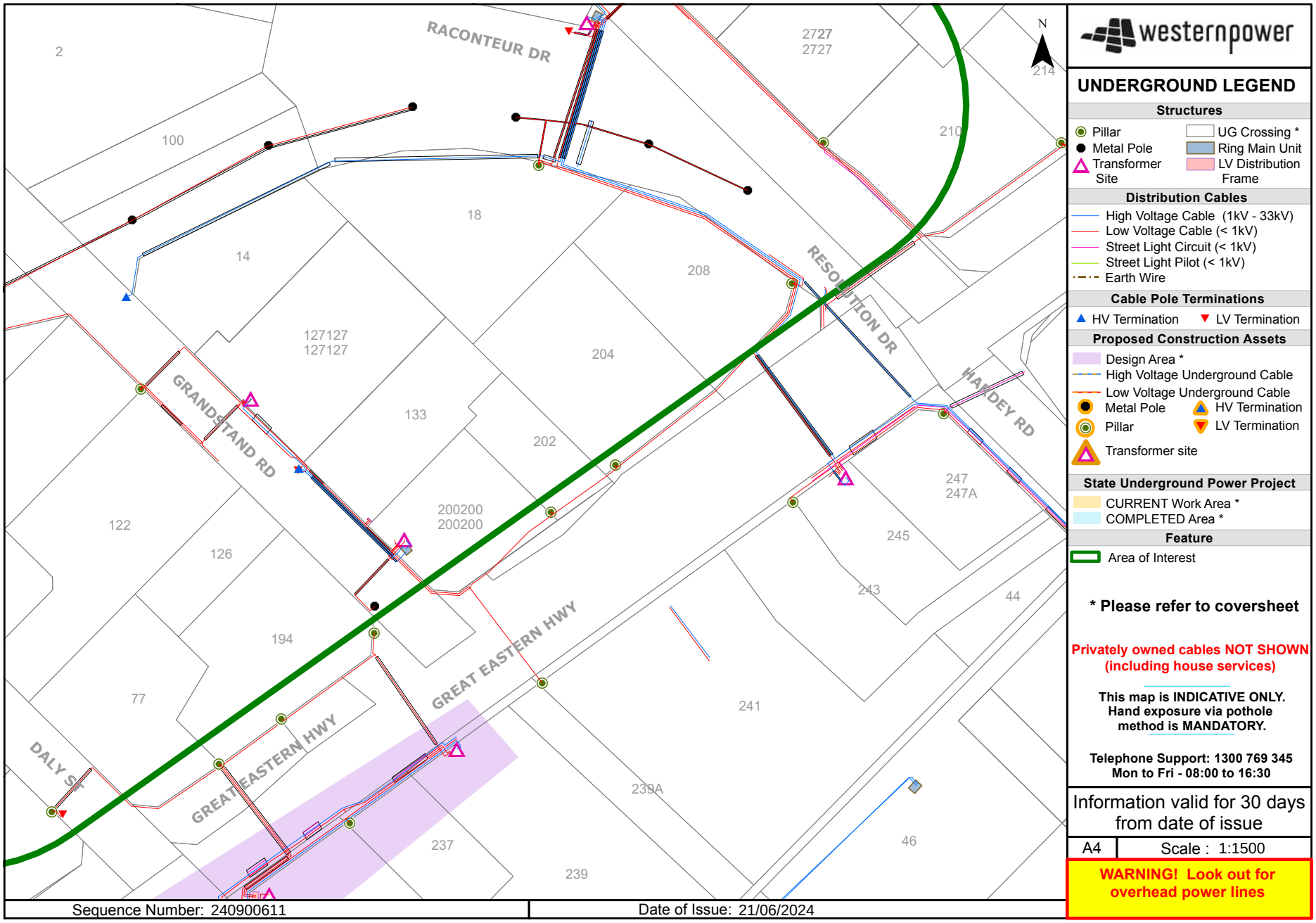
A4 | Scale : 1:3075

**WARNING! Look out for overhead power lines**


N
GRANDSTAND RD
GRANDSTAND RD
RESOLUTION DR
MARINA DR
RACONTEUR DR
41
43
45
47
70
11
13
22
22
33
80
80
71
Sequence Number: 240900611
Date of Issue: 21/06/2024
westernpower
UNDERGROUND LEGEND
Structures
Pillar
Metal Pole
Transformer Site
UG Crossing *
Ring Main Unit
LV Distribution Frame
Distribution Cables
High Voltage Cable (1kV - 33kV)
Low Voltage Cable (< 1kV)
Street Light Circuit (< 1kV)
Street Light Pilot (< 1kV)
Earth Wire
Cable Pole Terminations
HV Termination
LV Termination
Proposed Construction Assets
Design Area *
High Voltage Underground Cable
Low Voltage Underground Cable
Metal Pole
HV Termination
Pillar
LV Termination
Transformer site
State Underground Power Project
CURRENT Work Area *
COMPLETED Area *
Feature
Area of Interest
* Please refer to coversheet
Privately owned cables NOT SHOWN (including house services)
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Telephone Support: 1300 769 345
Mon to Fri - 08:00 to 16:30
Information valid for 30 days from date of issue
A4
Scale : 1:1500
WARNING! Look out for overhead power lines


N
MATHESON RD
HARDEY RD
KALGOORLIE ST
CARBINE ST
RACONTEUR DR
Lot4
westernpower
UNDERGROUND LEGEND
Structures
Pillar
Metal Pole
Transformer Site
UG Crossing *
Ring Main Unit
LV Distribution Frame
Distribution Cables
High Voltage Cable (1kV - 33kV)
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Date of Issue: 21/06/2024


THE BOARDWALK
TINN COVE
MARINA DR
RESOLUTION DR
GRANDSTAND RD
STONEHAM ST
DALY ST
Lot 10417
Lot 50
22
20
18
16
14
12
10
8
6
4
2
7
7
7
11
43
80
80
88
96
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68
72
74
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9
8076
7678
18
N
westernpower
UNDERGROUND LEGEND
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Pillar
Metal Pole
Transformer Site
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Date of Issue: 21/06/2024




westernpower

## UNDERGROUND LEGEND

**Structures**

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- COMPLETED Area *

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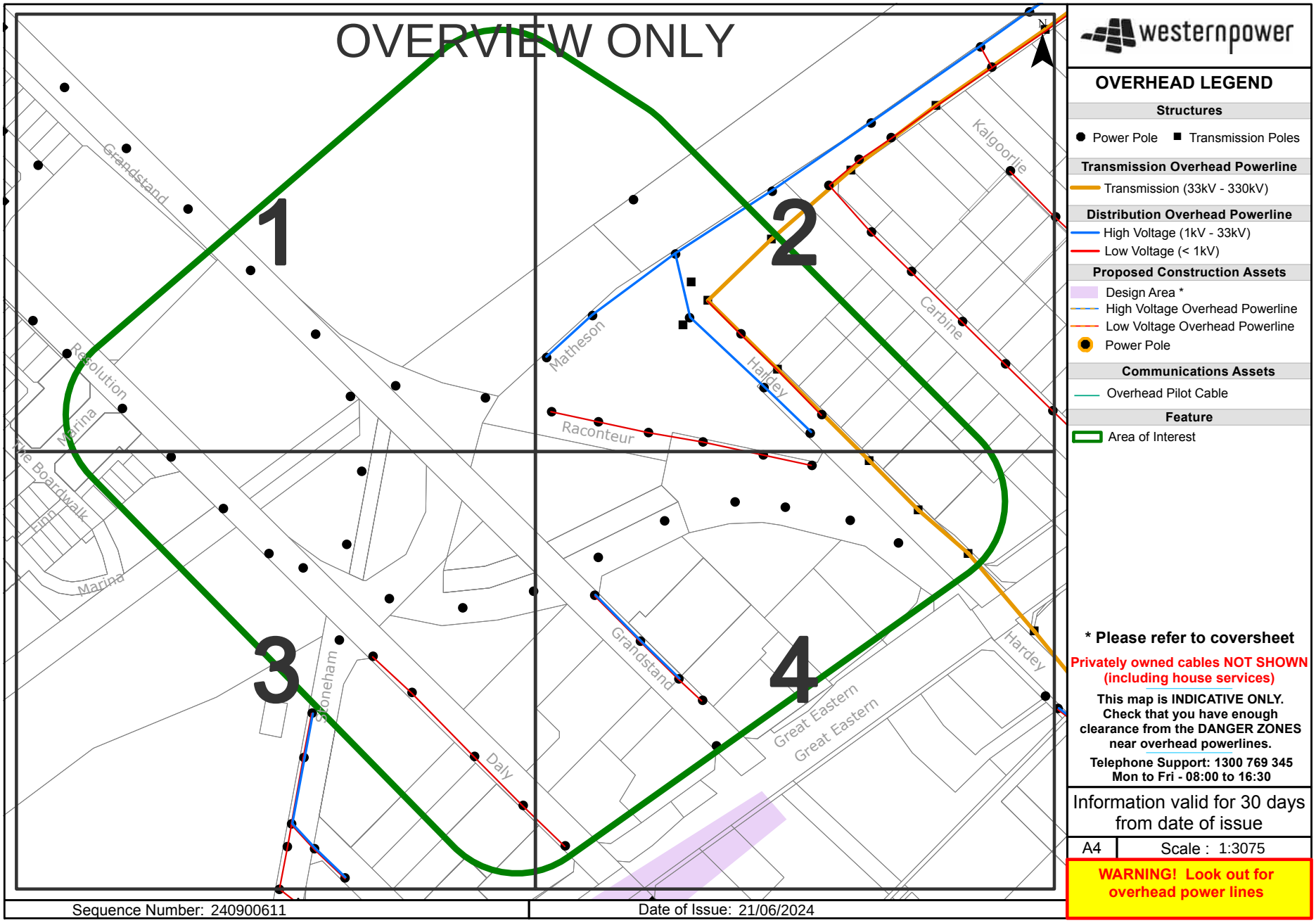
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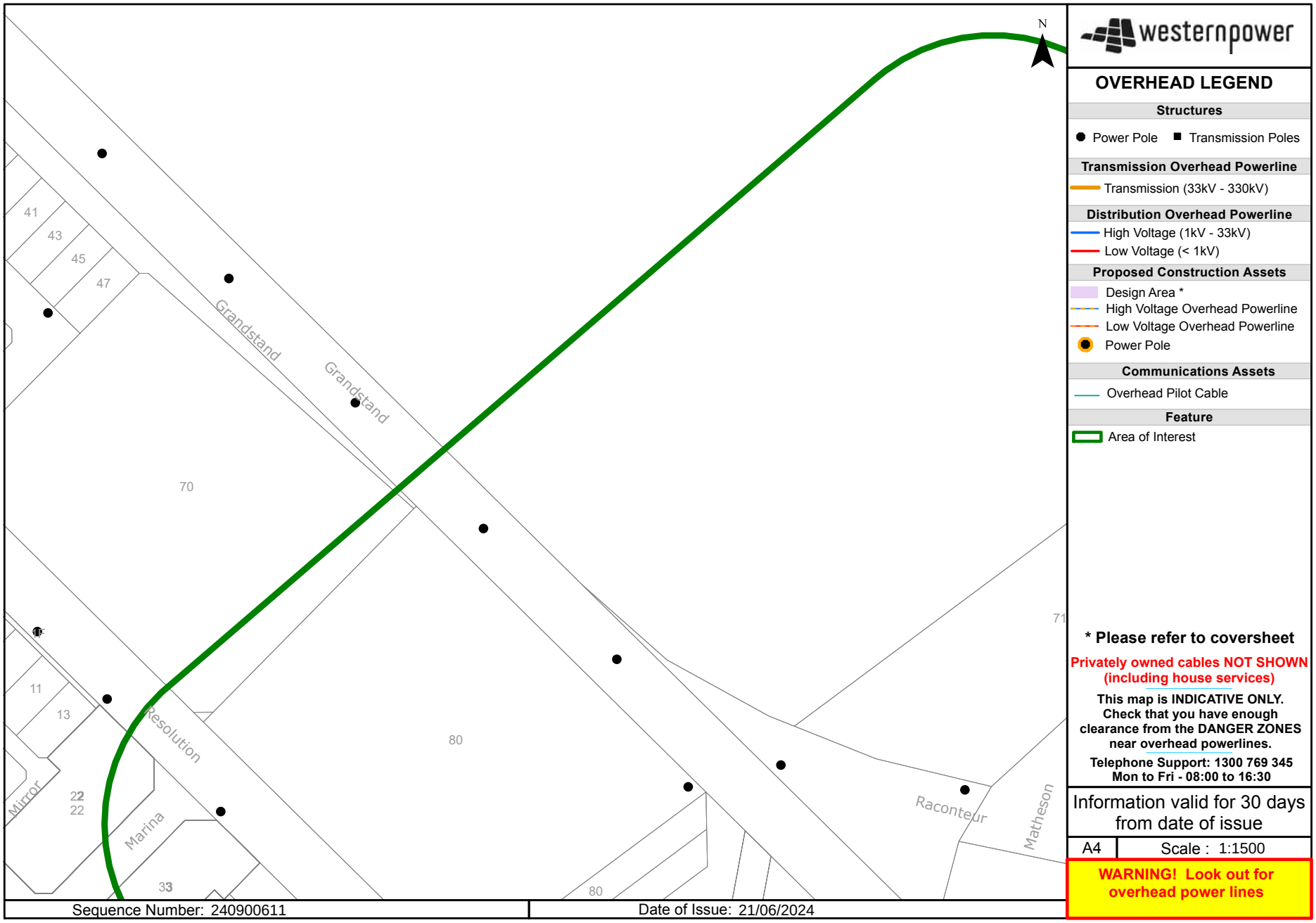
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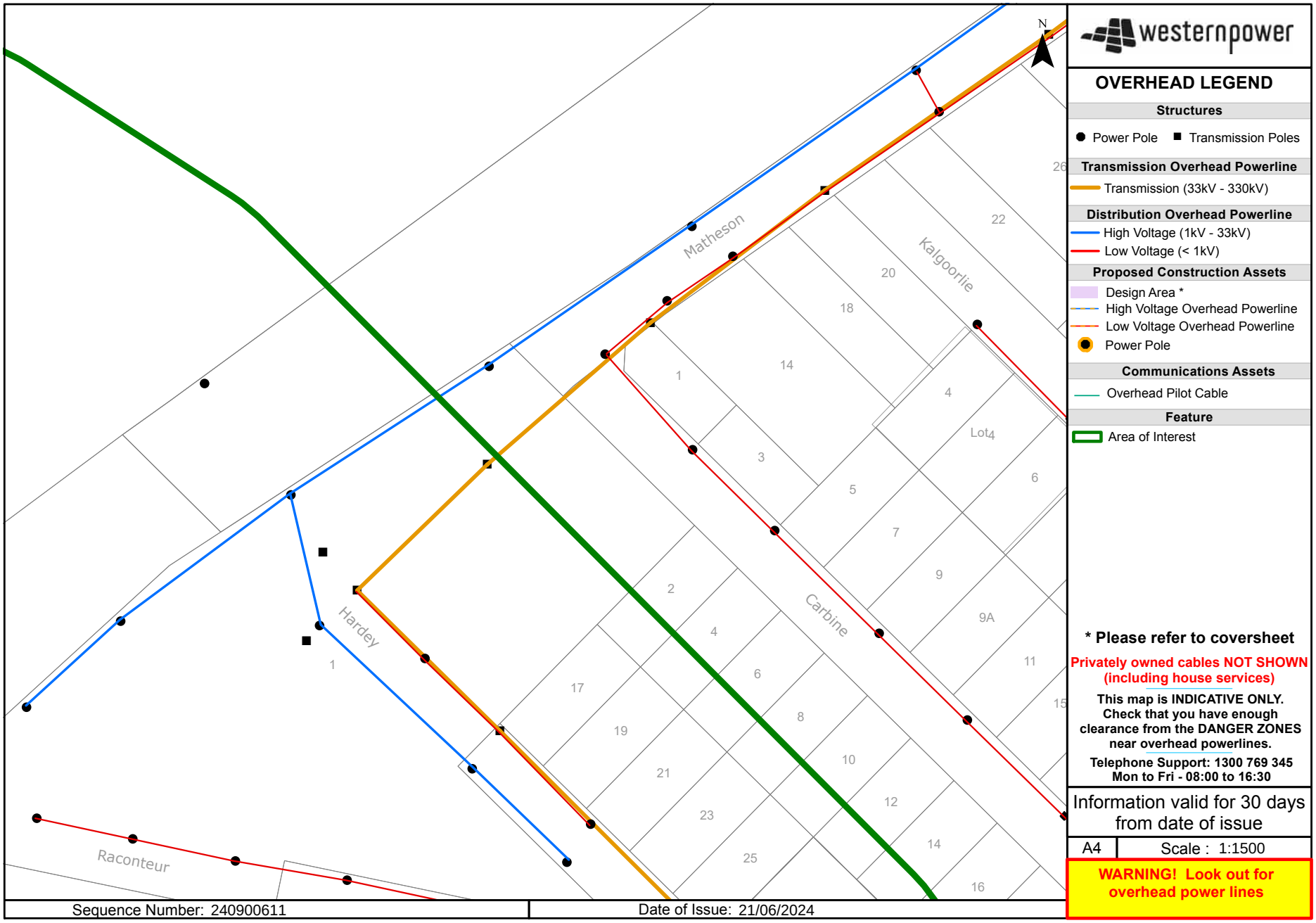
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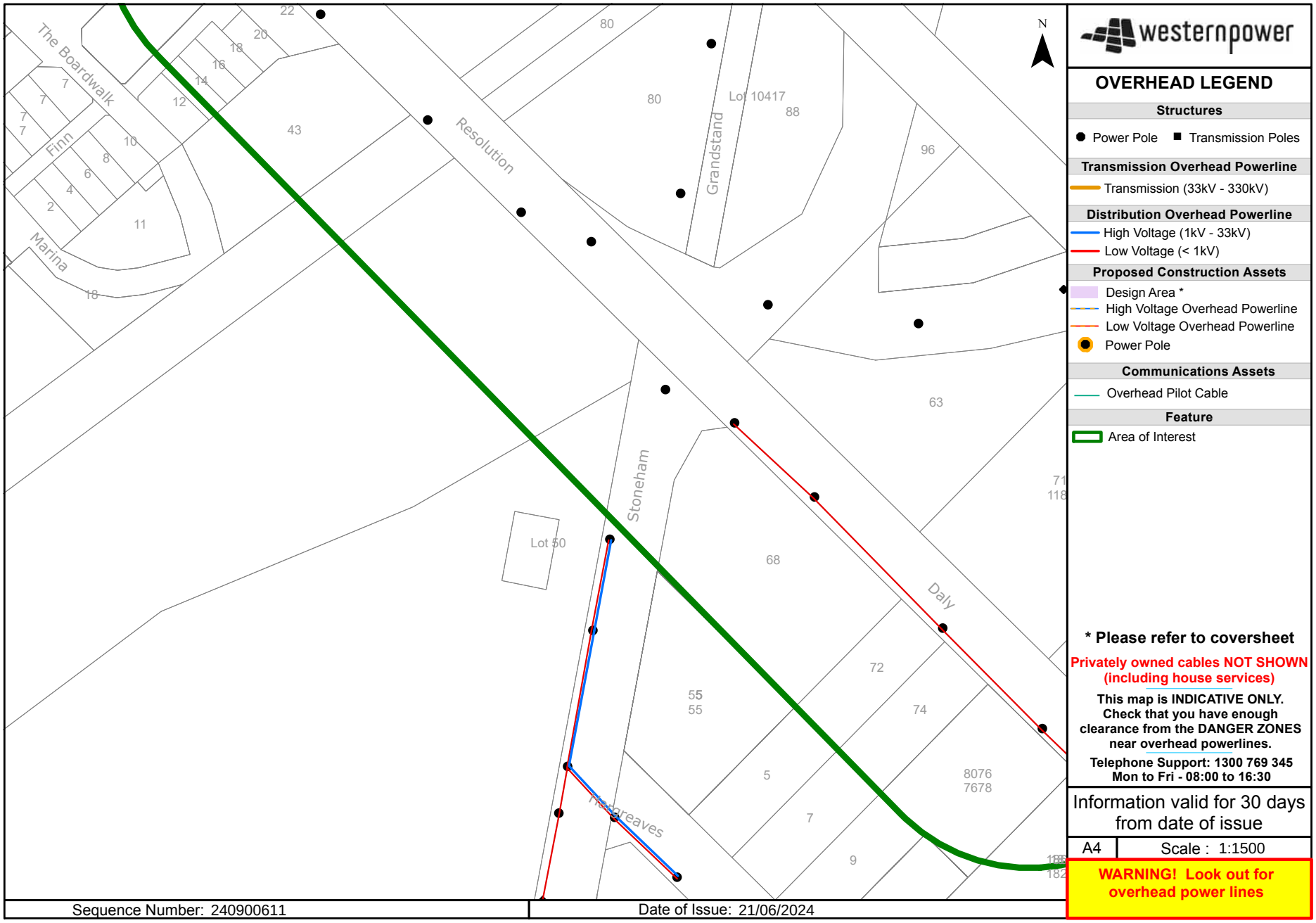
A4 | Scale : 1:1500

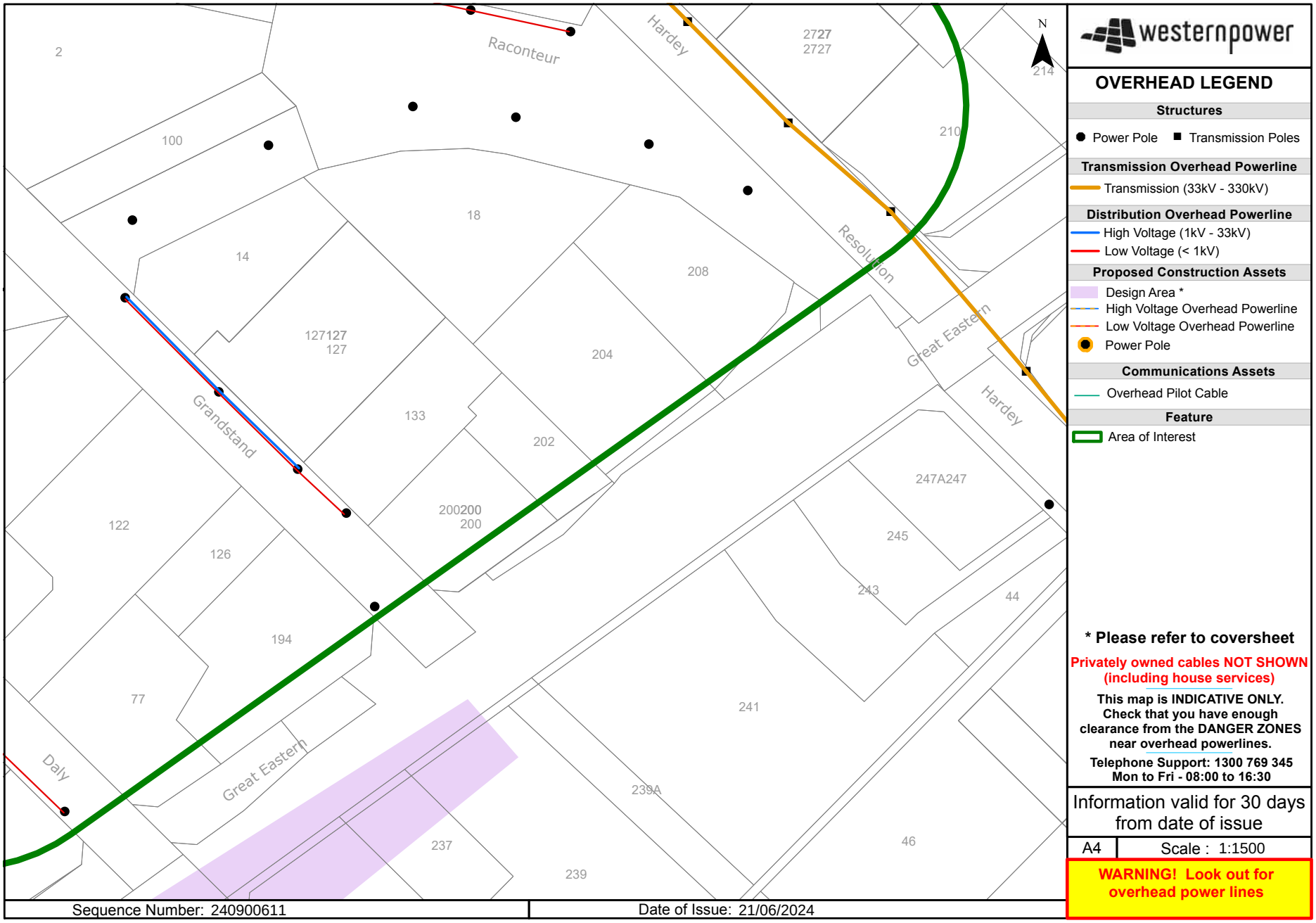
**WARNING! Look out for overhead power lines**


OVERVIEW ONLY
1
2
3
4
Grandstand
Resolution
Marina
The Boardwalk
Finn
Marina
Matheson
Hardey
Raconteur
Carbine
Kalgoorlie
Stoneham
Daly
Grandstand
Great Eastern
Great Eastern
Hardey
N
Sequence Number: 240900611
Date of Issue: 21/06/2024
westernpower
OVERHEAD LEGEND
Structures
Power Pole
Transmission Poles
Transmission Overhead Powerline
Transmission (33kV - 330kV)
Distribution Overhead Powerline
High Voltage (1kV - 33kV)
Low Voltage (< 1kV)
Proposed Construction Assets
Design Area *
High Voltage Overhead Powerline
Low Voltage Overhead Powerline
Power Pole
Communications Assets
Overhead Pilot Cable
Feature
Area of Interest
* Please refer to coversheet
Privately owned cables NOT SHOWN (including house services)
This map is INDICATIVE ONLY. Check that you have enough clearance from the DANGER ZONES near overhead powerlines.
Telephone Support: 1300 769 345
Mon to Fri - 08:00 to 16:30
Information valid for 30 days from date of issue
A4
Scale : 1:3075
WARNING! Look out for overhead power lines


N
41
43
45
47
Grandstand
Grandstand
70
11
13
Resolution
Mirror
22
22
Marina
33
80
80
71
Raconteur
Matheson
Sequence Number: 240900611
Date of Issue: 21/06/2024
westernpower
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N
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Kalgoorlie
Carbine
Hardey
Raconteur
Lot4
Sequence Number: 240900611
Date of Issue: 21/06/2024
westernpower
OVERHEAD LEGEND
Structures
Power Pole
Transmission Poles
Transmission Overhead Powerline
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The Boardwalk
Finn
Marina
Resolution
Grandstand
Stoneham
Daly
Hargreaves
Lot 10417
Lot 50
22
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westernpower
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Raconteur
Hardey
Resolution
Great Eastern
Hardey
Grandstand
Daly
Great Eastern
2
100
14
18
208
204
133
202
122
126
194
77
241
239A
237
239
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214
210
245
243
44
247A247
200200
200
127127
127
2727
2727
N
westernpower
OVERHEAD LEGEND
Structures
Power Pole
Transmission Poles
Transmission Overhead Powerline
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WARNING! Look out for overhead power lines
Sequence Number: 240900611
Date of Issue: 21/06/2024

Job ID 36962243

## Precinct E

# End of document

**This document may exclude some files (eg. DWF or ZIP files)**

This document was automatically generated at a point-in-time. Be aware that the source information from which this document was created may have changed since it was produced. This document may contain incomplete or out-of-date information. Always check your enquiry details in the BYDA Referral Service for the most recent information. For copyright information refer to individual responses.

Job No 36962238

byda.com.au

## Contact Details

| Contact | Contact number | Company | Enquirer ID |
|---|---|---|---|
| Justin Zielinski | 0420 304 451 | - | 3140642 |

**Email**
jzielinski@tabec.com.au

**Address**
54 Havelock Street
West Perth WA 6005

## Job Site and Enquiry Details

**WARNING:** The map below only displays the location of the proposed job site and does not display any asset owners' pipe or cables. The area highlighted has been used only to identify the participating asset owners, who will send information to you directly.

| Enquiry date | Start date | End date | On behalf of | Job purpose | Locations | Onsite activities |
|---|---|---|---|---|---|---|
| 21/06/2024 | 24/06/2024 | 24/06/2024 | Private | Design | Both Road | Planning & Design |



Check that the location of the job site is correct. If not, you must submit a new enquiry.

If the scope of works change or plan validity dates expire, you must submit a new enquiry.

Do NOT dig without plans. Safe excavation is your responsibility. If you don't understand the plans or how to proceed safely, please contact the relevant asset owners.

| User Reference | Address | Notes/description |
|---|---|---|
| Preinct D | 70 Grandstand Road<br>Ascot WA 6104 | - |

## Your Responsibility and Duty of Care

- **Lodging an enquiry does not authorise project commencement.** Before starting work, you must obtain all necessary information from all affected asset owners.
- If you don't receive plans within 2 business days, contact the asset owner & quote their sequence number.
- Always follow the 5Ps of Safe Excavation (page 2), and locate assets before commencing work.
- Ensure you comply with State legislative requirements for Duty of Care and safe digging.
- If you damage an underground asset, you MUST advise the asset owner immediately.
- By using the BYDA service, you agree to the Privacy Policy and Term of Use.
- For more information on safe digging practices, visit www.byda.com.au

## Asset Owner Details

Below is a list of asset owners with underground infrastructure in and around your job site. It is your responsibility to identify the presence of these assets. Plans issued by Members are indicative only unless specified otherwise. Note: not all asset owners are registered with BYDA. You must contact asset owners not listed here directly.

| Referral ID (Seq. no) | Authority Name | Phone | Status |
|---|---|---|---|
| 240900580 | ATCO Gas Australia | 1300 926 755 | NOTIFIED |
| 240900576 | NBN Co (WA) | 1800 687 626 | NOTIFIED |
| 240900574 | Optus (WA) | 1800 505 777 | NOTIFIED |
| 240900578 | Telstra (WA) | 1800 653 935 | NOTIFIED |
| 240900575 | Vocus (WA) | 1800 262 663 | NOTIFIED |
| 240900579 | Water Corporation | 13 13 95 | NOTIFIED |
| 240900577 | Western Power | 13 10 87 | NOTIFIED |

END OF UTILITIES LIST

**Lodge your FREE enquiry online any time at byda.com.au**

# ATCO UNDERGROUND ASSET DETAILS ASSETS AFFECTED
GAS DIVISION

**ASSETS AFFECTED – see accompanying Plan**

**Job No:** **36962238**
**Sequence No:** **240900580**
Date of Issue: 21 June 2024
Phone: **1300 926 755**

**Justin Zielinski**
**ATCO Gas Australia**
54 Havelock Street
West Perth
WA 6005

**BYDA Utility Registration Name:** Private
**BYDA Location:** **70 Grandstand Road Ascot WA 6104**

**ATTENTION:** This response to your enquiry has been interpreted from details in your requested DBYD picture location request only (not any street address you gave). It is your duty to ensure the accompanying plan/s match your geographical area of works.

**IF YOU SEE, HEAR, SMELL OR OTHERWISE DETECT GAS,**
**LEAVE THE IMMEDIATE AREA AND THEN CALL 13 13 52**

Our records indicate that ATCO gas infrastructure ***IS PRESENT*** in the vicinity of and/or surrounding area of the above enquiry. This response relates only to ATCO assets. Your Duty of Care requires that personnel **Must** at all times comply with, and have on site, this information sheet and the accompanying plan(s). All plans are subject to this information sheet. You should refer to the ATCO Self-service Portal (Link Here) or if unsure, contact ATCO on **1300 926 755** during business hours.

All information provided is to be used as a guide only (see Disclaimer item **5**). It does not absolve you or third parties from your Duty of Care obligations, including to take additional precautions where work has the potential to impact on gas assets, public safety or the environment, or from your duties at law (including Reg 3.21 of the Occupational Safety and Health Regulations 1996).

## WARNINGS

- No works of any type within 15 metres of any **CRITICAL GAS ASSET** infrastructure without prior approval from ATCO
- **NO HOT WORK** within 15 metres of any gas infrastructure except in compliance with applicable laws & *Australian Standard 1674.* **Do Not** let heat sources or hot works impact on any gas infrastructure and take into consideration that the ground or adjacent structures may also be capable of transmitting heat so as to circumvent protection afforded by a heat shield or barrier
- **DANGER** - Gas can cause asphyxiation and is flammable. Keep all ignition sources well away (e.g., flames, matches/ lighters, sparks, electrical devices, vehicles or engines, mobile phones, cameras)
- Gas pipes **Must Not** be unsupported or left without adequate cover or protection without prior approval from ATCO
- Damage to the pipe coating or pipe itself can be very dangerous if not given immediate attention. Report any damage to ATCO immediately on **13 13 52**. **Do Not** attempt to repair any damaged gas infrastructure
- No alteration or removal of live or abandoned gas infrastructure without prior written approval from ATCO
- Any abandoned or proposed gas infrastructure indicated on the gas plans **Must** be treated as live
- Never assume the location or depth of any gas infrastructure. Pipes may not follow straight lines or maintain a constant depth. Always check carefully (e.g., by careful hand digging of potholes)
- Unauthorised repairs or tampering with gas infrastructure may result in prosecution under the *Energy Operators (Powers) Act 1979*. ATCO Gas Australia reserves all rights to recover compensation for loss or damage to its gas infrastructure or other property including for indirect or consequential losses.

**PLANS:**

Plans provided are current for **30 days only** from date of request. You must use current plans at all times.

Plans do not show all gas service lines (which connect gas mains to individual meter positions). See condition **3.c)** below.

If plan shows **additional detail** symbols ( * ) or ( ) in the area of proposed works it is **your duty** to obtain that further detail from the number below.

Plans (including the location of pipes, services, infrastructure and boundaries) are **approximate only**. You **Must** use safe and proper procedures – including **potholing** (see condition **4** below).

Plans are not a guide as to gas availability for connection purposes.

**To call ATCO:** **Weekdays from 7.30am to 3.30pm, call – 1300 926 755 After hours, weekends and emergencies, call – 13 13 52**

**CONDITIONS FOR WORKS IN THE VICINITY OF ATCO ASSETS**

**1. Compliance with Warnings**

You **Must** comply with the Warnings contained in this information sheet and the accompanying plan(s).

**2. Compliance with 'Working around Gas Infrastructure' Document (Link Here) applicable laws and duty of care**

All work (including but not limited to using Excavator's Augers, Directional, drilling machines, 'Ditch Witch' type trenching machine, Loader, Dozer, Skid Steer (Bob Cat)) **Must** comply with all applicable requirements in the 'Working around Gas Infrastructure' Document and with all applicable laws and Australian Standards. All due care must be exercised to locate any gas infrastructure in the vicinity and when conducting any works near them.

**3. All Gas Infrastructure**

All work that may have any impact upon any gas infrastructure (see **3.a)**, **b)** and **c)** below for examples) should be carefully planned with notification to ATCO well in advance of commencement. Contact ATCO on **1300 926 755** or visit Atco's online self-service portal (Link Here). Amongst other things, this includes excavation of or near gas pipelines, boring/drilling, crossings of pipelines (including by other underground infrastructure e.g. drains, power cables, etc.), road works and structural installations. In addition:

a) Critical Asset

No works of any type are permitted within 15 meters of these pipelines without prior approval from ATCO. For approvals contact ATCO on **1300 926 755** or visit the Atco online Self-service portal (Link Here)

You **Must** ascertain the location of any Critical Asset, in relation to your proposed work by:

- Locating a straight line between two marker danger signs, and
- Assessing the distance from this line to your proposed work area.

ATCO may require stand-by supervision during your works and will advise of attendance requirements.

b) Non Critical Assets

These pipelines are installed in most streets throughout the Perth metro area and several country centers. Main valves, regulator sets, and test points also exist at intervals along these pipelines. Where work may impact upon these pipelines or assets then ATCO **Must** be contacted as per item **3** above.

c) Gas Services and Meters

If a gas meter is installed on a property, an underground gas service pipe will run from the meter position to the gas main in the street. Plans do not show all gas service lines (with the exception of Critical Assets), but their presence must be anticipated. Most gas meter boxes installed since 1996 will include a sticker giving approximate guidelines for the gas service line location. All due care must be exercised to locate any gas services in the vicinity and when conducting any works near them.

**4. Compliance with Safe Work Practices**

It is your responsibility to have and comply with adequate safe work practices and procedures. Without limiting your obligations:

**PLAN** The complete & current Before you Dig Australia documentation and plans must always be on site & referred to for the duration of work. Refer to regulation 3.21 of the Occupational Safety and Health Regulations 1996 and the Utility Providers "Code of Practice" for further useful information.

**PREPARE** Prepare by reviewing the Before you Dig Australia Documentation and contacting ATCO if you need assistance. Look for onsite ATCO asset and infrastructure clues such as pit lids, marker posts and meters. No works of any type are permitted within 15 meters of a **CRITICAL ASSET** without prior approval from ATCO. For approvals contact ATCO on **1300 926 755** or visit the Atco website Self Service portal (Link Here) and allow suitable

processing time. Atco recommends engaging a BYDA Certified Locator which includes undertaking electronic location prior to potholing.

**POTHOLE** Using current Before you Dig Australia plans, all gas pipes should be located (including any deviation in the direction of a gas pipe) by exposing them by careful digging using a HAND SHOVEL. Where the proposed work is parallel to a gas pipeline, pothole every 10 meters along the entire route. Damage to the pipe coating or to the pipe itself can create a very dangerous situation if not given immediate attention. If damage does occur, it **Must** be reported to ATCO immediately on Ph. **13 13 52**.

**PROTECT** Supervise and monitor all excavations near gas infrastructure using a dedicated spotter. Where any gas infrastructure is required to be exposed, adequate protection of the gas infrastructure is required to prevent potential damage. Also implement appropriate controls when conducting 'hot work' (in accordance with AS 1674) in the vicinity of the ATCO infrastructure such as; isolation; separation distance; the placement of an effective non-combustible barrier of sufficient size and thermal resistance for the intensity, type and duration of heat exposure; gas monitoring; monitoring the environment surrounding the ATCO infrastructure to ensure it is not being impacted by the work, and other controls as necessary.

**PROCEED** You should **only proceed** with your excavation work after you have planned, prepared, potholed (unless prohibited) and have protective measures in place. All locations markers/pegs are to be removed on completion of works. If you are unsure, **DO NOT** Proceed. Call ATCO on **1300 926 755**

**5. Disclaimer and Further Terms**

a) Nothing in this document, any accompanying plan or the 'Additional Information for Working around Gas Infrastructure' (AGA-O&M-PR24) (together called "**Documents**") purports to exclude or modify any term, condition or warranty to the extent that by law it cannot lawfully be excluded or modified by agreement or notice, including but not limited to those contained in Schedule 2 of the *Competition and Consumer Act* 2010 (Cth) and corresponding provisions of any state legislation.

b) If any of ATCO, or their respective related entities, officers, employees, agents, contractors or advisers (together called "**Associates**") is liable for a breach of a term, condition or warranty described in paragraph **5.a)** above, its liability is, to the fullest extent permitted by law, limited to any one or more of the
following as it determines in its absolute discretion:

i) in relation to goods supplied by them, replacing or repairing the goods, supplying an equivalent item, paying the cost of replacing or repairing the goods or paying the cost of acquiring or hiring an equivalent item; and

ii) in relation to services supplied by them, the re-supply of the services or the payment of the cost of having the services re-supplied.

c) Subject to paragraphs **5.a)** and **b)**, but otherwise despite any other provision in the Documents, no representation or warranty is made or given (whether expressly or by implication) by any of ATCO or their respective Associates in respect of any information contained or referred to in any of the Documents or in any other communication from ATCO concerning any of the Documents or the subject matter of any of the
Documents ("Information"). In particular, but without limiting the generality of the foregoing limitation, none of ATCO or their respective Associates makes any warranty or representation as to the truth, accuracy, completeness, reliability, currency, timeliness, quality or fitness for any purpose of or the standard of care taken in the preparation of any Document or Information (including, but not limited to, the accuracy of the scale of, or the location of anything or symbol shown on, any plan or diagram).

d) Subject to paragraphs **5.a)** and **b)**, to the maximum extent permitted by law, none of ATCO or their respective Associates is liable to any person or other body ("**Recipient**") who receives or otherwise obtains access to all or any part or parts of the Documents or Information, in any way (including, but not limited to, liability for negligence, breach of statutory duty or lack of care) in respect of any cost, expense, damages, loss or liability, including, but not limited to:

i) any financial or economic loss, cost, expense or damage, including but not limited to loss of production, loss of profit, loss of revenue, loss of use, loss of contract, loss of goodwill or loss of business opportunity;

ii) any new or increased costs or expenses, including but not limited to financing or operating costs;

iii) any failure to achieve any actual or anticipated saving in respect of any cost or expense;

iv) any cost, expense, damage or loss resulting from any liability of the Recipient to any other person or body howsoever and whensoever arising, suffered or incurred by the Recipient in relation to, or in connection with, the disclosure to them of, or use of, or reliance on, all or any

part or parts of the Documents or Information.

e) By using any Document or Information, each Recipient is taken to represent and warrant to ATCO that the Recipient will comply with the conditions and other terms referred to in the Documents or Information, including but not limited to conditions that:

i) the Recipient **Must** comply with the conditions in numbered paragraphs **1** to **4** above and this paragraph **5**;

ii) as between ATCO and each Recipient, ATCO owns the Information and all rights and title in and to the Information are to remain vested in ATCO;

iii) no Recipient has any right, title or interest in the Information or, except as expressly provided for in the Documents, any license or right to copy, alter, modify, publish or otherwise use or deal with the Information without prior written approval from ATCO;

iv) ATCO makes no representation and gives no warranty as to its right to disclose any Information;

v) the Recipient relies on any Information entirely at its own risk and expense;

vi) the Recipient **Must** undertake its own independent due diligence and investigations in relation to the Information;

vii) none of ATCO or their respective Associates owes the Recipient any duty of care in respect of the Information; and

viii) none of ATCO or their respective Associates is under any obligation to correct, update or revise any Documents or Information.

**GAS MAIN AND SERVICE IDENTIFICATION**

**LEGEND**

1. Critical Asset (See **WARNINGS** page 1)
2. Pipe Diameter (millimetres)
3. Pipe Material
   CI = Cast Iron PE = Polyethylene
   GI = Galvanised Iron PVC = PVC
   ST = Steel
4. Alignment (in metres from property line)
5. Pressure in main (MP 70 kPa = Medium Pressure and MAOP (Maximum Allowable Operating Pressure)
6. Off-line Service – service may not be straight line to meter. (**WARNING – OLS may not always be shown on plan**. See item **Error: Reference source not found** above)
7. Service Valve in the vicinity
   (**NOTE:** Service Valve may be **"BURIED"**)
8. Pre-laid Service laid in Common Trench
9. Main Status: (See **WARNINGS** page 1)
   9a. AB = Abandoned Mains
   9b. PROP = Proposed Mains
10. Customer Connection: Does not indicate actual location of Meter Position
    D2 (D = Domestic & 2 = Number of Meters)
    C1 (C = Commercial & 1 = Number of Meters)
11. **Additional detail available and Must be obtained if within area of proposed works – see page 2 above.**
12. Depth of Cover (DOC) in metres.




IF UNSURE, PLEASE CONTACT ATCO ON **1300 926 755**

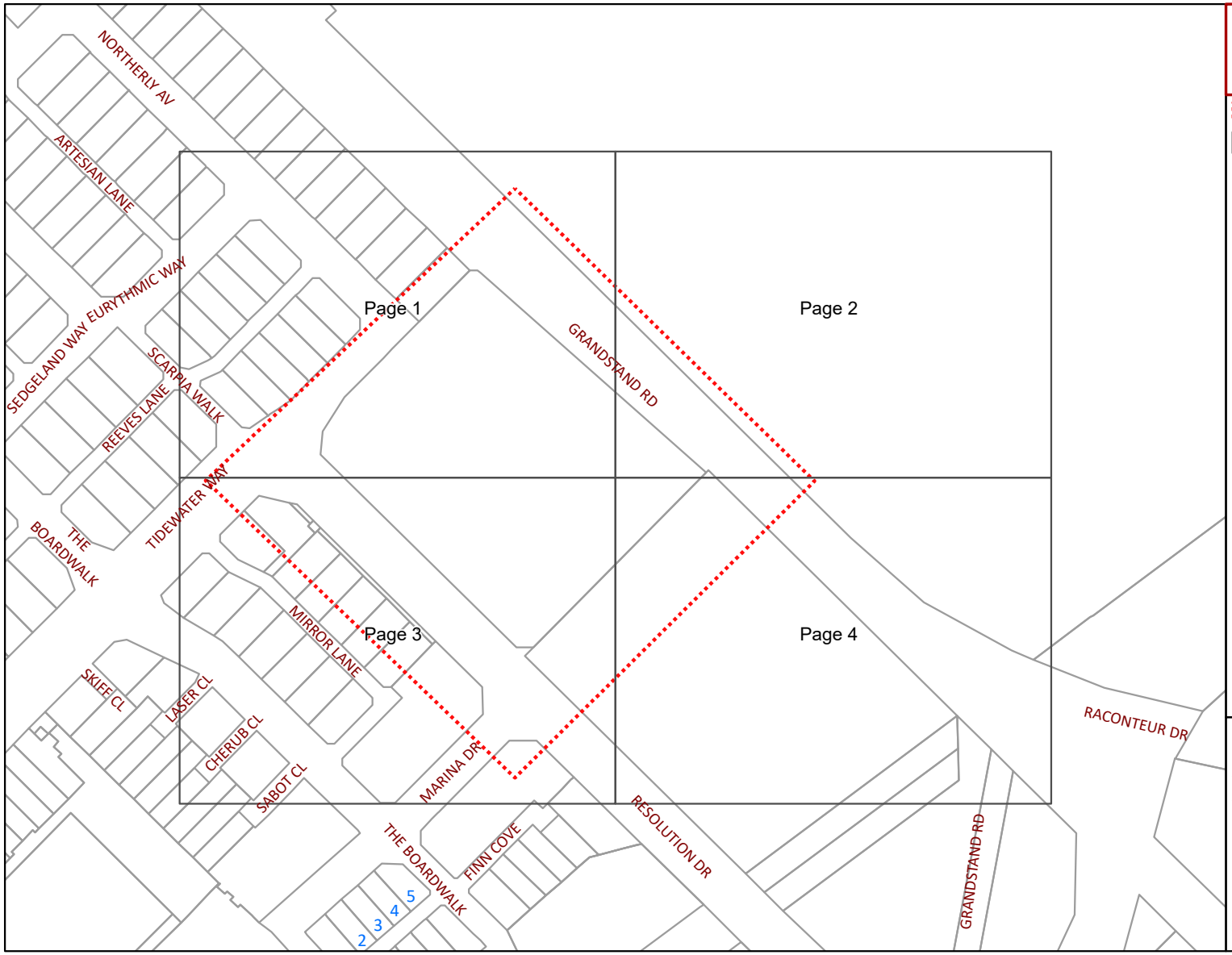
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ABN: 90 089 531 975

Date: 21/06/24 (valid for 30 days)
Index Sheet

Seq # 240900580
Job # 36962238

BYDA Location: 70 Grandstand Road Ascot 6104
Scale: 1:2,000




**WARNING**
**Refer to Cover Sheet for Further Information**

BYDA Enquiry

Detailed map page

Please refer to Symbols Sheet for Further Information

Disclaimer:
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ATCO Gas Australia will seek compensation for damage caused to assets.

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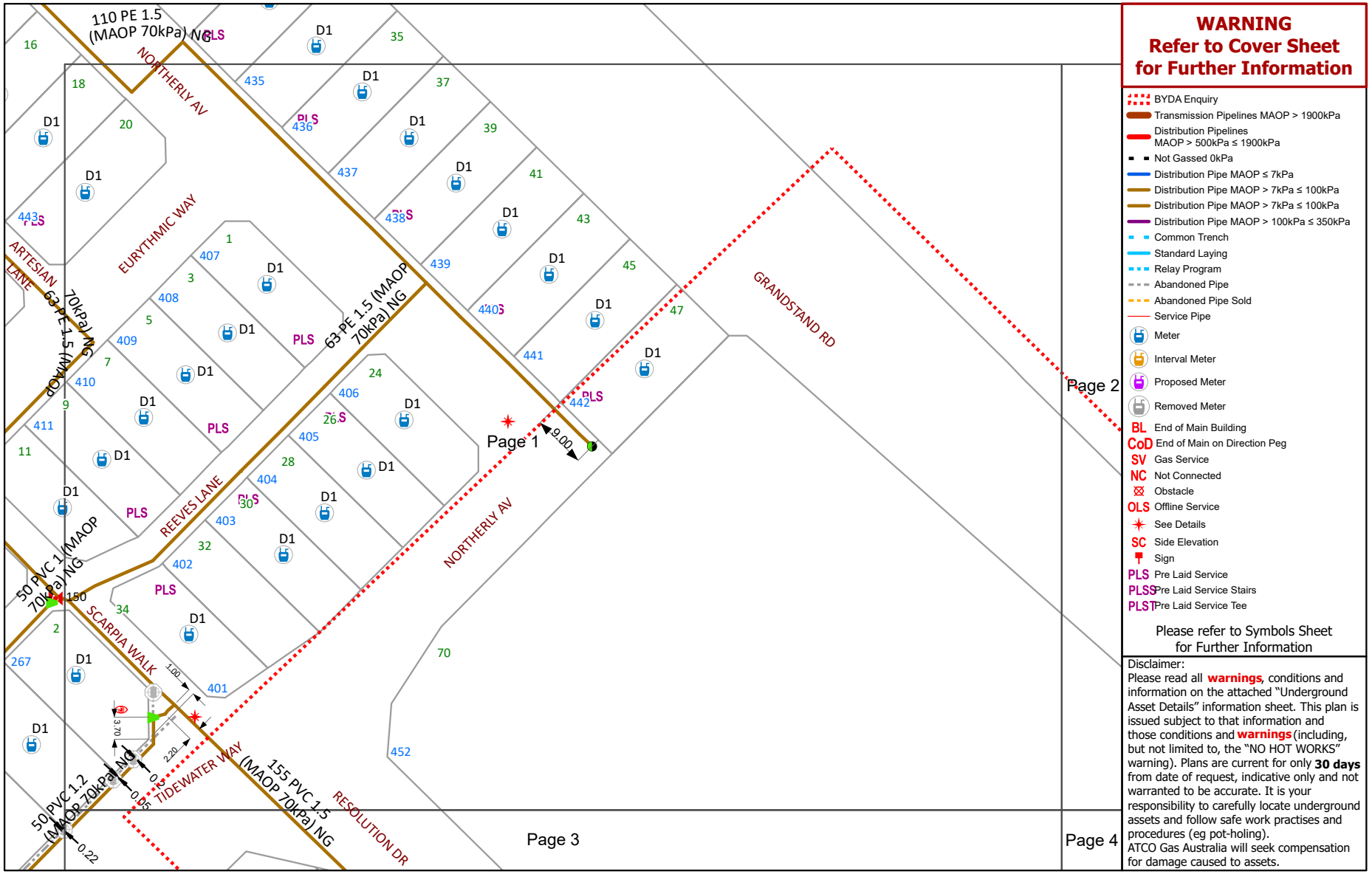
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Seq # 240900580
Job # 36962238

BYDA Location: 70 Grandstand Road Ascot 6104
Scale: 1:800




**WARNING**
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- BYDA Enquiry
- Transmission Pipelines MAOP > 1900kPa
- Distribution Pipelines MAOP > 500kPa ≤ 1900kPa
- Not Gassed 0kPa
- Distribution Pipe MAOP ≤ 7kPa
- Distribution Pipe MAOP > 7kPa ≤ 100kPa
- Distribution Pipe MAOP > 7kPa ≤ 100kPa
- Distribution Pipe MAOP > 100kPa ≤ 350kPa
- Common Trench
- Standard Laying
- Relay Program
- Abandoned Pipe
- Abandoned Pipe Sold
- Service Pipe
- Meter
- Interval Meter
- Proposed Meter
- Removed Meter
- BL End of Main Building
- CoD End of Main on Direction Peg
- SV Gas Service
- NC Not Connected
- Obstacle
- OLS Offline Service
- See Details
- SC Side Elevation
- Sign
- PLS Pre Laid Service
- PLSS Pre Laid Service Stairs
- PLST Pre Laid Service Tee

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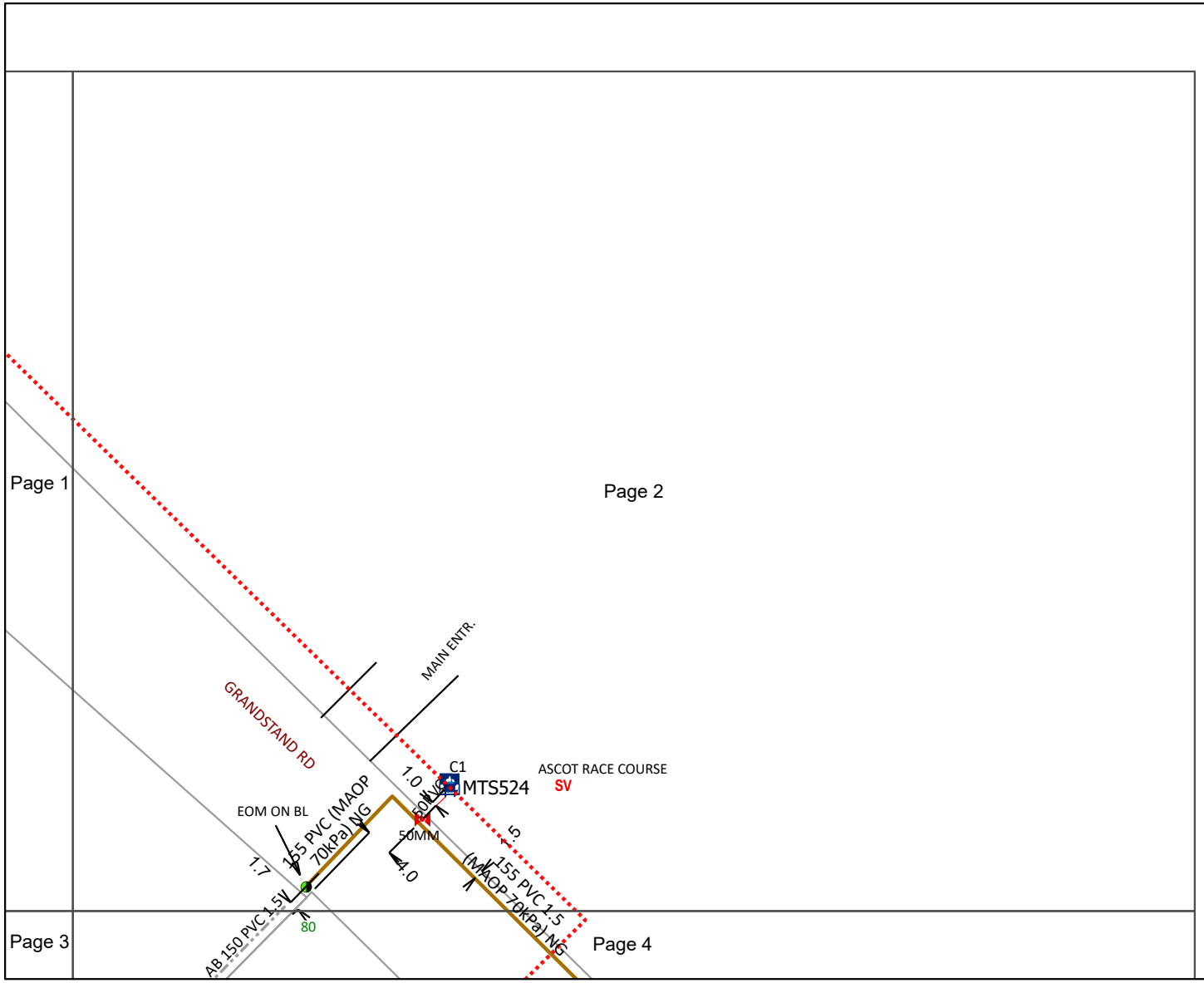
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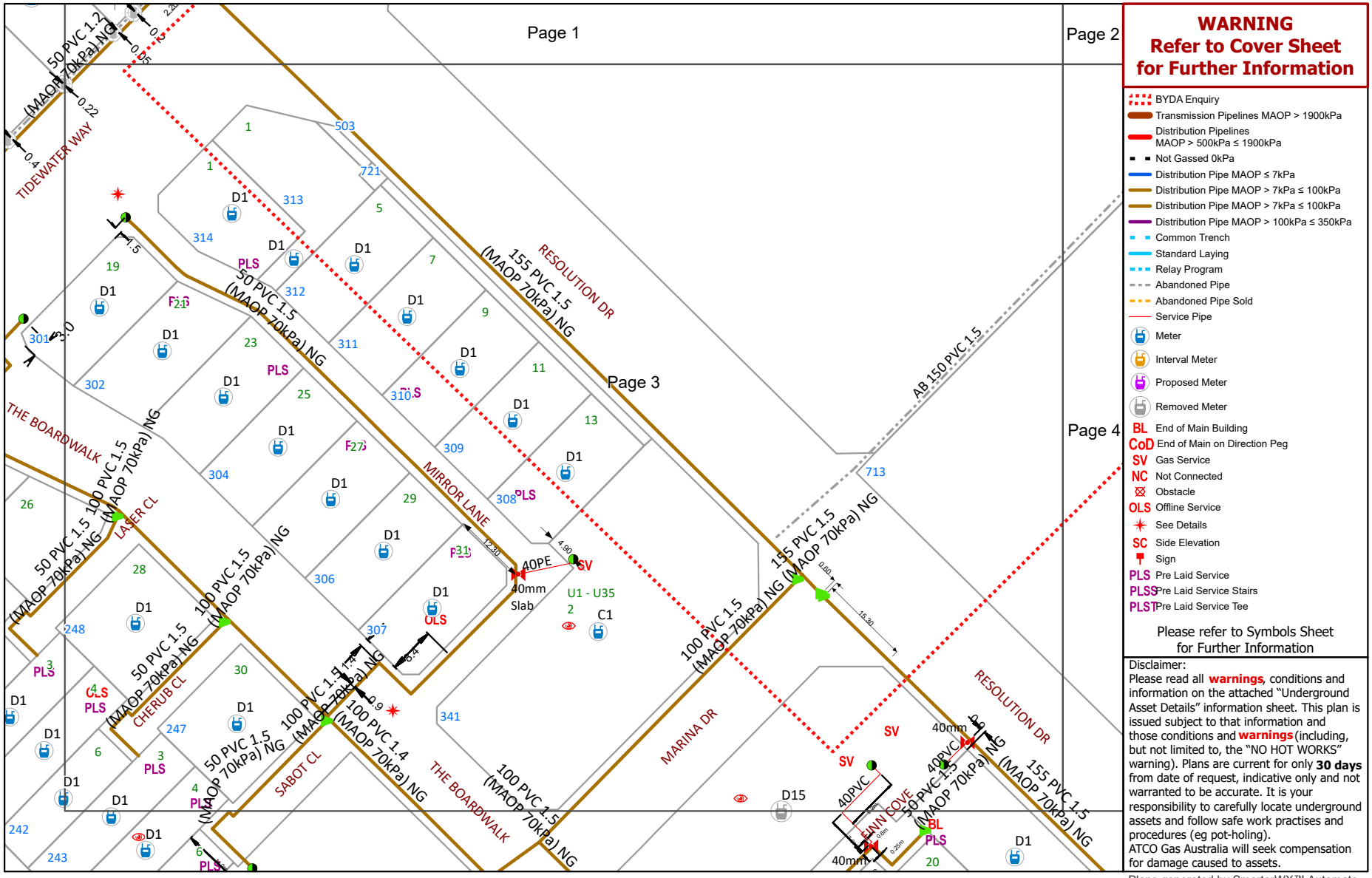
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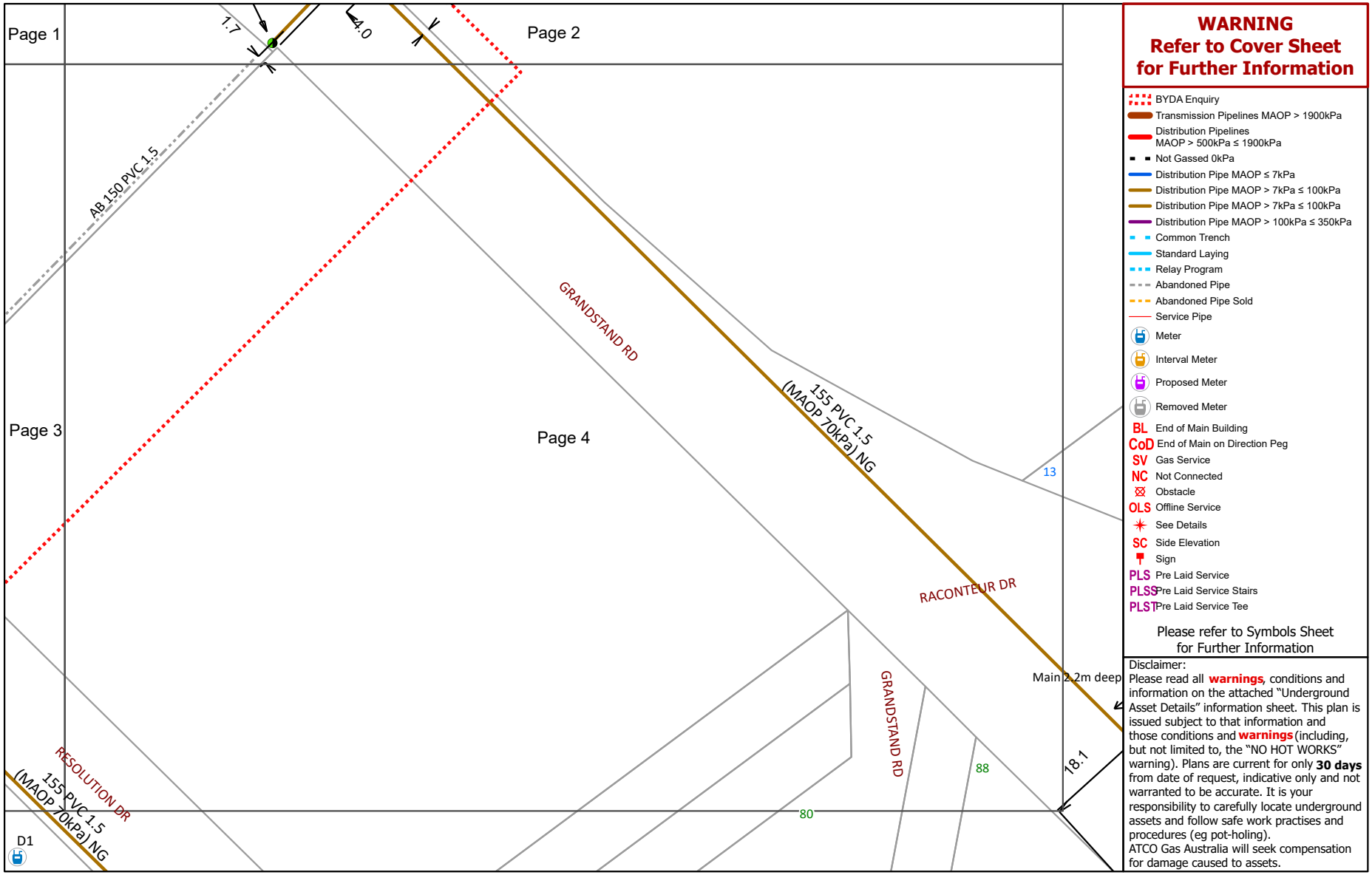
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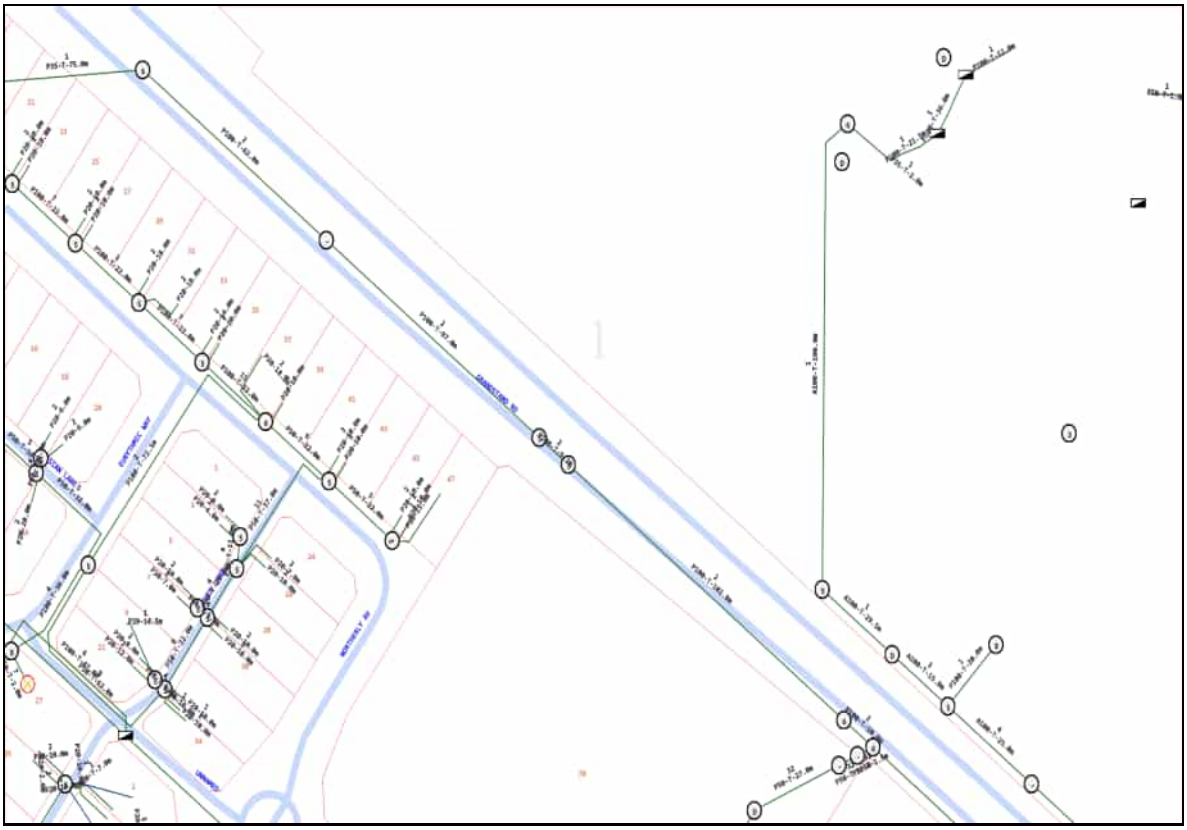
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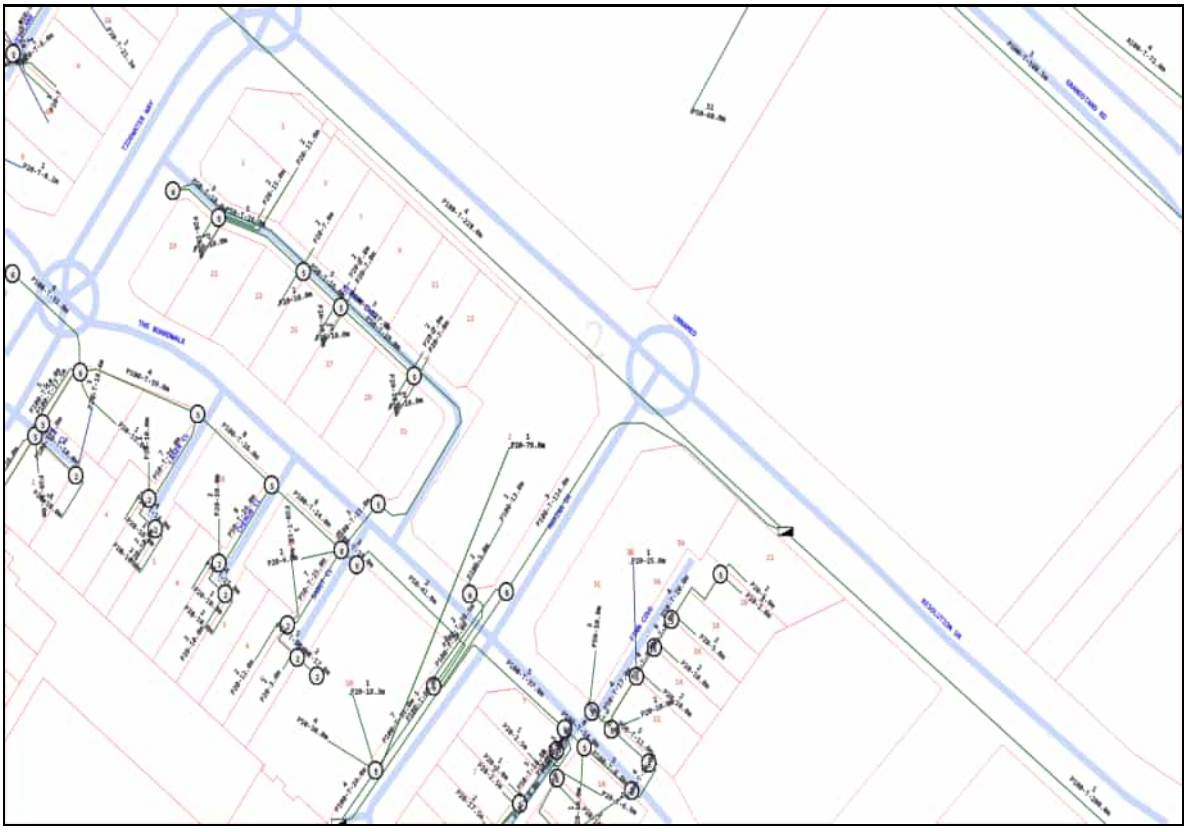
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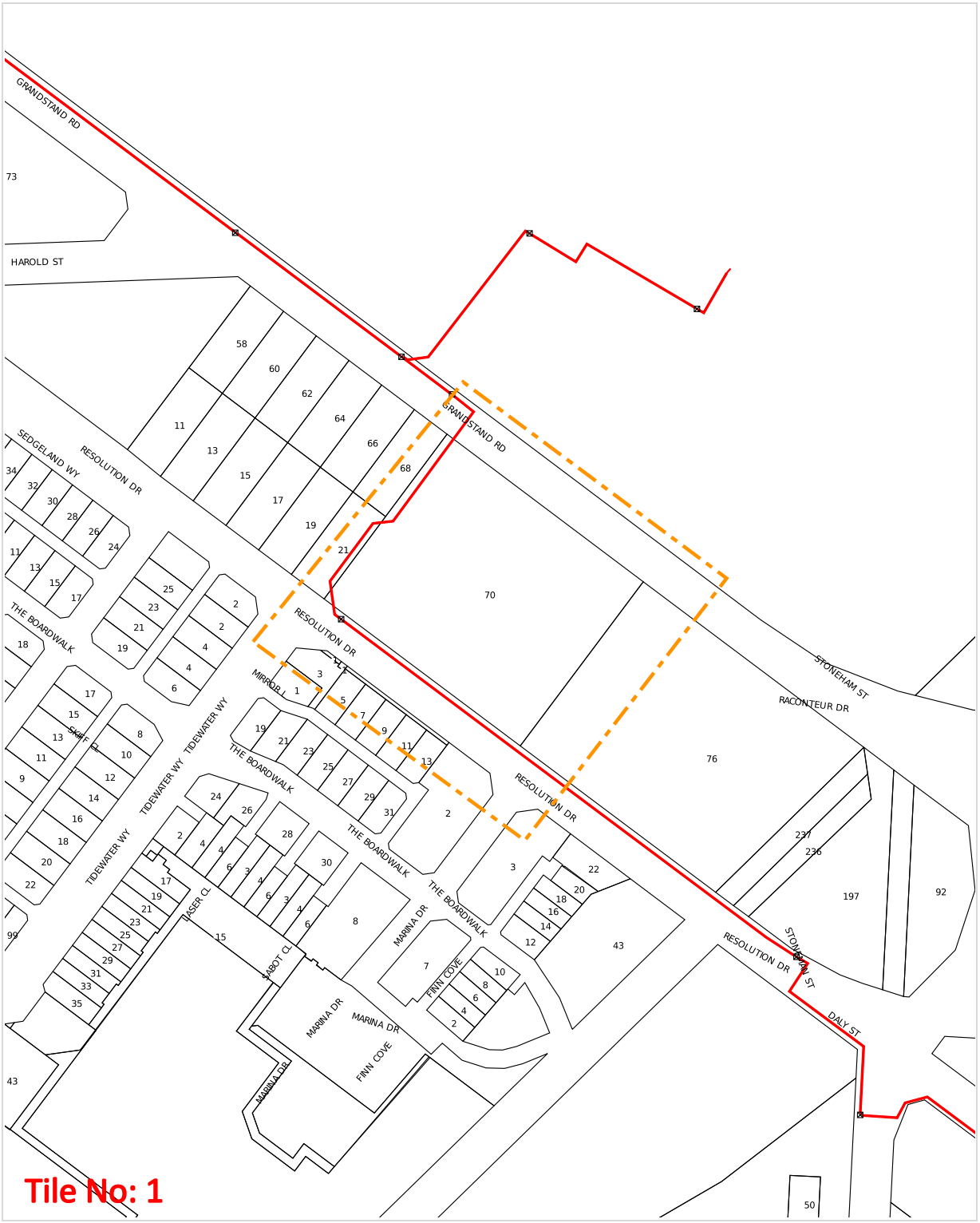
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## Emergency Contacts

You must immediately report any damage to the **nbn™** network that you are/become aware of. Notification may be by telephone - 1800 626 329.




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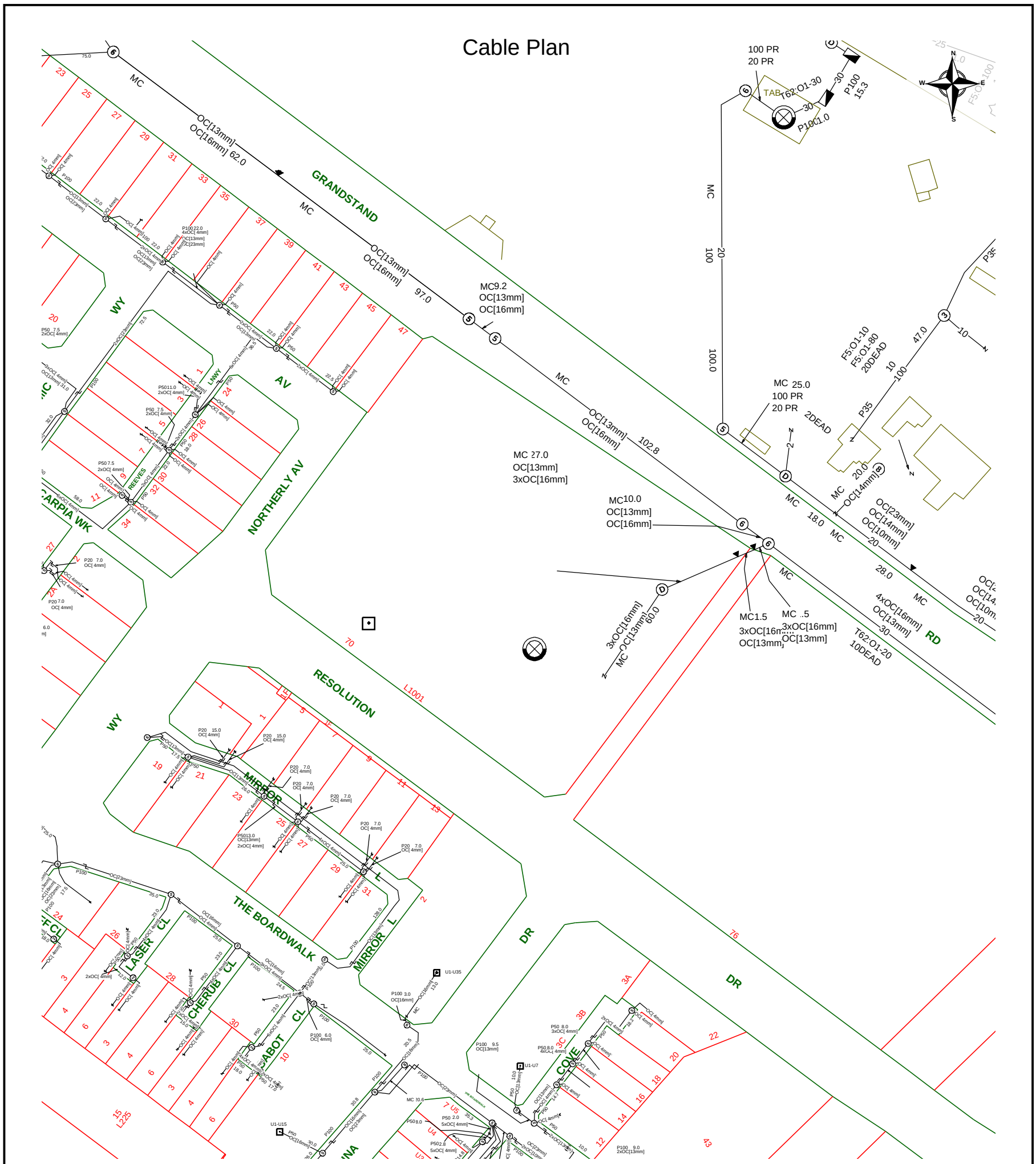
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For all Optus DBYD plan enquiries –
Email: Fibre.Locations@optus.net.au
For urgent onsite assistance contact 1800 505 777
Optus Limited ACN 052 833 208

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# Cable Plan



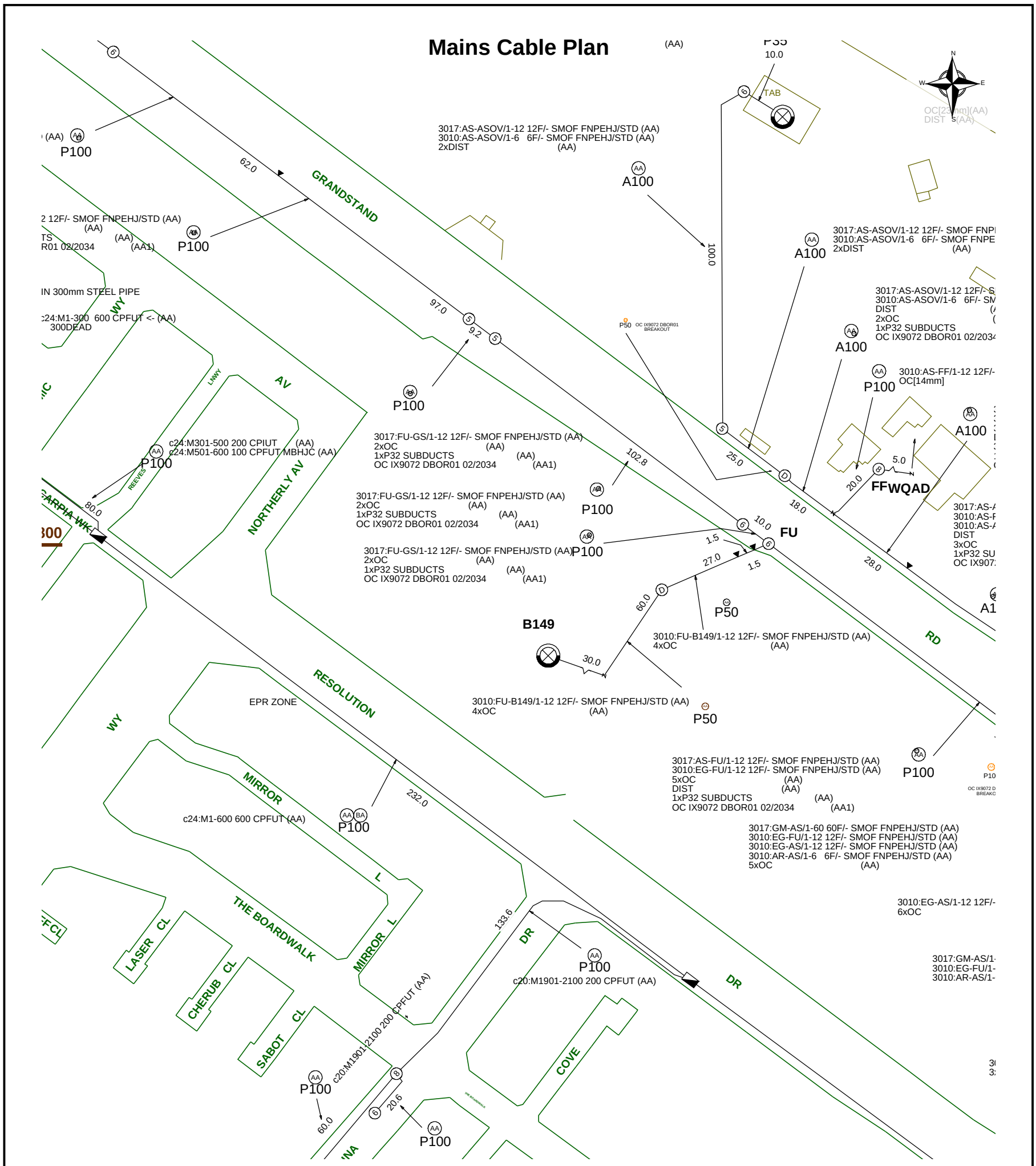

| | |
|---|---|
| Report Damage: https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment<br>Ph - 13 22 03<br>Email - Telstra.Plans@team.telstra.com<br>Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries | Sequence Number: 240900578 |
| TELSTRA LIMITED A.C.N. 086 174 781 | CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance. |
| Generated On 21/06/2024 19:05:32 | |

The above plan must be viewed in conjunction with the Mains Cable Plan on the following page

WARNING
Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information.
As such,Telstra supplied location information is indicative only.Spatial accuracy is not applicable to Quality Level D.
Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it.
Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy.
Further on site investigation is required to validate the exact location of Telstra plant prior to commencing construction work.
A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works.

See the Steps- Telstra Duty of Care that was provided in the email response.

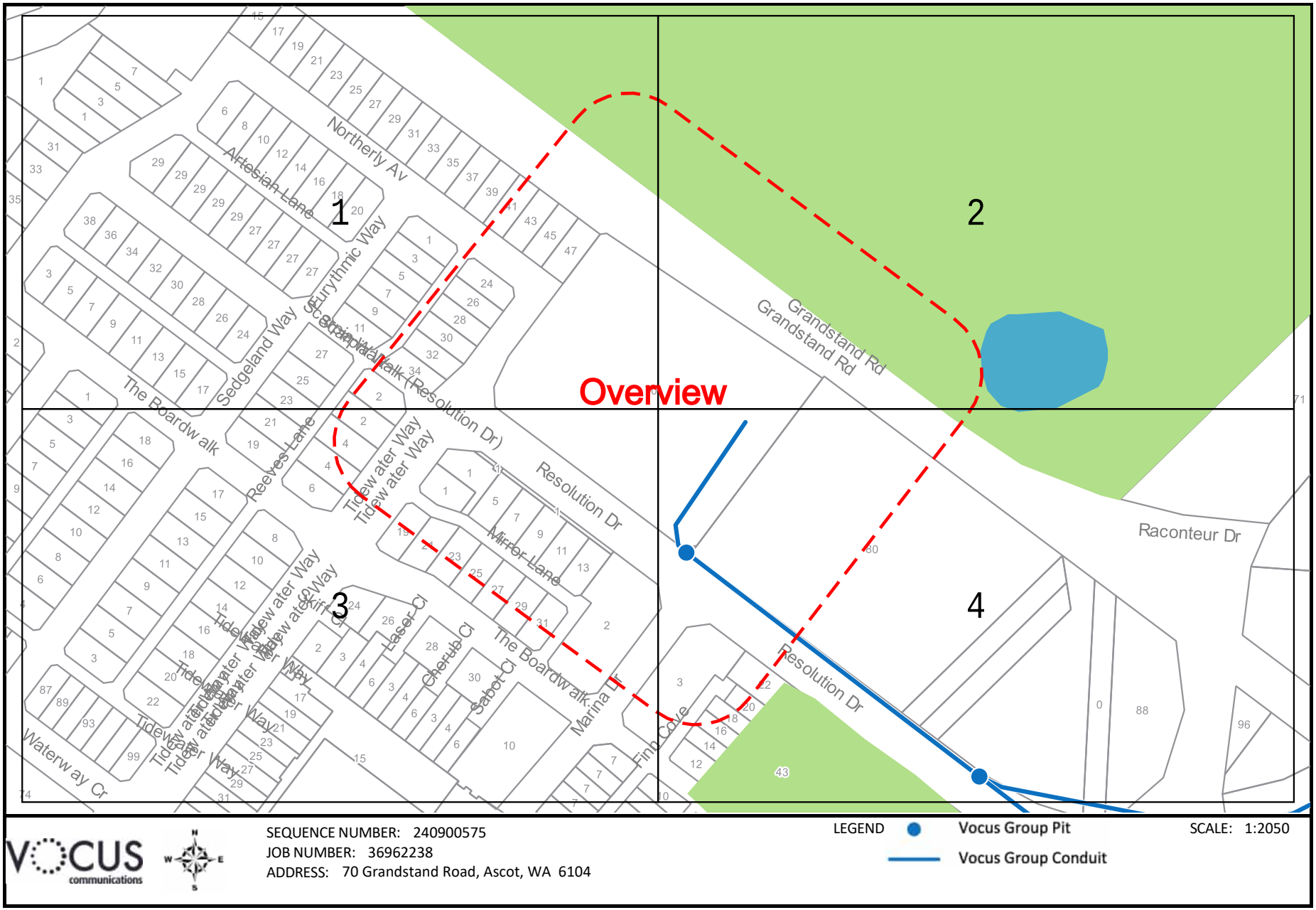
**Page 1 of 2**



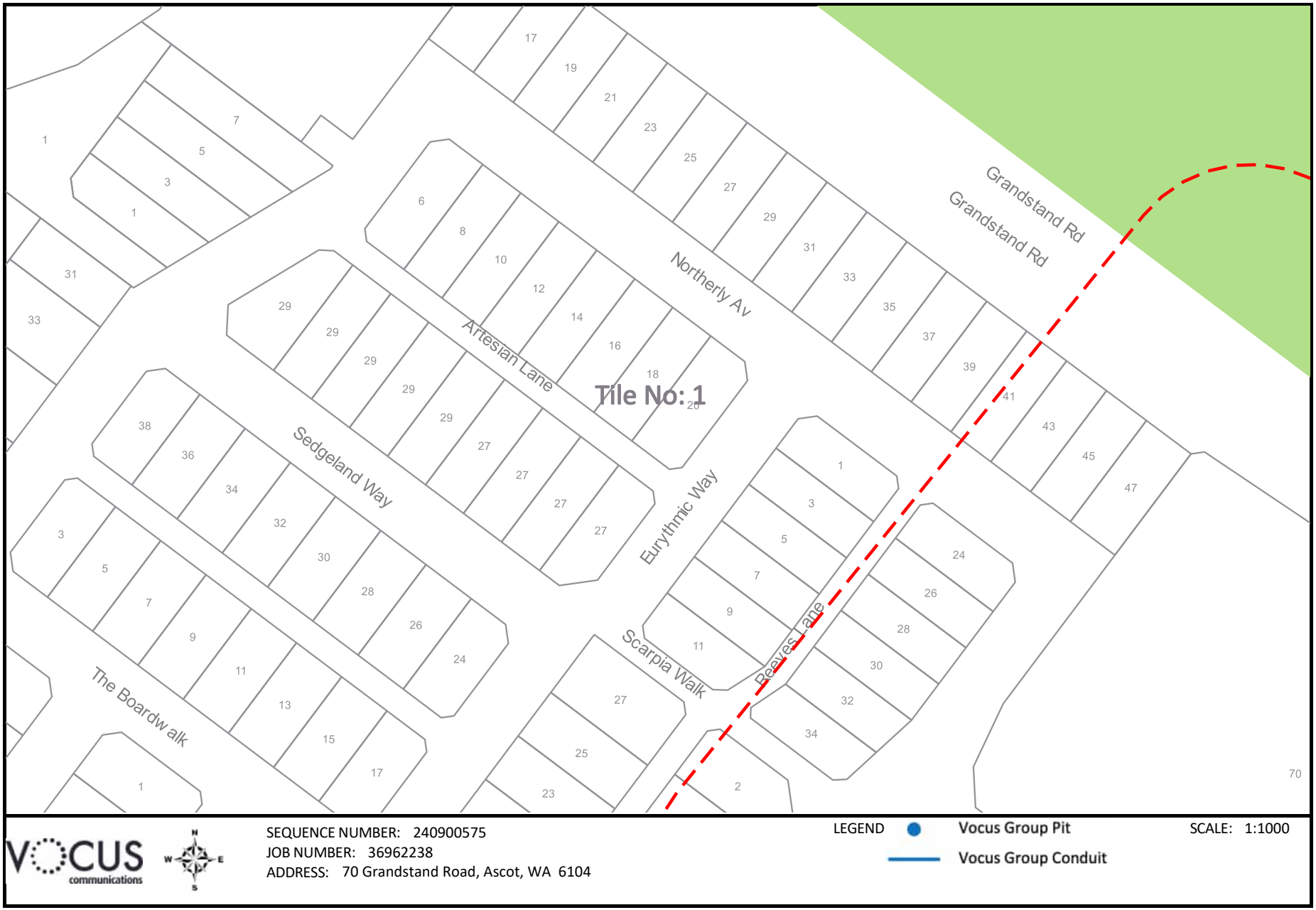

| | |
|---|---|
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| Generated On 21/06/2024 19:05:34 | |

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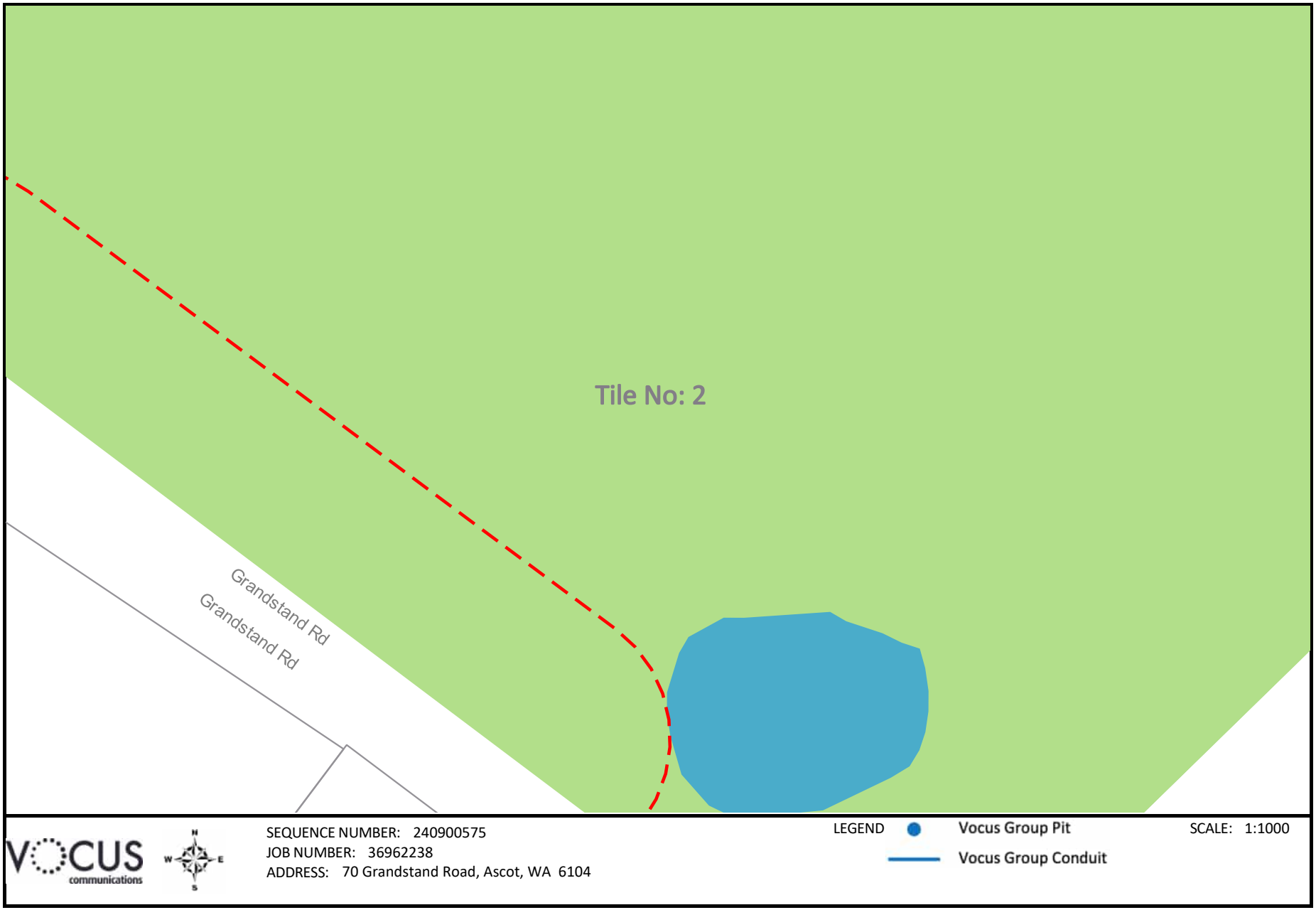
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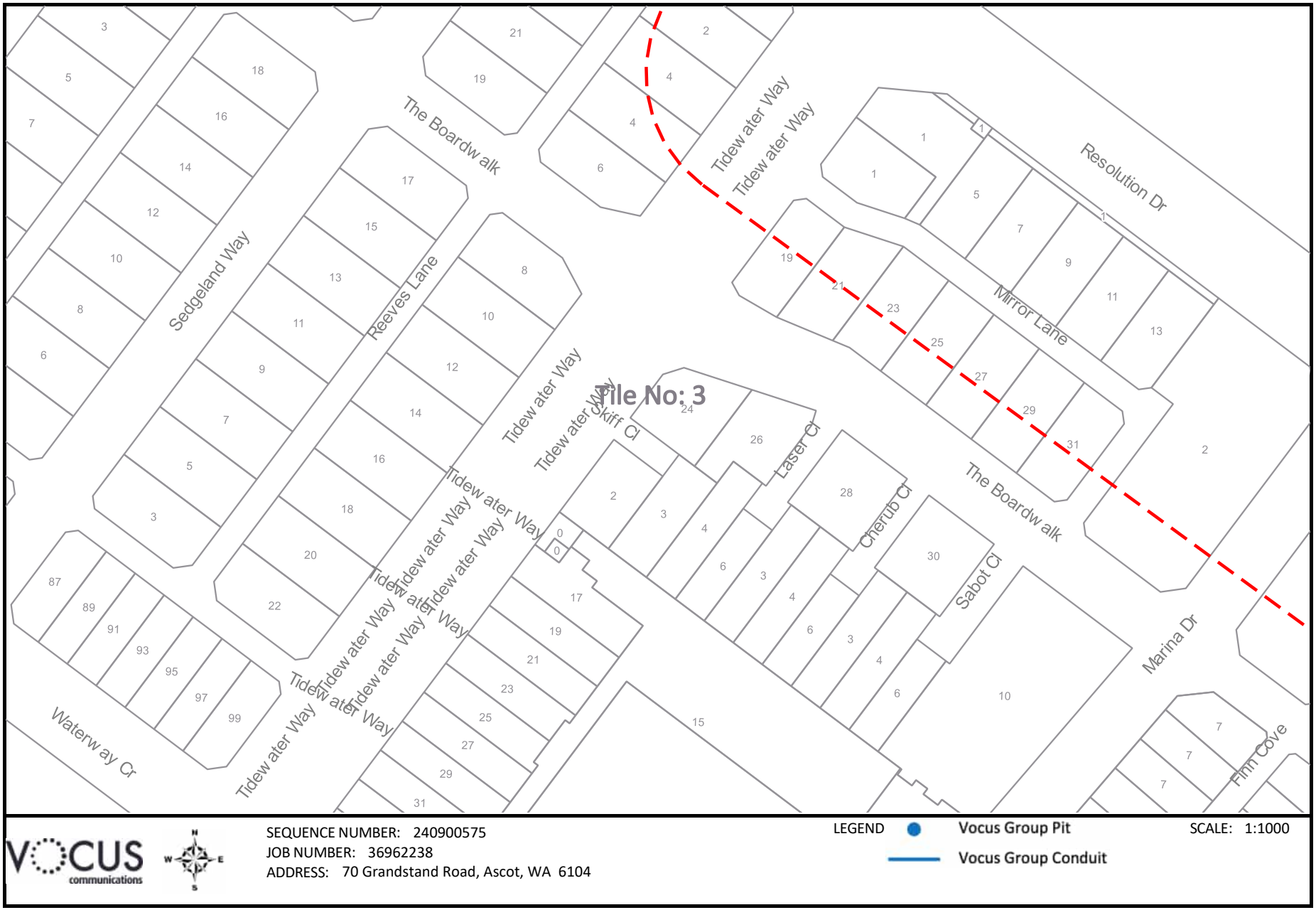

The Vocus Group includes related bodies corporate of Vocus Communications Limited ACN 084 115 499.



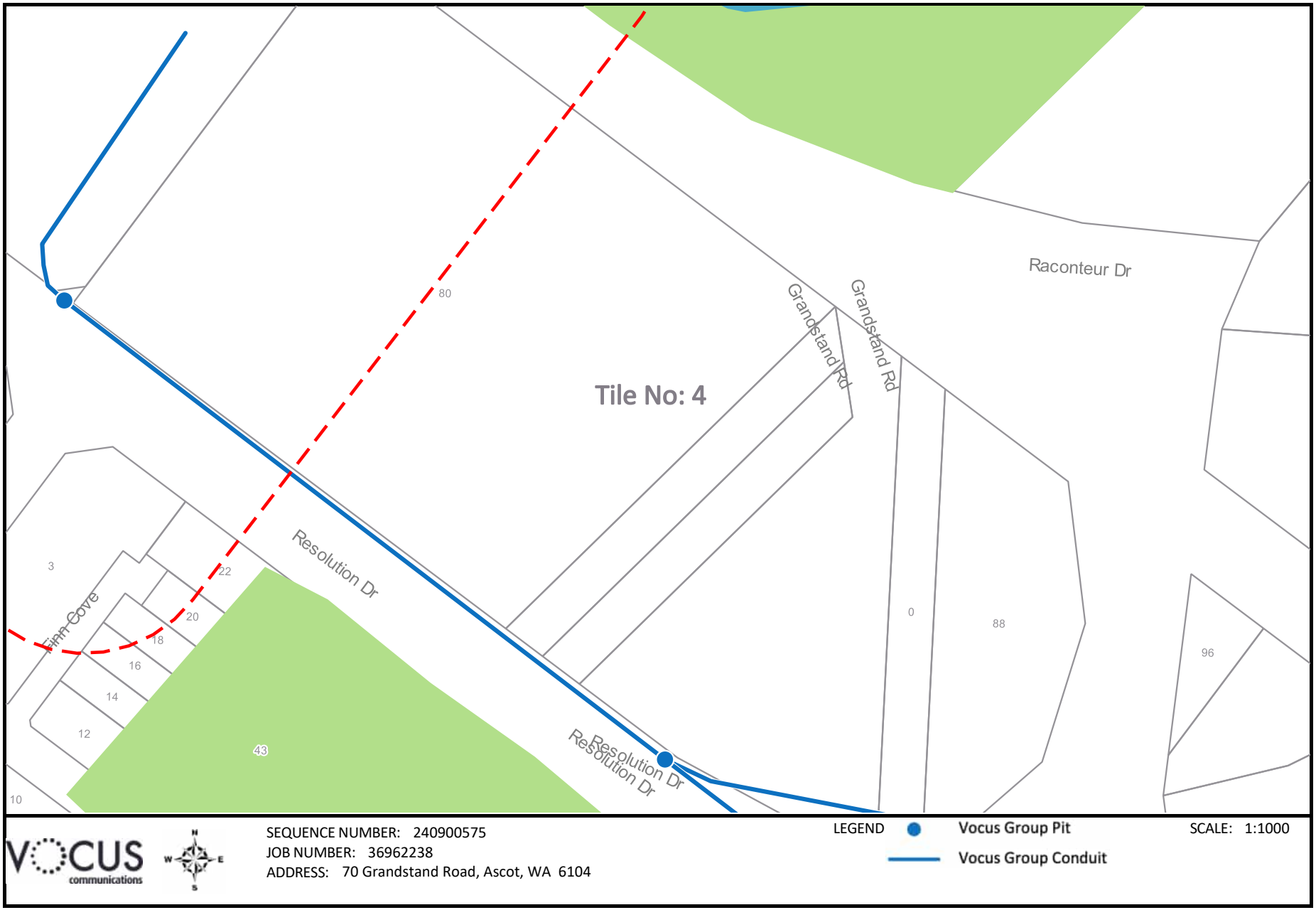

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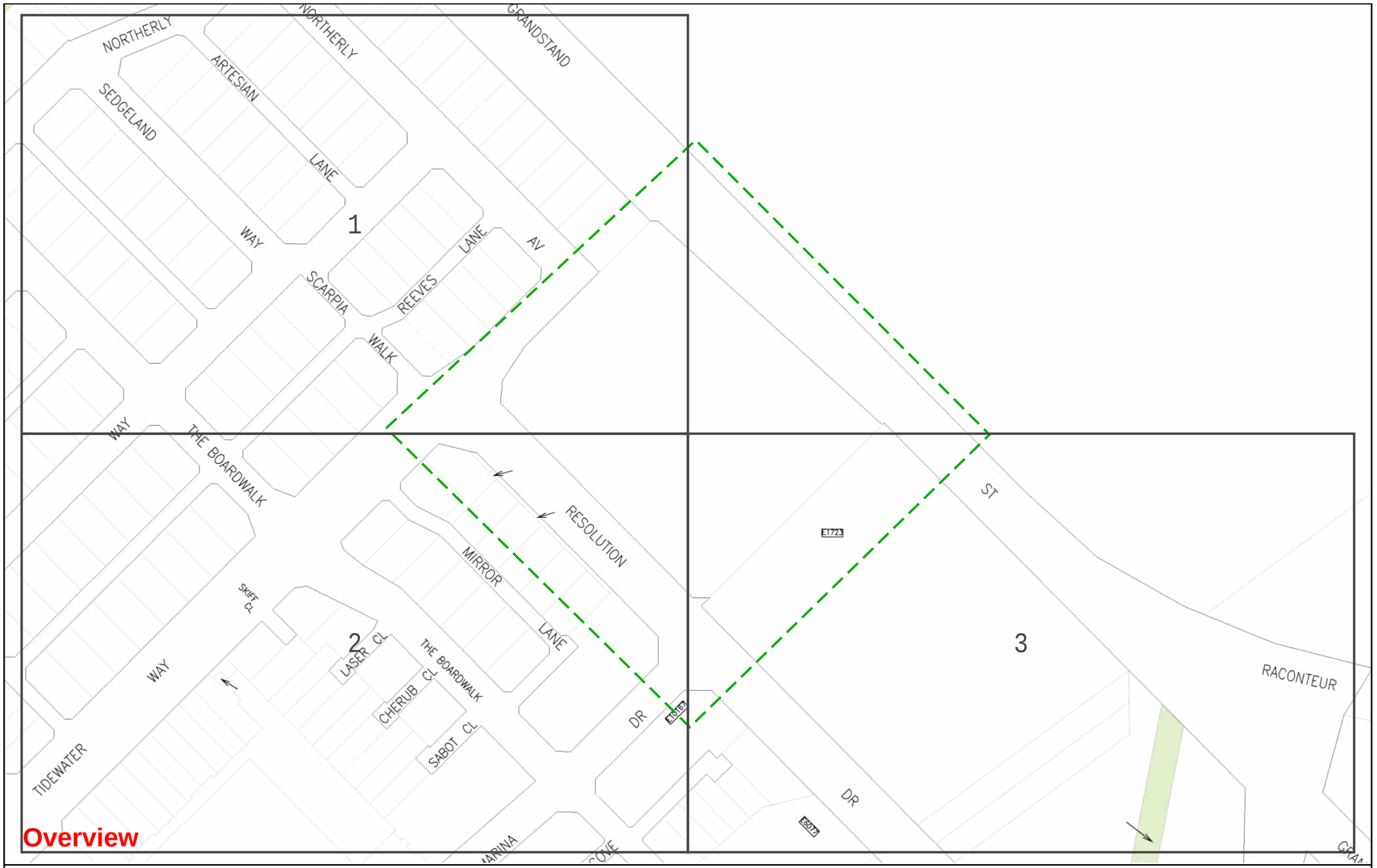

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WATER CORPORATION

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| Job No.: | 36962238 |
| Sequence No.: | 240900579 |
| Print Date: | 21 Jun 2024 |

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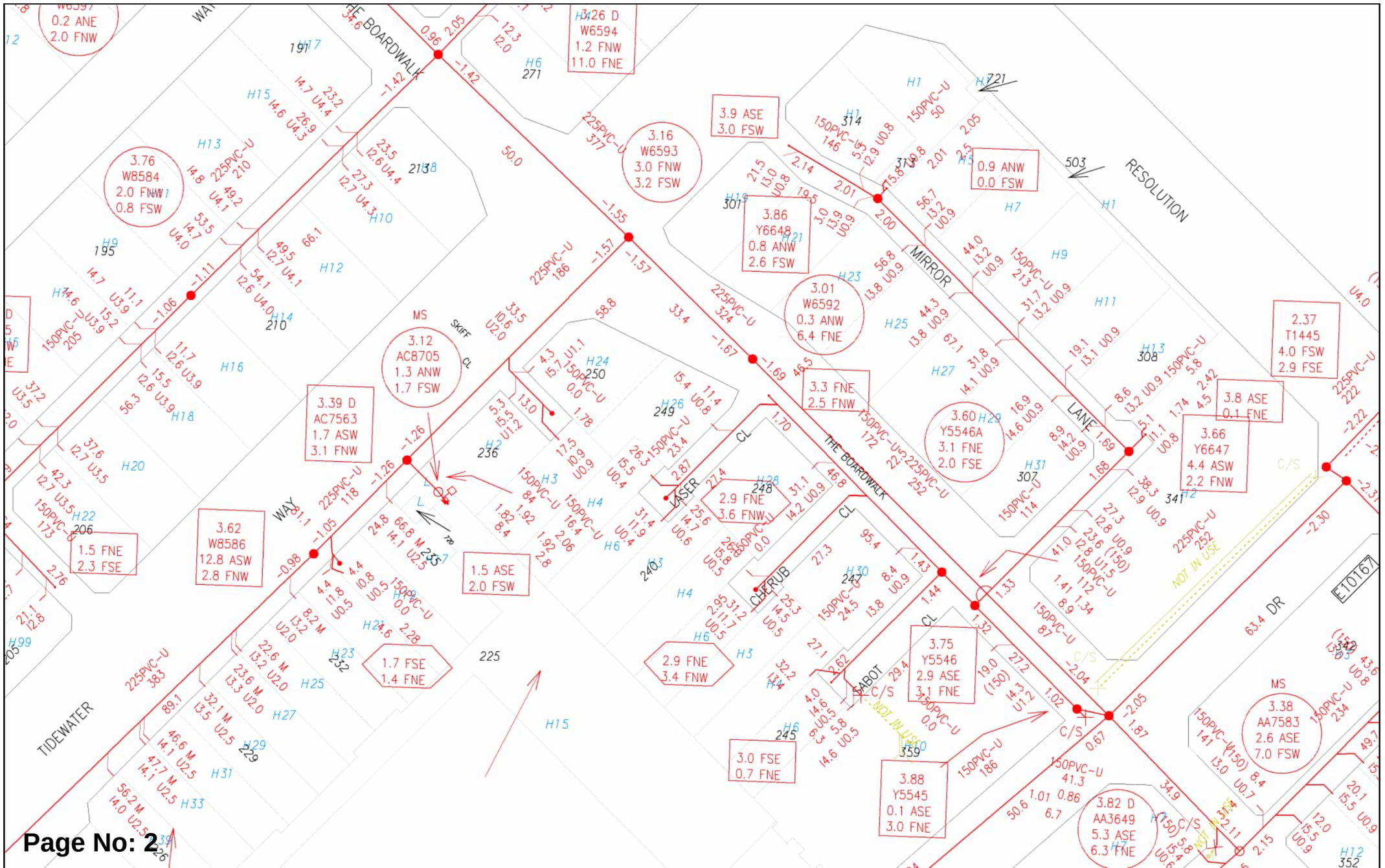
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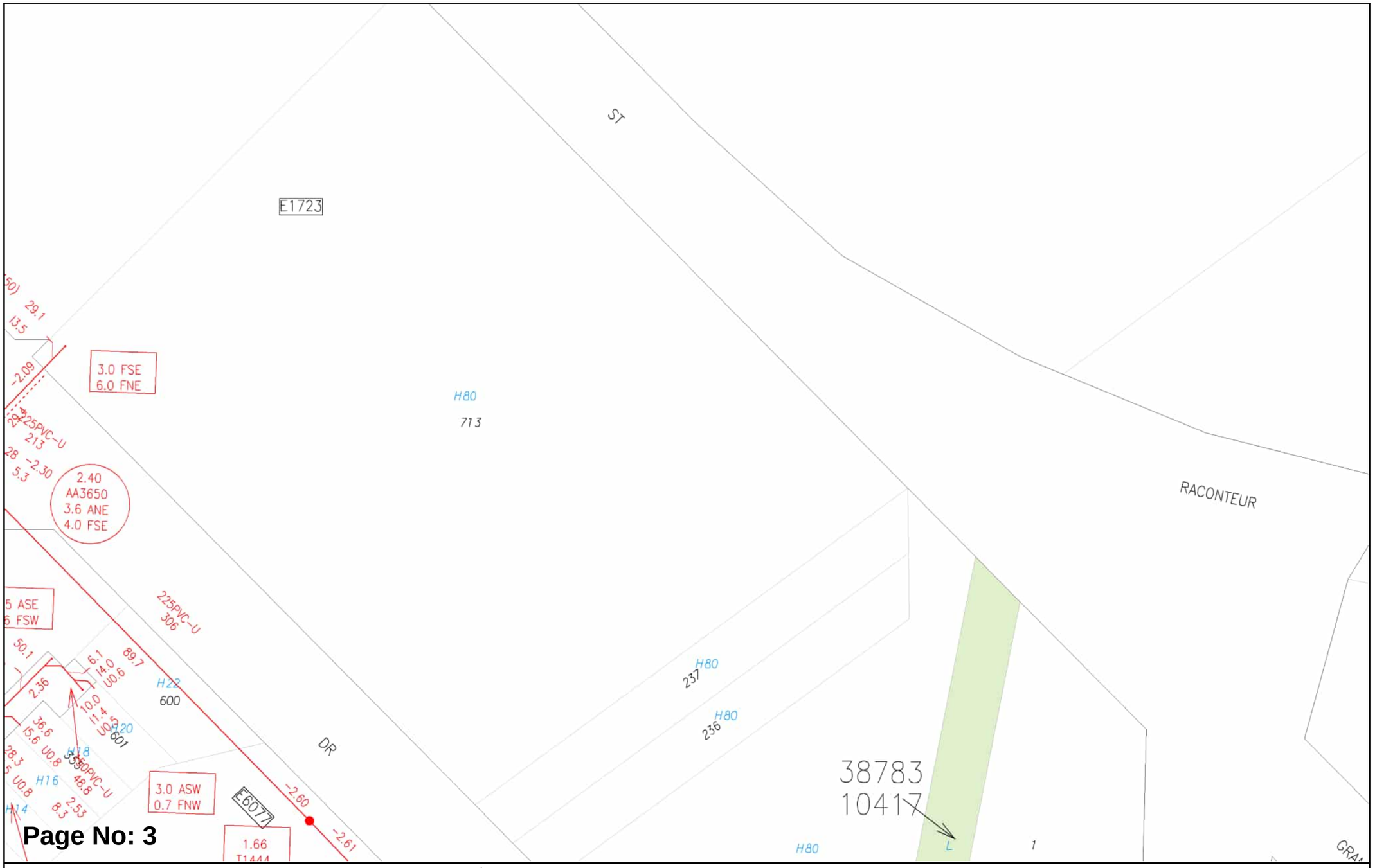



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| Sequence No.: | 240900579 |
| Print Date: | 21 Jun 2024 |

Sewer

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BOARDWALK
RESOLUTION
MIRROR
LANE
THE BOARDWALK
CL
WAY
TIDEWATER
CHERUB
SKIFF
LASER
FABOT
63.4 DR
E10167
NOT IN USE
C/S
MS
3.76 W8584 2.0 FNW 0.8 FSW
3.16 W6593 3.0 FNW 3.2 FSW
3.26 D W6594 1.2 FNW 11.0 FNE
3.9 ASE 3.0 FSW
0.9 ANW 0.0 FSW
3.86 Y6648 0.8 ANW 2.6 FSW
3.01 W6592 0.3 ANW 6.4 FNE
3.3 FNE 2.5 FNW
3.60 Y5546A 3.1 FNE 2.0 FSE
2.37 T1445 4.0 FSW 2.9 FSE
3.8 ASE 0.1 FNE
3.66 Y6647 4.4 ASW 2.2 FNW
3.39 D AC7563 1.7 ASW 3.1 FNW
3.12 AC8705 1.3 ANW 1.7 FSW
3.62 W8586 12.8 ASW 2.8 FNW
1.5 FNE 2.3 FSE
1.5 ASE 2.0 FSW
1.7 FSE 1.4 FNE
2.9 FNE 3.6 FNW
2.9 FNE 3.4 FNW
3.0 FSE 0.7 FNE
3.75 Y5546 2.9 ASE 3.1 FNE
3.88 Y5545 0.1 ASE 3.0 FNE
3.82 D AA3649 5.3 ASE 6.3 FNE
3.38 AA7583 2.6 ASE 7.0 FSW
225PVC-U 377
225PVC-U 324
225PVC-U 186
225PVC-U 383
150PVC-U 205
150PVC-U 210
150PVC-U 213
150PVC-U 146
150PVC-U 172
150PVC-U 118
150PVC-U 173
150PVC-U 186
150PVC-U 114
150PVC-U 87
225PVC-U 222
225PVC-U 252
150PVC-U 234
150PVC-U 141
Page No: 2
Scale: 1:750
Job No.: 36962238
Sequence No.: 240900579
Print Date: 21 Jun 2024
N
Sewer
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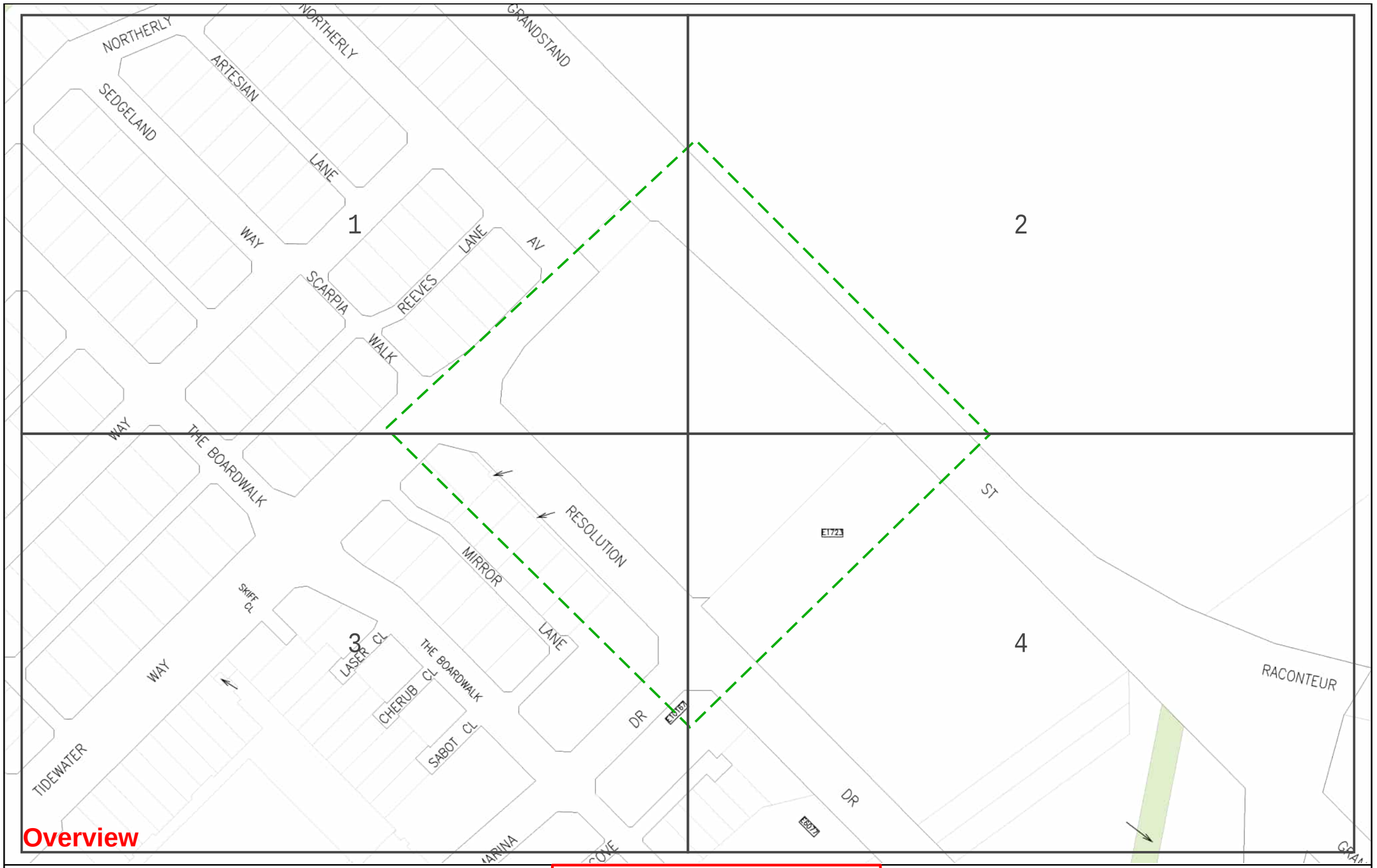



WATER CORPORATION

| | |
|---|---|
| Scale: | 1:750 |
| Job No.: | 36962238 |
| Sequence No.: | 240900579 |
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WATER CORPORATION

Scale: 1:1538
Job No.: 36962238
Sequence No.: 240900579
Print Date: 21 Jun 2024

N

Water

WARNING ASSET PROTECTION APPROVAL MAY BE REQUIRED

Apply for approval to work near our assets at:

Working near assets (watercorporation.com.au)

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| Job No.: | 36962238 |
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| Print Date: | 21 Jun 2024 |

N

Water

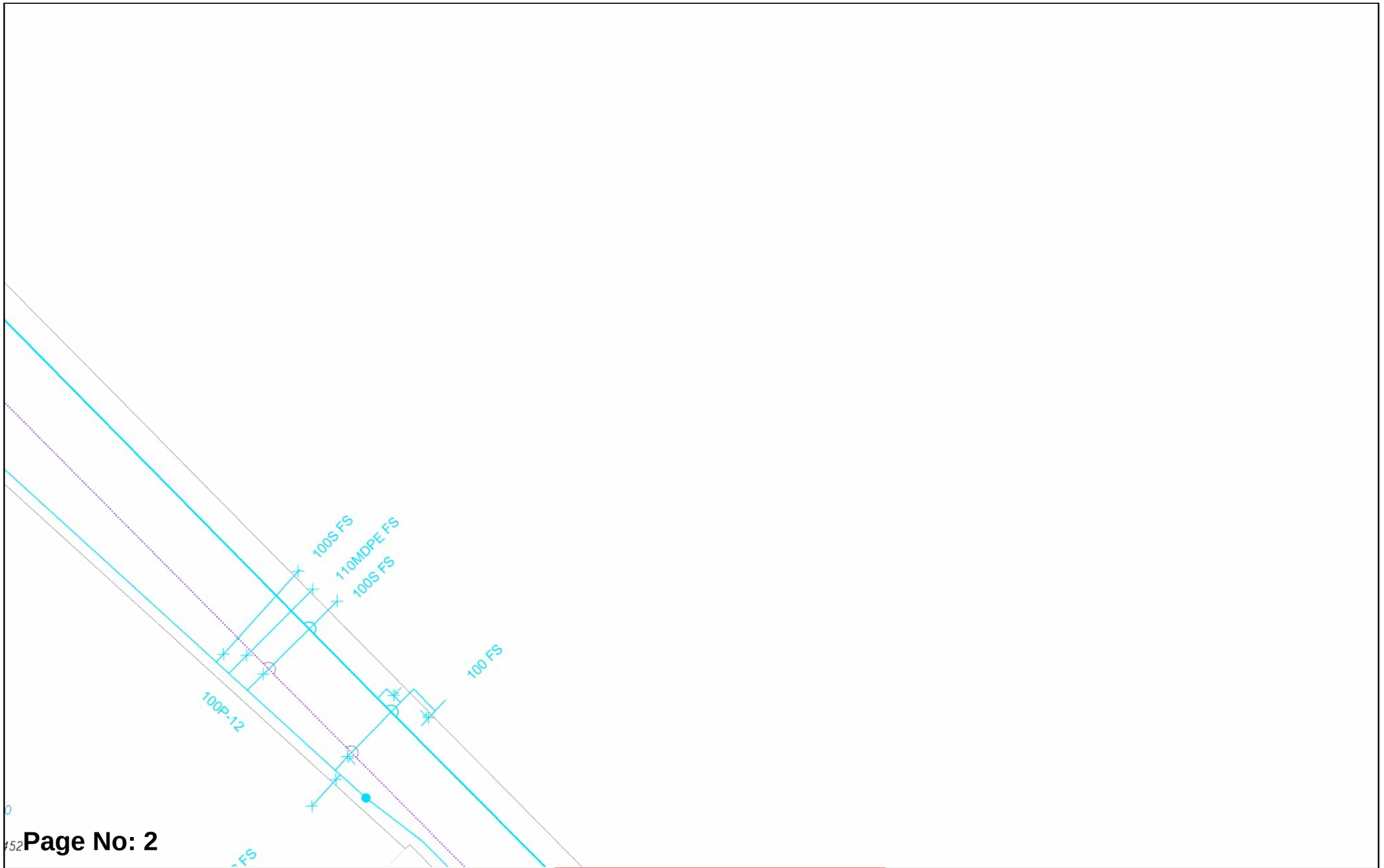
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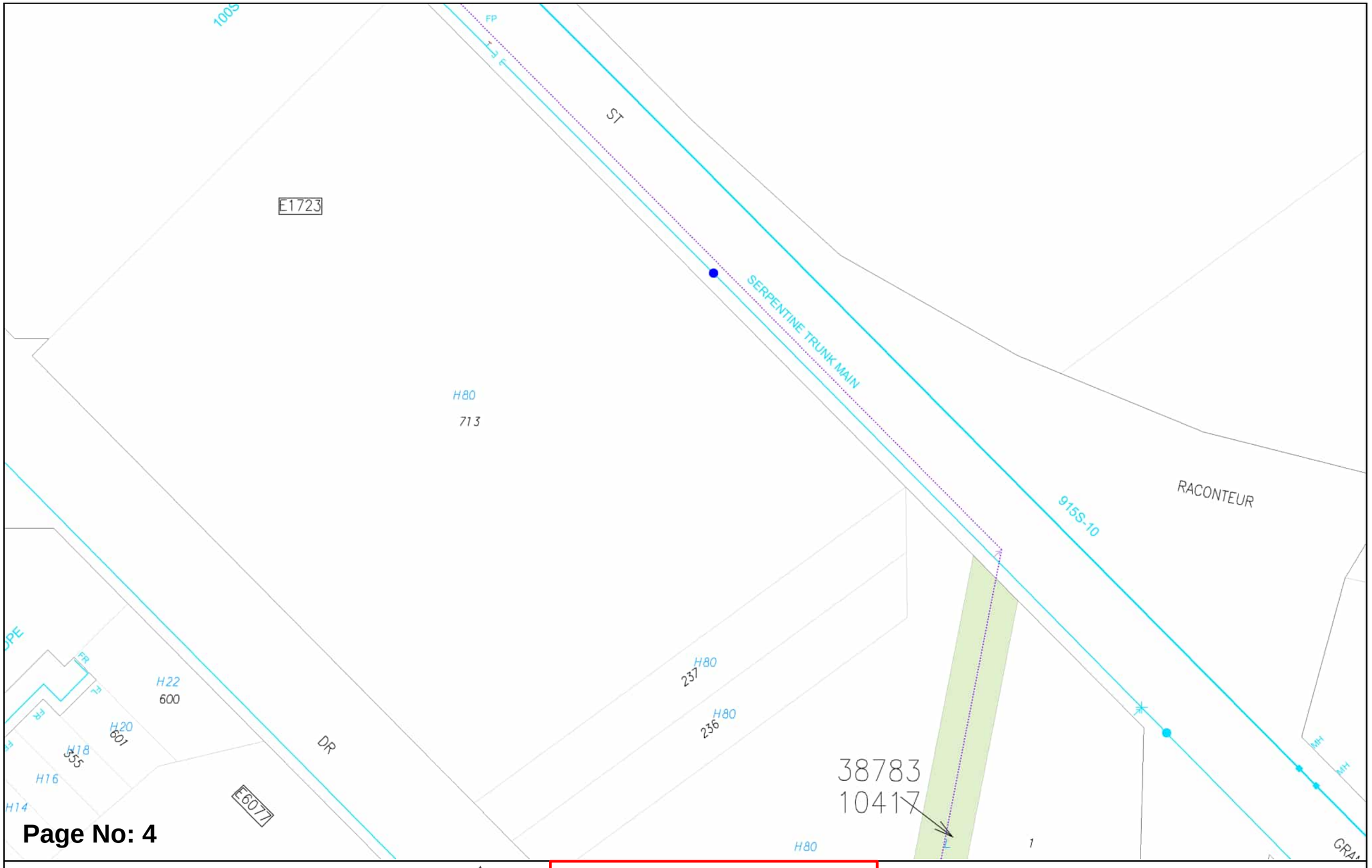
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| | | | |
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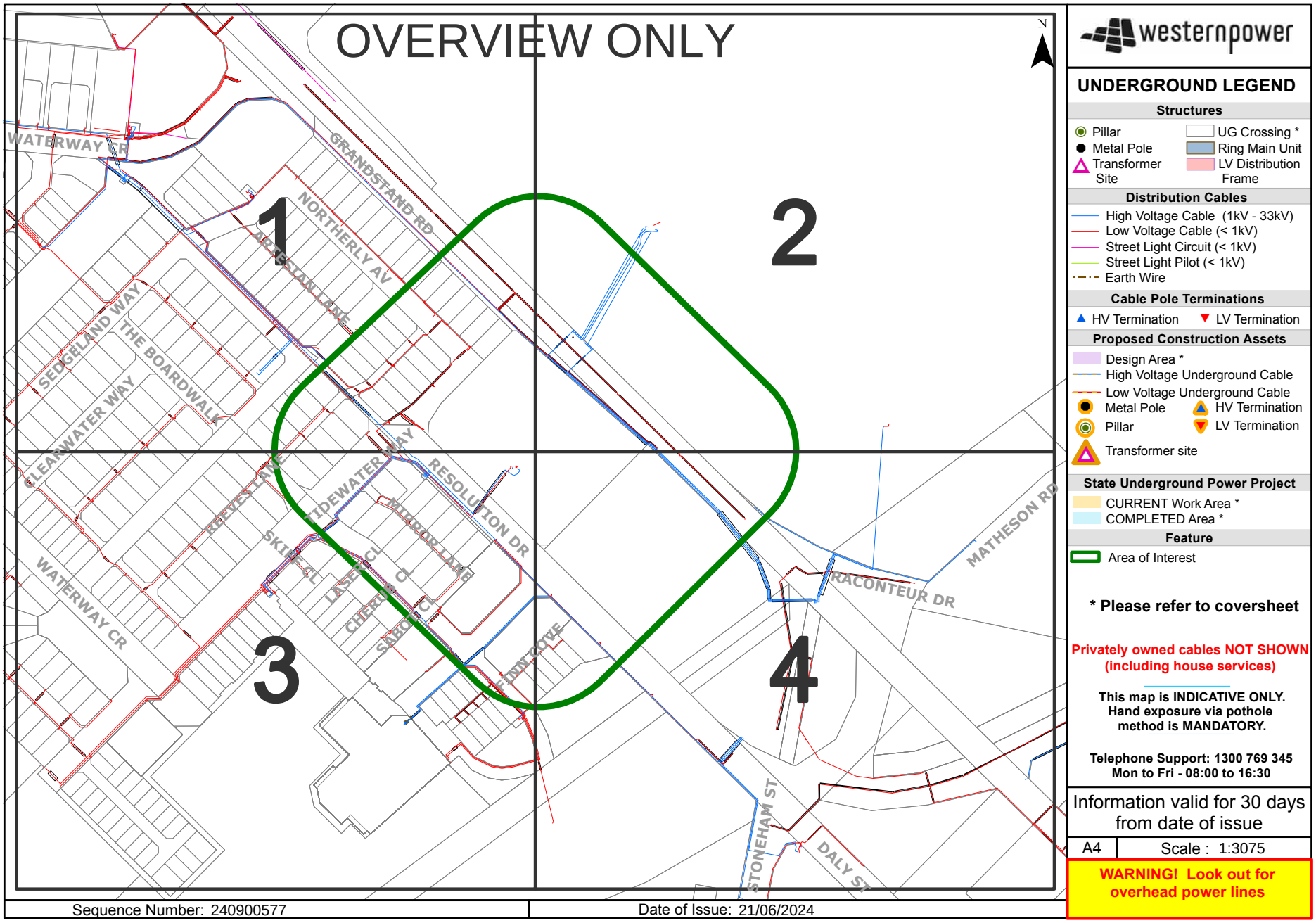

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westernpower

## UNDERGROUND LEGEND

**Structures**

- Pillar
- Metal Pole
- Transformer Site
- UG Crossing *
- Ring Main Unit
- LV Distribution Frame

**Distribution Cables**

- High Voltage Cable (1kV - 33kV)
- Low Voltage Cable (< 1kV)
- Street Light Circuit (< 1kV)
- Street Light Pilot (< 1kV)
- Earth Wire

**Cable Pole Terminations**

- HV Termination
- LV Termination

**Proposed Construction Assets**

- Design Area *
- High Voltage Underground Cable
- Low Voltage Underground Cable
- Metal Pole
- Pillar
- Transformer site
- HV Termination
- LV Termination

**State Underground Power Project**

- CURRENT Work Area *
- COMPLETED Area *

**Feature**

- Area of Interest

*** Please refer to coversheet**

**Privately owned cables NOT SHOWN (including house services)**

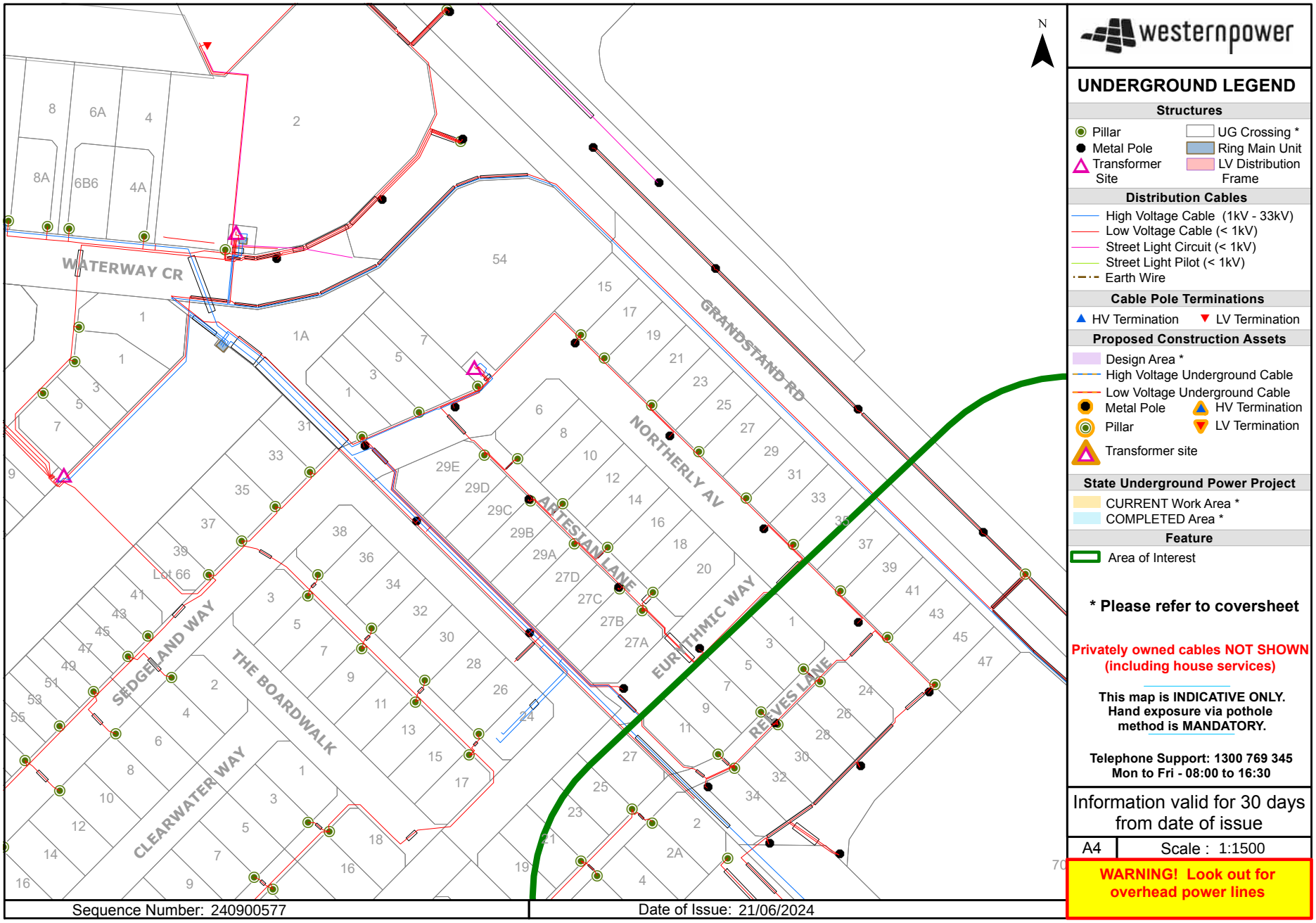
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**Telephone Support: 1300 769 345 Mon to Fri - 08:00 to 16:30**

Information valid for 30 days from date of issue

A4 | Scale : 1:3075

**WARNING! Look out for overhead power lines**




westernpower

## UNDERGROUND LEGEND

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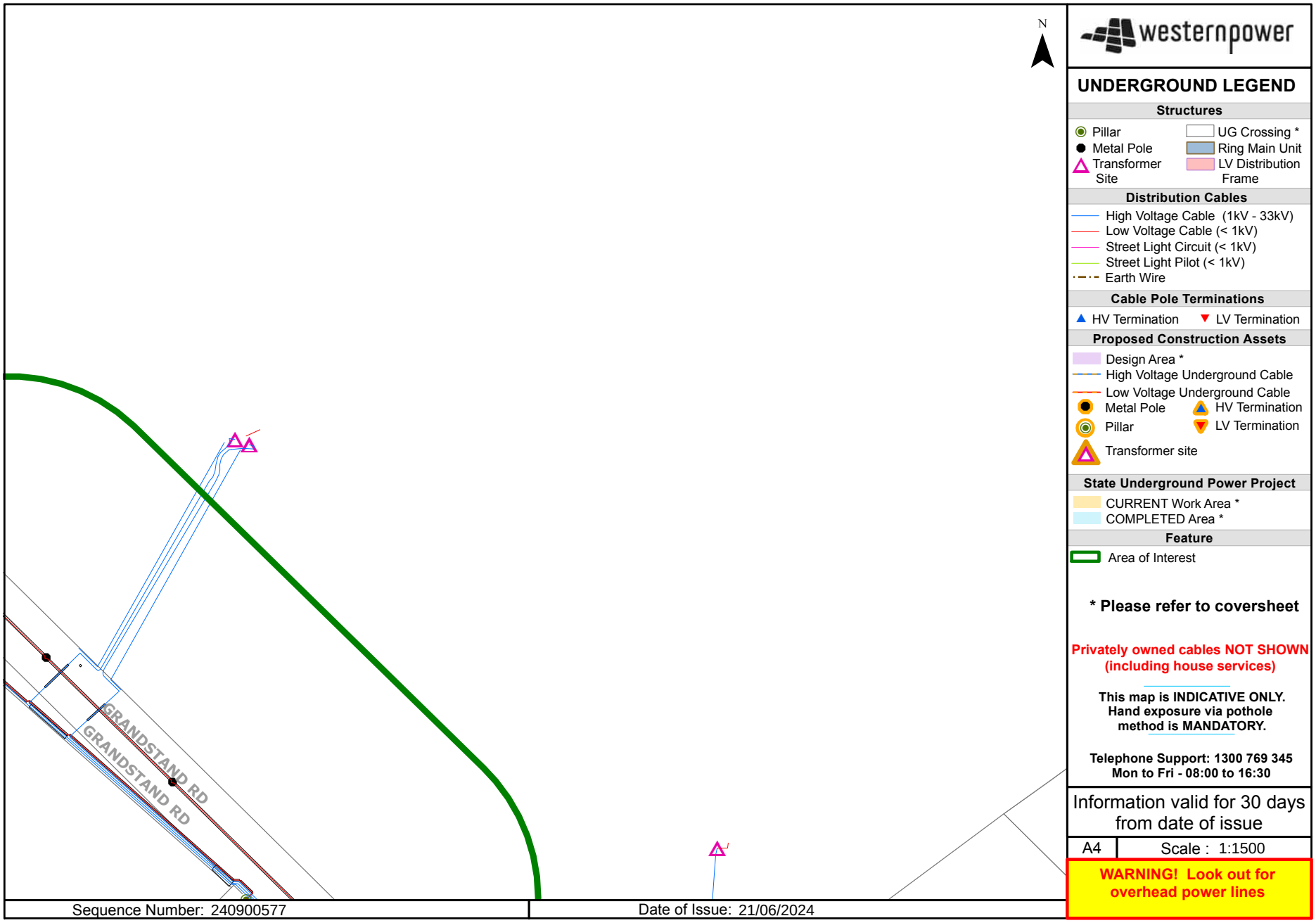
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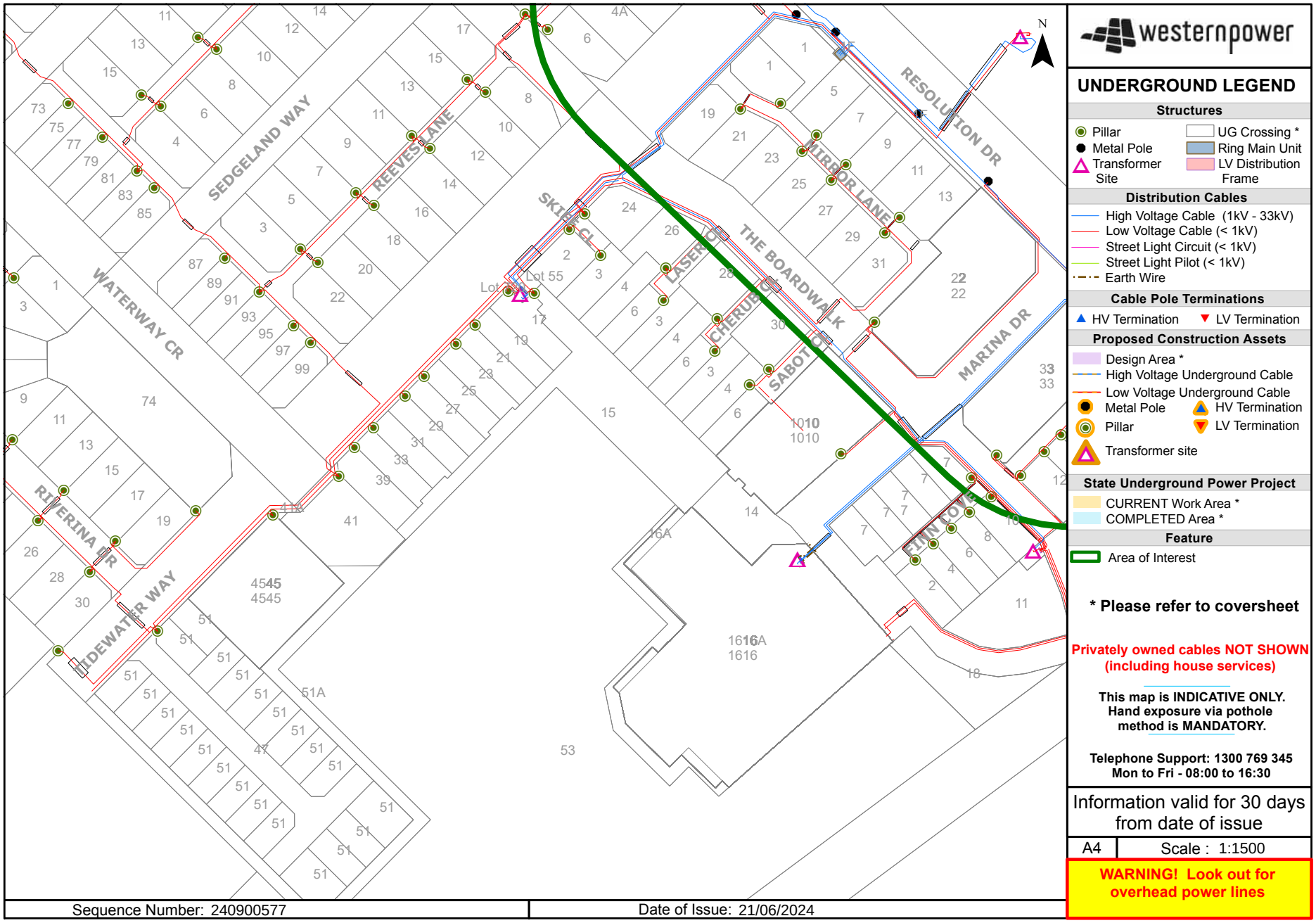
**Telephone Support: 1300 769 345**
**Mon to Fri - 08:00 to 16:30**

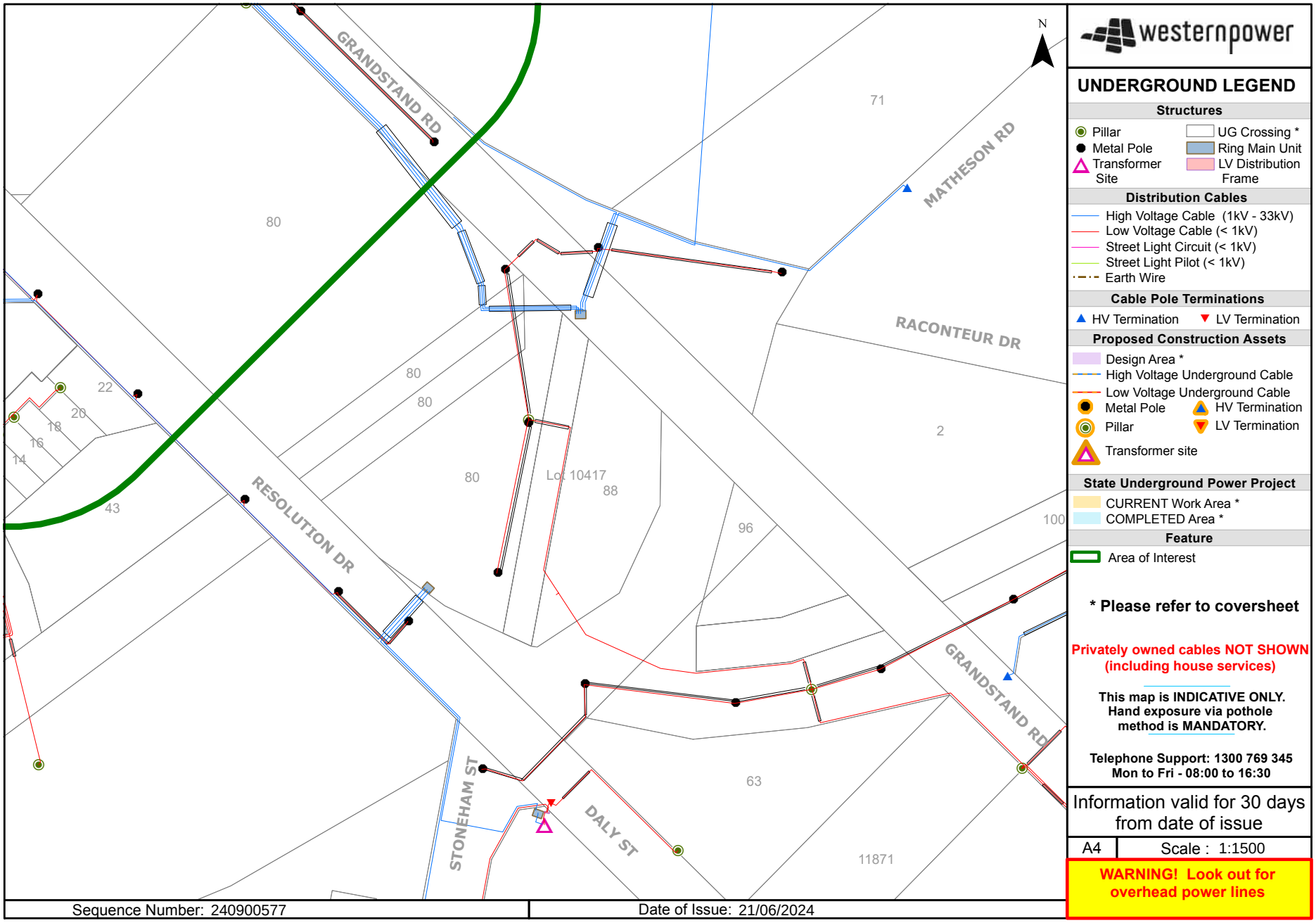
Information valid for 30 days from date of issue

A4 | Scale : 1:1500

**WARNING! Look out for overhead power lines**


N
GRANDSTAND RD
GRANDSTAND RD
Sequence Number: 240900577
Date of Issue: 21/06/2024
westernpower
UNDERGROUND LEGEND
Structures
Pillar
Metal Pole
Transformer Site
UG Crossing *
Ring Main Unit
LV Distribution Frame
Distribution Cables
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COMPLETED Area *
Feature
Area of Interest
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Telephone Support: 1300 769 345
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westernpower
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SEDGELAND WAY
REEVES LANE
WATERWAY CR
RIVERINA DR
TIDEWATER WAY
SKIFF CL
LASER CT
CHERUB CT
SABOT CT
THE BOARDWALK
MIRROR LANE
RESOLUTION DR
MARINA DR
TIN LOVE
Lot 55
Lot 56
4545
1010
1616
1616A
53
51A
47


GRANDSTAND RD
MATHESON RD
RACONTEUR DR
RESOLUTION DR
STONEHAM ST
DALY ST
GRANDSTAND RD
Lot 10417
80
71
2
96
100
63
11871
88
43
22
20
18
16
14
N
westernpower
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A4
Scale : 1:1500
WARNING! Look out for overhead power lines
Sequence Number: 240900577
Date of Issue: 21/06/2024

Job ID 36962238

**Preinct D**

BEFORE YOU DIG www.byda.com.au

# End of document

**This document may exclude some files (eg. DWF or ZIP files)**

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Job No 36962250

byda.com.au

## Contact Details

| Contact | Contact number | Company | Enquirer ID |
|---|---|---|---|
| Justin Zielinski | 0420 304 451 | - | 3140642 |

**Email**
jzielinski@tabec.com.au

**Address**
54 Havelock Street
West Perth WA 6005

## Job Site and Enquiry Details

**WARNING:** The map below only displays the location of the proposed job site and does not display any asset owners' pipe or cables. The area highlighted has been used only to identify the participating asset owners, who will send information to you directly.

| Enquiry date | Start date | End date | On behalf of | Job purpose | Locations | Onsite activities |
|---|---|---|---|---|---|---|
| 21/06/2024 | 24/06/2024 | 24/06/2024 | Private | Design | Both Road | Planning & Design |



Check that the location of the job site is correct. If not, you must submit a new enquiry.

If the scope of works change or plan validity dates expire, you must submit a new enquiry.

Do NOT dig without plans. Safe excavation is your responsibility. If you don't understand the plans or how to proceed safely, please contact the relevant asset owners.

| User Reference | Address | Notes/description |
|---|---|---|
| Precinct C - 2 | 71 Matheson Road<br>Ascot WA 6104 | - |

## Your Responsibility and Duty of Care

- **Lodging an enquiry does not authorise project commencement.** Before starting work, you must obtain all necessary information from all affected asset owners.
- If you don't receive plans within 2 business days, contact the asset owner & quote their sequence number.
- Always follow the 5Ps of Safe Excavation (page 2), and locate assets before commencing work.
- Ensure you comply with State legislative requirements for Duty of Care and safe digging.
- If you damage an underground asset, you MUST advise the asset owner immediately.
- By using the BYDA service, you agree to the Privacy Policy and Term of Use.
- For more information on safe digging practices, visit www.byda.com.au

## Asset Owner Details

Below is a list of asset owners with underground infrastructure in and around your job site. It is your responsibility to identify the presence of these assets. Plans issued by Members are indicative only unless specified otherwise. Note: not all asset owners are registered with BYDA. You must contact asset owners not listed here directly.

| Referral ID (Seq. no) | Authority Name | Phone | Status |
|---|---|---|---|
| 240900653 | ATCO Gas Australia | 1300 926 755 | NOTIFIED |
| 240900649 | NBN Co (WA) | 1800 687 626 | NOTIFIED |
| 240900651 | Telstra (WA) | 1800 653 935 | NOTIFIED |
| 240900652 | Water Corporation | 13 13 95 | NOTIFIED |
| 240900650 | Western Power | 13 10 87 | NOTIFIED |

END OF UTILITIES LIST

**Lodge your FREE enquiry online any time at byda.com.au**

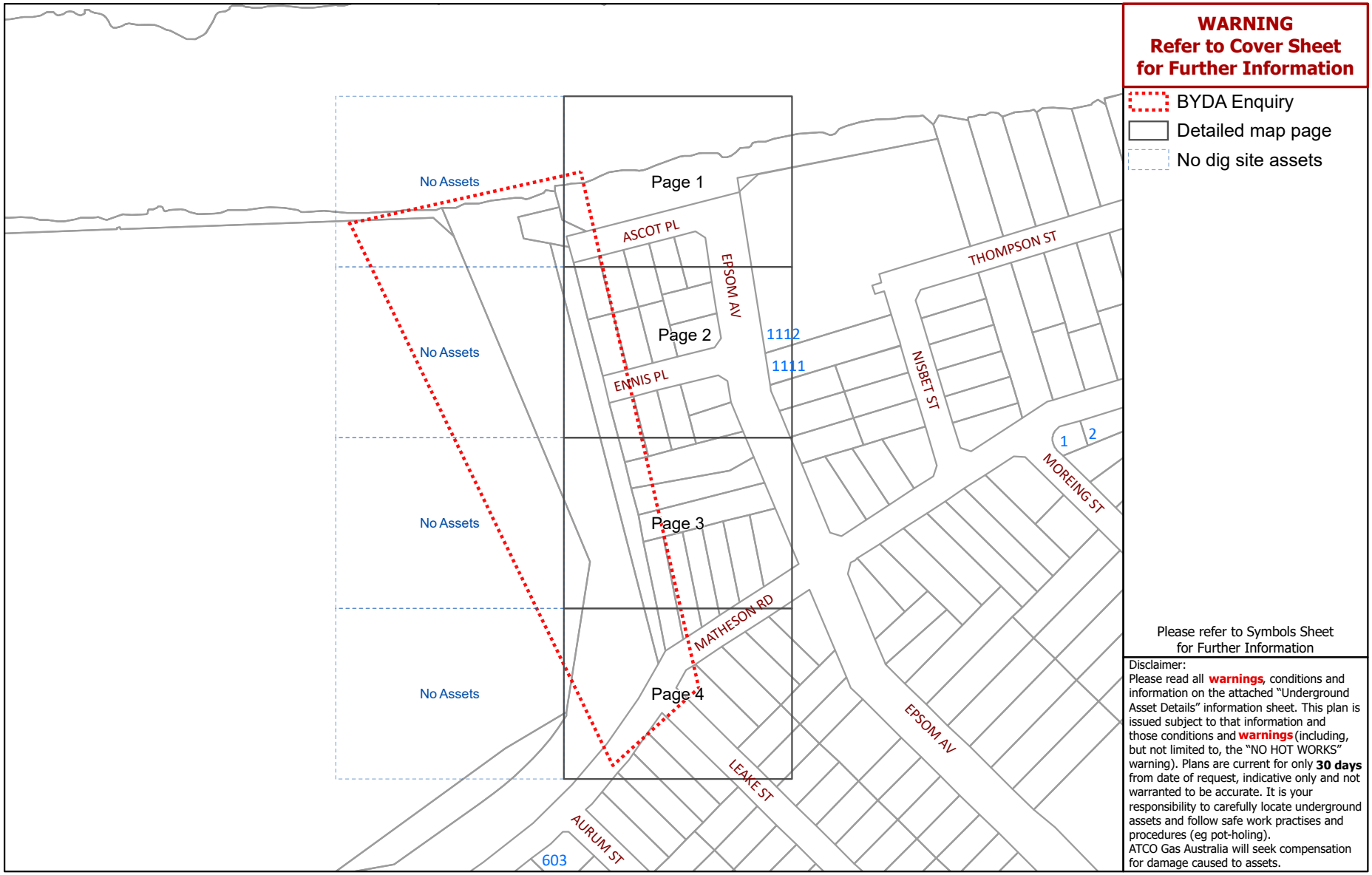
ATCO

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ABN: 90 089 531 975

Date: 21/06/24 (valid for 30 days)
Index Sheet

Seq # 240900653
Job # 36962250

BYDA Location: 71 Matheson Road Ascot 6104
Scale: 1:3,500




**WARNING**
**Refer to Cover Sheet for Further Information**

BYDA Enquiry
Detailed map page
No dig site assets

Please refer to Symbols Sheet for Further Information

Disclaimer:
Please read all **warnings**, conditions and information on the attached "Underground Asset Details" information sheet. This plan is issued subject to that information and those conditions and **warnings** (including, but not limited to, the "NO HOT WORKS" warning). Plans are current for only **30 days** from date of request, indicative only and not warranted to be accurate. It is your responsibility to carefully locate underground assets and follow safe work practises and procedures (eg pot-holing).
ATCO Gas Australia will seek compensation for damage caused to assets.

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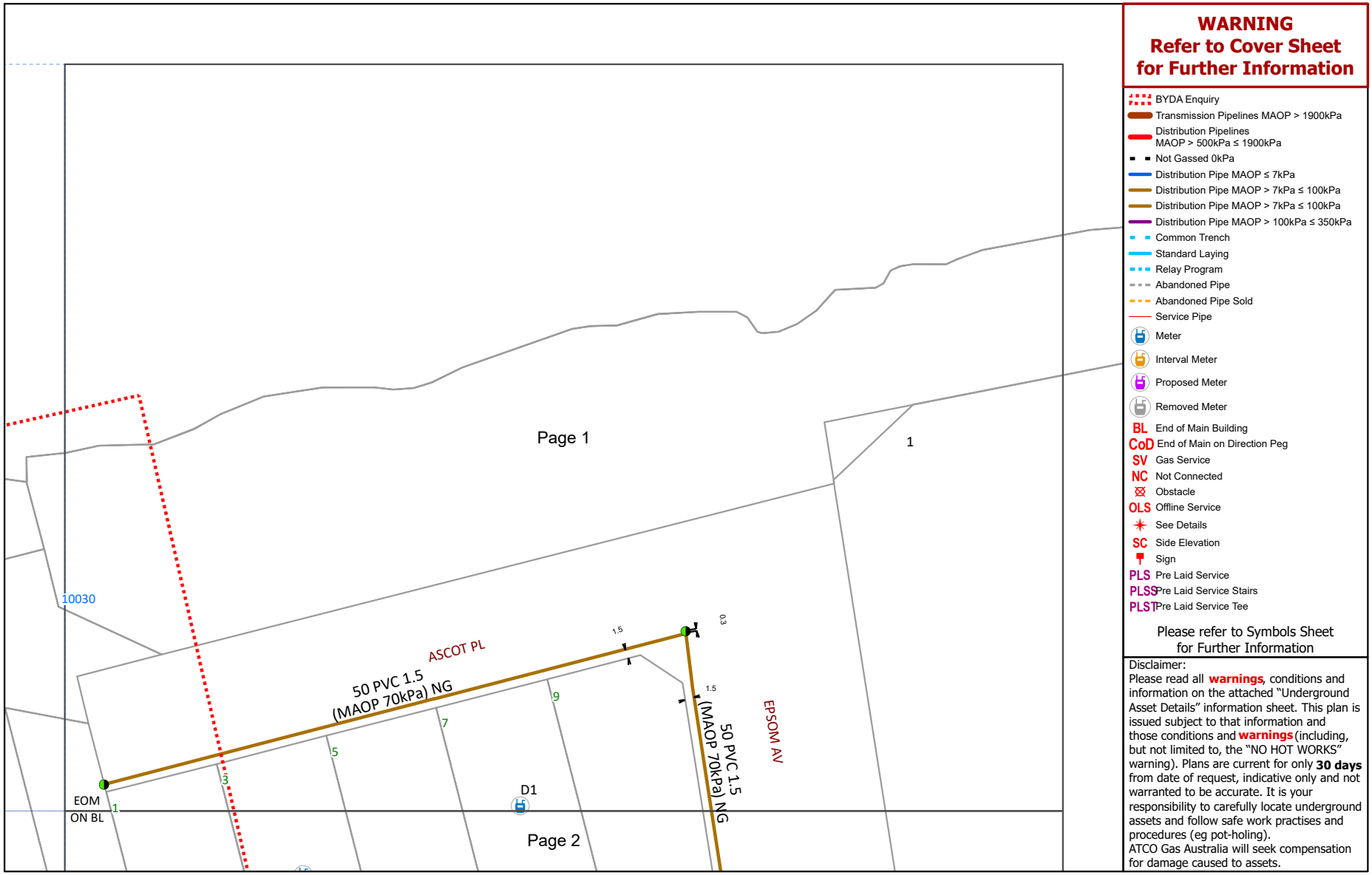
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ABN: 90 089 531 975

Date: 21/06/24 (valid for 30 days)

Seq # 240900653
Job # 36962250

BYDA Location: 71 Matheson Road Ascot 6104
Scale: 1:800




**WARNING**
**Refer to Cover Sheet for Further Information**

- BYDA Enquiry
- Transmission Pipelines MAOP > 1900kPa
- Distribution Pipelines MAOP > 500kPa ≤ 1900kPa
- Not Gassed 0kPa
- Distribution Pipe MAOP ≤ 7kPa
- Distribution Pipe MAOP > 7kPa ≤ 100kPa
- Distribution Pipe MAOP > 7kPa ≤ 100kPa
- Distribution Pipe MAOP > 100kPa ≤ 350kPa
- Common Trench
- Standard Laying
- Relay Program
- Abandoned Pipe
- Abandoned Pipe Sold
- Service Pipe
- Meter
- Interval Meter
- Proposed Meter
- Removed Meter
- BL End of Main Building
- CoD End of Main on Direction Peg
- SV Gas Service
- NC Not Connected
- Obstacle
- OLS Offline Service
- See Details
- SC Side Elevation
- Sign
- PLS Pre Laid Service
- PLSS Pre Laid Service Stairs
- PLST Pre Laid Service Tee

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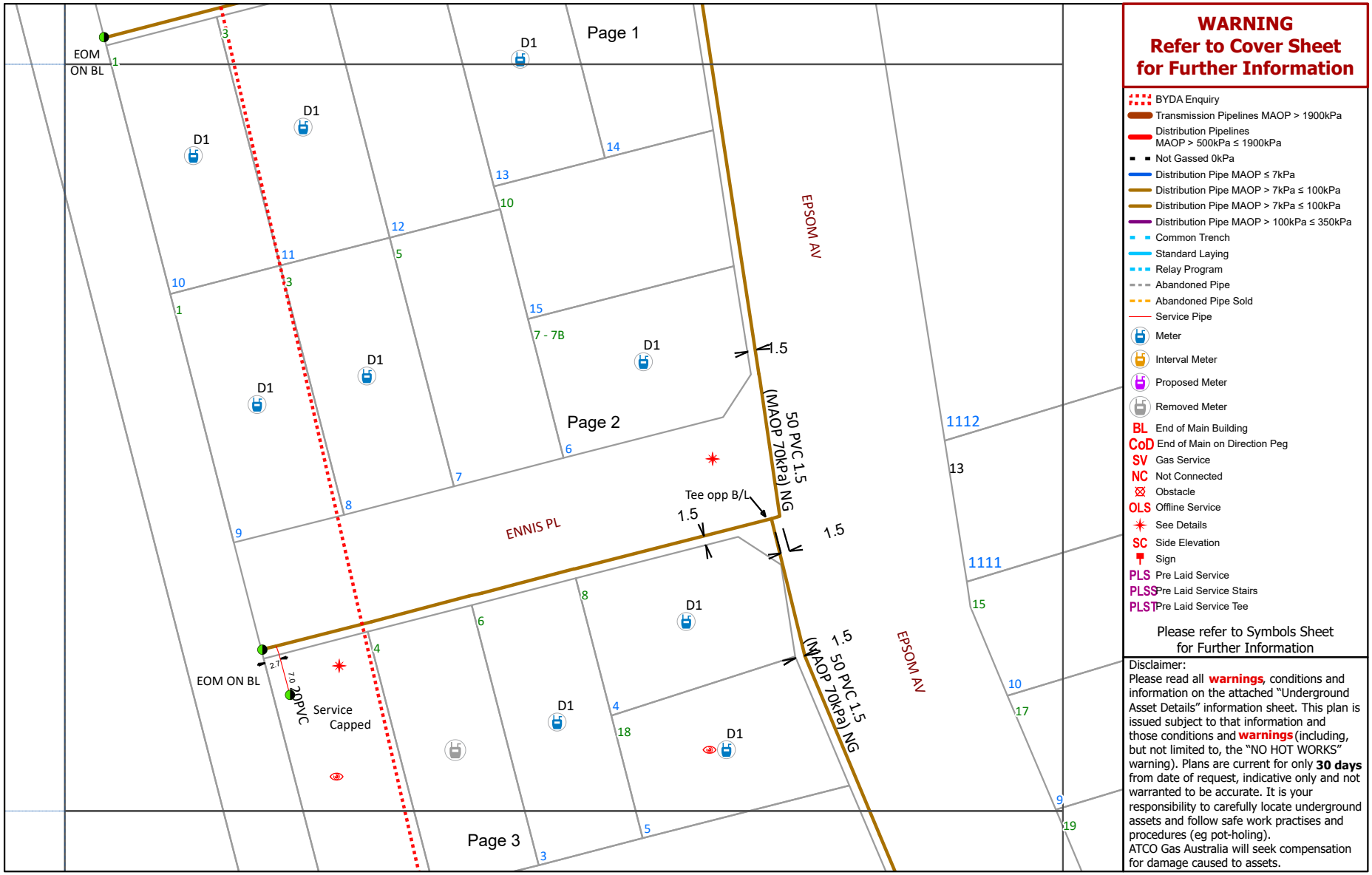
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Seq # 240900653
Job # 36962250

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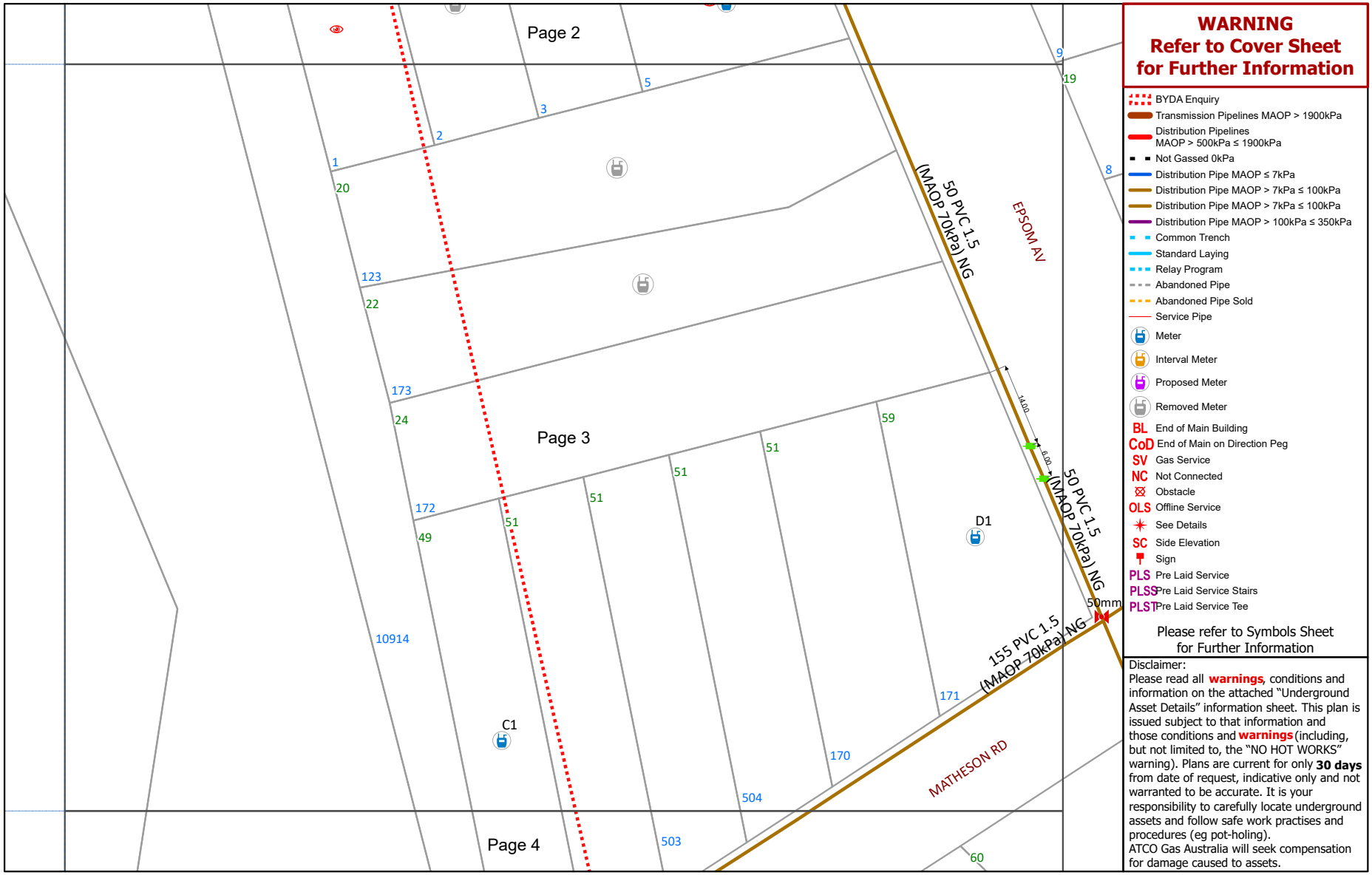
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**WARNING**
**Refer to Cover Sheet for Further Information**

- BYDA Enquiry
- Transmission Pipelines MAOP > 1900kPa
- Distribution Pipelines MAOP > 500kPa ≤ 1900kPa
- Not Gassed 0kPa
- Distribution Pipe MAOP ≤ 7kPa
- Distribution Pipe MAOP > 7kPa ≤ 100kPa
- Distribution Pipe MAOP > 7kPa ≤ 100kPa
- Distribution Pipe MAOP > 100kPa ≤ 350kPa
- Common Trench
- Standard Laying
- Relay Program
- Abandoned Pipe
- Abandoned Pipe Sold
- Service Pipe
- Meter
- Interval Meter
- Proposed Meter
- Removed Meter
- BL End of Main Building
- CoD End of Main on Direction Peg
- SV Gas Service
- NC Not Connected
- Obstacle
- OLS Offline Service
- See Details
- SC Side Elevation
- Sign
- PLS Pre Laid Service
- PLSS Pre Laid Service Stairs
- PLST Pre Laid Service Tee

Please refer to Symbols Sheet for Further Information

Disclaimer:
Please read all **warnings**, conditions and information on the attached "Underground Asset Details" information sheet. This plan is issued subject to that information and those conditions and **warnings** (including, but not limited to, the "NO HOT WORKS" warning). Plans are current for only **30 days** from date of request, indicative only and not warranted to be accurate. It is your responsibility to carefully locate underground assets and follow safe work practises and procedures (eg pot-holing).
ATCO Gas Australia will seek compensation for damage caused to assets.

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Plans generated by SmarterWX™ Automate

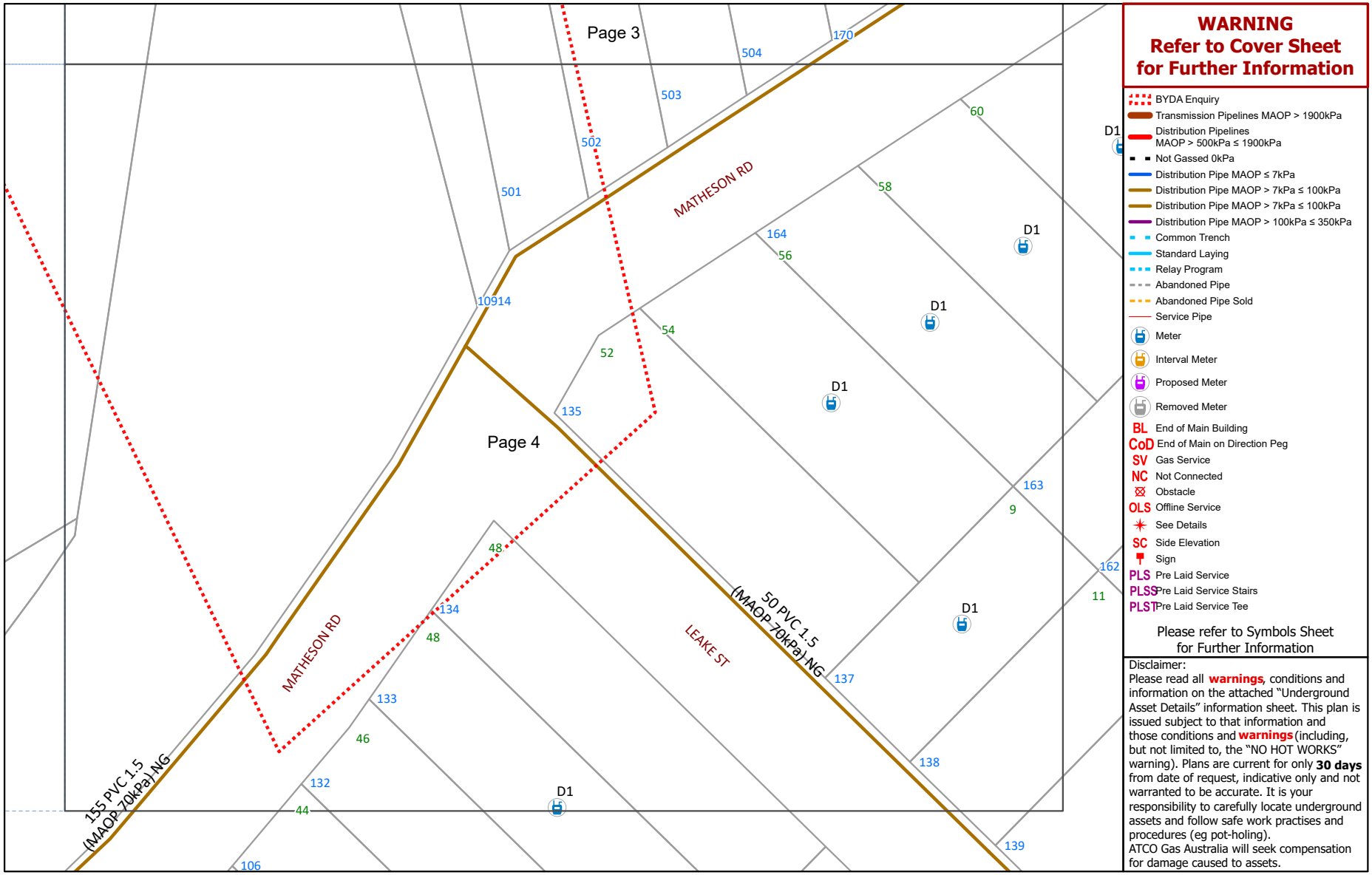
ATCO

©ATCO Gas Australia Pty LTD
ABN: 90 089 531 975

Date: 21/06/24 (valid for 30 days)

Seq # 240900653
Job # 36962250

BYDA Location: 71 Matheson Road Ascot 6104
Scale: 1:800




**WARNING**
**Refer to Cover Sheet for Further Information**

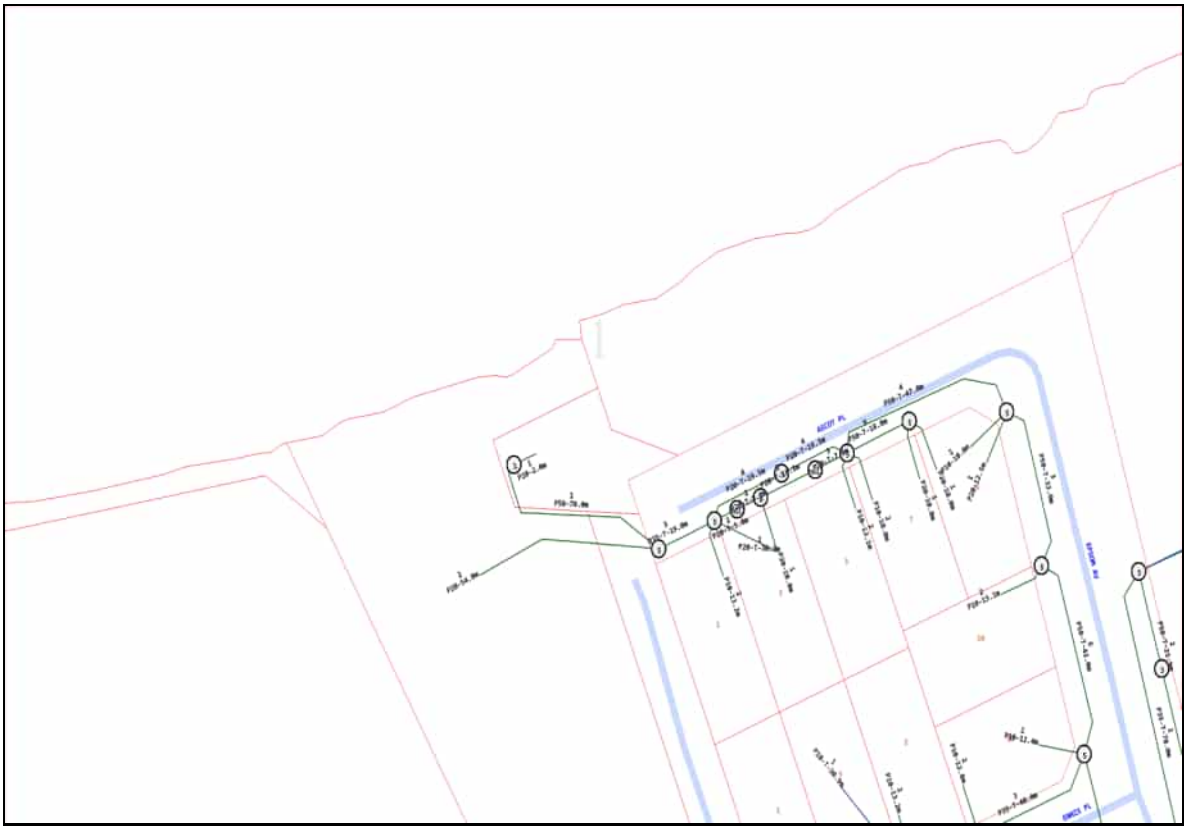
- BYDA Enquiry
- Transmission Pipelines MAOP > 1900kPa
- Distribution Pipelines MAOP > 500kPa ≤ 1900kPa
- Not Gassed 0kPa
- Distribution Pipe MAOP ≤ 7kPa
- Distribution Pipe MAOP > 7kPa ≤ 100kPa
- Distribution Pipe MAOP > 7kPa ≤ 100kPa
- Distribution Pipe MAOP > 100kPa ≤ 350kPa
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- PLST Pre Laid Service Tee

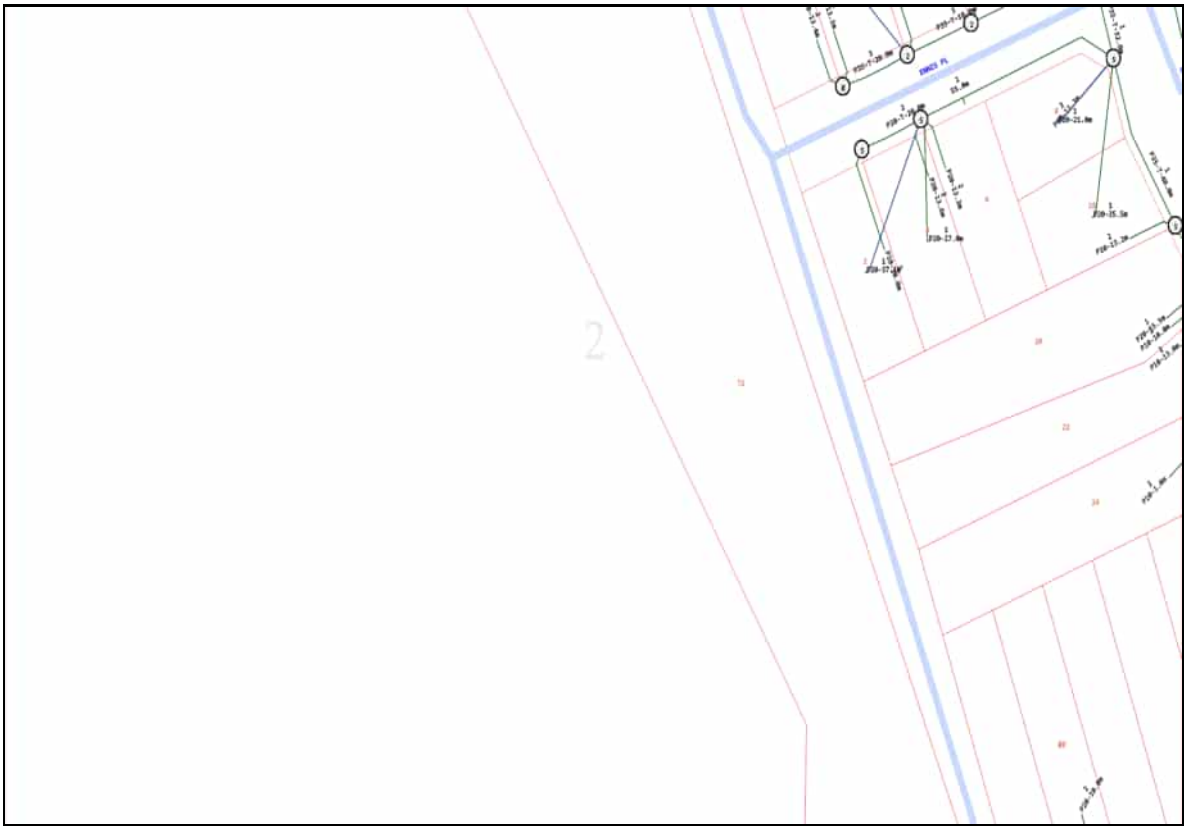
Please refer to Symbols Sheet for Further Information

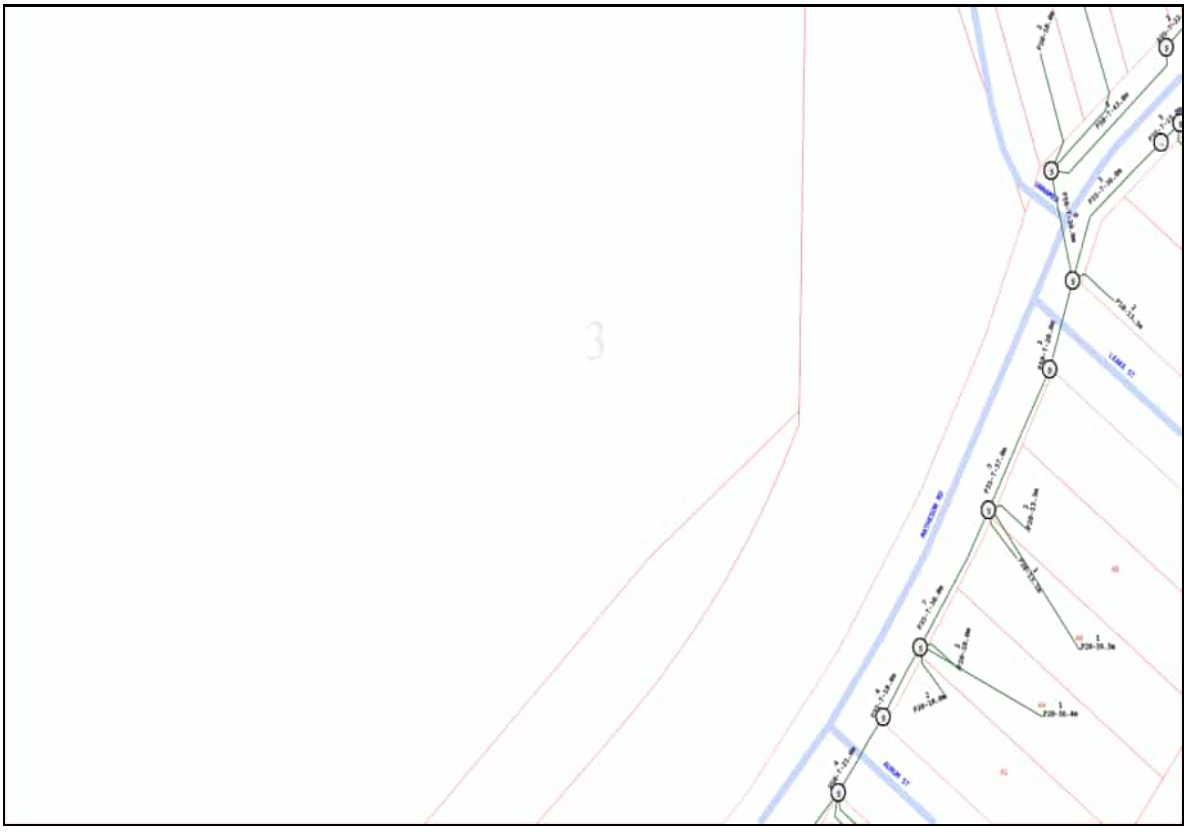
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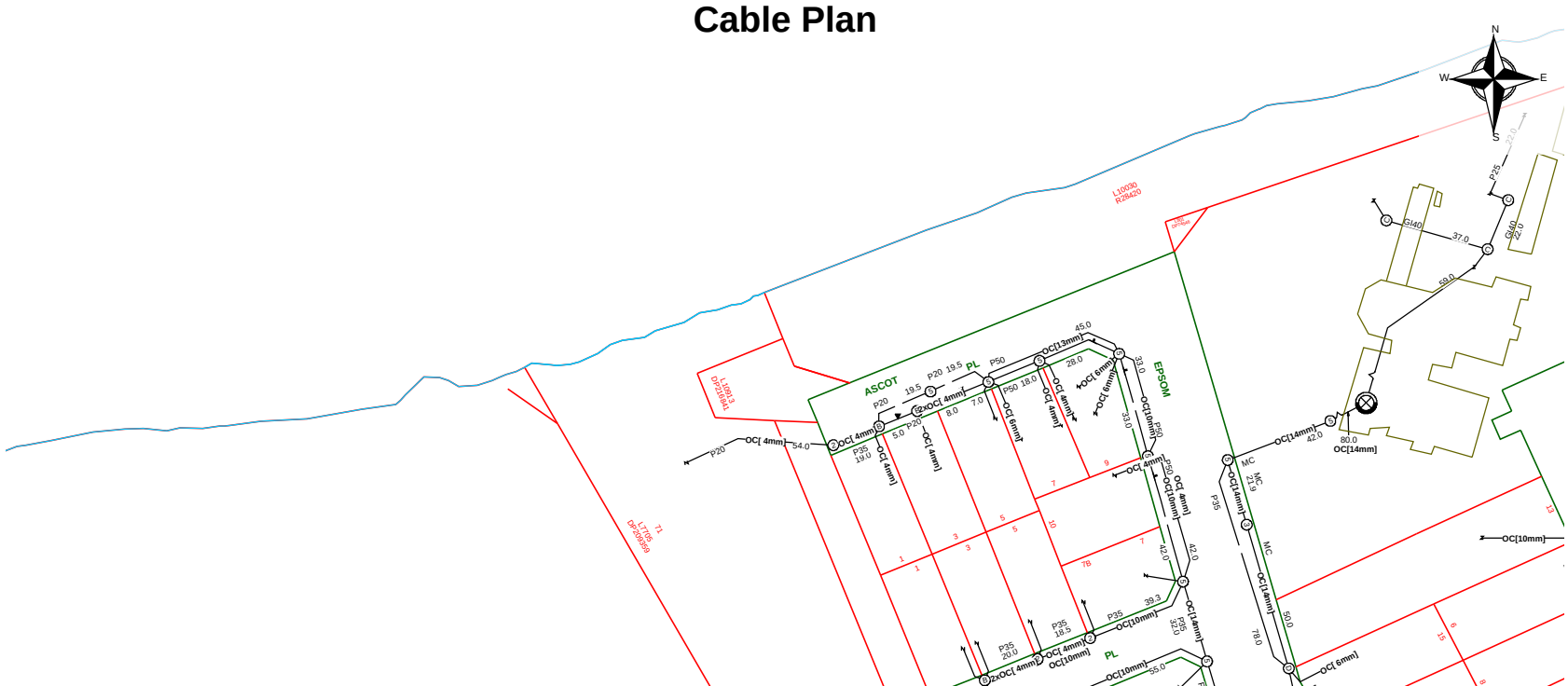




## Emergency Contacts

You must immediately report any damage to the **nbn™** network that you are/become aware of. Notification may be by telephone - 1800 626 329.

# Cable Plan



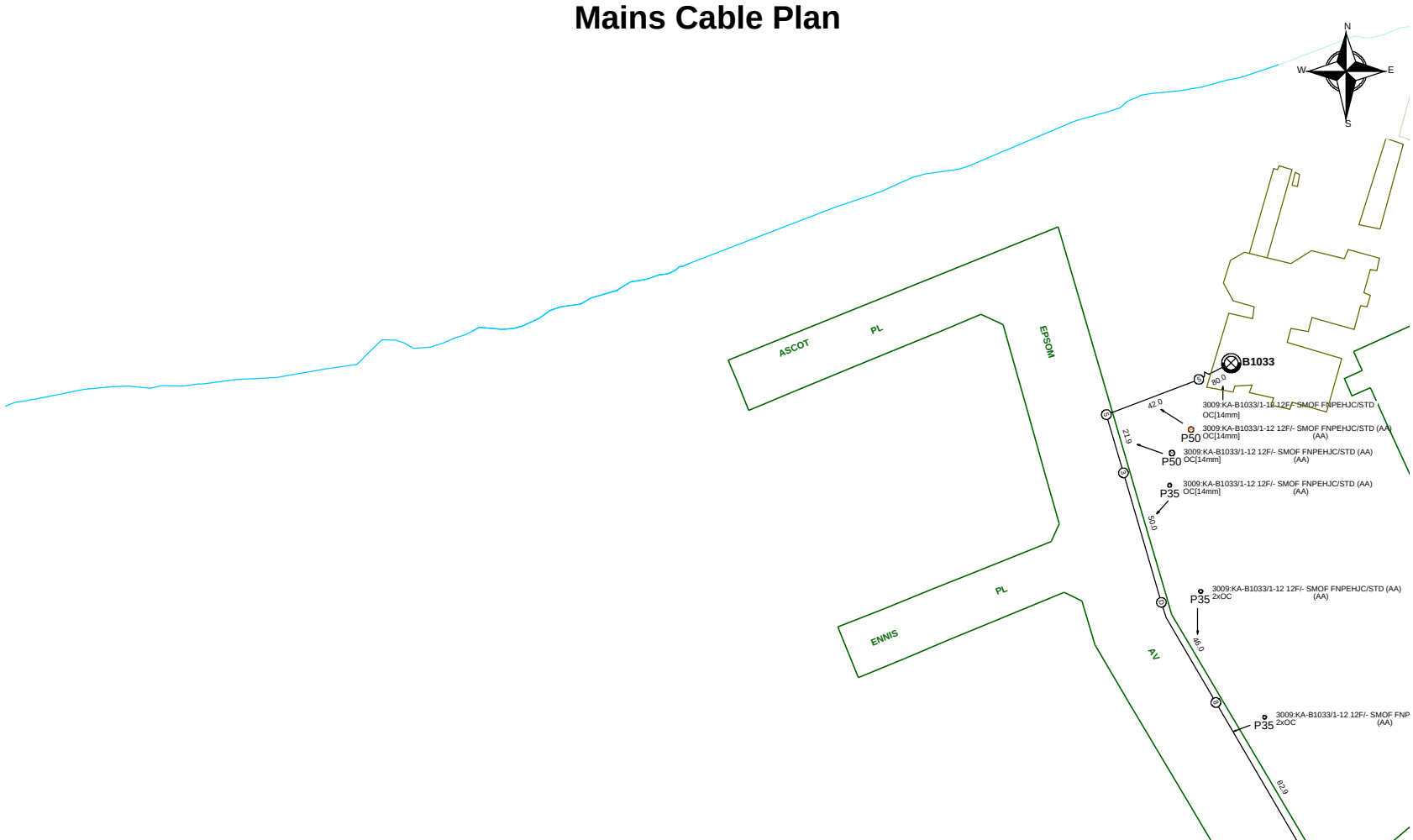

| | |
|---|---|
| Report Damage: https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment<br>Ph - 13 22 03<br>Email - Telstra.Plans@team.telstra.com<br>Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries | Sequence Number: 240900651 |
| TELSTRA LIMITED A.C.N. 086 174 781 | CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance. |
| Generated On 21/06/2024 19:09:58 | |

The above plan must be viewed in conjunction with the Mains Cable Plan on the following page

WARNING
Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information.
As such,Telstra supplied location information is indicative only.Spatial accuracy is not applicable to Quality Level D.
Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it.
Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy.
Further on site investigation is required to validate the exact location of Telstra plant prior to commencing construction work.
A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works.

See the Steps- Telstra Duty of Care that was provided in the email response.

# Mains Cable Plan




Report Damage: https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment
Ph - 13 22 03
Email - Telstra.Plans@team.telstra.com
Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries

TELSTRA LIMITED A.C.N. 086 174 781

Generated On 21/06/2024 19:09:59

Sequence Number: 240900651

CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance.

WARNING
Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information.
As such,Telstra supplied location information is indicative only.Spatial accuracy is not applicable to Quality Level D.
Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it.
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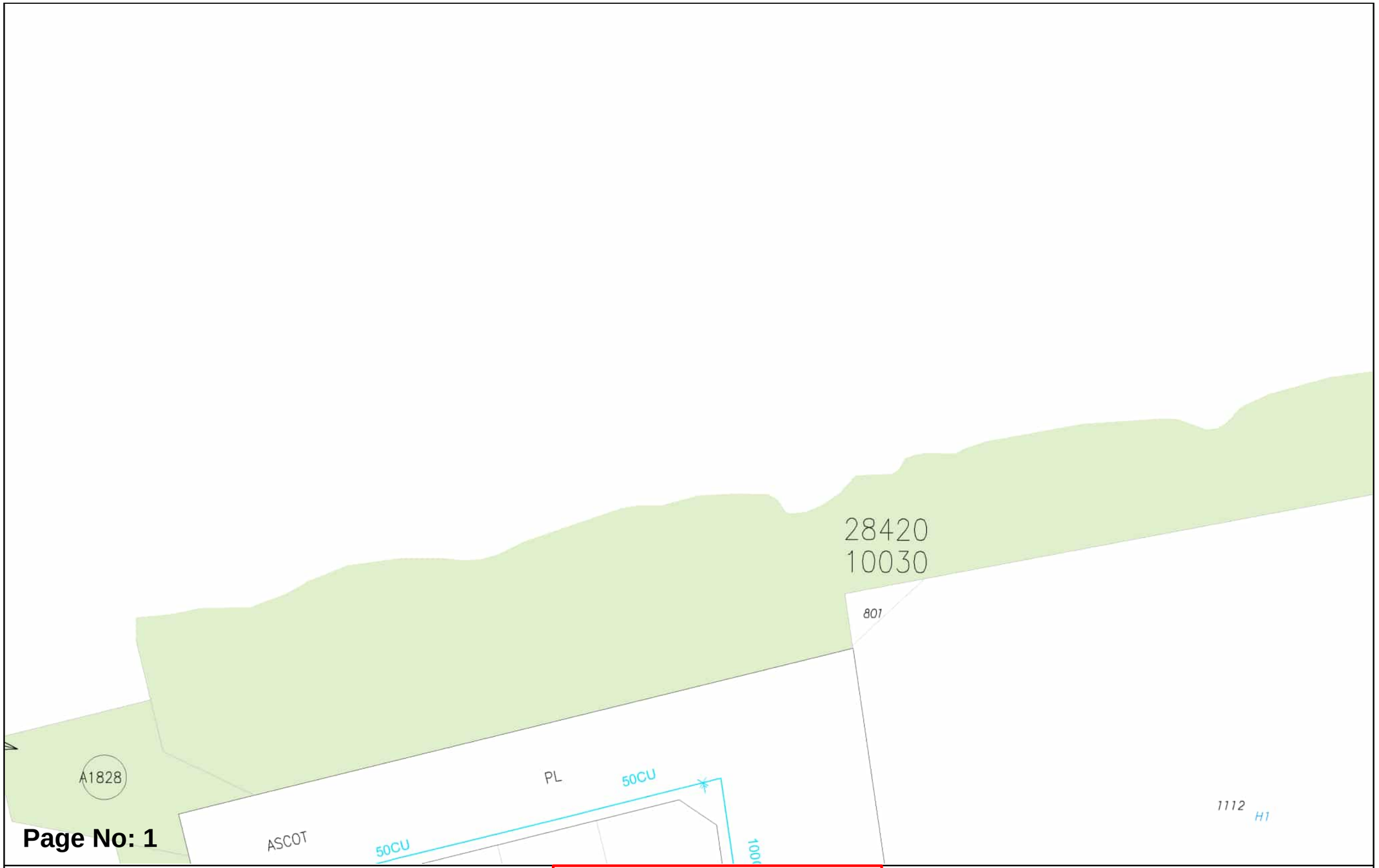

WATER CORPORATION

Scale: 1:3075
Job No.: 36962250
Sequence No.: 240900652
Print Date: 21 Jun 2024

N
Water

WARNING ASSET PROTECTION APPROVAL MAY BE REQUIRED
Apply for approval to work near our assets at:
Working near assets (watercorporation.com.au)
Unauthorised work within prescribed proximities of Water Corporation Assets is prohibited.

The Water Corporation has taken due care in the preparation of this map but accepts no responsibility for any inaccuracies or inappropriate use. This plan may be reproduced in its entirety for the purpose of site work planning but shall not otherwise be altered or published in any form without the permission of the Water Corporation. The Water Corporation may need to be advised of any planned ground disturbing activities near facilities on this map. Refer to Brochure - "Protecting Buried Pipelines". Please report any inaccuracies to Asset Registration Team by email to asset.registration@watercorporation.com.au.




WATER CORPORATION

Scale: 1:750
Job No.: 36962250
Sequence No.: 240900652
Print Date: 21 Jun 2024

N

Water

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**Page No: 2**

WATER CORPORATION

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|---|---|
| Scale: | 1:750 |
| Job No.: | 36962250 |
| Sequence No.: | 240900652 |
| Print Date: | 21 Jun 2024 |

N

**Water**

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**Page No: 3**

WATER CORPORATION

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| Job No.: | 36962250 |
| Sequence No.: | 240900652 |
| Print Date: | 21 Jun 2024 |

N

Water

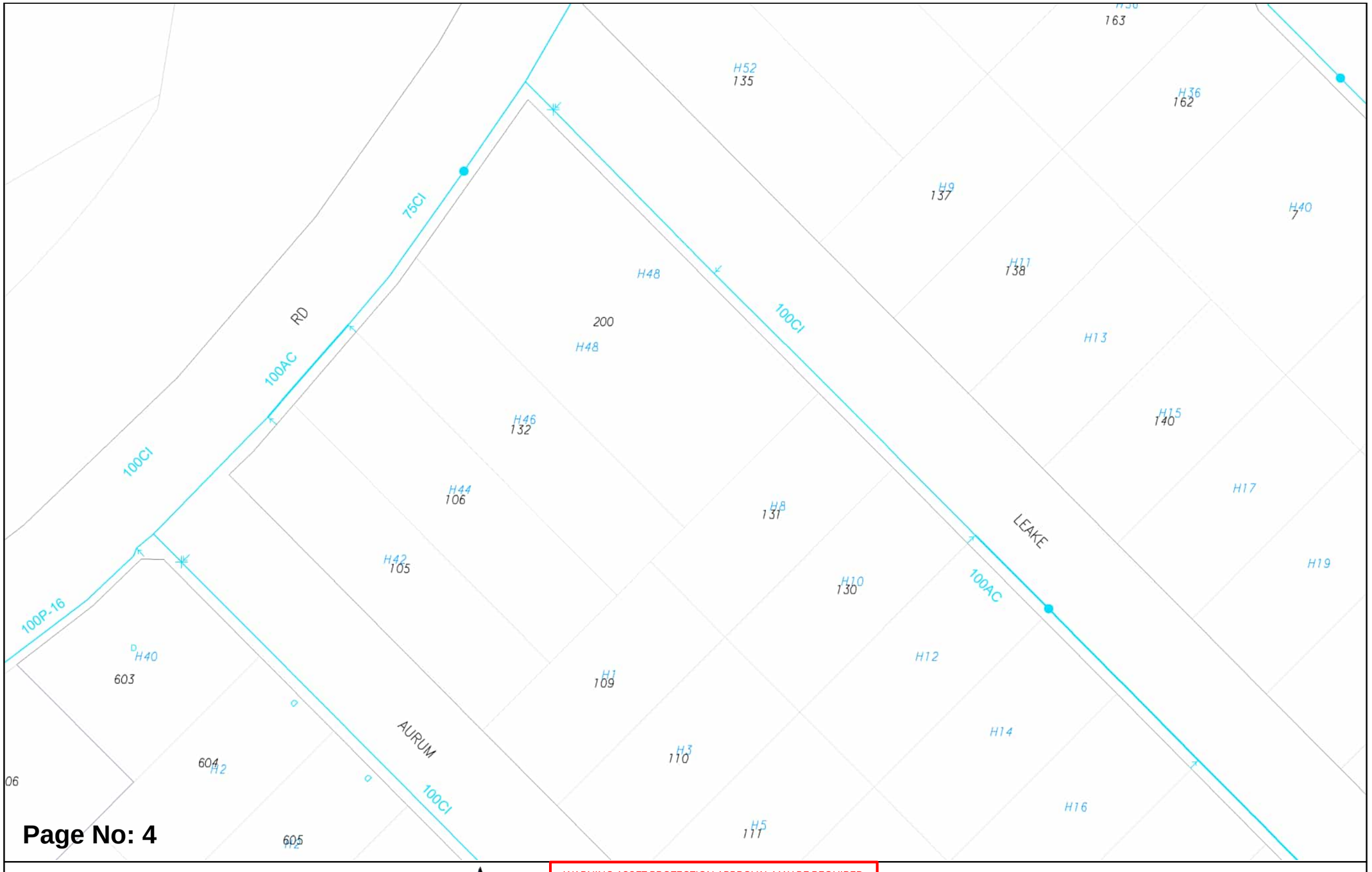
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| | | | |
|---|---|---|---|
| WATER CORPORATION | Scale: | 1:750 | |
| | Job No.: | 36962250 | |
| | Sequence No.: | 240900652 | |
| | Print Date: | 21 Jun 2024 | |

N

Water

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## Overview

WATER CORPORATION

Scale: 1:3075
Job No.: 36962250
Sequence No.: 240900652
Print Date: 21 Jun 2024

N

Sewer

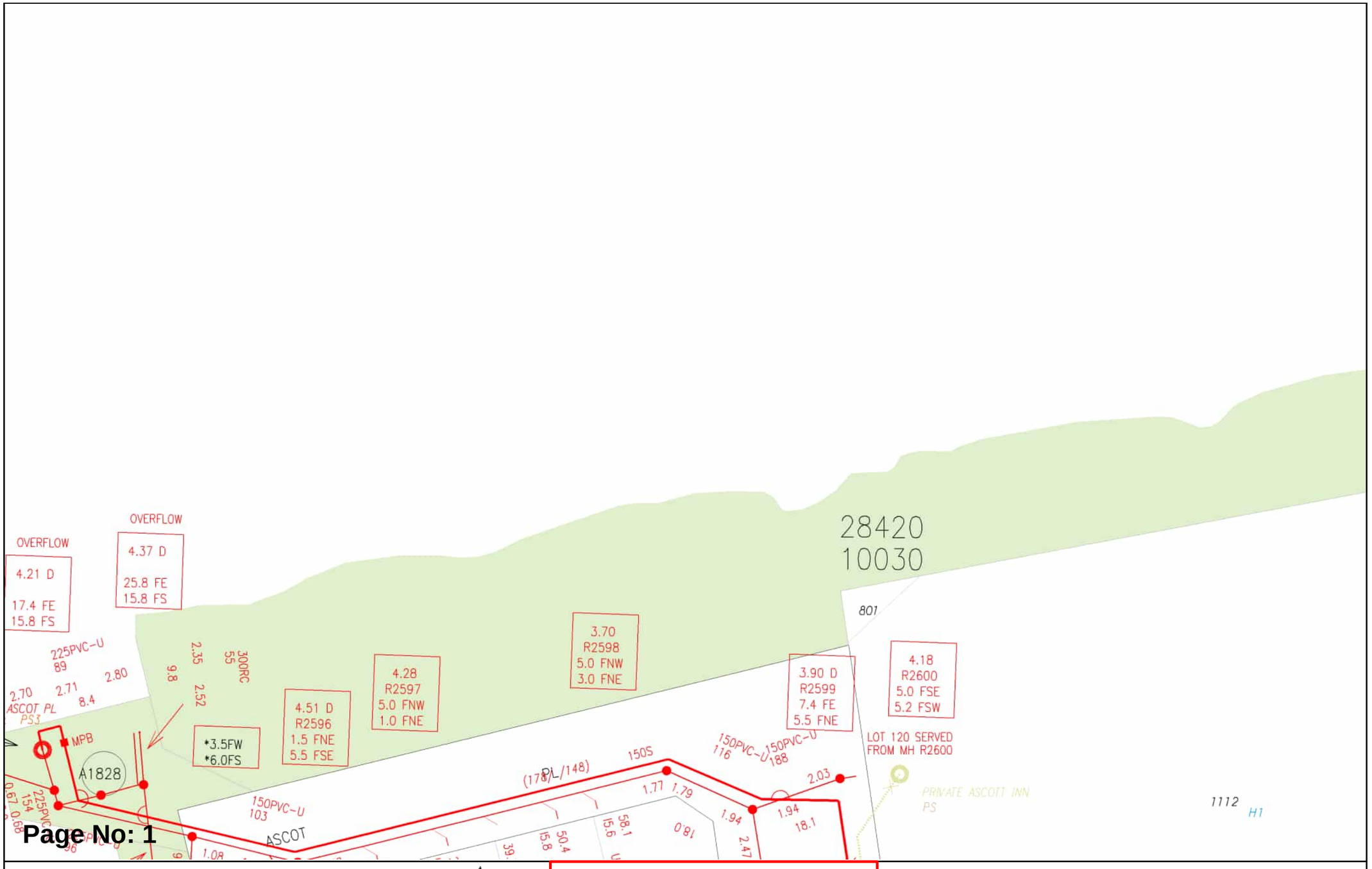
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**Page No: 1**

WATER CORPORATION

Scale: 1:750
Job No.: 36962250
Sequence No.: 240900652
Print Date: 21 Jun 2024

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**Sewer**

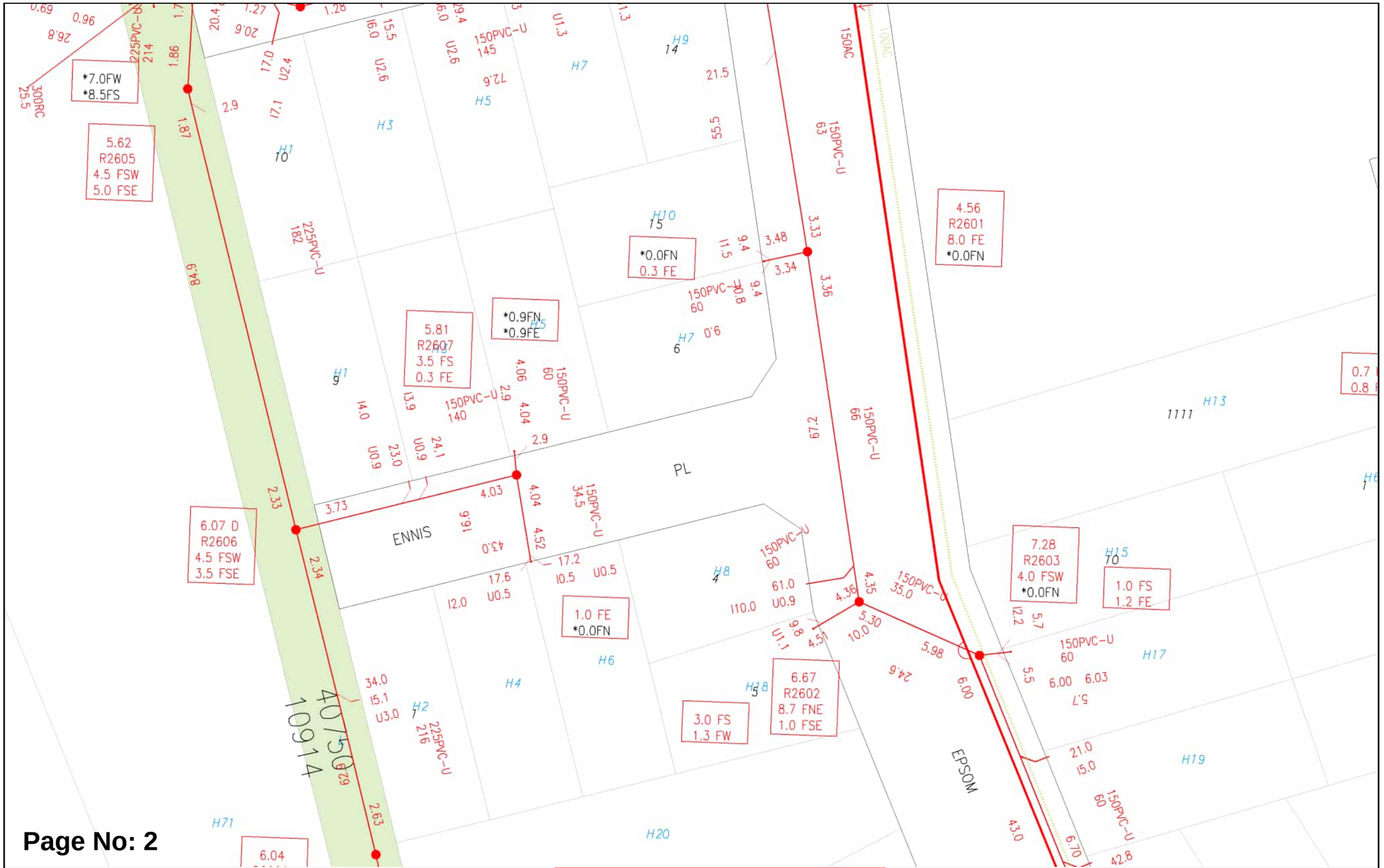
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**Page No: 2**

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| Scale: | 1:750 |
| Job No.: | 36962250 |
| Sequence No.: | 240900652 |
| Print Date: | 21 Jun 2024 |

Sewer

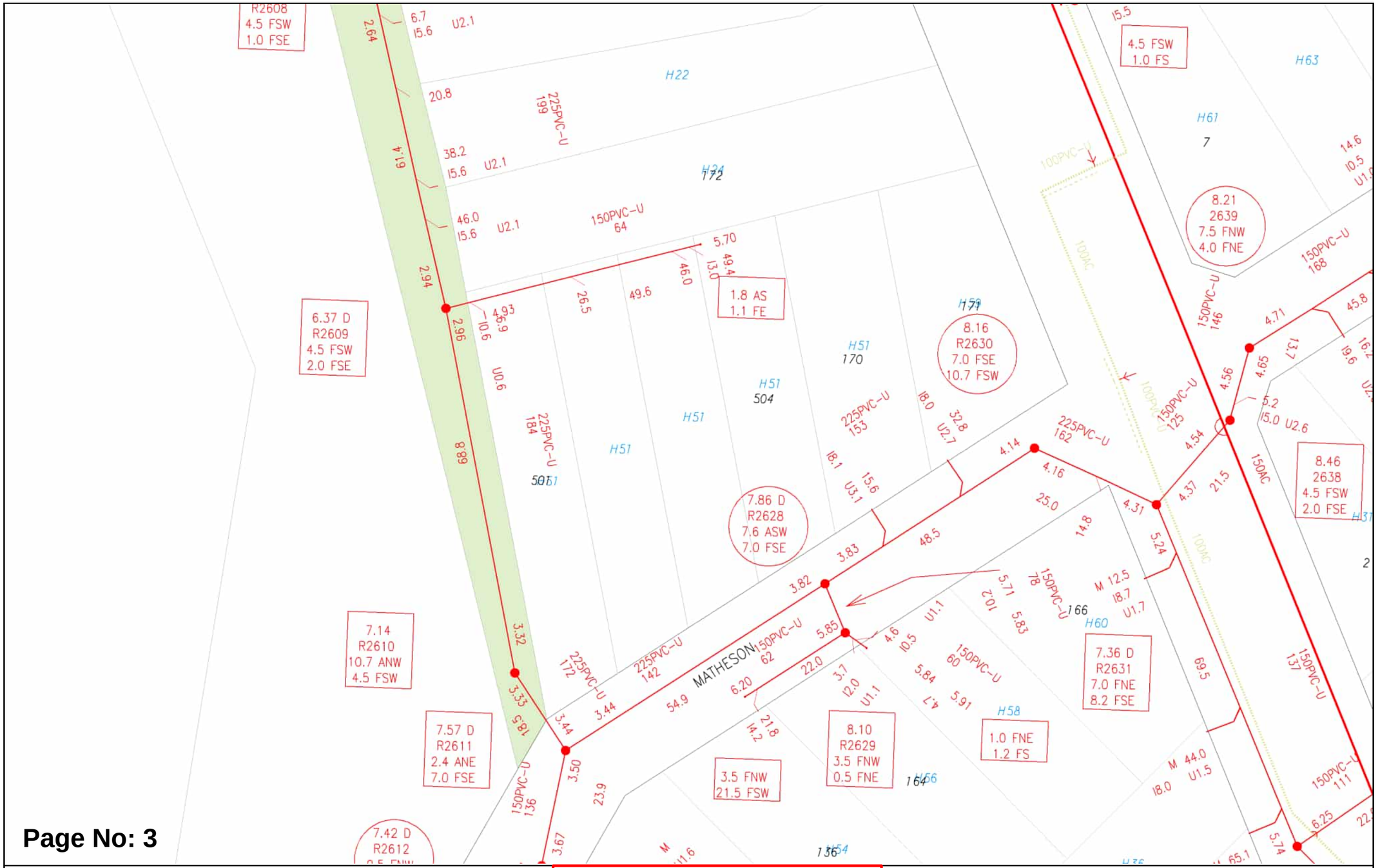
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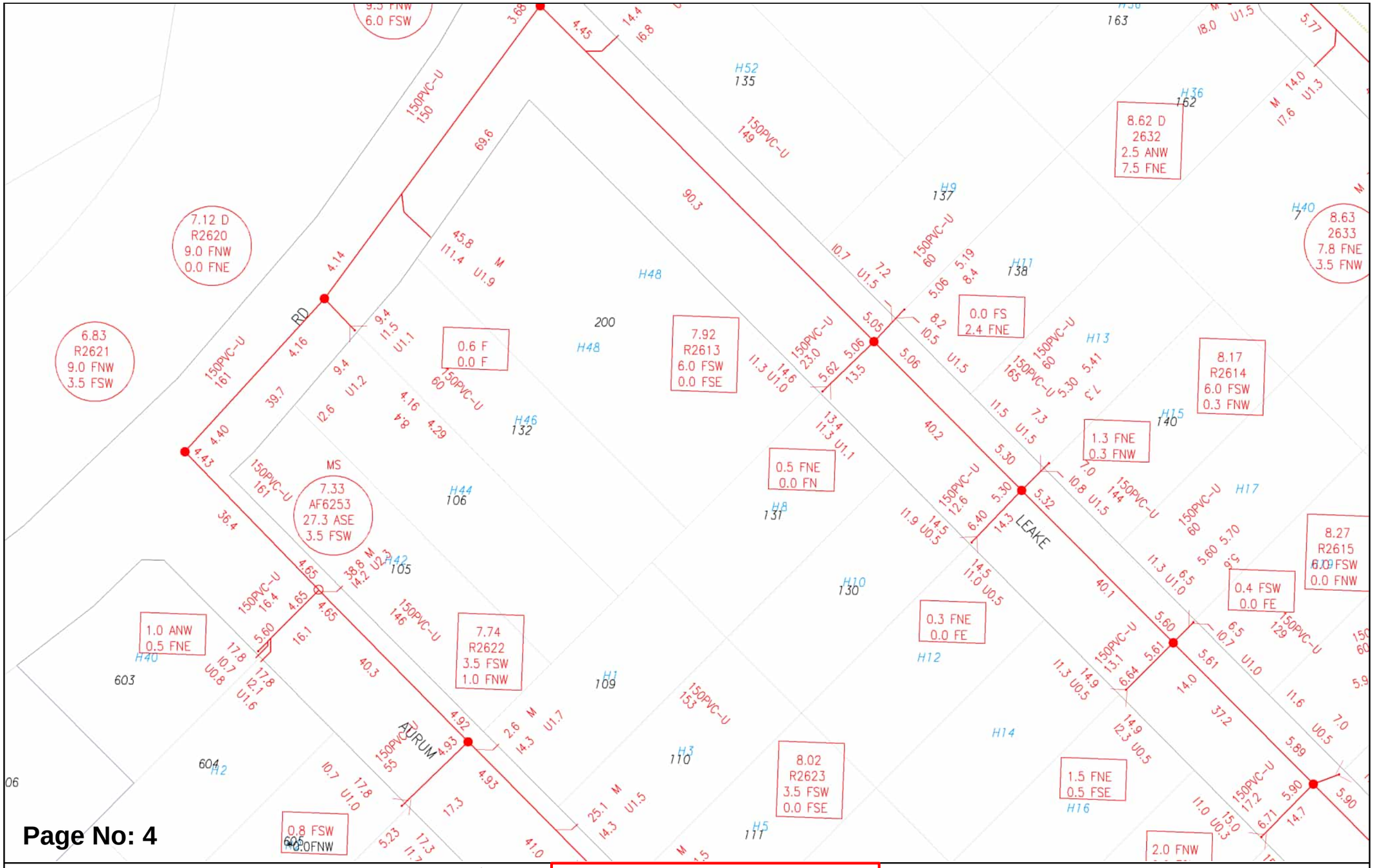
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**Page No: 3**

Plans generated 21 Jun 2024 by PelicanCorp TicketAccess Software | www.pelicancorp.com

Water Corp - Critical Plan.docx (21 May 2024)




**Page No: 4**

WATER CORPORATION

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| Job No.: | 36962250 |
| Sequence No.: | 240900652 |
| Print Date: | 21 Jun 2024 |

Sewer

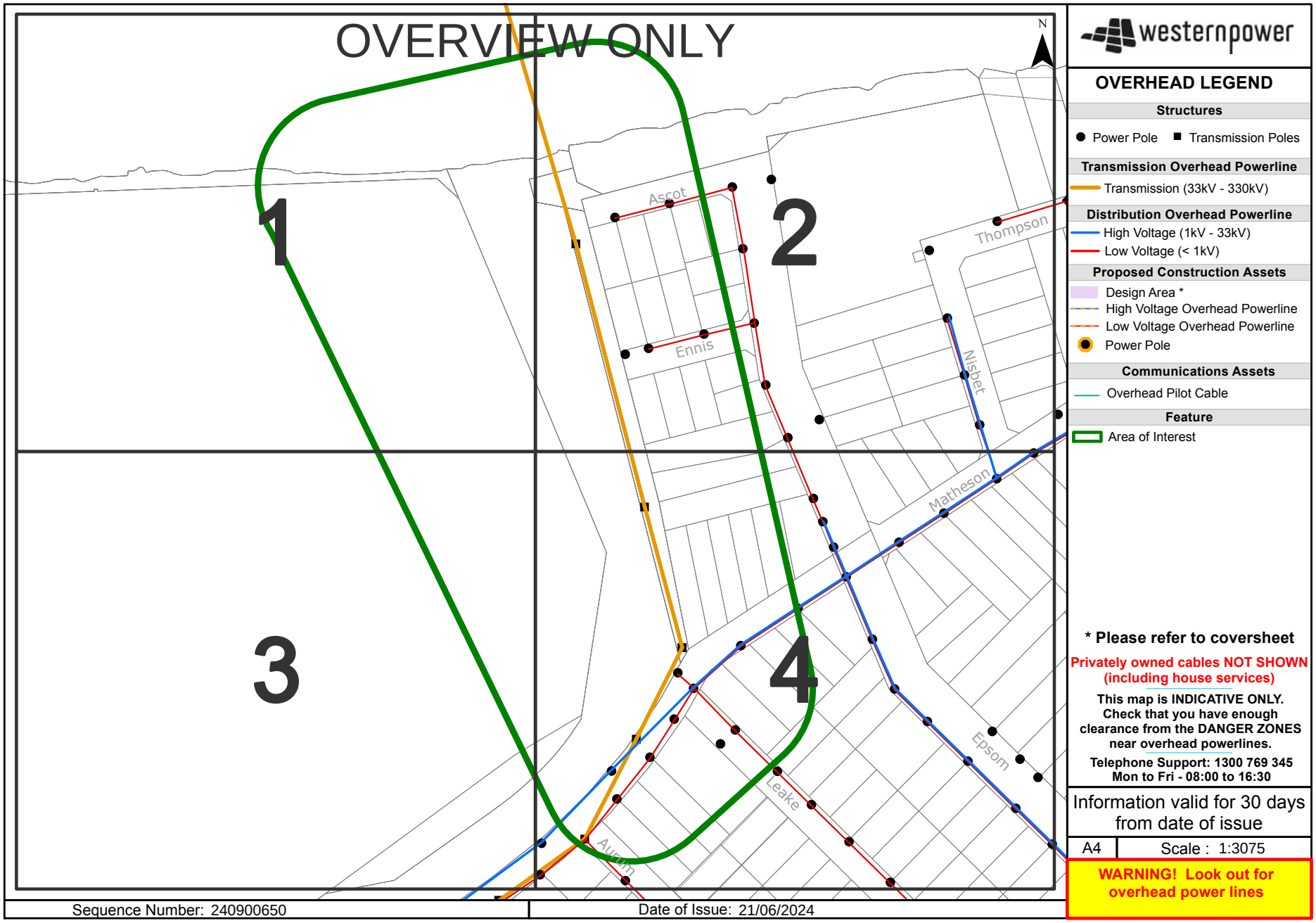
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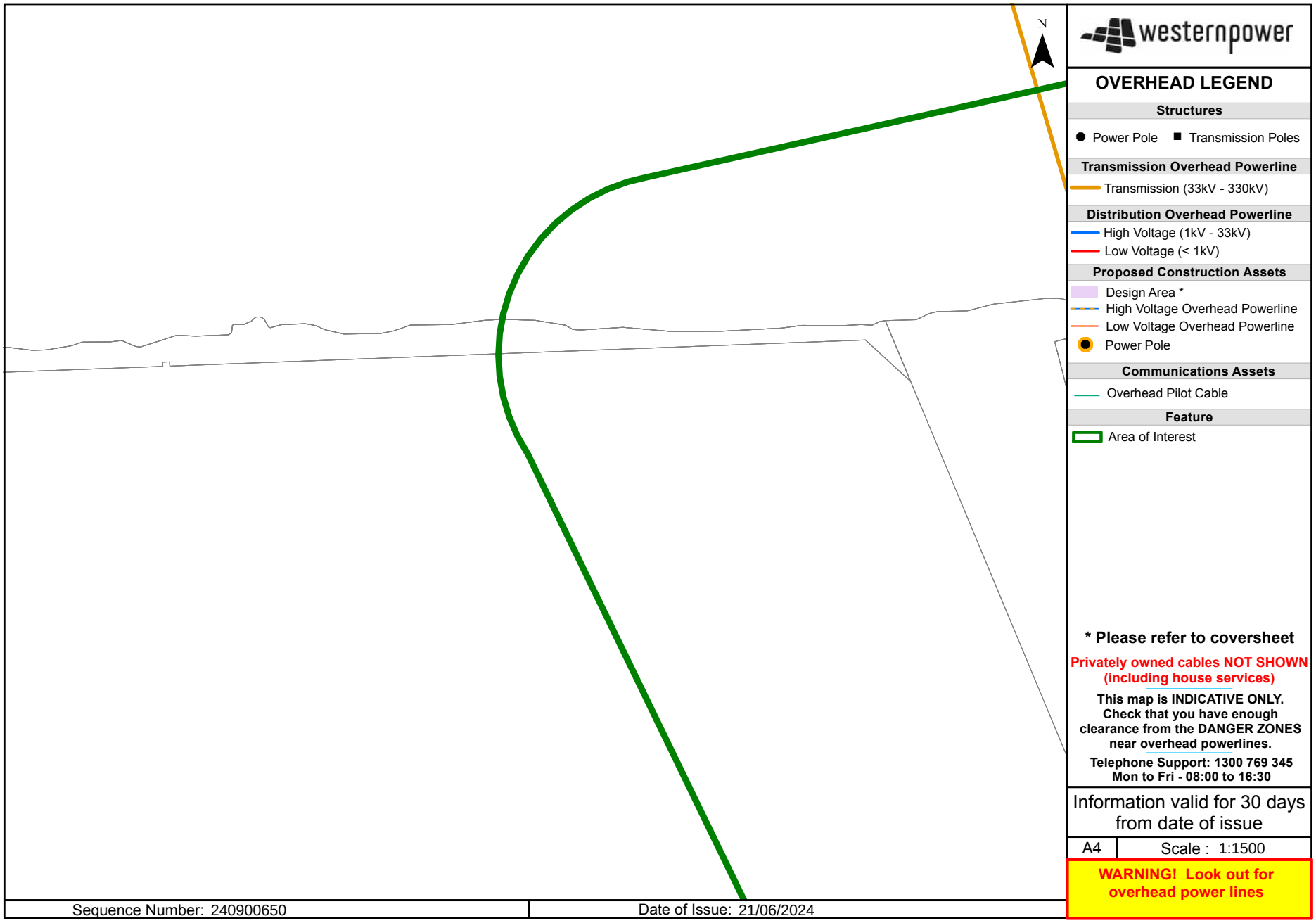
Apply for approval to work near our assets at:

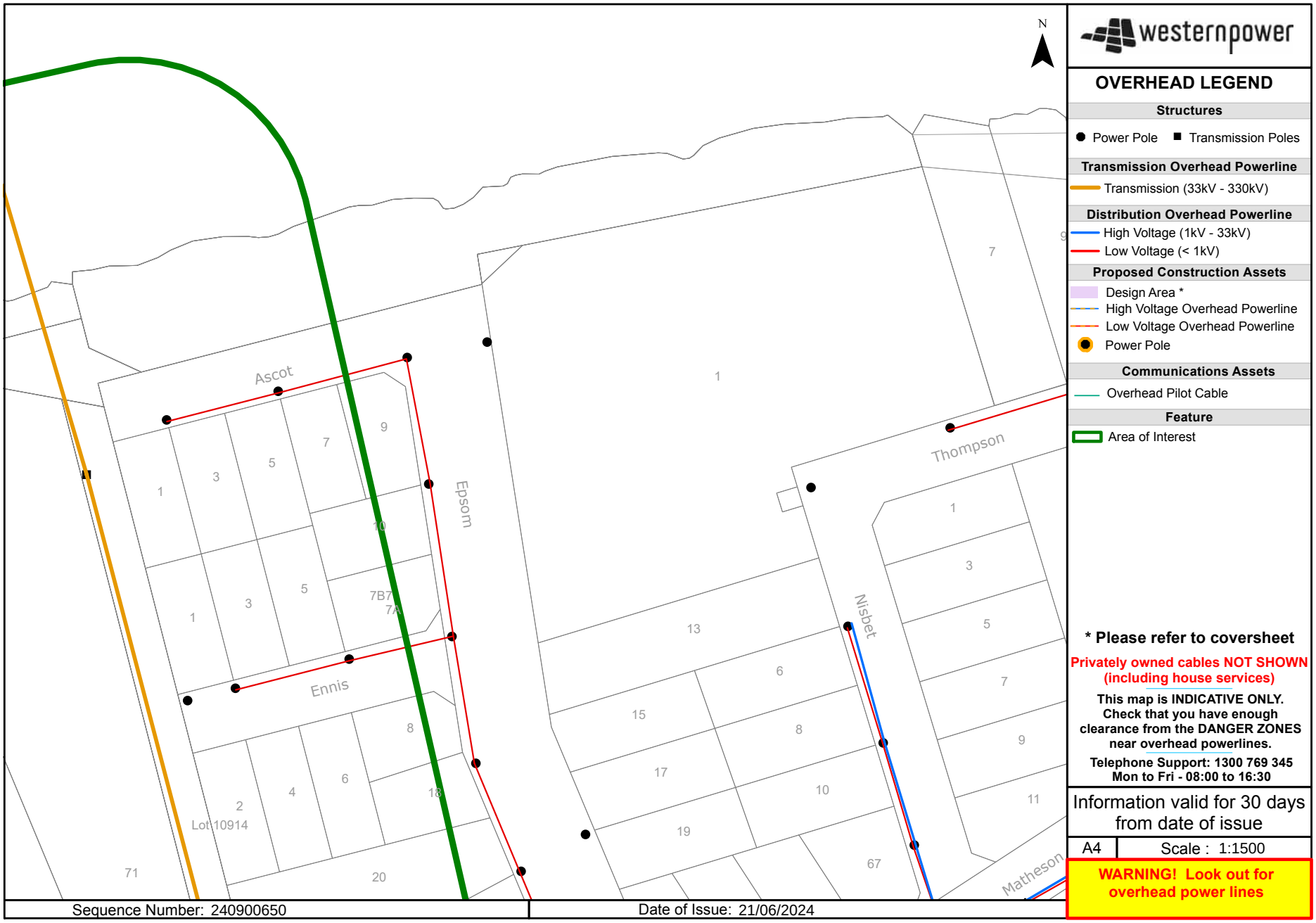
Working near assets (watercorporation.com.au)

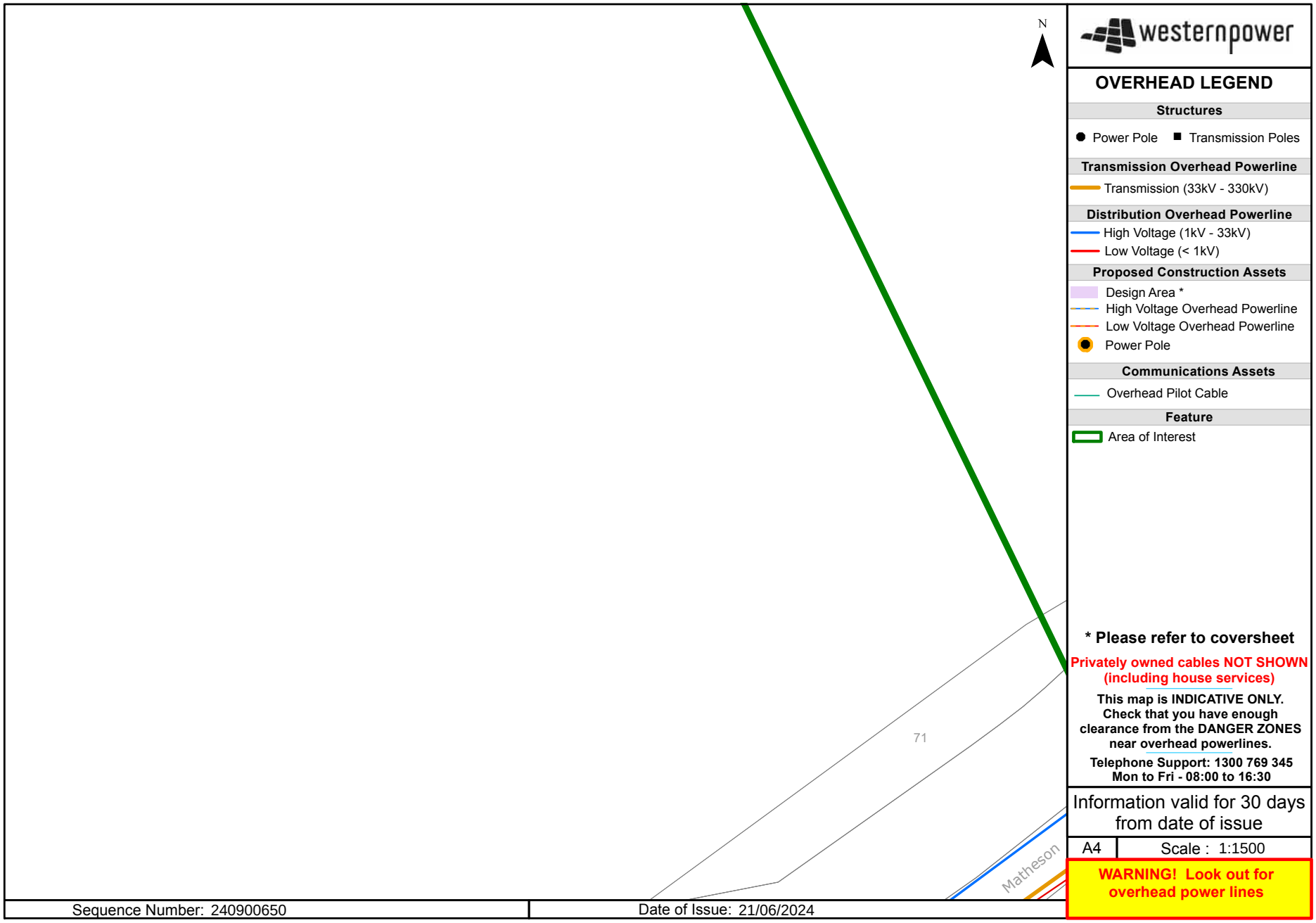
Unauthorised work within prescribed proximities of Water Corporation Assets is prohibited.

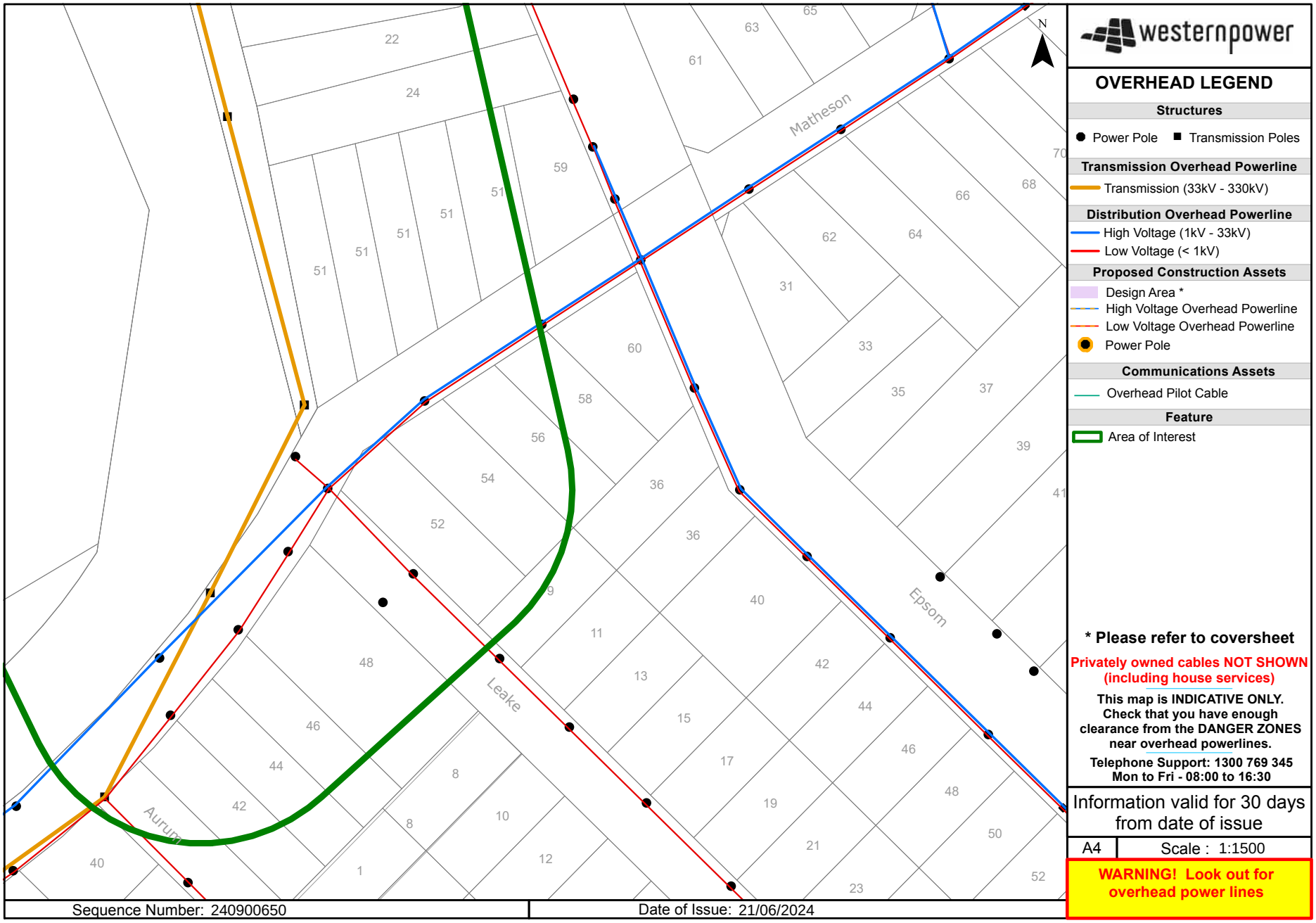
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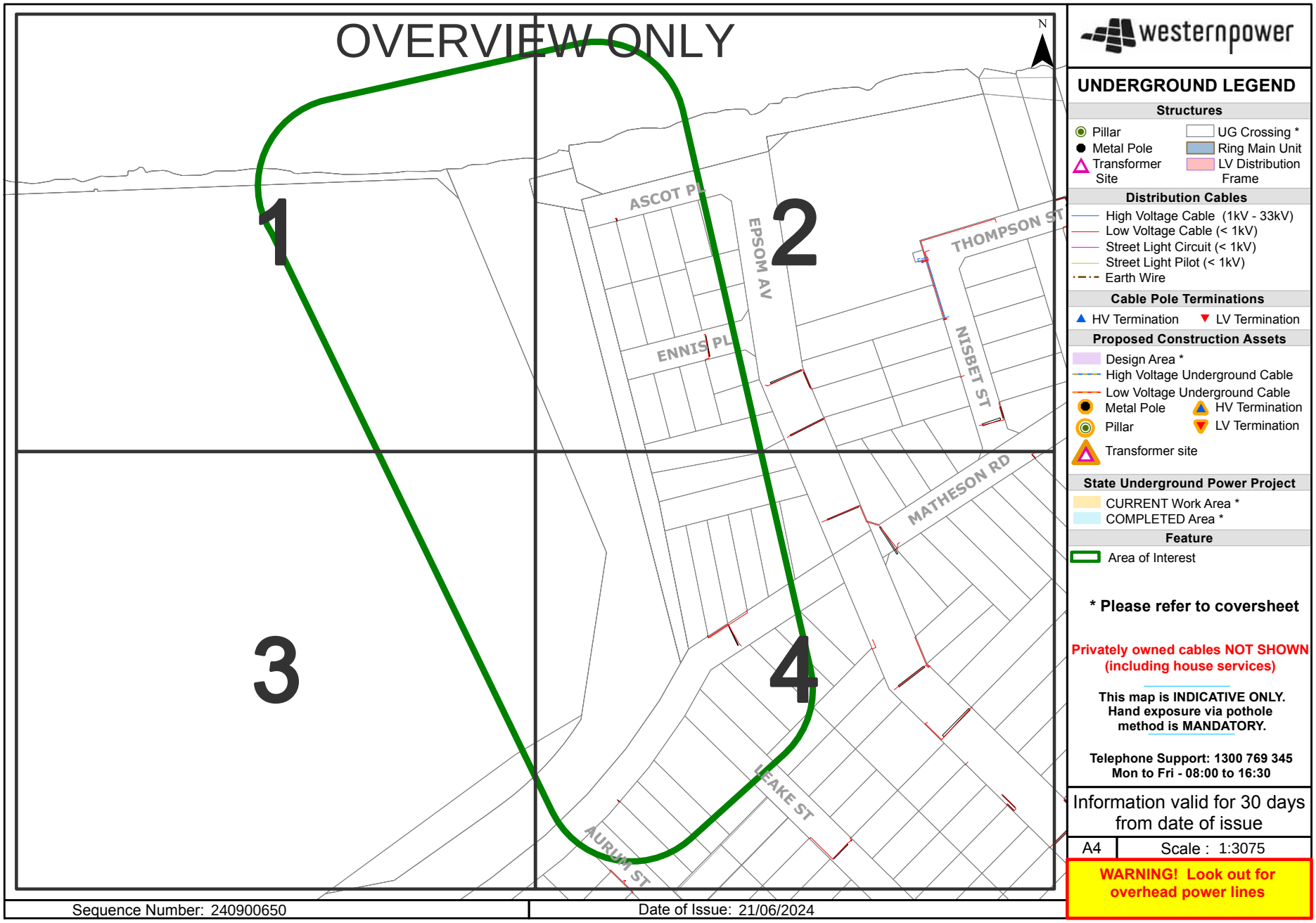

OVERVIEW ONLY
N
1
2
3
4
Ascot
Ennis
Thompson
Nisbet
Matheson
Epsom
Leake
Aurum
westernpower
OVERHEAD LEGEND
Structures
Power Pole
Transmission Poles
Transmission Overhead Powerline
Transmission (33kV - 330kV)
Distribution Overhead Powerline
High Voltage (1kV - 33kV)
Low Voltage (< 1kV)
Proposed Construction Assets
Design Area *
High Voltage Overhead Powerline
Low Voltage Overhead Powerline
Power Pole
Communications Assets
Overhead Pilot Cable
Feature
Area of Interest
* Please refer to coversheet
Privately owned cables NOT SHOWN (including house services)
This map is INDICATIVE ONLY. Check that you have enough clearance from the DANGER ZONES near overhead powerlines.
Telephone Support: 1300 769 345
Mon to Fri - 08:00 to 16:30
Information valid for 30 days from date of issue
A4
Scale : 1:3075
WARNING! Look out for overhead power lines
Sequence Number: 240900650
Date of Issue: 21/06/2024

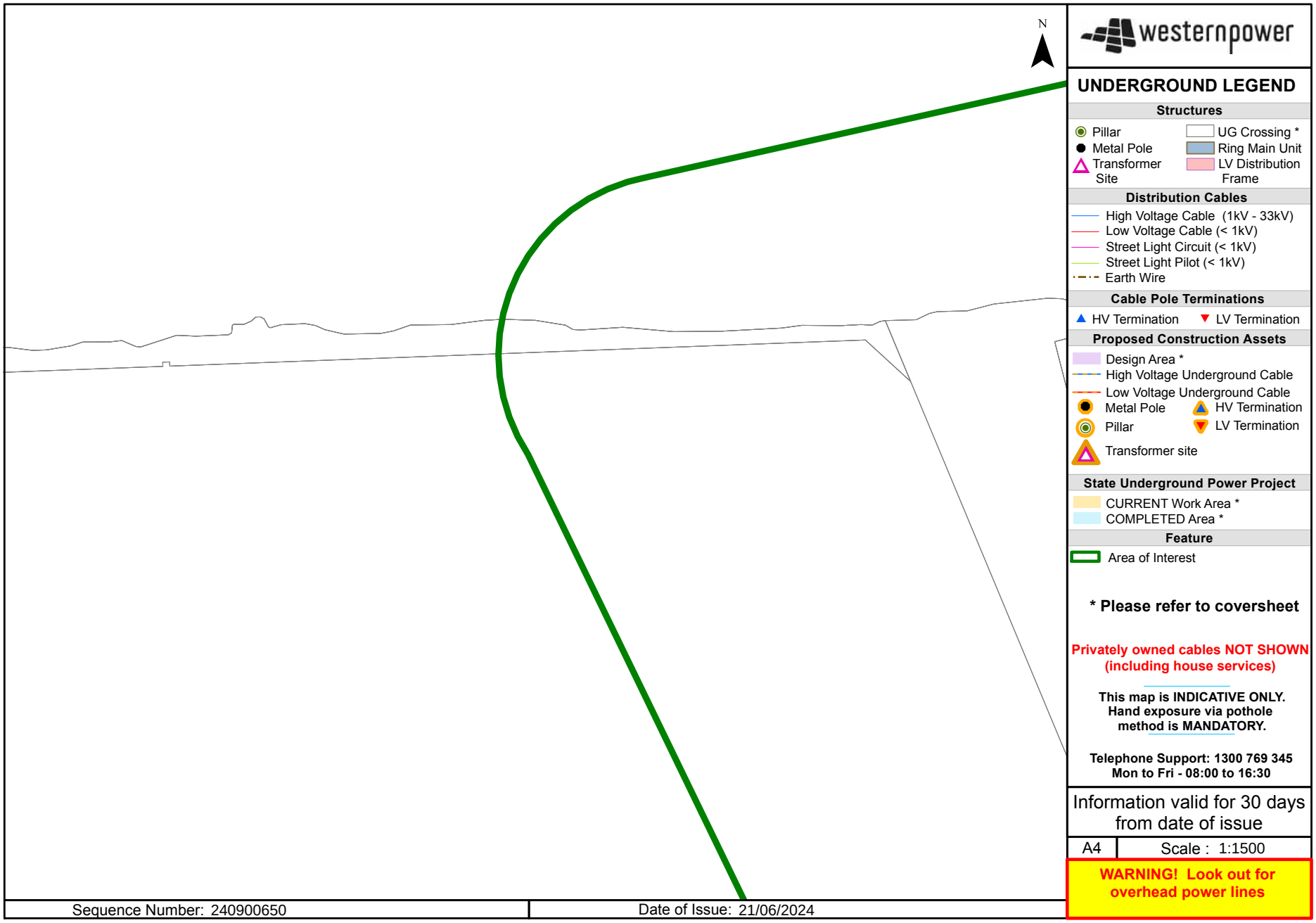

N
westernpower
OVERHEAD LEGEND
Structures
Power Pole
Transmission Poles
Transmission Overhead Powerline
Transmission (33kV - 330kV)
Distribution Overhead Powerline
High Voltage (1kV - 33kV)
Low Voltage (< 1kV)
Proposed Construction Assets
Design Area *
High Voltage Overhead Powerline
Low Voltage Overhead Powerline
Power Pole
Communications Assets
Overhead Pilot Cable
Feature
Area of Interest
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Telephone Support: 1300 769 345
Mon to Fri - 08:00 to 16:30
Information valid for 30 days from date of issue
A4
Scale : 1:1500
WARNING! Look out for overhead power lines
Sequence Number: 240900650
Date of Issue: 21/06/2024

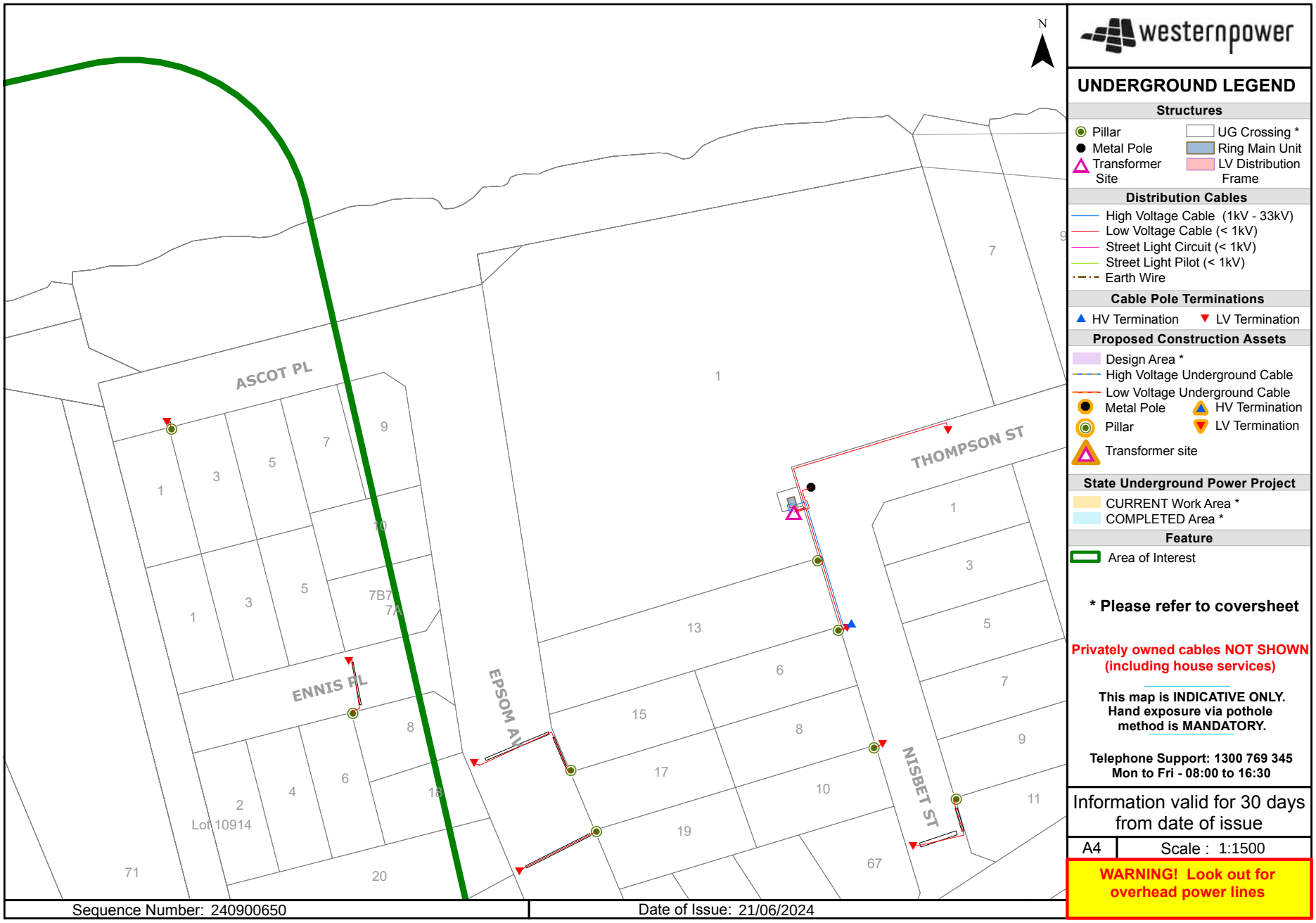

N
Ascot
Epsom
Ennis
Nisbet
Thompson
Matheson
Lot 10914
Sequence Number: 240900650
Date of Issue: 21/06/2024
westernpower
OVERHEAD LEGEND
Structures
Power Pole
Transmission Poles
Transmission Overhead Powerline
Transmission (33kV - 330kV)
Distribution Overhead Powerline
High Voltage (1kV - 33kV)
Low Voltage (< 1kV)
Proposed Construction Assets
Design Area *
High Voltage Overhead Powerline
Low Voltage Overhead Powerline
Power Pole
Communications Assets
Overhead Pilot Cable
Feature
Area of Interest
* Please refer to coversheet
Privately owned cables NOT SHOWN (including house services)
This map is INDICATIVE ONLY. Check that you have enough clearance from the DANGER ZONES near overhead powerlines.
Telephone Support: 1300 769 345
Mon to Fri - 08:00 to 16:30
Information valid for 30 days from date of issue
A4
Scale : 1:1500
WARNING! Look out for overhead power lines

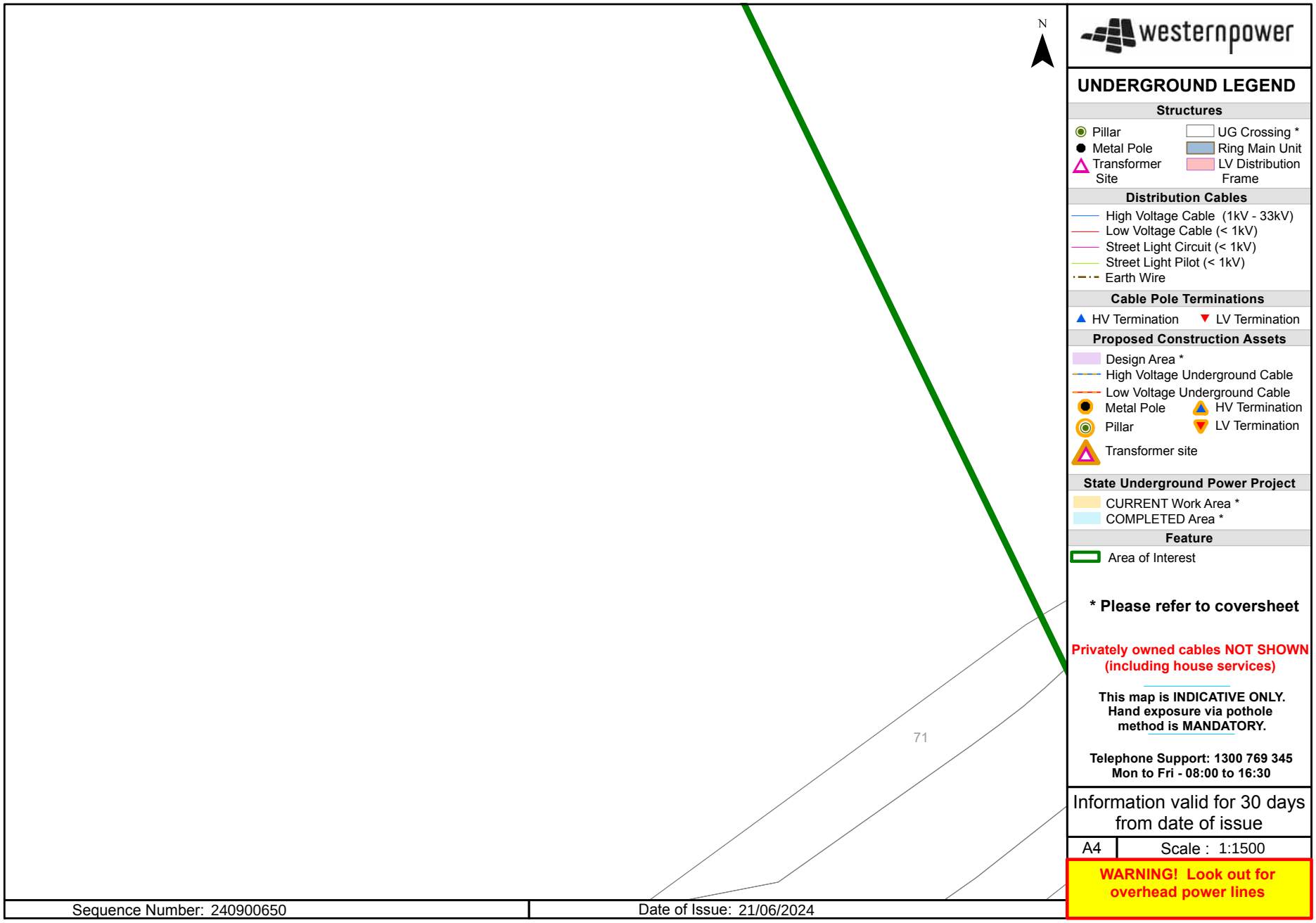

N
westernpower
OVERHEAD LEGEND
Structures
Power Pole
Transmission Poles
Transmission Overhead Powerline
Transmission (33kV - 330kV)
Distribution Overhead Powerline
High Voltage (1kV - 33kV)
Low Voltage (< 1kV)
Proposed Construction Assets
Design Area *
High Voltage Overhead Powerline
Low Voltage Overhead Powerline
Power Pole
Communications Assets
Overhead Pilot Cable
Feature
Area of Interest
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Mon to Fri - 08:00 to 16:30
Information valid for 30 days from date of issue
A4
Scale : 1:1500
WARNING! Look out for overhead power lines
71
Matheson
Sequence Number: 240900650
Date of Issue: 21/06/2024

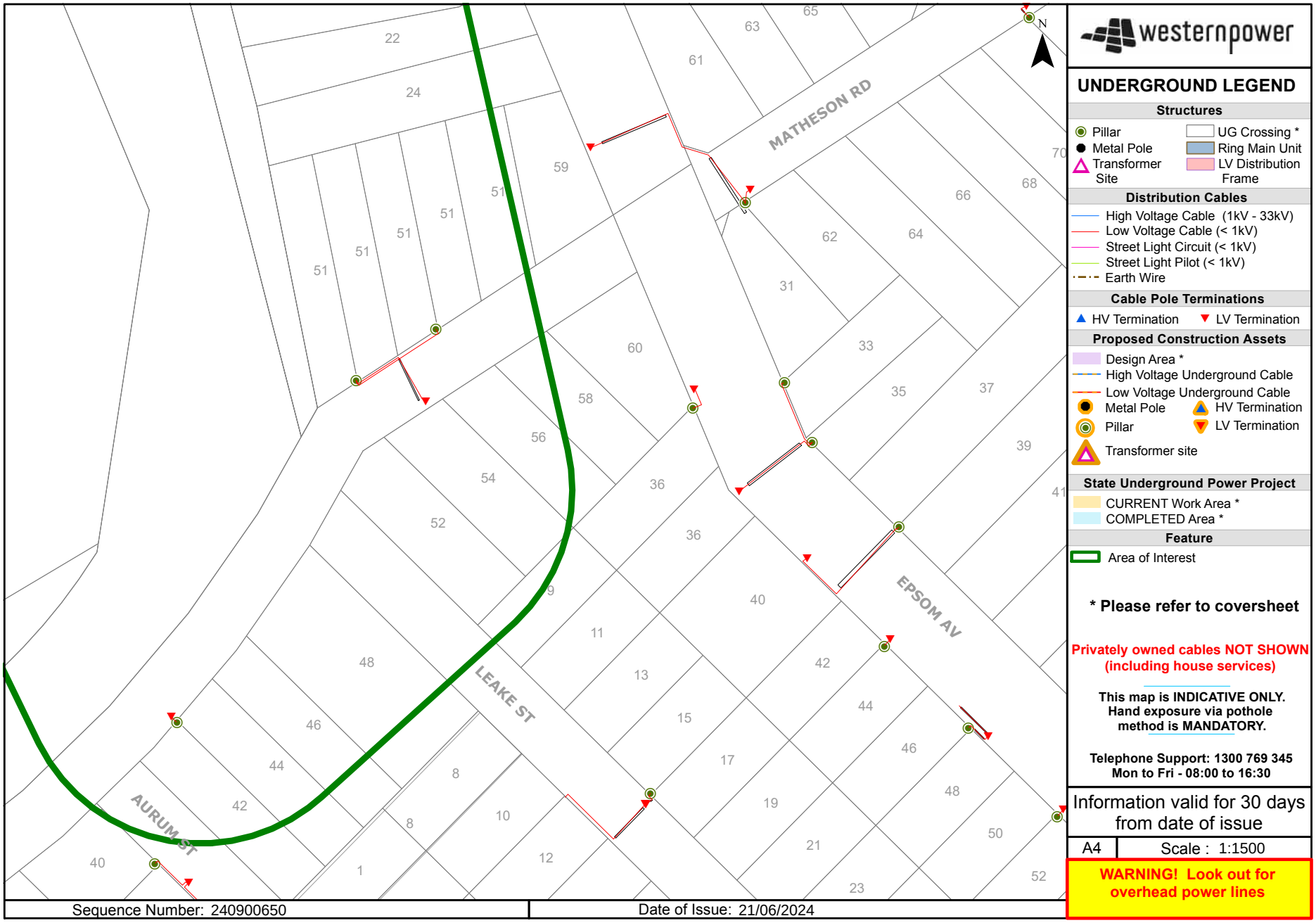

N
Matheson
Epsom
Leake
Aurum
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50
westernpower
OVERHEAD LEGEND
Structures
Power Pole
Transmission Poles
Transmission Overhead Powerline
Transmission (33kV - 330kV)
Distribution Overhead Powerline
High Voltage (1kV - 33kV)
Low Voltage (< 1kV)
Proposed Construction Assets
Design Area *
High Voltage Overhead Powerline
Low Voltage Overhead Powerline
Power Pole
Communications Assets
Overhead Pilot Cable
Feature
Area of Interest
* Please refer to coversheet
Privately owned cables NOT SHOWN (including house services)
This map is INDICATIVE ONLY. Check that you have enough clearance from the DANGER ZONES near overhead powerlines.
Telephone Support: 1300 769 345
Mon to Fri - 08:00 to 16:30
Information valid for 30 days from date of issue
A4
Scale : 1:1500
WARNING! Look out for overhead power lines
Sequence Number: 240900650
Date of Issue: 21/06/2024


OVERVIEW ONLY
N
1
2
3
4
ASCOT PL
EPSOM AV
ENNIS PL
THOMPSON ST
NISBET ST
MATHESON RD
LEAKE ST
AURUM ST
westernpower
UNDERGROUND LEGEND
Structures
Pillar
Metal Pole
Transformer Site
UG Crossing *
Ring Main Unit
LV Distribution Frame
Distribution Cables
High Voltage Cable (1kV - 33kV)
Low Voltage Cable (< 1kV)
Street Light Circuit (< 1kV)
Street Light Pilot (< 1kV)
Earth Wire
Cable Pole Terminations
HV Termination
LV Termination
Proposed Construction Assets
Design Area *
High Voltage Underground Cable
Low Voltage Underground Cable
Metal Pole
Pillar
Transformer site
HV Termination
LV Termination
State Underground Power Project
CURRENT Work Area *
COMPLETED Area *
Feature
Area of Interest
* Please refer to coversheet
Privately owned cables NOT SHOWN (including house services)
This map is INDICATIVE ONLY. Hand exposure via pothole method is MANDATORY.
Telephone Support: 1300 769 345
Mon to Fri - 08:00 to 16:30
Information valid for 30 days from date of issue
A4
Scale : 1:3075
WARNING! Look out for overhead power lines
Sequence Number: 240900650
Date of Issue: 21/06/2024


N
westernpower
UNDERGROUND LEGEND
Structures
Pillar
Metal Pole
Transformer Site
UG Crossing *
Ring Main Unit
LV Distribution Frame
Distribution Cables
High Voltage Cable (1kV - 33kV)
Low Voltage Cable (< 1kV)
Street Light Circuit (< 1kV)
Street Light Pilot (< 1kV)
Earth Wire
Cable Pole Terminations
HV Termination
LV Termination
Proposed Construction Assets
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High Voltage Underground Cable
Low Voltage Underground Cable
Metal Pole
Pillar
Transformer site
HV Termination
LV Termination
State Underground Power Project
CURRENT Work Area *
COMPLETED Area *
Feature
Area of Interest
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Scale : 1:1500
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N
ASCOT PL
ENNIS PL
EPSOM AV
THOMPSON ST
NISBET ST
Lot 10914
Sequence Number: 240900650
Date of Issue: 21/06/2024
westernpower
UNDERGROUND LEGEND
Structures
Pillar
Metal Pole
Transformer Site
UG Crossing *
Ring Main Unit
LV Distribution Frame
Distribution Cables
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Low Voltage Cable (< 1kV)
Street Light Circuit (< 1kV)
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HV Termination
LV Termination
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Low Voltage Underground Cable
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Pillar
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LV Termination
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Feature
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Scale : 1:1500
WARNING! Look out for overhead power lines


N
71
westernpower
UNDERGROUND LEGEND
Structures
Pillar
Metal Pole
Transformer Site
UG Crossing *
Ring Main Unit
LV Distribution Frame
Distribution Cables
High Voltage Cable (1kV - 33kV)
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MATHESON RD
LEAKE ST
EPSOM AV
AURUM ST
N
westernpower
UNDERGROUND LEGEND
Structures
Pillar
Metal Pole
Transformer Site
UG Crossing *
Ring Main Unit
LV Distribution Frame
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Scale : 1:1500
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Sequence Number: 240900650
Date of Issue: 21/06/2024

Job No 36962248

byda.com.au

## Contact Details

| Contact | Contact number | Company | Enquirer ID |
|---|---|---|---|
| Justin Zielinski | 0420 304 451 | - | 3140642 |

**Email**
jzielinski@tabec.com.au

**Address**
54 Havelock Street
West Perth WA 6005

## Job Site and Enquiry Details

**WARNING:** The map below only displays the location of the proposed job site and does not display any asset owners' pipe or cables. The area highlighted has been used only to identify the participating asset owners, who will send information to you directly.

| Enquiry date | Start date | End date | On behalf of | Job purpose | Locations | Onsite activities |
|---|---|---|---|---|---|---|
| 21/06/2024 | 24/06/2024 | 24/06/2024 | Private | Design | Both Road | Planning & Design |




Check that the location of the job site is correct. If not, you must submit a new enquiry.

If the scope of works change or plan validity dates expire, you must submit a new enquiry.

Do NOT dig without plans. Safe excavation is your responsibility. If you don't understand the plans or how to proceed safely, please contact the relevant asset owners.

| User Reference | Address | Notes/description |
|---|---|---|
| Precinct C - 1 | 30 Matheson Road<br>Ascot WA 6104 | - |

## Your Responsibility and Duty of Care

- **Lodging an enquiry does not authorise project commencement.** Before starting work, you must obtain all necessary information from all affected asset owners.
- If you don't receive plans within 2 business days, contact the asset owner & quote their sequence number.
- Always follow the 5Ps of Safe Excavation (page 2), and locate assets before commencing work.
- Ensure you comply with State legislative requirements for Duty of Care and safe digging.
- If you damage an underground asset, you MUST advise the asset owner immediately.
- By using the BYDA service, you agree to the Privacy Policy and Term of Use.
- For more information on safe digging practices, visit www.byda.com.au

## Asset Owner Details

Below is a list of asset owners with underground infrastructure in and around your job site. It is your responsibility to identify the presence of these assets. Plans issued by Members are indicative only unless specified otherwise. Note: not all asset owners are registered with BYDA. You must contact asset owners not listed here directly.

| Referral ID (Seq. no) | Authority Name | Phone | Status |
|---|---|---|---|
| 240900641 | ATCO Gas Australia | 1300 926 755 | NOTIFIED |
| 240900637 | NBN Co (WA) | 1800 687 626 | NOTIFIED |
| 240900639 | Telstra (WA) | 1800 653 935 | NOTIFIED |
| 240900640 | Water Corporation | 13 13 95 | NOTIFIED |
| 240900638 | Western Power | 13 10 87 | NOTIFIED |

END OF UTILITIES LIST

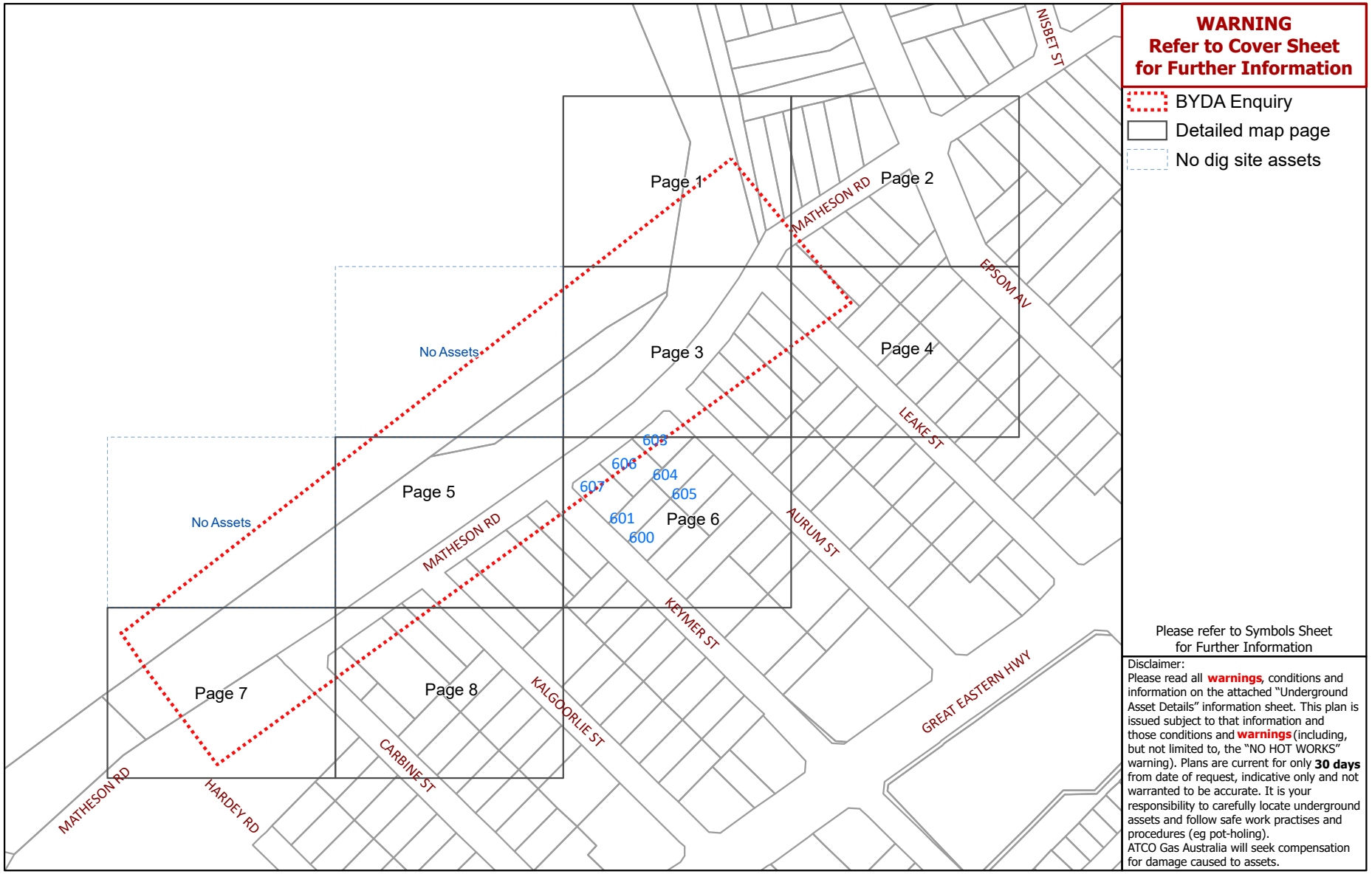
**Lodge your FREE enquiry online any time at byda.com.au**

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ABN: 90 089 531 975

Date: 21/06/24 (valid for 30 days)
Index Sheet

Seq # 240900641
Job # 36962248

BYDA Location: 30 Matheson Road Ascot 6104
Scale: 1:3,500




**WARNING**
**Refer to Cover Sheet for Further Information**

BYDA Enquiry
Detailed map page
No dig site assets

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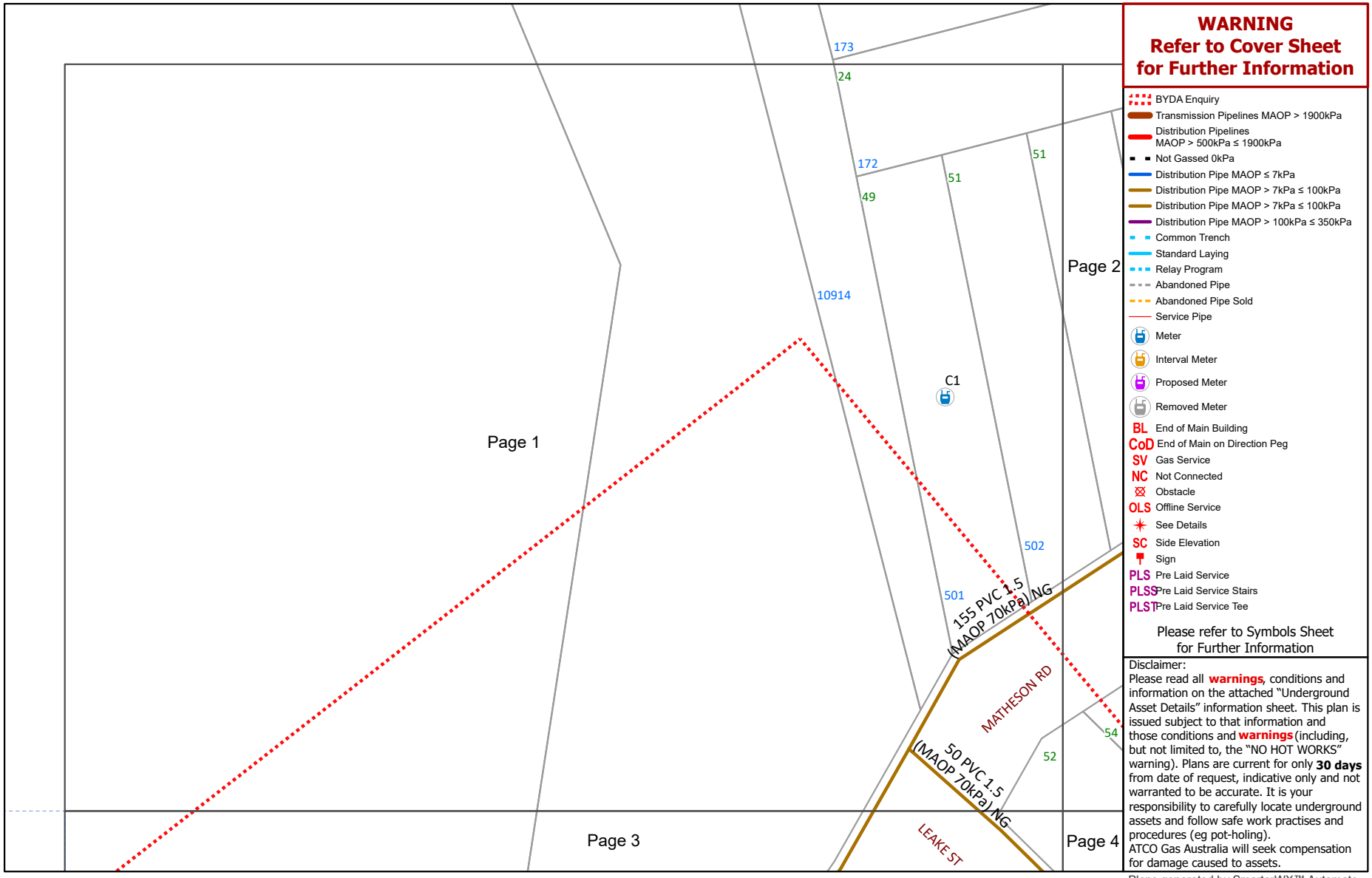
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ABN: 90 089 531 975

Date: 21/06/24 (valid for 30 days)

Seq # 240900641
Job # 36962248

BYDA Location: 30 Matheson Road Ascot 6104
Scale: 1:800




**WARNING**
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- BYDA Enquiry
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- Distribution Pipelines MAOP > 500kPa ≤ 1900kPa
- Not Gassed 0kPa
- Distribution Pipe MAOP ≤ 7kPa
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- Distribution Pipe MAOP > 7kPa ≤ 100kPa
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- Removed Meter
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- Obstacle
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- Sign
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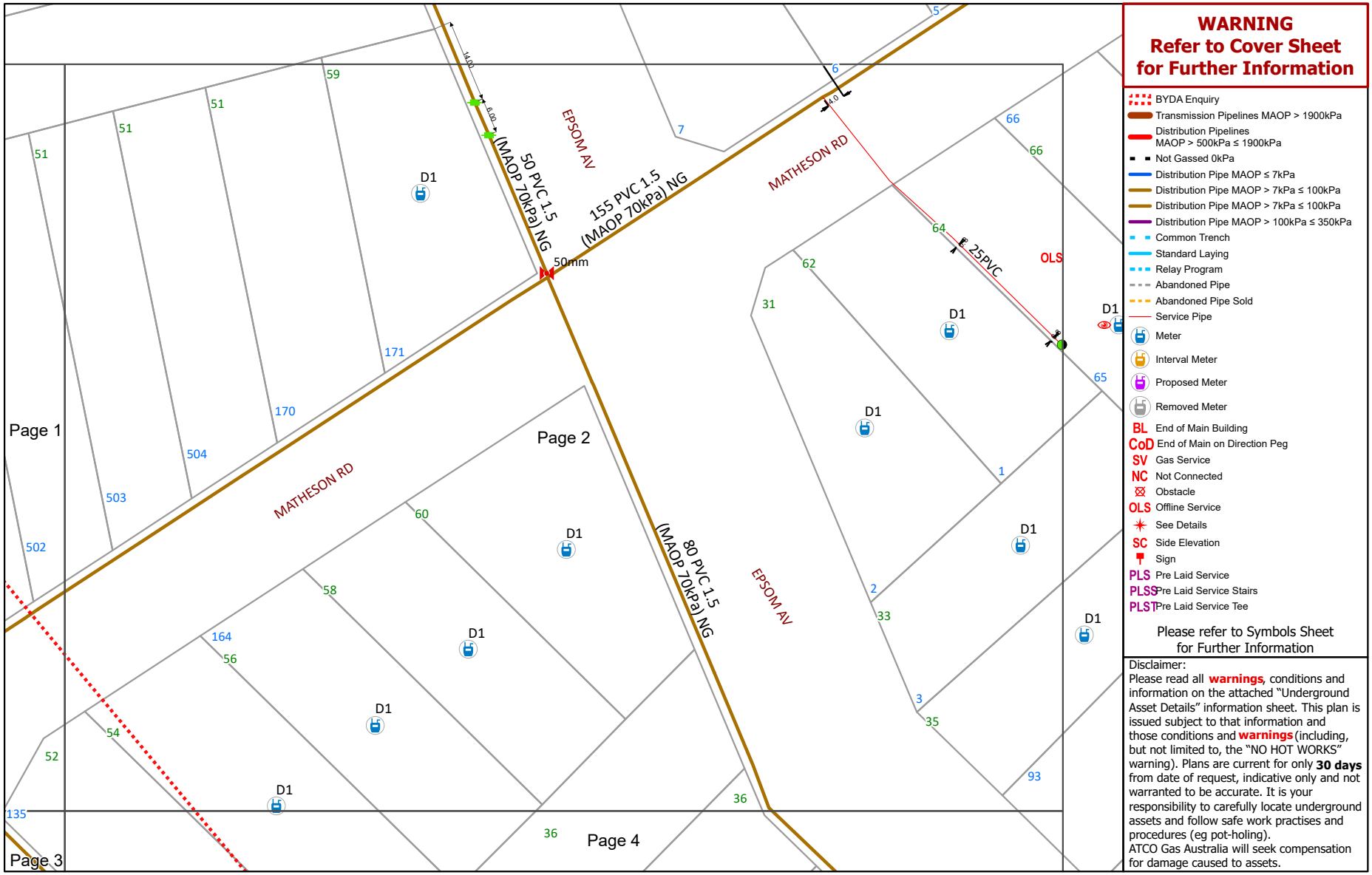
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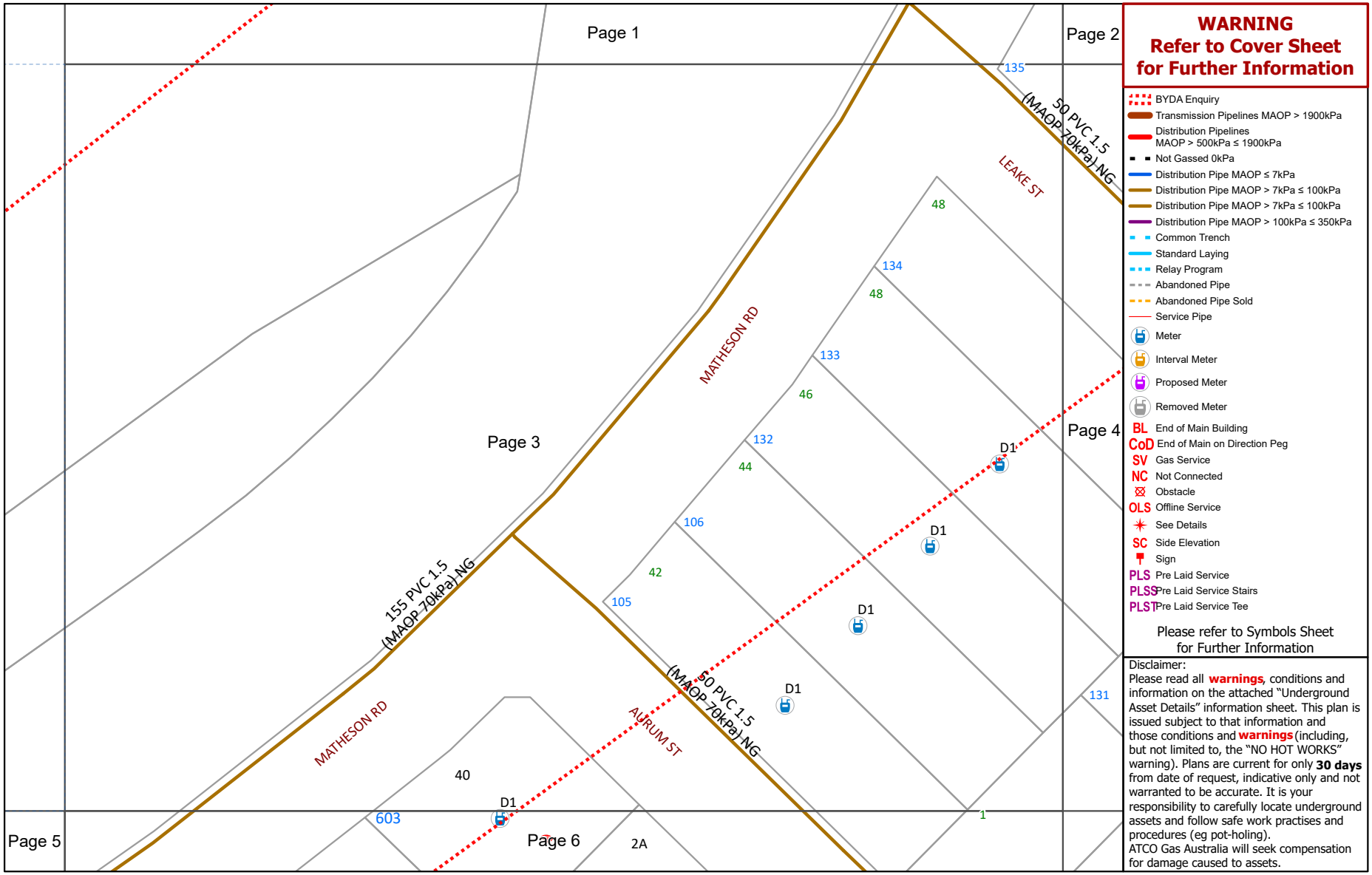
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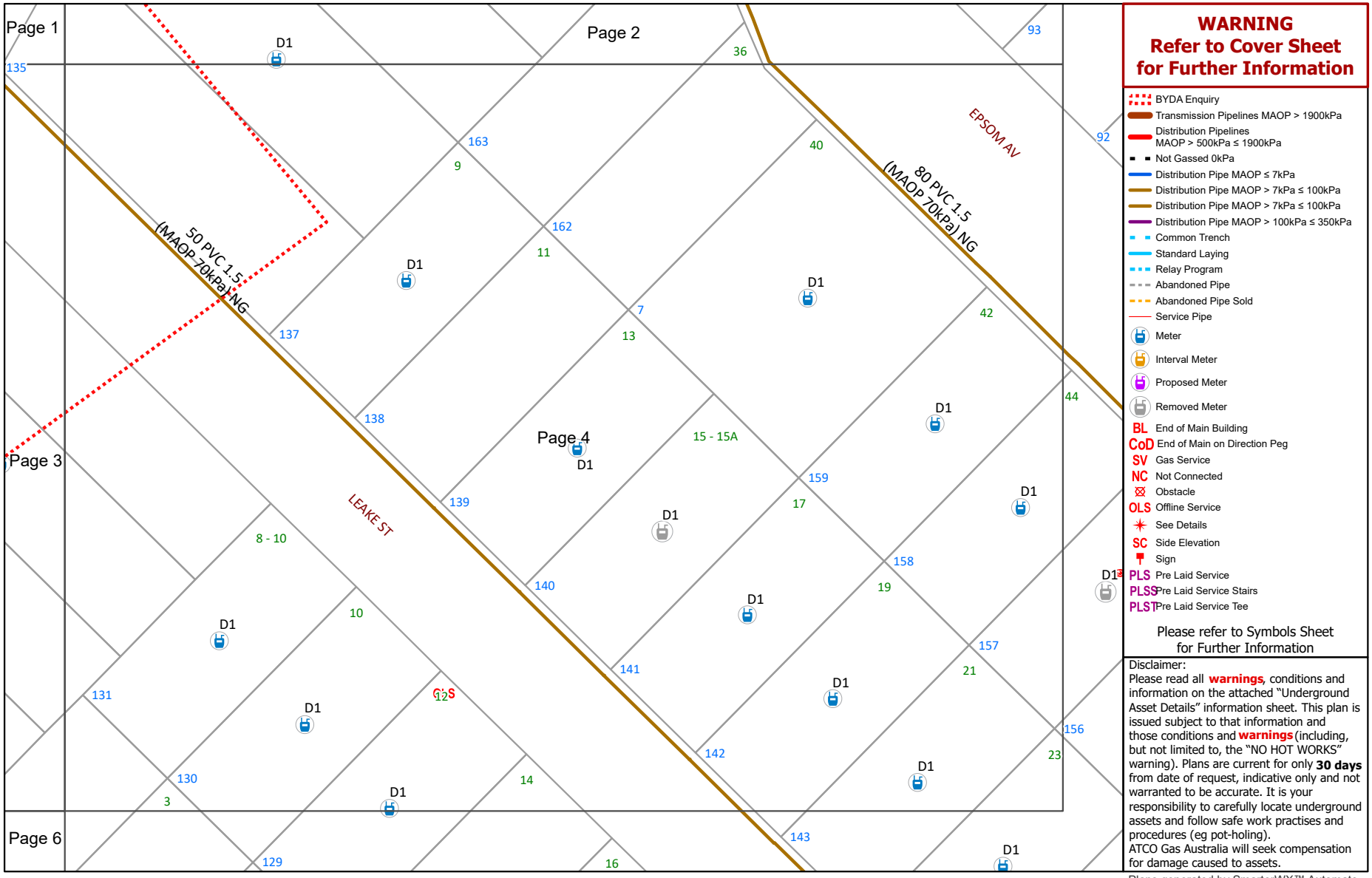
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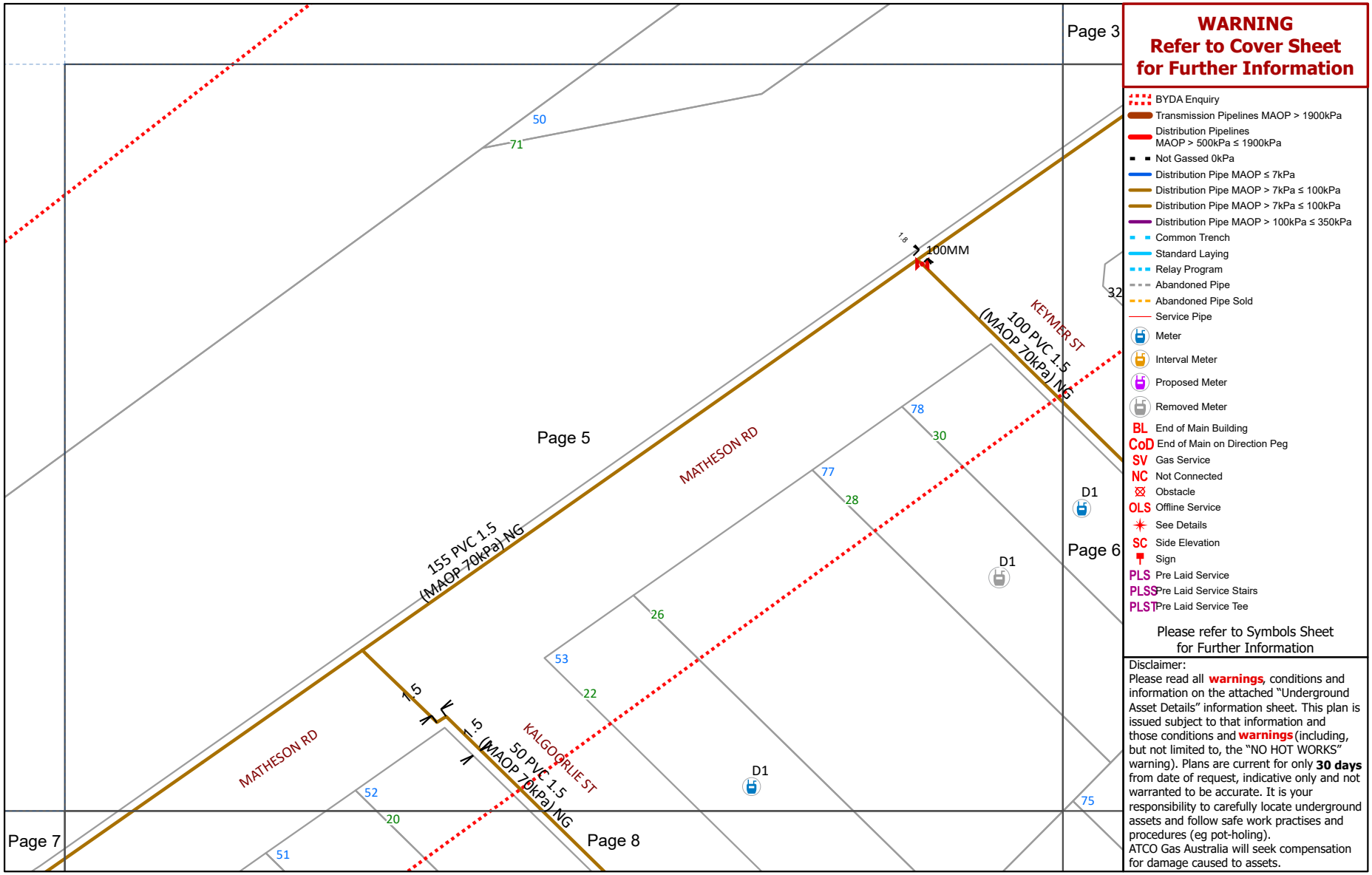
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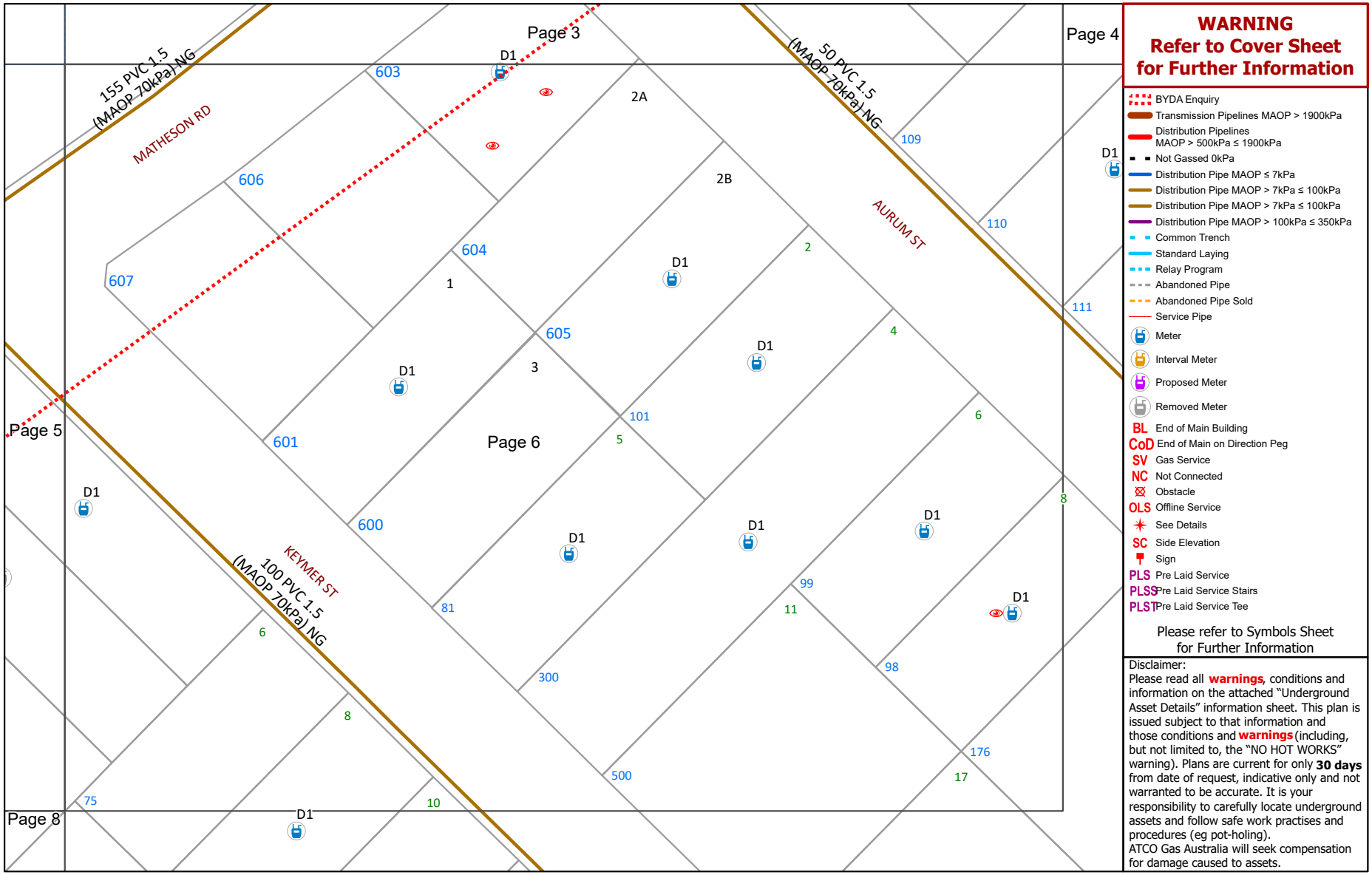
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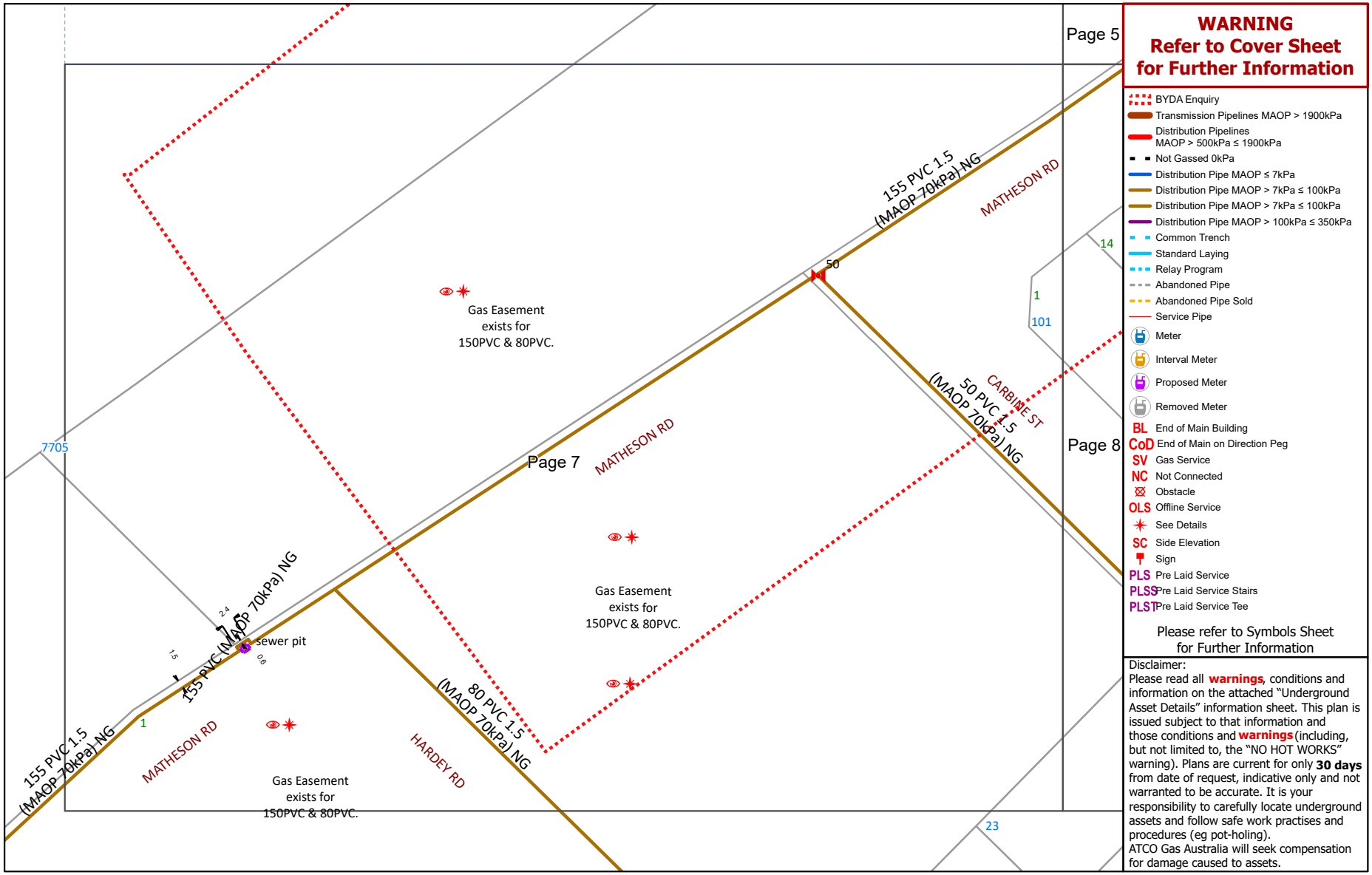
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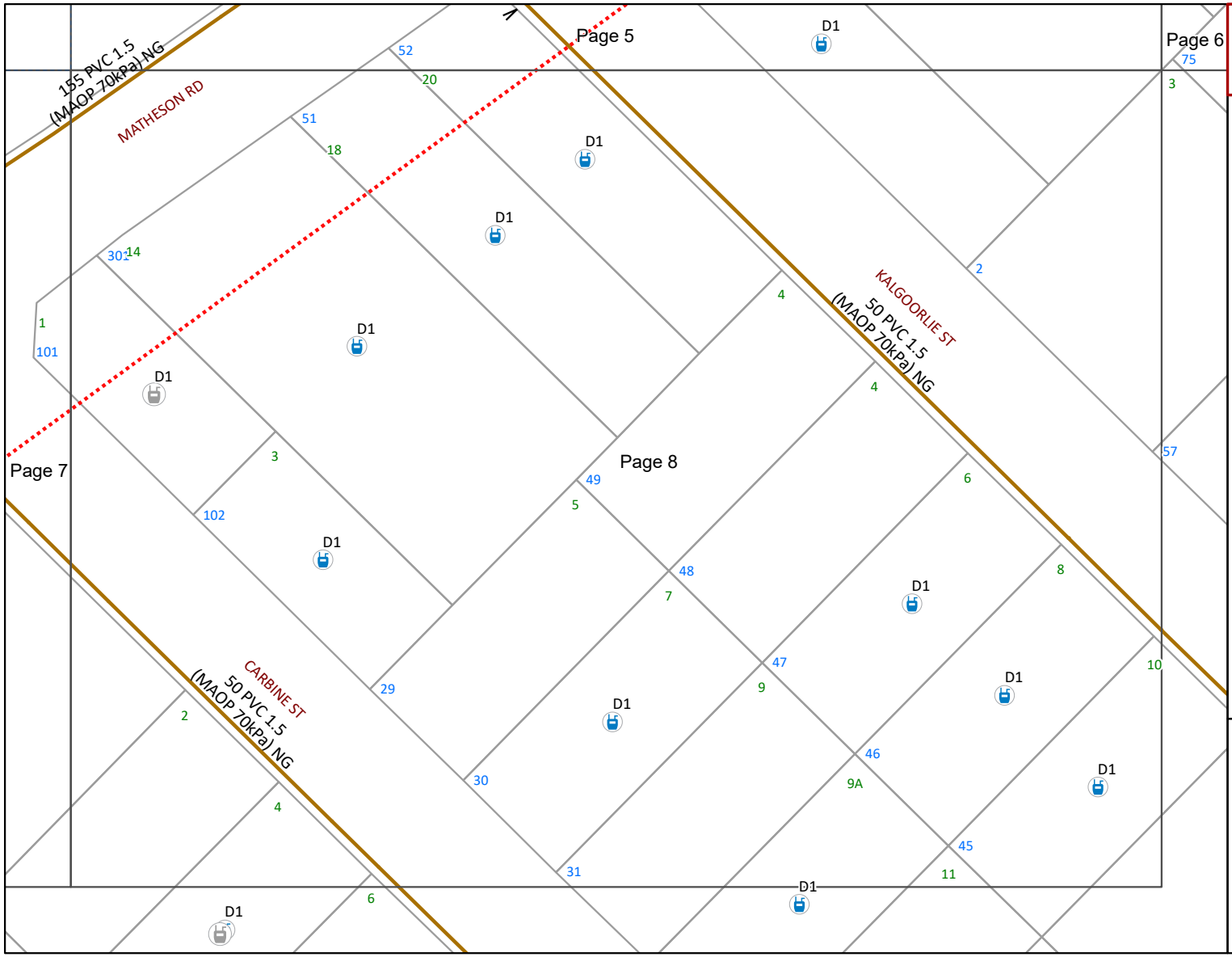
ATCO

©ATCO Gas Australia Pty LTD
ABN: 90 089 531 975

Date: 21/06/24 (valid for 30 days)

Seq # 240900641
Job # 36962248

BYDA Location: 30 Matheson Road Ascot 6104
Scale: 1:800




**WARNING**
**Refer to Cover Sheet for Further Information**

- BYDA Enquiry
- Transmission Pipelines MAOP > 1900kPa
- Distribution Pipelines MAOP > 500kPa ≤ 1900kPa
- Not Gassed 0kPa
- Distribution Pipe MAOP ≤ 7kPa
- Distribution Pipe MAOP > 7kPa ≤ 100kPa
- Distribution Pipe MAOP > 7kPa ≤ 100kPa
- Distribution Pipe MAOP > 100kPa ≤ 350kPa
- Common Trench
- Standard Laying
- Relay Program
- Abandoned Pipe
- Abandoned Pipe Sold
- Service Pipe
- Meter
- Interval Meter
- Proposed Meter
- Removed Meter
- BL End of Main Building
- CoD End of Main on Direction Peg
- SV Gas Service
- NC Not Connected
- Obstacle
- OLS Offline Service
- See Details
- SC Side Elevation
- Sign
- PLS Pre Laid Service
- PLSS Pre Laid Service Stairs
- PLST Pre Laid Service Tee

Please refer to Symbols Sheet for Further Information

Disclaimer:
Please read all **warnings**, conditions and information on the attached "Underground Asset Details" information sheet. This plan is issued subject to that information and those conditions and **warnings** (including, but not limited to, the "NO HOT WORKS" warning). Plans are current for only **30 days** from date of request, indicative only and not warranted to be accurate. It is your responsibility to carefully locate underground assets and follow safe work practises and procedures (eg pot-holing).
ATCO Gas Australia will seek compensation for damage caused to assets.

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Plans generated by SmarterWX™ Automate

# ATCO UNDERGROUND ASSET DETAILS ASSETS AFFECTED
GAS DIVISION

**ASSETS AFFECTED – see accompanying Plan**

**Job No:** **36962248**
**Sequence No:** **240900641**
Date of Issue: 21 June 2024
Phone: **1300 926 755**

**Justin Zielinski**
**ATCO Gas Australia**
54 Havelock Street
West Perth
WA 6005

**BYDA Utility Registration Name:** Private
**BYDA Location:** **30 Matheson Road Ascot WA 6104**

**ATTENTION:** This response to your enquiry has been interpreted from details in your requested DBYD picture location request only (not any street address you gave). It is your duty to ensure the accompanying plan/s match your geographical area of works.

**IF YOU SEE, HEAR, SMELL OR OTHERWISE DETECT GAS,**
**LEAVE THE IMMEDIATE AREA AND THEN CALL 13 13 52**

Our records indicate that ATCO gas infrastructure ***IS PRESENT*** in the vicinity of and/or surrounding area of the above enquiry. This response relates only to ATCO assets. Your Duty of Care requires that personnel **Must** at all times comply with, and have on site, this information sheet and the accompanying plan(s). All plans are subject to this information sheet. You should refer to the ATCO Self-service Portal (Link Here) or if unsure, contact ATCO on **1300 926 755** during business hours.

All information provided is to be used as a guide only (see Disclaimer item **5**). It does not absolve you or third parties from your Duty of Care obligations, including to take additional precautions where work has the potential to impact on gas assets, public safety or the environment, or from your duties at law (including Reg 3.21 of the Occupational Safety and Health Regulations 1996).

## WARNINGS

- No works of any type within 15 metres of any **CRITICAL GAS ASSET** infrastructure without prior approval from ATCO
- **NO HOT WORK** within 15 metres of any gas infrastructure except in compliance with applicable laws & *Australian Standard 1674.* **Do Not** let heat sources or hot works impact on any gas infrastructure and take into consideration that the ground or adjacent structures may also be capable of transmitting heat so as to circumvent protection afforded by a heat shield or barrier
- **DANGER** - Gas can cause asphyxiation and is flammable. Keep all ignition sources well away (e.g., flames, matches/ lighters, sparks, electrical devices, vehicles or engines, mobile phones, cameras)
- Gas pipes **Must Not** be unsupported or left without adequate cover or protection without prior approval from ATCO
- Damage to the pipe coating or pipe itself can be very dangerous if not given immediate attention. Report any damage to ATCO immediately on **13 13 52**. **Do Not** attempt to repair any damaged gas infrastructure
- No alteration or removal of live or abandoned gas infrastructure without prior written approval from ATCO
- Any abandoned or proposed gas infrastructure indicated on the gas plans **Must** be treated as live
- Never assume the location or depth of any gas infrastructure. Pipes may not follow straight lines or maintain a constant depth. Always check carefully (e.g., by careful hand digging of potholes)
- Unauthorised repairs or tampering with gas infrastructure may result in prosecution under the *Energy Operators (Powers) Act 1979*. ATCO Gas Australia reserves all rights to recover compensation for loss or damage to its gas infrastructure or other property including for indirect or consequential losses.

**PLANS:**

Plans provided are current for **30 days only** from date of request. You must use current plans at all times.

Plans do not show all gas service lines (which connect gas mains to individual meter positions). See condition **3.c)** below.

If plan shows **additional detail** symbols ( * ) or ( ) in the area of proposed works it is **your duty** to obtain that further detail from the number below.

Plans (including the location of pipes, services, infrastructure and boundaries) are **approximate only**. You **Must** use safe and proper procedures – including **potholing** (see condition **4** below).

Plans are not a guide as to gas availability for connection purposes.

**To call ATCO:** **Weekdays from 7.30am to 3.30pm, call – 1300 926 755 After hours, weekends and emergencies, call – 13 13 52**

**CONDITIONS FOR WORKS IN THE VICINITY OF ATCO ASSETS**

**1. Compliance with Warnings**

You **Must** comply with the Warnings contained in this information sheet and the accompanying plan(s).

**2. Compliance with 'Working around Gas Infrastructure' Document (Link Here) applicable laws and duty of care**

All work (including but not limited to using Excavator's Augers, Directional, drilling machines, 'Ditch Witch' type trenching machine, Loader, Dozer, Skid Steer (Bob Cat)) **Must** comply with all applicable requirements in the 'Working around Gas Infrastructure' Document and with all applicable laws and Australian Standards. All due care must be exercised to locate any gas infrastructure in the vicinity and when conducting any works near them.

**3. All Gas Infrastructure**

All work that may have any impact upon any gas infrastructure (see **3.a)**, **b)** and **c)** below for examples) should be carefully planned with notification to ATCO well in advance of commencement. Contact ATCO on **1300 926 755** or visit Atco's online self-service portal (Link Here). Amongst other things, this includes excavation of or near gas pipelines, boring/drilling, crossings of pipelines (including by other underground infrastructure e.g. drains, power cables, etc.), road works and structural installations. In addition:

a) Critical Asset

No works of any type are permitted within 15 meters of these pipelines without prior approval from ATCO. For approvals contact ATCO on **1300 926 755** or visit the Atco online Self-service portal (Link Here)

You **Must** ascertain the location of any Critical Asset, in relation to your proposed work by:

- Locating a straight line between two marker danger signs, and
- Assessing the distance from this line to your proposed work area.

ATCO may require stand-by supervision during your works and will advise of attendance requirements.

b) Non Critical Assets

These pipelines are installed in most streets throughout the Perth metro area and several country centers. Main valves, regulator sets, and test points also exist at intervals along these pipelines. Where work may impact upon these pipelines or assets then ATCO **Must** be contacted as per item **3** above.

c) Gas Services and Meters

If a gas meter is installed on a property, an underground gas service pipe will run from the meter position to the gas main in the street. Plans do not show all gas service lines (with the exception of Critical Assets), but their presence must be anticipated. Most gas meter boxes installed since 1996 will include a sticker giving approximate guidelines for the gas service line location. All due care must be exercised to locate any gas services in the vicinity and when conducting any works near them.

**4. Compliance with Safe Work Practices**

It is your responsibility to have and comply with adequate safe work practices and procedures. Without limiting your obligations:

**PLAN** The complete & current Before you Dig Australia documentation and plans must always be on site & referred to for the duration of work. Refer to regulation 3.21 of the Occupational Safety and Health Regulations 1996 and the Utility Providers "Code of Practice" for further useful information.

**PREPARE** Prepare by reviewing the Before you Dig Australia Documentation and contacting ATCO if you need assistance. Look for onsite ATCO asset and infrastructure clues such as pit lids, marker posts and meters. No works of any type are permitted within 15 meters of a **CRITICAL ASSET** without prior approval from ATCO. For approvals contact ATCO on **1300 926 755** or visit the Atco website Self Service portal (Link Here) and allow suitable

processing time. Atco recommends engaging a BYDA Certified Locator which includes undertaking electronic location prior to potholing.

**POTHOLE** Using current Before you Dig Australia plans, all gas pipes should be located (including any deviation in the direction of a gas pipe) by exposing them by careful digging using a HAND SHOVEL. Where the proposed work is parallel to a gas pipeline, pothole every 10 meters along the entire route. Damage to the pipe coating or to the pipe itself can create a very dangerous situation if not given immediate attention. If damage does occur, it **Must** be reported to ATCO immediately on Ph. **13 13 52**.

**PROTECT** Supervise and monitor all excavations near gas infrastructure using a dedicated spotter. Where any gas infrastructure is required to be exposed, adequate protection of the gas infrastructure is required to prevent potential damage. Also implement appropriate controls when conducting 'hot work' (in accordance with AS 1674) in the vicinity of the ATCO infrastructure such as; isolation; separation distance; the placement of an effective non-combustible barrier of sufficient size and thermal resistance for the intensity, type and duration of heat exposure; gas monitoring; monitoring the environment surrounding the ATCO infrastructure to ensure it is not being impacted by the work, and other controls as necessary.

**PROCEED** You should **only proceed** with your excavation work after you have planned, prepared, potholed (unless prohibited) and have protective measures in place. All locations markers/pegs are to be removed on completion of works. If you are unsure, **DO NOT** Proceed. Call ATCO on **1300 926 755**

**5. Disclaimer and Further Terms**

a) Nothing in this document, any accompanying plan or the 'Additional Information for Working around Gas Infrastructure' (AGA-O&M-PR24) (together called "**Documents**") purports to exclude or modify any term, condition or warranty to the extent that by law it cannot lawfully be excluded or modified by agreement or notice, including but not limited to those contained in Schedule 2 of the *Competition and Consumer Act* 2010 (Cth) and corresponding provisions of any state legislation.

b) If any of ATCO, or their respective related entities, officers, employees, agents, contractors or advisers (together called "**Associates**") is liable for a breach of a term, condition or warranty described in paragraph **5.a)** above, its liability is, to the fullest extent permitted by law, limited to any one or more of the
following as it determines in its absolute discretion:

i) in relation to goods supplied by them, replacing or repairing the goods, supplying an equivalent item, paying the cost of replacing or repairing the goods or paying the cost of acquiring or hiring an equivalent item; and

ii) in relation to services supplied by them, the re-supply of the services or the payment of the cost of having the services re-supplied.

c) Subject to paragraphs **5.a)** and **b)**, but otherwise despite any other provision in the Documents, no representation or warranty is made or given (whether expressly or by implication) by any of ATCO or their respective Associates in respect of any information contained or referred to in any of the Documents or in any other communication from ATCO concerning any of the Documents or the subject matter of any of the
Documents ("Information"). In particular, but without limiting the generality of the foregoing limitation, none of ATCO or their respective Associates makes any warranty or representation as to the truth, accuracy, completeness, reliability, currency, timeliness, quality or fitness for any purpose of or the standard of care taken in the preparation of any Document or Information (including, but not limited to, the accuracy of the scale of, or the location of anything or symbol shown on, any plan or diagram).

d) Subject to paragraphs **5.a)** and **b)**, to the maximum extent permitted by law, none of ATCO or their respective Associates is liable to any person or other body ("**Recipient**") who receives or otherwise obtains access to all or any part or parts of the Documents or Information, in any way (including, but not limited to, liability for negligence, breach of statutory duty or lack of care) in respect of any cost, expense, damages, loss or liability, including, but not limited to:

i) any financial or economic loss, cost, expense or damage, including but not limited to loss of production, loss of profit, loss of revenue, loss of use, loss of contract, loss of goodwill or loss of business opportunity;

ii) any new or increased costs or expenses, including but not limited to financing or operating costs;

iii) any failure to achieve any actual or anticipated saving in respect of any cost or expense;

iv) any cost, expense, damage or loss resulting from any liability of the Recipient to any other person or body howsoever and whensoever arising, suffered or incurred by the Recipient in relation to, or in connection with, the disclosure to them of, or use of, or reliance on, all or any

part or parts of the Documents or Information.

e) By using any Document or Information, each Recipient is taken to represent and warrant to ATCO that the Recipient will comply with the conditions and other terms referred to in the Documents or Information, including but not limited to conditions that:

i) the Recipient **Must** comply with the conditions in numbered paragraphs **1** to **4** above and this paragraph **5**;

ii) as between ATCO and each Recipient, ATCO owns the Information and all rights and title in and to the Information are to remain vested in ATCO;

iii) no Recipient has any right, title or interest in the Information or, except as expressly provided for in the Documents, any license or right to copy, alter, modify, publish or otherwise use or deal with the Information without prior written approval from ATCO;

iv) ATCO makes no representation and gives no warranty as to its right to disclose any Information;

v) the Recipient relies on any Information entirely at its own risk and expense;

vi) the Recipient **Must** undertake its own independent due diligence and investigations in relation to the Information;

vii) none of ATCO or their respective Associates owes the Recipient any duty of care in respect of the Information; and

viii) none of ATCO or their respective Associates is under any obligation to correct, update or revise any Documents or Information.

**GAS MAIN AND SERVICE IDENTIFICATION**

**LEGEND**

1. Critical Asset (See **WARNINGS** page 1)
2. Pipe Diameter (millimetres)
3. Pipe Material

   CI = Cast Iron PE = Polyethylene
   GI = Galvanised Iron PVC = PVC
   ST = Steel
4. Alignment (in metres from property line)
5. Pressure in main (MP 70 kPa = Medium Pressure and MAOP (Maximum Allowable Operating Pressure)
6. Off-line Service – service may not be straight line to meter. (**WARNING – OLS may not always be shown on plan**. See item **Error: Reference source not found** above)
7. Service Valve in the vicinity
   (**NOTE:** Service Valve may be **"BURIED"**)
8. Pre-laid Service laid in Common Trench
9. Main Status: (See **WARNINGS** page 1)

   9a. AB = Abandoned Mains

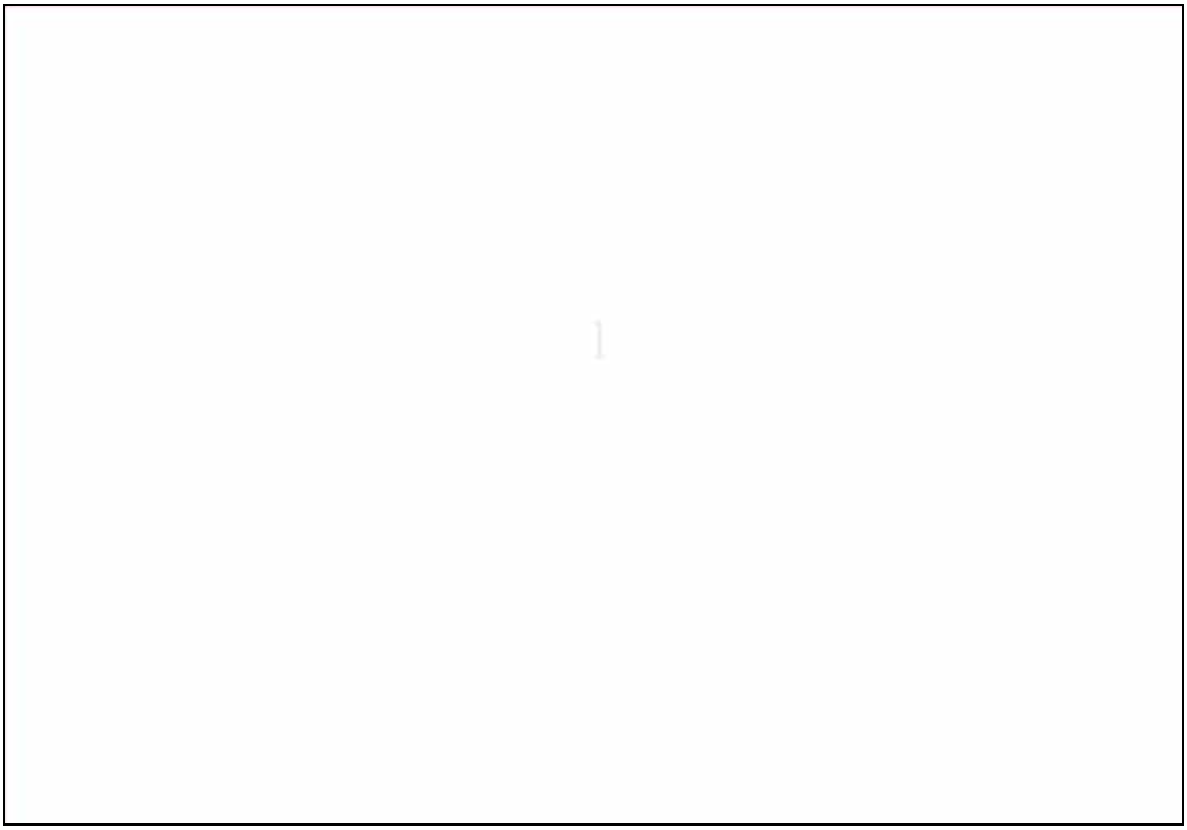
   9b. PROP = Proposed Mains
10. Customer Connection: Does not indicate actual location of Meter Position

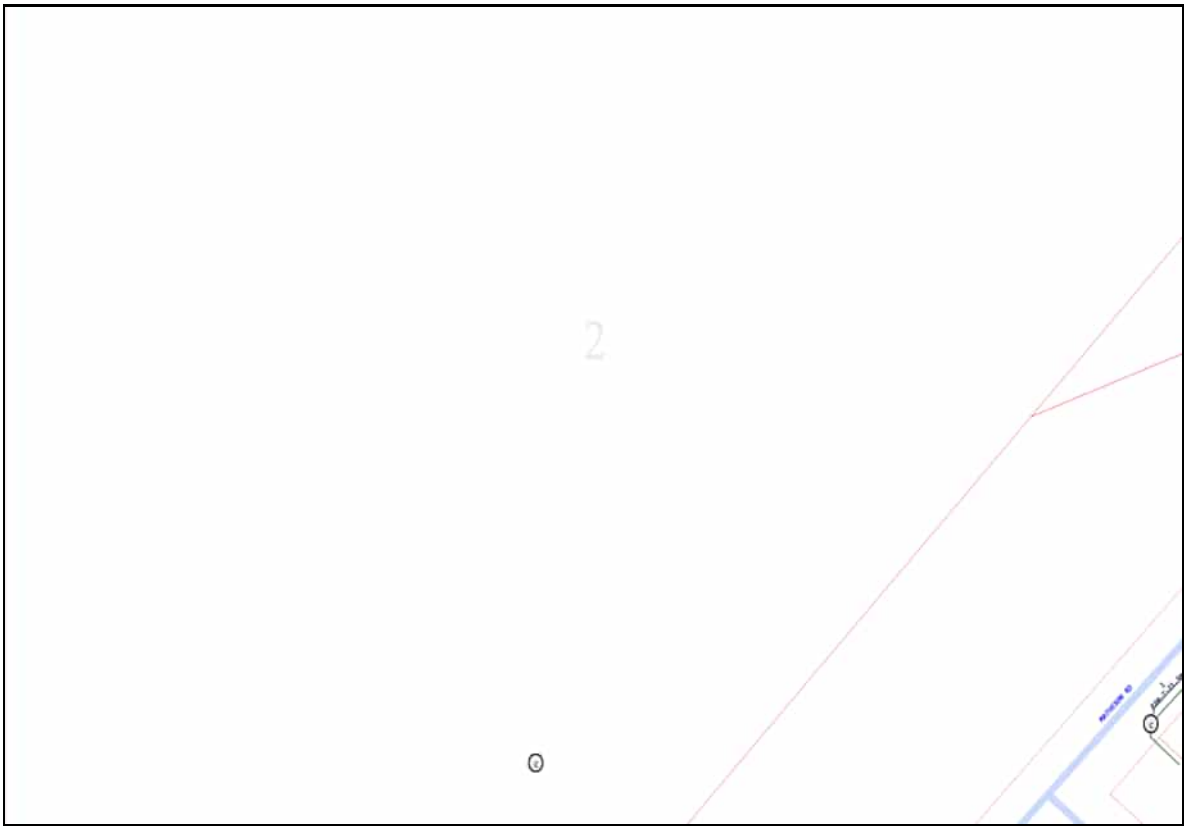
    D2 (D = Domestic & 2 = Number of Meters)

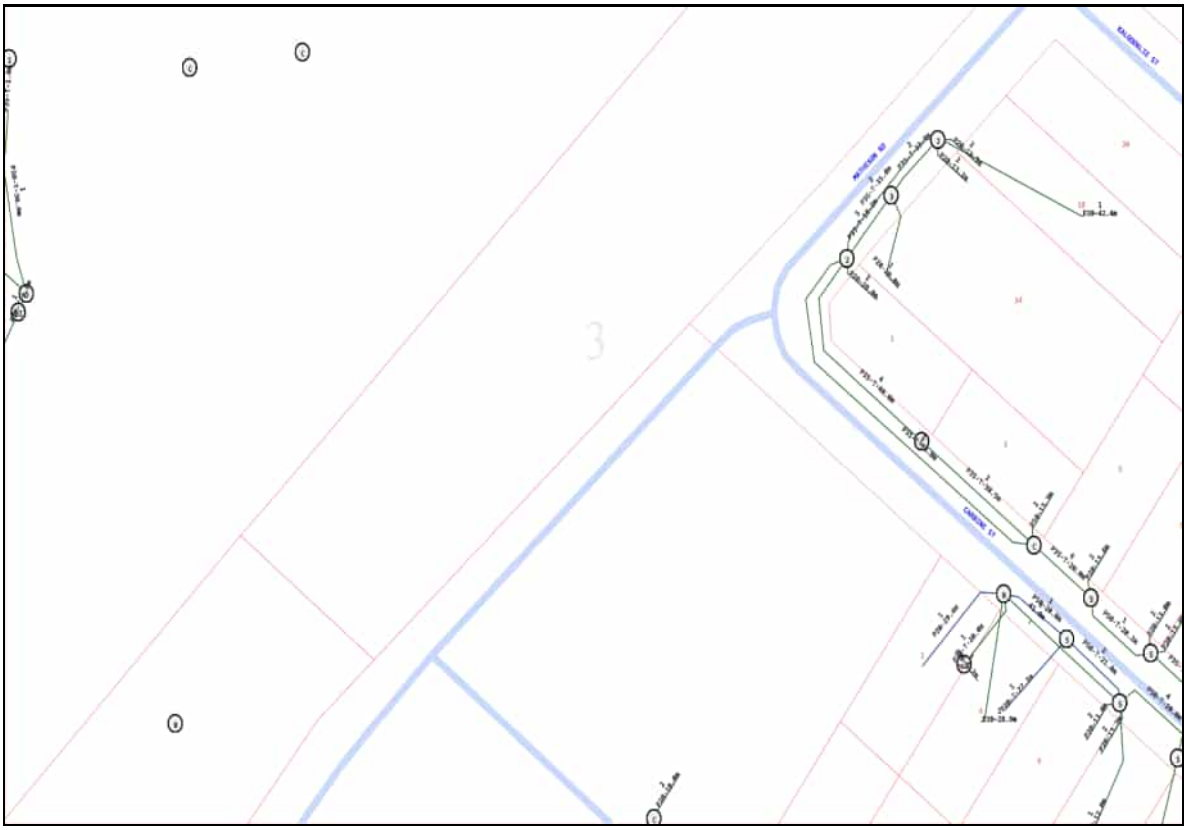
    C1 (C = Commercial & 1 = Number of Meters)
11. **Additional detail available and Must be obtained if within area of proposed works – see page 2 above.**
12. Depth of Cover (DOC) in metres.

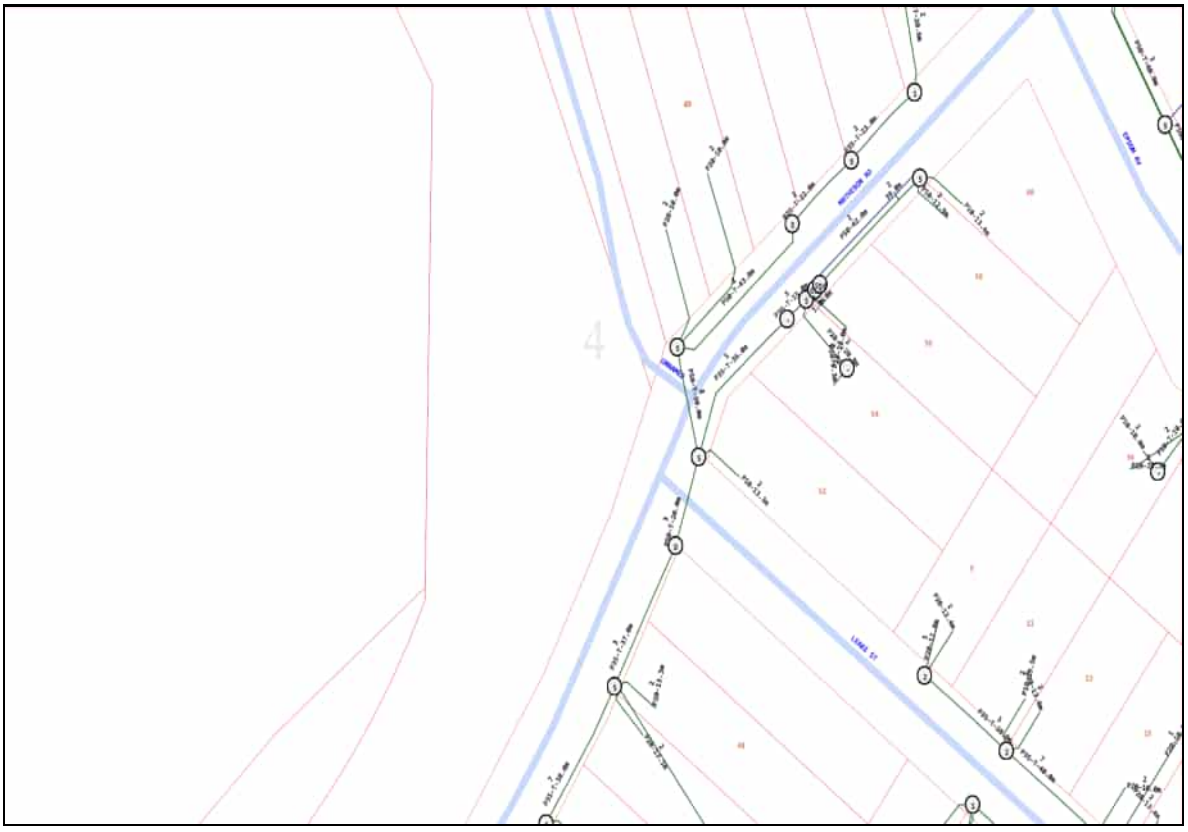


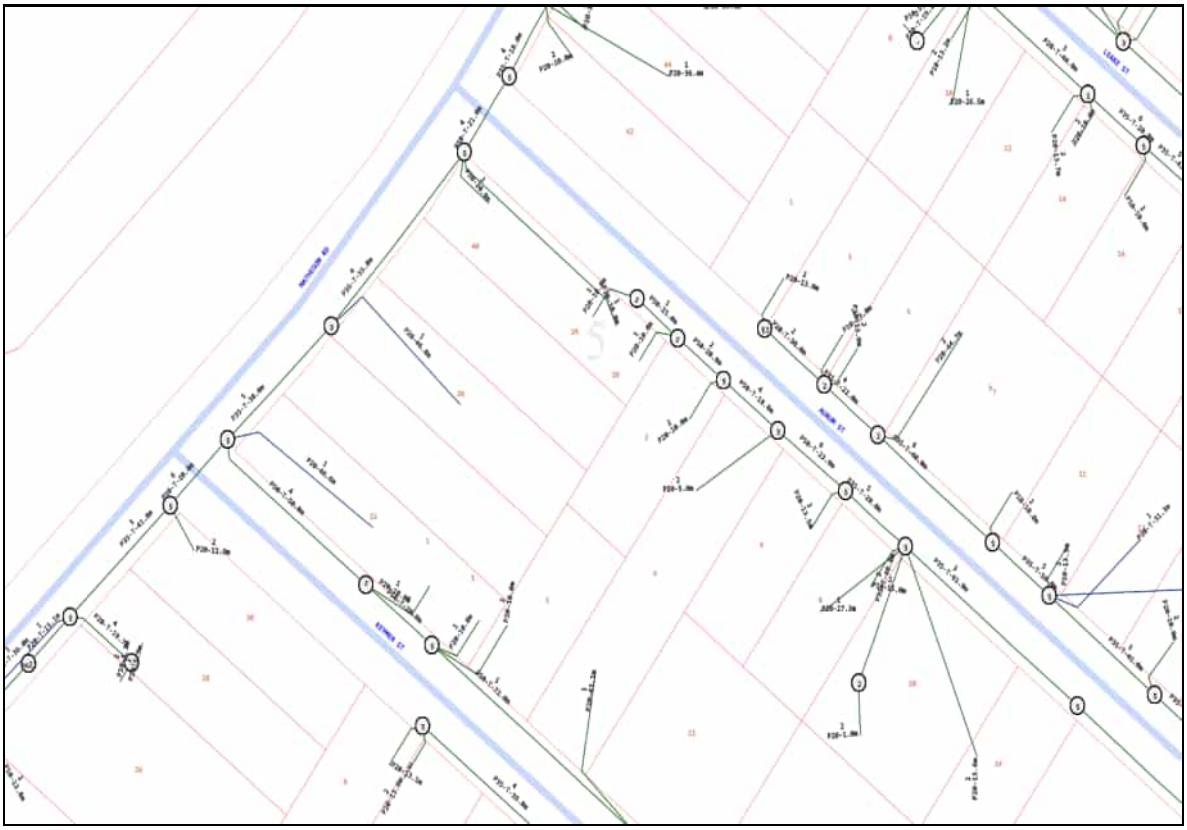

IF UNSURE, PLEASE CONTACT ATCO ON **1300 926 755**

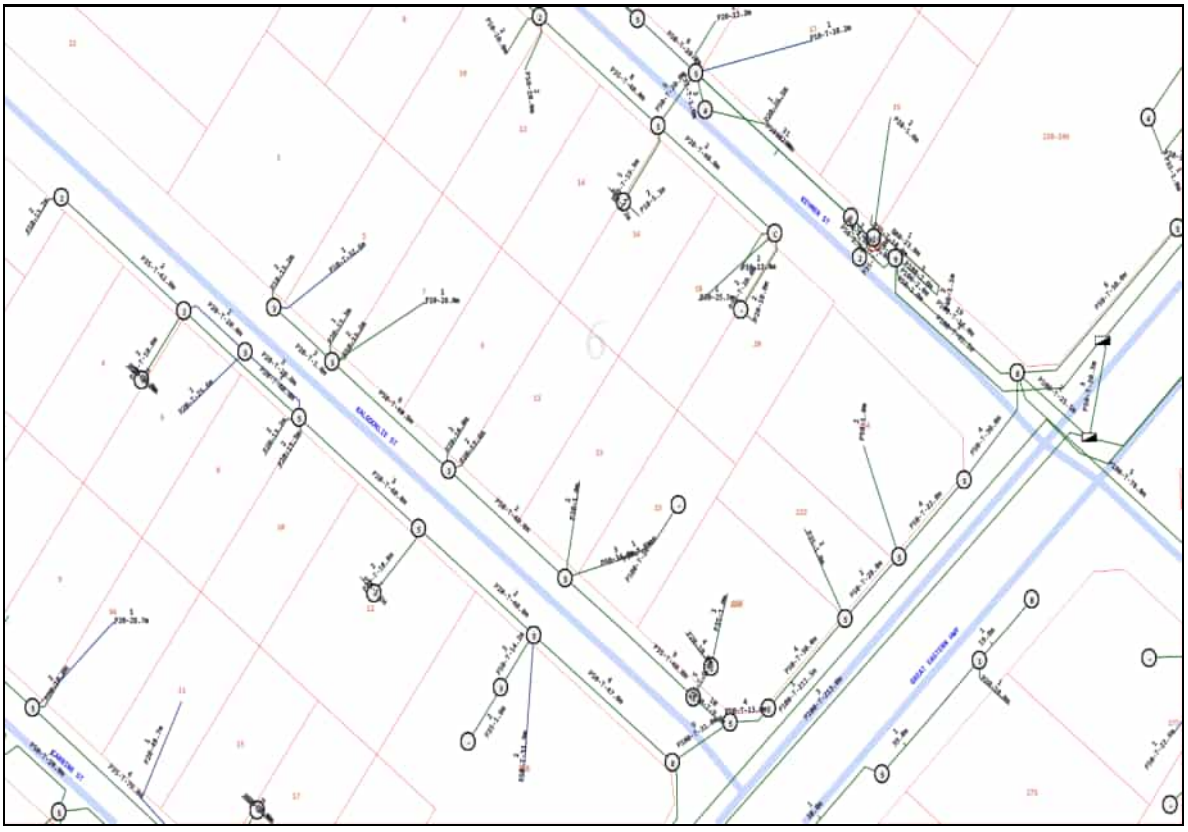






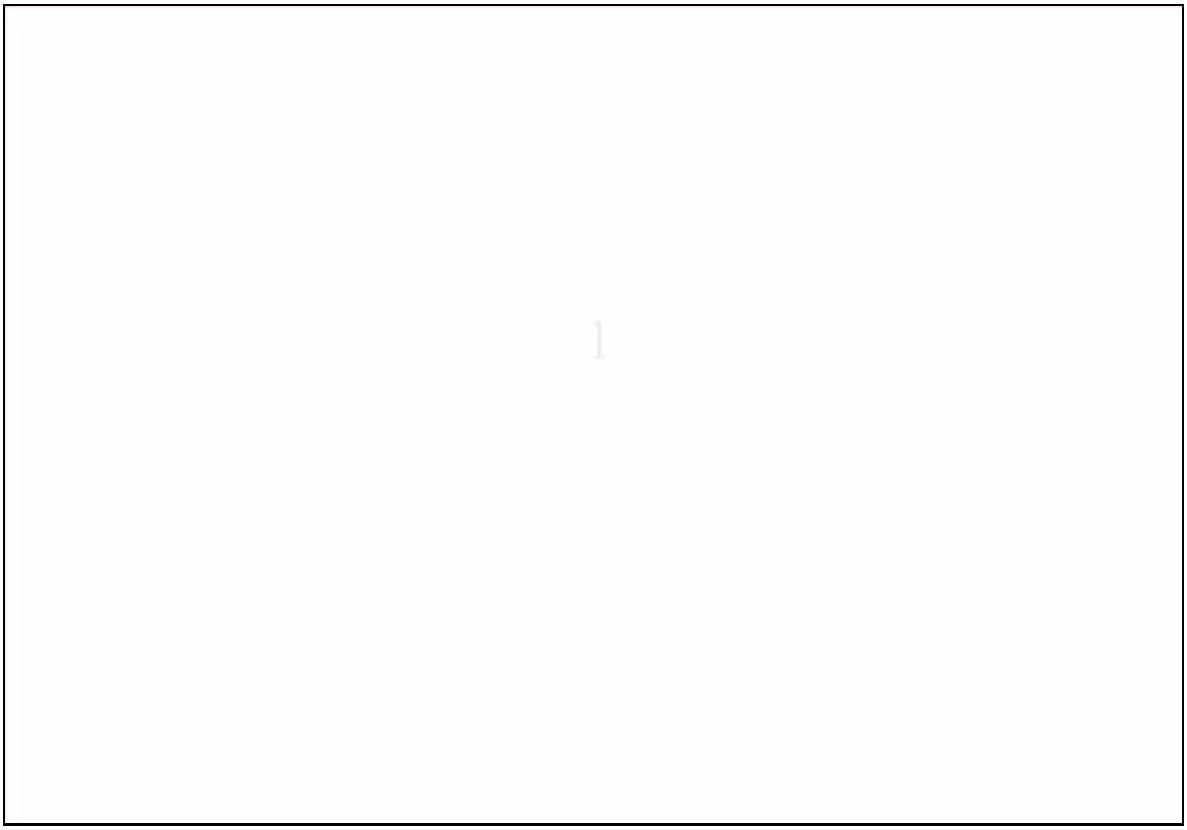


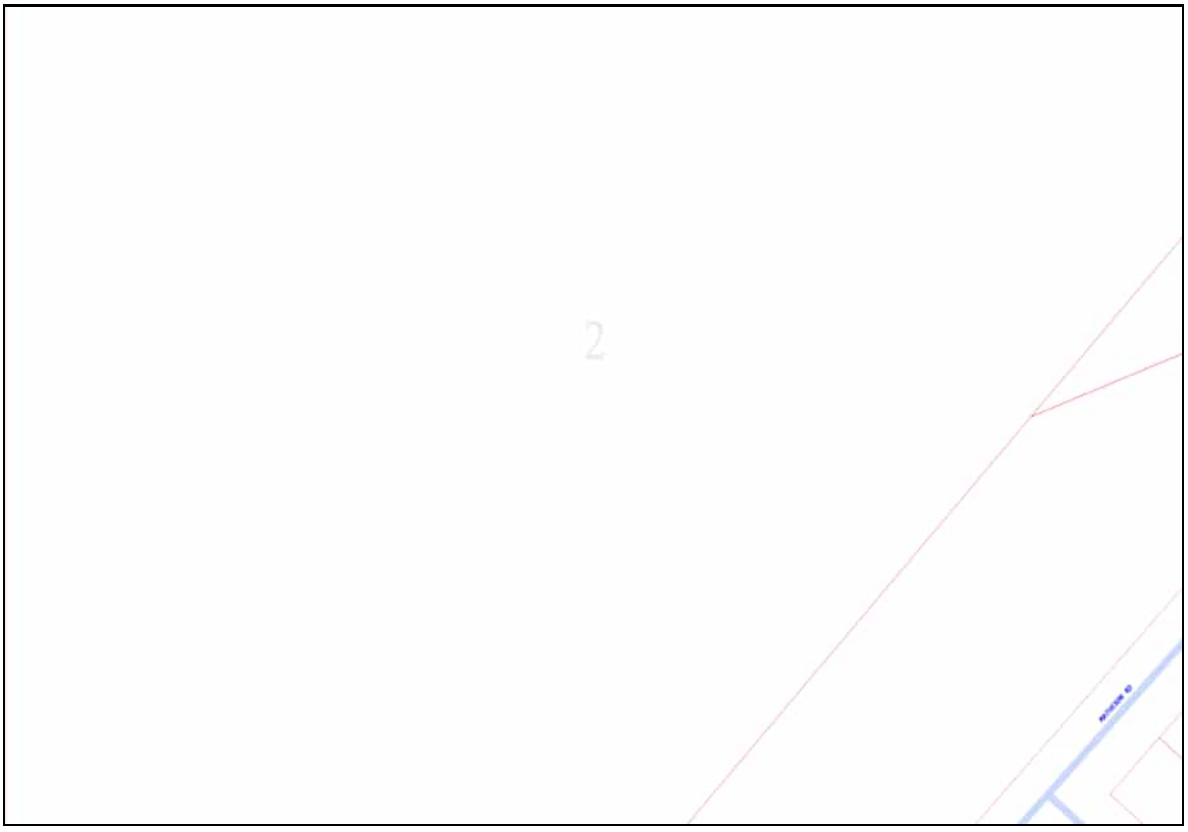


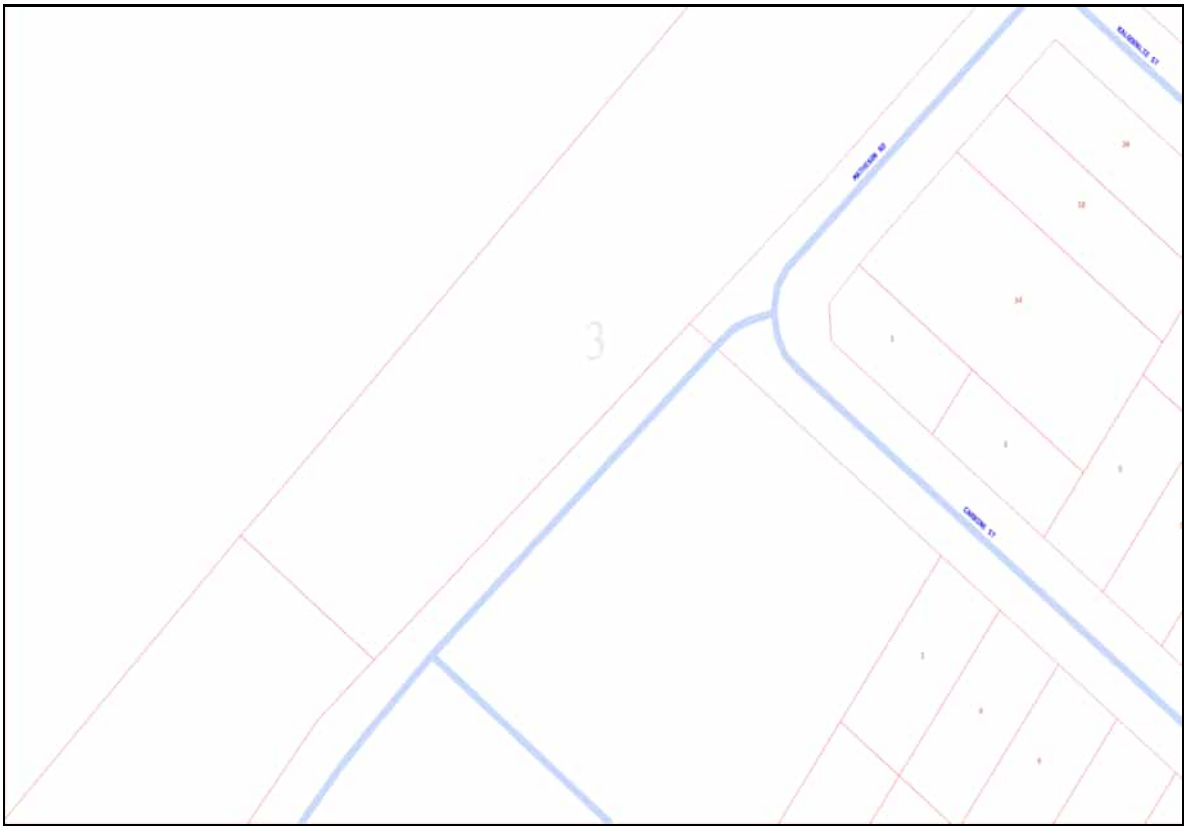


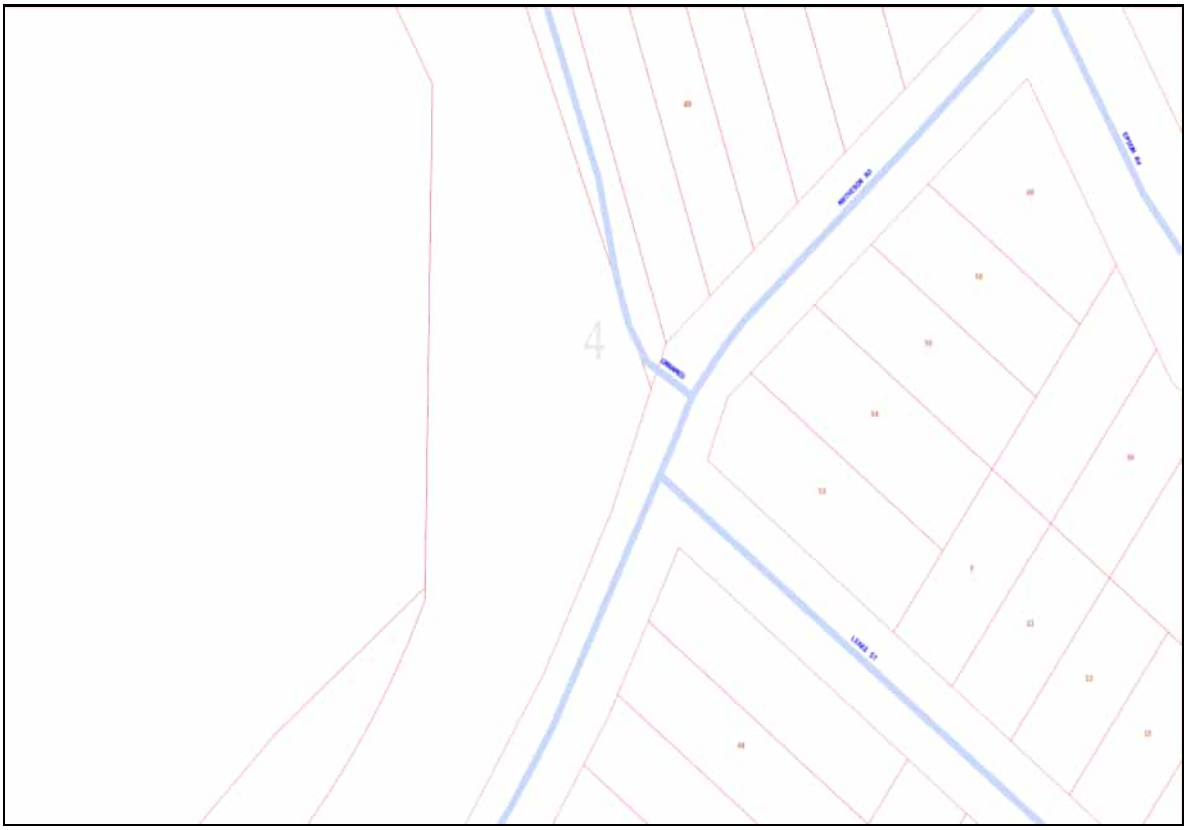
## Emergency Contacts

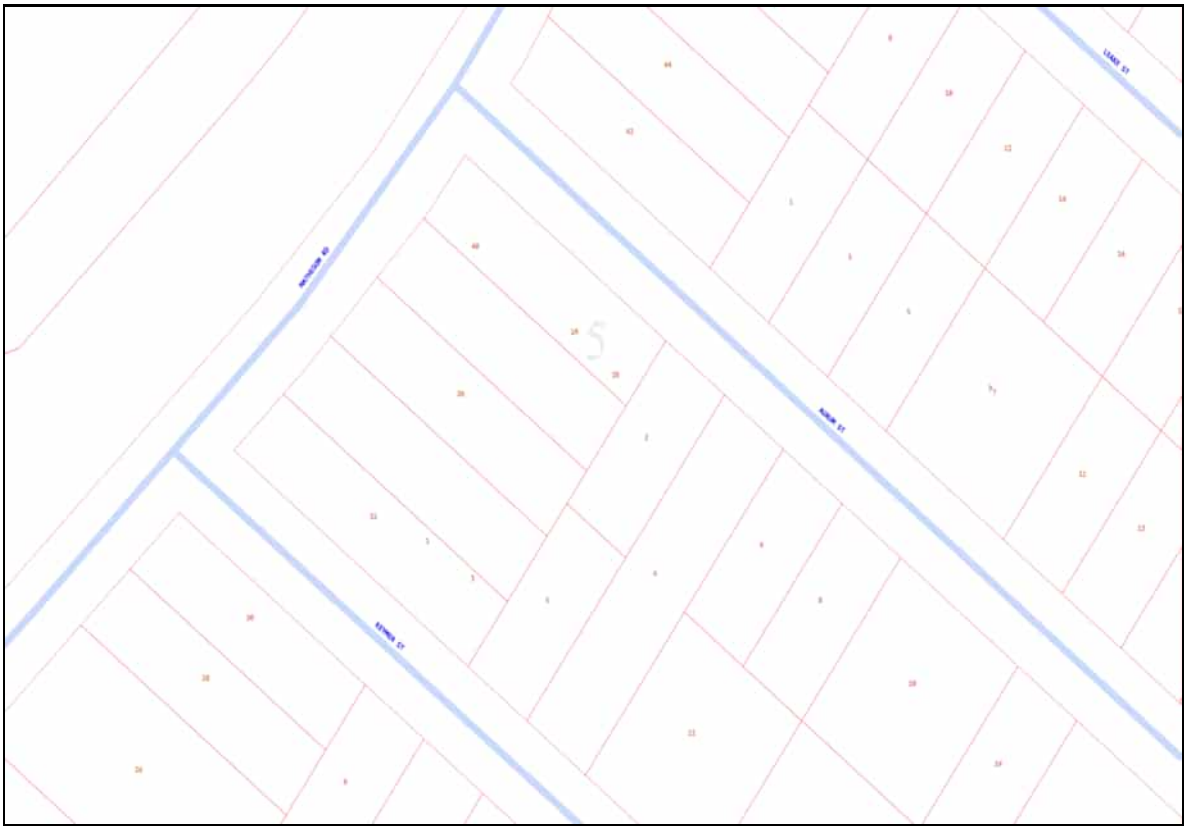
You must immediately report any damage to the **nbn™** network that you are/become aware of. Notification may be by telephone - 1800 626 329.

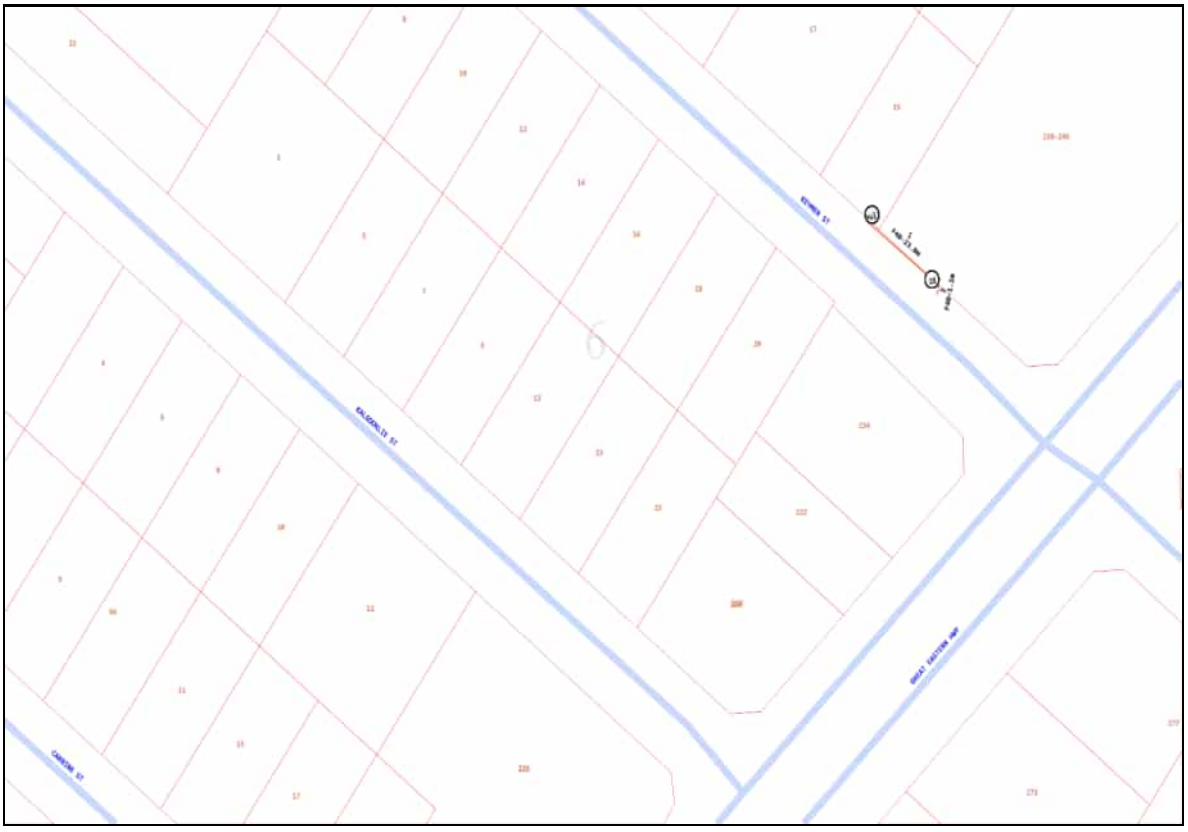








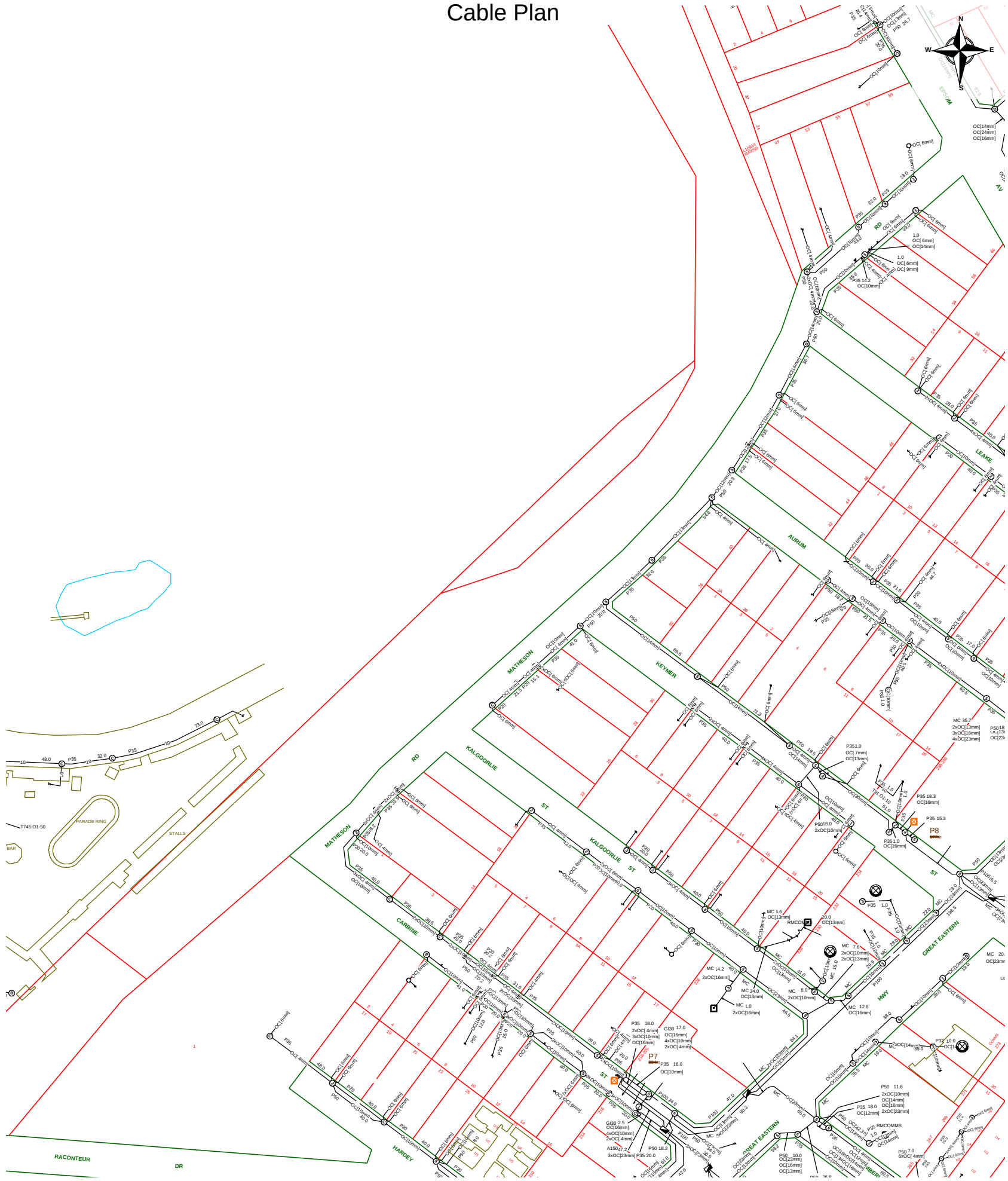




## Emergency Contacts

You must immediately report any damage to the **nbn™** network that you are/become aware of. Notification may be by telephone - 1800 626 329.

# Cable Plan




| | |
|---|---|
| Report Damage: https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment<br>Ph - 13 22 03<br>Email - Telstra.Plans@team.telstra.com<br>Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries | Sequence Number: 240900639 |
| TELSTRA LIMITED A.C.N. 086 174 781 | CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance. |
| Generated On 21/06/2024 19:09:59 | |

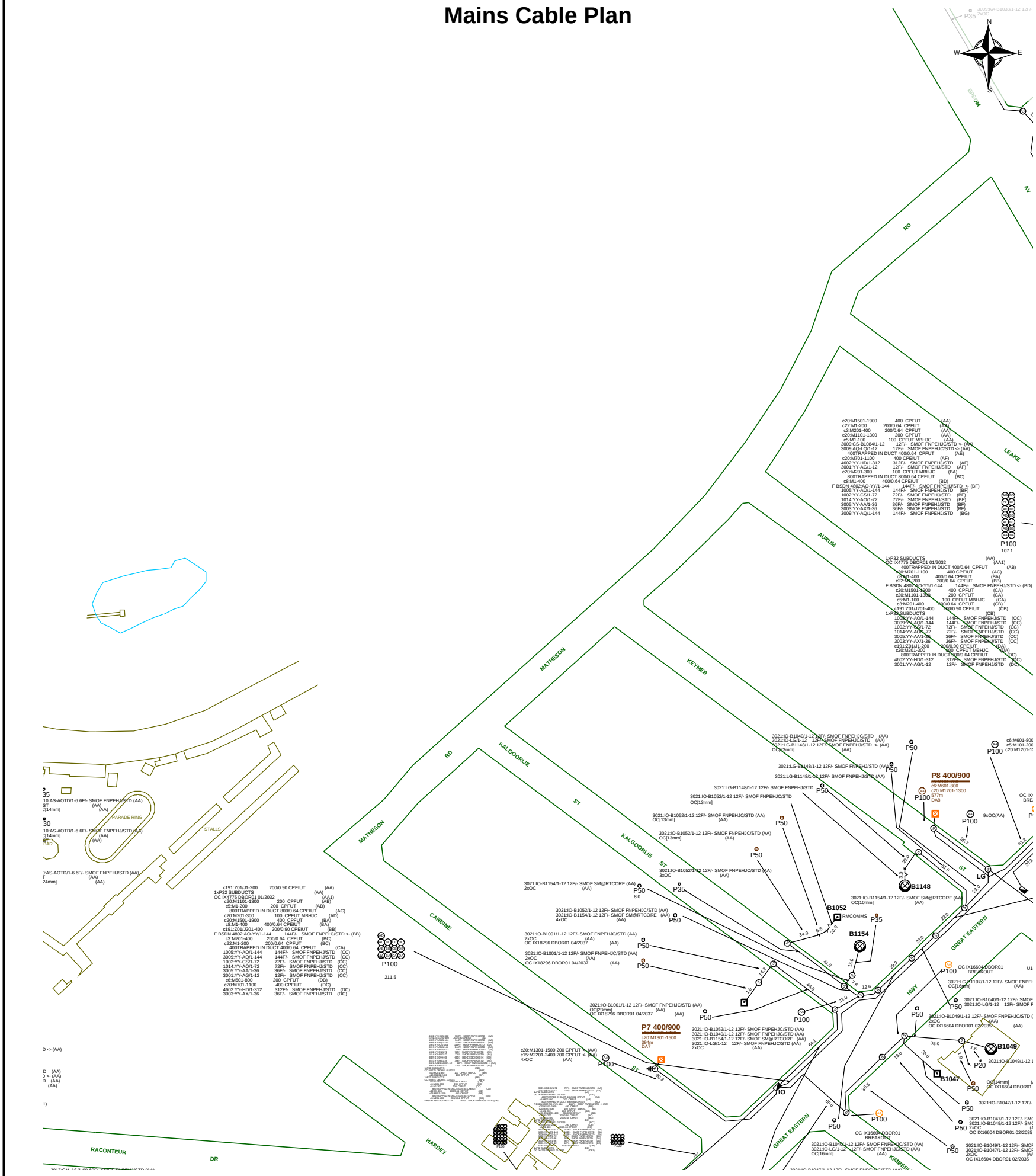
The above plan must be viewed in conjunction with the Mains Cable Plan on the following page

WARNING
Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information.
As such,Telstra supplied location information is indicative only.Spatial accuracy is not applicable to Quality Level D.
Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it.
Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy.
Further on site investigation is required to validate the exact location of Telstra plant prior to commencing construction work.
A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works.

See the Steps- Telstra Duty of Care that was provided in the email response.

**Page 1 of 2**

# Mains Cable Plan




| | |
|---|---|
| Report Damage: https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment<br>Ph - 13 22 03<br>Email - Telstra.Plans@team.telstra.com<br>Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries | Sequence Number: 240900639 |
| TELSTRA LIMITED A.C.N. 086 174 781 | CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance. |
| Generated On 21/06/2024 19:10:01 | |

WARNING
Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information.
As such,Telstra supplied location information is indicative only.Spatial accuracy is not applicable to Quality Level D.
Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it.
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A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works.

See the Steps- Telstra Duty of Care that was provided in the email response.




WATER CORPORATION

Scale: 1:3075
Job No.: 36962248
Sequence No.: 240900640
Print Date: 21 Jun 2024

N

Sewer

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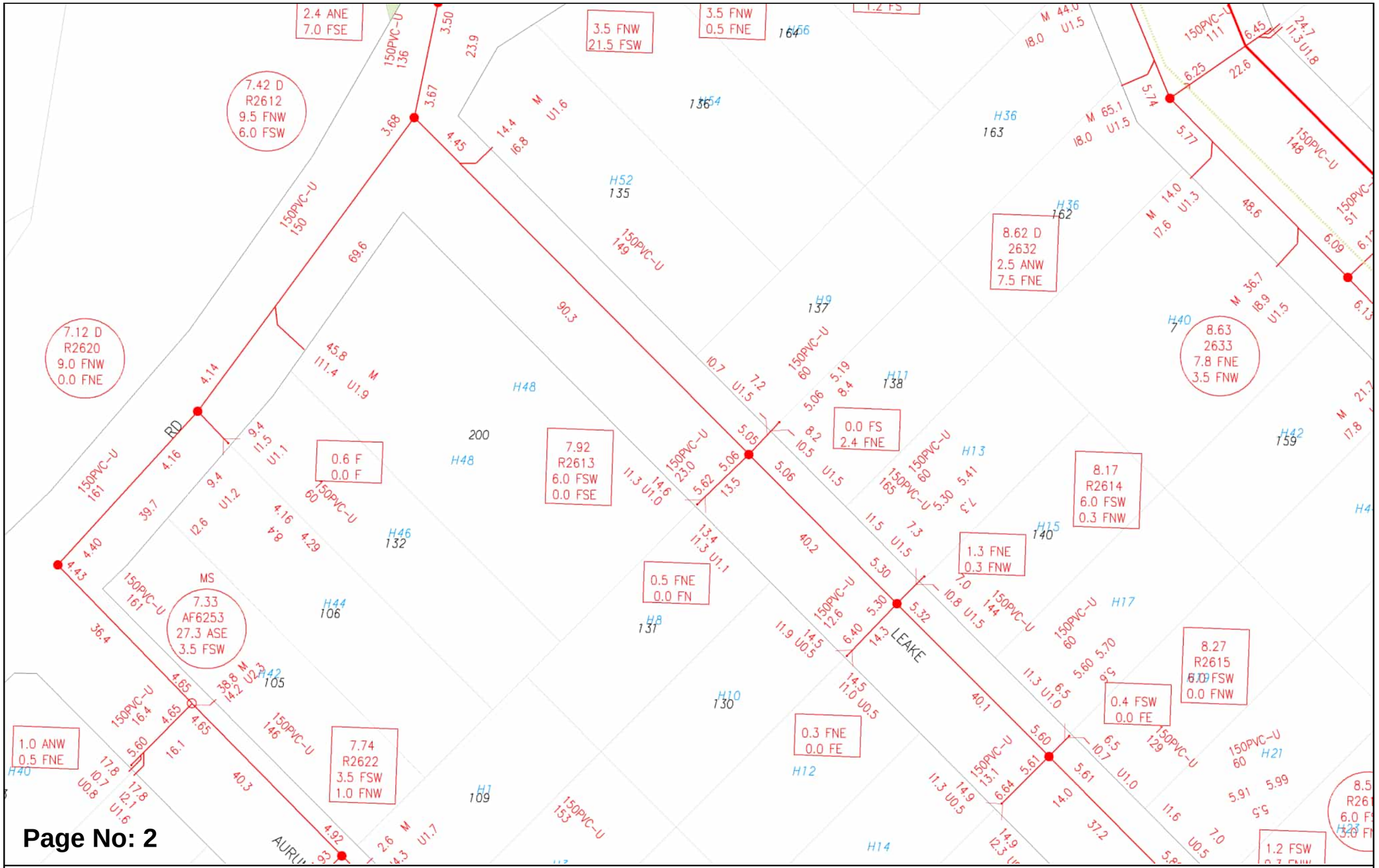



WATER CORPORATION

| | |
|---|---|
| Scale: | 1:750 |
| Job No.: | 36962248 |
| Sequence No.: | 240900640 |
| Print Date: | 21 Jun 2024 |

Sewer

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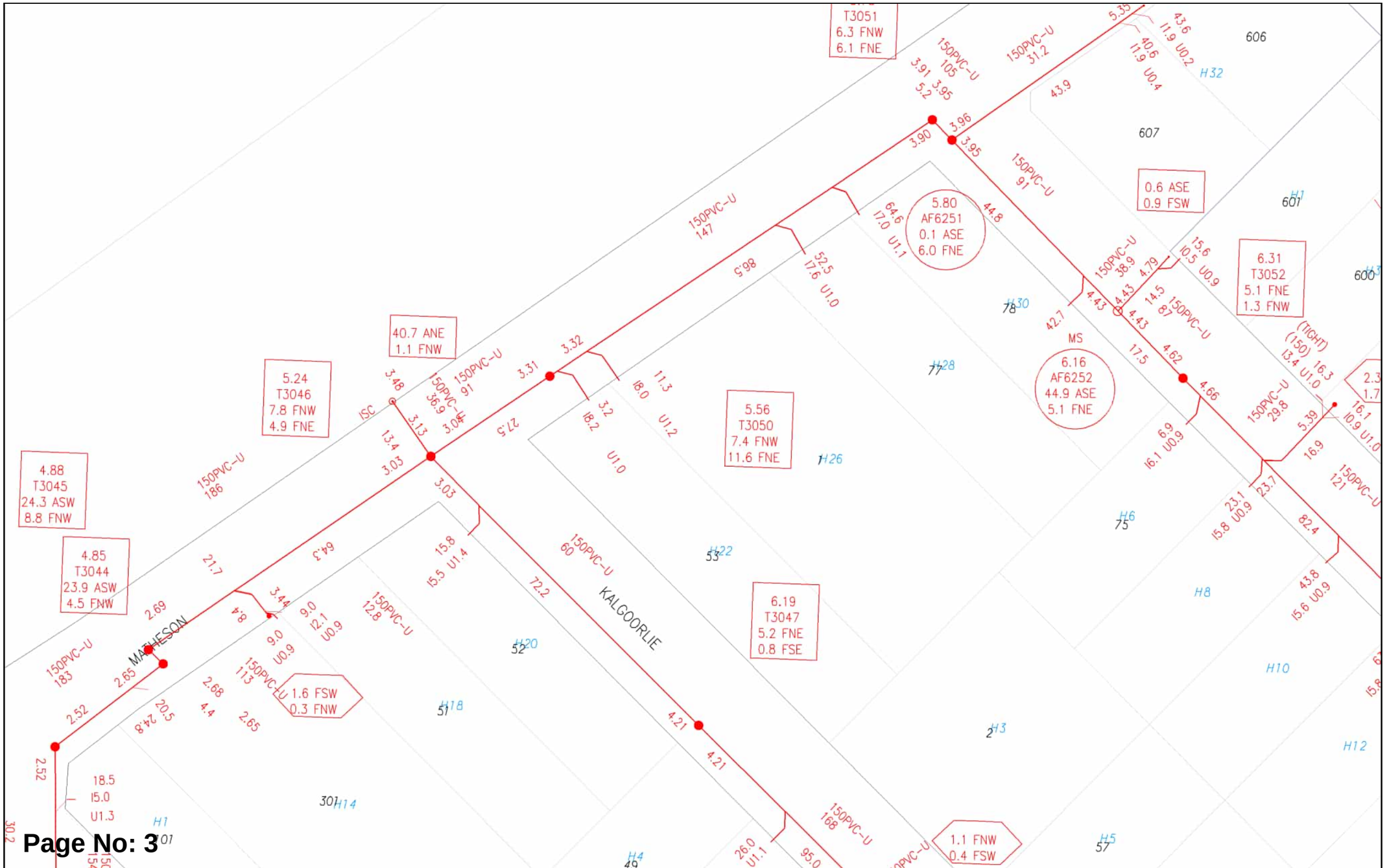

WATER CORPORATION

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|---|---|
| Scale: | 1:750 |
| Job No.: | 36962248 |
| Sequence No.: | 240900640 |
| Print Date: | 21 Jun 2024 |

N

**Sewer**

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**Page No: 3**

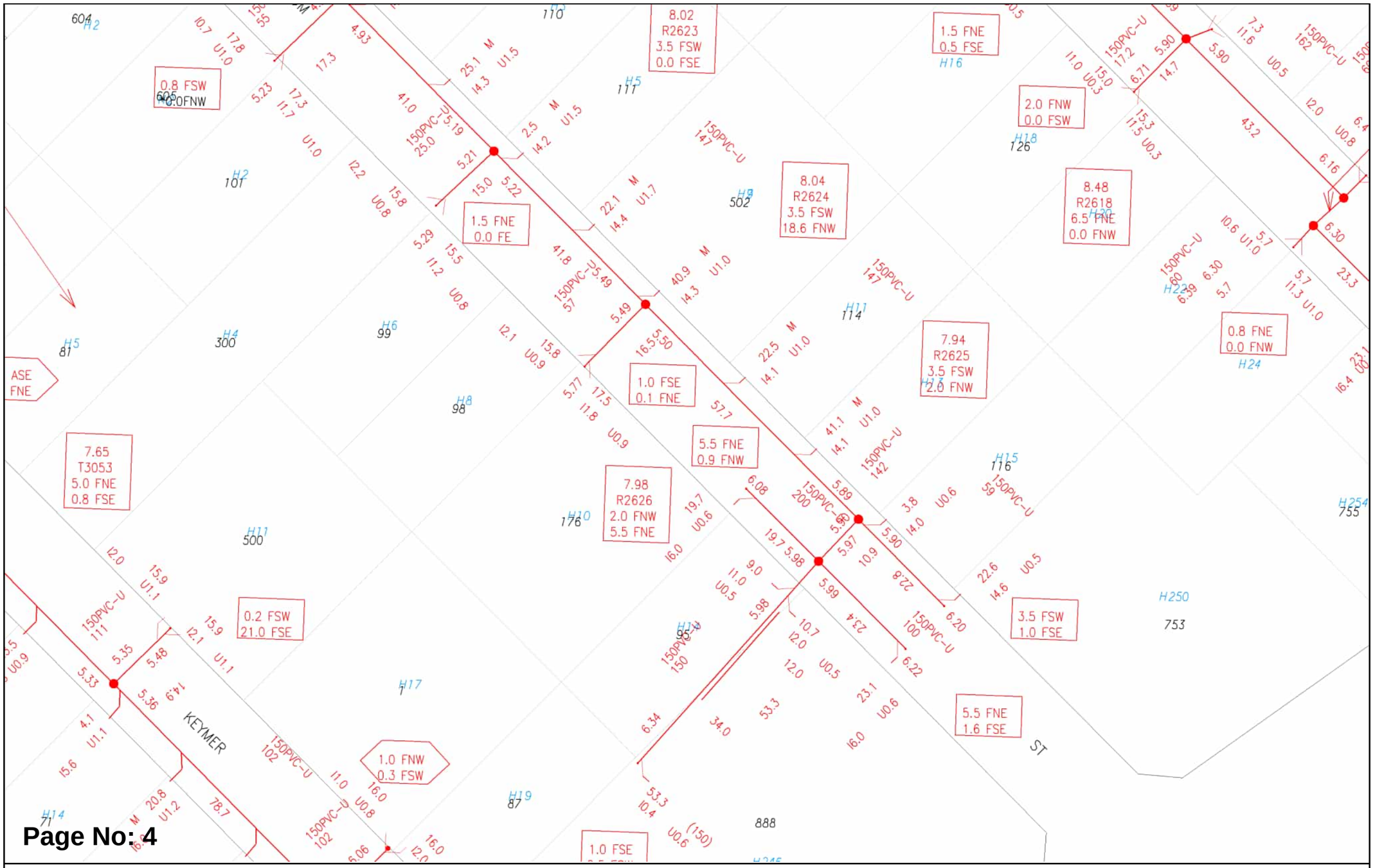
WATER CORPORATION

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| Scale: | 1:750 |
| Job No.: | 36962248 |
| Sequence No.: | 240900640 |
| Print Date: | 21 Jun 2024 |

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**Sewer**

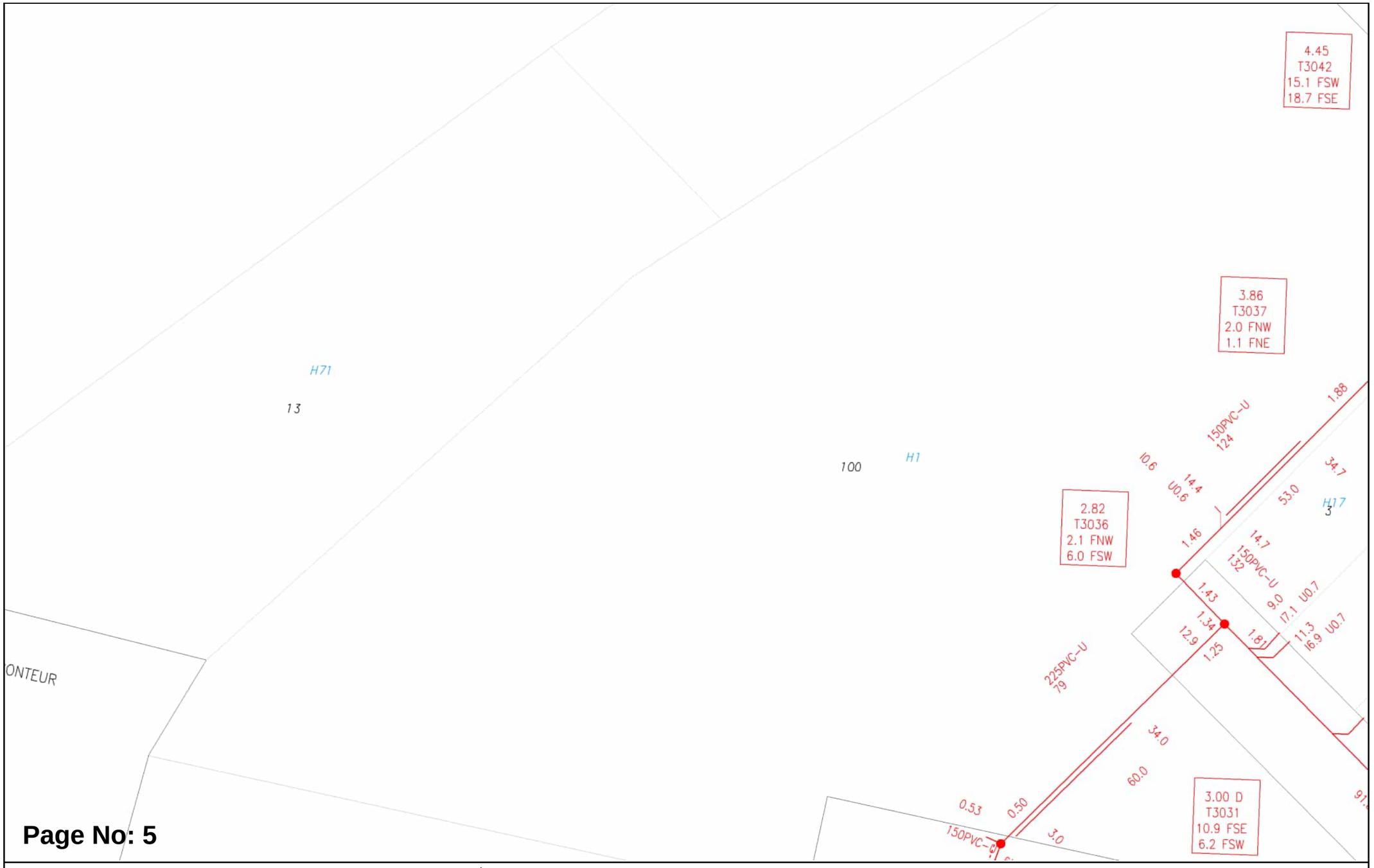
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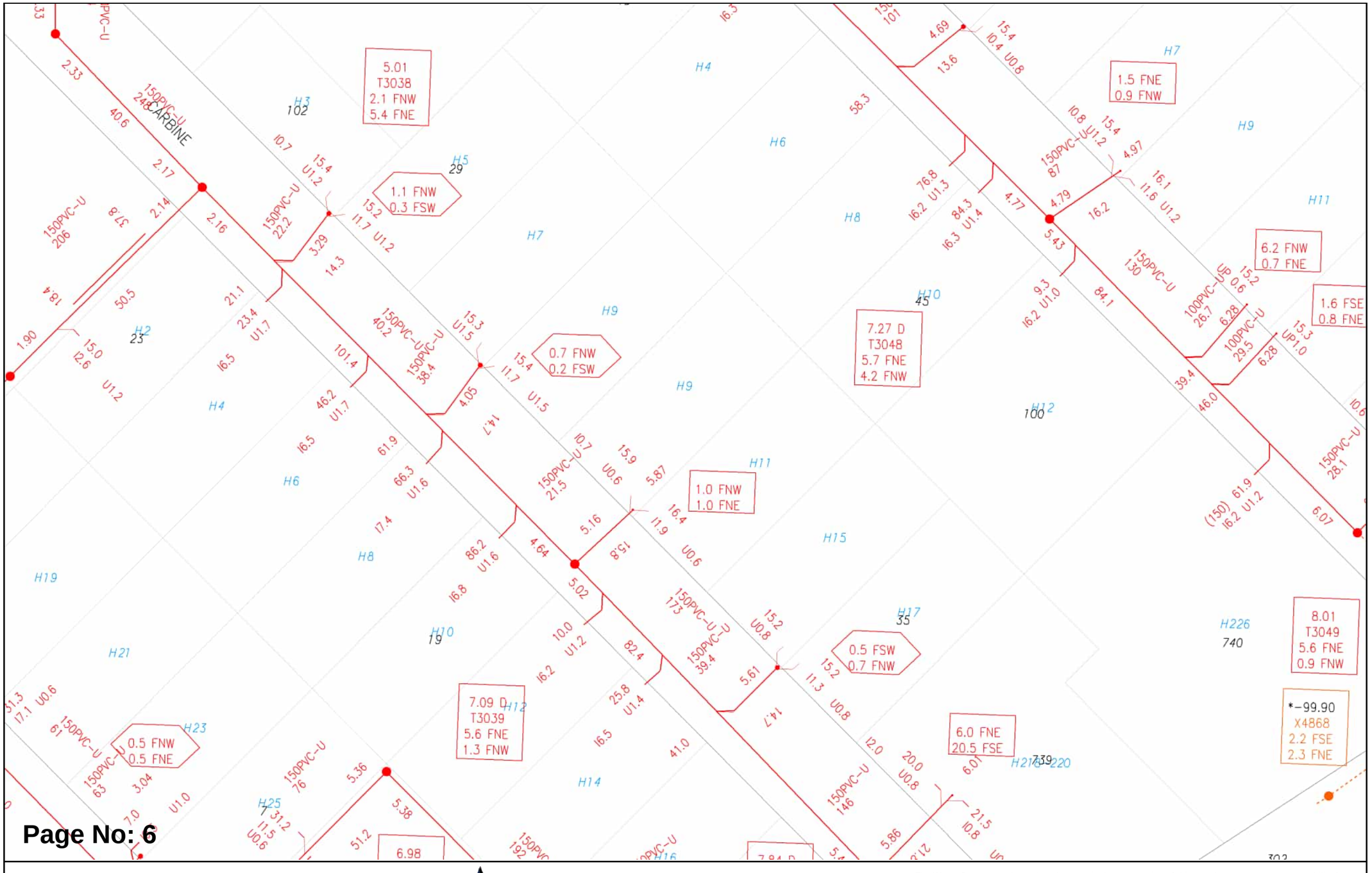
Sewer

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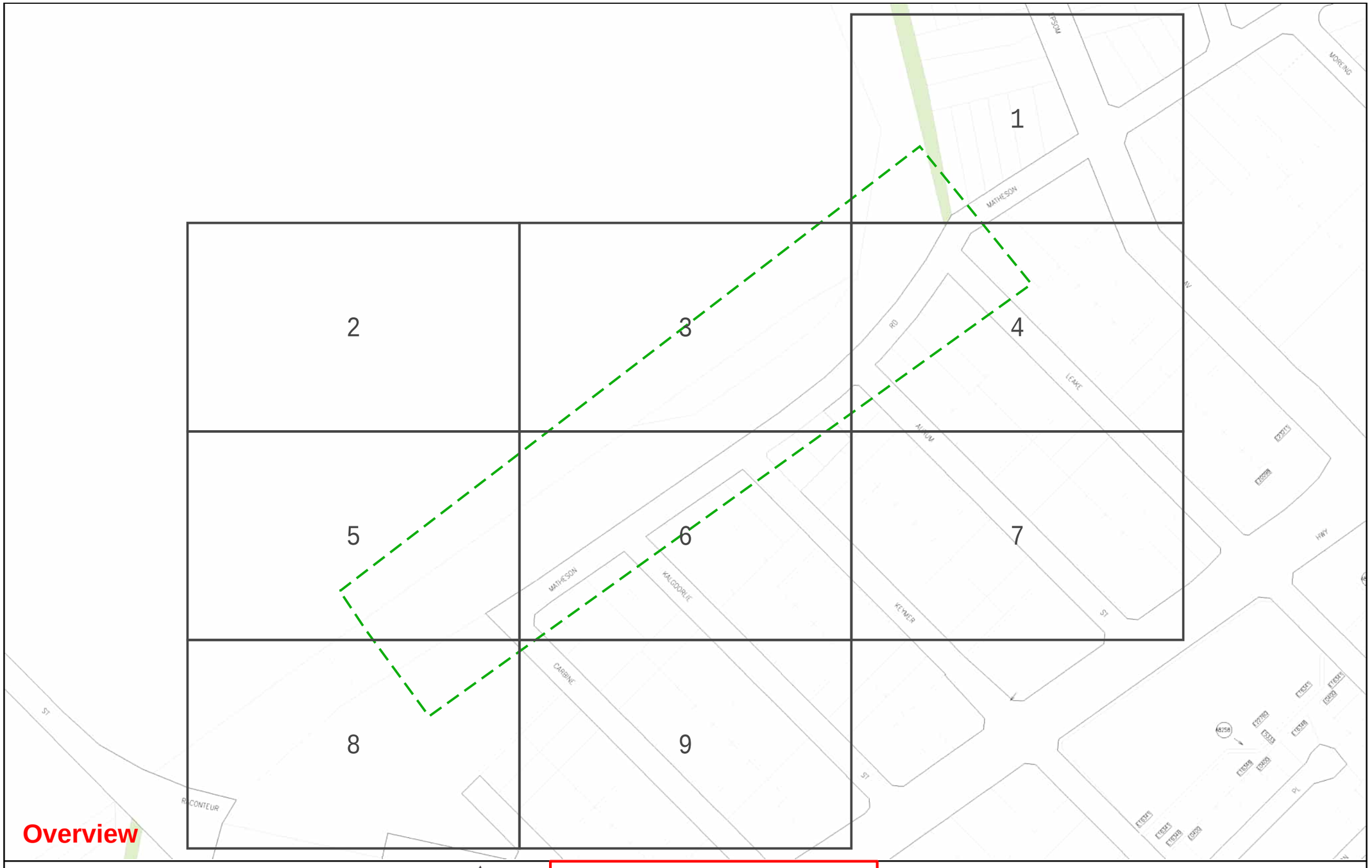
Water Corp - Non-critical Plan.docx (21 May 2024)




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Sewer

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WATER CORPORATION

Scale: 1:3075
Job No.: 36962248
Sequence No.: 240900640
Print Date: 21 Jun 2024

N

Water

WARNING ASSET PROTECTION APPROVAL MAY BE REQUIRED

Apply for approval to work near our assets at:

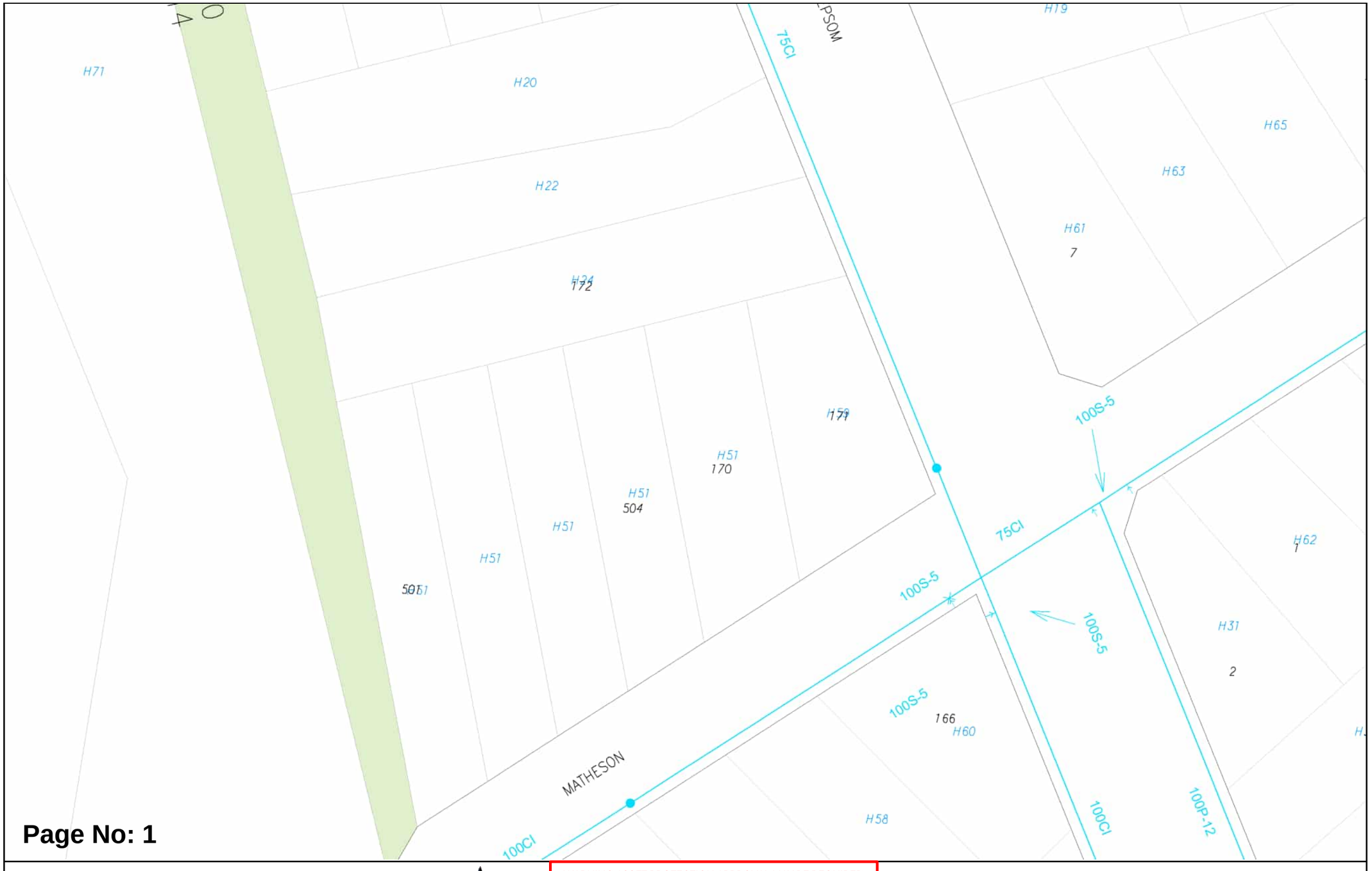
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Water Corp - Critical Plan.docx (21 May 2024)




**Page No: 1**

WATER CORPORATION

Scale: 1:750
Job No.: 36962248
Sequence No.: 240900640
Print Date: 21 Jun 2024

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Water

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Water Corp - Critical Plan.docx (21 May 2024)

9002

**Page No: 2**

WATER CORPORATION

Scale: 1:750
Job No.: 36962248
Sequence No.: 240900640
Print Date: 21 Jun 2024

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Water

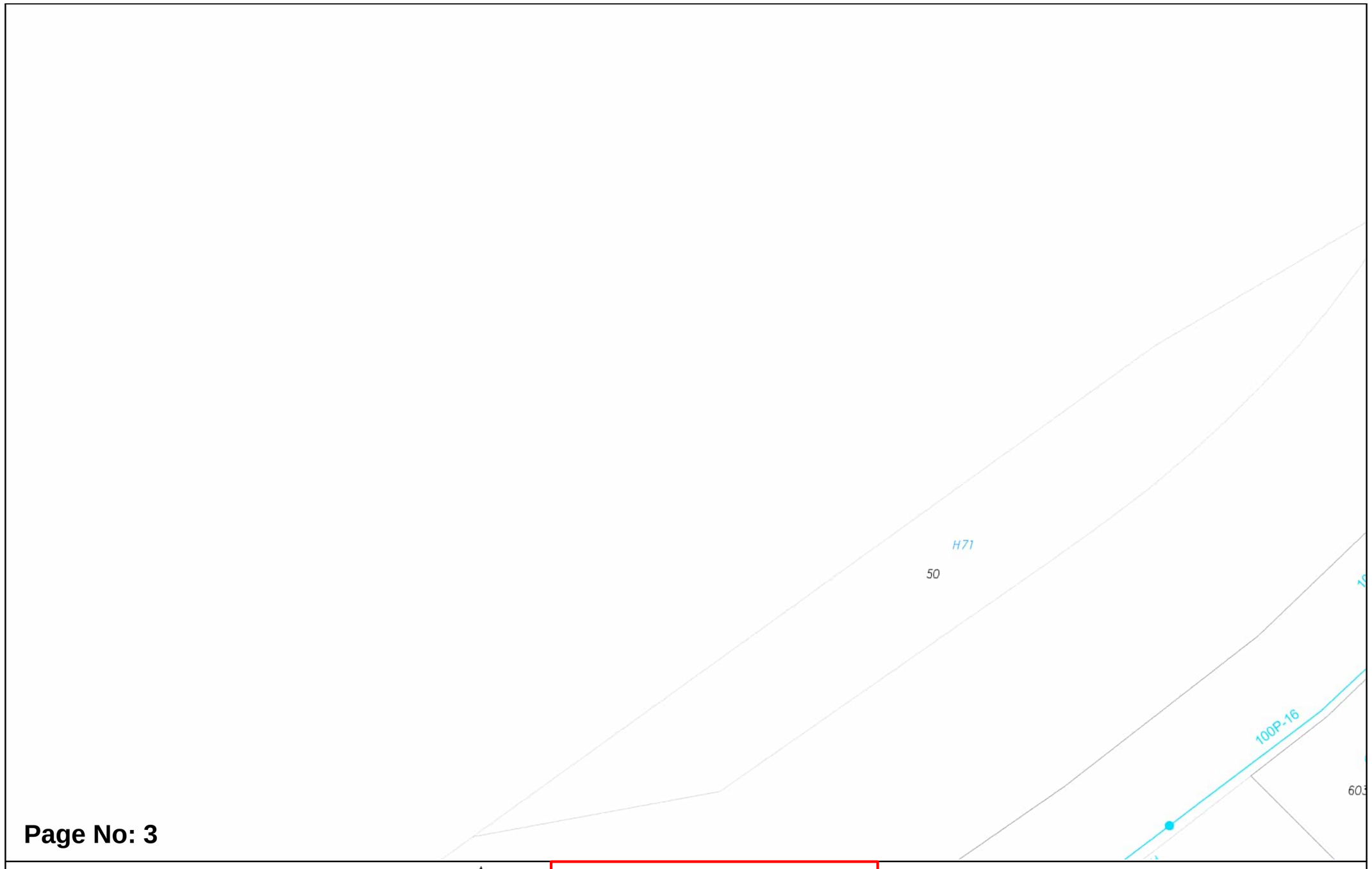
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**Page No: 3**

WATER CORPORATION

Scale: 1:750
Job No.: 36962248
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Print Date: 21 Jun 2024

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Water

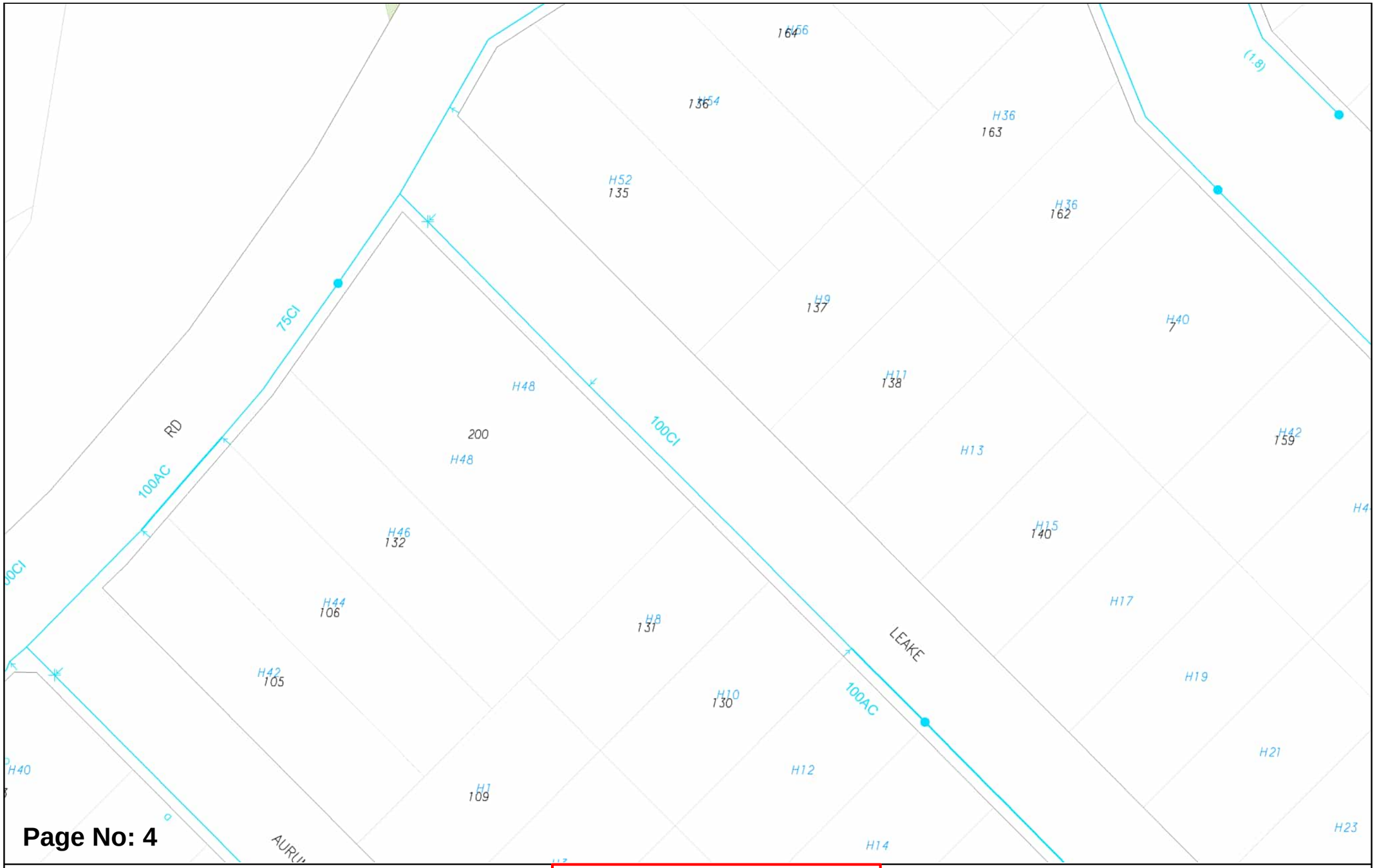
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**Page No: 4**

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| Sequence No.: | 240900640 |
| Print Date: | 21 Jun 2024 |

Water

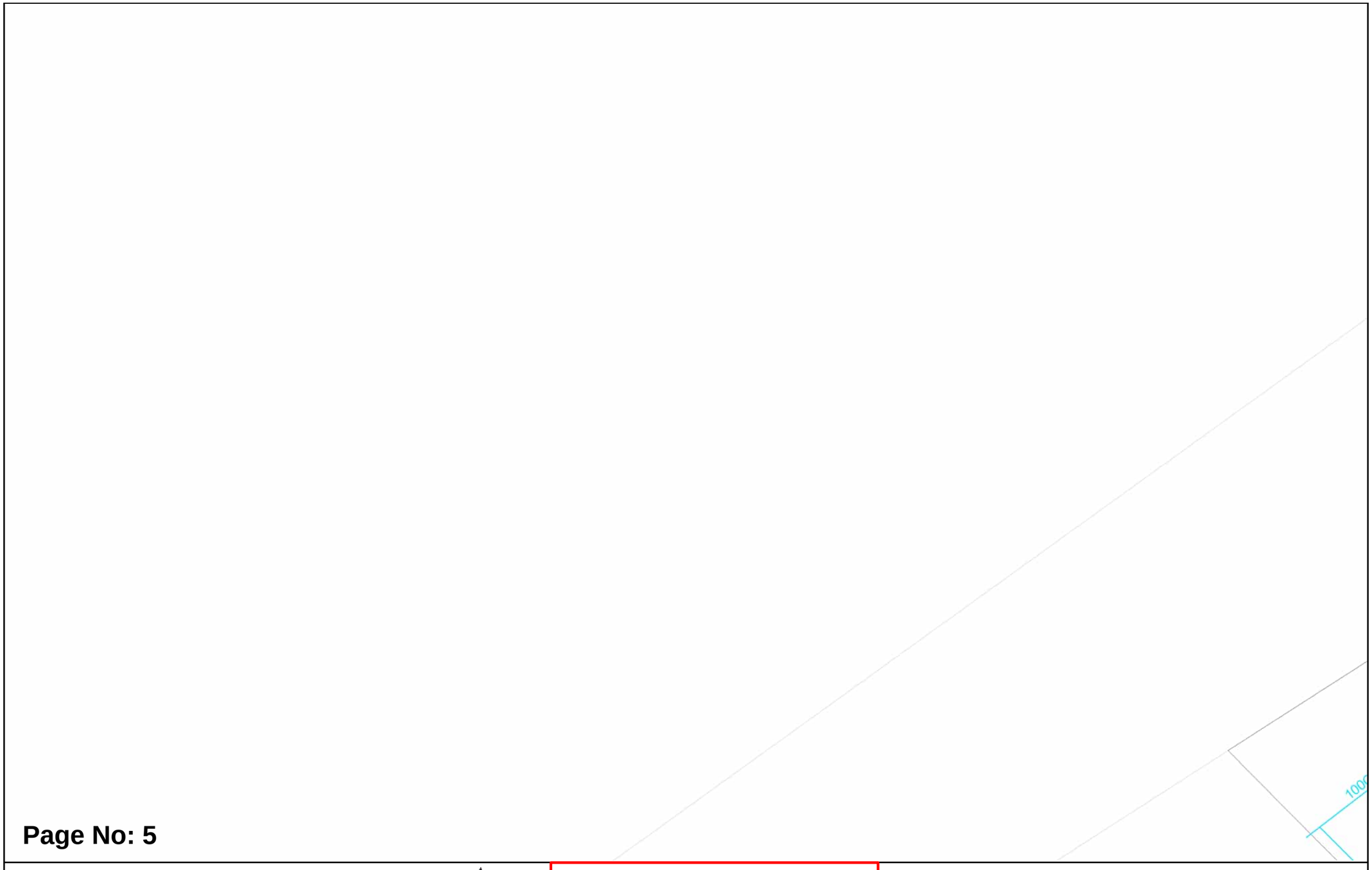
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**Page No: 5**

WATER CORPORATION

Scale: 1:750
Job No.: 36962248
Sequence No.: 240900640
Print Date: 21 Jun 2024

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Water

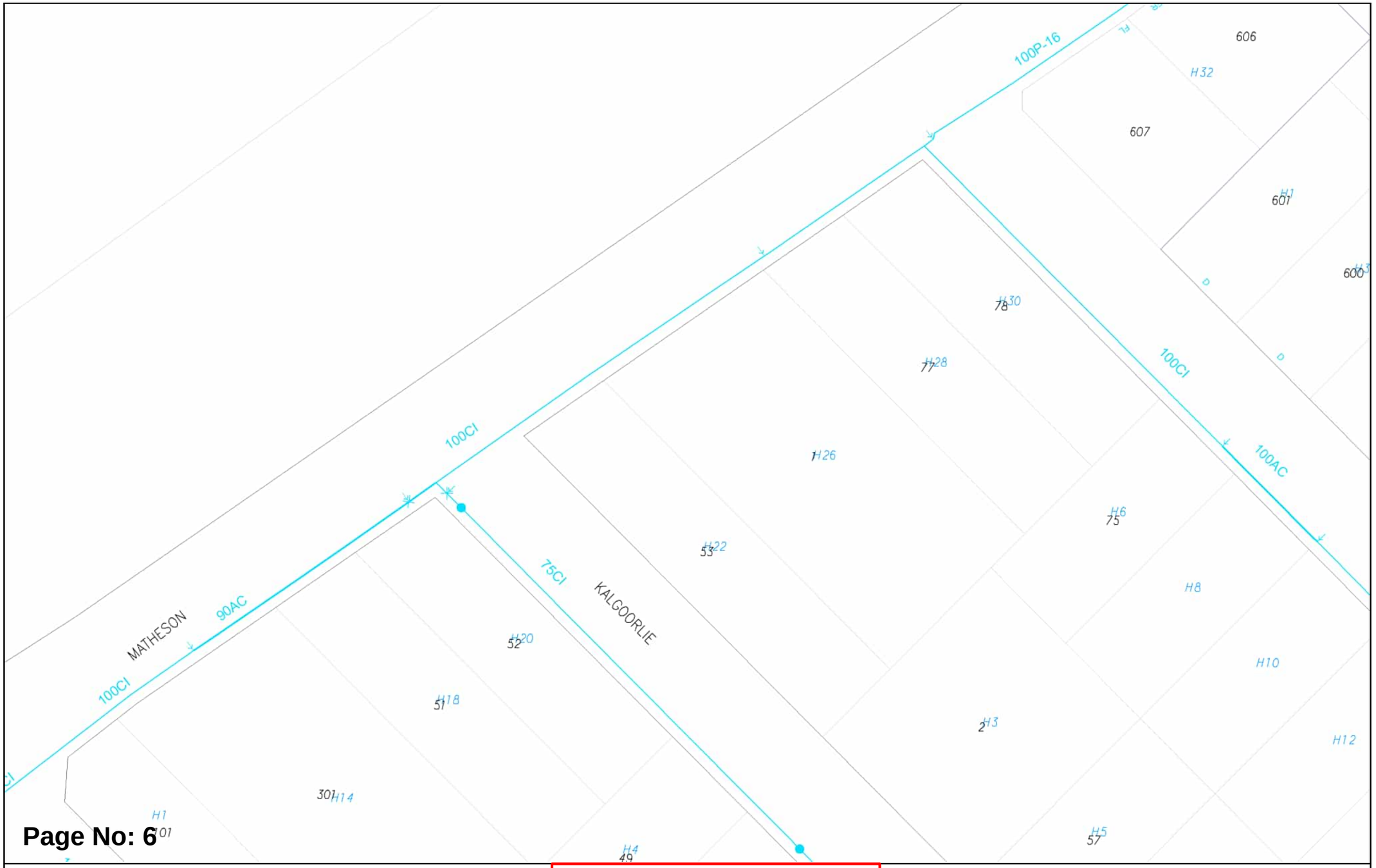
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**Page No: 6**

WATER CORPORATION

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**Water**

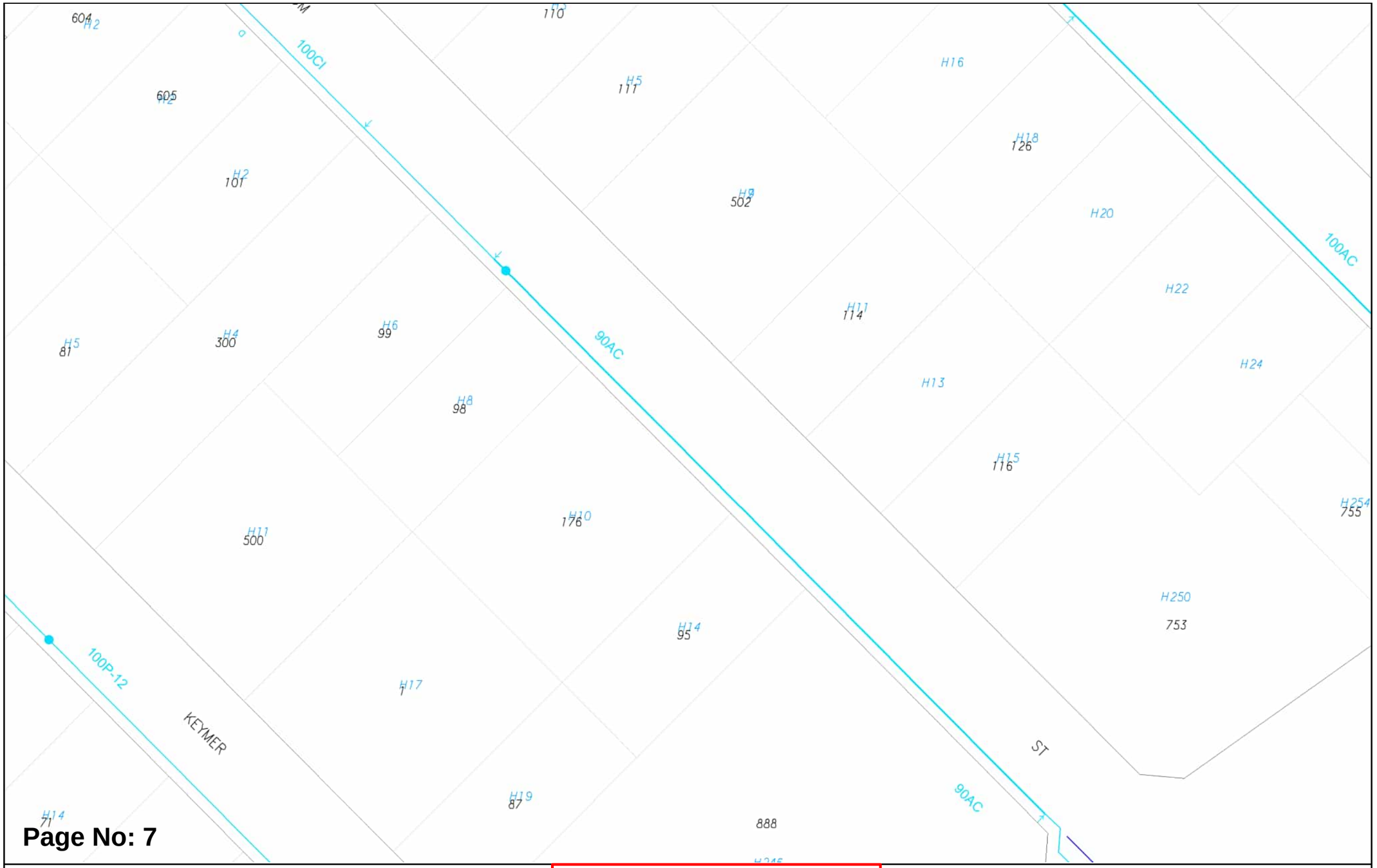
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**Page No: 7**

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Water

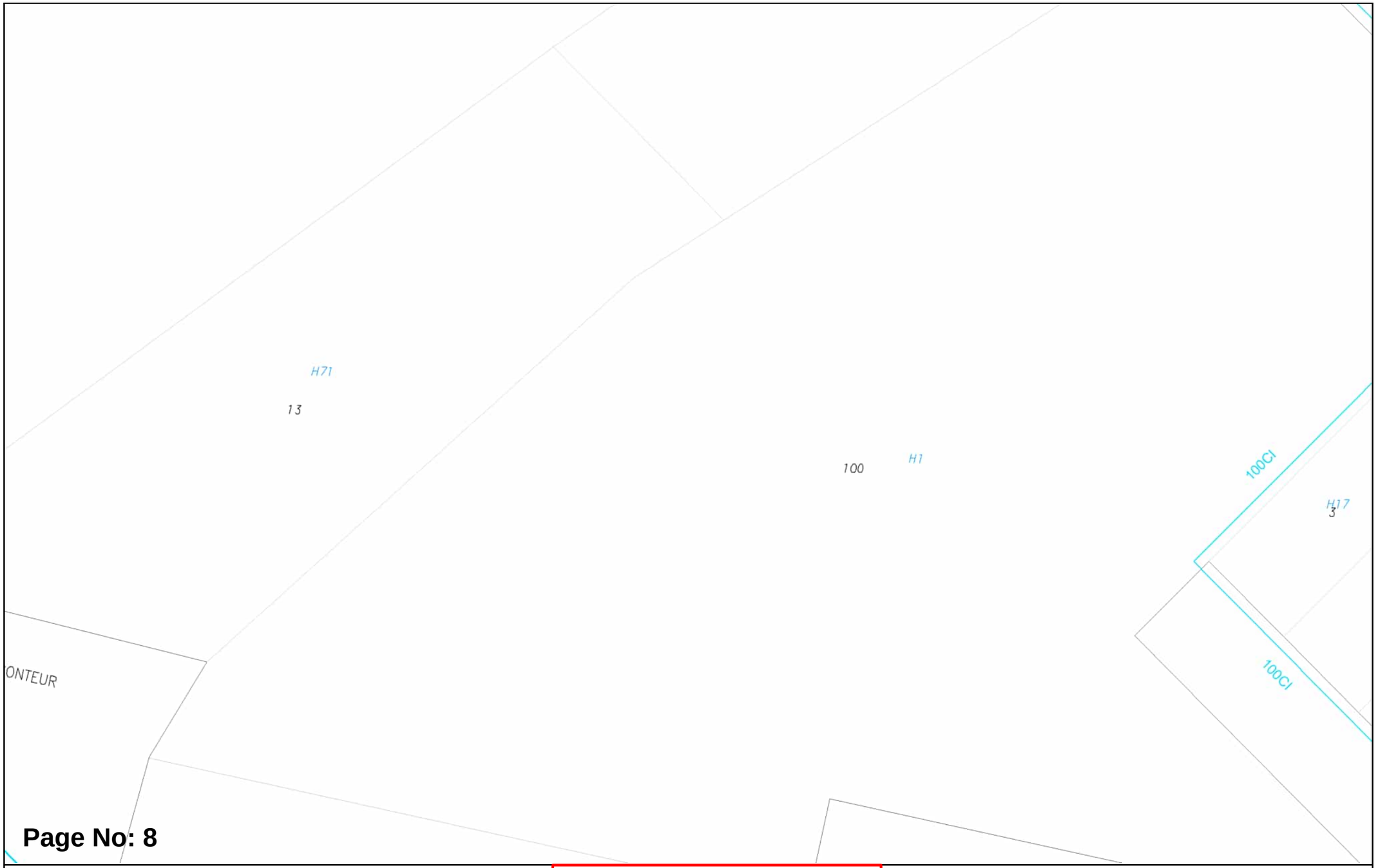
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**Page No: 8**

WATER CORPORATION

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Job No.: 36962248
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**Water**

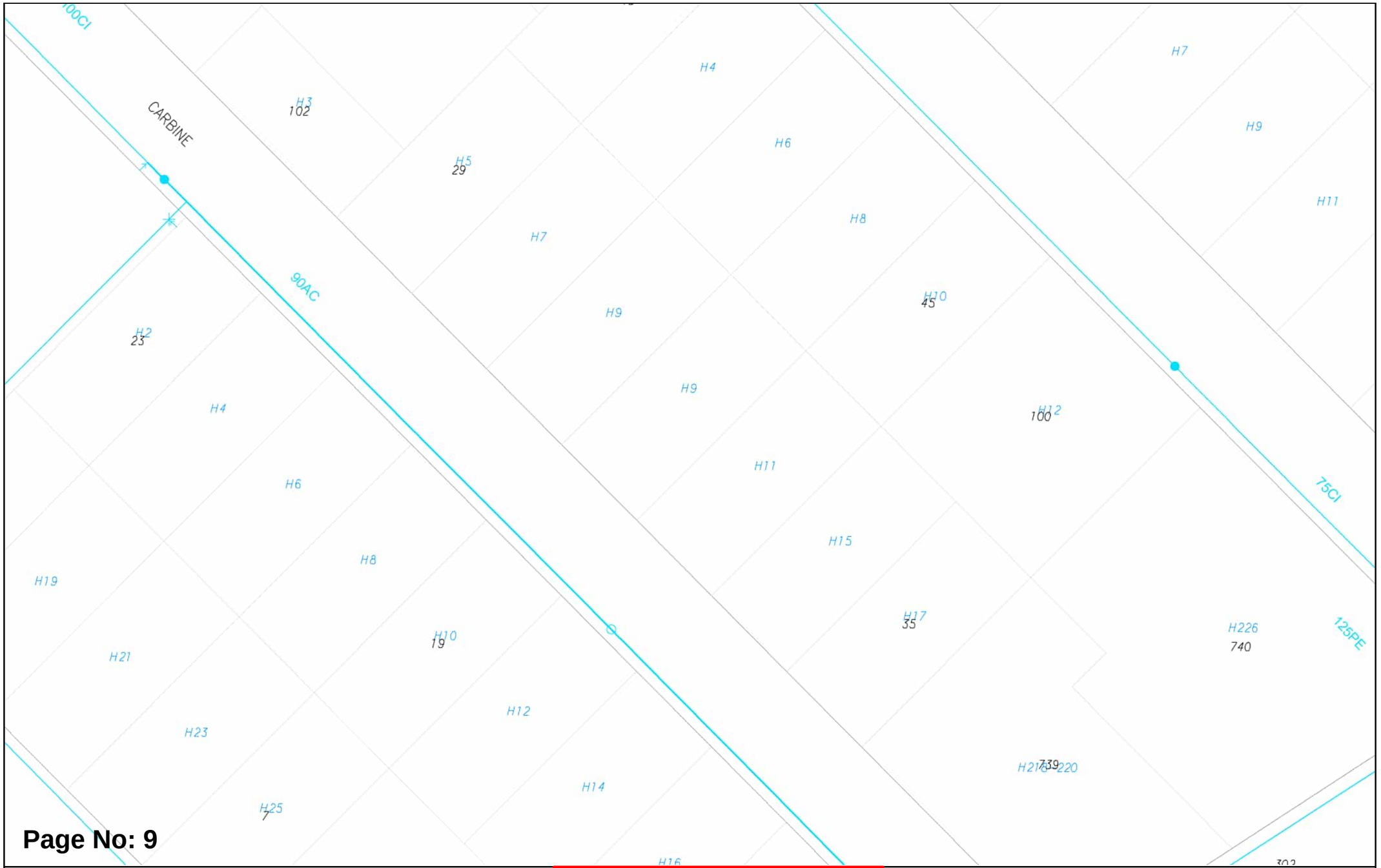
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**Page No: 9**

WATER CORPORATION

Scale: 1:750
Job No.: 36962248
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**Water**

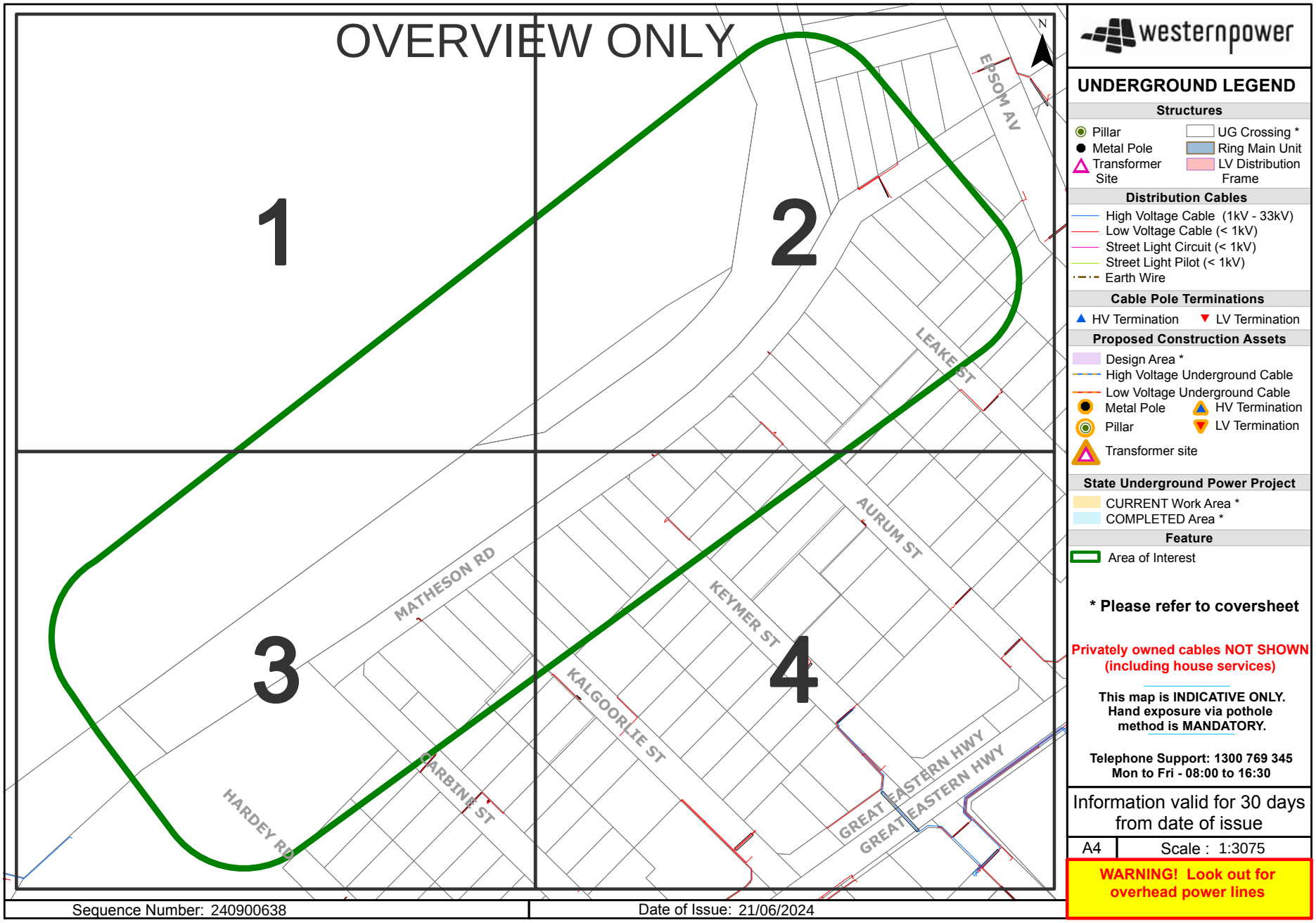
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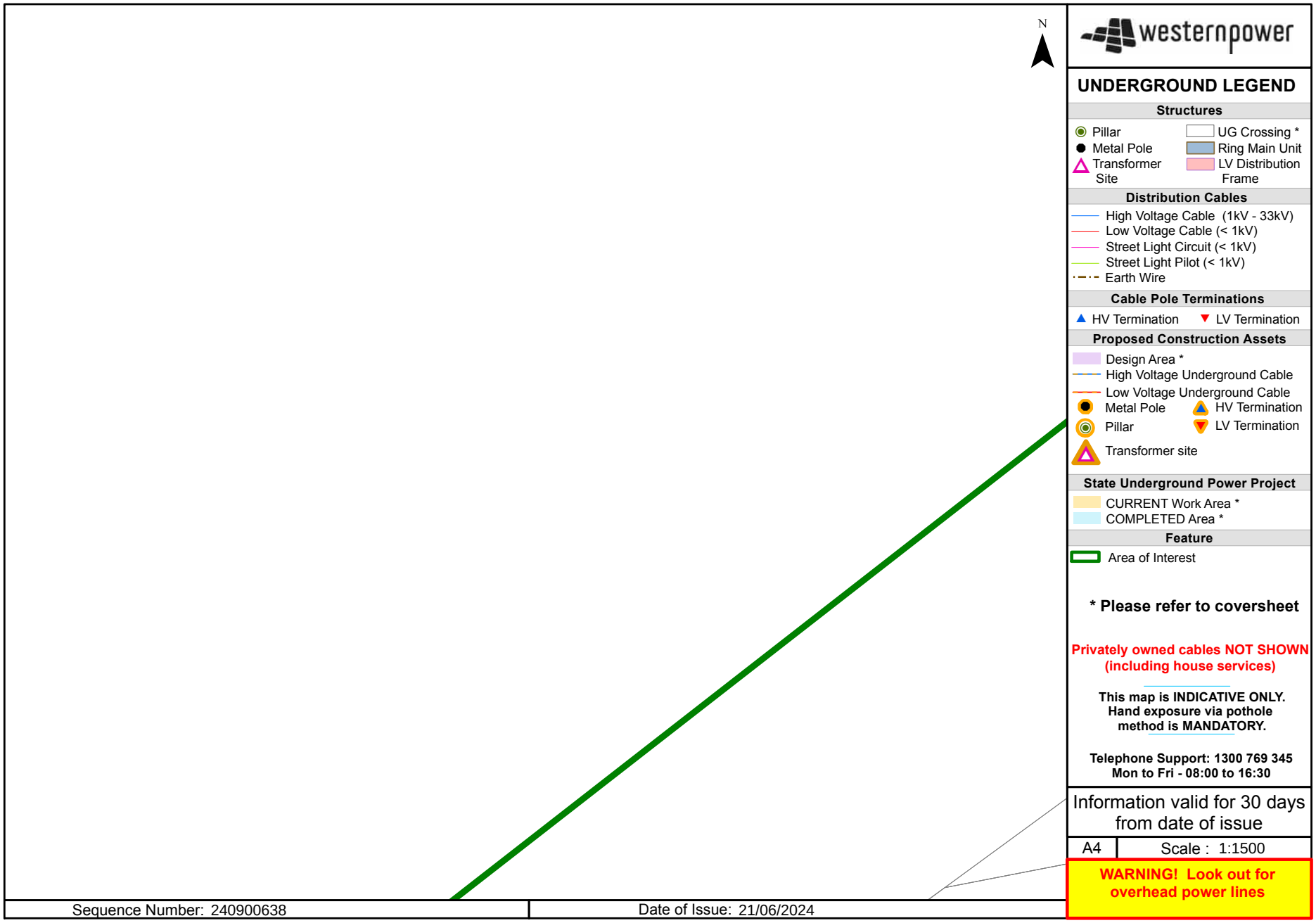
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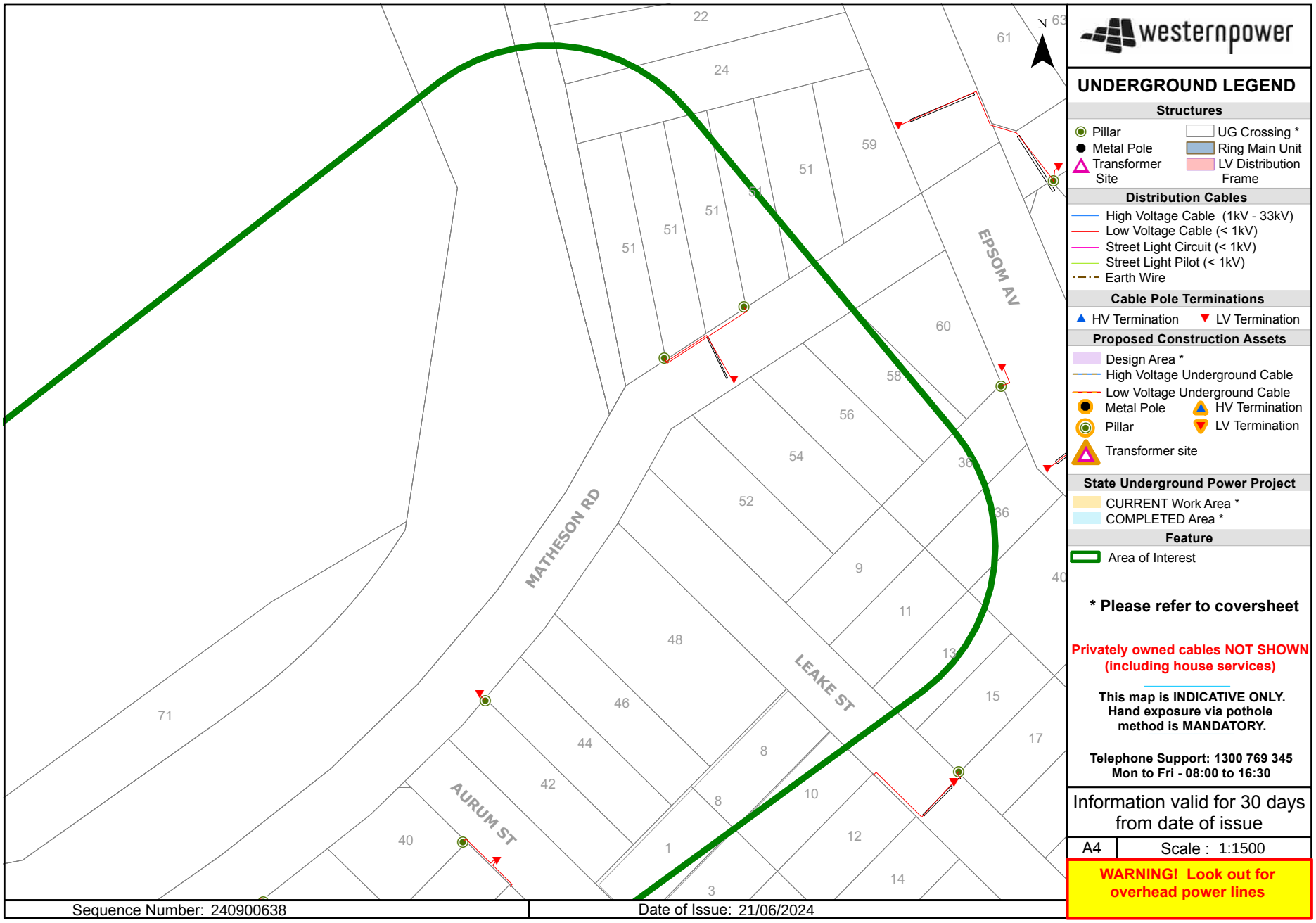
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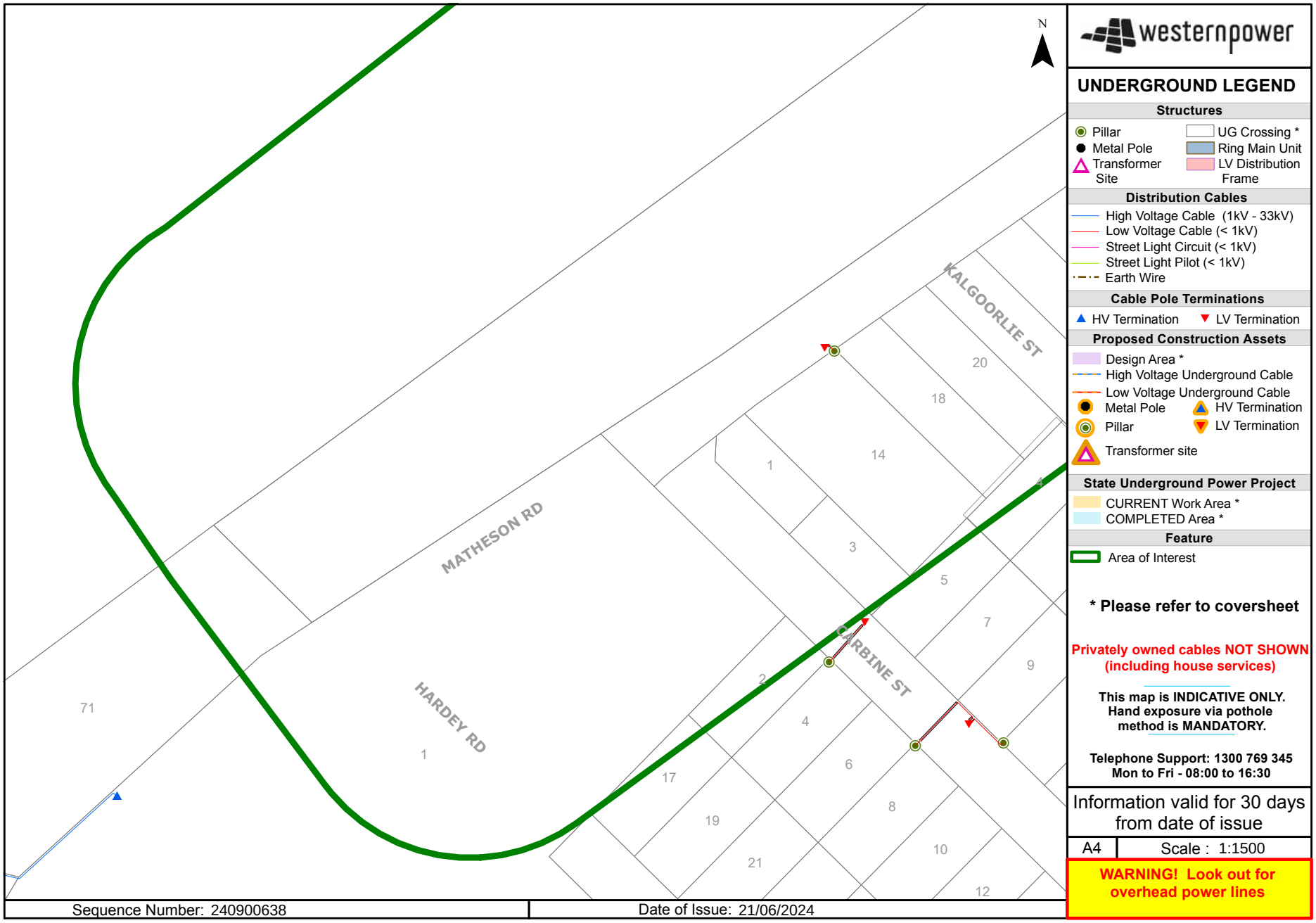
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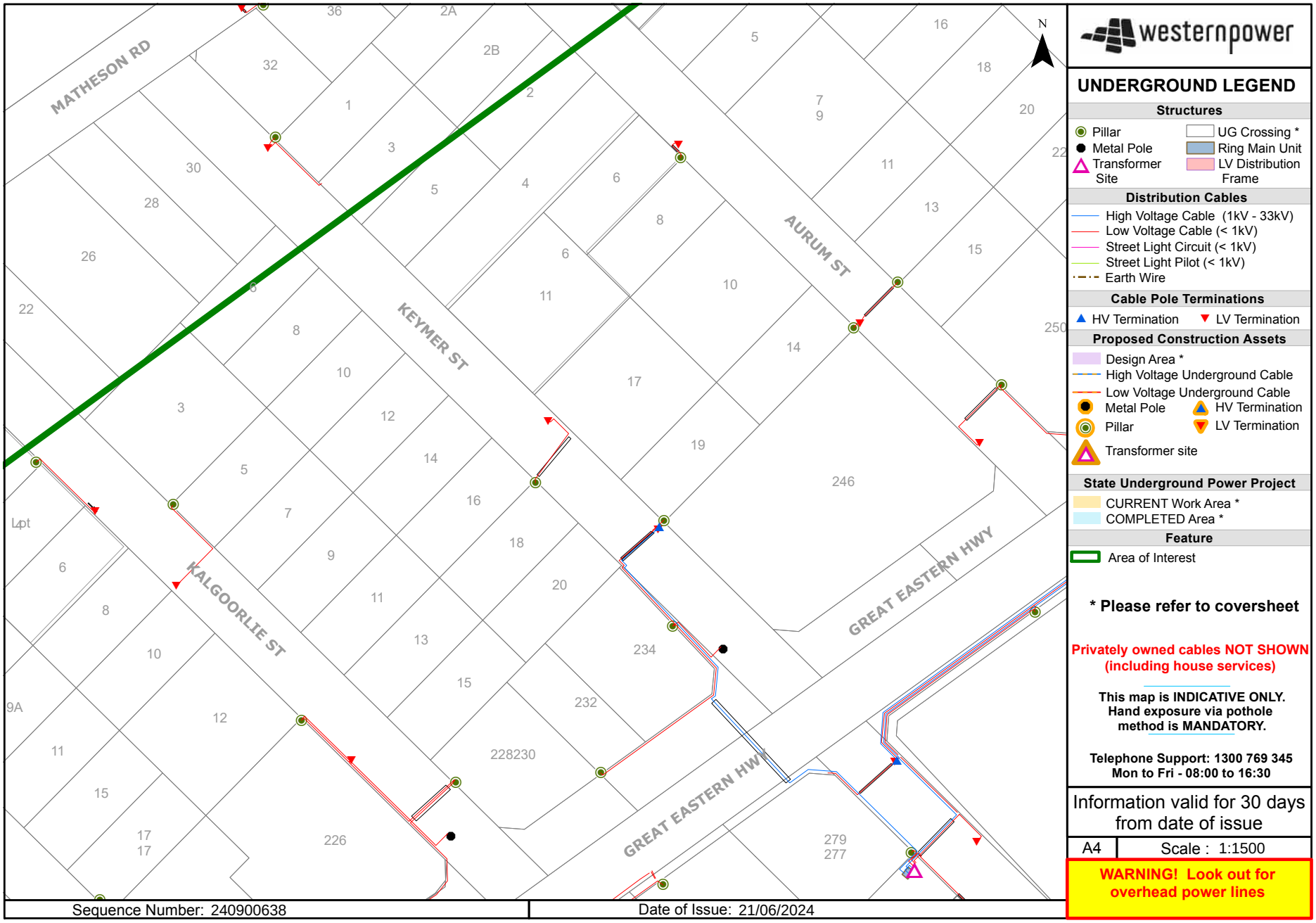
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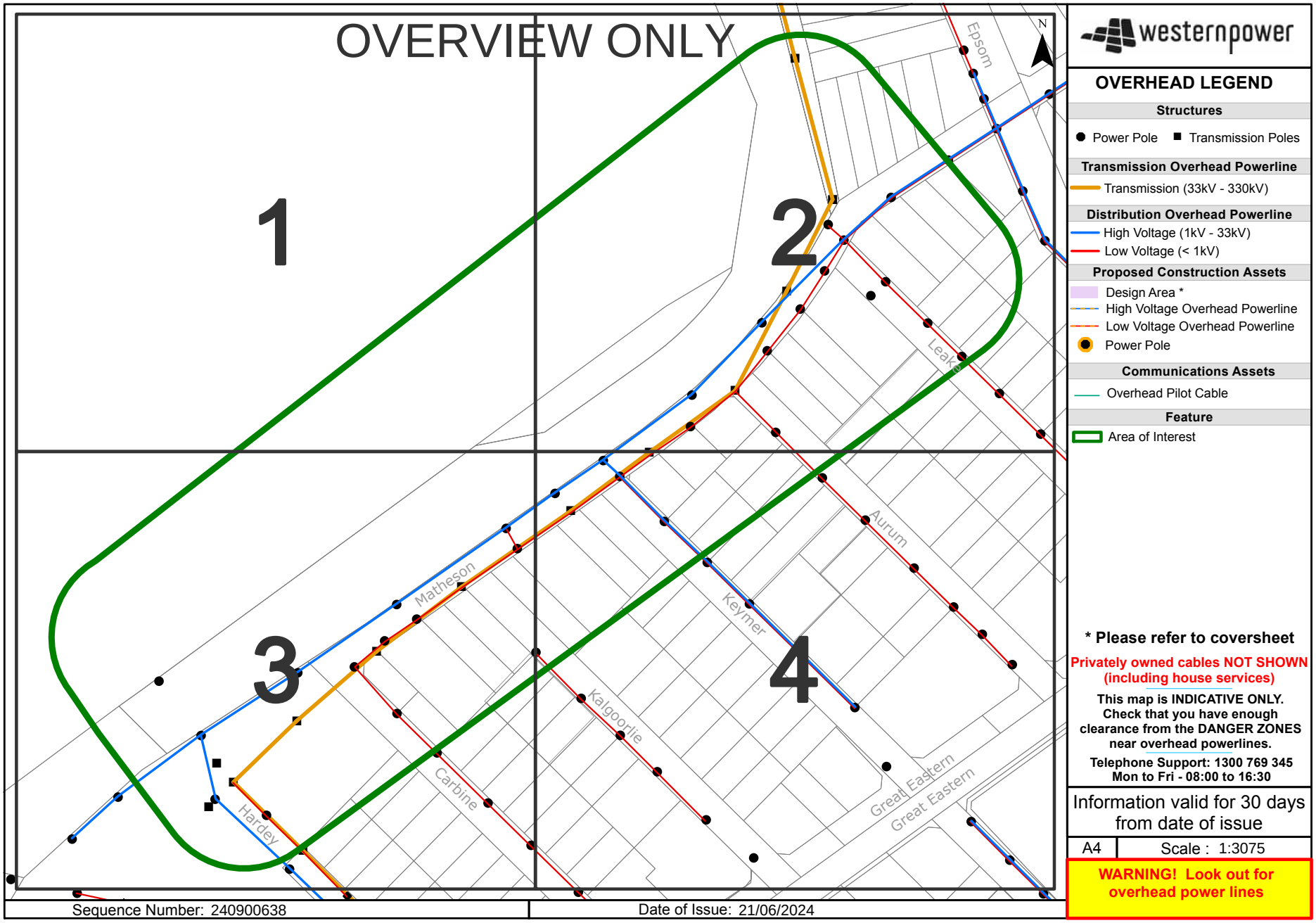

OVERVIEW ONLY
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AURUM ST
KEYMER ST
MATHESON RD
KALGOORLIE ST
CARBINE ST
HARDEY RD
GREAT EASTERN HWY
GREAT EASTERN HWY
Sequence Number: 240900638
Date of Issue: 21/06/2024
westernpower
UNDERGROUND LEGEND
Structures
Pillar
Metal Pole
Transformer Site
UG Crossing *
Ring Main Unit
LV Distribution Frame
Distribution Cables
High Voltage Cable (1kV - 33kV)
Low Voltage Cable (< 1kV)
Street Light Circuit (< 1kV)
Street Light Pilot (< 1kV)
Earth Wire
Cable Pole Terminations
HV Termination
LV Termination
Proposed Construction Assets
Design Area *
High Voltage Underground Cable
Low Voltage Underground Cable
Metal Pole
Pillar
Transformer site
HV Termination
LV Termination
State Underground Power Project
CURRENT Work Area *
COMPLETED Area *
Feature
Area of Interest
* Please refer to coversheet
Privately owned cables NOT SHOWN (including house services)
This map is INDICATIVE ONLY. Hand exposure via pothole method is MANDATORY.
Telephone Support: 1300 769 345
Mon to Fri - 08:00 to 16:30
Information valid for 30 days from date of issue
A4
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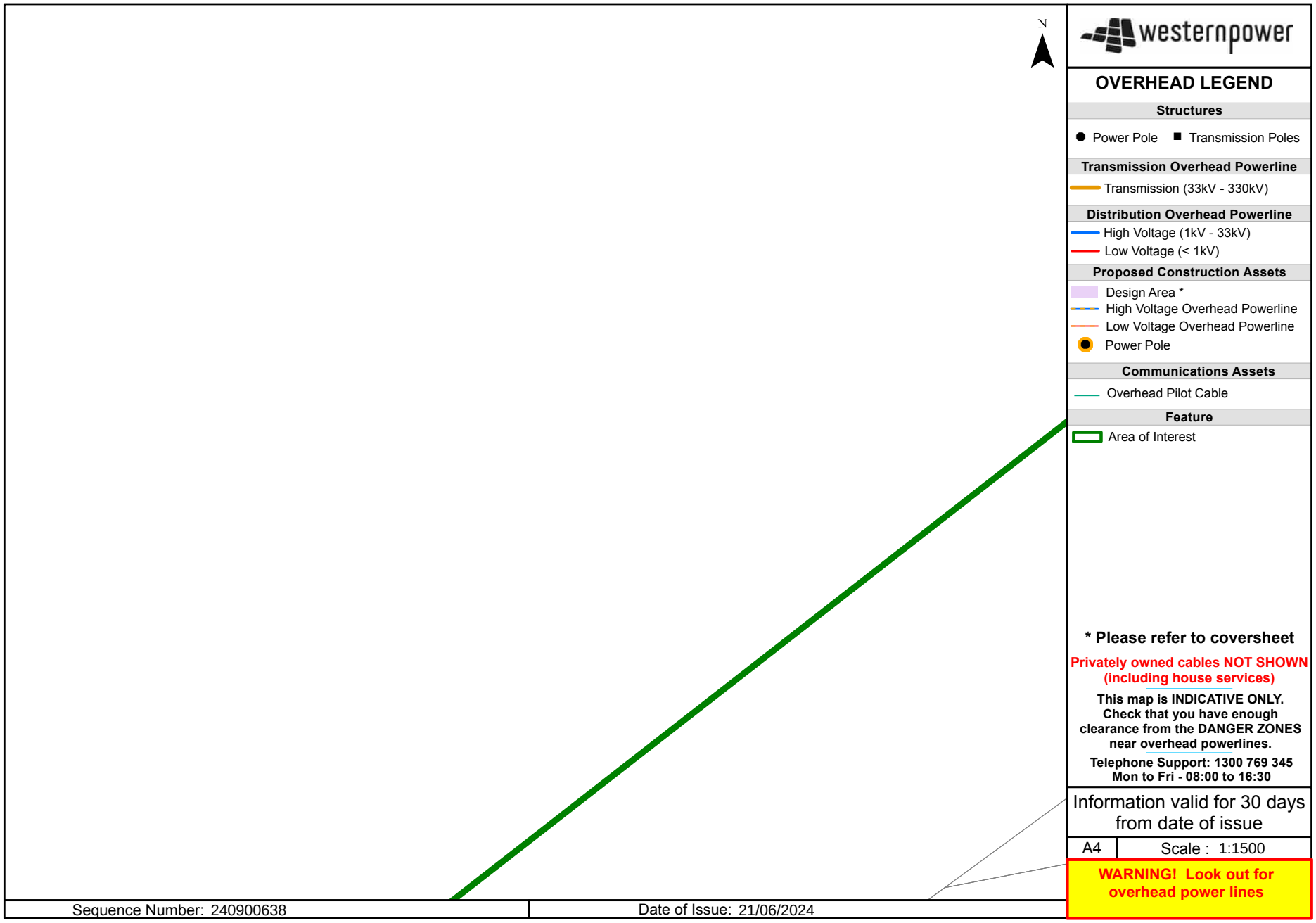

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westernpower
UNDERGROUND LEGEND
Structures
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Metal Pole
Transformer Site
UG Crossing *
Ring Main Unit
LV Distribution Frame
Distribution Cables
High Voltage Cable (1kV - 33kV)
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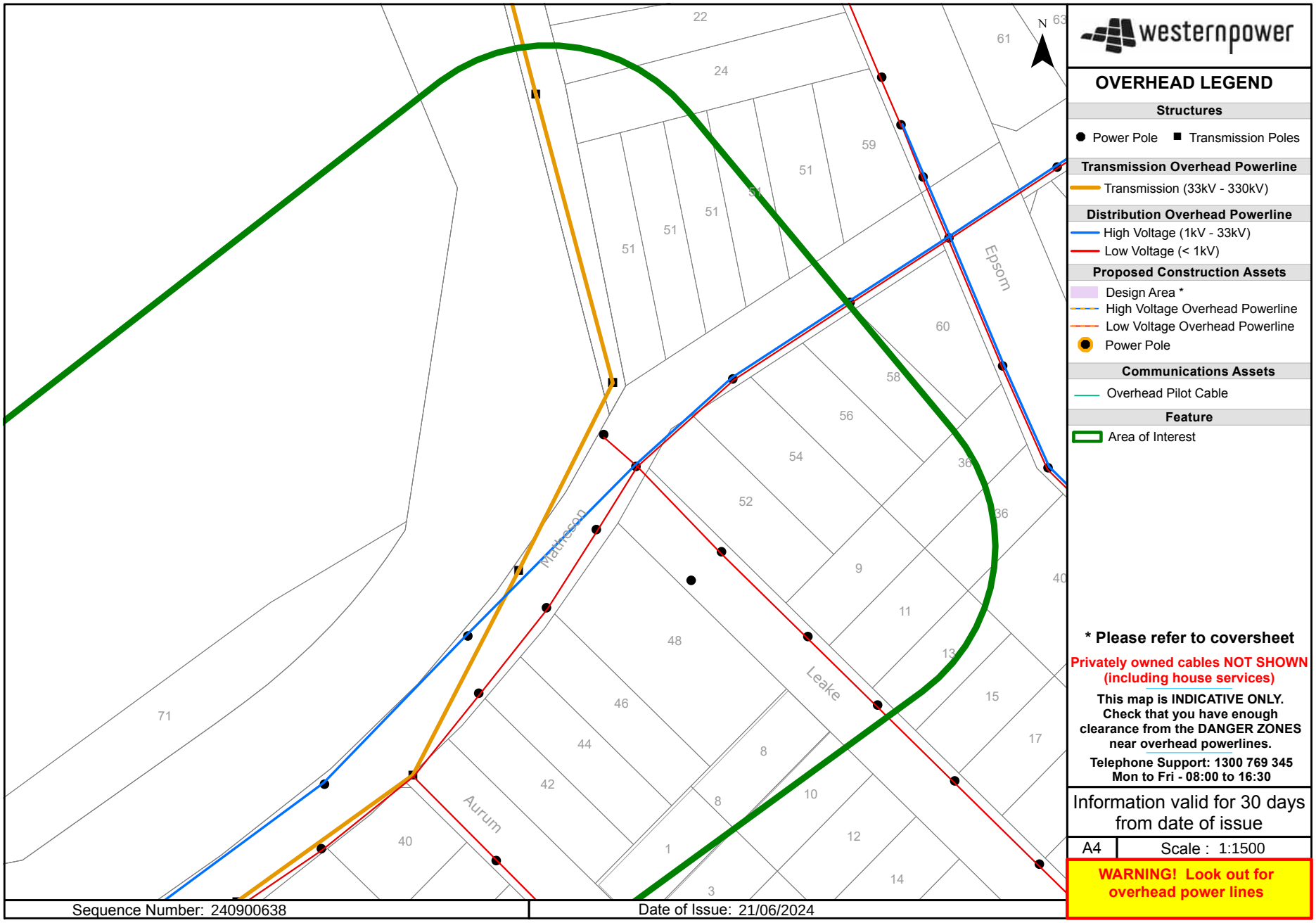

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AURUM ST
EPSOM AV
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westernpower
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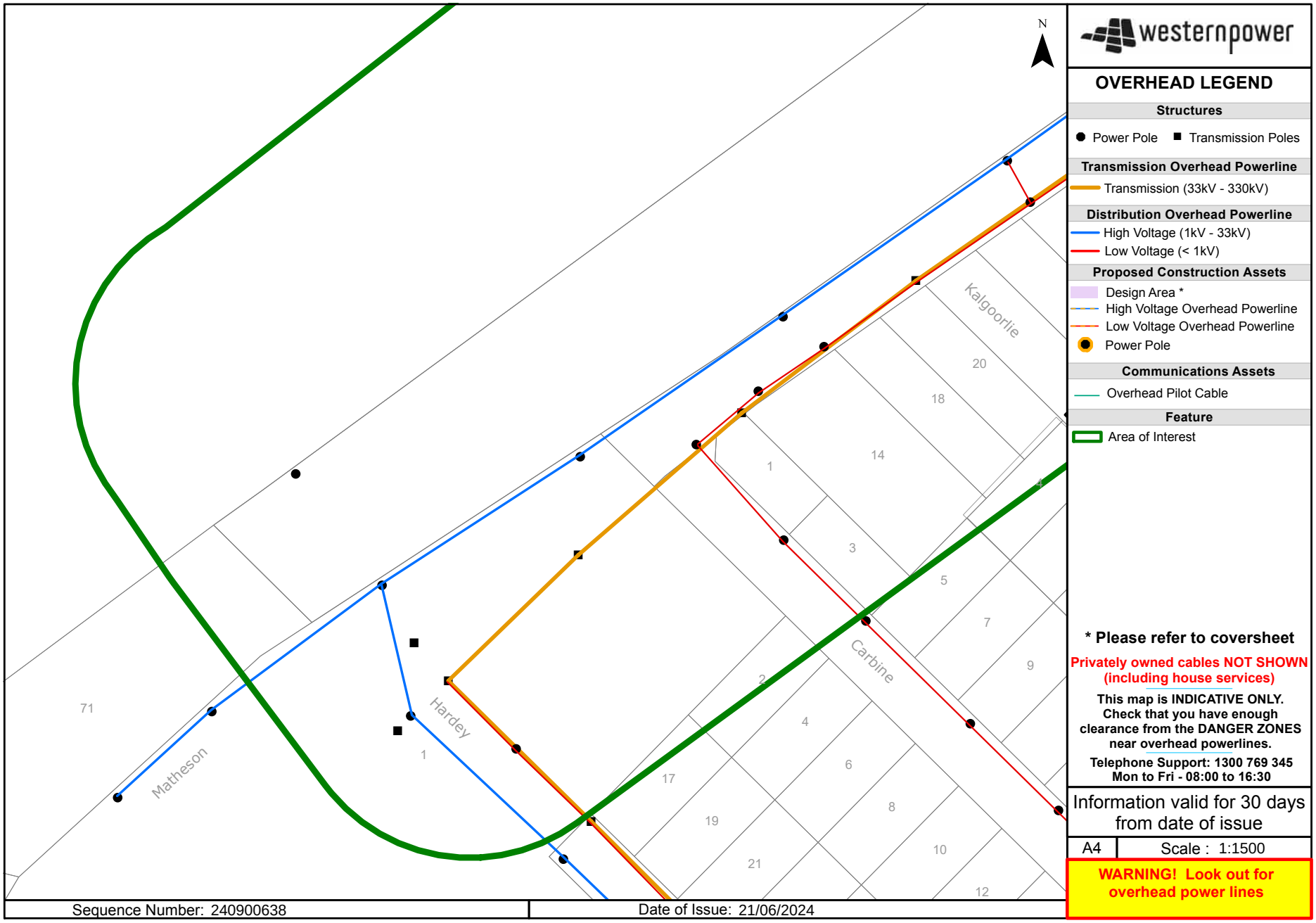

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MATHESON RD
HARDEY RD
KALGOORLIE ST
CARBINE ST
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OVERVIEW ONLY
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2
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4
N
Epsom
Leake
Aurum
Keymer
Matheson
Kalgoorlie
Carbine
Hardey
Great Eastern
Great Eastern
Sequence Number: 240900638
Date of Issue: 21/06/2024
westernpower
OVERHEAD LEGEND
Structures
Power Pole
Transmission Poles
Transmission Overhead Powerline
Transmission (33kV - 330kV)
Distribution Overhead Powerline
High Voltage (1kV - 33kV)
Low Voltage (< 1kV)
Proposed Construction Assets
Design Area *
High Voltage Overhead Powerline
Low Voltage Overhead Powerline
Power Pole
Communications Assets
Overhead Pilot Cable
Feature
Area of Interest
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Scale : 1:3075
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westernpower
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Transmission Poles
Transmission Overhead Powerline
Transmission (33kV - 330kV)
Distribution Overhead Powerline
High Voltage (1kV - 33kV)
Low Voltage (< 1kV)
Proposed Construction Assets
Design Area *
High Voltage Overhead Powerline
Low Voltage Overhead Powerline
Power Pole
Communications Assets
Overhead Pilot Cable
Feature
Area of Interest
* Please refer to coversheet
Privately owned cables NOT SHOWN (including house services)
This map is INDICATIVE ONLY. Check that you have enough clearance from the DANGER ZONES near overhead powerlines.
Telephone Support: 1300 769 345
Mon to Fri - 08:00 to 16:30
Information valid for 30 days from date of issue
A4
Scale : 1:1500
WARNING! Look out for overhead power lines
Sequence Number: 240900638
Date of Issue: 21/06/2024


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Matheson
Leake
Aurum
westernpower
OVERHEAD LEGEND
Structures
Power Pole
Transmission Poles
Transmission Overhead Powerline
Transmission (33kV - 330kV)
Distribution Overhead Powerline
High Voltage (1kV - 33kV)
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westernpower

**OVERHEAD LEGEND**

**Structures**
- Power Pole
- Transmission Poles

**Transmission Overhead Powerline**
- Transmission (33kV - 330kV)

**Distribution Overhead Powerline**
- High Voltage (1kV - 33kV)
- Low Voltage (< 1kV)

**Proposed Construction Assets**
- Design Area *
- High Voltage Overhead Powerline
- Low Voltage Overhead Powerline
- Power Pole

**Communications Assets**
- Overhead Pilot Cable

**Feature**
- Area of Interest

*** Please refer to coversheet**

**Privately owned cables NOT SHOWN (including house services)**

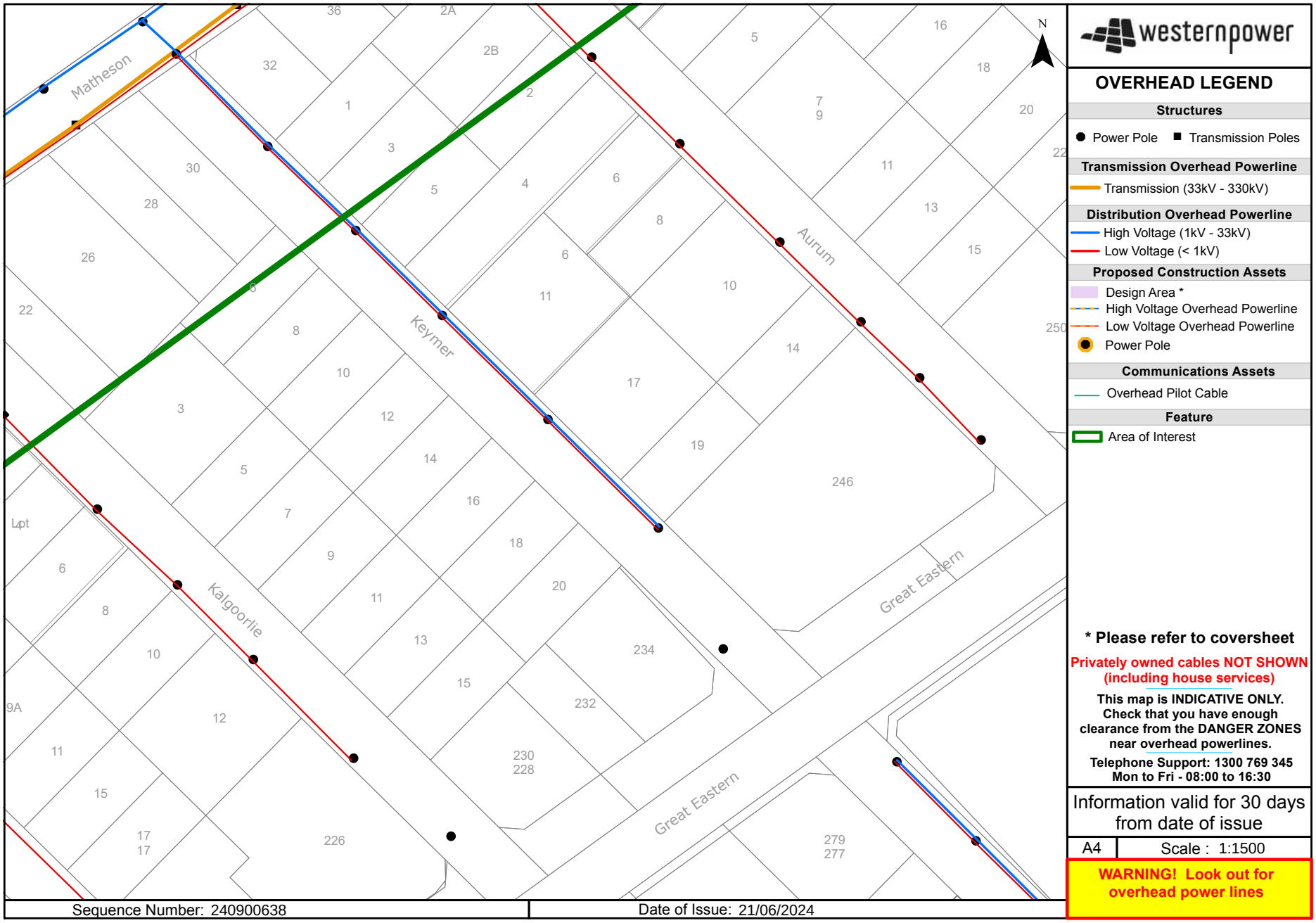
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A4 | Scale : 1:1500

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Matheson
Keymer
Aurum
Kalgoorlie
Great Eastern
Great Eastern
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N
Sequence Number: 240900638
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westernpower
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Job No 36968397

byda.com.au

## Contact Details

| Contact | Contact number | Company | Enquirer ID |
|---|---|---|---|
| Justin Zielinski | 0420 304 451 | - | 3140642 |

**Email**
jzielinski@tabec.com.au

**Address**
54 Havelock Street
West Perth WA 6005

## Job Site and Enquiry Details

**WARNING:** The map below only displays the location of the proposed job site and does not display any asset owners' pipe or cables. The area highlighted has been used only to identify the participating asset owners, who will send information to you directly.

| Enquiry date | Start date | End date | On behalf of | Job purpose | Locations | Onsite activities |
|---|---|---|---|---|---|---|
| 24/06/2024 | 25/06/2024 | 25/06/2024 | Private | Design | Both Road | Planning & Design |




Check that the location of the job site is correct. If not, you must submit a new enquiry.

If the scope of works change or plan validity dates expire, you must submit a new enquiry.

Do NOT dig without plans. Safe excavation is your responsibility. If you don't understand the plans or how to proceed safely, please contact the relevant asset owners.

| User Reference | Address | Notes/description |
|---|---|---|
| Precinct B | 39 Northerly Avenue<br>Ascot WA 6104 | - |

## Your Responsibility and Duty of Care

- **Lodging an enquiry does not authorise project commencement.** Before starting work, you must obtain all necessary information from all affected asset owners.
- If you don't receive plans within 2 business days, contact the asset owner & quote their sequence number.
- Always follow the 5Ps of Safe Excavation (page 2), and locate assets before commencing work.
- Ensure you comply with State legislative requirements for Duty of Care and safe digging.
- If you damage an underground asset, you MUST advise the asset owner immediately.
- By using the BYDA service, you agree to the Privacy Policy and Term of Use.
- For more information on safe digging practices, visit www.byda.com.au

## Asset Owner Details

Below is a list of asset owners with underground infrastructure in and around your job site. It is your responsibility to identify the presence of these assets. Plans issued by Members are indicative only unless specified otherwise. Note: not all asset owners are registered with BYDA. You must contact asset owners not listed here directly.

| Referral ID (Seq. no) | Authority Name | Phone | Status |
|---|---|---|---|
| 240936716 | ATCO Gas Australia | 1300 926 755 | NOTIFIED |
| 240936712 | NBN Co (WA) | 1800 687 626 | NOTIFIED |
| 240936708 | Optus (WA) | 1800 505 777 | NOTIFIED |
| 240936709 | Public Transport Authority - Bus Stops | 13 62 13 | NOTIFIED |
| 240936714 | Telstra (WA) | 1800 653 935 | NOTIFIED |
| 240936711 | TPG Telecom (WA) | 1800 786 306 | NOTIFIED |
| 240936710 | Vocus (WA) | 1800 262 663 | NOTIFIED |
| 240936715 | Water Corporation | 13 13 95 | NOTIFIED |
| 240936713 | Western Power | 13 10 87 | NOTIFIED |

END OF UTILITIES LIST

**Lodge your FREE enquiry online any time at byda.com.au**

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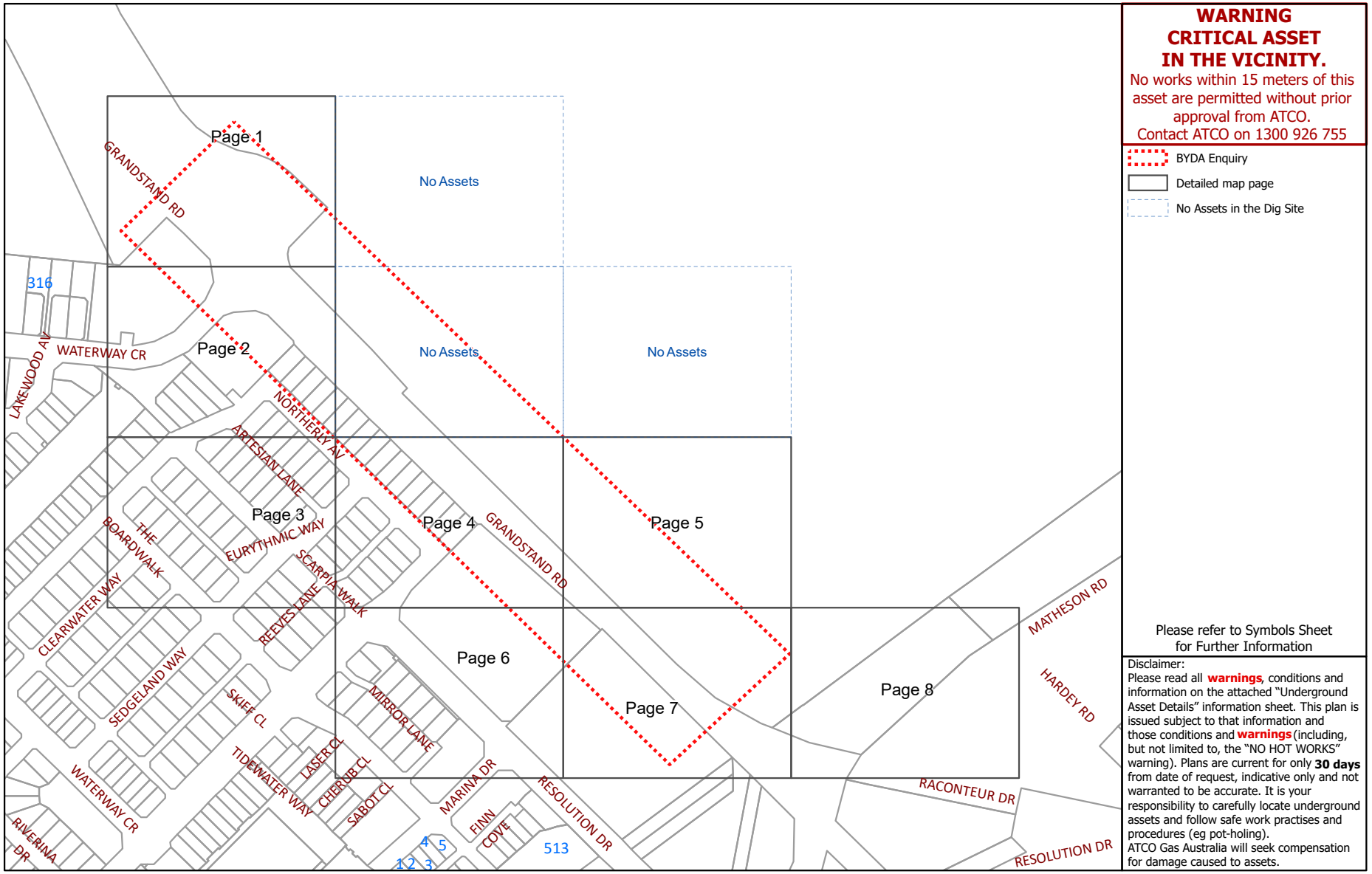
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ABN: 90 089 531 975

Date: 24/06/24 (valid for 30 days)
Index Sheet

Seq # 240936716
Job # 36968397

BYDA Location: 39 Northerly Avenue Ascot 6104
Scale: 1:3,500

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**WARNING**
**CRITICAL ASSET**
**IN THE VICINITY.**
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BYDA Enquiry
Detailed map page
No Assets in the Dig Site

Please refer to Symbols Sheet for Further Information

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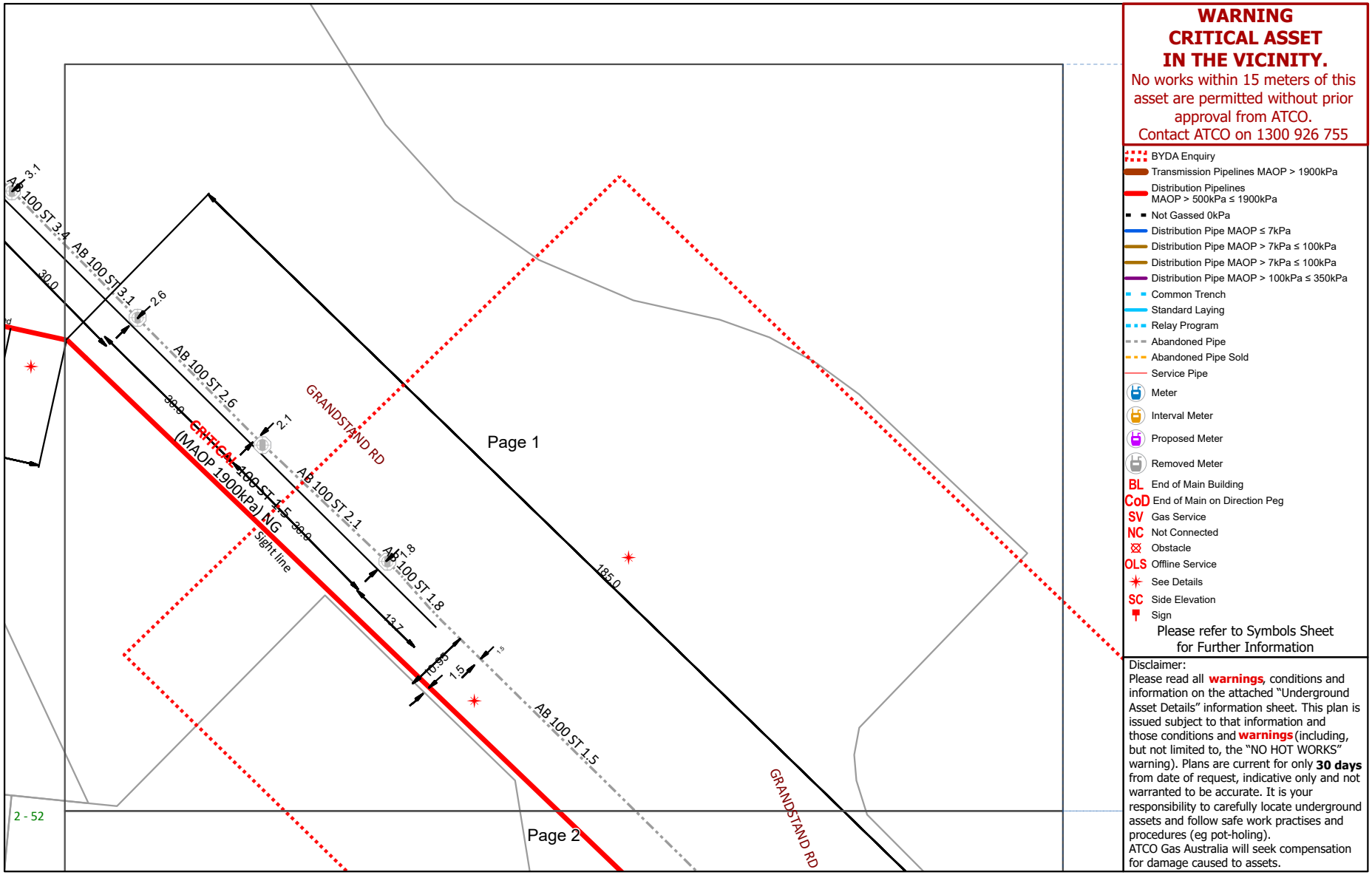
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Seq # 240936716
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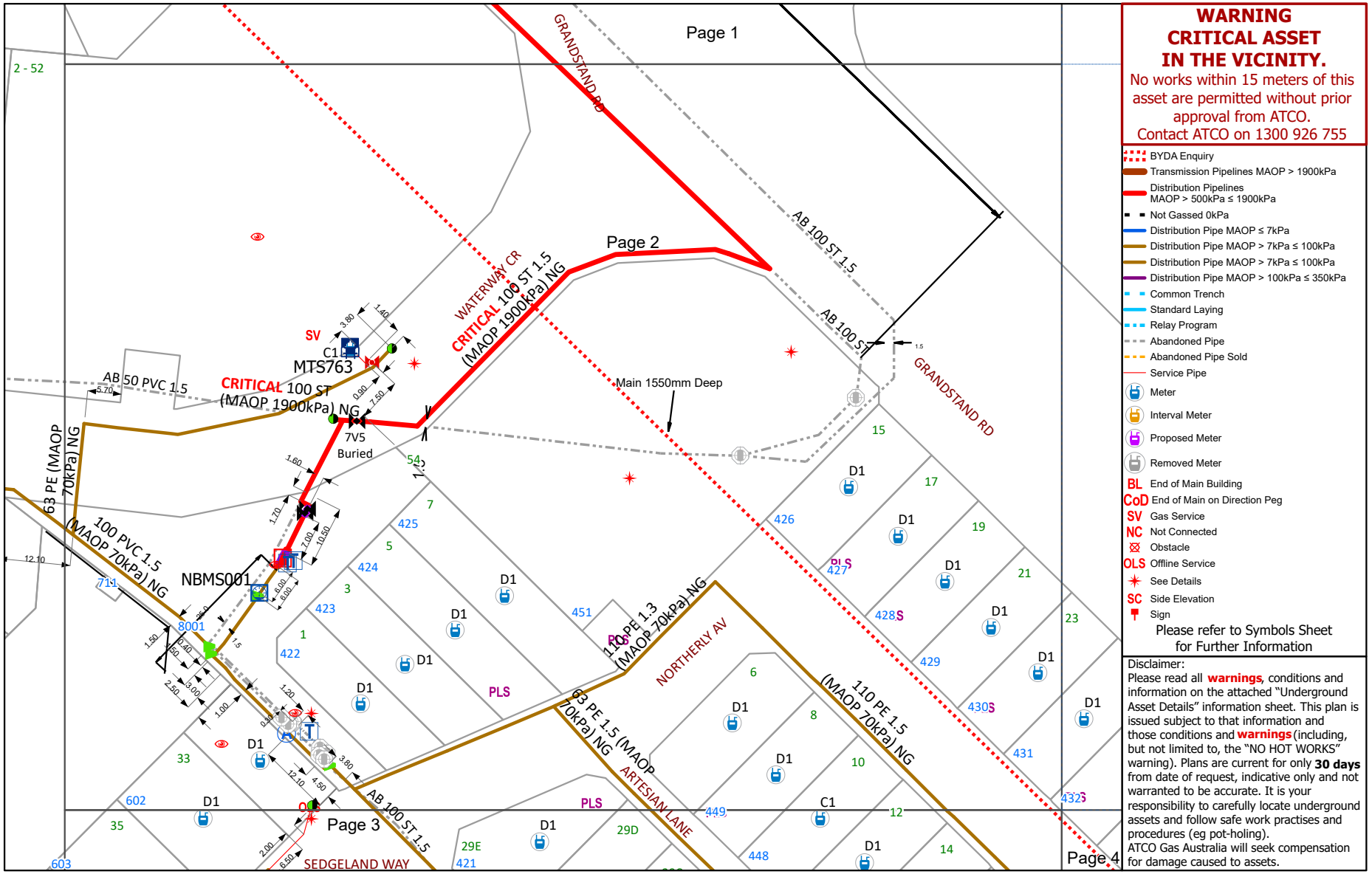
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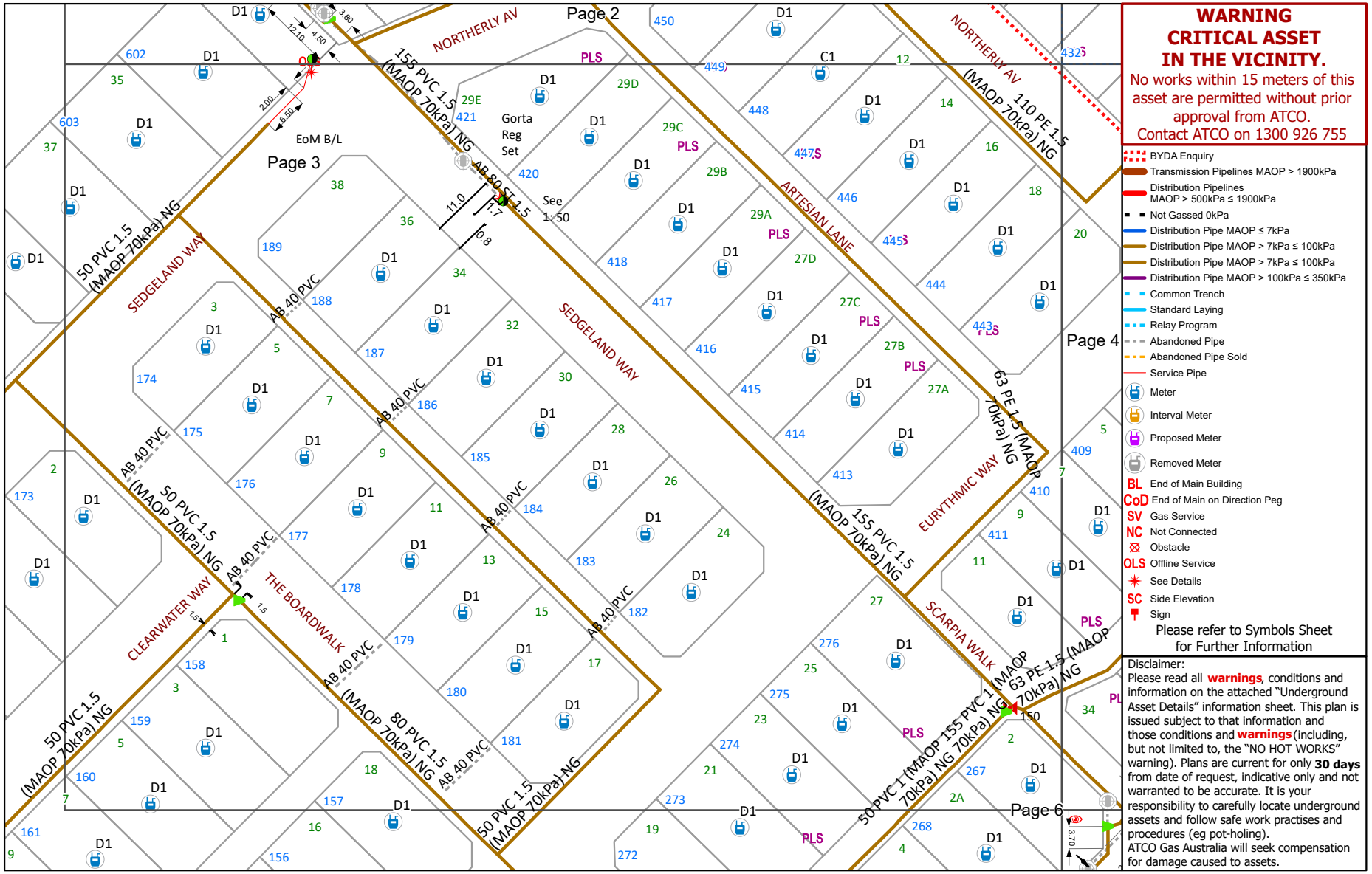
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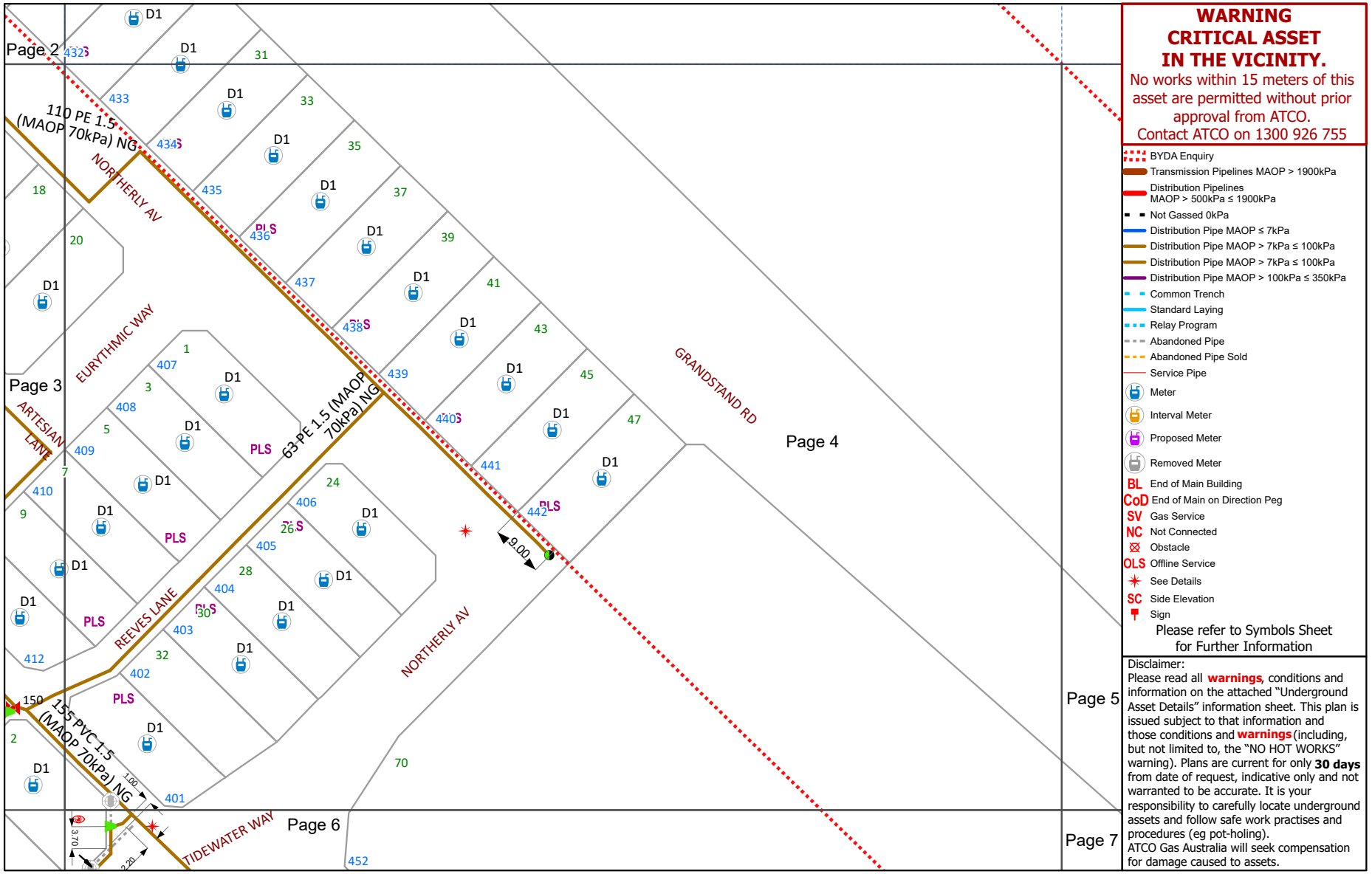
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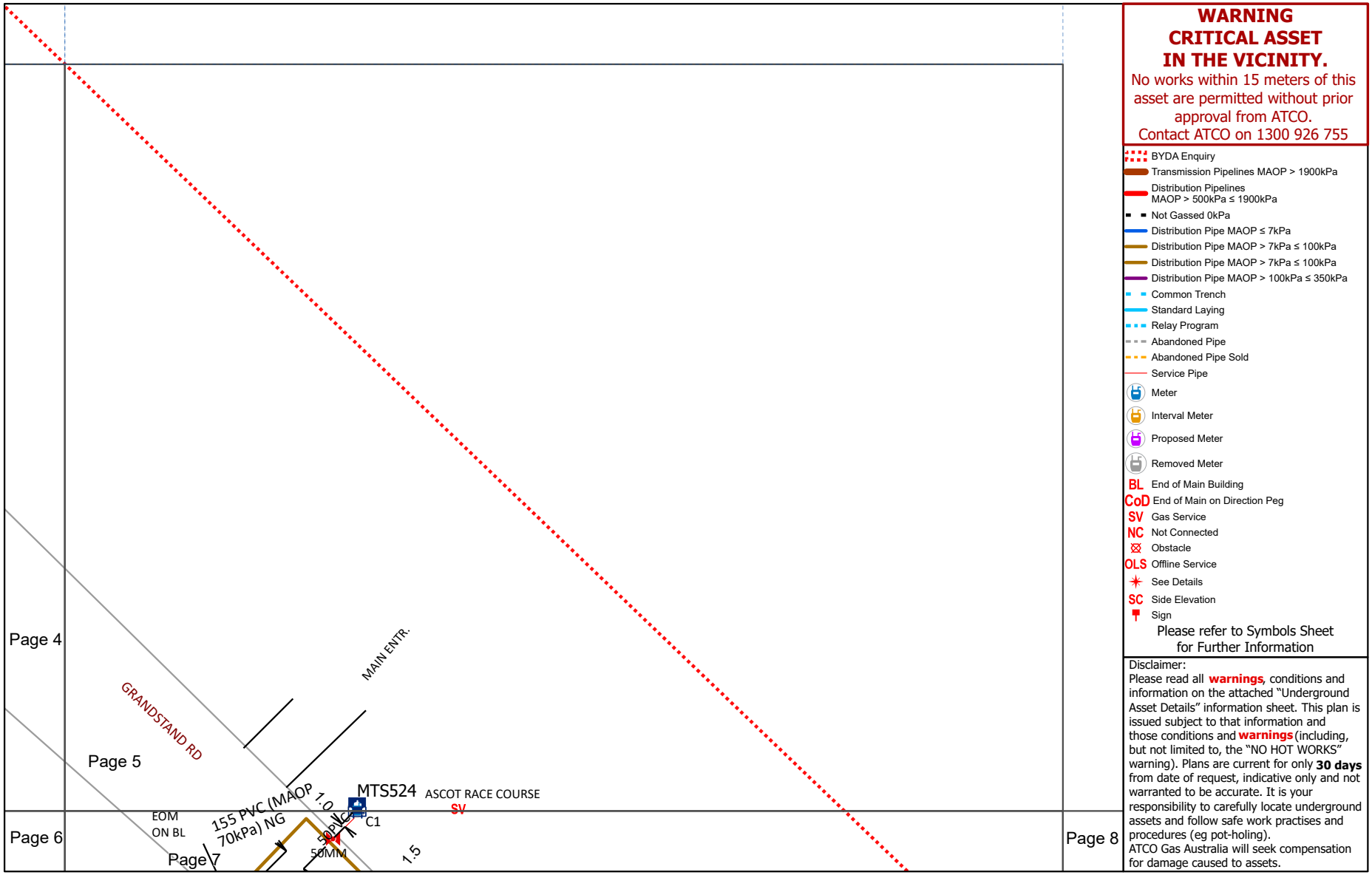
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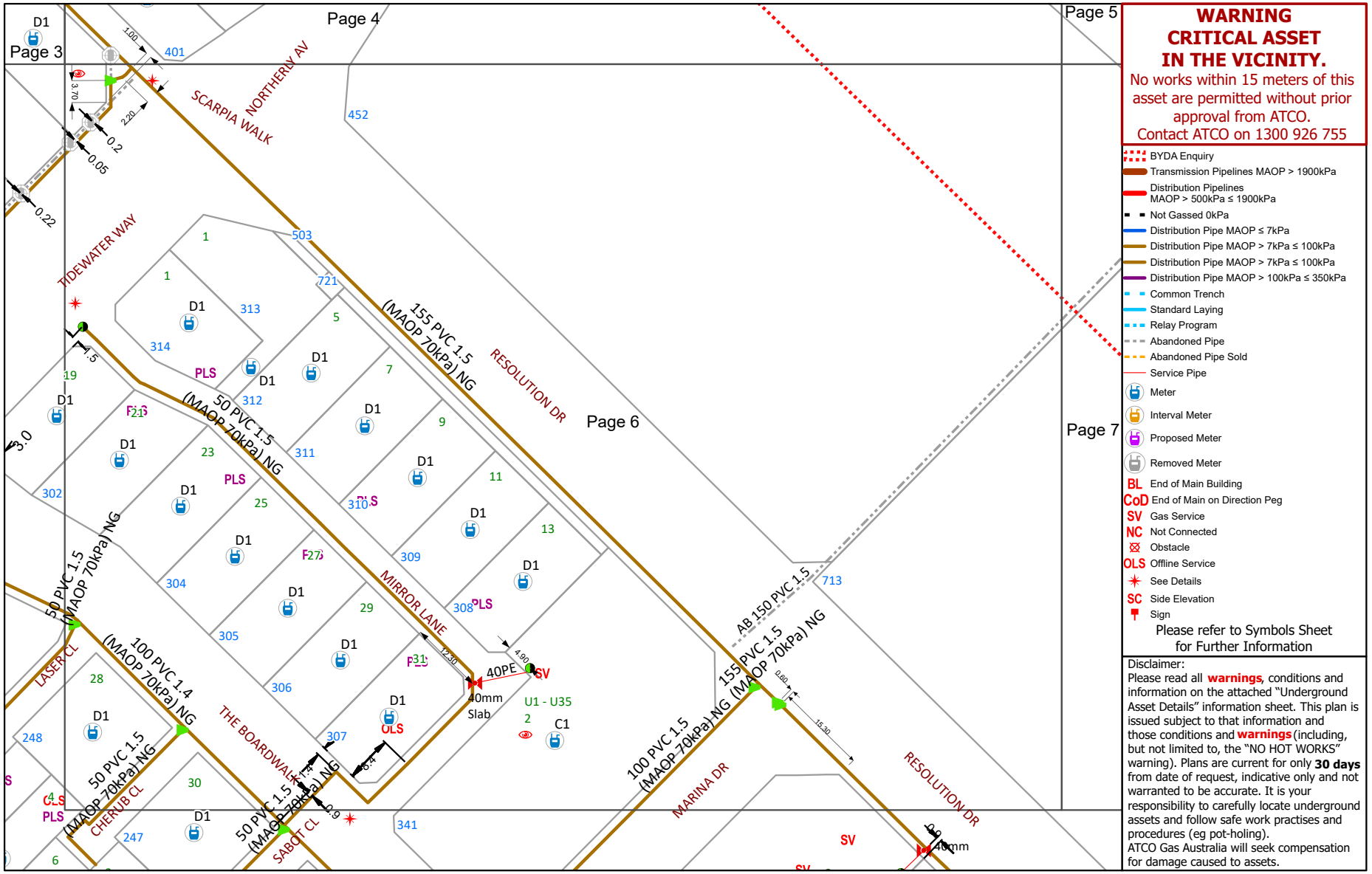
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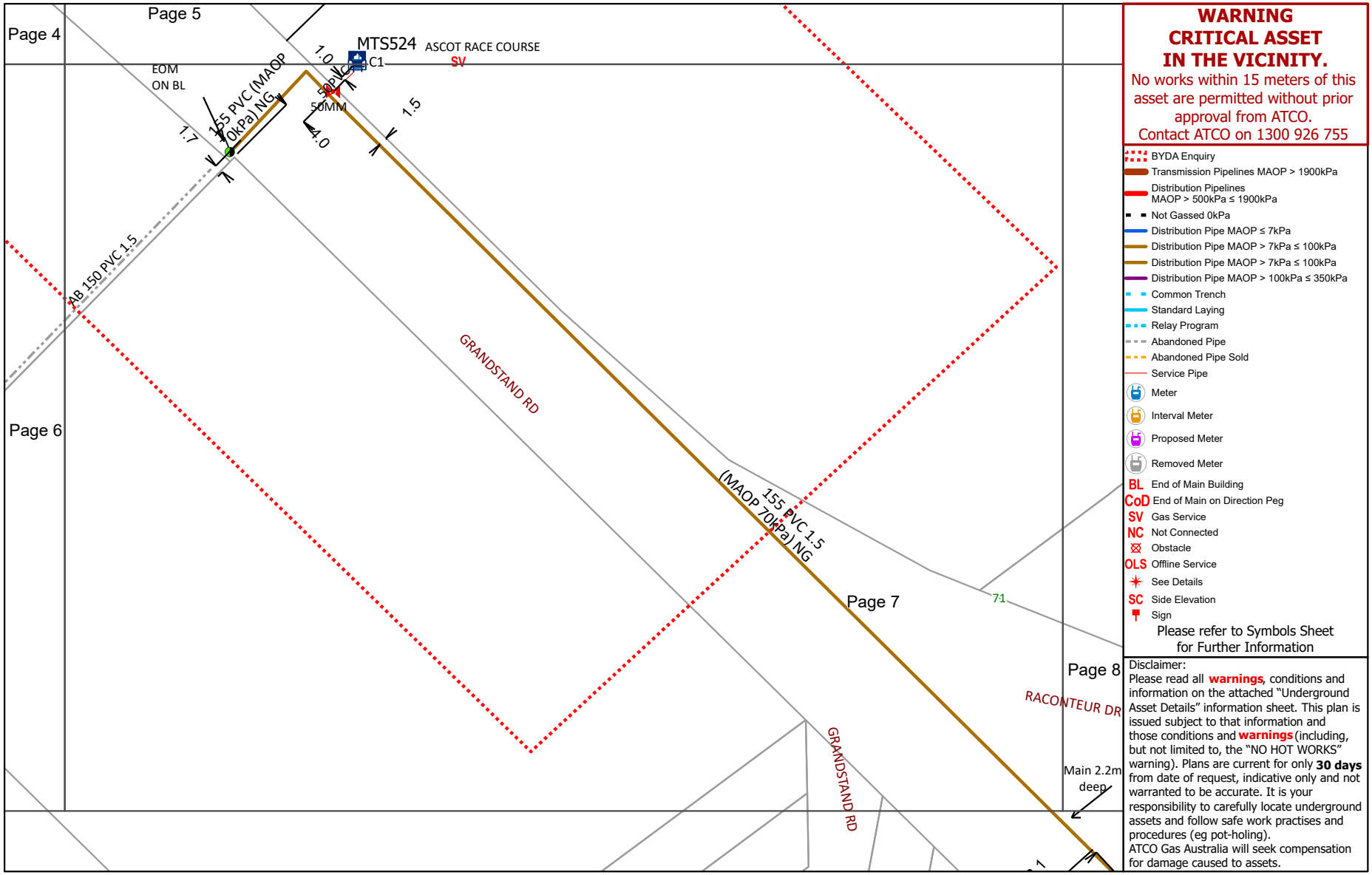
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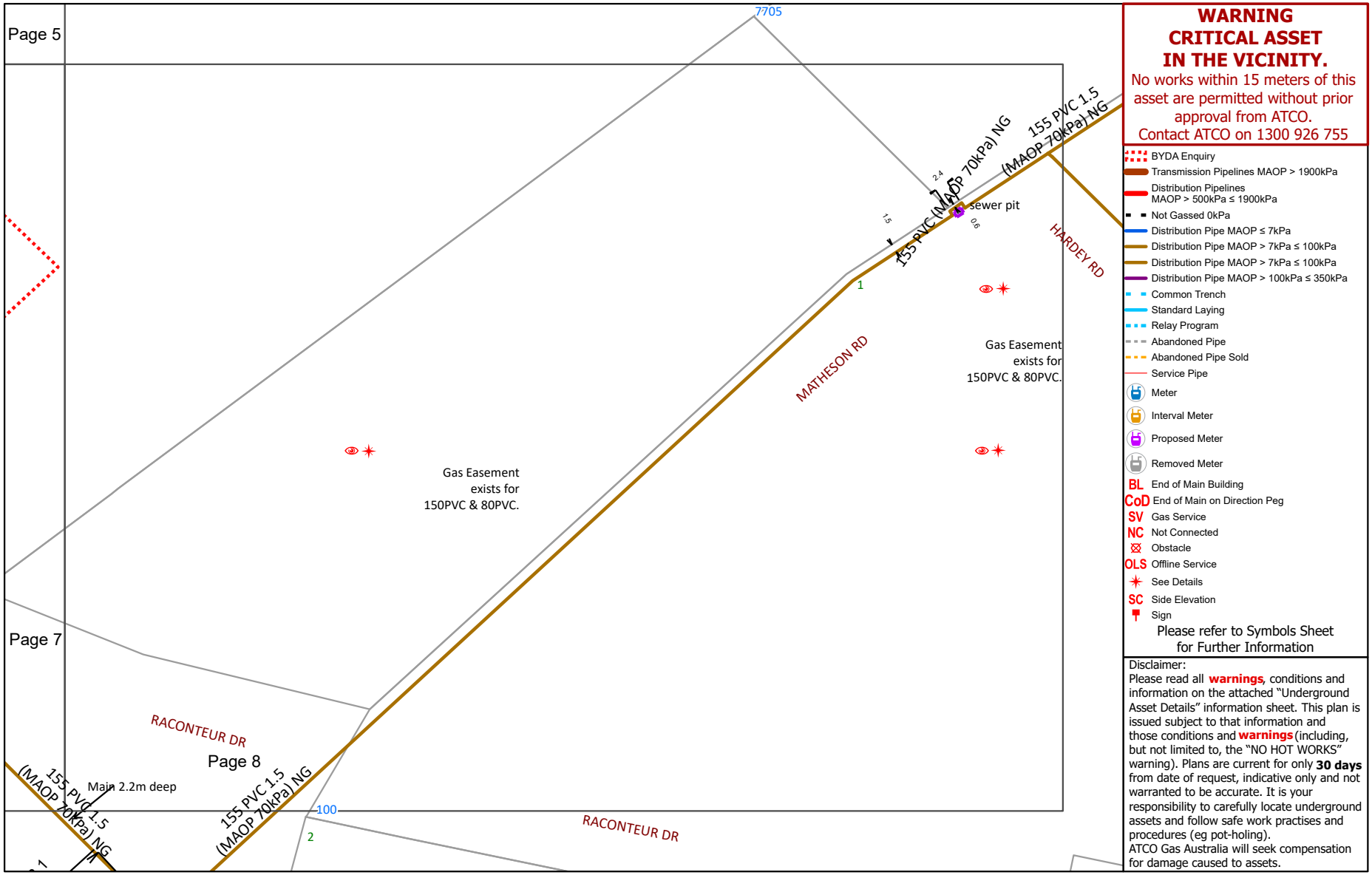
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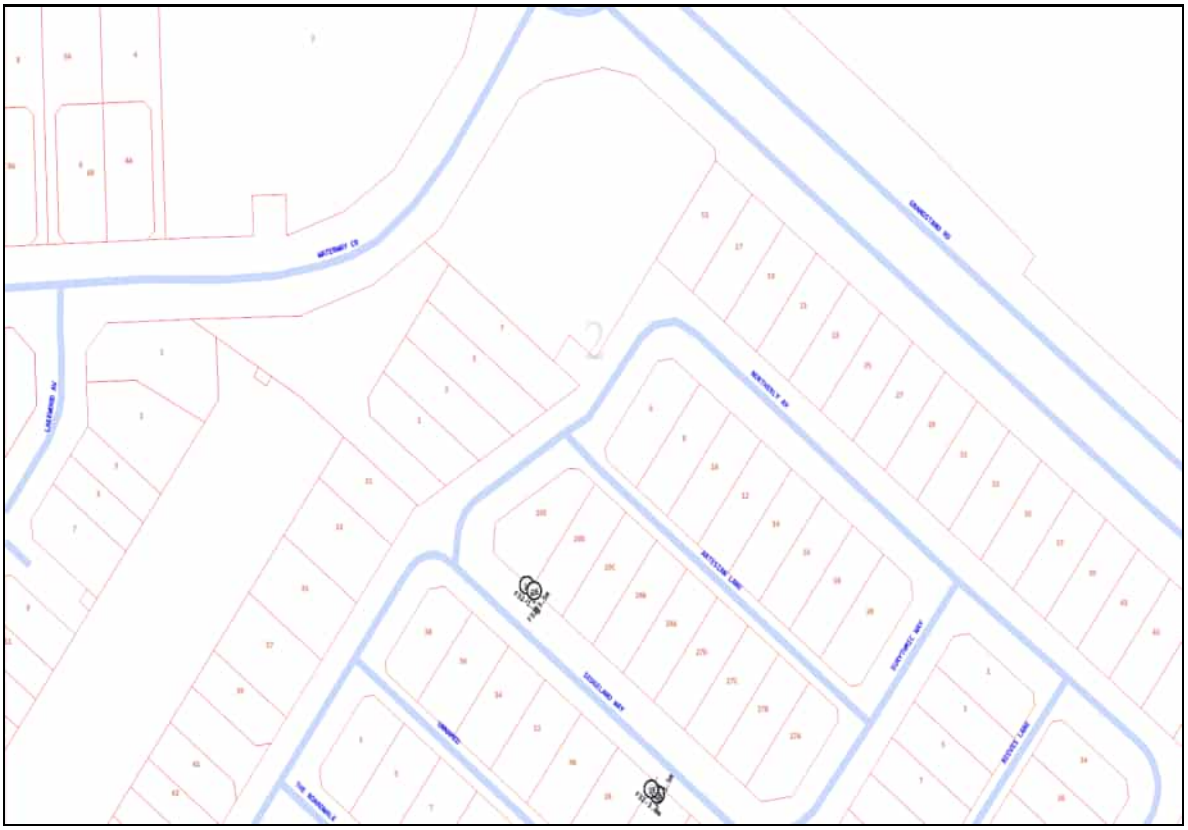
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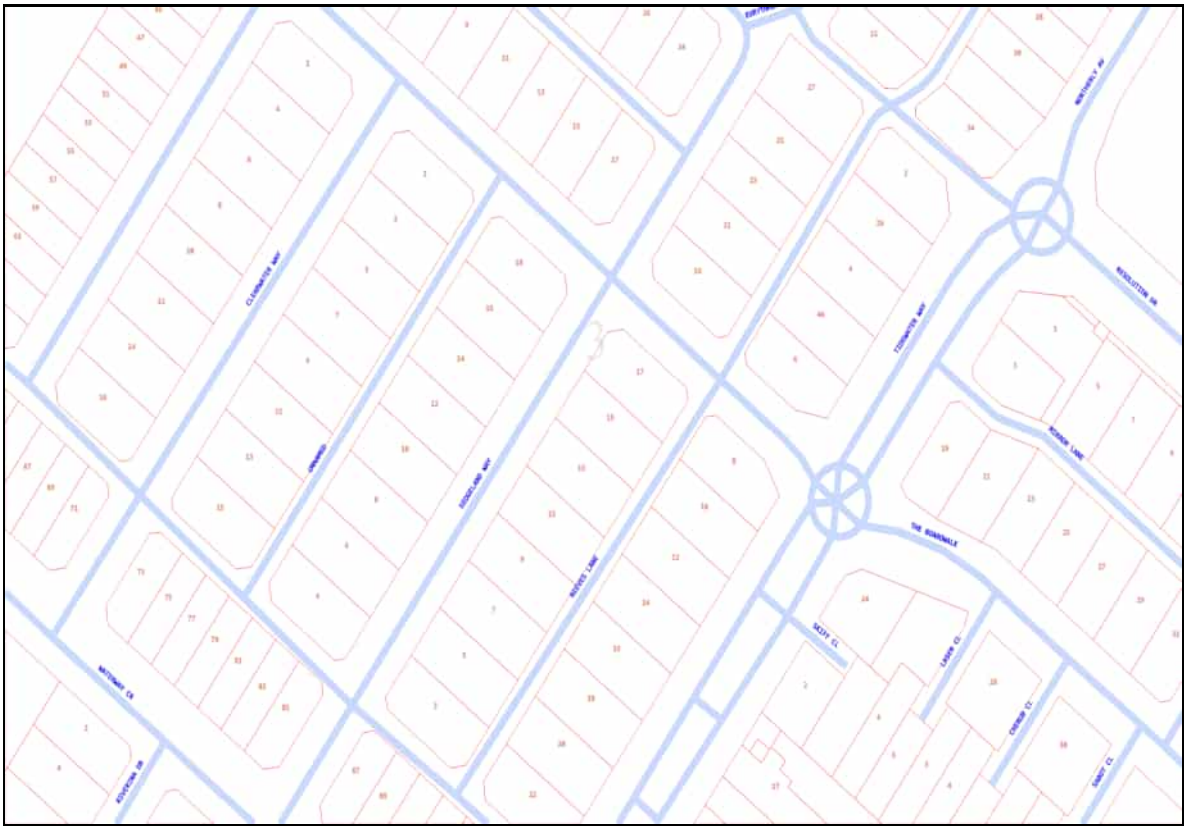
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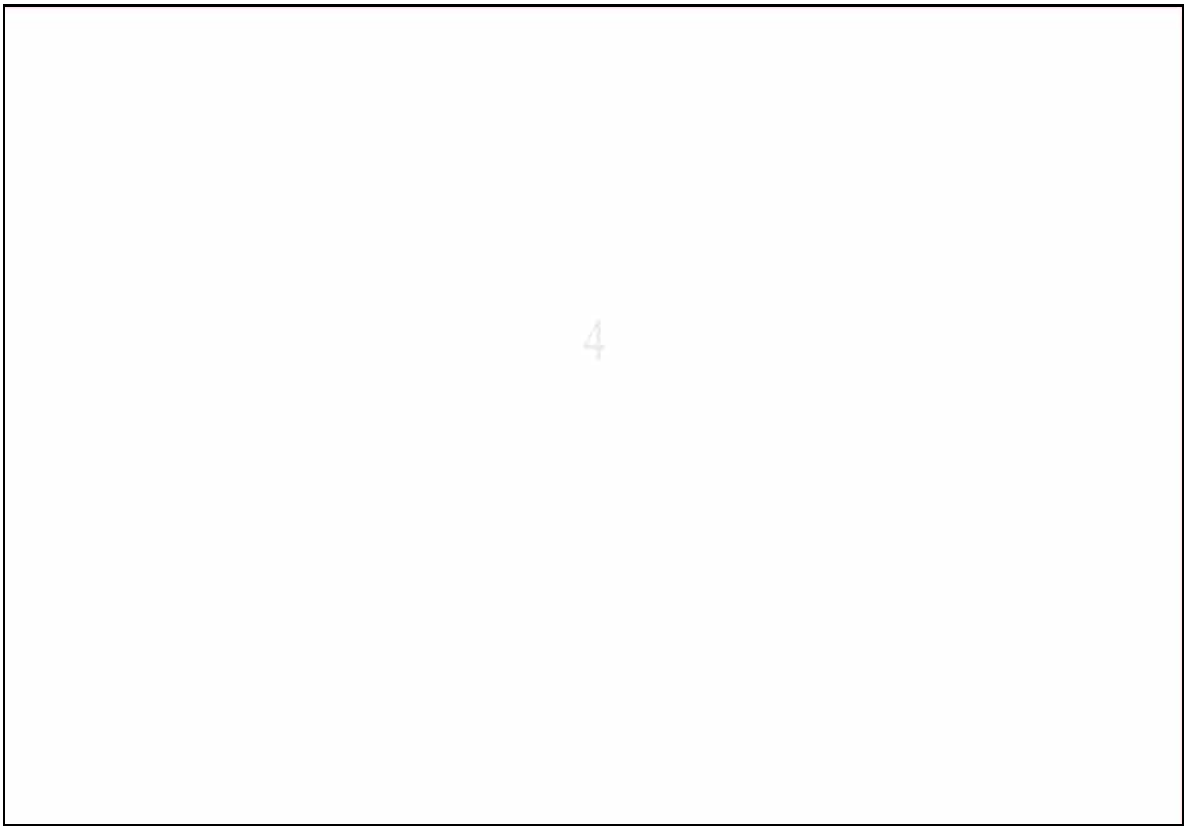
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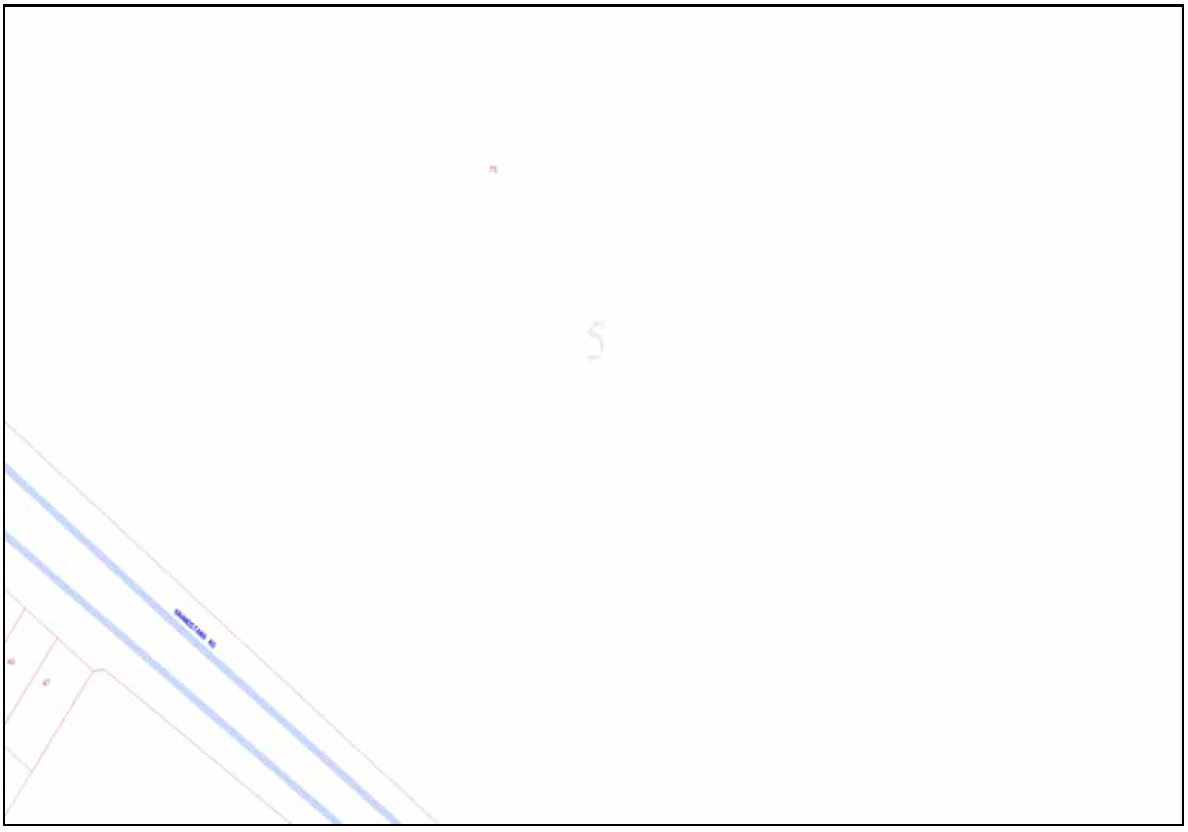
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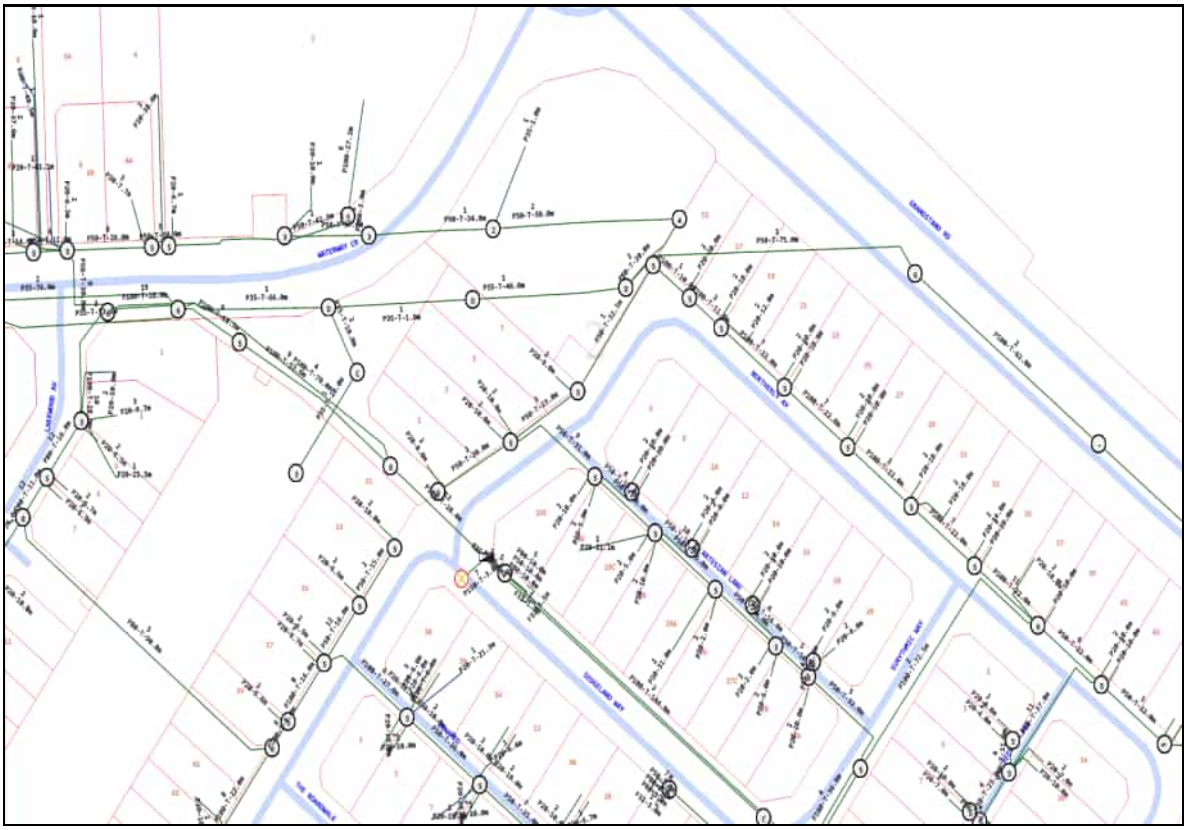


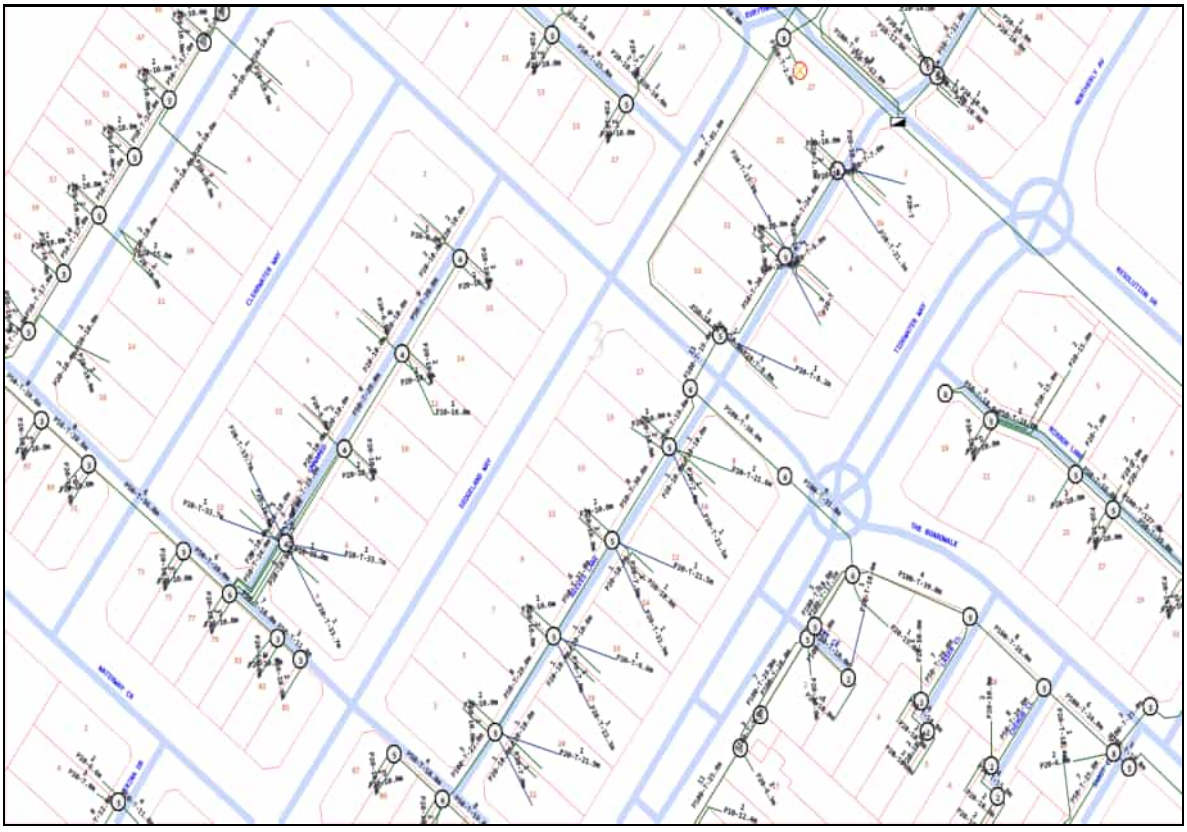


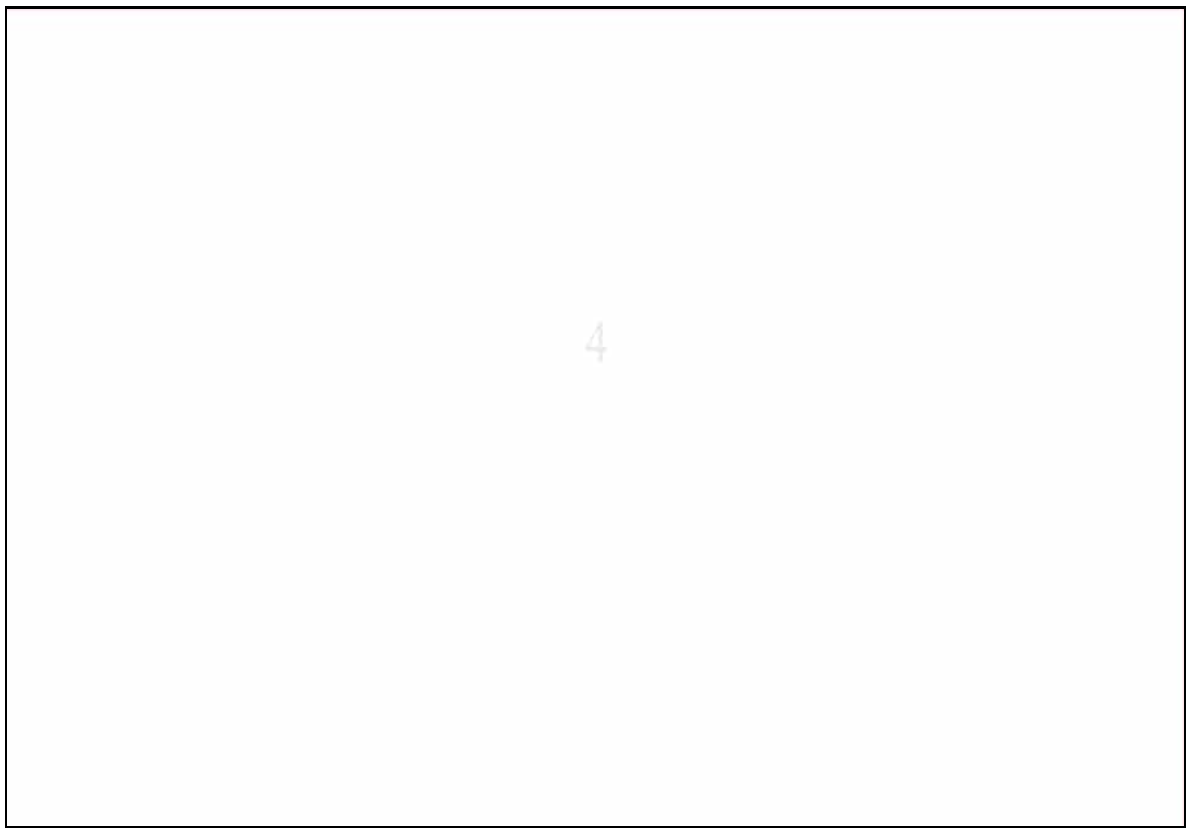
## Emergency Contacts

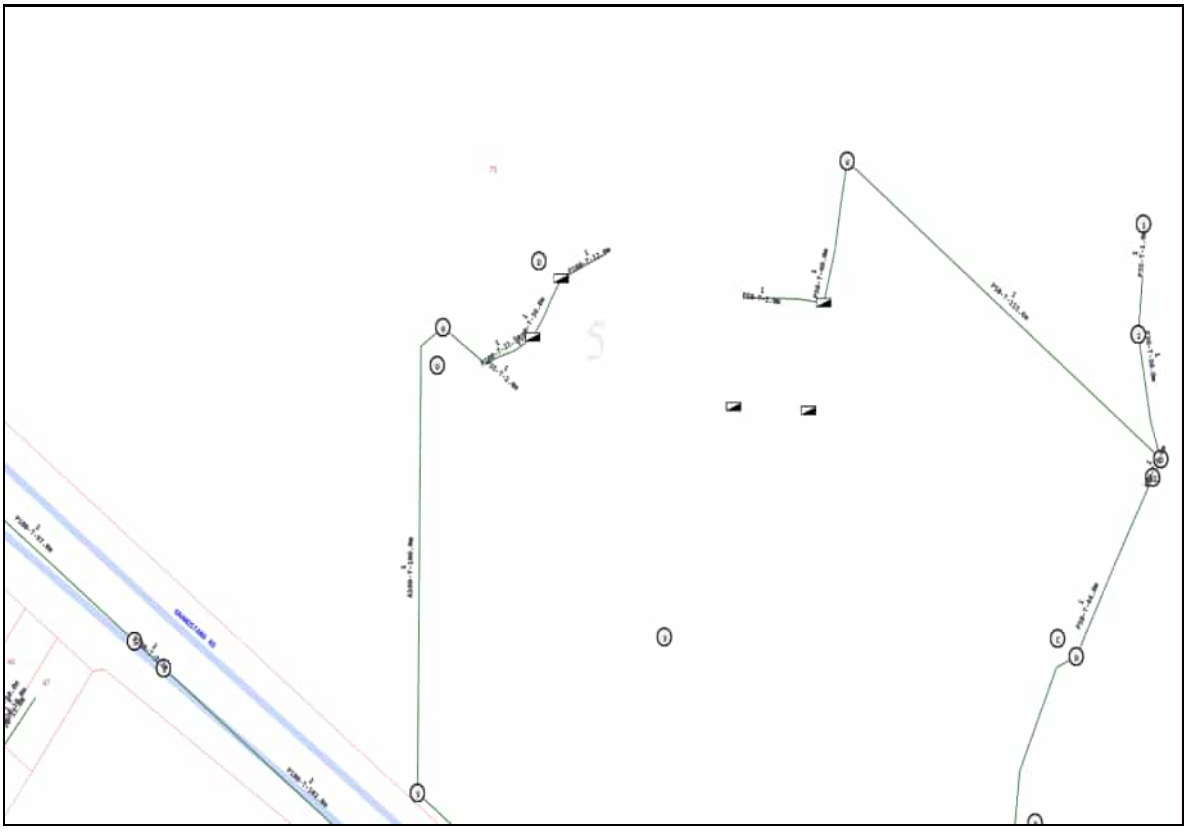
You must immediately report any damage to the **nbn™** network that you are/become aware of. Notification may be by telephone - 1800 626 329.

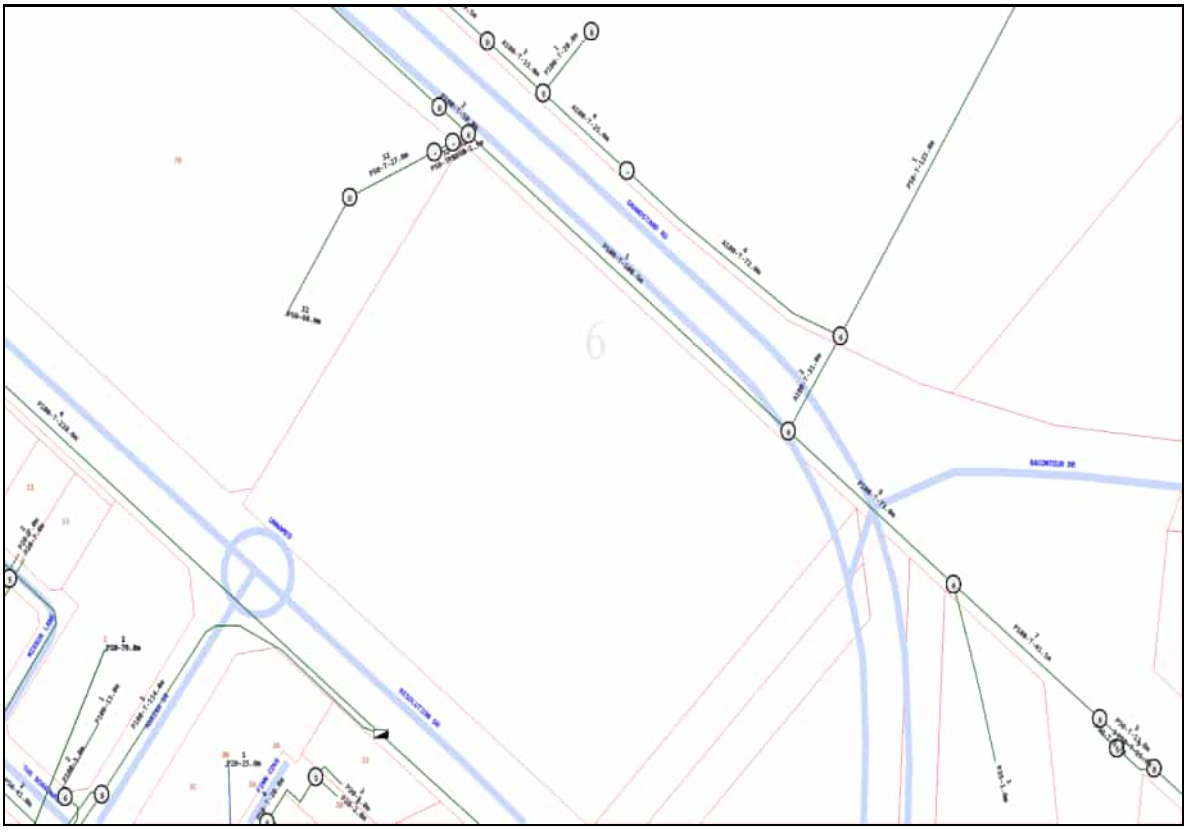






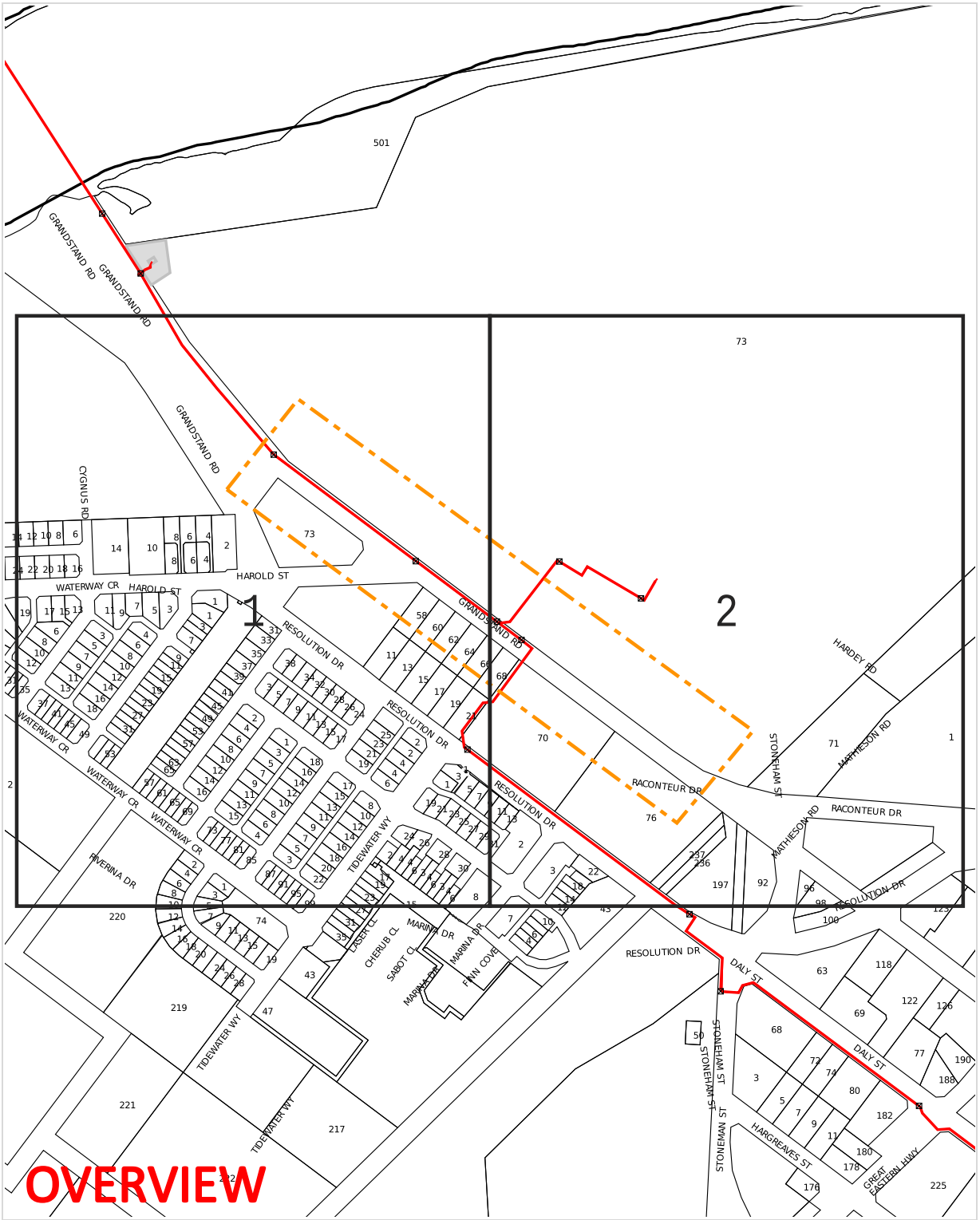






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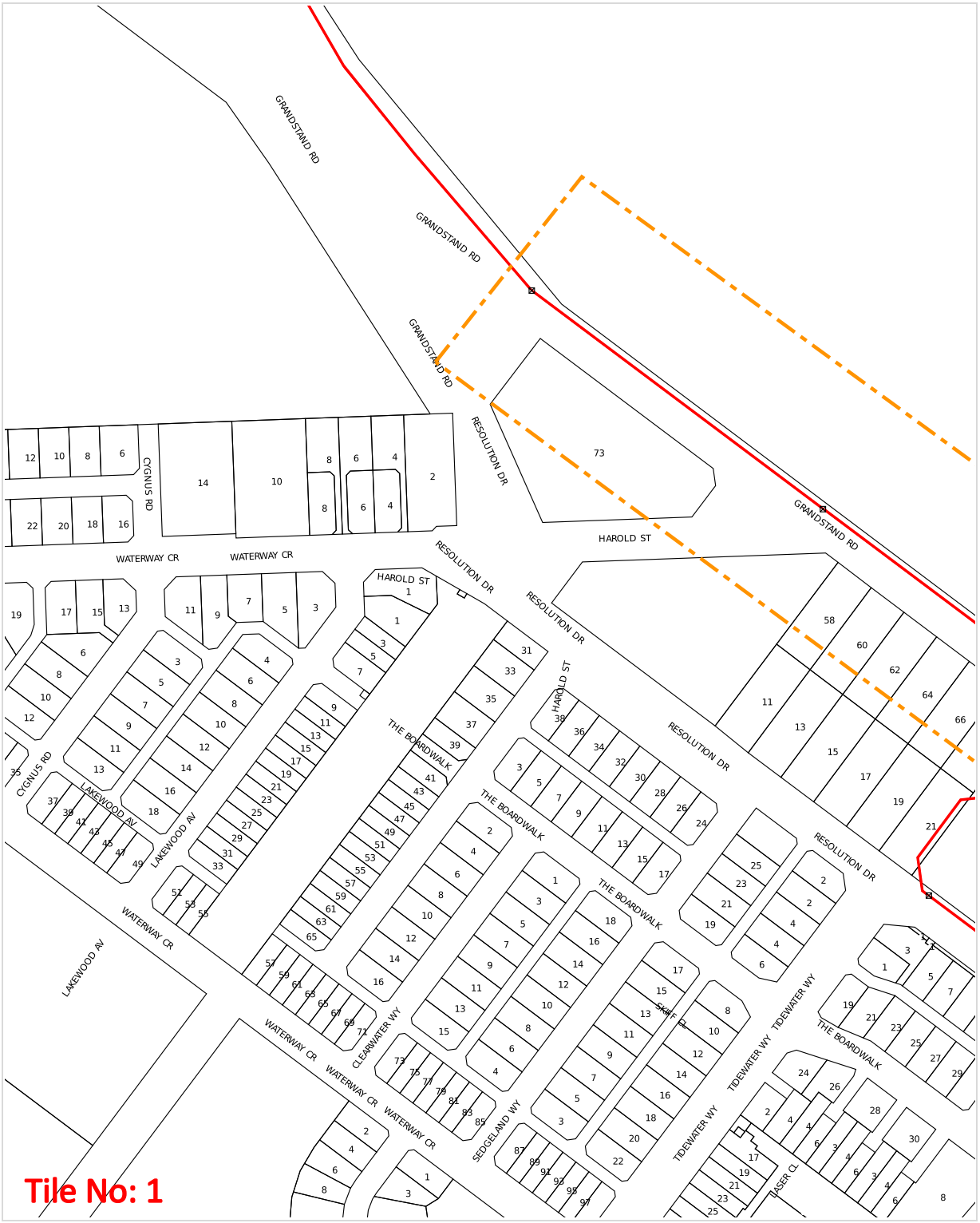

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Sequence Number: 240936708

Date Generated: 24 Jun 2024

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Email: Fibre.Locations@optus.net.au
For urgent onsite assistance contact 1800 505 777
Optus Limited ACN 052 833 208

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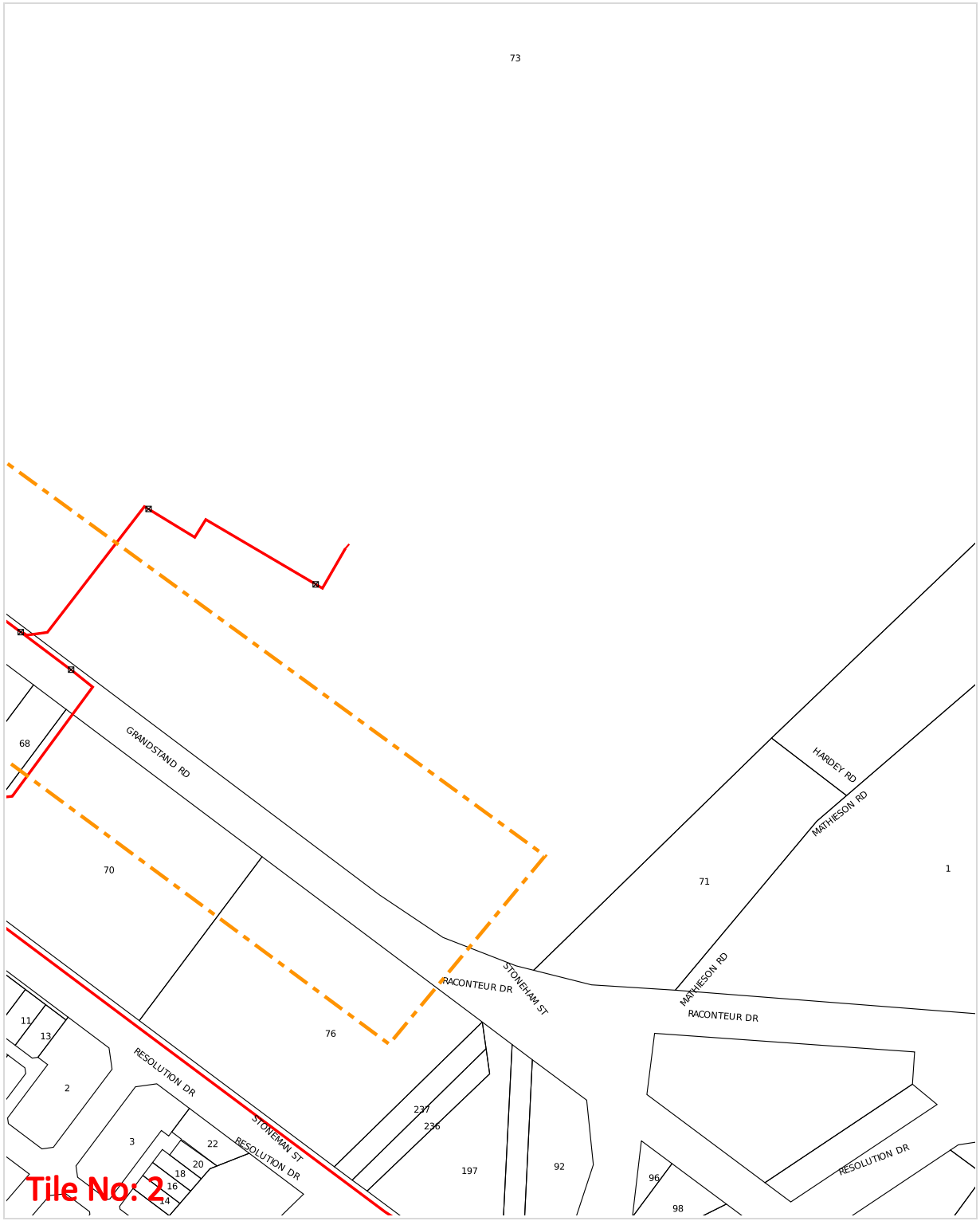

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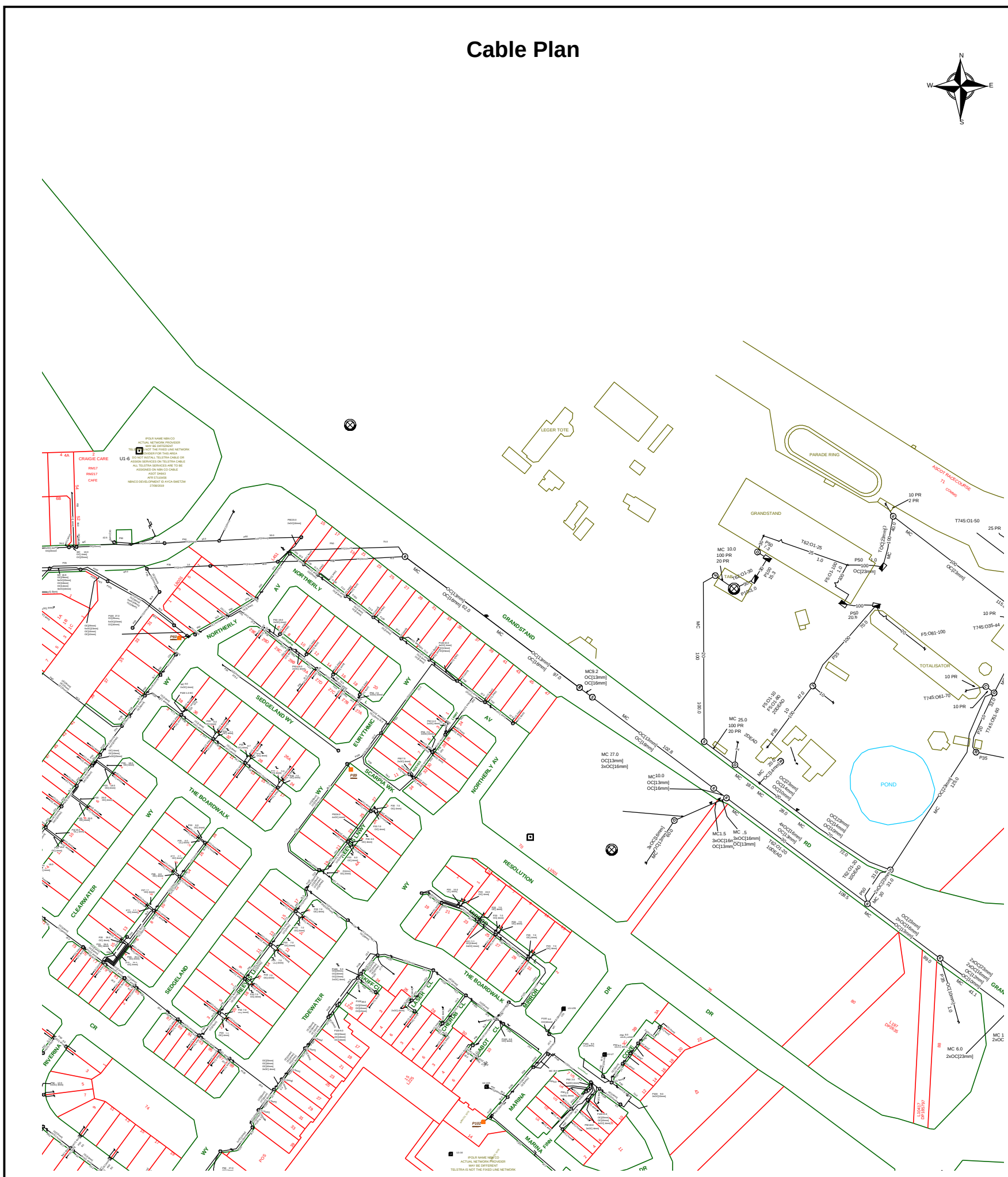
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# Cable Plan




| | | |
|---|---|---|
| | Report Damage: https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment<br>Ph - 13 22 03<br>Email - Telstra.Plans@team.telstra.com<br>Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries | Sequence Number: 240936714 |
| TELSTRA LIMITED A.C.N. 086 174 781 | | |
| Generated On 24/06/2024 09:36:36 | | CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance. |

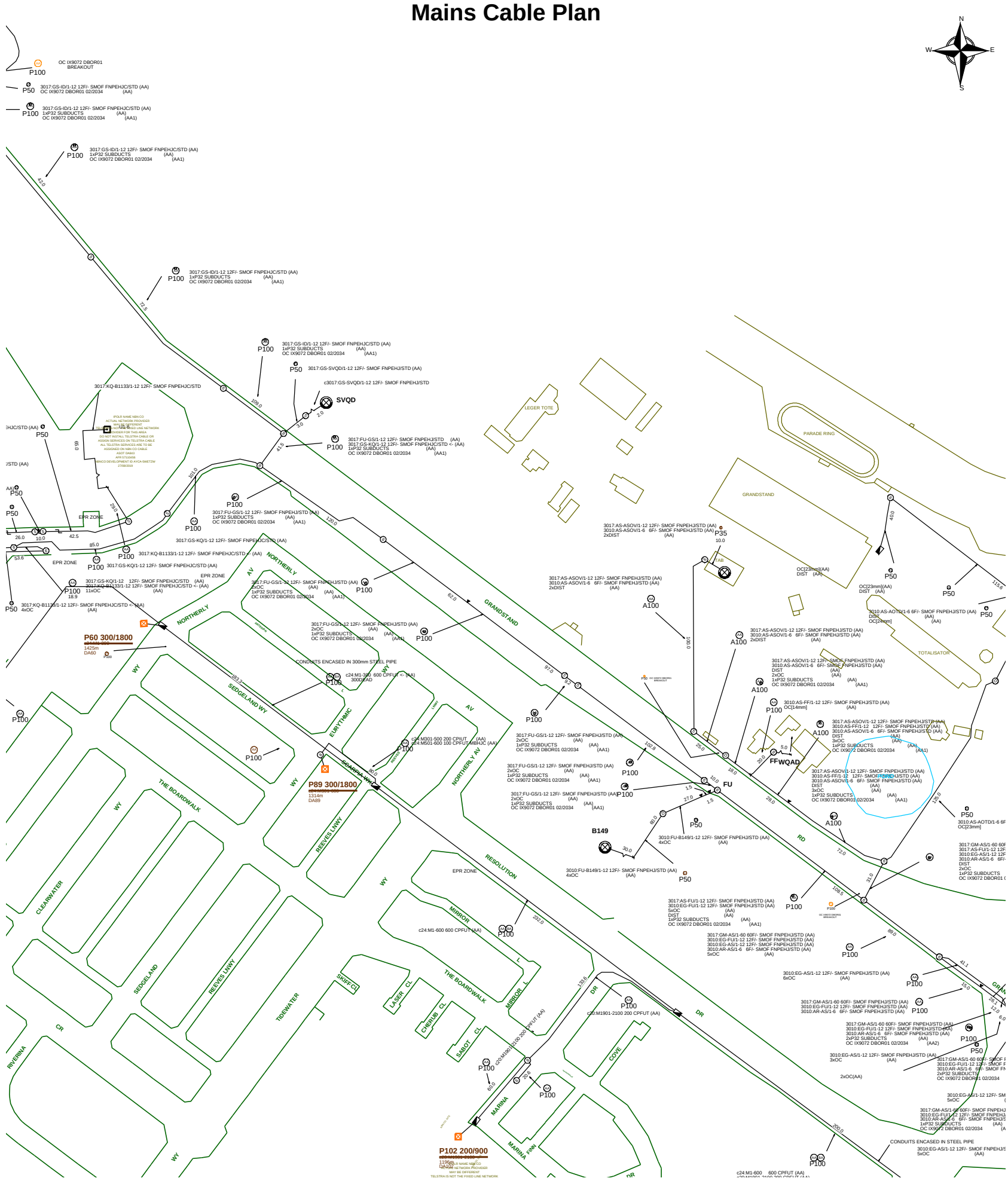
The above plan must be viewed in conjunction with the Mains Cable Plan on the following page

WARNING
Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information.
As such,Telstra supplied location information is indicative only.Spatial accuracy is not applicable to Quality Level D.
Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it.
Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy.
Further on site investigation is required to validate the exact location of Telstra plant prior to commencing construction work.
A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works.

See the Steps- Telstra Duty of Care that was provided in the email response.

Page 1 of 2

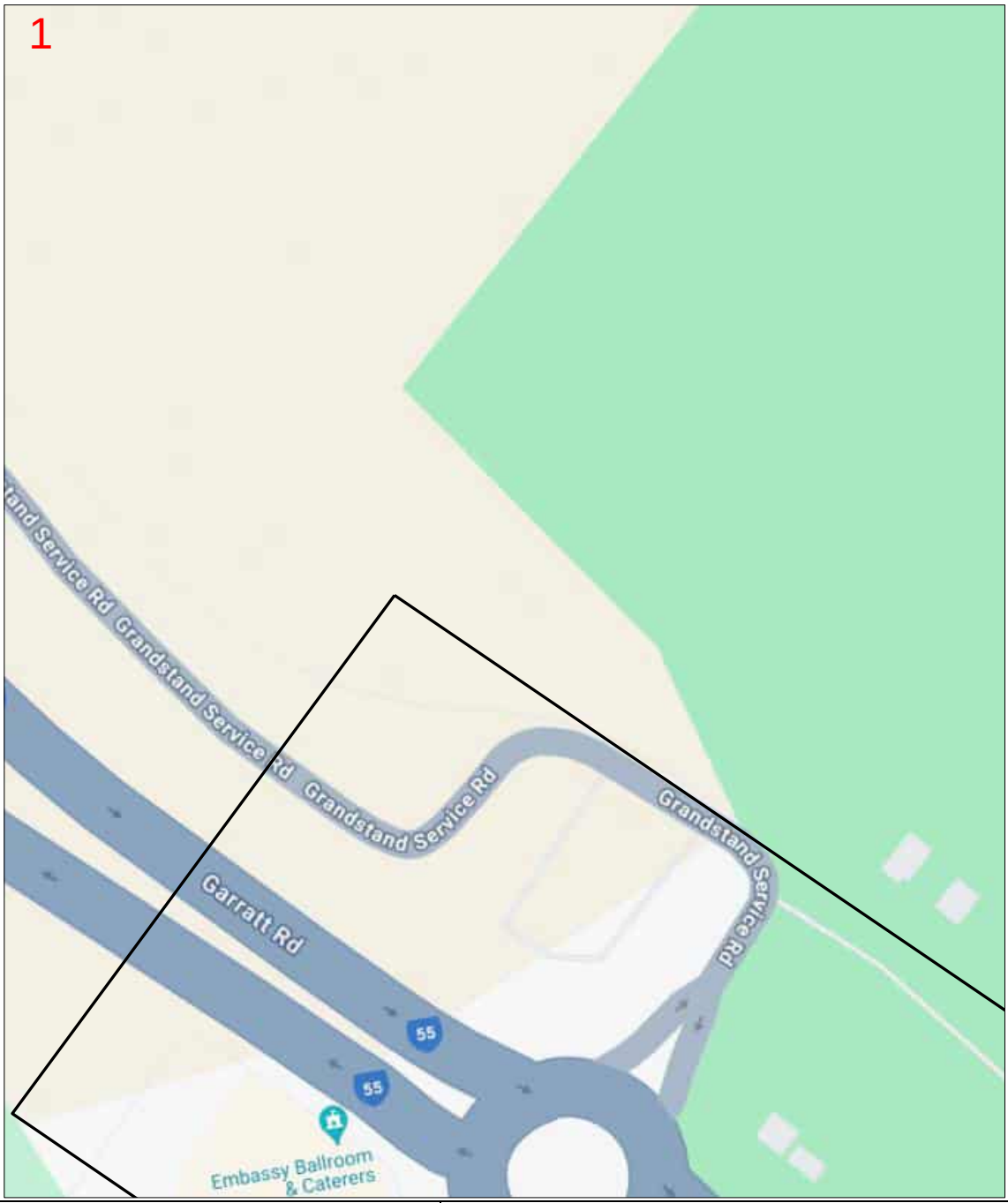
# Mains Cable Plan




| | |
|---|---|
| Report Damage: https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment<br>Ph - 13 22 03<br>Email - Telstra.Plans@team.telstra.com<br>Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries | Sequence Number: 240936714 |
| TELSTRA LIMITED A.C.N. 086 174 781 | CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance. |
| Generated On 24/06/2024 09:36:39 | |

WARNING
Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information.
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See the Steps- Telstra Duty of Care that was provided in the email response.




**Enquiry Number:** 240936711

**Map Sheet:** 1

**Scale:** 1: 750

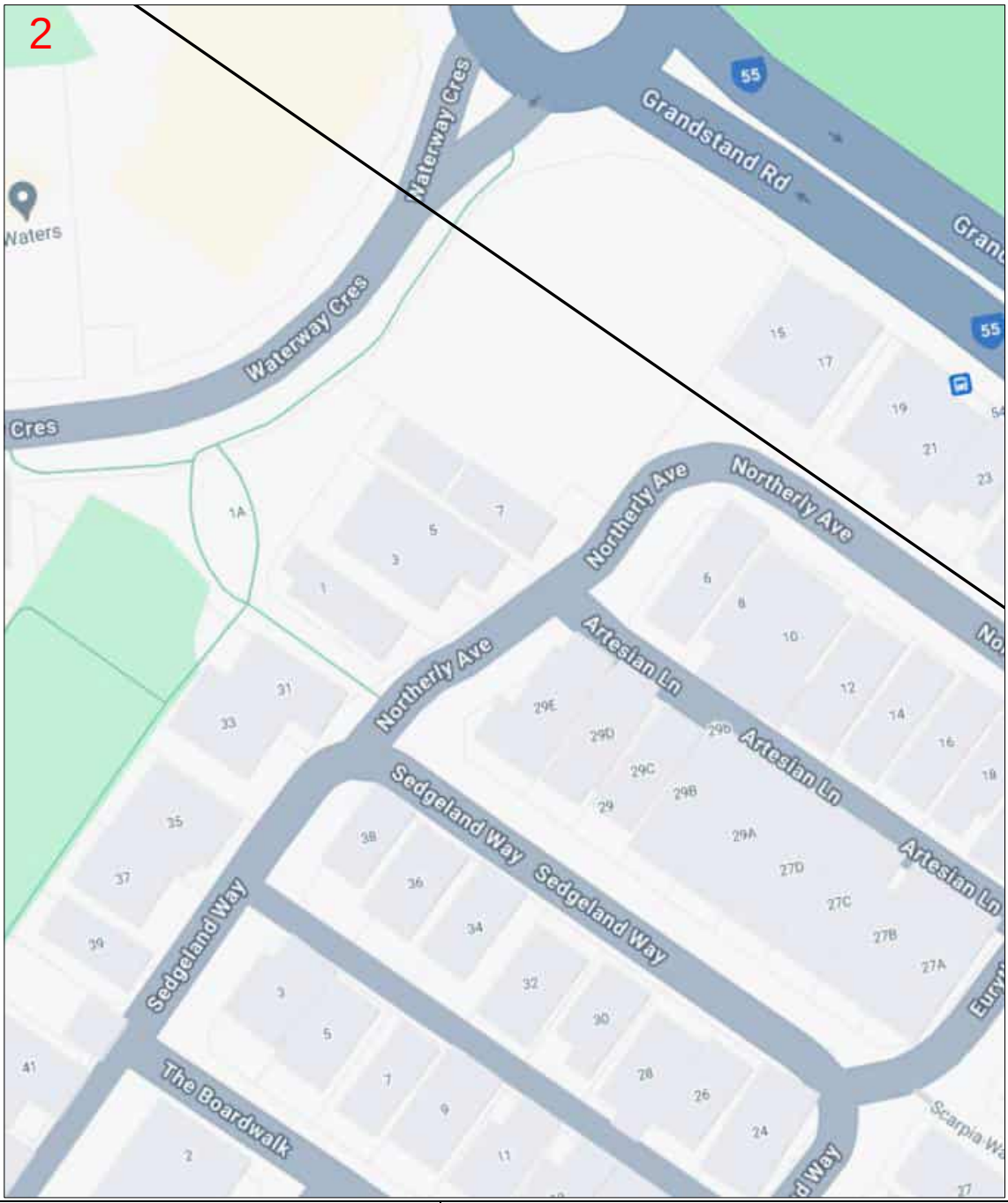
0 0.008km

N

**LEGEND**

| | |
|---|---|
| BYDA Work Area | |
| AAPT/PowerTel Pit | TransACT Pit |
| AAPT/PowerTel Duct | TransACT Duct |
| DDA Pit | SOUL Pattinson Telecoms Pit |
| DDA Duct | SOUL Pattinson Telecoms Duct |
| Agile/Adam Pit | PIPE Networks Pit |
| Agile/Adam Duct | PIPE Networks Duct |

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**Enquiry Number:** 240936711

**Map Sheet:** 2

**Scale:** 1: 750

0 0.008km

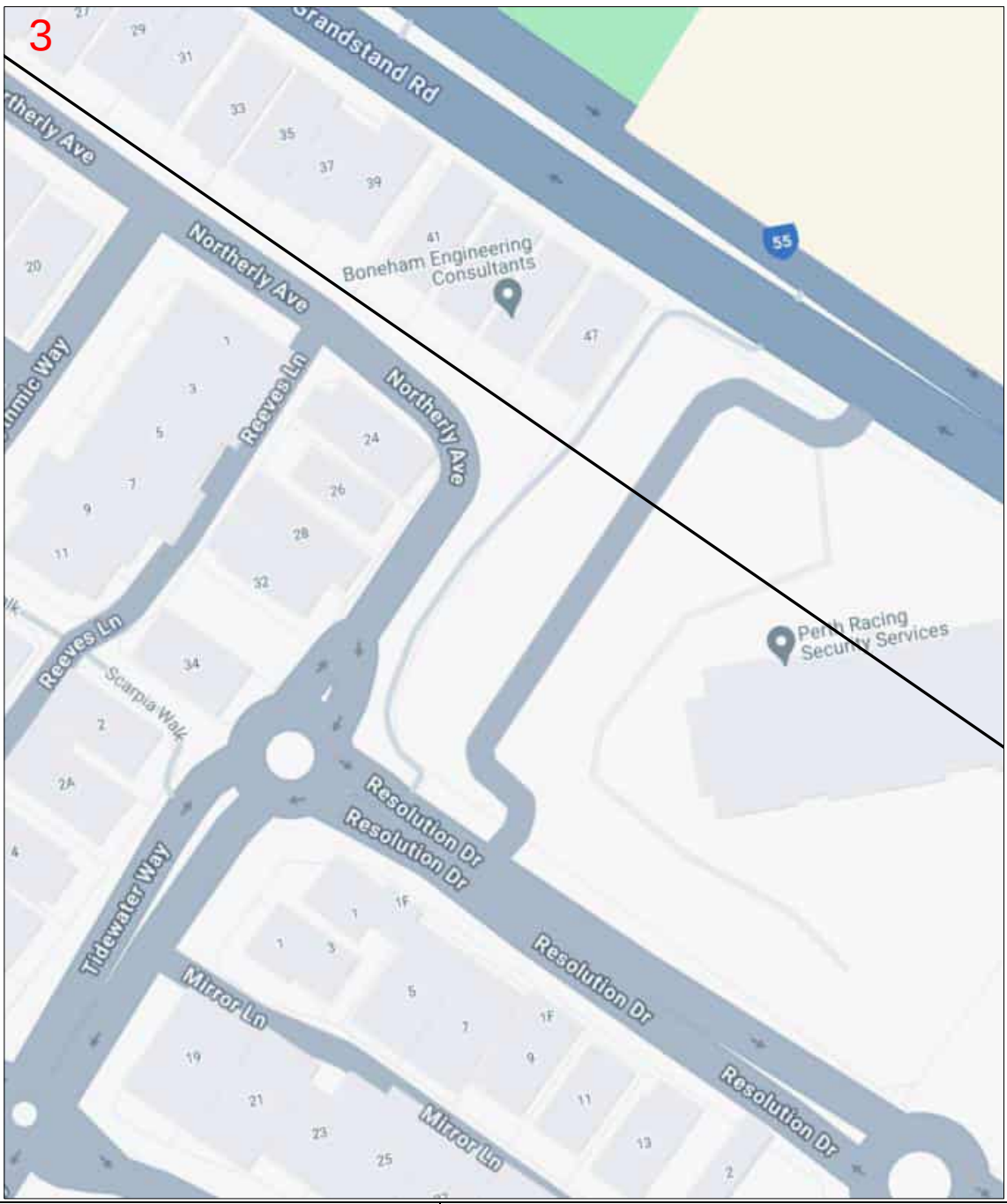
N

**LEGEND**

BYDA Work Area

| | |
|---|---|
| AAPT/PowerTel Pit | TransACT Pit |
| AAPT/PowerTel Duct | TransACT Duct |
| DDA Pit | SOUL Pattinson Telecoms Pit |
| DDA Duct | SOUL Pattinson Telecoms Duct |
| Agile/Adam Pit | PIPE Networks Pit |
| Agile/Adam Duct | PIPE Networks Duct |

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**Enquiry Number:** 240936711

**Map Sheet:** 3

**Scale:** 1: 750

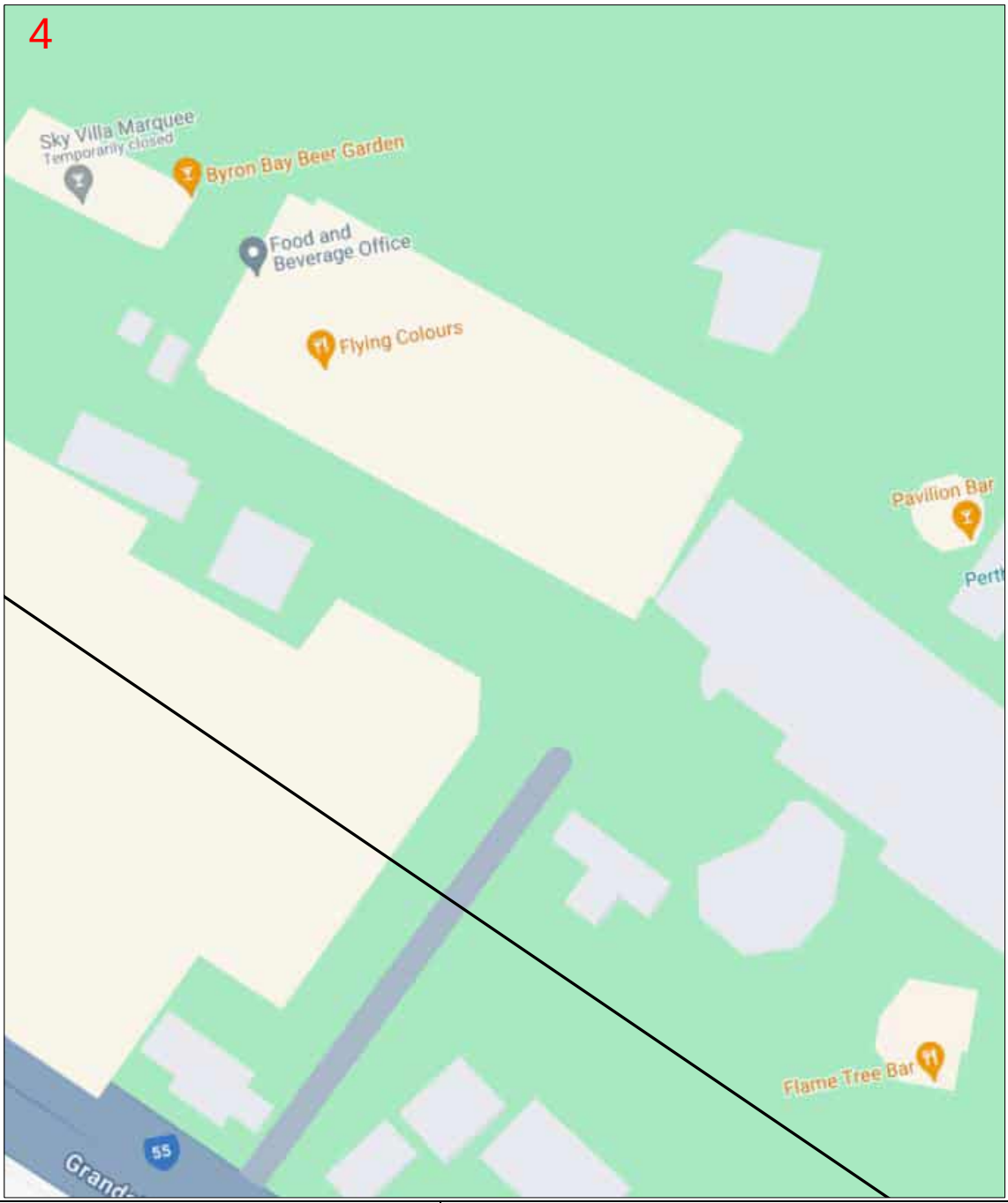
0 0.008km

N

**LEGEND**

| | |
|---|---|
| BYDA Work Area | |
| AAPT/PowerTel Pit | TransACT Pit |
| AAPT/PowerTel Duct | TransACT Duct |
| DDA Pit | SOUL Pattinson Telecoms Pit |
| DDA Duct | SOUL Pattinson Telecoms Duct |
| Agile/Adam Pit | PIPE Networks Pit |
| Agile/Adam Duct | PIPE Networks Duct |

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**Enquiry Number:** 240936711

**Map Sheet:** 4

**Scale:** 1: 750

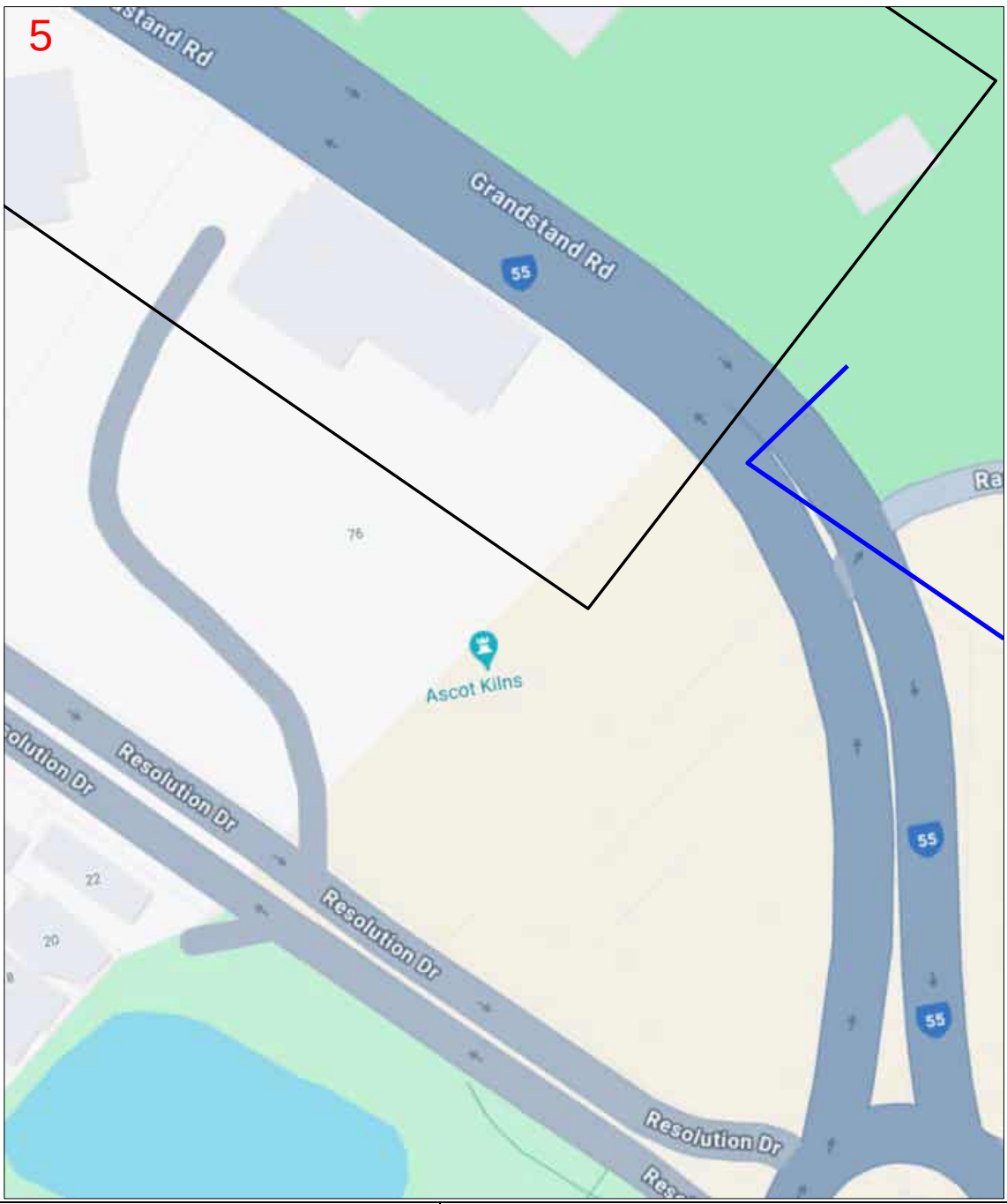
0 0.008km

N

***LEGEND***

| | |
|---|---|
| BYDA Work Area | |
| AAPT/PowerTel Pit | TransACT Pit |
| AAPT/PowerTel Duct | TransACT Duct |
| DDA Pit | SOUL Pattinson Telecoms Pit |
| DDA Duct | SOUL Pattinson Telecoms Duct |
| Agile/Adam Pit | PIPE Networks Pit |
| Agile/Adam Duct | PIPE Networks Duct |

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**Enquiry Number:** 240936711

**Map Sheet:** 5

**Scale:** 1: 750

0 0.008km

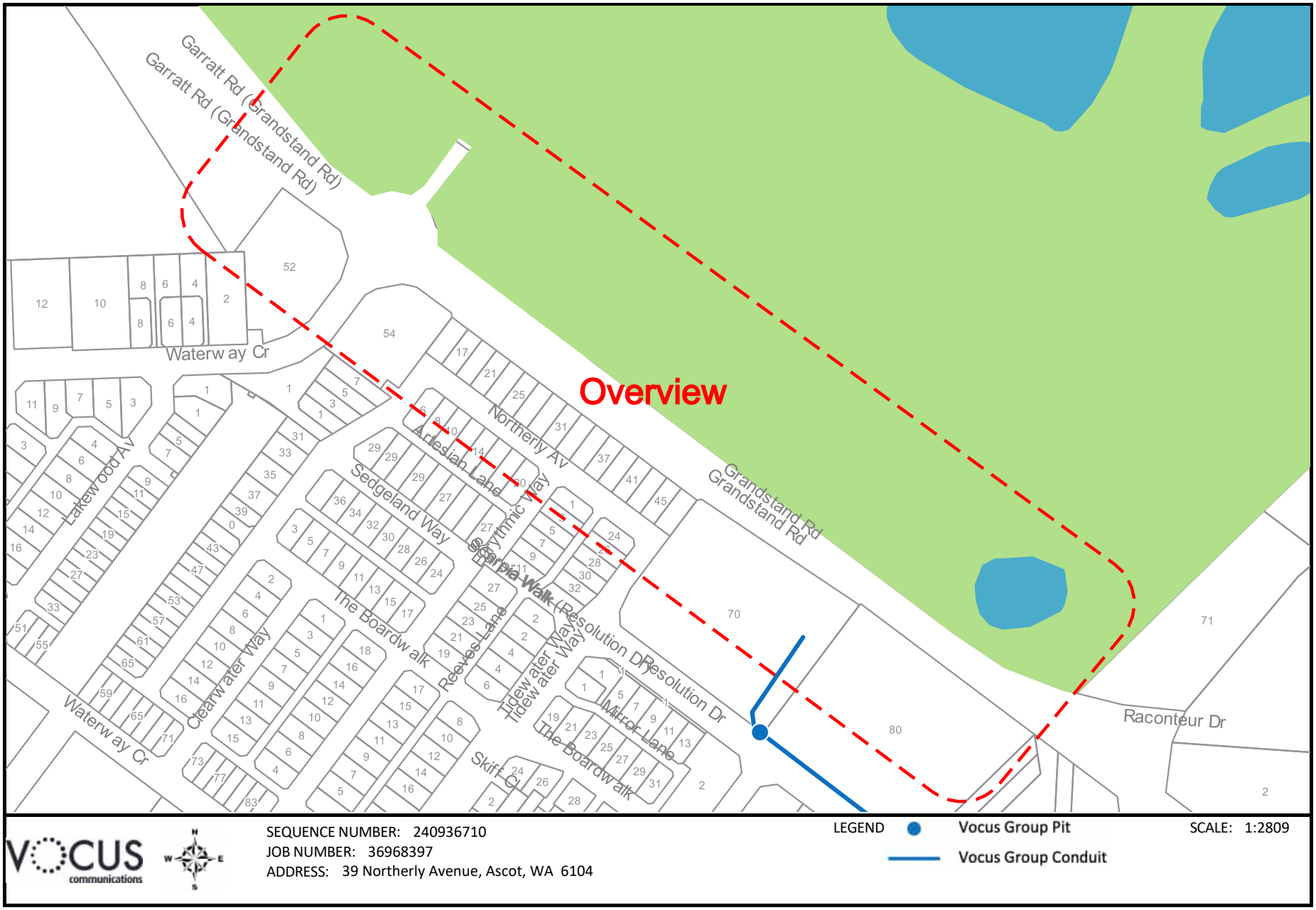
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LEGEND

BYDA Work Area

| | |
|---|---|
| AAPT/PowerTel Pit | TransACT Pit |
| AAPT/PowerTel Duct | TransACT Duct |
| DDA Pit | SOUL Pattinson Telecoms Pit |
| DDA Duct | SOUL Pattinson Telecoms Duct |
| Agile/Adam Pit | PIPE Networks Pit |
| Agile/Adam Duct | PIPE Networks Duct |

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The Vocus Group includes related bodies corporate of Vocus Communications Limited ACN 084 115 499.




WATER CORPORATION

Scale: 1:3075
Job No.: 36968397
Sequence No.: 240936715
Print Date: 24 Jun 2024

N

Water

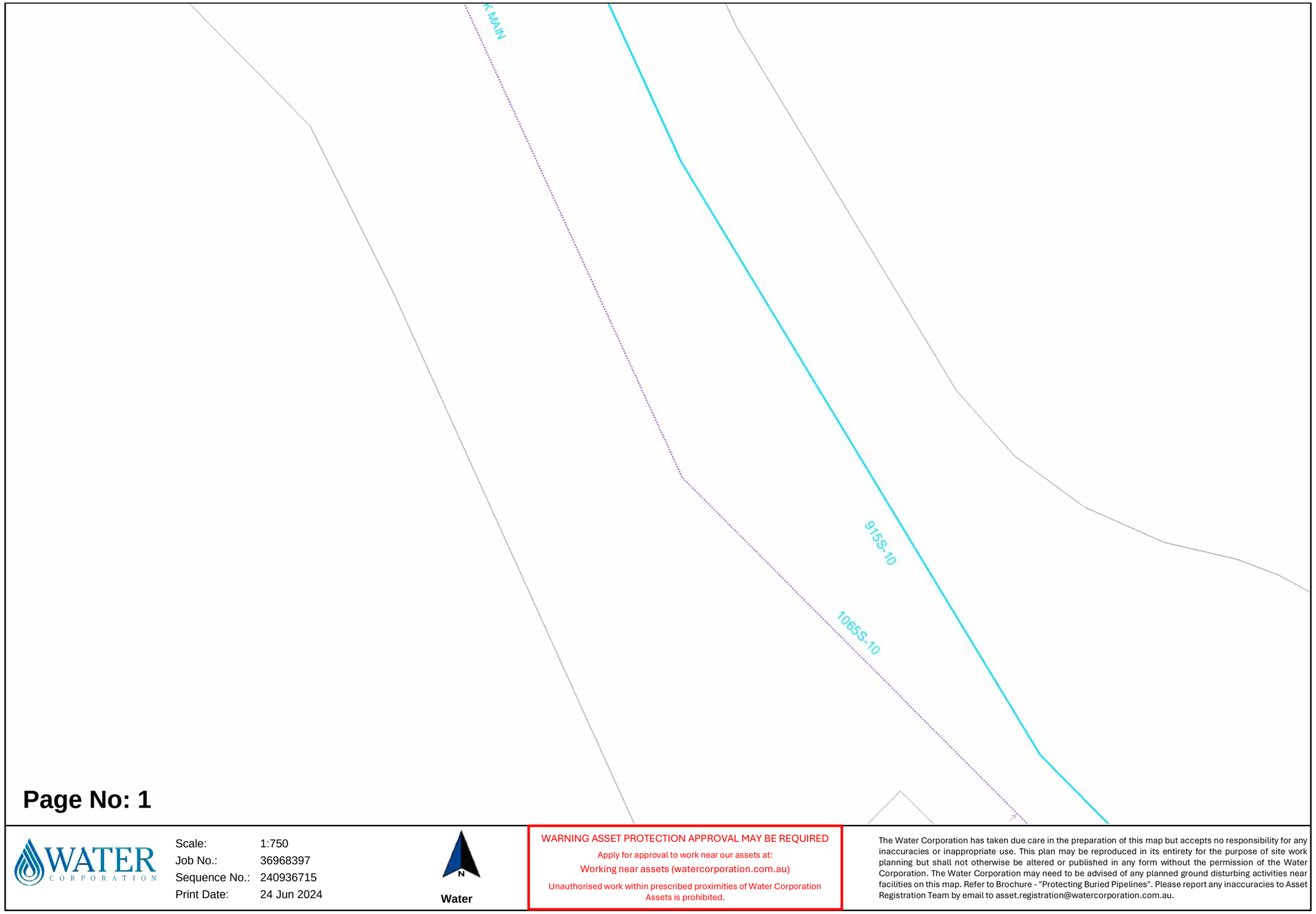
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**Page No: 1**

WATER CORPORATION

Scale: 1:750
Job No.: 36968397
Sequence No.: 240936715
Print Date: 24 Jun 2024

N

Water

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**Page No: 2**

WATER CORPORATION

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| Scale: | 1:750 |
| Job No.: | 36968397 |
| Sequence No.: | 240936715 |
| Print Date: | 24 Jun 2024 |

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**Water**

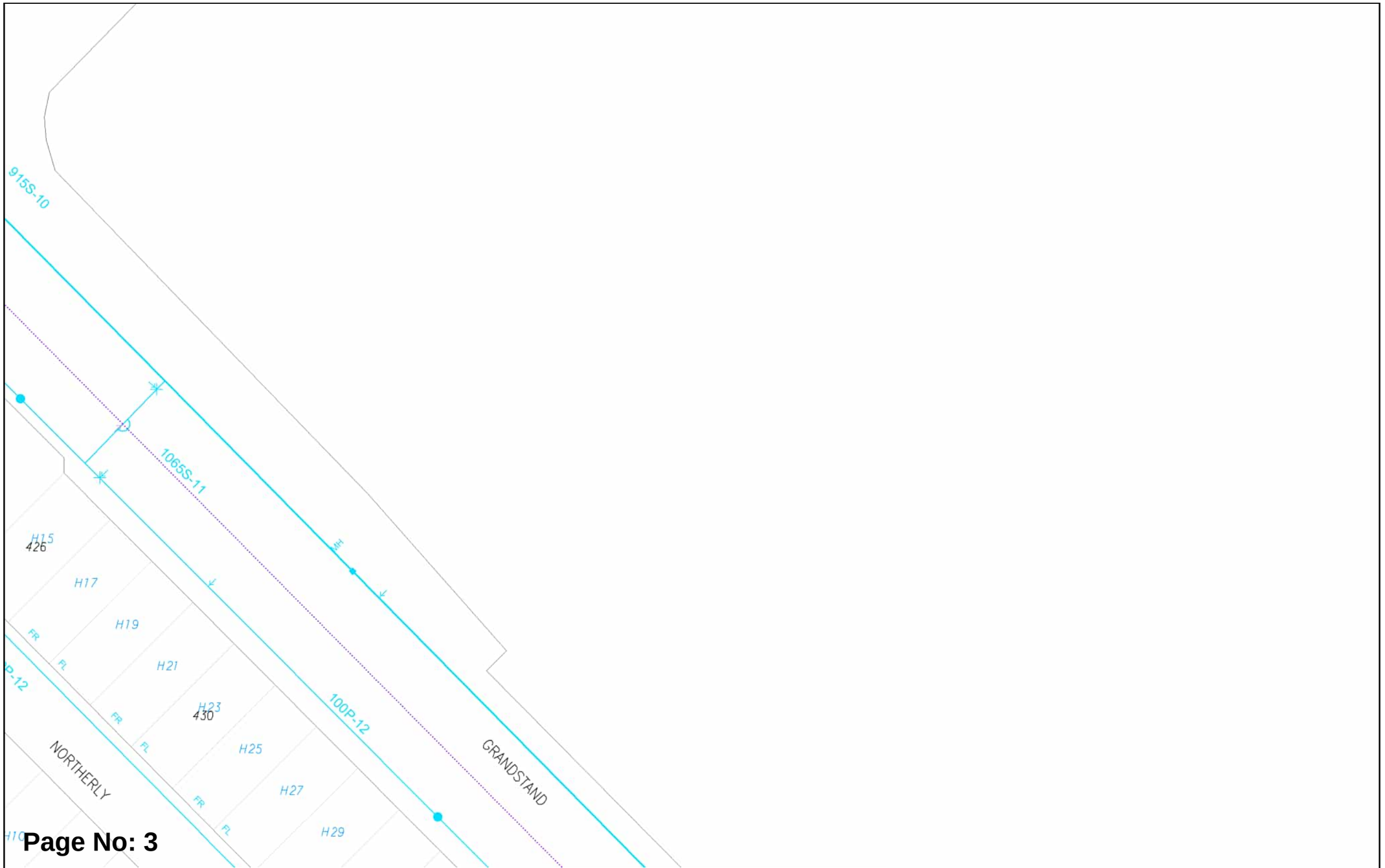
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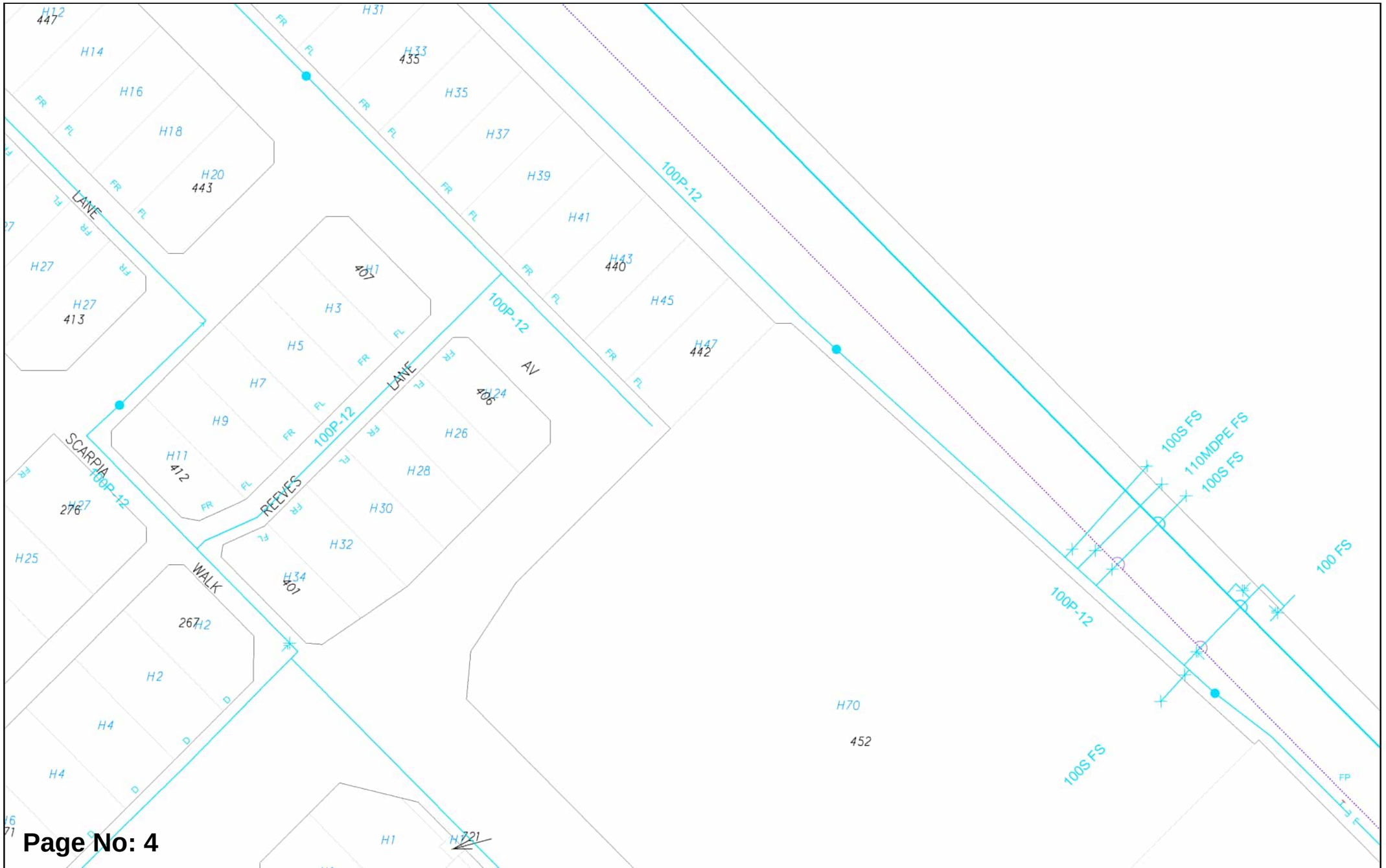
WATER CORPORATION

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Water

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**Page No: 4**

WATER CORPORATION

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| Job No.: | 36968397 |
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| Print Date: | 24 Jun 2024 |

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**Water**

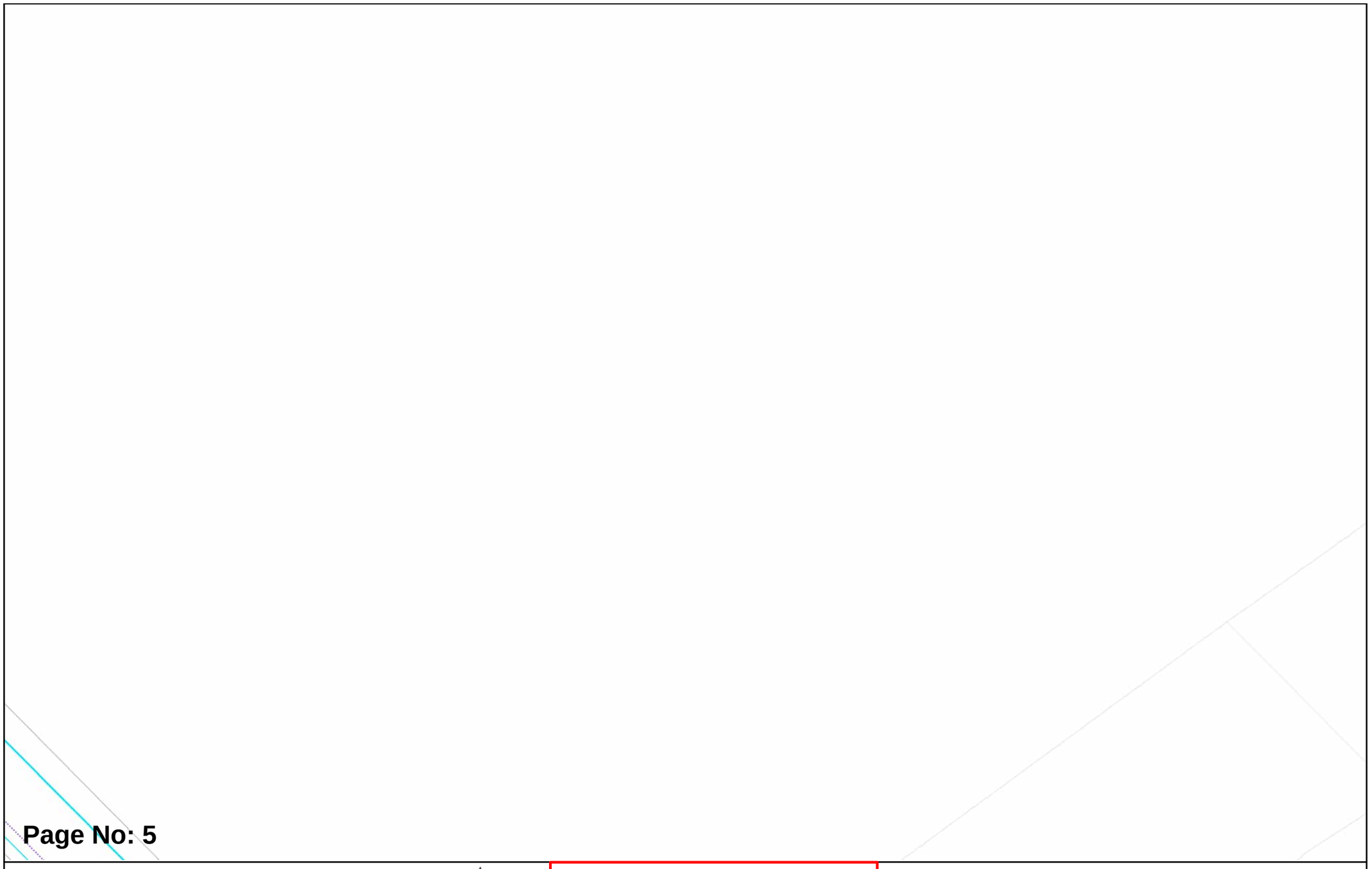
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**Page No: 5**

WATER CORPORATION

Scale: 1:750
Job No.: 36968397
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Print Date: 24 Jun 2024

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**Water**

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**Page No: 6**

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| Job No.: | 36968397 |
| Sequence No.: | 240936715 |
| Print Date: | 24 Jun 2024 |

Water

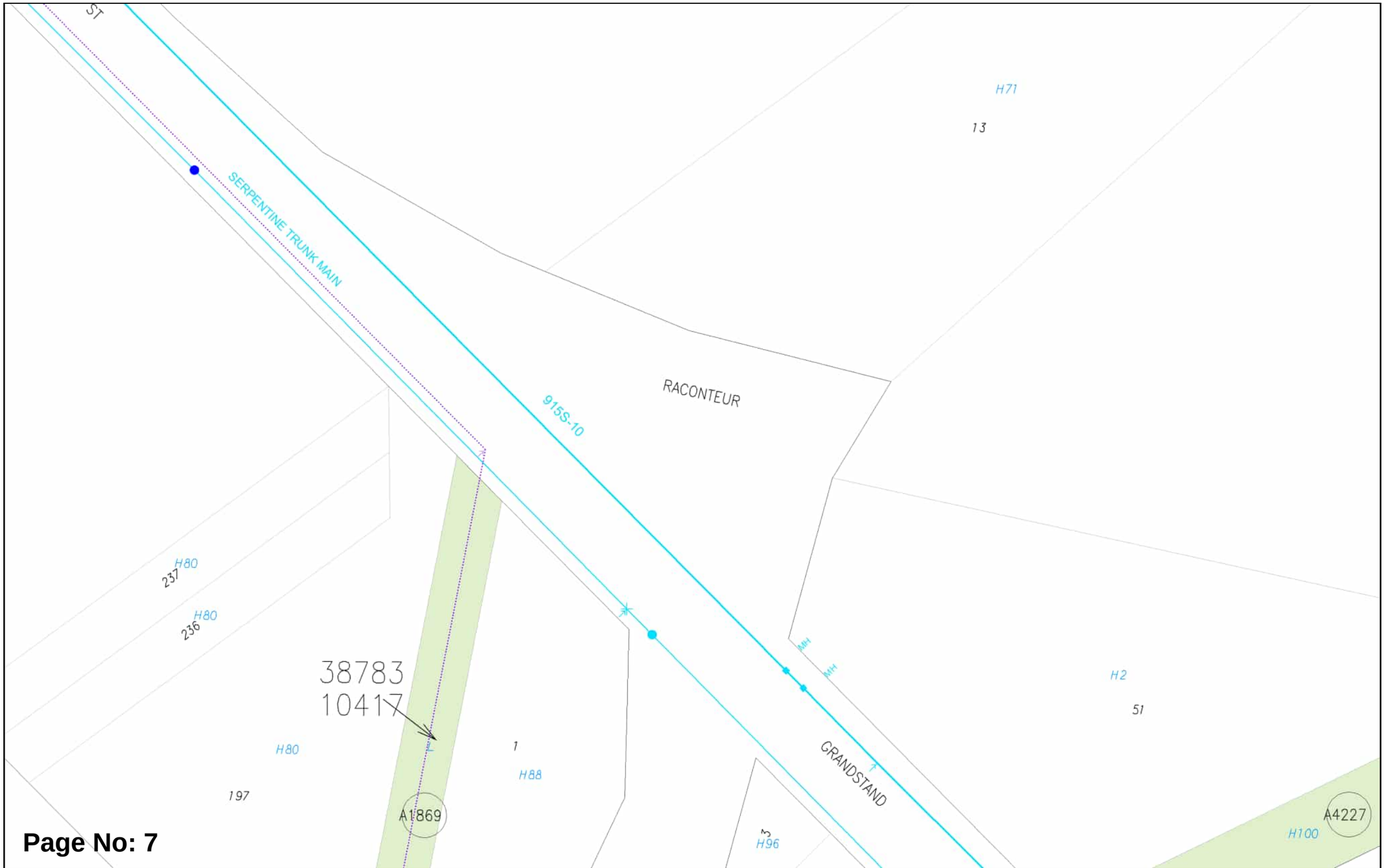
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**Page No: 7**

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Scale: 1:750
Job No.: 36968397
Sequence No.: 240936715
Print Date: 24 Jun 2024

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Water

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WATER CORPORATION

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| Scale: | 1:2790 |
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N

Sewer

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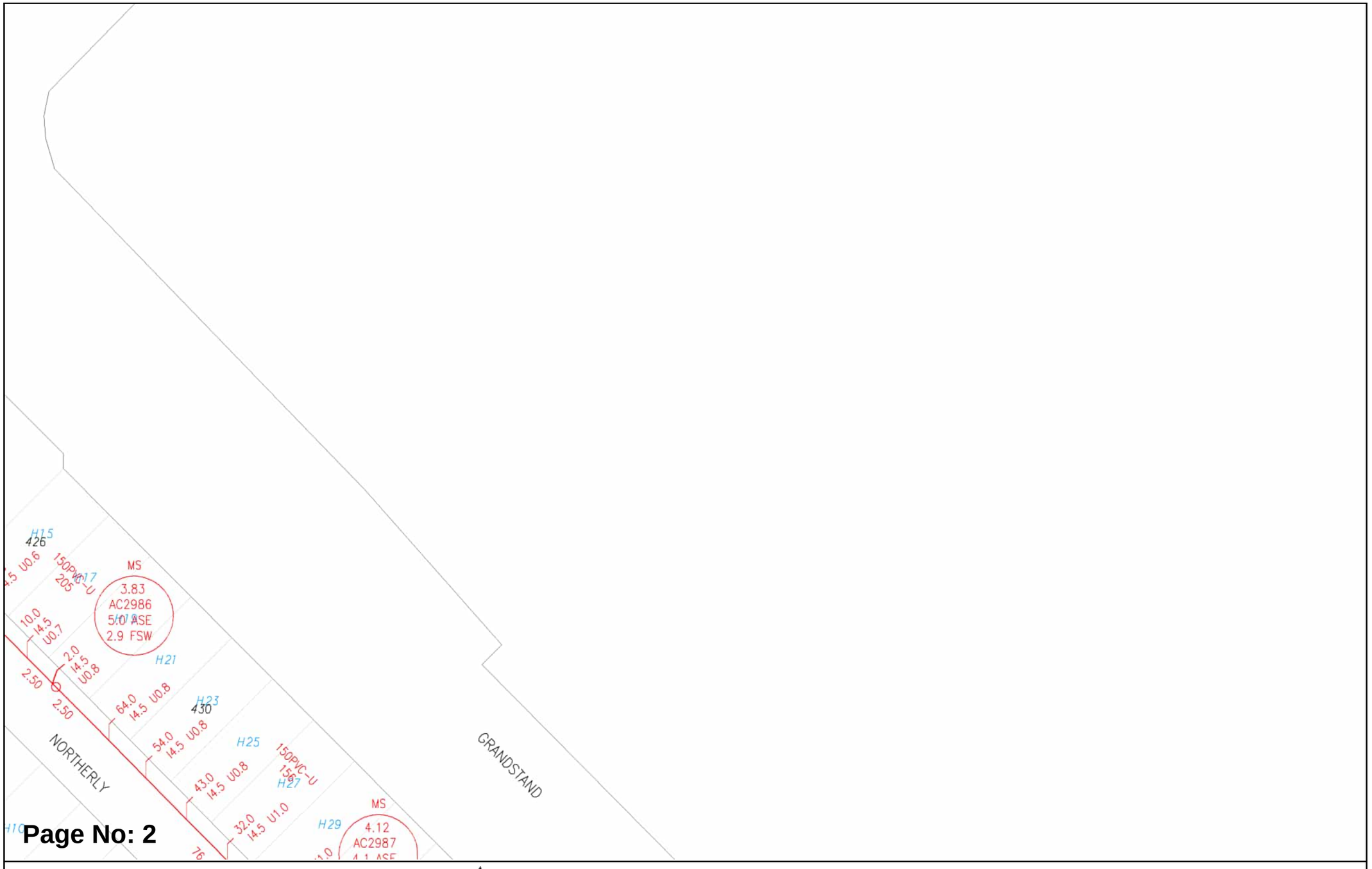

WATER CORPORATION

Scale: 1:750
Job No.: 36968397
Sequence No.: 240936715
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N

Sewer

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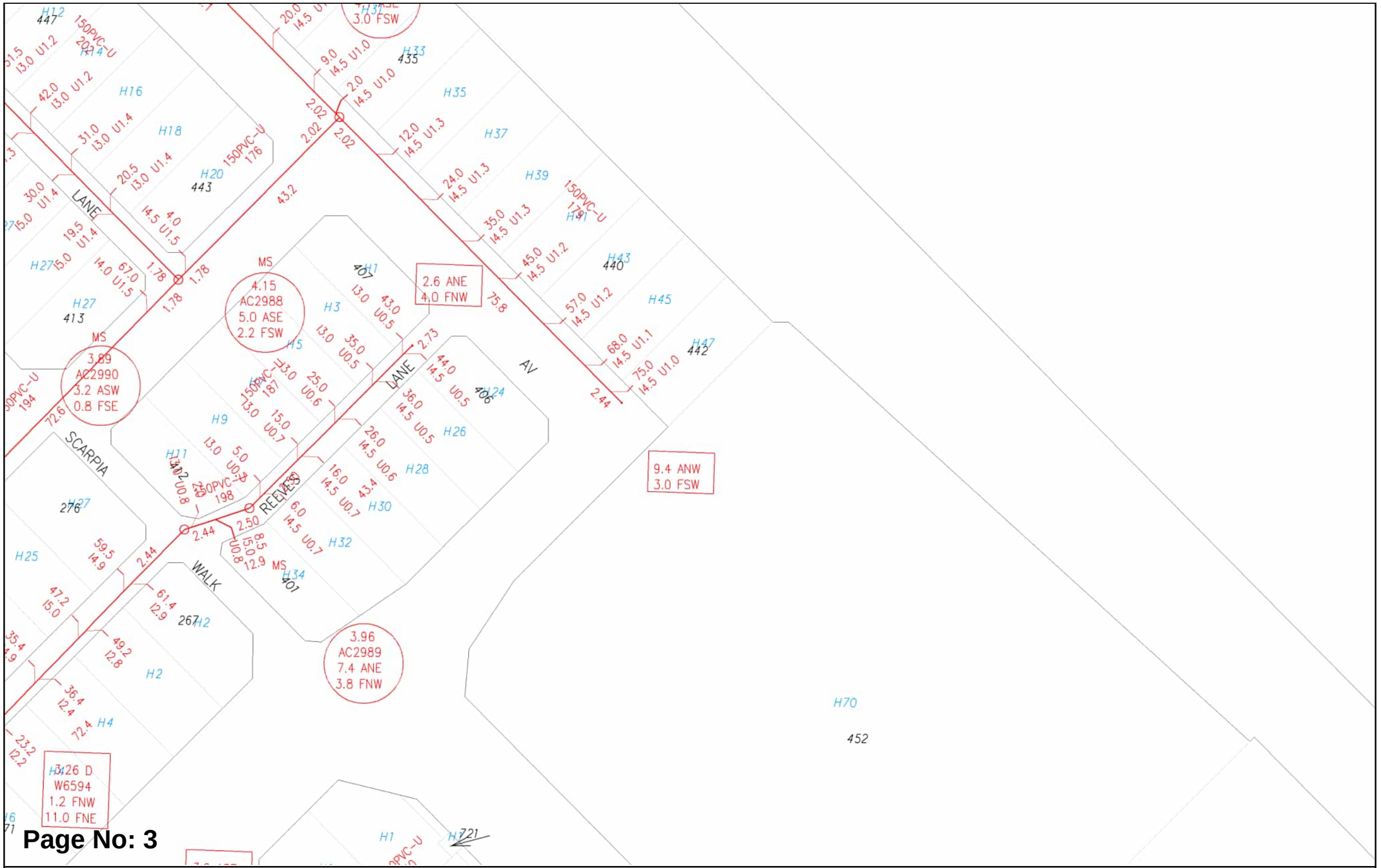

WATER CORPORATION

| | |
|---|---|
| Scale: | 1:750 |
| Job No.: | 36968397 |
| Sequence No.: | 240936715 |
| Print Date: | 24 Jun 2024 |

N

**Sewer**

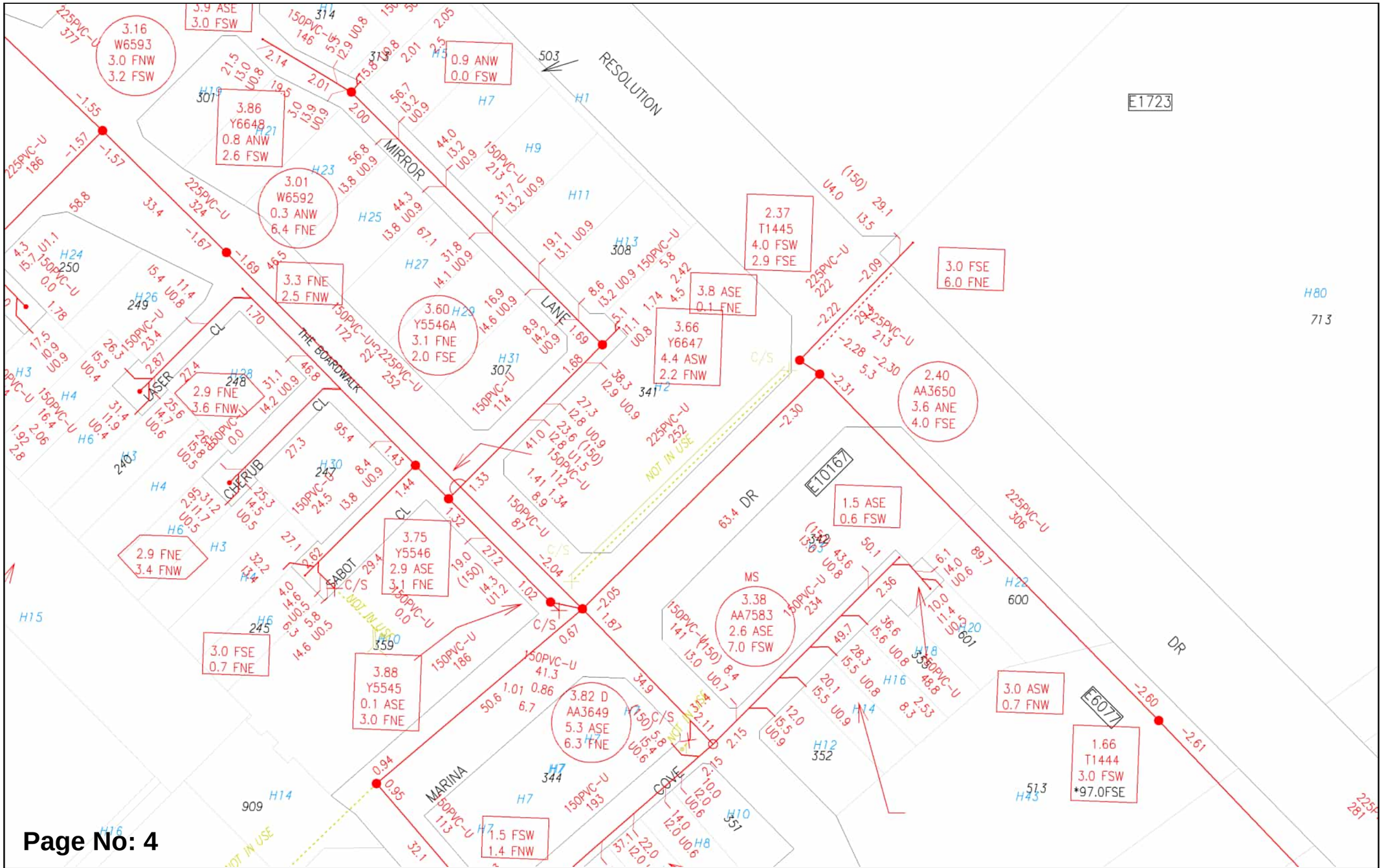
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| | |
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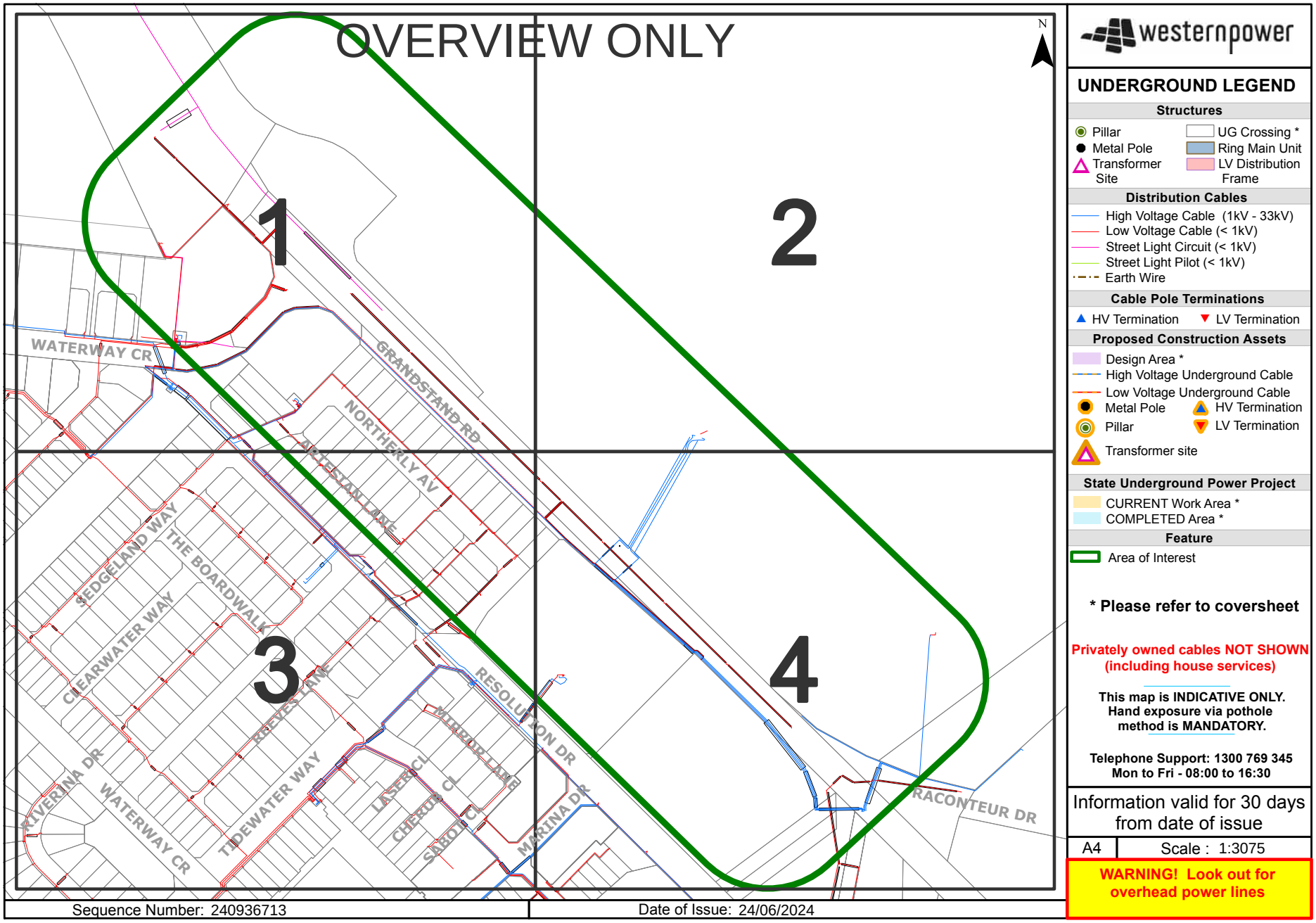

**Page No: 4**

WATER CORPORATION

| | |
|---|---|
| Scale: | 1:750 |
| Job No.: | 36968397 |
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**Sewer**

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westernpower

**UNDERGROUND LEGEND**

**Structures**

- Pillar
- Metal Pole
- Transformer Site
- UG Crossing *
- Ring Main Unit
- LV Distribution Frame

**Distribution Cables**

- High Voltage Cable (1kV - 33kV)
- Low Voltage Cable (< 1kV)
- Street Light Circuit (< 1kV)
- Street Light Pilot (< 1kV)
- Earth Wire

**Cable Pole Terminations**

- HV Termination
- LV Termination

**Proposed Construction Assets**

- Design Area *
- High Voltage Underground Cable
- Low Voltage Underground Cable
- Metal Pole
- Pillar
- Transformer site
- HV Termination
- LV Termination

**State Underground Power Project**

- CURRENT Work Area *
- COMPLETED Area *

**Feature**

- Area of Interest

*** Please refer to coversheet**

**Privately owned cables NOT SHOWN (including house services)**

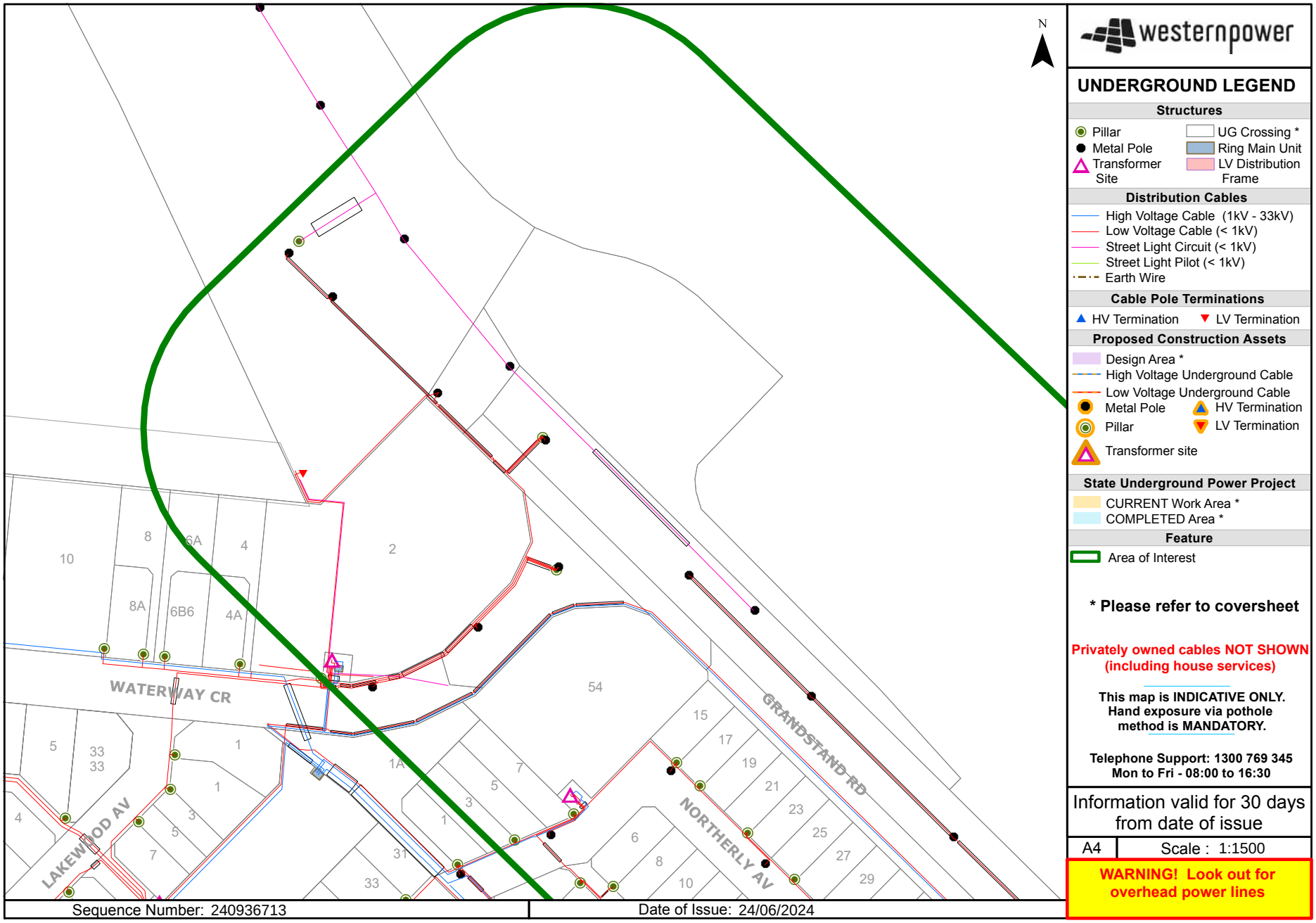
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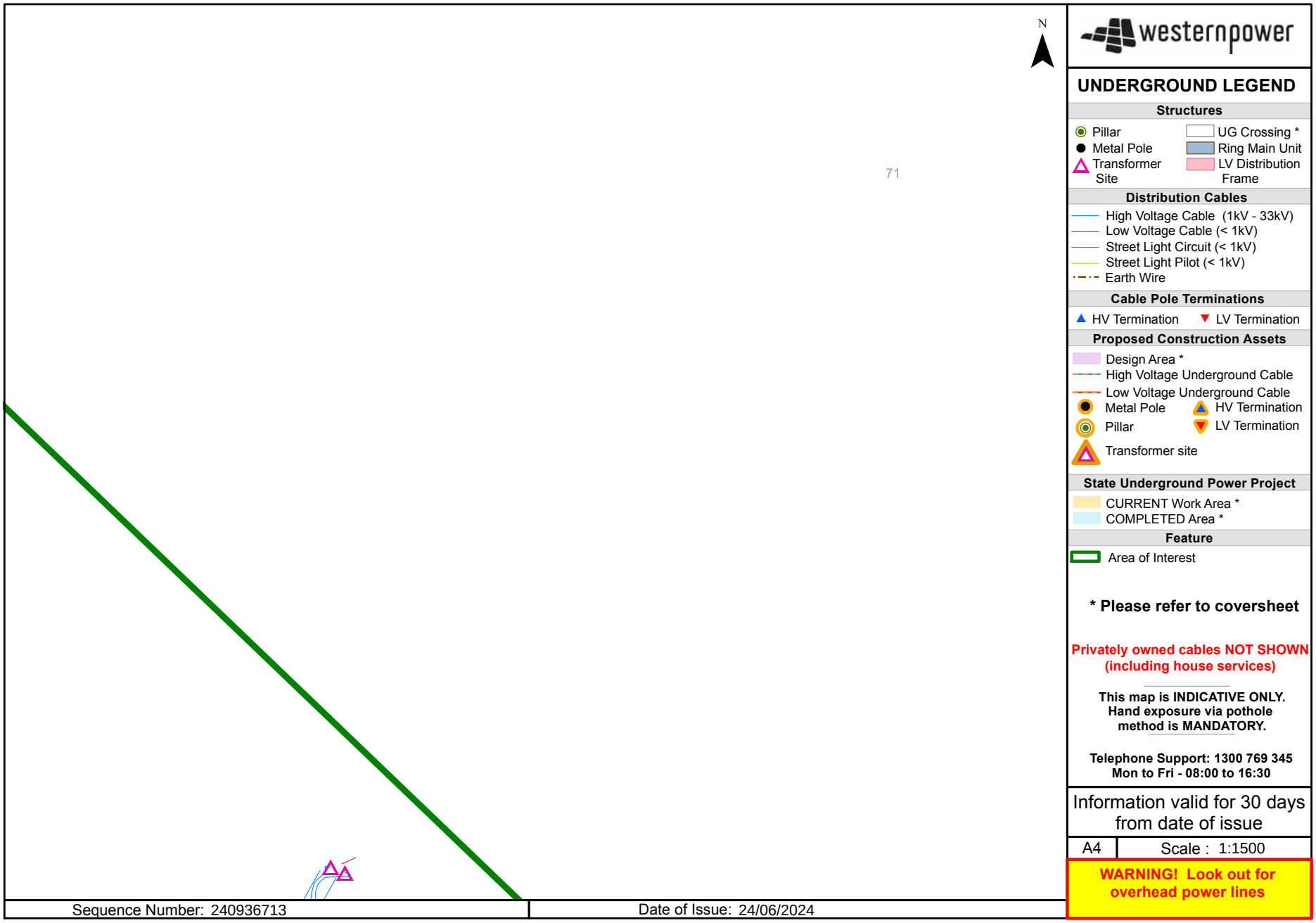
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**Mon to Fri - 08:00 to 16:30**

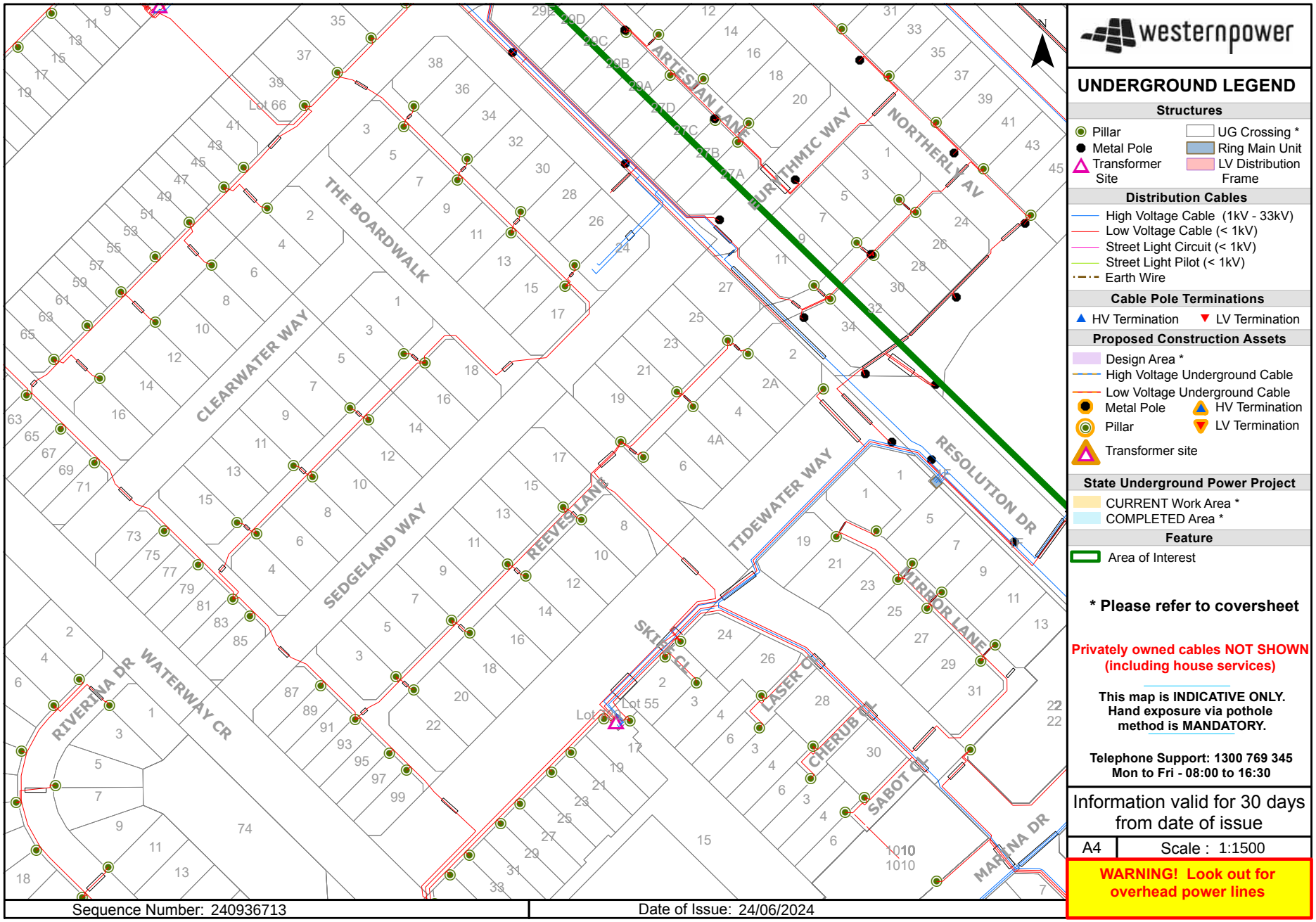
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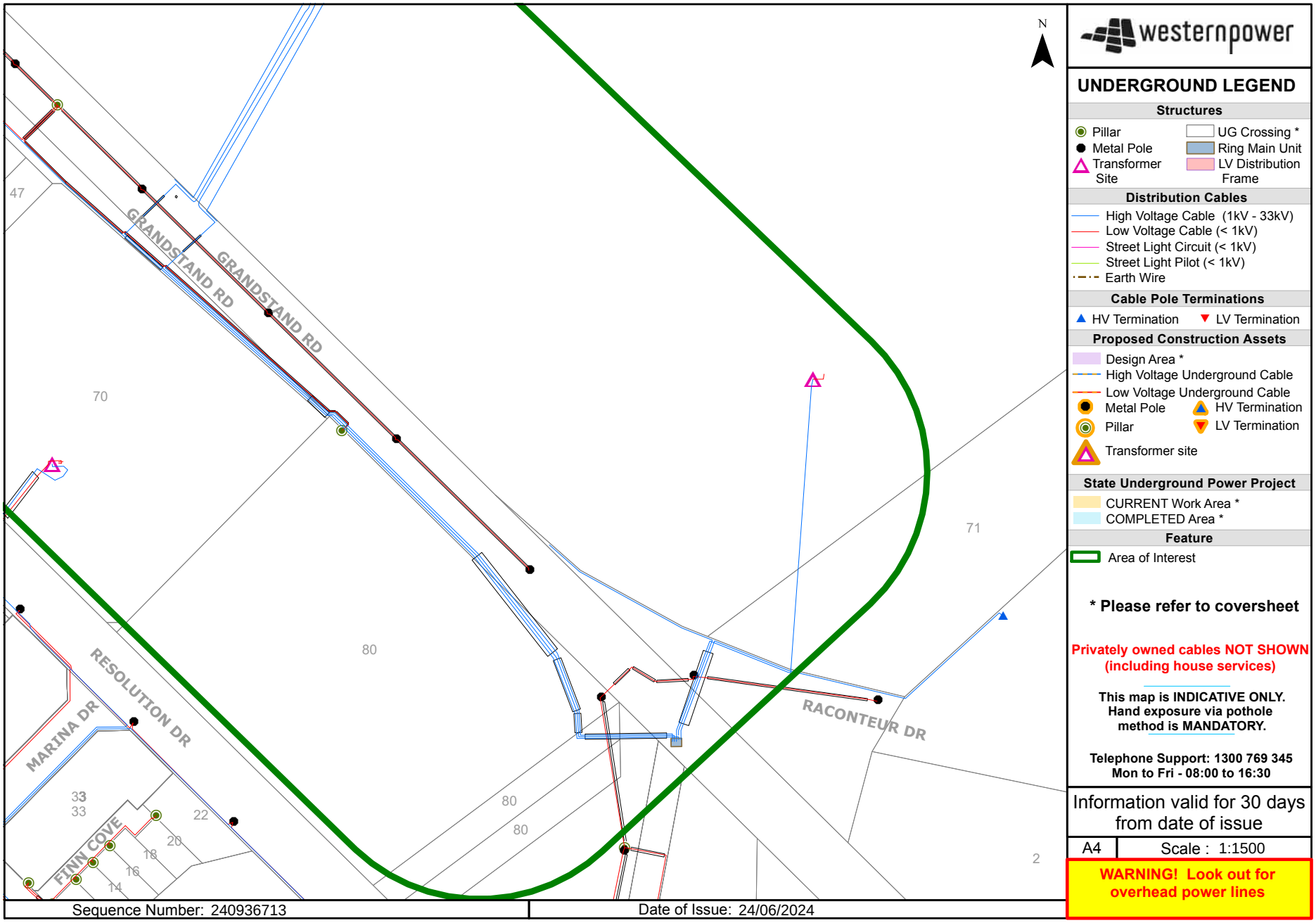
A4 | Scale : 1:3075

**WARNING! Look out for overhead power lines**


N
westernpower
UNDERGROUND LEGEND
Structures
Pillar
Metal Pole
Transformer Site
UG Crossing *
Ring Main Unit
LV Distribution Frame
Distribution Cables
High Voltage Cable (1kV - 33kV)
Low Voltage Cable (< 1kV)
Street Light Circuit (< 1kV)
Street Light Pilot (< 1kV)
Earth Wire
Cable Pole Terminations
HV Termination
LV Termination
Proposed Construction Assets
Design Area *
High Voltage Underground Cable
Low Voltage Underground Cable
Metal Pole
Pillar
Transformer site
HV Termination
LV Termination
State Underground Power Project
CURRENT Work Area *
COMPLETED Area *
Feature
Area of Interest
* Please refer to coversheet
Privately owned cables NOT SHOWN (including house services)
This map is INDICATIVE ONLY. Hand exposure via pothole method is MANDATORY.
Telephone Support: 1300 769 345
Mon to Fri - 08:00 to 16:30
Information valid for 30 days from date of issue
A4
Scale : 1:1500
WARNING! Look out for overhead power lines
WATERWAY CR
LAKEWOOD AV
GRANDSTAND RD
NORTHERLY AV
Sequence Number: 240936713
Date of Issue: 24/06/2024


N
71
westernpower
UNDERGROUND LEGEND
Structures
Pillar
Metal Pole
Transformer Site
UG Crossing *
Ring Main Unit
LV Distribution Frame
Distribution Cables
High Voltage Cable (1kV - 33kV)
Low Voltage Cable (< 1kV)
Street Light Circuit (< 1kV)
Street Light Pilot (< 1kV)
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HV Termination
LV Termination
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HV Termination
Pillar
LV Termination
Transformer site
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COMPLETED Area *
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Area of Interest
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Telephone Support: 1300 769 345
Mon to Fri - 08:00 to 16:30
Information valid for 30 days from date of issue
A4
Scale : 1:1500
WARNING! Look out for overhead power lines
Sequence Number: 240936713
Date of Issue: 24/06/2024


westernpower
UNDERGROUND LEGEND
Structures
Pillar
Metal Pole
Transformer Site
UG Crossing *
Ring Main Unit
LV Distribution Frame
Distribution Cables
High Voltage Cable (1kV - 33kV)
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CURRENT Work Area *
COMPLETED Area *
Feature
Area of Interest
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Mon to Fri - 08:00 to 16:30
Information valid for 30 days from date of issue
A4
Scale : 1:1500
WARNING! Look out for overhead power lines
THE BOARDWALK
CLEARWATER WAY
SEDGELAND WAY
WATERWAY CR
RIVERINA DR
REEVES LANE
TIDEWATER WAY
ARTESIAN LANE
EURYTHMIC WAY
NORTHERLY AV
RESOLUTION DR
HARBOR LANE
SKETCH CL
LASER CL
CHERUB CT
SABOT CT
MARINA DR
Lot 66
Lot 55
Sequence Number: 240936713
Date of Issue: 24/06/2024




westernpower

## UNDERGROUND LEGEND

**Structures**

- Pillar
- Metal Pole
- Transformer Site
- UG Crossing *
- Ring Main Unit
- LV Distribution Frame

**Distribution Cables**

- High Voltage Cable (1kV - 33kV)
- Low Voltage Cable (< 1kV)
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- HV Termination
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**Proposed Construction Assets**

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- High Voltage Underground Cable
- Low Voltage Underground Cable
- Metal Pole
- Pillar
- Transformer site
- HV Termination
- LV Termination

**State Underground Power Project**

- CURRENT Work Area *
- COMPLETED Area *

**Feature**

- Area of Interest

*** Please refer to coversheet**

**Privately owned cables NOT SHOWN (including house services)**

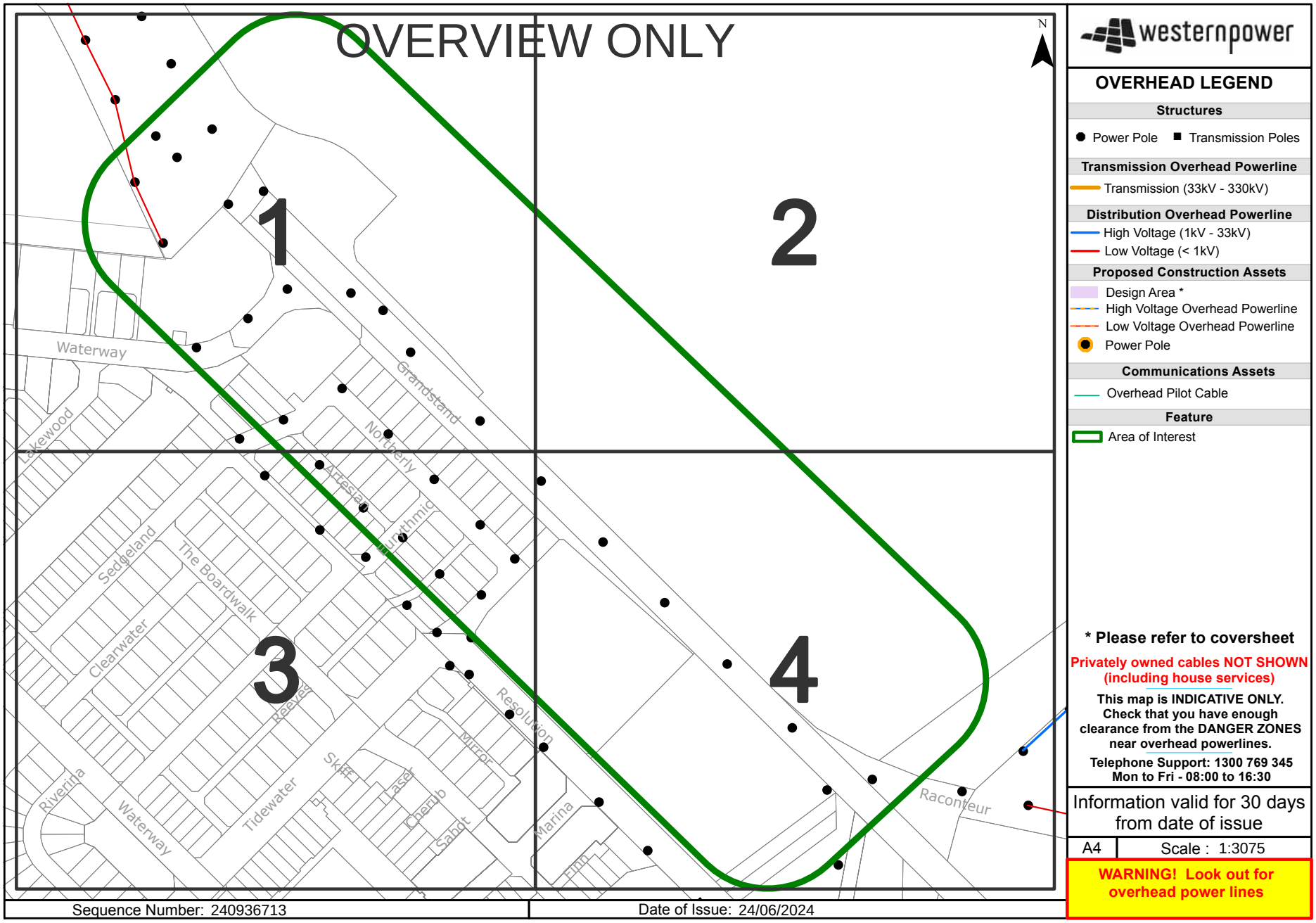
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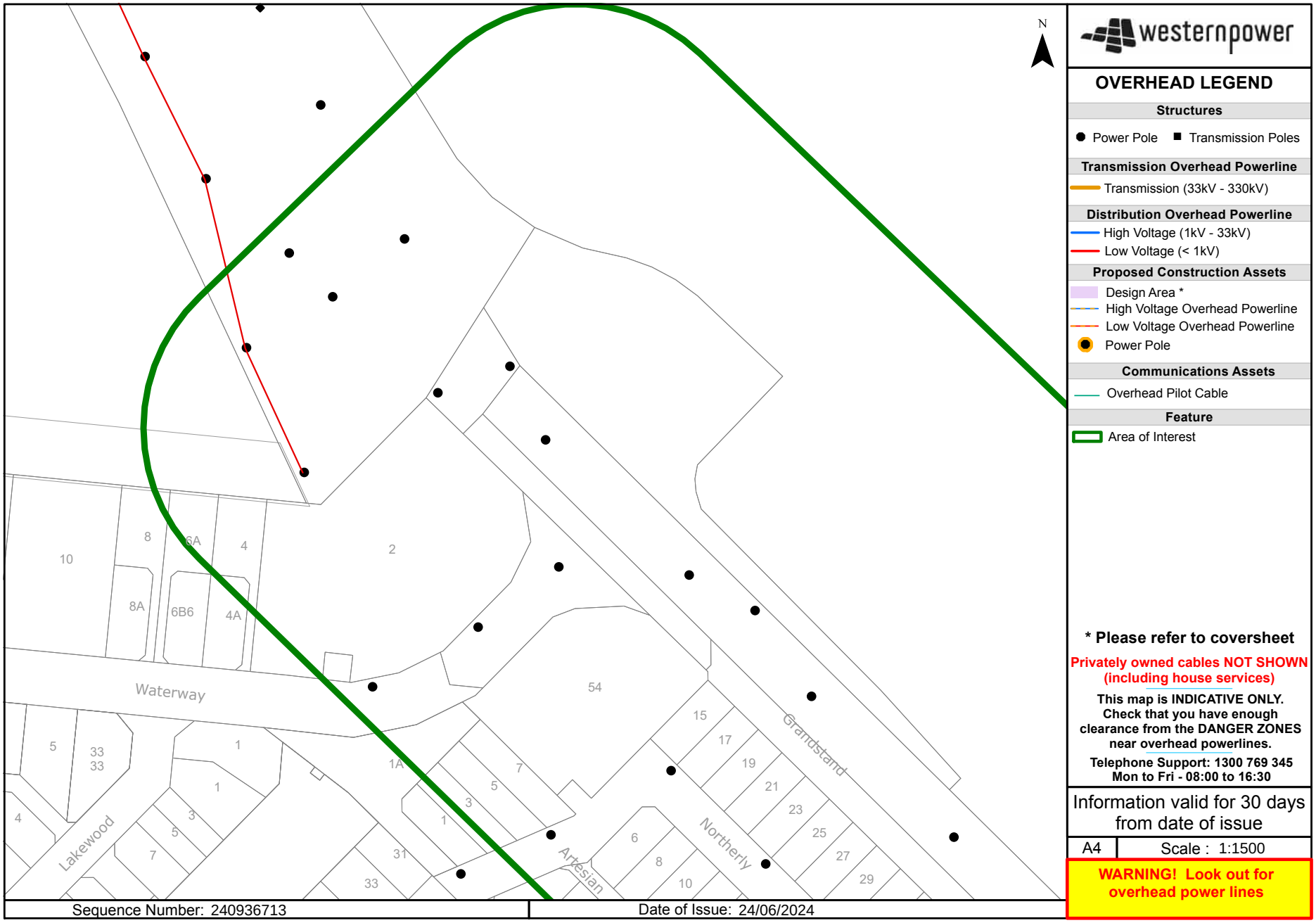
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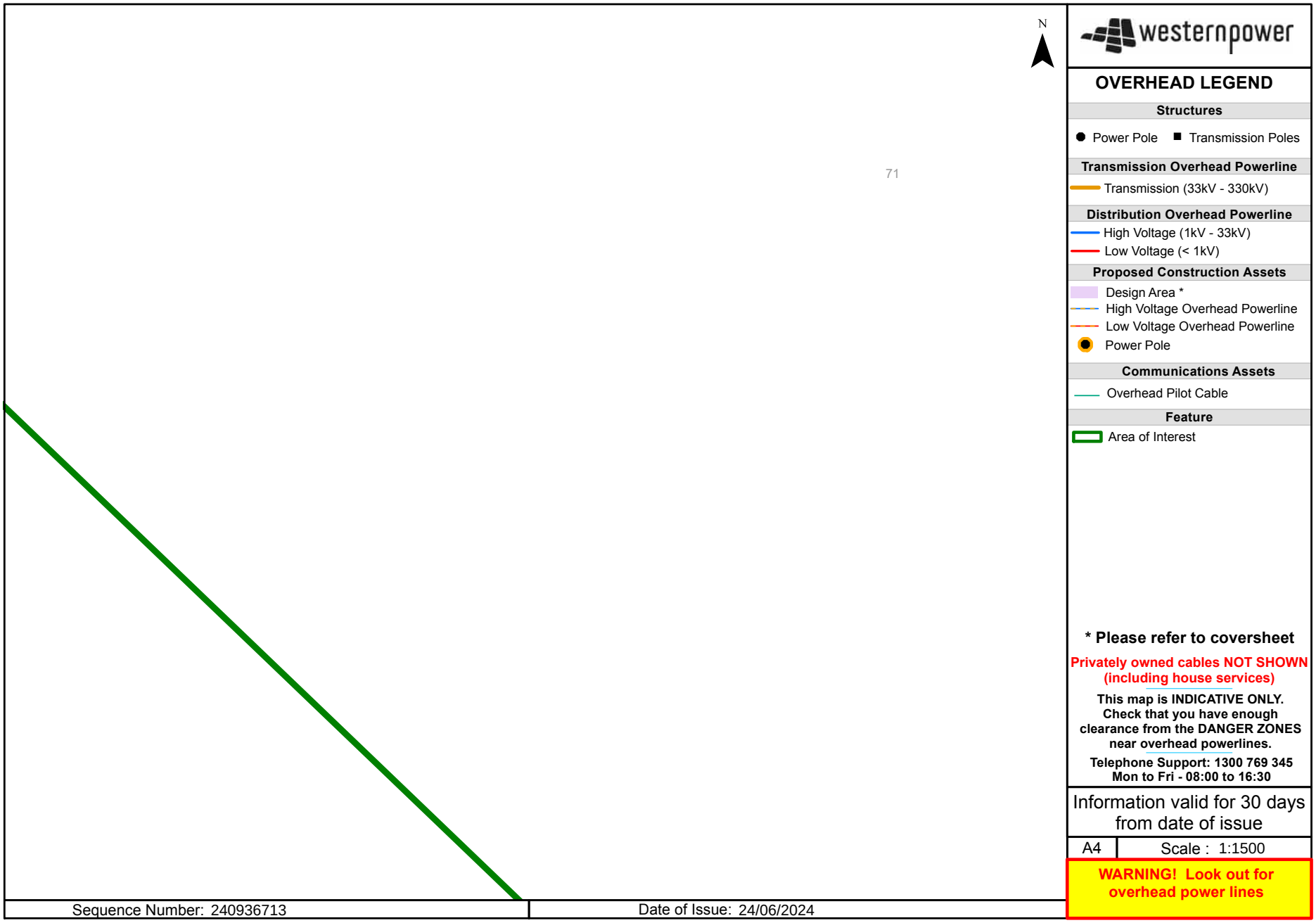
Information valid for 30 days from date of issue

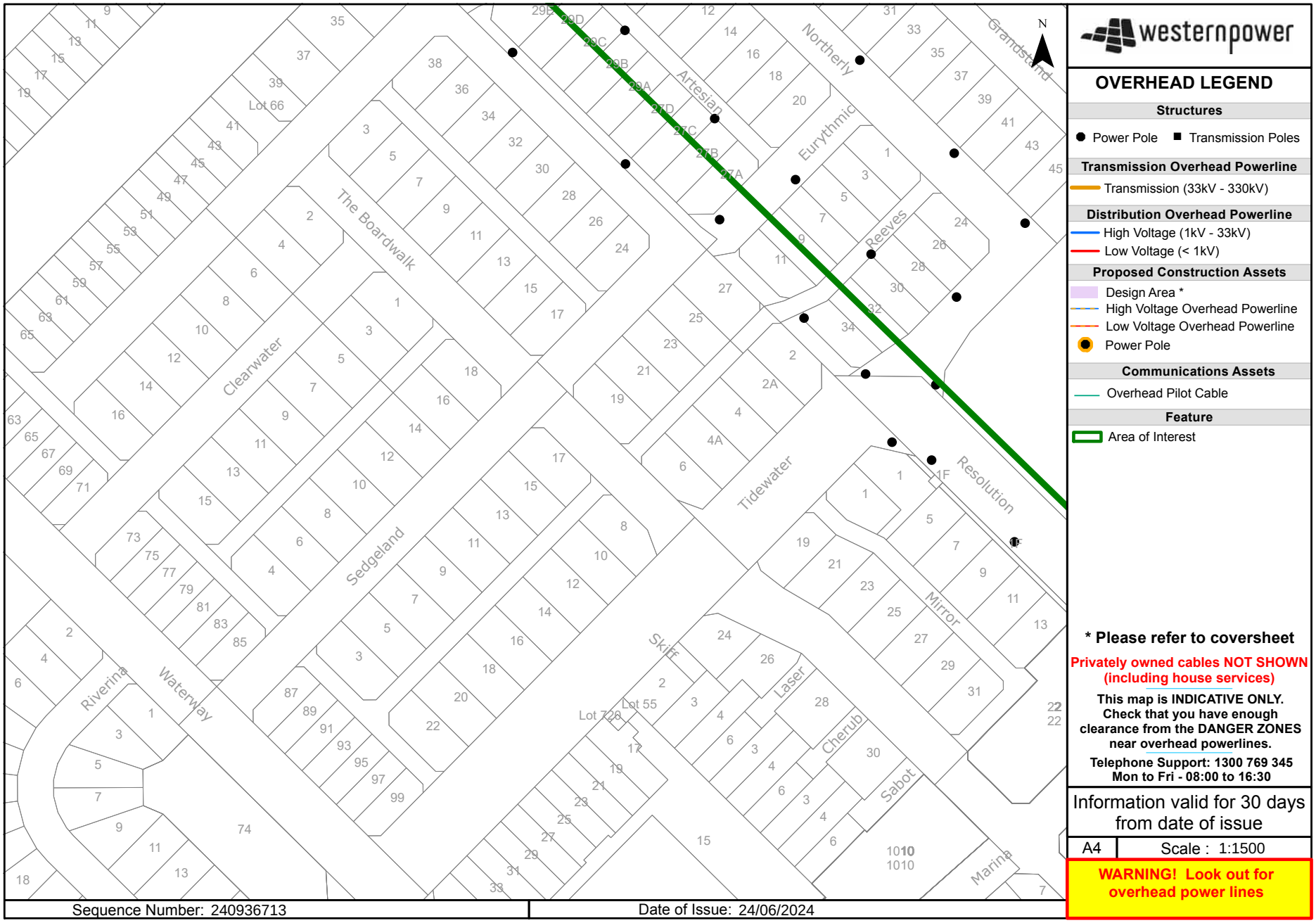
A4 | Scale : 1:1500

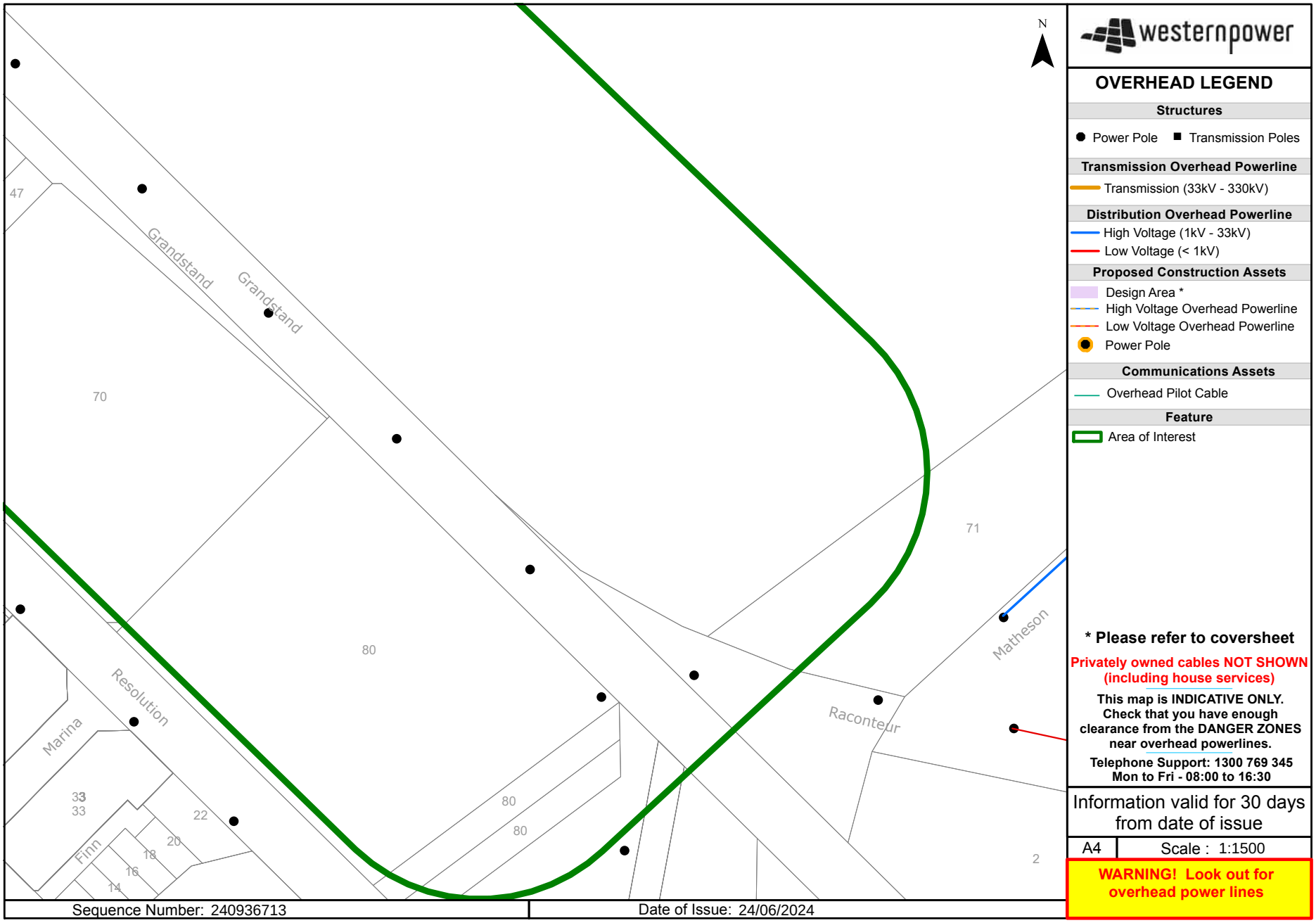
**WARNING! Look out for overhead power lines**


OVERVIEW ONLY
N
1
2
3
4
Waterway
Lakewood
Grandstand
Northerly
Arrestal
Sedgeland
The Boardwalk
Clearwater
Riverina
Waterway
Tidewater
Reeves
Skeg
Laser
Cherub
Sabot
Mirror
Resolution
Marina
Finn
Raconteur
westernpower
OVERHEAD LEGEND
Structures
Power Pole
Transmission Poles
Transmission Overhead Powerline
Transmission (33kV - 330kV)
Distribution Overhead Powerline
High Voltage (1kV - 33kV)
Low Voltage (< 1kV)
Proposed Construction Assets
Design Area *
High Voltage Overhead Powerline
Low Voltage Overhead Powerline
Power Pole
Communications Assets
Overhead Pilot Cable
Feature
Area of Interest
* Please refer to coversheet
Privately owned cables NOT SHOWN (including house services)
This map is INDICATIVE ONLY. Check that you have enough clearance from the DANGER ZONES near overhead powerlines.
Telephone Support: 1300 769 345
Mon to Fri - 08:00 to 16:30
Information valid for 30 days from date of issue
A4
Scale : 1:3075
WARNING! Look out for overhead power lines
Sequence Number: 240936713
Date of Issue: 24/06/2024


N
westernpower
OVERHEAD LEGEND
Structures
Power Pole
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Mon to Fri - 08:00 to 16:30
Information valid for 30 days from date of issue
A4
Scale : 1:1500
WARNING! Look out for overhead power lines
Waterway
Lakewood
Artesian
Northerly
Grandstand
Sequence Number: 240936713
Date of Issue: 24/06/2024


N
71
westernpower
OVERHEAD LEGEND
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Power Pole
Transmission Poles
Transmission Overhead Powerline
Transmission (33kV - 330kV)
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N
westernpower
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WARNING! Look out for overhead power lines
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The Boardwalk
Clearwater
Sedgeland
Riverina
Waterway
Artesian
Northerly
Eurythmic
Reeves
Grandstand
Tidewater
Resolution
Mirror
Skiff
Laser
Cherub
Sabot
Marina
Lot 66
Lot 55
Lot 720


N
47
Grandstand
Grandstand
70
80
71
Resolution
Marina
Finn
33
33
22
20
18
16
14
80
80
Raconteur
Matheson
2
Sequence Number: 240936713
Date of Issue: 24/06/2024
westernpower
OVERHEAD LEGEND
Structures
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Mon to Fri - 08:00 to 16:30
Information valid for 30 days from date of issue
A4
Scale : 1:1500
WARNING! Look out for overhead power lines

Job No 36962214

byda.com.au

## Contact Details

| Contact | Contact number | Company | Enquirer ID |
|---|---|---|---|
| Justin Zielinski | 0420 304 451 | - | 3140642 |

**Email**
jzielinski@tabec.com.au

**Address**
54 Havelock Street
West Perth WA 6005

## Job Site and Enquiry Details

**WARNING:** The map below only displays the location of the proposed job site and does not display any asset owners' pipe or cables. The area highlighted has been used only to identify the participating asset owners, who will send information to you directly.

| Enquiry date | Start date | End date | On behalf of | Job purpose | Locations | Onsite activities |
|---|---|---|---|---|---|---|
| 21/06/2024 | 24/06/2024 | 24/06/2024 | Private | Design | Both Road | Subdivision |



Check that the location of the job site is correct. If not, you must submit a new enquiry.

If the scope of works change or plan validity dates expire, you must submit a new enquiry.

Do NOT dig without plans. Safe excavation is your responsibility. If you don't understand the plans or how to proceed safely, please contact the relevant asset owners.

| User Reference | Address | Notes/description |
|---|---|---|
| Precinct A | 75 Grandstand Road<br>Ascot WA 6104 | - |

## Your Responsibility and Duty of Care

- **Lodging an enquiry does not authorise project commencement.** Before starting work, you must obtain all necessary information from all affected asset owners.
- If you don't receive plans within 2 business days, contact the asset owner & quote their sequence number.
- Always follow the 5Ps of Safe Excavation (page 2), and locate assets before commencing work.
- Ensure you comply with State legislative requirements for Duty of Care and safe digging.
- If you damage an underground asset, you MUST advise the asset owner immediately.
- By using the BYDA service, you agree to the Privacy Policy and Term of Use.
- For more information on safe digging practices, visit www.byda.com.au

## Asset Owner Details

Below is a list of asset owners with underground infrastructure in and around your job site. It is your responsibility to identify the presence of these assets. Plans issued by Members are indicative only unless specified otherwise. Note: not all asset owners are registered with BYDA. You must contact asset owners not listed here directly.

| Referral ID (Seq. no) | Authority Name | Phone | Status |
|---|---|---|---|
| 240900419 | ATCO Gas Australia | 1300 926 755 | NOTIFIED |
| 240900415 | NBN Co (WA) | 1800 687 626 | NOTIFIED |
| 240900413 | Optus (WA) | 1800 505 777 | NOTIFIED |
| 240900417 | Telstra (WA) | 1800 653 935 | NOTIFIED |
| 240900414 | TPG Telecom (WA) | 1800 786 306 | NOTIFIED |
| 240900418 | Water Corporation | 13 13 95 | NOTIFIED |
| 240900416 | Western Power | 13 10 87 | NOTIFIED |

END OF UTILITIES LIST

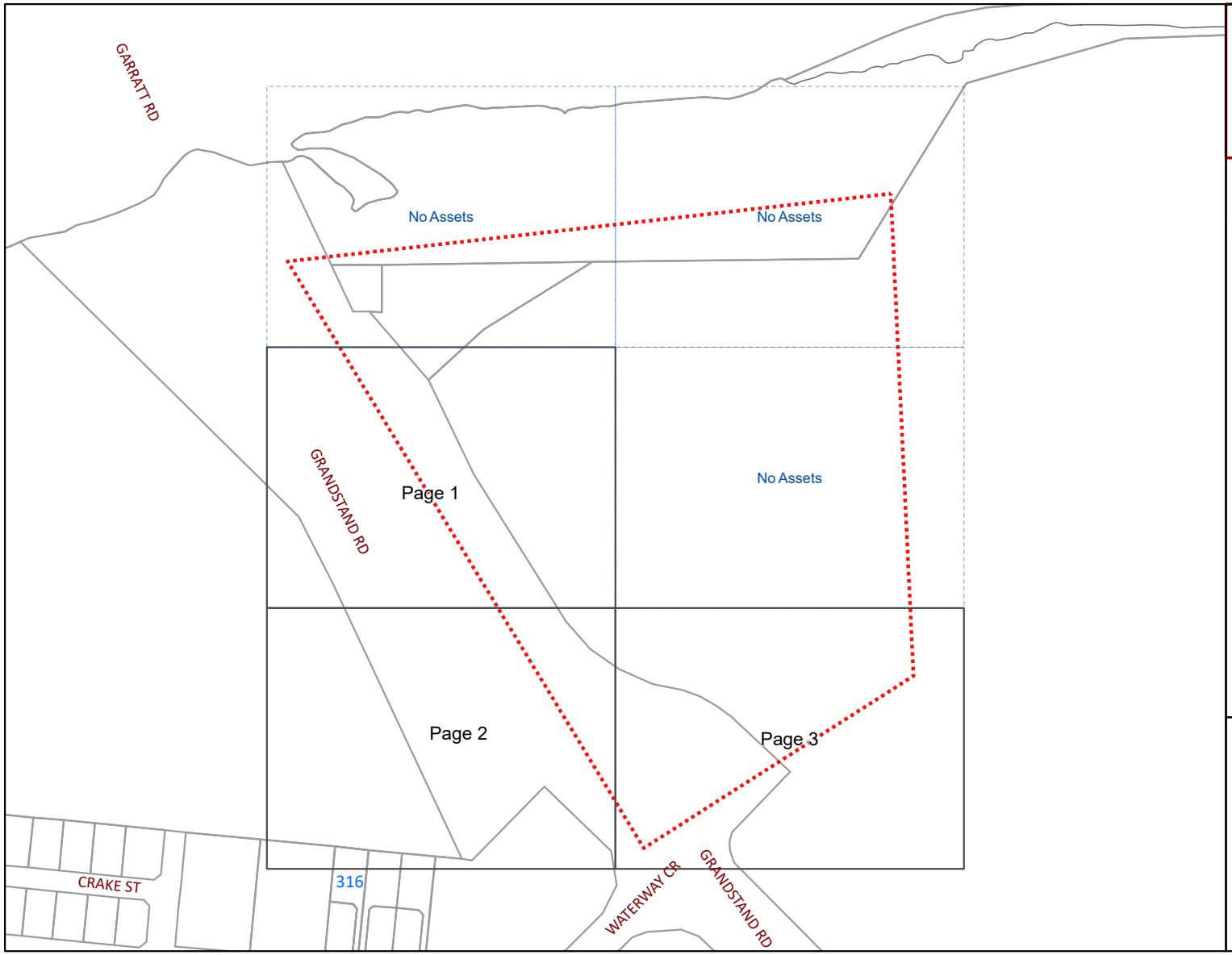
**Lodge your FREE enquiry online any time at byda.com.au**

ATCO
©ATCO Gas Australia Pty LTD
ABN: 90 089 531 975

Date: 21/06/24 (valid for 30 days)
Index Sheet

Seq # 240900419
Job # 36962214

BYDA Location: 75 Grandstand Road Ascot 6104
Scale: 1:2,500




**WARNING**
**CRITICAL ASSET**
**IN THE VICINITY.**
No works within 15 meters of this asset are permitted without prior approval from ATCO.
Contact ATCO on 1300 926 755

BYDA Enquiry
Detailed map page
No Assets in the Dig Site

Please refer to Symbols Sheet for Further Information

Disclaimer:
Please read all **warnings**, conditions and information on the attached "Underground Asset Details" information sheet. This plan is issued subject to that information and those conditions and **warnings** (including, but not limited to, the "NO HOT WORKS" warning). Plans are current for only **30 days** from date of request, indicative only and not warranted to be accurate. It is your responsibility to carefully locate underground assets and follow safe work practises and procedures (eg pot-holing).
ATCO Gas Australia will seek compensation for damage caused to assets.

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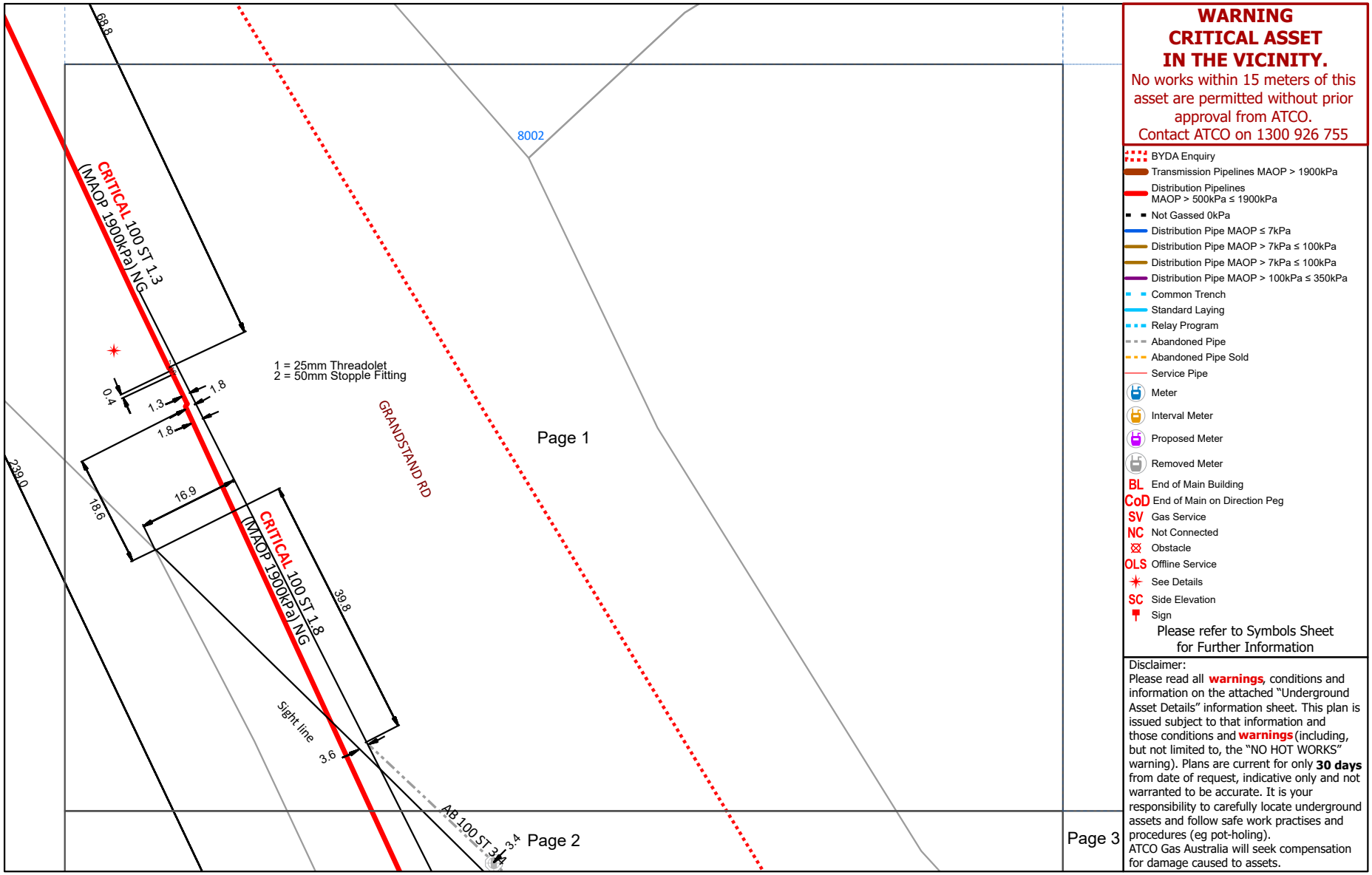
ATCO

©ATCO Gas Australia Pty LTD
ABN: 90 089 531 975

Date: 21/06/24 (valid for 30 days)

Seq # 240900419
Job # 36962214

BYDA Location: 75 Grandstand Road Ascot 6104
Scale: 1:800




**WARNING**
**CRITICAL ASSET**
**IN THE VICINITY.**
No works within 15 meters of this asset are permitted without prior approval from ATCO.
Contact ATCO on 1300 926 755

- BYDA Enquiry
- Transmission Pipelines MAOP > 1900kPa
- Distribution Pipelines MAOP > 500kPa ≤ 1900kPa
- Not Gassed 0kPa
- Distribution Pipe MAOP ≤ 7kPa
- Distribution Pipe MAOP > 7kPa ≤ 100kPa
- Distribution Pipe MAOP > 7kPa ≤ 100kPa
- Distribution Pipe MAOP > 100kPa ≤ 350kPa
- Common Trench
- Standard Laying
- Relay Program
- Abandoned Pipe
- Abandoned Pipe Sold
- Service Pipe
- Meter
- Interval Meter
- Proposed Meter
- Removed Meter
- BL End of Main Building
- CoD End of Main on Direction Peg
- SV Gas Service
- NC Not Connected
- Obstacle
- OLS Offline Service
- See Details
- SC Side Elevation
- Sign

Please refer to Symbols Sheet for Further Information

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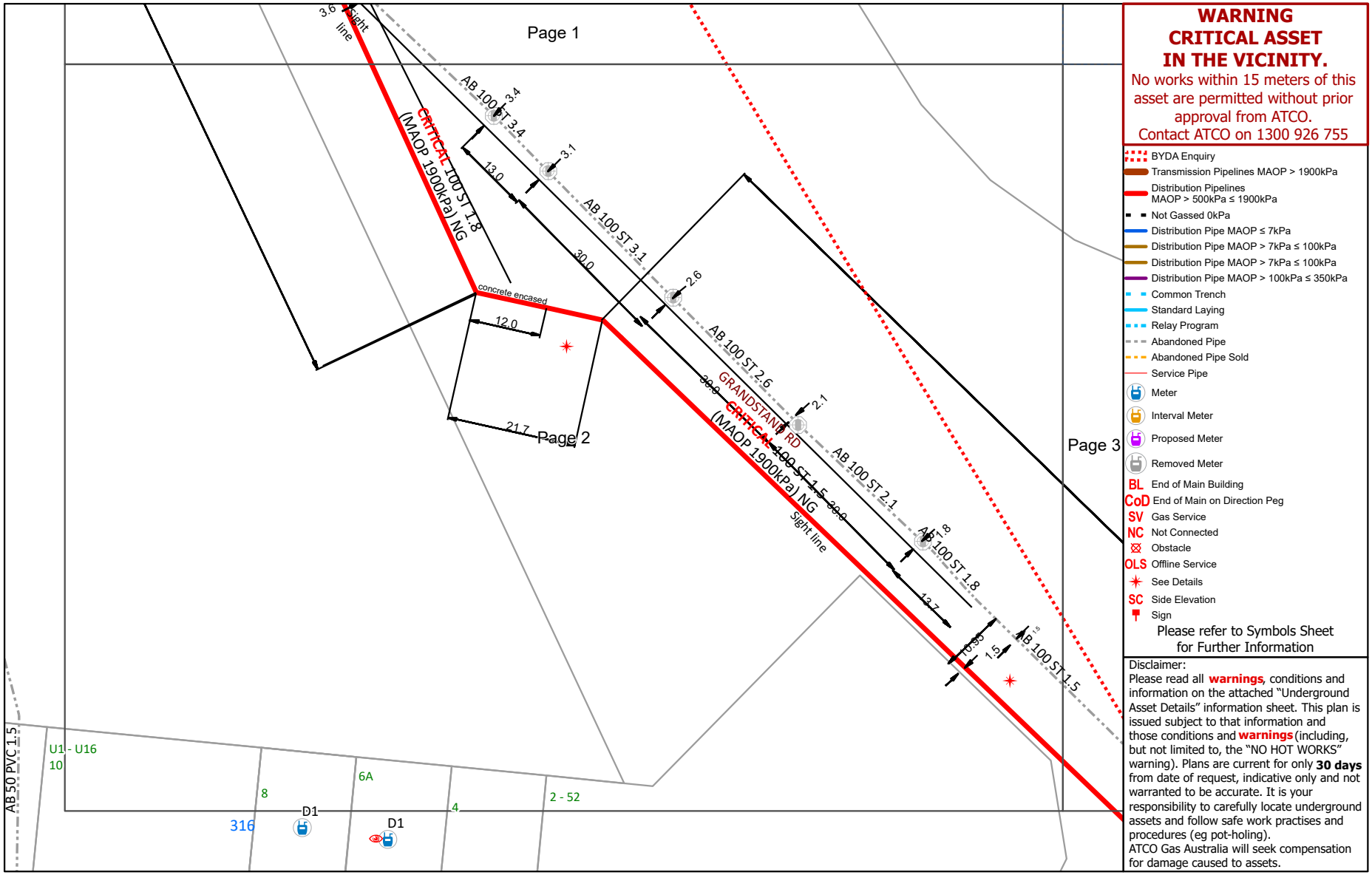
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ATCO
©ATCO Gas Australia Pty LTD
ABN: 90 089 531 975

Date: 21/06/24 (valid for 30 days)

Seq # 240900419
Job # 36962214

BYDA Location: 75 Grandstand Road Ascot 6104
Scale: 1:800




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- BL End of Main Building
- CoD End of Main on Direction Peg
- SV Gas Service
- NC Not Connected
- Obstacle
- OLS Offline Service
- See Details
- SC Side Elevation
- Sign

Please refer to Symbols Sheet for Further Information

Disclaimer:
Please read all **warnings**, conditions and information on the attached "Underground Asset Details" information sheet. This plan is issued subject to that information and those conditions and **warnings** (including, but not limited to, the "NO HOT WORKS" warning). Plans are current for only **30 days** from date of request, indicative only and not warranted to be accurate. It is your responsibility to carefully locate underground assets and follow safe work practises and procedures (eg pot-holing).
ATCO Gas Australia will seek compensation for damage caused to assets.

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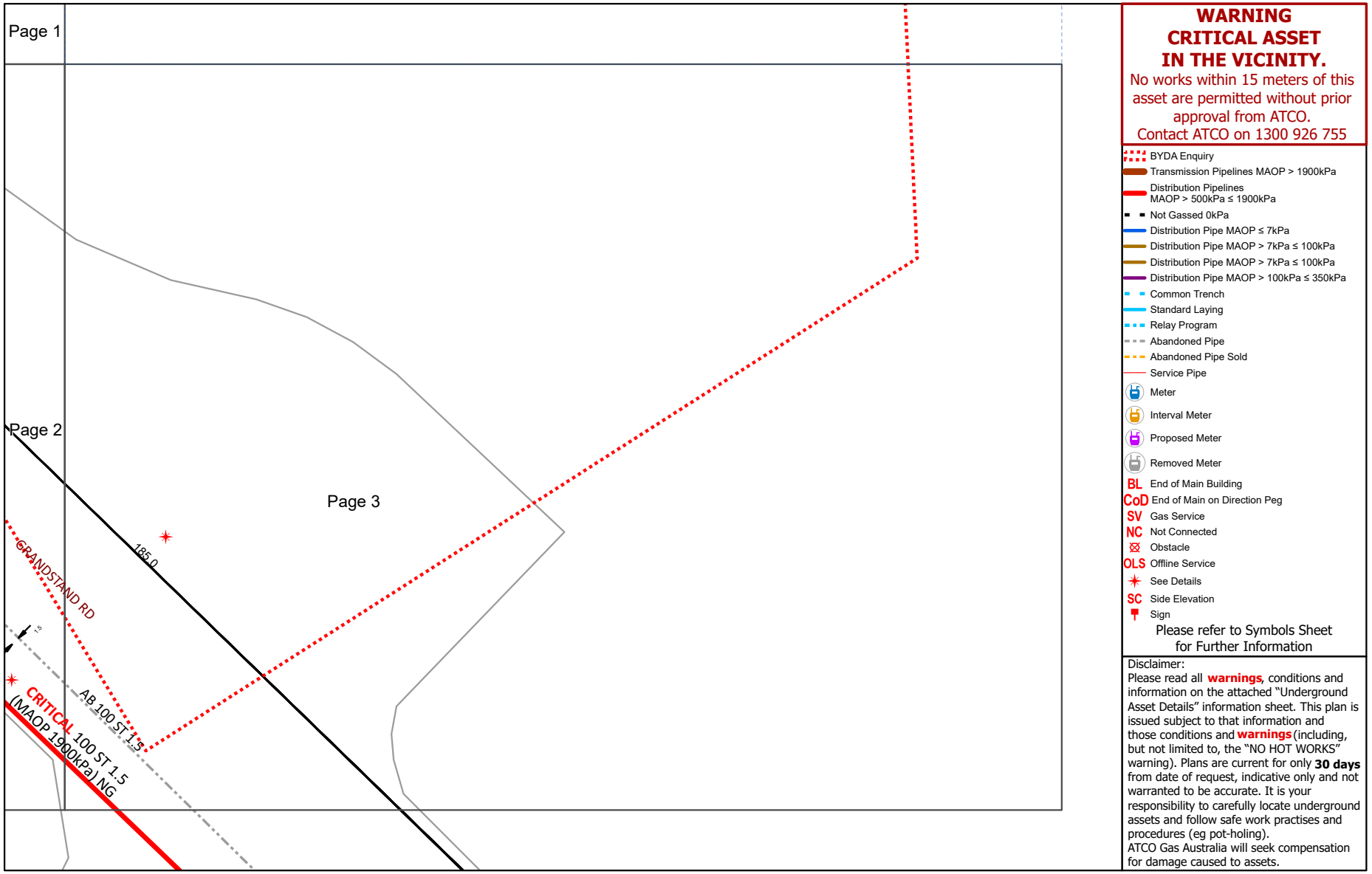
ATCO

©ATCO Gas Australia Pty LTD
ABN: 90 089 531 975

Date: 21/06/24 (valid for 30 days)

Seq # 240900419
Job # 36962214

BYDA Location: 75 Grandstand Road Ascot 6104
Scale: 1:800



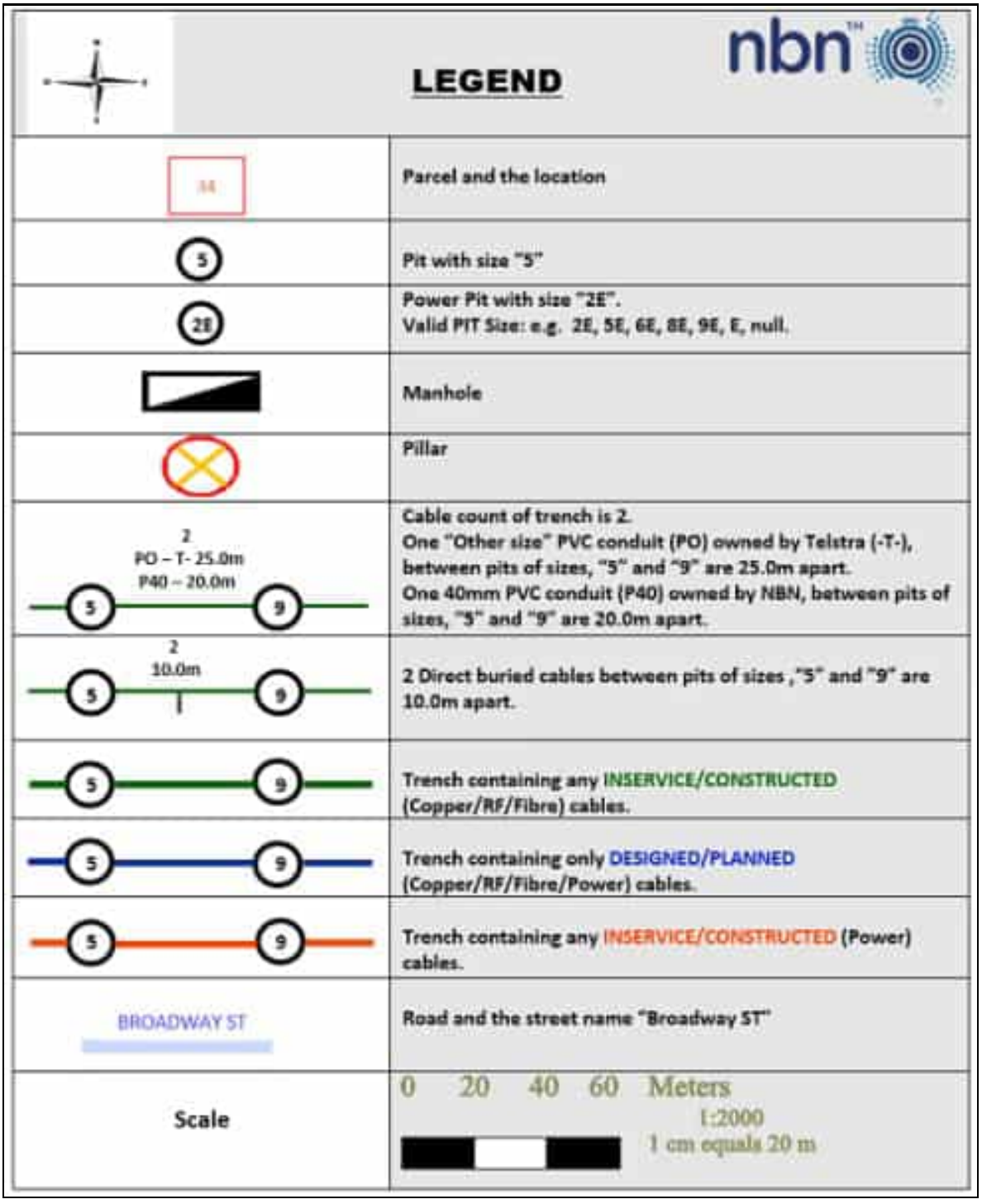

**WARNING**
**CRITICAL ASSET**
**IN THE VICINITY.**
No works within 15 meters of this asset are permitted without prior approval from ATCO.
Contact ATCO on 1300 926 755

- BYDA Enquiry
- Transmission Pipelines MAOP > 1900kPa
- Distribution Pipelines MAOP > 500kPa ≤ 1900kPa
- Not Gassed 0kPa
- Distribution Pipe MAOP ≤ 7kPa
- Distribution Pipe MAOP > 7kPa ≤ 100kPa
- Distribution Pipe MAOP > 7kPa ≤ 100kPa
- Distribution Pipe MAOP > 100kPa ≤ 350kPa
- Common Trench
- Standard Laying
- Relay Program
- Abandoned Pipe
- Abandoned Pipe Sold
- Service Pipe
- Meter
- Interval Meter
- Proposed Meter
- Removed Meter
- BL End of Main Building
- CoD End of Main on Direction Peg
- SV Gas Service
- NC Not Connected
- Obstacle
- OLS Offline Service
- See Details
- SC Side Elevation
- Sign

Please refer to Symbols Sheet for Further Information

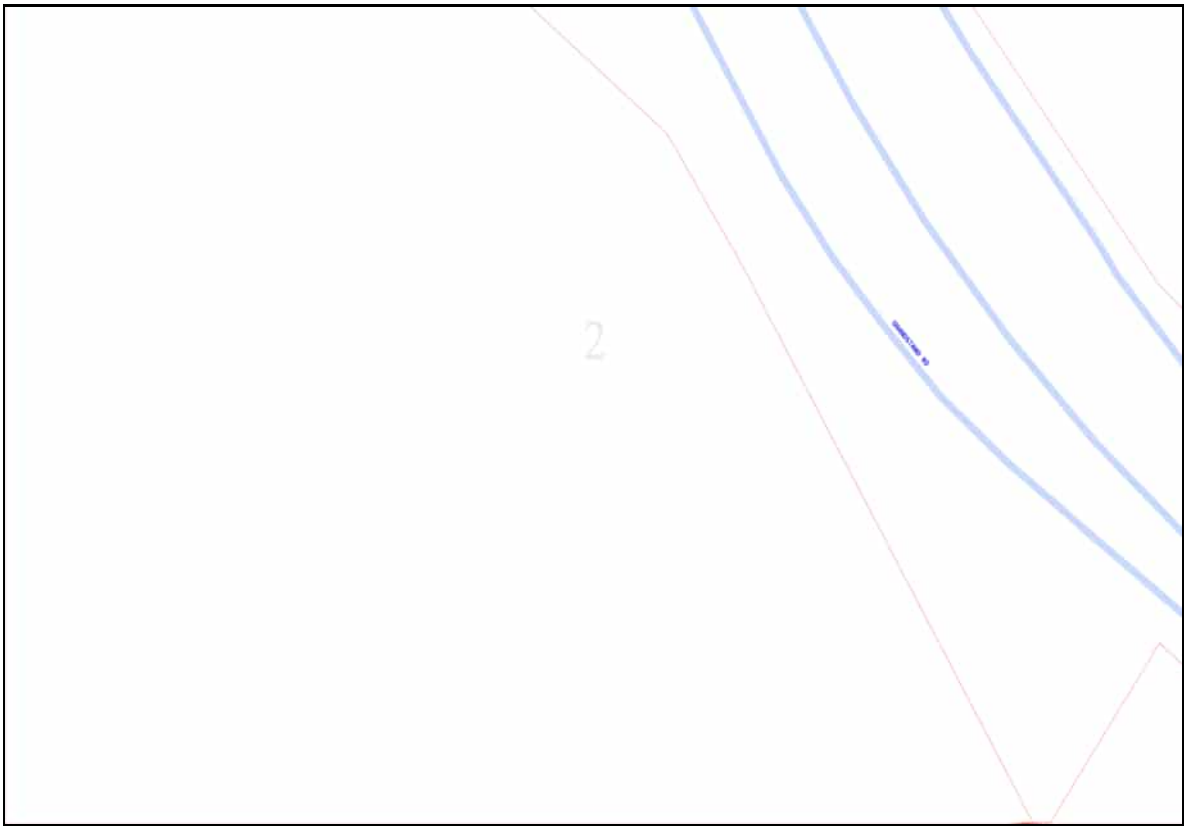
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ATCO Gas Australia will seek compensation for damage caused to assets.

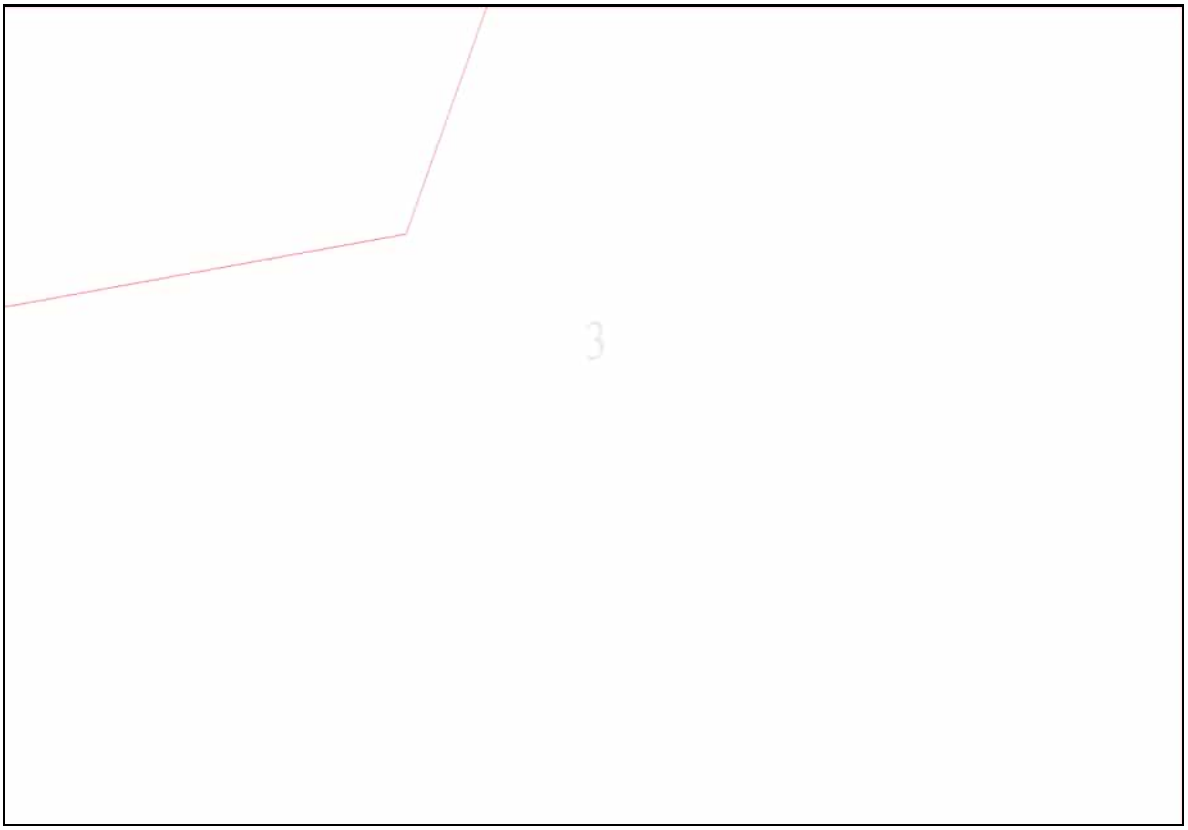
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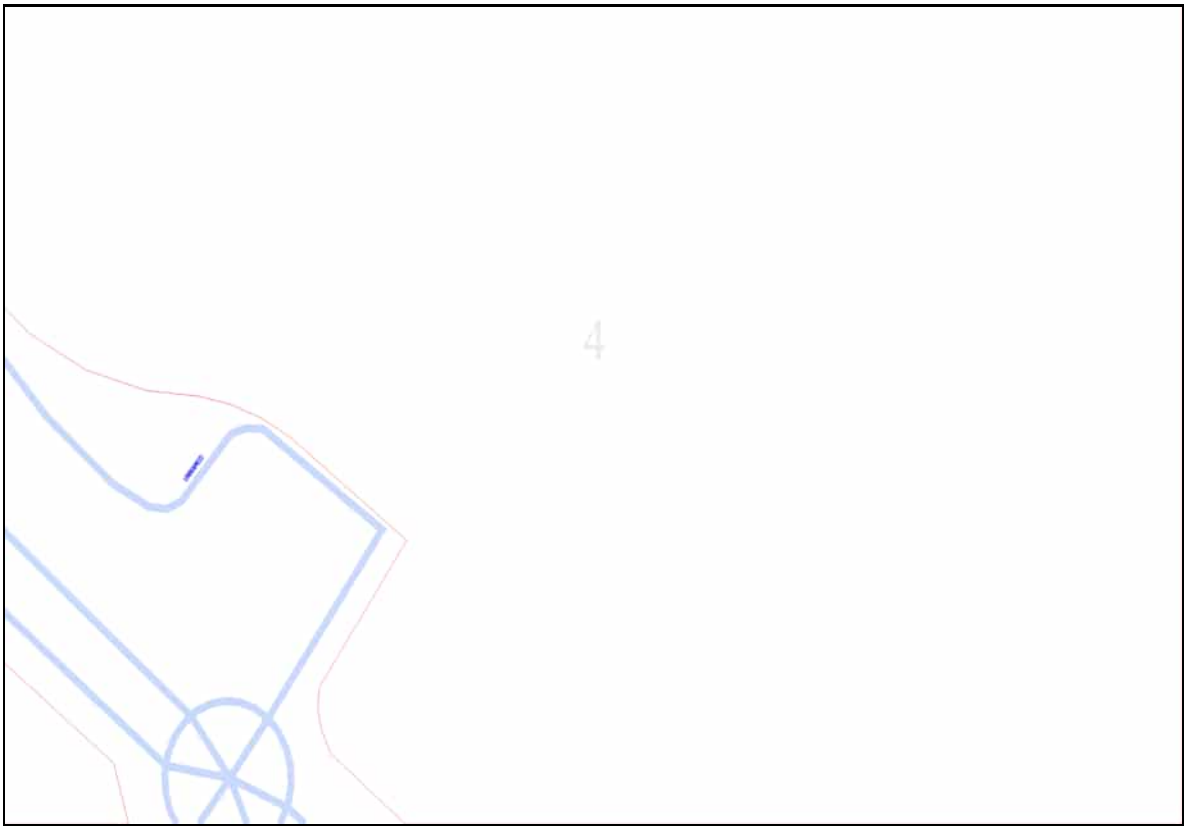


| | |
|---|---|
| | **LEGEND** |
| 44 | Parcel and the location |
| 5 | Pit with size "5" |
| 2E | Power Pit with size "2E".<br>Valid PIT Size: e.g. 2E, 5E, 6E, 8E, 9E, E, null. |
| | Manhole |
| | Pillar |
| 2<br>PO – T- 25.0m<br>P40 – 20.0m<br>5 9 | Cable count of trench is 2.<br>One "Other size" PVC conduit (PO) owned by Telstra (-T-), between pits of sizes, "5" and "9" are 25.0m apart.<br>One 40mm PVC conduit (P40) owned by NBN, between pits of sizes, "5" and "9" are 20.0m apart. |
| 2<br>10.0m<br>5 9 | 2 Direct buried cables between pits of sizes ,"5" and "9" are 10.0m apart. |
| 5 9 | Trench containing any INSERVICE/CONSTRUCTED (Copper/RF/Fibre) cables. |
| 5 9 | Trench containing only DESIGNED/PLANNED (Copper/RF/Fibre/Power) cables. |
| 5 9 | Trench containing any INSERVICE/CONSTRUCTED (Power) cables. |
| BROADWAY ST | Road and the street name "Broadway ST" |
| Scale | 0 20 40 60 Meters<br>1:2000<br>1 cm equals 20 m |



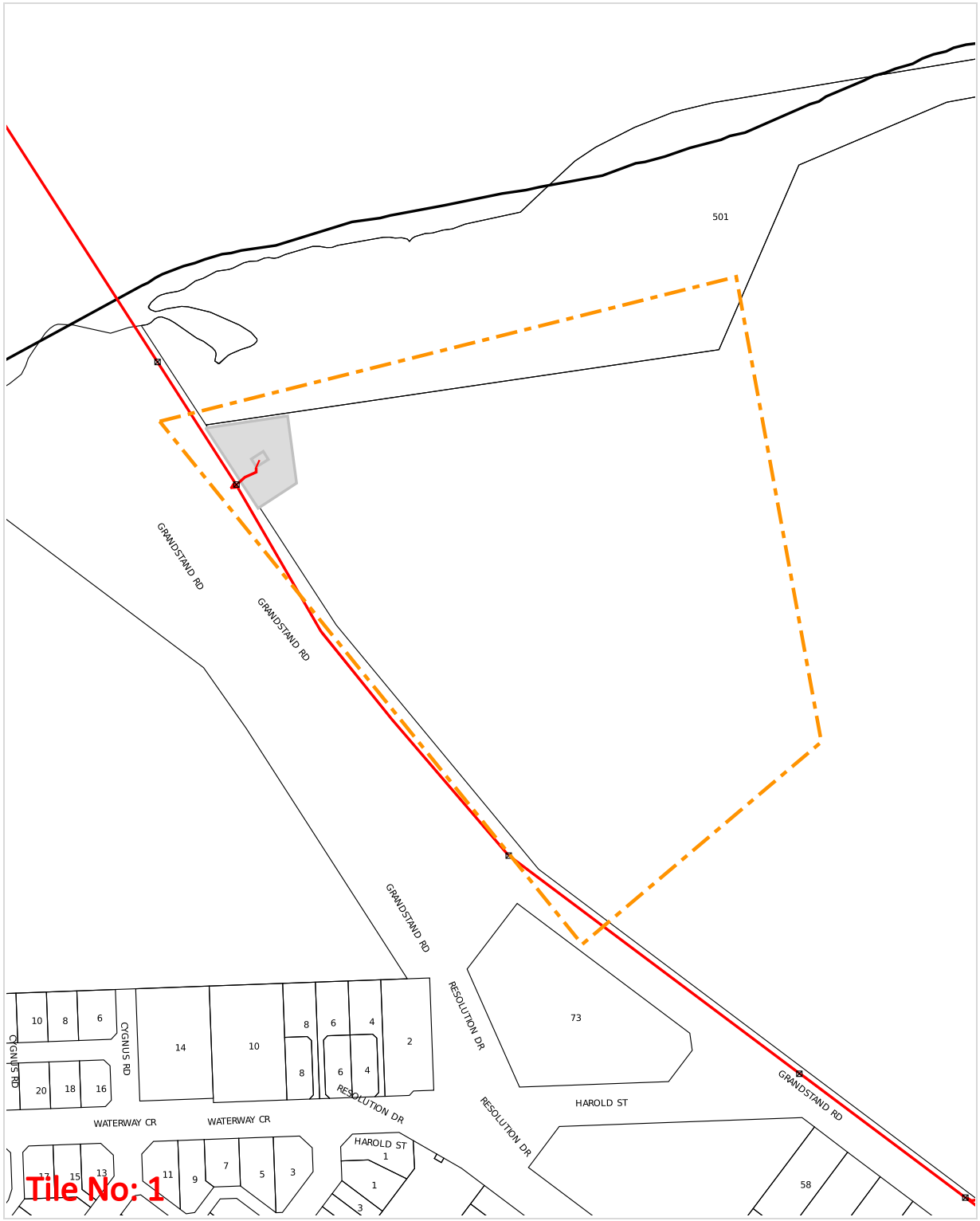






## Emergency Contacts

You must immediately report any damage to the **nbn™** network that you are/become aware of. Notification may be by telephone - 1800 626 329.



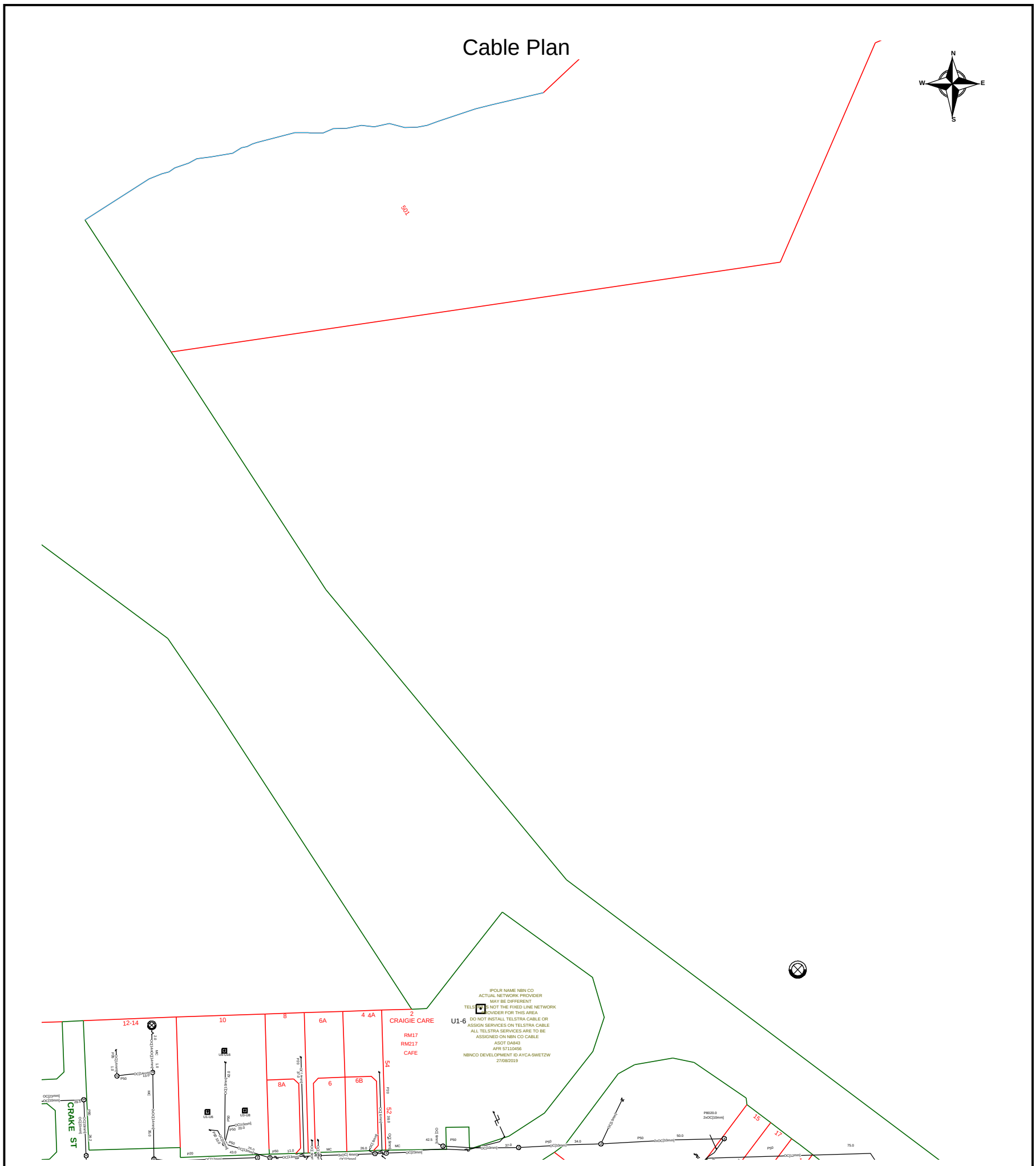

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Sequence Number: 240900413

Date Generated: 21 Jun 2024

For all Optus DBYD plan enquiries –
Email: Fibre.Locations@optus.net.au
For urgent onsite assistance contact 1800 505 777
Optus Limited ACN 052 833 208

Plans generated 21 Jun 2024 by Pelicancorp TicketAccess Software | www.pelicancorp.com




Report Damage: https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment
Ph - 13 22 03
Email - Telstra.Plans@team.telstra.com
Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries

Sequence Number: 240900417

TELSTRA LIMITED A.C.N. 086 174 781

CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance.

Generated On 21/06/2024 19:05:14

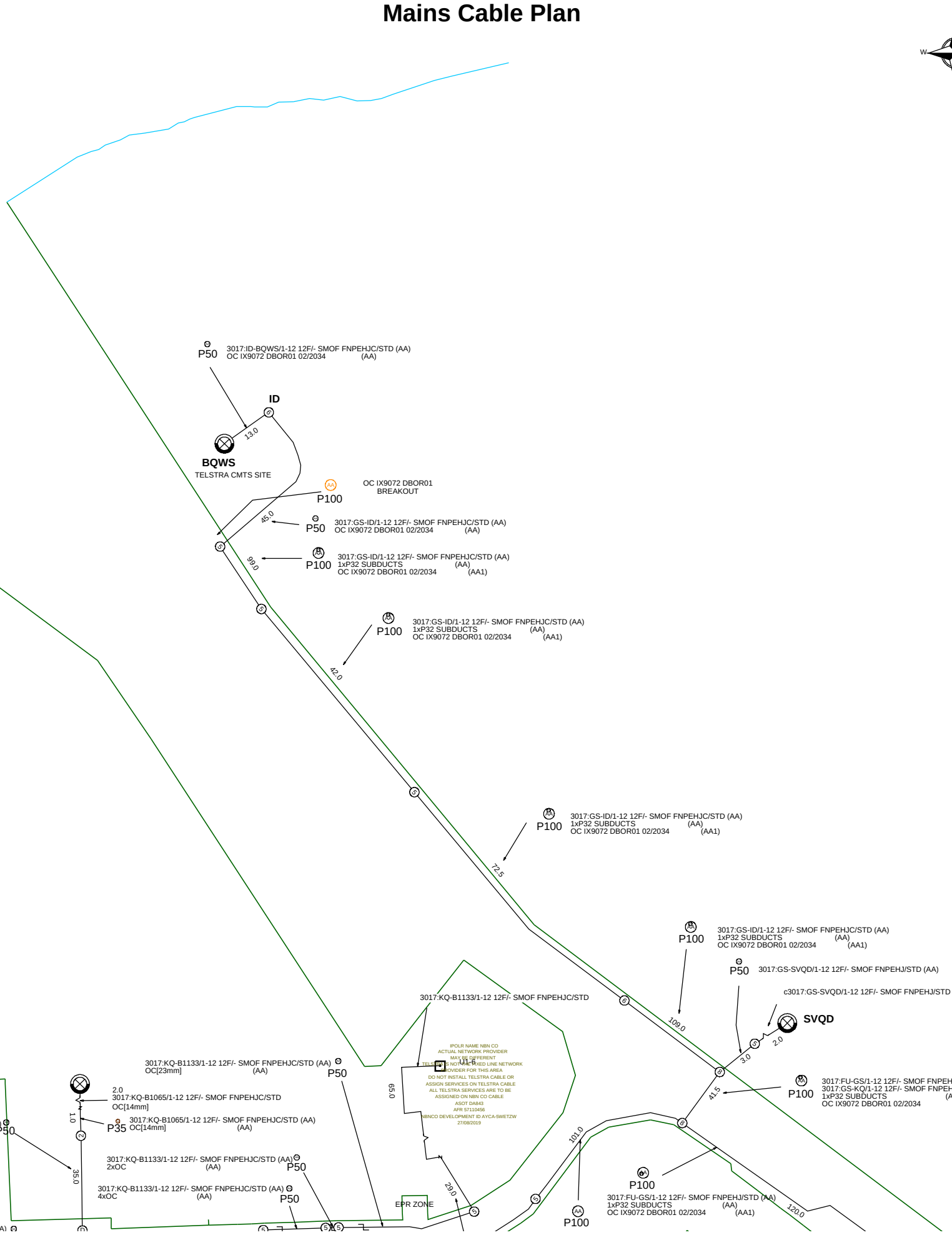
The above plan must be viewed in conjunction with the Mains Cable Plan on the following page

WARNING
Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information.
As such,Telstra supplied location information is indicative only.Spatial accuracy is not applicable to Quality Level D.
Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it.
Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy.
Further on site investigation is required to validate the exact location of Telstra plant prior to commencing construction work.
A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works.

See the Steps- Telstra Duty of Care that was provided in the email response.

**Page 1 of 2**

# Mains Cable Plan




Report Damage: https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment
Ph - 13 22 03
Email - Telstra.Plans@team.telstra.com
Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries

TELSTRA LIMITED A.C.N. 086 174 781

Generated On 21/06/2024 19:05:16

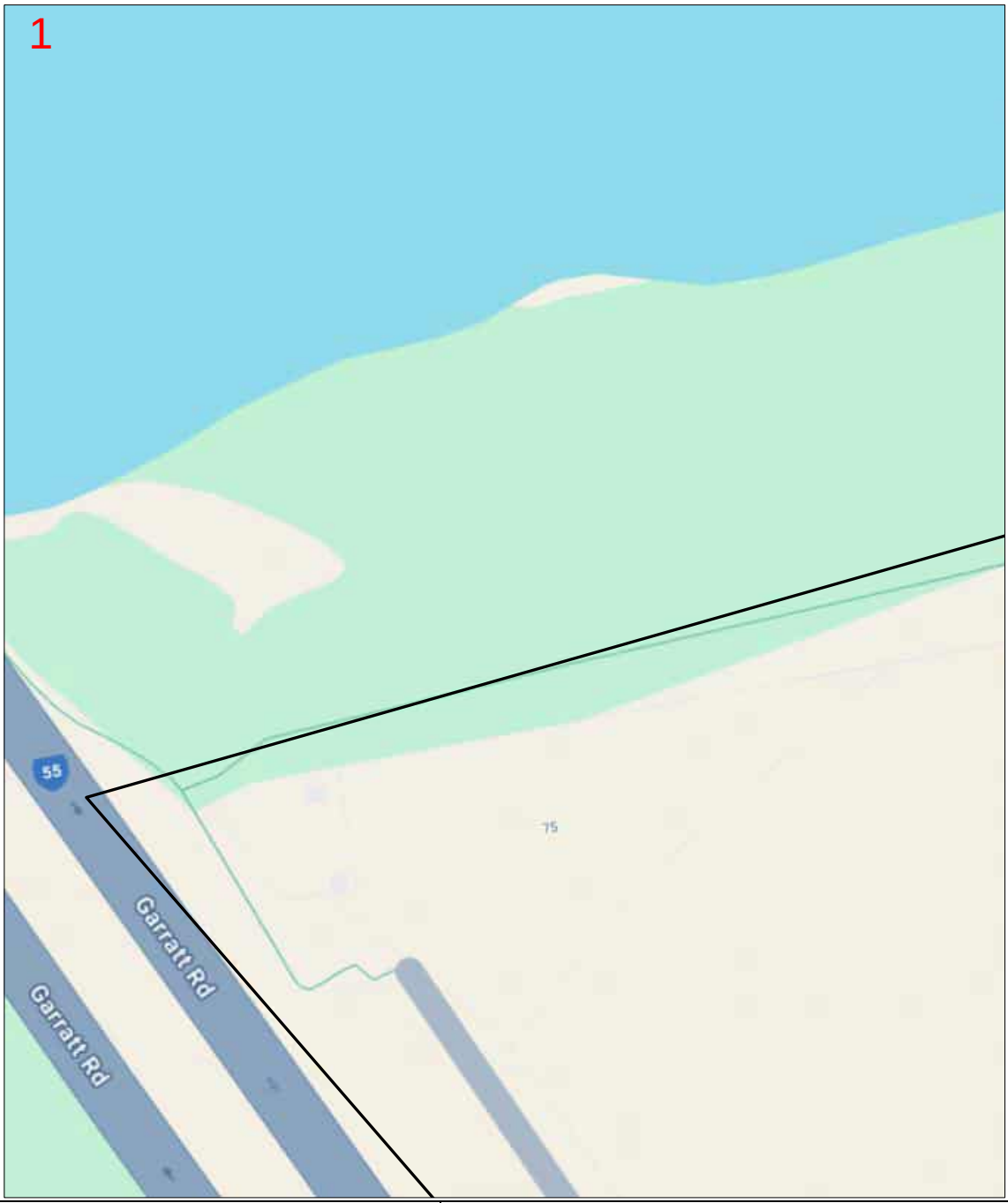
Sequence Number: 240900417

CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance.

WARNING
Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information.
As such,Telstra supplied location information is indicative only.Spatial accuracy is not applicable to Quality Level D.
Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it.
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See the Steps- Telstra Duty of Care that was provided in the email response.

Page 2 of 2




**Enquiry Number:** 240900414

**Map Sheet:** 1

**Scale:** 1: 750

0 0.008km

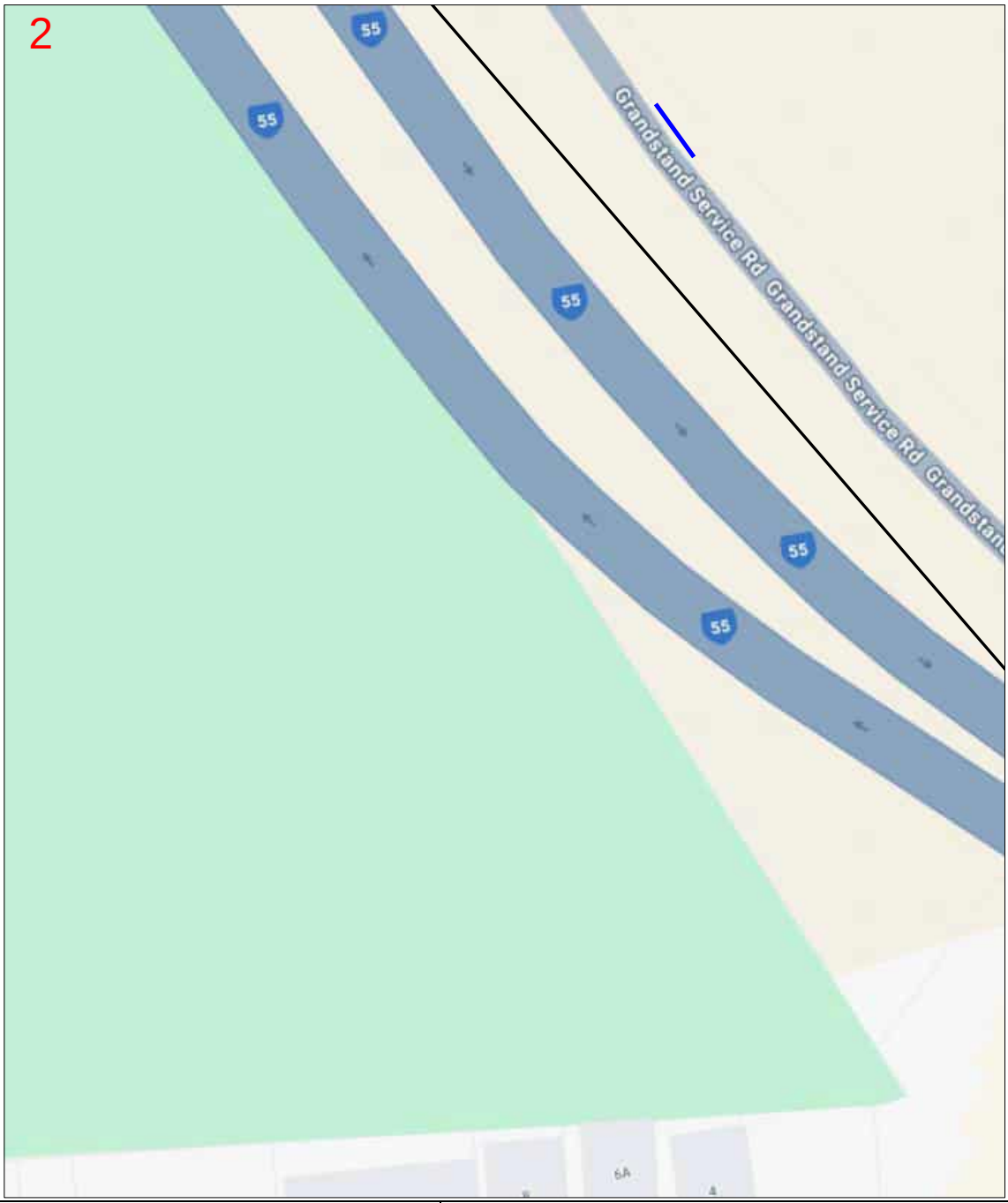
N

LEGEND

BYDA Work Area

| | |
|---|---|
| AAPT/PowerTel Pit | TransACT Pit |
| AAPT/PowerTel Duct | TransACT Duct |
| DDA Pit | SOUL Pattinson Telecoms Pit |
| DDA Duct | SOUL Pattinson Telecoms Duct |
| Agile/Adam Pit | PIPE Networks Pit |
| Agile/Adam Duct | PIPE Networks Duct |

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**Enquiry Number:** 240900414

**Map Sheet:** 2

**Scale:** 1: 750

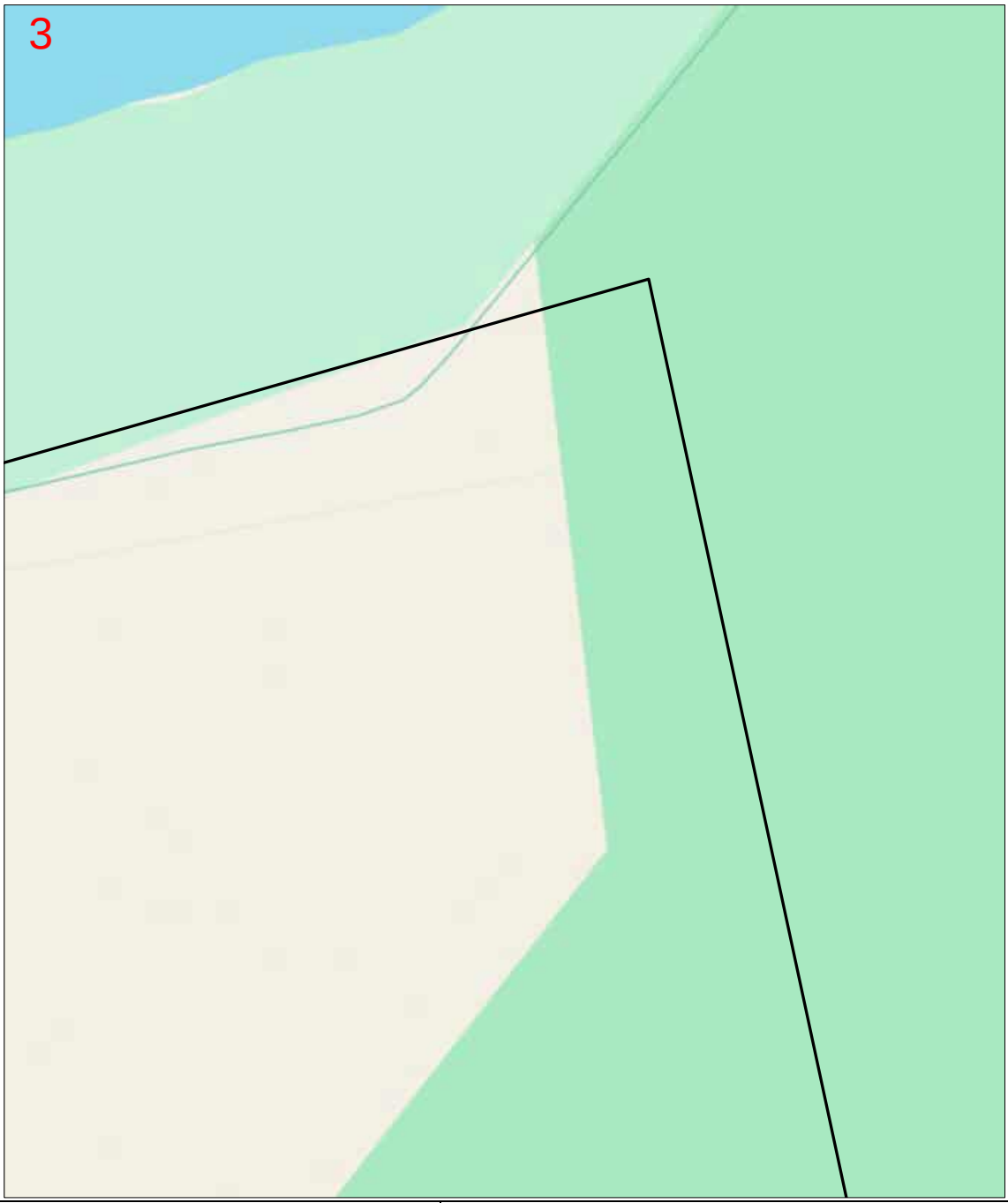
0 0.008km

N

LEGEND

| | | | |
|---|---|---|---|
| BYDA Work Area | | | |
| AAPT/PowerTel Pit | | TransACT Pit | |
| AAPT/PowerTel Duct | | TransACT Duct | |
| DDA Pit | | SOUL Pattinson Telecoms Pit | |
| DDA Duct | | SOUL Pattinson Telecoms Duct | |
| Agile/Adam Pit | | PIPE Networks Pit | |
| Agile/Adam Duct | | PIPE Networks Duct | |

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**Enquiry Number:** 240900414

**Map Sheet:** 3

**Scale:** 1: 750

0 0.008km

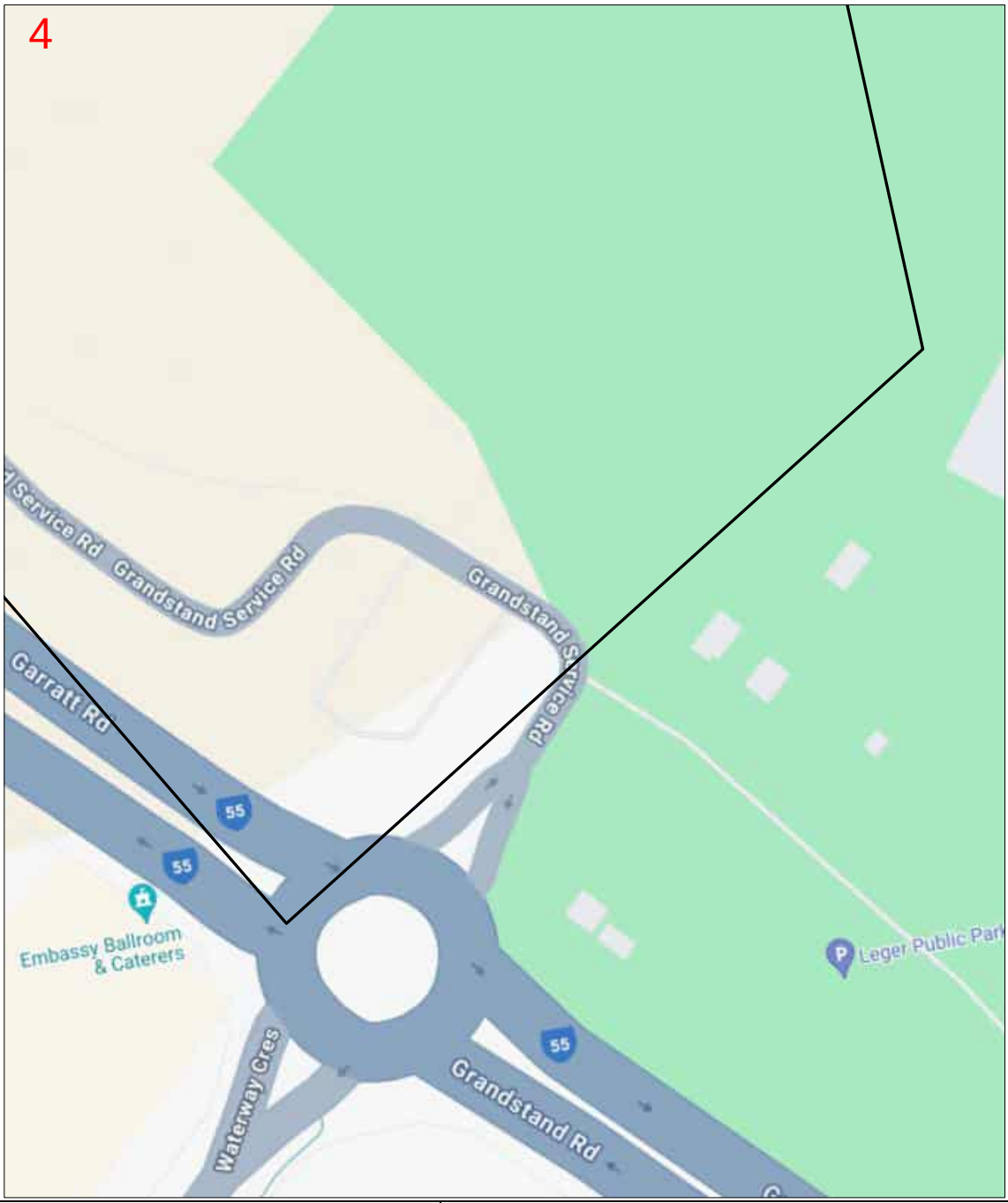
N

***LEGEND***

BYDA Work Area

| | |
|---|---|
| AAPT/PowerTel Pit | TransACT Pit |
| AAPT/PowerTel Duct | TransACT Duct |
| DDA Pit | SOUL Pattinson Telecoms Pit |
| DDA Duct | SOUL Pattinson Telecoms Duct |
| Agile/Adam Pit | PIPE Networks Pit |
| Agile/Adam Duct | PIPE Networks Duct |

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**Enquiry Number:** 240900414

**Map Sheet:** 4

**Scale:** 1: 750

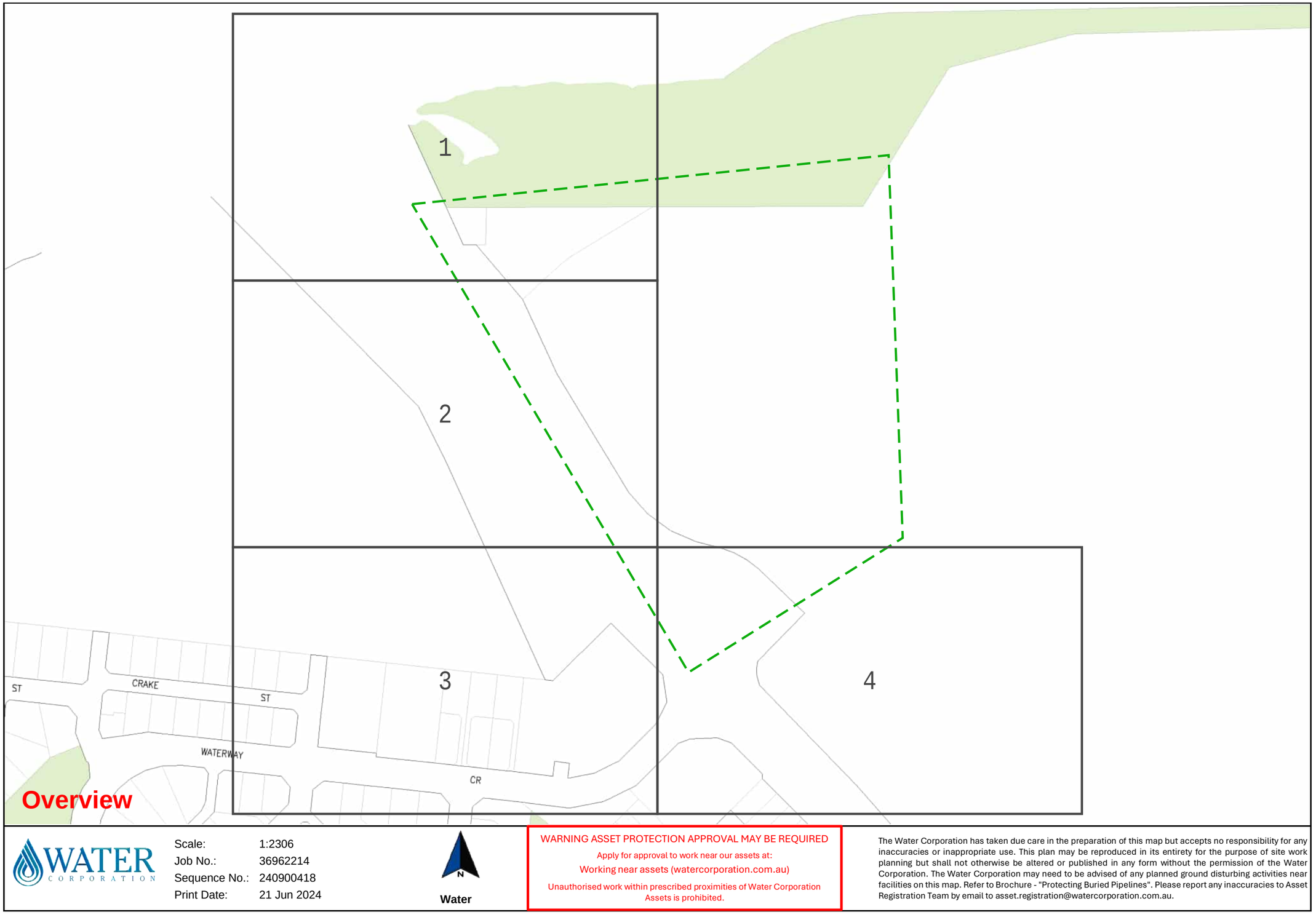
0 0.008km

N

LEGEND

| | |
|---|---|
| BYDA Work Area | |
| AAPT/PowerTel Pit | TransACT Pit |
| AAPT/PowerTel Duct | TransACT Duct |
| DDA Pit | SOUL Pattinson Telecoms Pit |
| DDA Duct | SOUL Pattinson Telecoms Duct |
| Agile/Adam Pit | PIPE Networks Pit |
| Agile/Adam Duct | PIPE Networks Duct |

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WATER CORPORATION

Scale: 1:2306
Job No.: 36962214
Sequence No.: 240900418
Print Date: 21 Jun 2024

N

Water

WARNING ASSET PROTECTION APPROVAL MAY BE REQUIRED

Apply for approval to work near our assets at:

Working near assets (watercorporation.com.au)

Unauthorised work within prescribed proximities of Water Corporation Assets is prohibited.

The Water Corporation has taken due care in the preparation of this map but accepts no responsibility for any inaccuracies or inappropriate use. This plan may be reproduced in its entirety for the purpose of site work planning but shall not otherwise be altered or published in any form without the permission of the Water Corporation. The Water Corporation may need to be advised of any planned ground disturbing activities near facilities on this map. Refer to Brochure - "Protecting Buried Pipelines". Please report any inaccuracies to Asset Registration Team by email to asset.registration@watercorporation.com.au.




**Page No: 1**

WATER CORPORATION

Scale: 1:750
Job No.: 36962214
Sequence No.: 240900418
Print Date: 21 Jun 2024

N

Water

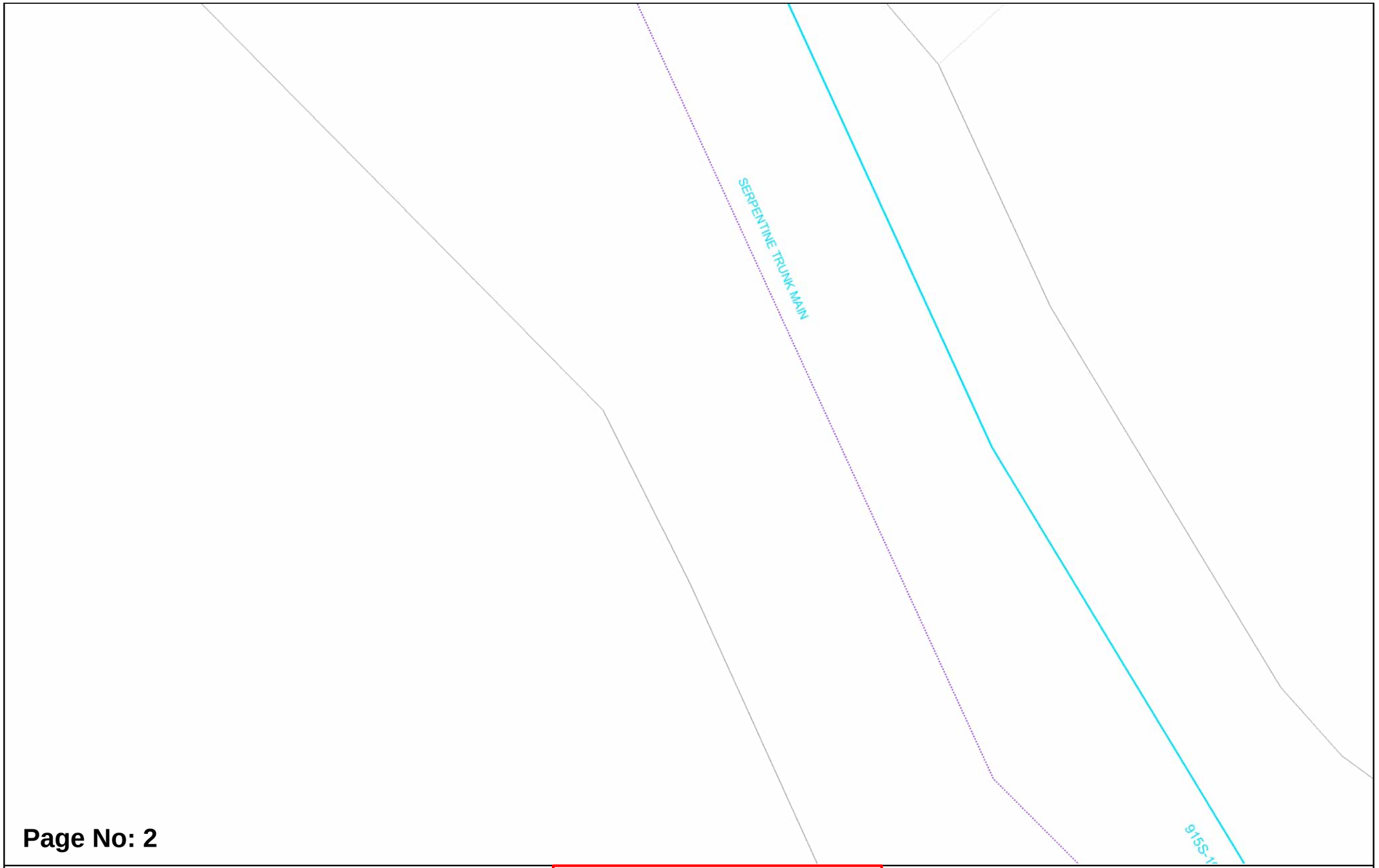
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**Page No: 2**

WATER CORPORATION

Scale: 1:750
Job No.: 36962214
Sequence No.: 240900418
Print Date: 21 Jun 2024

N

Water

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**Page No: 3**

WATER CORPORATION

| | |
|---|---|
| Scale: | 1:750 |
| Job No.: | 36962214 |
| Sequence No.: | 240900418 |
| Print Date: | 21 Jun 2024 |

N

**Water**

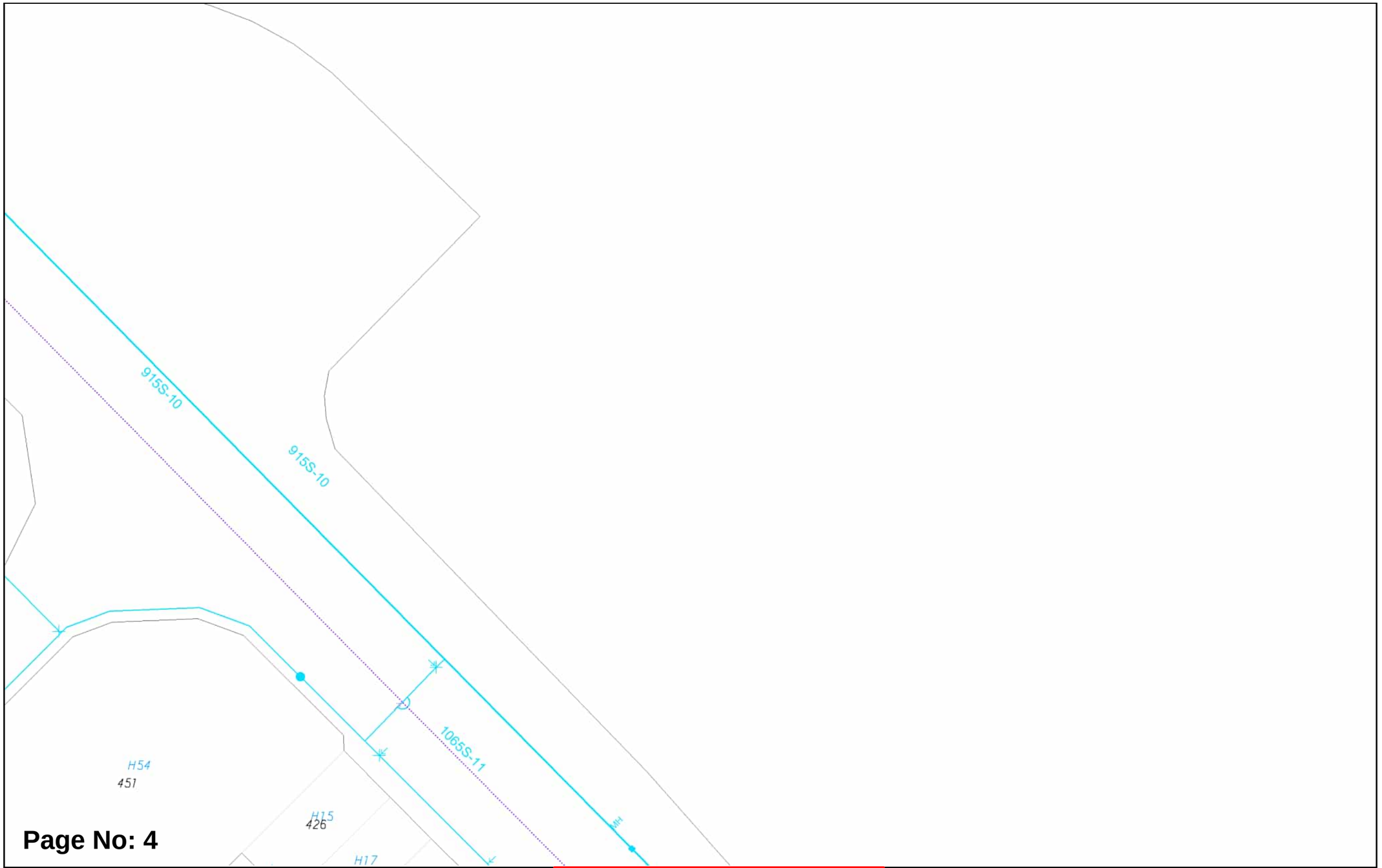
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WATER CORPORATION

Scale: 1:750
Job No.: 36962214
Sequence No.: 240900418
Print Date: 21 Jun 2024

N

Water

WARNING ASSET PROTECTION APPROVAL MAY BE REQUIRED

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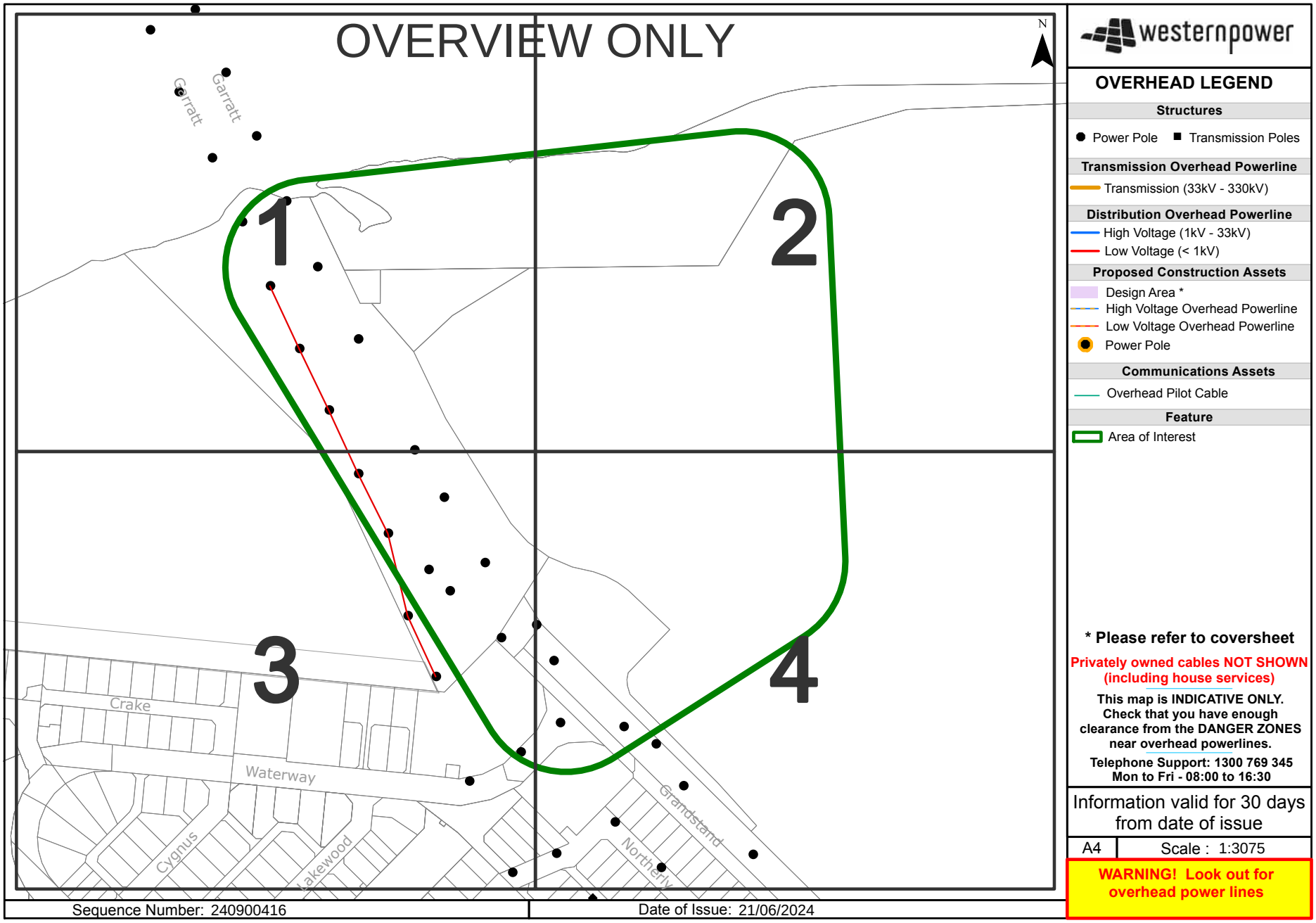
Working near assets (watercorporation.com.au)

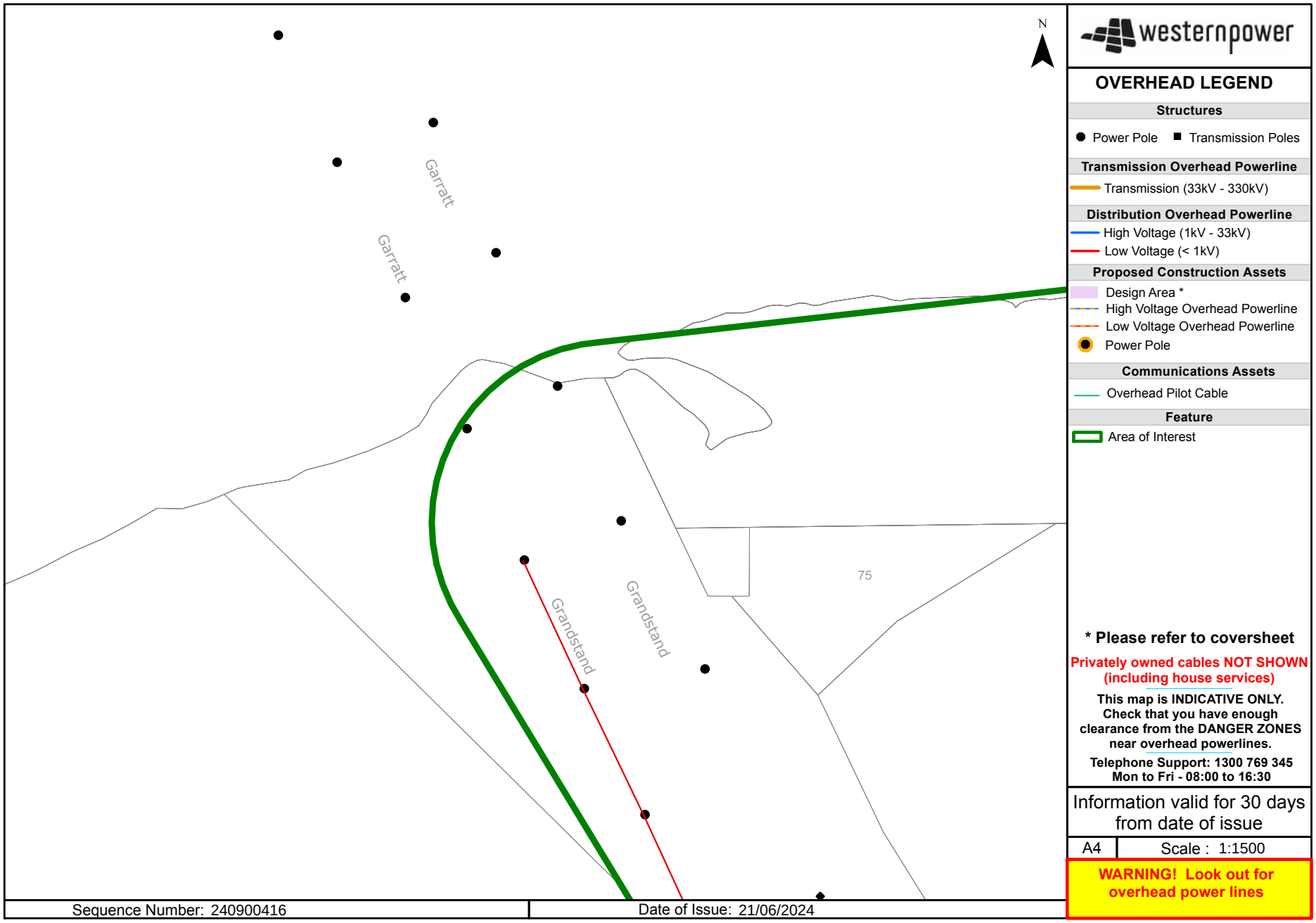
Unauthorised work within prescribed proximities of Water Corporation Assets is prohibited.

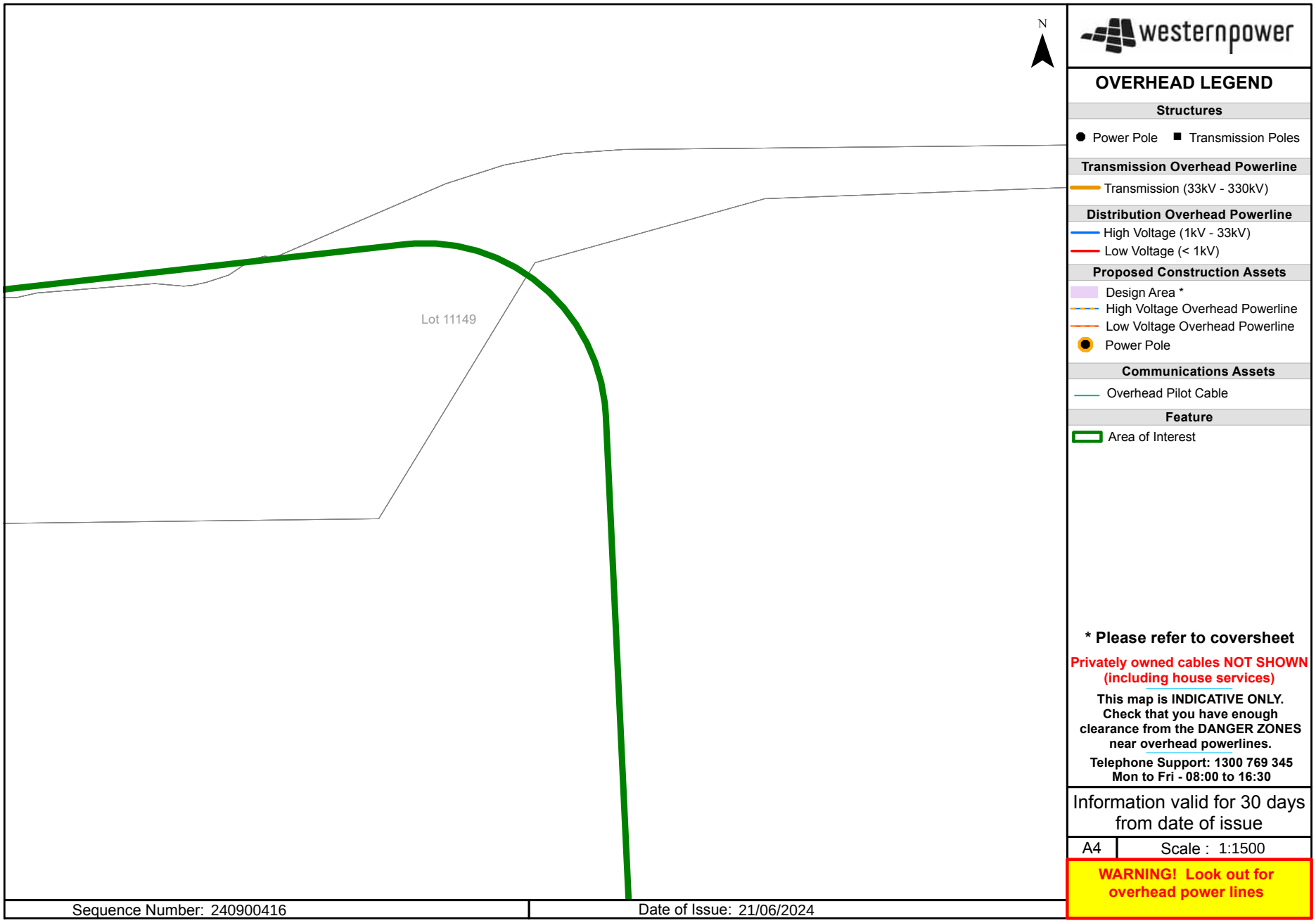
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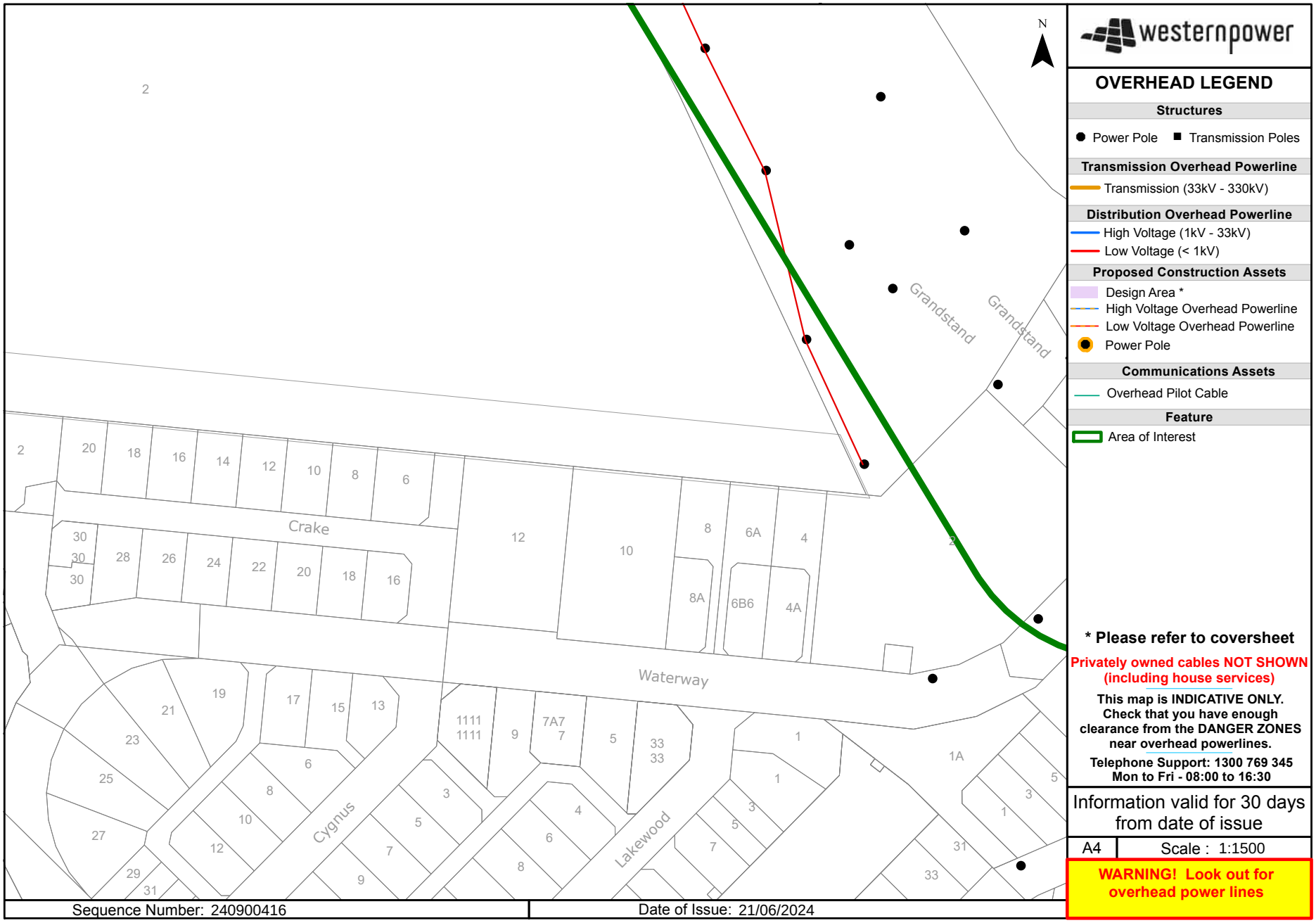
Plans generated 21 Jun 2024 by PelicanCorp TicketAccess Software | www.pelicancorp.com

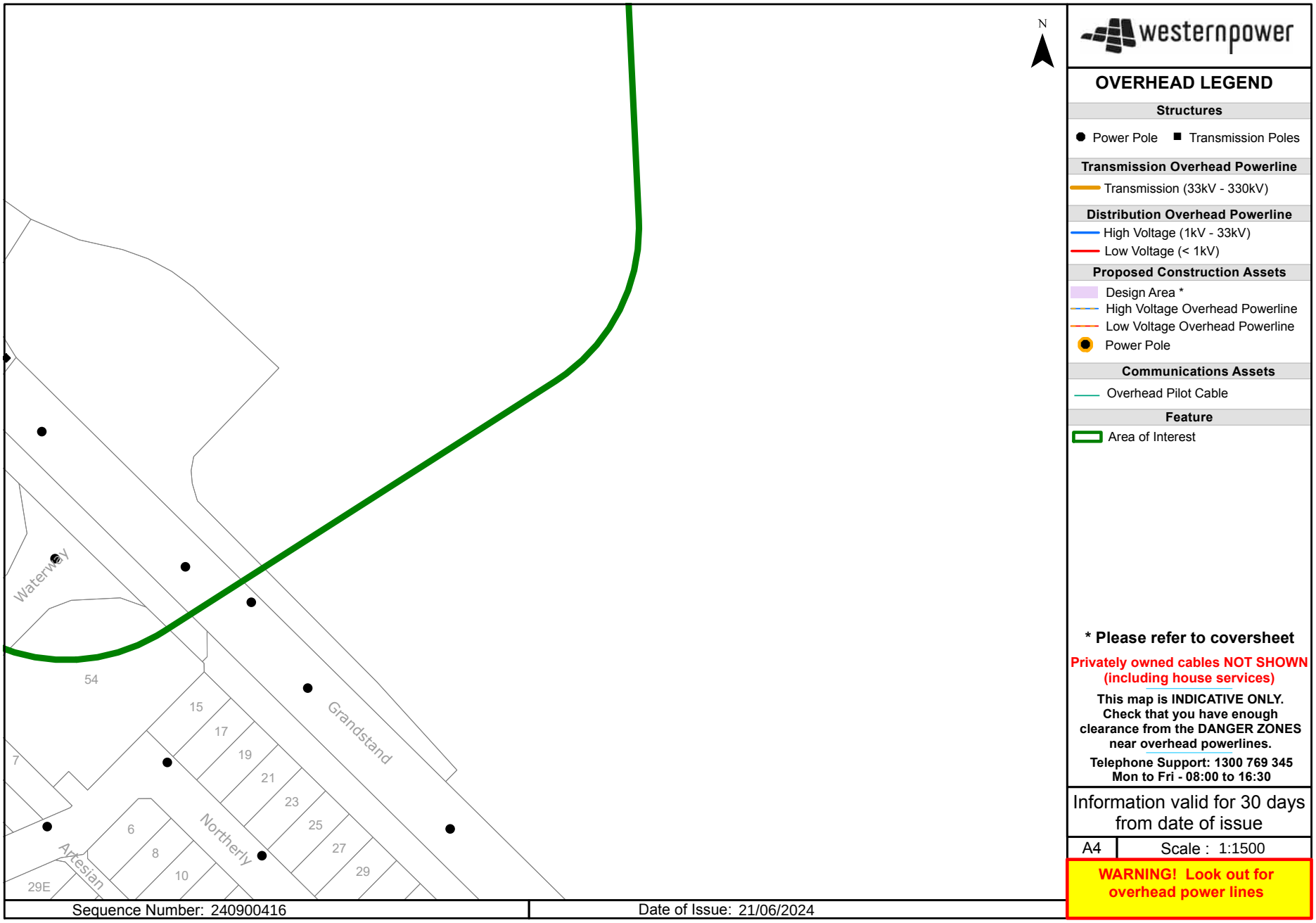
Water Corp - Critical Plan.docx (21 May 2024)

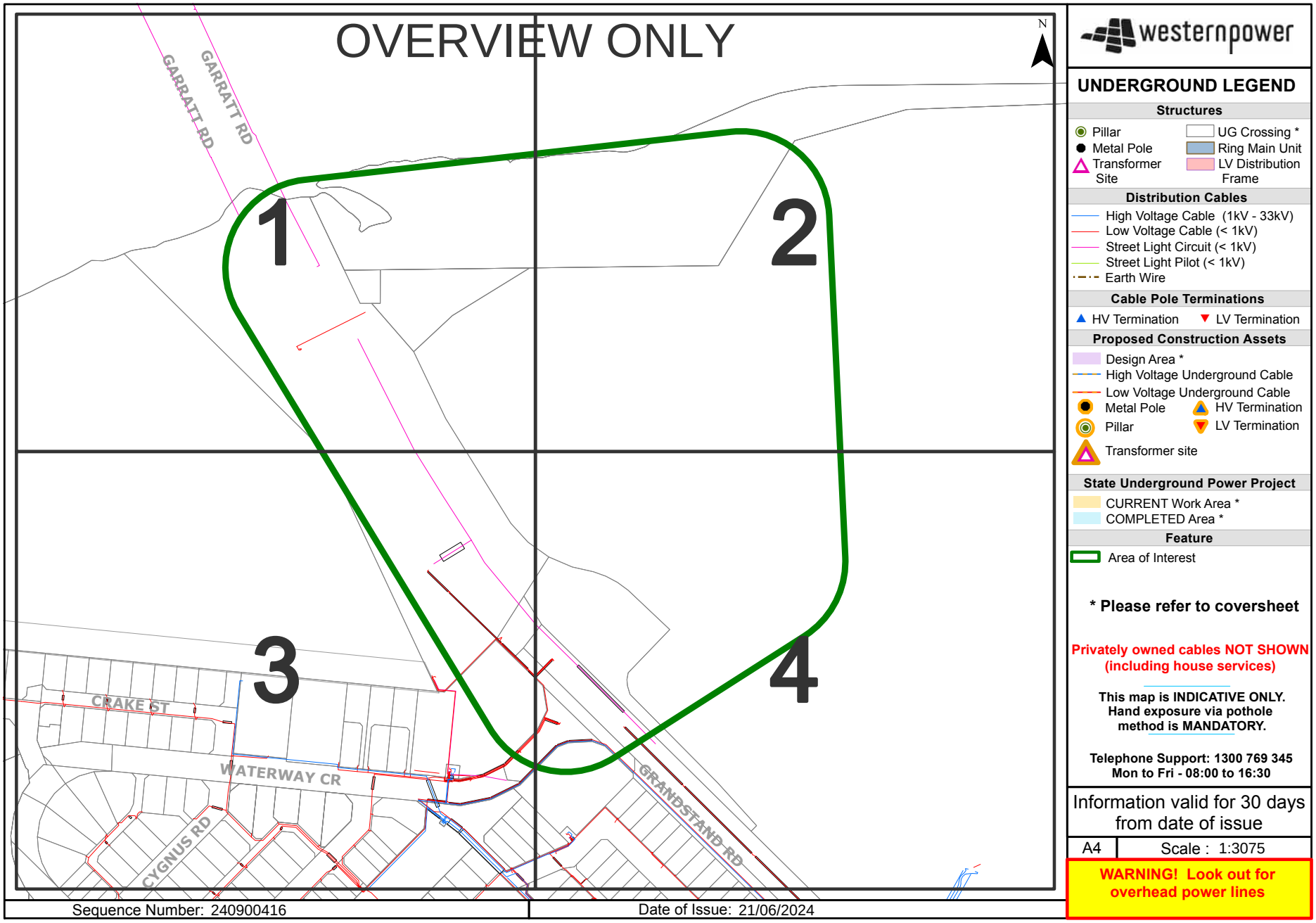

OVERVIEW ONLY
N
Garratt
Garratt
1
2
3
4
Crake
Waterway
Cygnus
Lakewood
Grandstand
Northerly
Sequence Number: 240900416
Date of Issue: 21/06/2024
westernpower
OVERHEAD LEGEND
Structures
Power Pole
Transmission Poles
Transmission Overhead Powerline
Transmission (33kV - 330kV)
Distribution Overhead Powerline
High Voltage (1kV - 33kV)
Low Voltage (< 1kV)
Proposed Construction Assets
Design Area *
High Voltage Overhead Powerline
Low Voltage Overhead Powerline
Power Pole
Communications Assets
Overhead Pilot Cable
Feature
Area of Interest
* Please refer to coversheet
Privately owned cables NOT SHOWN (including house services)
This map is INDICATIVE ONLY. Check that you have enough clearance from the DANGER ZONES near overhead powerlines.
Telephone Support: 1300 769 345
Mon to Fri - 08:00 to 16:30
Information valid for 30 days from date of issue
A4
Scale : 1:3075
WARNING! Look out for overhead power lines

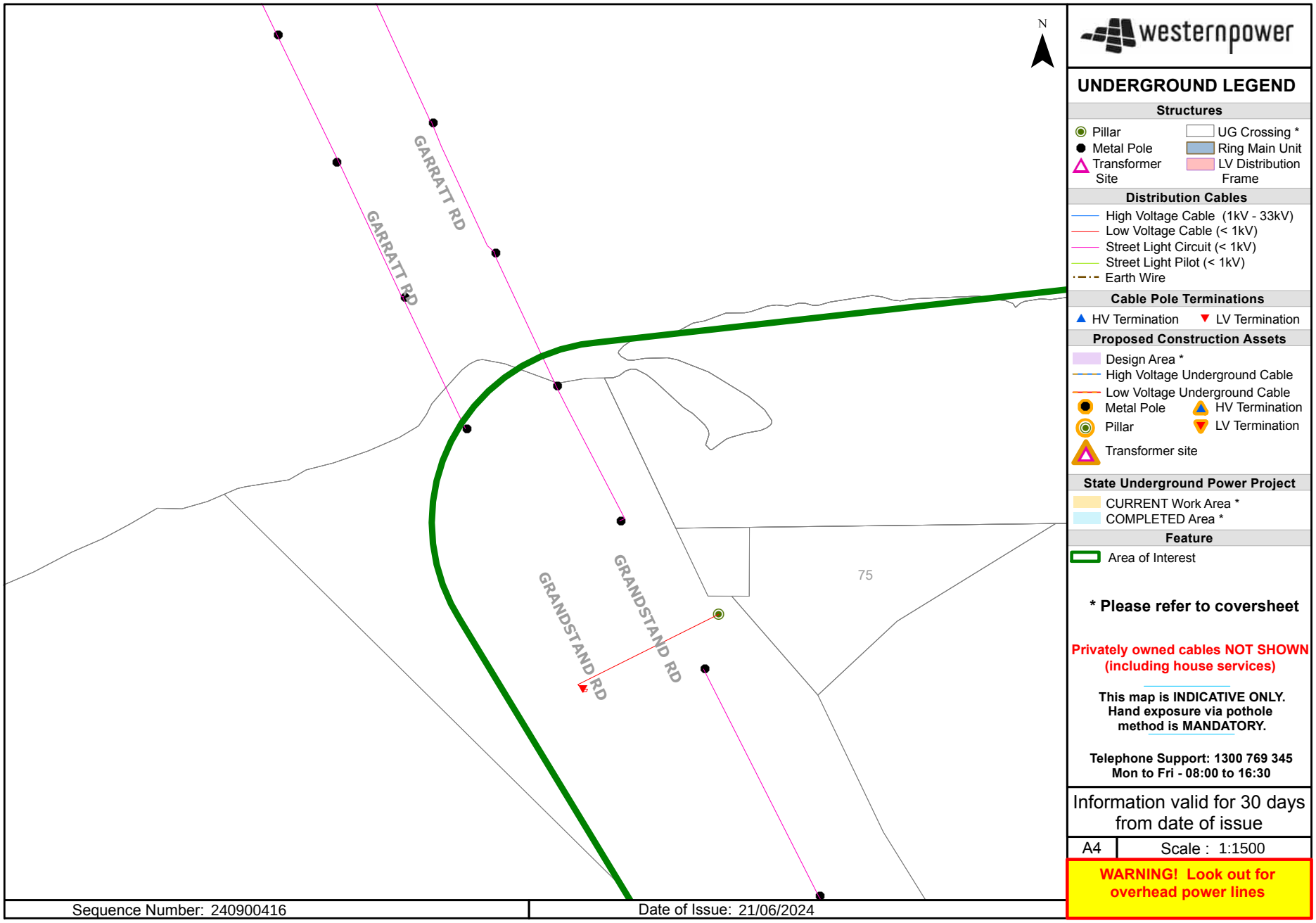

N
Garratt
Garratt
Grandstand
Grandstand
75
westernpower
OVERHEAD LEGEND
Structures
Power Pole
Transmission Poles
Transmission Overhead Powerline
Transmission (33kV - 330kV)
Distribution Overhead Powerline
High Voltage (1kV - 33kV)
Low Voltage (< 1kV)
Proposed Construction Assets
Design Area *
High Voltage Overhead Powerline
Low Voltage Overhead Powerline
Power Pole
Communications Assets
Overhead Pilot Cable
Feature
Area of Interest
* Please refer to coversheet
Privately owned cables NOT SHOWN (including house services)
This map is INDICATIVE ONLY. Check that you have enough clearance from the DANGER ZONES near overhead powerlines.
Telephone Support: 1300 769 345
Mon to Fri - 08:00 to 16:30
Information valid for 30 days from date of issue
A4
Scale : 1:1500
WARNING! Look out for overhead power lines
Sequence Number: 240900416
Date of Issue: 21/06/2024

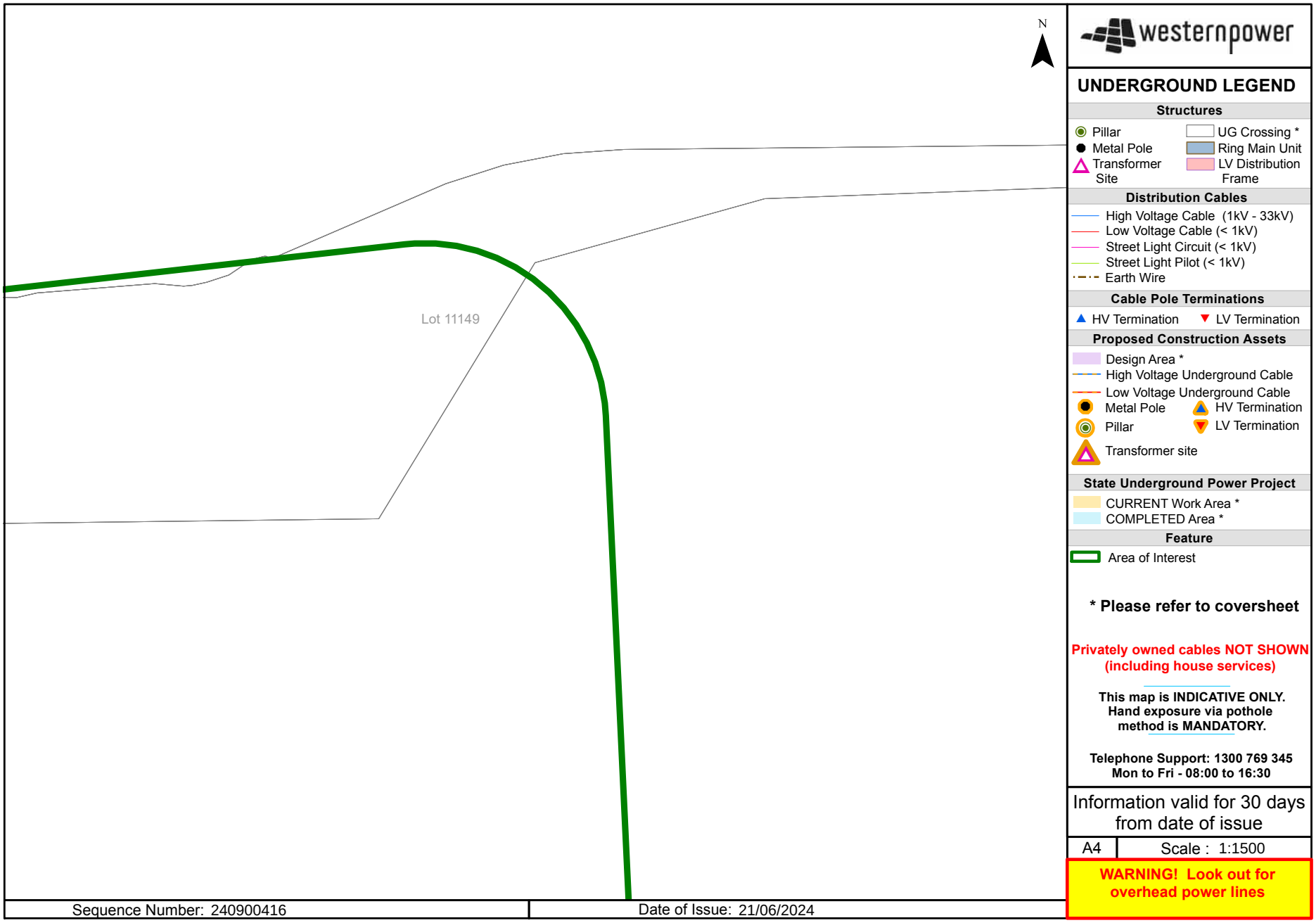

N
Lot 11149
westernpower
OVERHEAD LEGEND
Structures
Power Pole
Transmission Poles
Transmission Overhead Powerline
Transmission (33kV - 330kV)
Distribution Overhead Powerline
High Voltage (1kV - 33kV)
Low Voltage (< 1kV)
Proposed Construction Assets
Design Area *
High Voltage Overhead Powerline
Low Voltage Overhead Powerline
Power Pole
Communications Assets
Overhead Pilot Cable
Feature
Area of Interest
* Please refer to coversheet
Privately owned cables NOT SHOWN (including house services)
This map is INDICATIVE ONLY. Check that you have enough clearance from the DANGER ZONES near overhead powerlines.
Telephone Support: 1300 769 345
Mon to Fri - 08:00 to 16:30
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Date of Issue: 21/06/2024

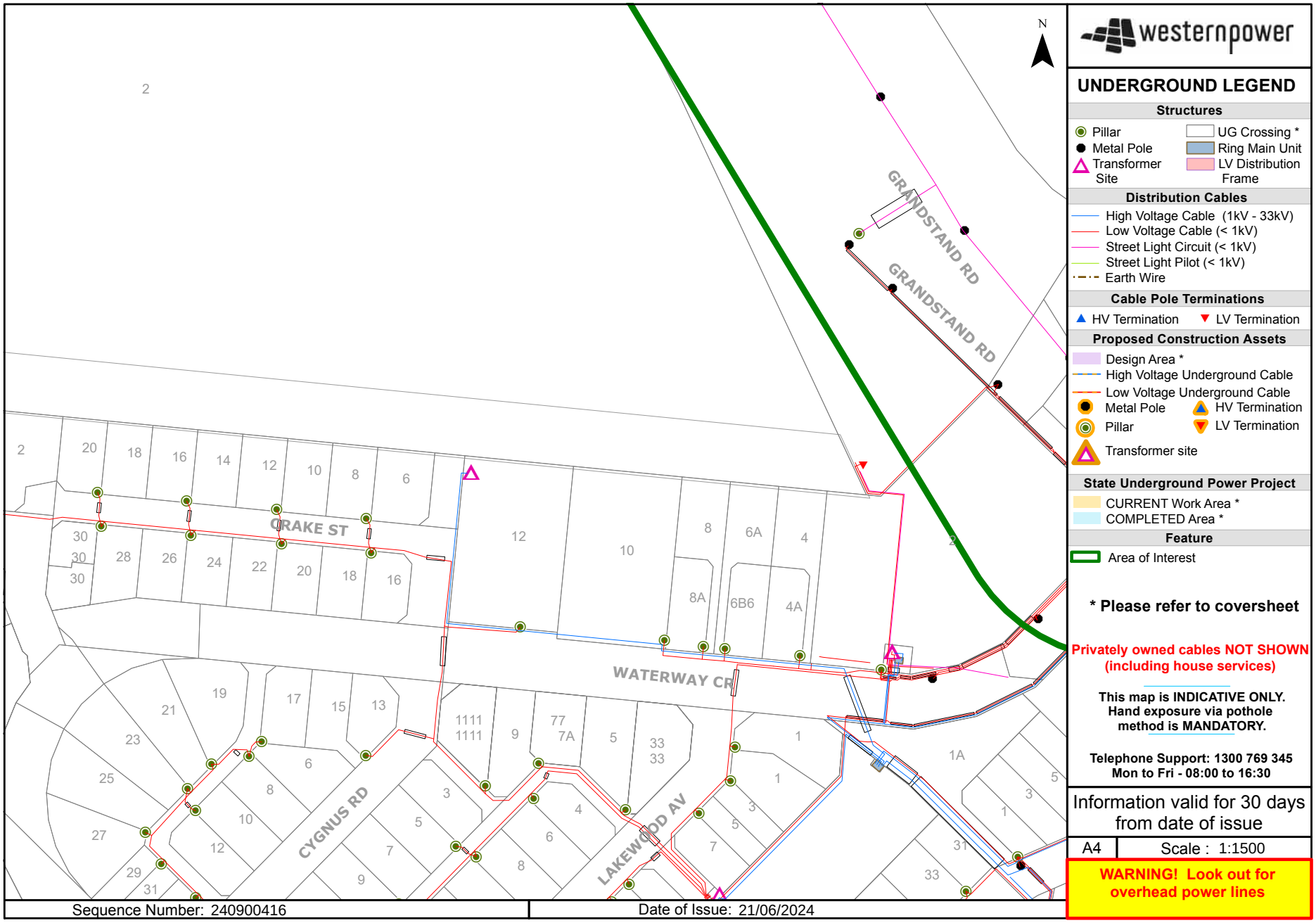

N
Grandstand
Grandstand
Crake
Waterway
Cygnus
Lakewood
Sequence Number: 240900416
Date of Issue: 21/06/2024
westernpower
OVERHEAD LEGEND
Structures
Power Pole
Transmission Poles
Transmission Overhead Powerline
Transmission (33kV - 330kV)
Distribution Overhead Powerline
High Voltage (1kV - 33kV)
Low Voltage (< 1kV)
Proposed Construction Assets
Design Area *
High Voltage Overhead Powerline
Low Voltage Overhead Powerline
Power Pole
Communications Assets
Overhead Pilot Cable
Feature
Area of Interest
* Please refer to coversheet
Privately owned cables NOT SHOWN (including house services)
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N
Waterway
54
15
17
19
21
23
25
27
29
7
6
8
10
29E
Grandstand
Northerly
Artesian
Sequence Number: 240900416
Date of Issue: 21/06/2024
westernpower
OVERHEAD LEGEND
Structures
Power Pole
Transmission Poles
Transmission Overhead Powerline
Transmission (33kV - 330kV)
Distribution Overhead Powerline
High Voltage (1kV - 33kV)
Low Voltage (< 1kV)
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Design Area *
High Voltage Overhead Powerline
Low Voltage Overhead Powerline
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OVERVIEW ONLY
N
GARRATT RD
GARRATT RD
1
2
3
4
CRAKE ST
WATERWAY CR
CYGNUS RD
GRANDSTAND RD
Sequence Number: 240900416
Date of Issue: 21/06/2024
westernpower
UNDERGROUND LEGEND
Structures
Pillar
Metal Pole
Transformer Site
UG Crossing *
Ring Main Unit
LV Distribution Frame
Distribution Cables
High Voltage Cable (1kV - 33kV)
Low Voltage Cable (< 1kV)
Street Light Circuit (< 1kV)
Street Light Pilot (< 1kV)
Earth Wire
Cable Pole Terminations
HV Termination
LV Termination
Proposed Construction Assets
Design Area *
High Voltage Underground Cable
Low Voltage Underground Cable
Metal Pole
Pillar
Transformer site
HV Termination
LV Termination
State Underground Power Project
CURRENT Work Area *
COMPLETED Area *
Feature
Area of Interest
* Please refer to coversheet
Privately owned cables NOT SHOWN (including house services)
This map is INDICATIVE ONLY. Hand exposure via pothole method is MANDATORY.
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WARNING! Look out for overhead power lines


N
GARRATT RD
GARRATT RD
GRANDSTAND RD
GRANDSTAND RD
75
westernpower
UNDERGROUND LEGEND
Structures
Pillar
Metal Pole
Transformer Site
UG Crossing *
Ring Main Unit
LV Distribution Frame
Distribution Cables
High Voltage Cable (1kV - 33kV)
Low Voltage Cable (< 1kV)
Street Light Circuit (< 1kV)
Street Light Pilot (< 1kV)
Earth Wire
Cable Pole Terminations
HV Termination
LV Termination
Proposed Construction Assets
Design Area *
High Voltage Underground Cable
Low Voltage Underground Cable
Metal Pole
Pillar
Transformer site
HV Termination
LV Termination
State Underground Power Project
CURRENT Work Area *
COMPLETED Area *
Feature
Area of Interest
* Please refer to coversheet
Privately owned cables NOT SHOWN (including house services)
This map is INDICATIVE ONLY. Hand exposure via pothole method is MANDATORY.
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N
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westernpower
UNDERGROUND LEGEND
Structures
Pillar
Metal Pole
Transformer Site
UG Crossing *
Ring Main Unit
LV Distribution Frame
Distribution Cables
High Voltage Cable (1kV - 33kV)
Low Voltage Cable (< 1kV)
Street Light Circuit (< 1kV)
Street Light Pilot (< 1kV)
Earth Wire
Cable Pole Terminations
HV Termination
LV Termination
Proposed Construction Assets
Design Area *
High Voltage Underground Cable
Low Voltage Underground Cable
Metal Pole
HV Termination
Pillar
LV Termination
Transformer site
State Underground Power Project
CURRENT Work Area *
COMPLETED Area *
Feature
Area of Interest
* Please refer to coversheet
Privately owned cables NOT SHOWN (including house services)
This map is INDICATIVE ONLY. Hand exposure via pothole method is MANDATORY.
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WARNING! Look out for overhead power lines
Sequence Number: 240900416
Date of Issue: 21/06/2024




westernpower

## UNDERGROUND LEGEND

**Structures**

- Pillar
- Metal Pole
- Transformer Site
- UG Crossing *
- Ring Main Unit
- LV Distribution Frame

**Distribution Cables**

- High Voltage Cable (1kV - 33kV)
- Low Voltage Cable (< 1kV)
- Street Light Circuit (< 1kV)
- Street Light Pilot (< 1kV)
- Earth Wire

**Cable Pole Terminations**

- HV Termination
- LV Termination

**Proposed Construction Assets**

- Design Area *
- High Voltage Underground Cable
- Low Voltage Underground Cable
- Metal Pole
- Pillar
- Transformer site
- HV Termination
- LV Termination

**State Underground Power Project**

- CURRENT Work Area *
- COMPLETED Area *

**Feature**

- Area of Interest

*** Please refer to coversheet**

**Privately owned cables NOT SHOWN (including house services)**

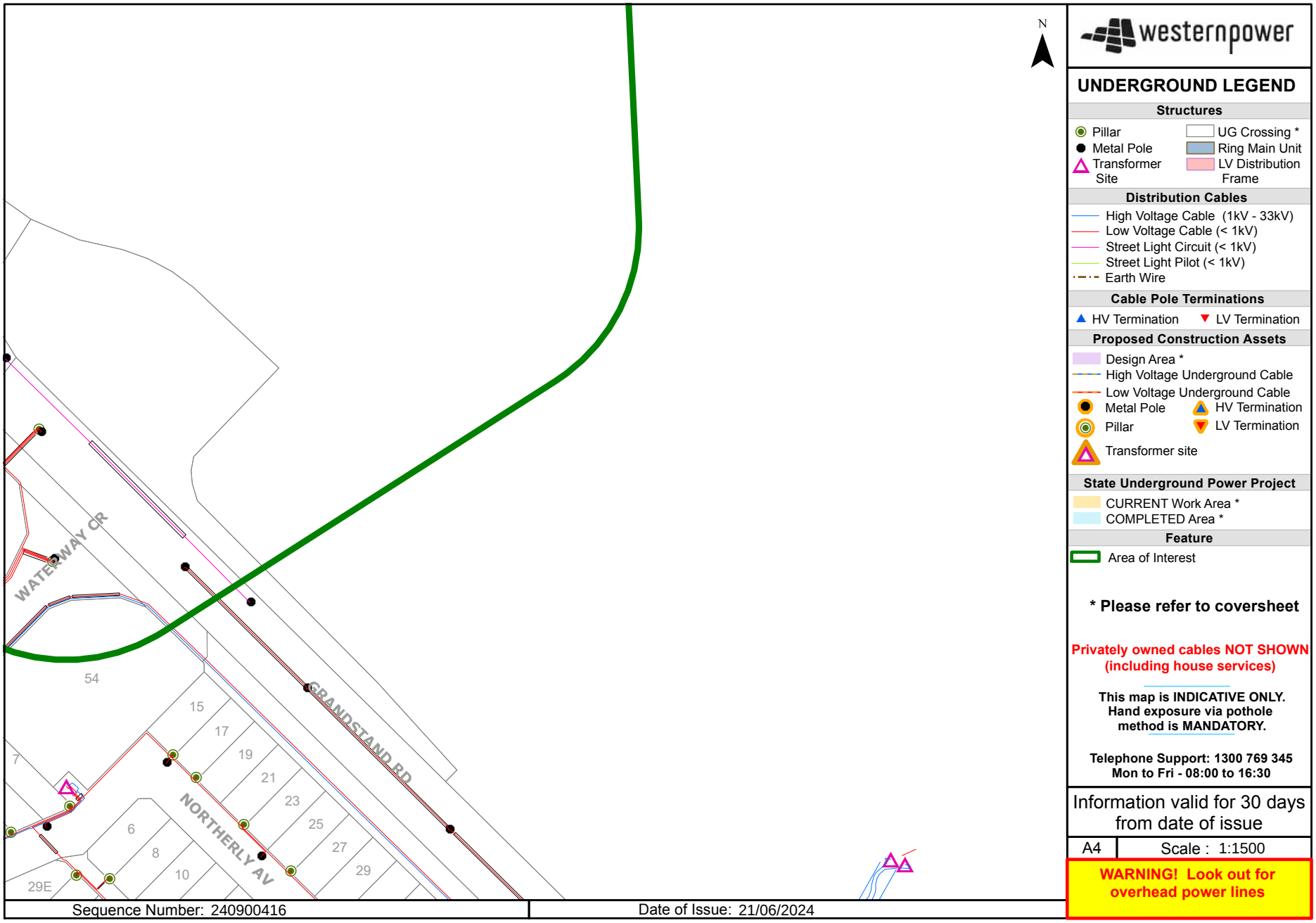
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**Mon to Fri - 08:00 to 16:30**

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**WARNING! Look out for overhead power lines**


N
WATERWAY CR
GRANDSTAND RD
NORTHERLY AV
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17
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29E
Sequence Number: 240900416
Date of Issue: 21/06/2024
westernpower
UNDERGROUND LEGEND
Structures
Pillar
Metal Pole
Transformer Site
UG Crossing *
Ring Main Unit
LV Distribution Frame
Distribution Cables
High Voltage Cable (1kV - 33kV)
Low Voltage Cable (< 1kV)
Street Light Circuit (< 1kV)
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High Voltage Underground Cable
Low Voltage Underground Cable
Metal Pole
Pillar
Transformer site
HV Termination
LV Termination
State Underground Power Project
CURRENT Work Area *
COMPLETED Area *
Feature
Area of Interest
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Telephone Support: 1300 769 345
Mon to Fri - 08:00 to 16:30
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Scale : 1:1500
WARNING! Look out for overhead power lines

# ATTACHMENT 8

Traffic Impact Assessment

**Perth Racing**

# Ascot Racecourse Local Structure Plan and Scheme Amendment

## Transport Impact Assessment

May 2024

Project Code: 07575

**PJA**
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## Version Control and Approval

| Version | Date | Main Contributor | Issued by | Approved by |
|---|---|---|---|---|
| A - DRAFT | 04 April 2024 | Lucy Briggs / Rodney Ding | TM | TM |
| B - FINAL | 08 May 2024 | Rodney Ding | TM | TM |

**Prepared for:**

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# 1 Introduction

## 1.1 Background

On behalf of Perth Racing (Applicant), Davison Advisory Services commissioned PJA Australia Pty Ltd to prepare this Transport Impact Assessment (TIA) for the proposed Local Structure Plan and the Scheme Amendment for the Applicant's landholding, encompassing Ascot Racecourse and surrounding land in the City of Belmont, Western Australia.

This assessment has been prepared in accordance with the Western Australian Planning Commission (WAPC) *Transport Impact Assessment Guidelines Volume 2 – Planning Schemes, Structure Plans & Activity Centre Plans (2016)*. This is the most appropriate level of TIA for a proposed Local Structure Plan and Scheme Amendment submission.

## 1.2 Summary of TIA

In accordance with WAPC Guidelines for Transport Impact Assessments, this report sets out the details of the proposed Local Structure Plan (LSP) and Scheme Amendment in the context of the movement network, assesses the site in terms of connectivity by active and public transport, parking and vehicular access. The TIA also reviews the future traffic generation of the LSP and any potential impacts that may need to be mitigated.

Under the WAPC Guidelines for TIAs, a LSP and/or Scheme Amendment requires a 'broad brush' assessment of the impacts of the development, given structure planning is for a larger area. This report sets recommendations for more detailed traffic analysis at later stages of the planning process, subject to the LSP and Scheme Amendment being ultimately supported.

This TIA also refers to the developing City of Belmont's Golden Gateway LSP (GGLSP) which currently encompasses part of the land under the ownership of the Applicant, which has been a catalyst to complete this LSP and Scheme Amendment to guide development in this area in a considered way. In pre-submission discussions with the City of Belmont's strategic planners, the support in principle for the Applicant to undertake a LSP has been provided and it is understood that through a later iteration of the concurrent Golden Gateway LSP, the City of Belmont will look to remove the Applicant's landholdings from the GGLSP.

## 1.3 Regional and Local Policy Context

### 1.3.1 Metropolitan Region Scheme (MRS)

The Site area is currently zoned for the most part as 'Private Recreation' for the area in use as Ascot Racecourse, with the surrounding land within the site boundary zoned as 'Urban'. Some land surrounding the site boundary to the north and west is also zoned as 'Parks and Recreation-Restricted Public Access' and the Great Eastern Highway is zoned as a 'Primary Regional Road'. **Figure 1-1** illustrates the site area's MRS zoning in map 16.

**Figure 1-1: MRS Zone Maps 16**




*Source: Metropolitan Region Scheme*

### 1.3.2 City of Belmont Local Planning Scheme No.15

Under the provisions of *the City of Belmont Local Planning Scheme No.15* (LPS No.15) the site area is for the most part zoned as 'Place of Public Assembly' comprising the area in use as Ascot Racecourse, in the southern extent of the site a small parcel is zoned as 'Mixed Use'. The area surrounding the site boundary largely comprises of 'Mixed Use', 'Mixed Business' and 'Residential and Stables' zoning, the latter of which is bespoke to the Ascot Racecourse area and is intended "to provide for compatible and environmentally responsible use of land in proximity" to the Racecourse and Swan River to the north-west.

Part 4 of LPS No.15 sets out the general development requirements for each key zone, inclusive of the minimum car and bicycle parking requirements for largely non-residential land uses (Table 2 and Table 3), residential parking requirements are set out separately. These parking requirements will be considered as the LSP and Scheme Amendment progresses.

**Figure 1-2** illustrates the LSP area zoning in the context of the site area.

**Figure 1-2: City of Belmont's Local Planning Scheme 15**




*Source: Local Planning Scheme 15, Local Zoning, City of Belmont*

### 1.3.3 City of Belmont's Redcliffe Station Precinct Activity Centre Plan & DA6

The Redcliffe Station Precinct Activity Centre Plan (RSPACP) is an extension of the Development Area 6 (DA6) Vision Plan and Implementation Strategy adopted by the City of Belmont in 2014. As set out on Council's website:

*"Development Area 6 (DA6) is DA6) is a redevelopment area bound by Great Eastern Highway, Coolgardie Avenue, Redcliffe Road, Fauntleroy Avenue and Tonkin Highway, as well as Perth Airport's Airport West Precinct. This area can be easily distinguished into two main areas:*

- *Perth Airport's Airport West Precinct*
- *A portion of the Redcliffe neighbourhood between Perth Airport and Great Eastern Highway.*

*Perth Airport Pty Ltd is responsible for planning work for its Airport West Precinct through the preparation and review of the Perth Airport Masterplan.*

*For the remainder of the DA6 Precinct in Redcliffe, in December 2022, the WAPC wrote to advise landowners about the initiation of Improvement Plan 45 – Redcliffe Station Precinct. The Improvement Plan itself does not change the development potential of land at this point in time. Initiating the Improvement Plan is the first step of the planning pathway to establish the appropriate development potential and planning standards for future development in the precinct. The Improvement Plan sets out the broad objectives for the redevelopment of the area, after which an Improvement Scheme is prepared. The Improvement Scheme will set out the specific standards for future development.*

*The DPLH has been tasked to prepare the Improvement Scheme and has advised that the City will continue to play an important role in the development and delivery of this planning framework for the precinct. The Department is currently making arrangements to progress an Improvement Scheme for the Development Area 6 Precinct, which will take several months to prepare. Once drafted, there will be a minimum 90-day consultation period. The Department will subsequently review submissions and assess if any modifications to the Improvement Scheme are necessary, prior to making a recommendation to the Minister for Planning".*

The City of Belmont's Vision Plan for DA6 area is shown in Figure 1-3.

**Figure 1-3: DA6 Vision Plan**




*Source: City of Belmont*

### 1.3.4 Recent Movement Network Upgrades in Ascot

The City of Belmont confirmed the following recent movement network upgrades in the vicinity of the subject site over the last approximate three years:

a) Network changes due to the Tonkin Gap Project: Motorists using Garratt Road bridge to access Great Eastern Highway and Guildford Road rather than the previous Tonkin Highway route increased and the City observed increased rat running over Stanton Road bridge, Abernethy Road (entire route), Hardey Road and Kooyong Road.

b) Redcliffe Train station opened 9 October 2022. This enabled bus network changes including new routes and frequency every 10 minutes. New super-buses will be established from the train station to the Perth CBD via Great Eastern Highway.

c) A 24/7 Woolworths opened near DFO late 2023.

d) Marina Drive residential development is complete and operational.

e) Belmont is slowing in rate of redeveloping the blocks of land from single site dwellings to multi-dwellings.

f) The Springs development area near Rowe Avenue & Riversdale Road, Rivervale: Increase in residential development from The Springs development. City is planning to restrict one car bay per unit, allowing all other on-street bays to be for visitors and people visiting the commercial shops and local businesses. The City has installed 'P' signs which have encouraged Fly-in/Fly-out (FIFO) workers and ALL DAY motorists heading to the Perth CBD. The City has commenced a parking strategy to review the parking. No paid parking will be involved.

Among the aforementioned projects, the Tonkin Gap project and the Marina Drive residential development are expected to directly impact the Ascot LSP area. Specifically, the Marina Drive development serves as an access point to/from Resolution Drive, via the western arm of the existing roundabout. Meanwhile, the Tonkin Gap project's construction diversions were routed via Garratt Road and subsequently Grandstand Road. However, with the recent completion of new traffic counts in 2024 as part of this Ascot LSP, both aforementioned projects (now complete) have been incorporated into the updated traffic counts, providing a basis for assessing the network's suitability and functionality.

# 2 Existing Situation

## 2.1 Existing Site Context and Land Uses

The Site is located in the Ascot suburb of Perth, immediately south of the Swan River, bound to the south-west by Grandstand Road (State Road 55) and south-east/east by Resolution Drive and largely residential land uses, with some stables.

As the site is already well established as Ascot Racecourse, vehicular access can already be achieved from several points along Grandstand Road and Matheson Road, via Raconteur Drive (from Grandstand Road) and further minor accesses via the residential streets to the south-east of the site such as Hardey Road (north), Carbine Street, Leake Street and Ascot Place. The location of the Site is illustrated in **Figure 2-1**.

**Figure 2-1: Site Location**




*Source Mapping: NearMap 2024*

## 2.2 Existing Road Network

The Site is located north-east of Grandstand Road and north-west of Matheson Road and Resolution Drive. Each carriageway abutting the site boundary is within the care and control of the City of Belmont, though the extent of Matheson Road and Raconteur Drive that sits within the site boundary is under the ownership of the Applicant.

**Figure 2-2** shows the layout and classification of the roads surrounding the site, including the primary road network. Grandstand Road is classified under the Main Roads WA Road Hierarchy as a Distributor A, though it is worth noting that further north, the Garratt Road Bridge is classified as a Primary Distributor. This will be due to the management of the bridge sitting with Main Roads rather than the Local Government. Grandstand Road is a dual carriageway road, each side typically measuring 7.0m to 7.8m wide. No on-road cycle lane facilities are provided. A single continuous shared use path along the north-eastern side of Grandstand Road exists, with intermittent (not all continuous) provision on the south-western side. For large portions, the footpaths are separated from the carriageway by a landscaped kerbed area or colour-contrasted paving to provide separation from the road for a more pleasant walking/riding experience.

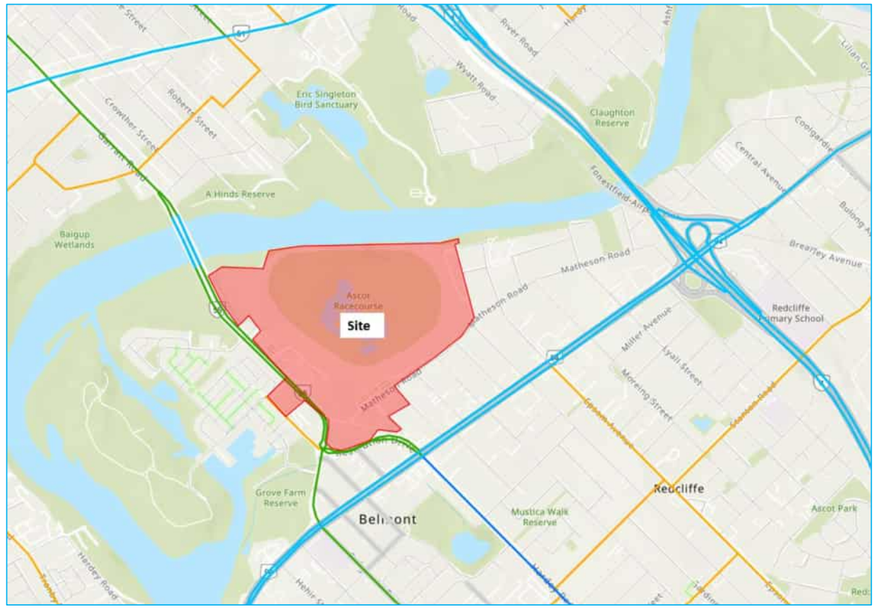
Raconteur Drive diverts east from Grandstand Road, as a one-way single-lane carriageway providing access to Matheson Road and an existing car park for Ascot Racecourse (horse float car park). Again, there are no on-road cycle lane facilities but a pedestrian footpath exists on the northern side of the carriageway connecting to Grandstand Road and another pedestrian path exists along Matheson Road (southern side) from east of Carbine Street all the way to Moreing Street. There is also a horse path along the northern side of Matheson Road that extends from the racecourse in an easterly direction. Beyond the site boundary, Matheson Road is classified as an Access Road under the Mains Road WA Road Hierarchy and no pedestrian or cycle infrastructure is noted on this route.

South of the site boundary, Resolution Drive continues west as a Distributor A route, from the Grandstand Road / Stoneham Street / Resolution Drive roundabout intersection. Resolution Drive is a single carriageway with shoulders of approx. 1.8m, each side of the approx. 3.5m carriageway. East of the roundabout, Resolution Drive meets the Great Eastern Highway (National Route 1 / National Highway 94) and Hardey Road via a signal-controlled intersection.

Stoneham Street continues ahead from Grandstand Road as a dual carriageway on approach to a signal-controlled intersection with the Great Eastern Highway and Belgravia Street. Great Eastern Highway is classified as a Primary Distributor while Belgravia Street continues from Stoneham Street as a Distributor A.

**Figure 2-3** over page sets out the speed limits for the road network surrounding the site. Grandstand Road, Resolution Road, Stoneham Street and the Great Eastern Highway are all subject to a 60km/hr speed limit. The remaining access roads surrounding the site are subject to a 40km/h speed limit, including Matheson Road.

**Figure 2-2: Road Hierarchy**

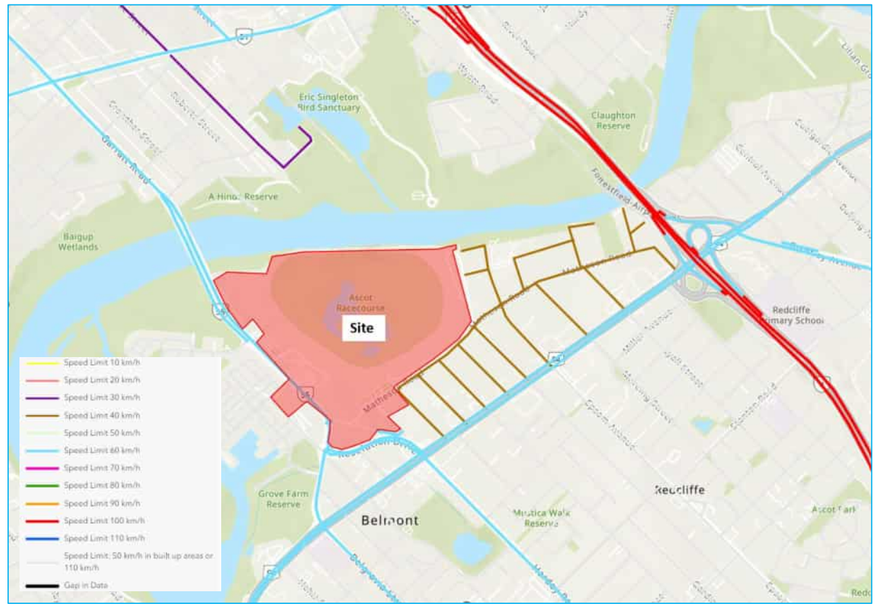



*Source: MRWA Road Information Mapping System*

Road classifications are defined in the Main Roads Functional Hierarchy as follows:

- **Primary Distributors** (light blue): Form the regional and inter-regional grid of MRWA traffic routes and carry large volumes of fast-moving traffic. Some are strategic freight routes, and all are National or State roads. They are managed by Main Roads.
- **Regional Distributors** (red): Roads that are not Primary Distributors but link significant destinations and are designed for efficient movement of people and goods within and beyond regional areas. They are managed by Local Government.
- **District Distributor A** (green): These carry traffic between industrial, commercial, and residential areas and connect to Primary Distributors. These are likely to be truck routes and provide only limited access to adjoining property. They are managed by Local Government.
- **District Distributor B** (dark blue): Perform a similar function to "District Distributor A" but with reduced capacity due to flow restrictions from access to and roadside parking alongside adjoining property. These are often older roads with traffic demand in excess of that originally intended. District Distributor A and B roads run between land-use cells and not through them, forming a grid that would ideally be around 1.5 kilometres apart. They are managed by Local Government.
- **Local Distributors** (orange)**:** Carry traffic within a cell and link District Distributors at the boundary to access roads. The route of the Local Distributor discourages through traffic so that the cell formed by the grid of District Distributors only carries traffic belonging to or serving the area. These roads should accommodate buses but discourage trucks. They are managed by Local Government.
- **Access Roads** (grey): Provide access to abutting properties with amenity, safety and aesthetic aspects having priority over the vehicle movement function. These roads are bicycle and pedestrian friendly. They are managed by Local Government.

**Figure 2-3: Speed Classifications**




*Source: MRWA Road Information Mapping System*

## 2.3 Existing RAV Network

The road network around the site does not currently form part of the Restricted Access Vehicle (RAV) Network.

## 2.4 Existing Key Intersections

The key intersections within the study area are as follows, with further detail and layouts shown below:

- Resolution Drive / Stoneham Street / Grandstand Road Roundabout
- Raconteur Drive / Grandstand Road Intersection
- Resolution Drive / Great Eastern Highway / Hardey Road Signalised Intersection
- Stoneham Street / Great Eastern Highway / Belgravia Street Signalised Intersection
- Garratt Road / Guildford Road Signalised Intersection.

All of the above intersections are modelled for traffic performance in this TIA with the exception of the Guildford Road intersection which is some 1.7km away from the LSP area.

**South of Site:**

Resolution Drive / Stoneham Street / Grandstand Road: The 4-way roundabout is located approx. 700m south of the site and connects Grandstand Road (providing several site accesses) with the Great Eastern Highway further south. Figure 2-4 shows the existing geometry of the intersection, Grandstand Road and Stoneham Street both have two-lane approaches to the roundabout while both approaches from Resolution Drive have a single lane approach.

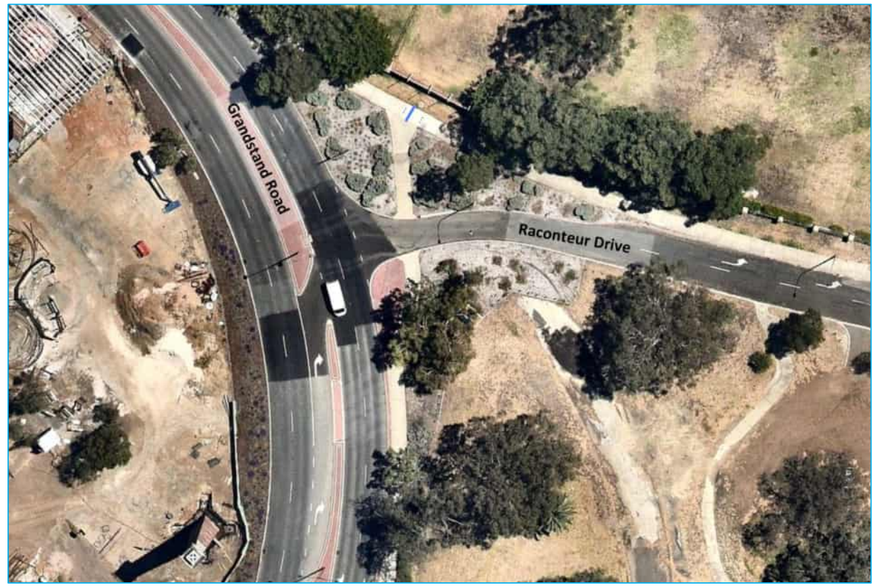
**Figure 2-4: Resolution Drive / Stoneham Street / Grandstand Road – 4-way roundabout**




*Source Mapping: NearMap 2024*

Raconteur Drive / Grandstand Road: The 3-way priority-controlled intersection is located approx. 500m south of the site and provides access to Raconteur Drive connecting to Matheson Road for one of the Ascot Racecourse car parks. As Raconteur Drive is one-way in this section, the intersection allows only left-in and right-in turning movements from each side of Grandstand Road (unless otherwise permitted under race day traffic management controls). **Figure 2-4** shows the existing geometry of the intersection.

**Figure 2-5: Raconteur Drive / Grandstand Road – 3-way priority-controlled intersection (left-in / right in only)**




*Source Mapping: NearMap 2024*

Resolution Drive / Great Eastern Highway / Hardey Road: The 4-way signalised intersection is located approx. 1km south of the site and provides access to existing residential areas to the south-east of Ascot Racecourse. **Figure 2-4** shows the existing geometry of the intersection. This includes three through lanes in each direction on the Great Eastern Highway, an intersection bus queue jump lane, a left-turn lane and a right-turn/U-turn lane.

Existing Situation

**Figure 2-6: Resolution Drive / Great Eastern Highway / Hardey Road – 4-way signalised intersection**




*Source Mapping: NearMap 2024*

Stoneham Street / Great Eastern Highway / Belgravia Street Signalised Intersection: The 4-way signalised intersection is located approx. 1km south of the site and provides access to existing residential areas to the south-east of Ascot Racecourse. **Figure 2-7** shows the existing geometry of the intersection. This includes three through lanes in each direction on the Great Eastern Highway, as well as bus queue jump lane for buses, a left-turn lane and a right-turn/U-turn lane.

**Figure 2-7: Stoneham Street / Great Eastern Highway / Belgravia Street – 4-way signalised intersection**




*Source Mapping: NearMap 2024*

**North-West of the Site:**

Garratt Road / Guildford Road Signalised Intersection: This 4-way signalised intersection is located approximately 1.7km north-west of the site and provides access to existing residential areas to the north-west of Ascot Racecourse. **Figure 2-8** shows the existing geometry of the intersection.

**Figure 2-8: Garratt Road / Guildford Road – 4-way signalised intersection**




*Source – NearMap 2024*

## 2.5 Existing Traffic Volumes

PJA contacted the City of Belmont, who kindly provided their latest traffic count data for the intersection of Resolution Drive/Grandstand Road/Stoneham Street from surveys undertaken in 2017 as part of the GGLSP studies presently being undertaken by the City. In addition to this, recent traffic counts were commissioned by PJA as part of the Ascot Racecourse project in February 2024.

Complementing the existing SCATS traffic counts at the signalised intersections, traffic counts were undertaken at the intersection of Resolution Drive/Raconteur Drive priority-controlled intersection and Grandstand Road/Waterway Crescent roundabout.

Midblock traffic counts were sourced from the Main Roads TrafficMap, and these indicate that there are the following daily traffic flows on the key roads near the Ascot Racecourse:

- Grandstand Road 16,670 vehicles per day (vpd) – 2018 counts
- Resolution Drive 7,860 vpd – 2021 counts
- Stoneham Street 14,270 vpd – 2018 counts.

Review of these midblock traffic flows over an extended period[1] up to the present day, indicates that traffic flows in the Ascot area have been increasing by approximately 0.75% per annum. Advice from the City, informed from the development of the traffic model for the Golden Gateway LSP, has indicated a 0.5% growth rate.

Thus, for the derivation of equivalent 2024 traffic flows for the intersection of Resolution Drive/Grandstand Road/Stoneham Street, the traffic flows to and from the main legs of the intersection has been increased by 0.5% per annum from 2017 to 2024. This was discussed with the City as being appropriate for use for the Ascot LSP.

These actual and/or derived counted 2024 traffic flows are shown below in **Figure 2-9**.

**Figure 2-9: Peak Hour 2024 Traffic Flows**




## 2.6 Existing Pedestrian / Cycle Networks

Existing pedestrian / cycle networks are illustrated in **Figure 2-10.** The first part of the below figure shows the proximity of the Perth-Midland Principal Shared Path (PSP) to the site, as it links through Meltham and Bayswater north of the site. The Perth-Midland PSP is a high-quality urban dual-use pathway which runs parallel to the Midland railway line. To access the PSP from the site, shared used paths are available on the northern side of the Garratt Road Bridge to/from the site which

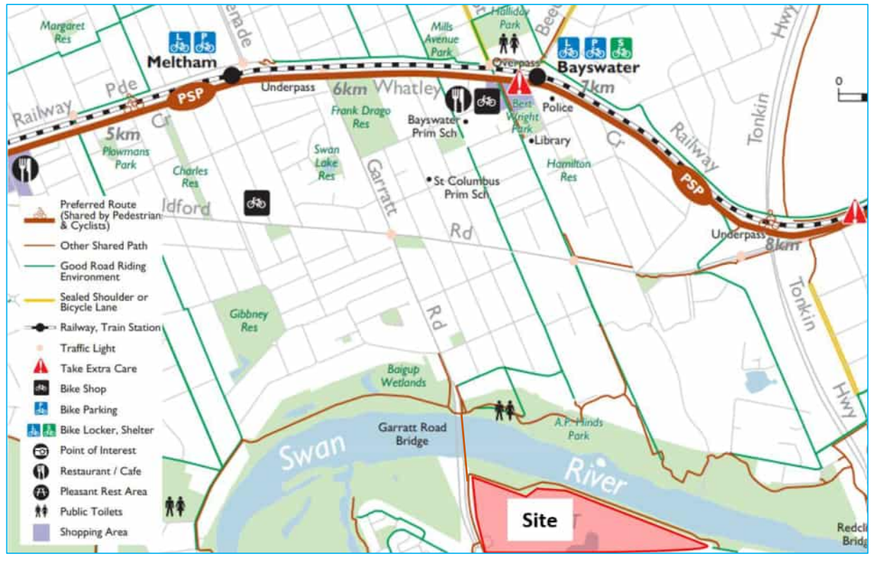
[1] Extended period over approximately 20 years (2002 – 2021).

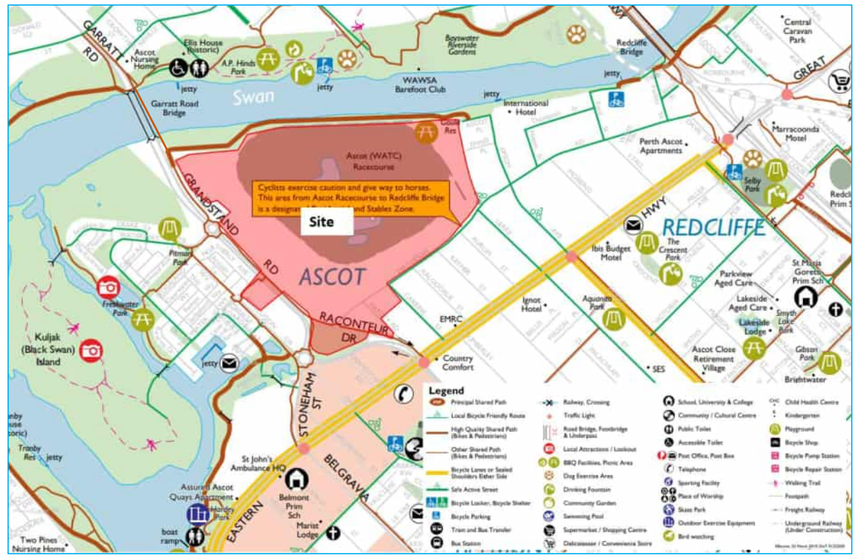
also runs parallel to the Swan River. From here, Leake Street and King William Street are two roads with good road riding environments in order to reach the PSP.

The second part of the figure below shows the existing cycle infrastructure available to the south, west and east of the site. One of the modal integration items to note is for cyclists to exercise caution and to give way to horses in the area between the racecourse and adjacent Redcliffe Bridge as a designated 'Residential and Stables' zone.

Immediately north of the site, a high-quality shared path for cyclists and pedestrians in available between the shared paths along Grandstand Road and Ascot Place. A number of local roads surrounding the site are highlighted as local cycle friendly routes including Matheson Road and Epsom Avenue. Additionally, the Great Eastern Highway is highlighted as providing cycle lanes or sealed shoulders on either side of the carriageway, though these are largely provided as on-road cycle lanes with no physical separation and are combined with, or are immediately adjacent to, bus lanes with vehicles travelling above the Safe System speeds of 30km/h for vulnerable road users.

**Figure 2-10: Existing Pedestrian / Cycle Networks**




Source: WA Department of Transport (2024)

## 2.7 Existing Public Transport

The main bus stops accessible from the site are on Grandstand Road immediately adjacent to one of the key pedestrian access points to the racecourse. Based on a desktop review, the infrastructure provided at these stops is limited as a shelter with seating is only available on the south-western side while a raised kerb to assist with reduced mobility access is only available for a short distance on the north-eastern side of Grandstand Road. It would be recommended that the City of Belmont undertake a review of these bus stops (irrespective of this development), particularly as they serve a significant destination.

These stops are served by the bus 998/999 which provided clockwise and anti-clockwise routes of the Perth CircleRoute (shown in purple in **Figure 2-11**), respectively. This circular route has limited stops and a good frequency of every 15 minutes, Monday-Saturday and every 30 minutes on Sundays, which encompasses many of Perth's suburbs encircling central Perth and locally providing connectivity to Bayswater Rail Station. Ascot Racecourse is serviced by the clockwise service at 06:03 on weekdays and a last service at 22:13. A shortened service is available on weekends and public holidays. These timings are reflected similarly in the anticlockwise service.

Additional frequent bus services are accessible from the site along the Great Eastern Highway as shown in **Figure 2-11** including services towards Redcliffe Station, central Perth and Perth Airport.

Existing Situation

**Figure 2-11: Public Transport Services**



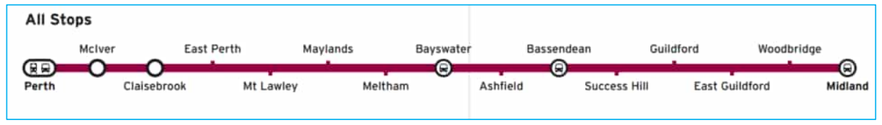

*Source: WA Department of Transport (2024)*

**Rail Services**

Bayswater Train Station is accessible via bus service 999 and provides access to both the Midland Railway Line and the Airport Line.

During the week, the Midland railway line carries passenger rail services between Perth city, and stations in between as shown in **Figure 2-12**, at intervals of approximately 10 to 15 minutes between 05:00am and 21:00pm. The frequency reduces past 9pm to every 30 minutes until 12:30am.

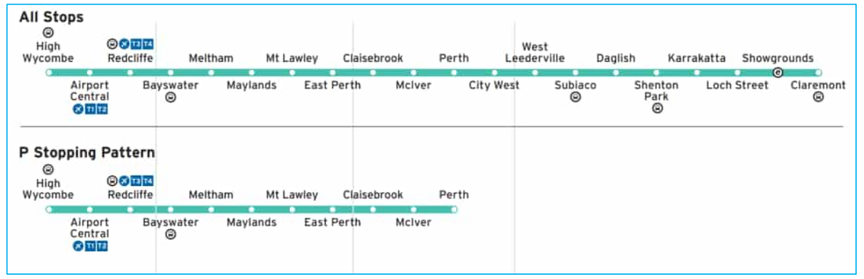
**Figure 2-12: Stopping Pattern on the Midland Rail Line**




*Source: Transperth*

The Airport Line operates from Claremont to High Wycombe via Perth Station, with some services throughout the day just terminating at Perth Station. Both variations of the route are shown in **Figure 2-13**. The service provides a fast connection to Perth Airport, operating every 12 minutes during the peak period, every 15 minutes during the day and every 30 minutes at night.

**Figure 2-13: Stopping Pattern on the Airport Rail Line**




*Source: Transperth*

Overall, the existing public transport service within the vicinity of the Site is good with moderate-to-high frequency of services operating during the network peak periods.

## 2.8 Crash Assessment

A search of the Main Roads WA Reporting Centre for crash data was undertaken. This search covered all recorded traffic accidents for the most recently available five-year reporting period between 1 January 2019 and 31 December 2023 for the study area shown in **Figure 2-14** and **Figure 2-15** which includes the following intersections:

- Resolution Drive / Stoneham Street / Grandstand Road Roundabout
- Raconteur Drive / Grandstand Road Intersection
- Resolution Drive / Great Eastern Highway / Hardey Road Signalised Intersection
- Stoneham Street / Great Eastern Highway / Belgravia Street Signalised Intersection

Both figures highlight how the majority of recorded crashes within the study area are 'Property Damage Only' and mostly occur on the midblock carriageway itself rather than the intersections noted above. The majority of these incidents occur on the Great Eastern Highway, which is typical as a 'Primary Distributor' with higher volumes (crash exposure).

The recorded crash types for the 200 crashes recorded in the study area are shown in **Table 2-1** below. The 'Hospital' and 'Medical' crashes recorded are typically rear-end, non-collision and right-angle types of crash.

**Table 2-1: Crash Data for Study Area**

| Type of Crash | Fatal | Hospital | Medical | Major PDO* | Minor PDO* | Total |
|---|---|---|---|---|---|---|
| Rear End | - | 4 | 19 | 62 | 40 | 125 |
| Sideswipe | - | - | - | 8 | 11 | 19 |
| Hit Object | - | - | - | 2 | 3 | 5 |
| Head On | - | - | - | - | - | - |
| Non-Collision | - | 1 | - | 1 | 1 | 3 |
| Right Angle | - | - | 1 | 12 | 10 | 23 |
| Other | - | 1 | - | 5 | 6 | 12 |
| Total | 0 | 6 | 20 | 90 | 71 | 187 |

**Property Damage Only*

Existing Situation

**Figure 2-14: Summary of All Crashes in Latest 5-Year Period**

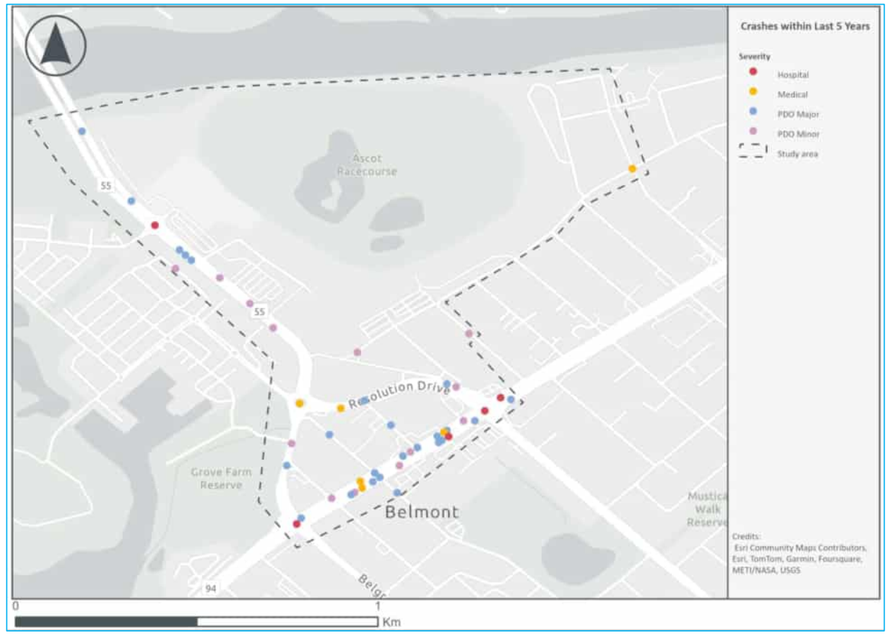
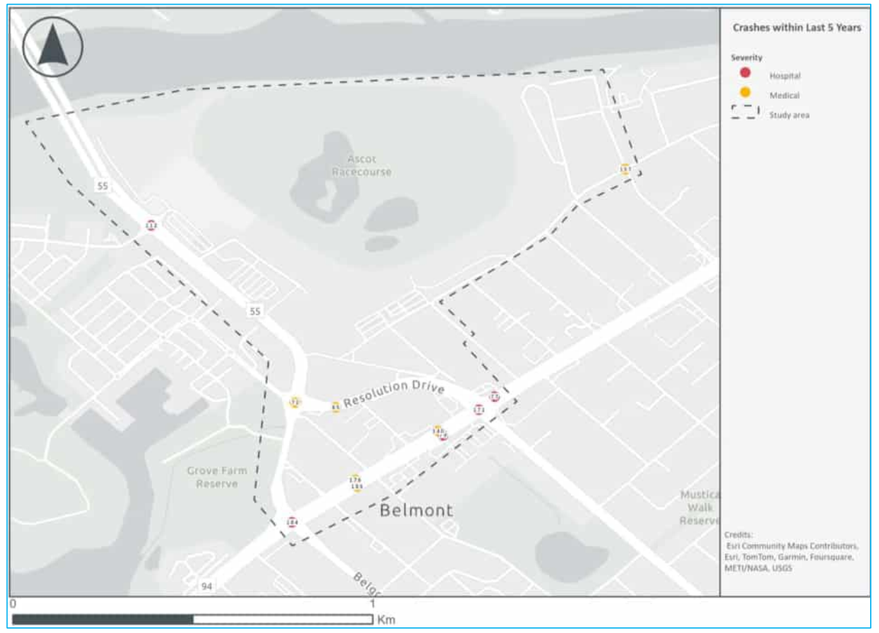



**Figure 2-15: Hospital and Medical Severity Crashes in the Latest 5-Year Period**



# 3 Proposed Local Structure Plan and Scheme Amendment

## 3.1 Proposed Zoning

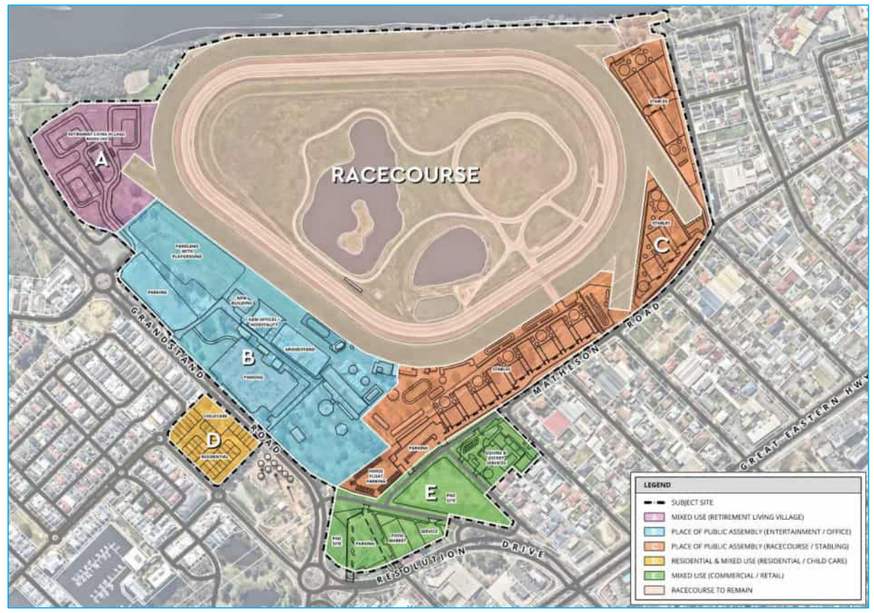
In Section 1 of this TIA, the site area was identified as largely dedicated to uses relating to Ascot Racecourse, such as 'Private Recreation' (MRS) or 'Place of Public Assembly' (LPS No.15), with some areas within the site boundary zoned as 'Urban' or 'Mixed Use'.

The Ascot LSP and Scheme Amendment proposes rezoning areas within the site boundary into five specific precincts, as summarised in **Table 3-1**, set out in **Figure 3-1** (**Appendix B**).

**Table 3-1: Proposed Land Use Yield**

| Precinct | Proposed Zoning | Proposed Uses | Proposed Built Form/Yield |
|---|---|---|---|
| A | Mixed Use | Retirement Living Village | – 330-390 retirement apartments (across 3 buildings of up to 15 storeys, each with 110-130 apartments).<br>– Maximum 300m$^2$ café. |
| B | Place Of Public Assembly (No Change to Existing Zone) | Entertainment / Racecourse Administration Office<br>– (New building with replace the footprint of an existing building and existing building rebuilt adjacent to new building.) | – New building - Office on Ground Floor, approx. 61 people across 680m$^2$ NLA (Net Lettable Area).<br>– New Building - Hospitality venue on Upper Floor - Total building footprint of 1,020m$^2$<br>– Parkland with a playground. |
| C | Place Of Public Assembly (No Change to Existing Zone) | Racecourse / Stabling | – 3 On-course stabling complexes.<br>– Approx. 400 stables.<br>– Parking area inc. Horse float parking. |
| D | Residential & Mixed Use (R60) | Residential / Child Care | – Child care centre fronting Grandstand Rd, across approx. 2,100m$^2$ for 70-90 children.<br>– Residential development with a yield of approx. 41 lots. |
| E | Mixed Use (with additional use of 'shop') | Commercial / Retail | – Site 1: 3,400m$^2$ retail floorspace and 2,500m$^2$ commercial floorspace<br>– Site 2: 5,200-7,100m$^2$ commercial floorspace.<br>– Site 3: Equine Centre - 'Jockey Health' inc. 'consulting room' type uses. |

**Figure 3-1: Proposed Masterplan Concept**




*Source: Rowe Group Design, 2024*

## 3.2 Vehicular Driveway Access Arrangements

While individual lot driveway access arrangements and car parking typically fall outside the scope of a general Structure Plan-level transport assessment outlined in the WAPC Guidelines, the Ascot LSP Applicant is proactively presenting several solutions upfront to enhance future lot access arrangements and network performance. These suggestions and recommendations are intended for discussion purposes only and are subject to further refinement in subsequent stages of development planning.

As highlighted in Section 2, the existing racecourse is served by a number of vehicular access points from Grandstand Road and Matheson Road.

It is acknowledged that in the draft GGLSP, a new roundabout intersection was previously proposed to replace the existing Grandstand Road / Raconteur Drive intersection, introducing an opportunity for a high capacity and controlled access to the racecourse via a new 4th arm of the roundabout. This arm would have also provided direct access for horse floats looking to travel northbound on Grandstand Road. However, it is understood that this new roundabout option was mooted based on stakeholder feedback during the City's draft GGLSP advertising period and subsequently the current intersection format will be retained.

Notwithstanding the above, for the Ascot LSP, this Grandstand Road and Resolution Drive intersection presents a major opportunity to modify the permissible movements at the restricted access point, to improve the overall access strategy for the LSP. This is further explored.

For the proposed Precinct B (Entertainment / Racecourse Administration Office) car park, vehicular access from the members carpark onto Grandstand Road, is expected to be retained as left-in/left-out (LILO). There are existing roundabouts at either end of the racecourse at Waterway Crescent and Resolution Drive that provide the same function as right turns at the crossover points. The traffic concern with allowing any right turns at the Precinct B crossovers is the added delay for patrons queuing and waiting to access the parking areas or when leaving after the races. If the LSP was to pursue direct right turn options at the Precinct B crossovers, it is recommended that the impacts would need to be assessed in finer detail, on a number of different peak weekend race days. Only the AM and PM effects of the wider development coinciding with the typical AM and PM commuter peaks has been examined for this LSP, as these would represent the highest traffic flow on a regular basis. The median island is wide enough for the northern two crossovers to potentially have two-stage right turn movements, but the southern crossover has a narrower median opposite, and therefore would not appear to have enough width to allow for two-staged median movements.

Any crossover to Precinct D (Child Care and Residential) onto Grandstand Road is recommended in the form of a LILO. A LILO is supported in balancing the needs of access to the child care centre and the amenity of residents on Northerly Avenue and Resolution Drive. There would be some non-local child care centre traffic along Resolution Drive if no LILO on Grandstand Road was permitted. As such, a LILO should be pursued to/from Grandstand Boulevard to Precinct D, which would need to be integrated safely with the operations of the crossover on the opposite side of the road to the racecourse. This can be assessed in detail in later stages, post LSP endorsement as an approval of a Scheme Amendment is not contingent on these details and available wider accessibility.

For the driveway accesses for Precinct E (commercial precinct) east of the roundabout, there is limited frontage available along Resolution Drive between Raconteur Drive and Grandstand Road. As such, full movement crossovers are unlikely to be possible due to road safety and as such likely to be in the form of LILOs.

Given the above restrictions for most access points to LILOs due to geometrical constraints, a relief valve is needed to support northbound traffic (right turning vehicle demands from the east). In this regard, the existing intersection of Grandstand Road and Resolution Drive is proposed to be open permanently to traffic with left and right turns allowed from Grandstand Road into Raconteur Drive and a left turn out from Raconteur Drive onto Grandstand Road (LILO-RI). These are the same movements currently permitted at this intersection on race days to allow racecourse patrons to park and exit. This critical left turn out to, and right turn in from Grandstand Road are both expected to operate satisfactorily with acceptable queues and delays to support the Ascot LSP (refer Section 6). Ultimate development queues are expected to be able to be contained within the current right turn pocket length on Grandstand Road.

## 3.3 Parking Impacts

Again, while individual lot driveway access arrangements and car parking typically fall outside the scope of a general Structure Plan-level transport assessment outlined in the WAPC Guidelines, the Ascot LSP Applicant is proactively presenting several solutions upfront to enhance future lot access arrangements.

The proposed redevelopment of Precinct E (commercial/retail) will impact the availability for parking that currently occurs on race days. The redevelopment will alter existing race patron parking and also horse-float and jockey parking in Precinct E.

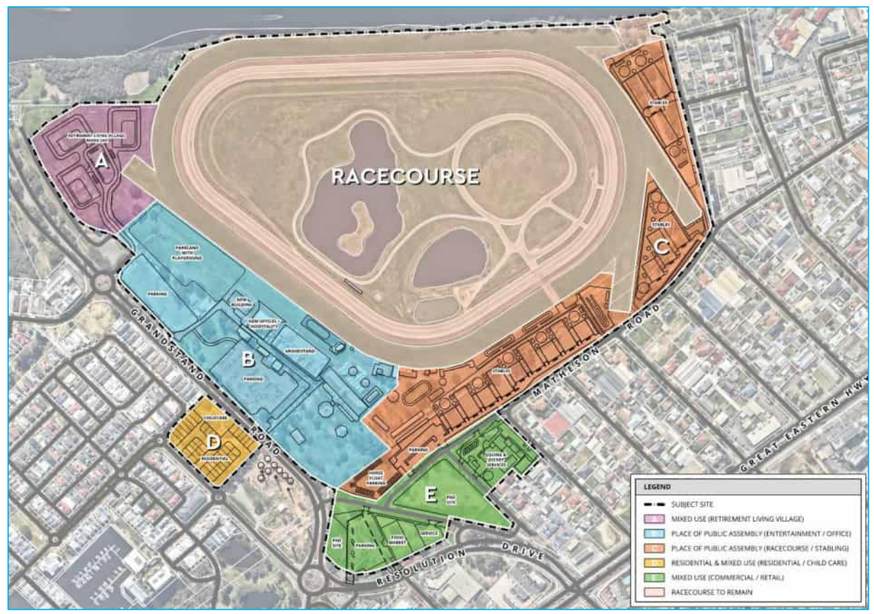
Current parking layout in **Figure 3-2** shows typical parking demand for an opening racing day on 14th October 2023. This shows paved patron parking and members parking within Precinct B (the racecourse entertainment) and patron parking within Precincts C (stabling) and E (commercial/retail). Similarly, the proposed development of Precinct C with the relocation of jockey parking and horse float parking towards the south west extremity of Precinct C will impact the ability of patrons to park within this existing area on race days. A similar impact is expected for Precinct E, where retail development will impact parking currently occurring across this land.

From **Figure 3-2** aerial imagery, there was assessed to be approximately 270 cars parked across the patron parking areas straddling the clouded area across Precincts B, C and E at the south east end of the racecourse.

**Figure 3-2: Typical Parking on Race Days**




**Figure 3-3: Possible Future Parking Layout**




The current patron parking within Precinct C (stabling) and E (commercial/retail) will be the most impacted by the LSP with these parking areas no longer available. The southern Precinct B patron parking area would still be available and could be managed to improve parking utilisation on race days. Based on observations of parking demand within the area of the grassed area in Precinct B and E, approximately 110 to 125 cars park within this area on a busy race day.

From the above aerial observations, it was found that there were approximately 40 spaces available within the patron parking in Precinct B at the north west end of the racecourse (accessed from the Waterways Crescent roundabout), approximately 70 spaces available within the member's parking area (accessed grom Grandstand Road) and the possibility to park up to 75 cars on the grassed area between the patron and member parking areas, all up approximately 185 cars could be parked.

Combined, this indicates that supply across the sites would more than meet the total demand for car parking with a **surplus of approximately 60 to 75 parking spaces** for the currently observed parking demand for a busy typical race day at Ascot. This is based on typical race days. For non-typical large events (such as the New Years Perth Cup) the traffic management plan for the racecourse would be appropriate for continued adoption.

To further manage the relocation of parking within the racecourse it is a recommendation of this TIA to implement a Travel Demand Plan for typical race days to actively discourage patrons from using their private motor vehicle to drive to and from the racecourse. This plan may include both the encouragement in the use of the currently available public transport services near the racecourse, improvement in private services, and the uptake of ride share services.

Routes 998 and 999 (CircleRoutes) stop on Grandstand Road immediately in front of the racecourse and high frequency bus service 940 stops on Great Eastern Highway. The CircleRoutes provide onward connections to Morley Bus Station via the new Bayswater Train Station (soon to be completed with Airport, Ellenbrook and Perth-Midland services and be the busiest station outside of Perth Station). Route 940 runs between Elizabeth Quay bus station (immediately next to Elizabeth Quay train station) and Redcliffe train station.

Implementing Travel Demand strategies to promote rideshare services (also known as Mobility as a Service (MaaS)) presents another option to reduce the reliance on private vehicle usage among Ascot Racecourse patrons. MaaS offers users a range of mobility options through a single platform or service provider, reducing congestion, alleviate parking demand, and promote other sustainable travel choices on race days.

Several strategies could be employed to encourage patrons to use MaaS options effectively and almost immediately:

- partnerships with MaaS providers and local transit agencies can enhance the integration of various transportation modes, ensuring seamless connectivity and ease of use for patrons.
- offering incentives such as discounted fares or priority access to race days for MaaS users (such as dedicated drop-off/pick-up areas) could further encourage patronage.
- By promoting MaaS as a viable alternative to private vehicle usage, the Ascot racecourse development could work towards addressing any perceived parking challenges.

The travel behaviours of patrons of entertainment services (hotels, taverns, restaurants, sporting venues etc) are now skewed towards using ride sharing instead of driving to these land uses. This in due to a combination of many factors but mostly the affordability, availability, attractiveness to latter generations and finally, allowing patrons to enjoy themselves without worry of driving under the influence.

### 3.4 Proposed Internal Transport Network

The proposed Local Structure Plan sets out the indicative future road network for the Scheme Amendment area, which is shown in **Figure 3-1**. The internal network will be detailed further as the lot submissions for each precinct are lodged for assessment. The City of Belmont places high importance on sustainable transport modes (public transport, walking and cycling) and would be seeking high-quality cycling facilities, footpaths, street trees etc to facilitate and reduce reliance on low-occupancy private car modes.

### 3.5 Assessment Years and Time Periods

This TIA analyses the existing base year of 2024 and the anticipated opening year of 2036 'with' and 'without' the full build-out of the Ascot LSP. Section 7 of this report discusses the assessment years and development traffic generation in more detail.

### 3.6 Pedestrian and Cyclist Access

Pedestrian and cyclist access has not yet been fully defined; however, it should be provided generally in accordance with the requirements of national and local guidance, the Department of Transport's Long Term Cycle Network, and areas comprising largely residential uses should be in accordance with *Liveable Neighbourhoods* and Safe System Engineering.

The proposed pedestrian and cyclist facilities should aim to provide a permeable road network within the subject site and create attractive opportunities that maximise the use of non-private vehicle transport modes. Section 5 of this report discusses access to public transport and recommended improvements.

# 4 Changes to External Transport Network

Part of the Ascot Racecourse development is currently within the GGLSP, with Precincts D and E falling wholly within the currently nominated GGLSP area with part of Precinct C. The draft Movement and Access Strategy report prepared by the GGLSP proposed road network changes as part of the LSP to support the LSP, noting that the proposal of a new roundabout at Resolution Drive / Grandstand Boulevard have been mooted based on advertising feedback from stakeholders. Accordingly, the GGLSP is presently in the process of being modified, to address agency concerns and comments and as such the road network is expected to remain much the same as it is presently.

The previous draft proposed road network is shown below in Figure 4-1. The proposed new roundabout, north of the current roundabout at Grandstand Road/Resolution Drive/Stoneham Street, was proposed to be a 3-way roundabout and would have provided Ascot Racecourse Precinct E an opportunity for a fourth approach entry.

The retention of the current road network does have the benefit of retaining Precinct E to be unbisected by any major roadway.

**Figure 4-1: Golden Gateway Local Structure Plan**




*Source: Golden Gateway Public Realm Strategy*

# 5 Integration with Surrounding Area

## 5.1 Surrounding Attractors / Generators

As Ascot Racecourse is already very well established in the local area, a variety of uses including retail, food, beverage and recreational uses are available in the local area primarily along the Great Eastern Highway and on the Racecourse site itself. In addition, as an attractor and a key employment location itself, the racecourse is located in close proximity to large residential areas of Redcliffe, Belmont, Rivervale and Maylands surrounding the site.

Approximately 1.2 km to the south of the Site, is Belmont Primary School.

## 5.2 Proposed Changes to Surrounding Land Uses

The City of Belmont's LPS No.15 details the proposed local zoning of land uses within the area surrounding the Site including DA6 to the south of Great Eastern Highway. The proposed changes to these zones are set out in full in Section 3 of this TIA, in the context of the existing zones.

## 5.3 Level of Overall Accessibility

As Ascot Racecourse is already very well established in the local area, the existing levels of accessibility will be maintained and built upon with the proposals to improve access for all to the site.

## 5.4 Pedestrian and Cyclist Accessibility

The existing shared path network on the northern side of Grandstand Road provides good active transport links to the area surrounding Ascot Racecourse. This will be further enhanced by the improvements proposed within the Ascot LSP and Scheme Amendment, as well as the Public Realm Strategy being developed as part of the GGLSP.

It is a recommendation of this TIA that, investigations be undertaken to extend the existing footpath network surrounding the racecourse, including south of Grandstand Road and improving pedestrian and cycle connections towards the local amenities on Great Eastern Highway and Belmont Primary School. If feasible, this would encourage trips on foot and wheels to local centres and help increase public transport usage to reduce the reliance on private vehicles.

# 6 Analysis of Transport Network

## 6.1 Assessment Years and Time Period

Each intersection will be assessed using the following two scenarios:

- **Scenario 1** – 2024 'current situation'.
- **Scenario 2** – 2036 'without development'.
- **Scenario 3** – 2036 'with Ascot LSP development'.

Scenario 1 sets the baseline for the area for the current traffic flows as surveyed and derived from intersection counts.

Scenario 2 without the development flows have been based on expected traffic flows in 2036 with no development of the Ascot Racecourse nor the effects of the GGLSP. In discussion with the City of Belmont, it was apparent that the previous modelling assessments undertaken for the GGLSP are presently needing to be revised by the GGLSP team. Consequently, there are too many unknowns relating to the GGLSP to assess/assume the outcomes or specific intersection turning movement traffic flows for various scenarios of the GGLSP and the adoption of the draft (now mooted) traffic flows would lead to erroneous results. Accordingly, the 2036 without development Scenario 2 assumes current traffic flows will increase to 2036 with no GGLSP influences.

Scenario 3 is with full development traffic anticipated in 2036 when all precincts are assumed to be fully developed, in line with the Ascot Racecourse anticipated rollout.

## 6.2 Background Traffic

The background traffic assumptions for this assessment have been based on PJA's consultation with the City of Belmont on the City's current GGLSP traffic assumptions, concluding a 0.5% growth per annum from 2021 through to 2036 is to be applied. Advice from the City of Belmont goes further to say that this growth rate is expected to be maintained through to 2041, beyond the assessment year as noted above. This growth has been applied to major traffic flows on the network but excluding traffic flows to and from:

- Waterways Crescent
- Resolution Drive west of the Grandstand Road/Resolution Drive/Stoneham Street roundabout.

The reason is that the two local Access Roads are established with the Marina Drive residential development recently completed and opened, and therefore 'ultimate' flows are captured in the 2024 base data collated.

## 6.3 Traffic Generation

The traffic generation rates in the AM peak trips for the Bulky Goods and Supermarket land uses are based on 20% of the expected PM peak flows.

The trip generation for Precinct A retirement village is based on a rate of 3 trips er dwelling per day and is appropriate, given that it is expected the units will have limited parking and that the demographics of the residents are expected to suggest a lower car ownership.

Table 6-1, sourced from the various sources, have been used to calculate an estimate of the traffic generated in the AM and PM peak periods. Given the location of the Site, the above is considered robust trip rates, with no reductions applied to account for linked or internal trips.

No trips were assigned to Precinct B (Racecourse) as the use of the racecourse in the AM and PM peaks during normal weekdays is comparatively negligible. The use of this precinct is expected to be at its highest on weekends and big race days, where traffic management may be utilised on Grandstand Road.

Likewise, no trips were assigned to Precinct C (the Stables). The reason for this is that activity at the stables typically occur well before the AM peak when horses are trained on the course early in the morning. After which, traffic movements from the stables will typically then occur after the typical network AM peak period.

Finally, for the retail use in Precinct E (Commercial / Retail), this was assumed to be a café of approximately 100-200m$^2$ in gross floor area. This development alone is not expected to generate notable trips independently, but any café patronage would be reciprocal between the proposed supermarket and commercial floorspace proposed to be located under the one roof. The café will also likely attract employees in the nearby area, who are expected to walk to and from the establishment.

The AM trips rates for the Bulky Goods and Supermarket land uses are based on 20% of the expected PM peak flows.

The trip generation for the retirement village is based on a rate of 3 trips er dwelling per day and is appropriate, given that it is expected the units will have limited parking and that the demographics of the residents are expected to suggest a lower car ownership.

**Table 6-1: Trip Generation Rates**

| Land Use | AM Peak Hour | | PM Peak Hour | |
|---|---|---|---|---|
| | In | Out | In | Out |
| Retirement (Precinct A) | 0.075 trips per dwelling | 0.225 trips per dwelling | 0.2 trips per dwelling | 0.1 trips per dwelling |
| Racecourse (Precinct B) | NIL | NIL | NIL | NIL |
| Stables (Precinct C) | NIL | NIL | NIL | NIL |
| Residential (Precinct D) | 0.2 trips per dwelling | 0.6 trips per dwelling | 0.5 trips per dwelling | 0.3 trips per dwelling |
| Child Care (Precinct D) | 0.25 trips per child | 0.25 trips per child | 0.15 trips per child | 0.15 trips per child |
| Jockey Services (Precinct E) | 1.6 trips per 100m$^2$ | 0.4 trips per 100m$^2$ | 0.4 trips per 100m$^2$ | 1.6 trips per 100m$^2$ |
| Supermarket (Precinct E) | 1.55 trips per 100m$^2$ | 1.55 trips per 100m$^2$ | 7.75 trips per 100m$^2$ | 7.75 trips per 100m$^2$ |
| Commercial (Precinct E) | 0.32 trips per 100m$^2$ | 0.08 trips per 100m$^2$ | 0.4 trips per 100m$^2$ | 1.6 trips per 100m$^2$ |
| Retail (Precinct E) | NIL | NIL | NIL | NIL |
| Bulky Goods Retail (Precinct E) | 0.2 trips per 100m$^2$ | 0.2 trips per 100m$^2$ | 1.0 trips per 100m$^2$ | 1.0 trips per 100m$^2$ |

Application of the above noted trip generation rates leads to the creation of Table 7-2 which summarises the trip volumes derived from the adopted generation rates.

**Table 6-2: Estimated LSP Traffic Generation (vehicles per hour)**

| Land Use | AM Peak Hour | | PM Peak Hour | |
|---|---|---|---|---|
| | In | Out | In | Out |
| Retirement (Precinct A) | 29 | 88 | 78 | 39 |
| Racecourse (Precinct B) | 0 | 0 | 0 | 0 |
| Stables (Precinct C) | 0 | 0 | 0 | 0 |
| Residential (Precinct D) | 8 | 24 | 21 | 11 |

| Land Use | AM Peak Hour | | PM Peak Hour | |
|---|---|---|---|---|
| | In | Out | In | Out |
| Child Care (Precinct D) | 20 | 20 | 12 | 12 |
| Jockey Services (Precinct E) | 21 | 5 | 5 | 21 |
| Supermarket (Precinct E) | 72 | 18 | 224 | 224 |
| Commercial (Precinct E) | 1 | 0 | 4 | 4 |
| Retail (Precinct E) | 0 | 0 | 0 | 0 |
| Bulky Goods Retail (Precinct E) | 31 | 8 | 96 | 96 |
| **Total** | **182** | **163** | **440** | **407** |

The Site is expected to generate a total of 345 two-way vehicle trips in the AM peak hour and approximately 845 in the PM peak hour. The overall development is expected to generate the highest flows in the PM and thus the PM peak has been chosen as the basis for the following intersection assessment as these higher flows would be putting the road network under the greatest stress.

Of the above generated trips, 50% of the trips associated with the supermarket have been assumed to be pass-by trips. These trips already exist on the adjacent road network, with drivers diverted from the adjacent road network onto the site and then to exit the site to continue on their journey.

## 6.4 Future Year Traffic Growth

As previously discussed, the future year growth rates to 2036 (and further to 2041) were provided by the City. From 2021 to 2041 traffic flows are expected to increase by 0.5% per annum linear growth. With the Ascot Waters area being now fully developed (apart from the Precinct D component) traffic flows to and from the legs of intersections into Ascot Waters has been assumed to have zero future traffic growth.

## 6.5 Traffic Distribution and Assignment

The distribution of trips to and from the Site via the various site accesses have been estimated based on the existing traffic flow percentage split travelling in each direction in the AM and PM peak periods.

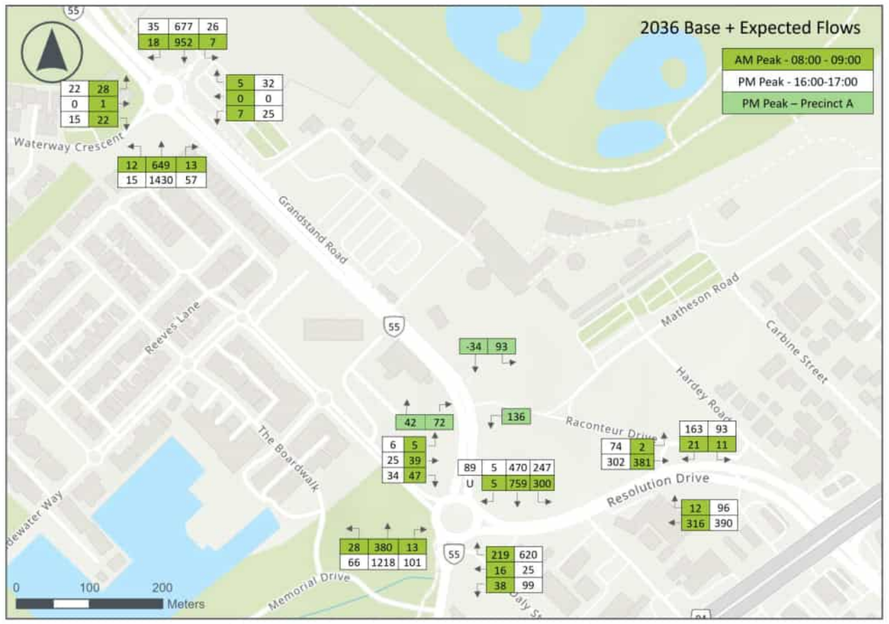
The percentage split of traffic is in keeping with the expectation that a greater proportion of trips generated by the Site will travel in same direction as the commuter peak for the residential and retirement uses. For the commercial attractions, this will be in the same direction as the commuter peak flows for the pass-by trips, but for new trips these will be attracted to the site based on the arrival flow proportions entering the Ascot Racecourse area along Grandstand Road, Resolution Drive and Stoneham Street. The estimated 2036 flows with expected distribution is presented in **Figure 6-1** to **Figure 6-3.**

**Figure 6-1: Base 2036 Traffic Flows (no development; background growth only)**



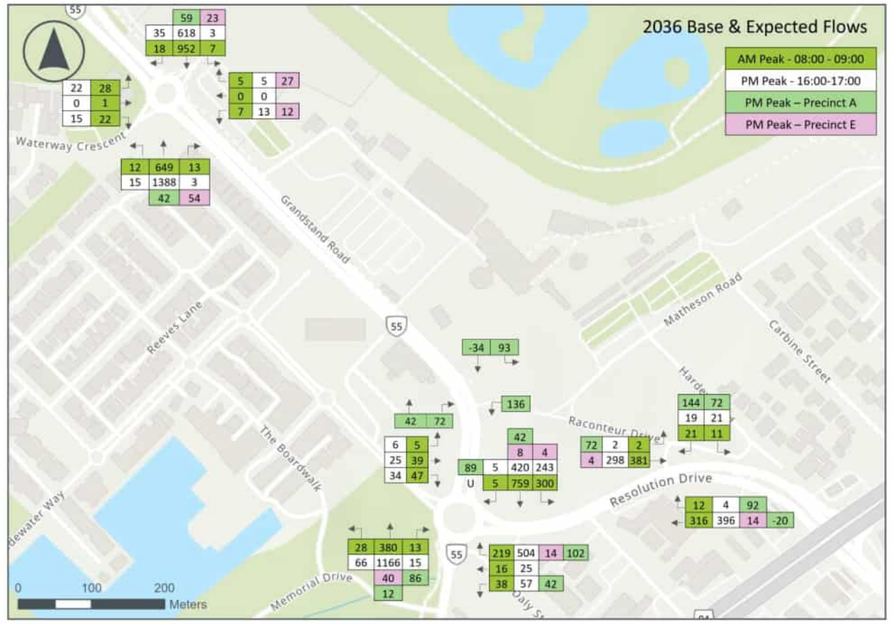

Credits: Esri Community Maps Contributors, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, Foursquare, METI/NASA,

**Figure 6-2: 2036 Traffic Flows (plus Precinct A Development Flows)**




Credits: Esri Community Maps Contributors, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, Foursquare, METI/NASA,

**Figure 6-3: 2036 Traffic Flows (with Ultimate Ascot LSP Development Flows)**




Credits: Esri Community Maps Contributors, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, Foursquare, METI/NASA,

The above figure focuses on the distribution of traffic onto the road network for typical AM and PM peak periods. The Racecourse access has not been shown on this figure as the peak movements to and from the racecourse are expected to occur on a Saturday, when traffic flows on Grandstand Road are approximately 60% of typical PM peak values. Peak Racecourse flow is typically at approximately 12pm, prior to the start of the first race at the racecourse and the expected peak arrival time of patrons. The last race typically concludes at about 5:30pm and traffic flows at that time on Grandstand Road are approximately 50% of PM peak flows, this at a time when patrons will be leaving the racecourse at the highest rate.

To put the above into context, the peak weekend flows on Grandstand Road are approximately the same as the inter-peak weekday flows at about the same time.

## 6.6 Intersection Performance

SIDRA analysis was undertaken at the following intersections to estimate the impact of the development generated traffic on the surrounding transport network:

- Resolution Drive / Stoneham Street / Grandstand Road Roundabout
- Raconteur Drive / Grandstand Road Intersection
- Grandstand Road and Waterways Cresent Roundabout
- Resolution Drive / Raconteur Drive intersection.

SIDRA results for each approach are presented below in the form of Degree of Saturation (DOS), Average Delay, Level of Service (LOS) and 95th Percentile Queue. These characteristics are defined as follows:

- **Degree of Saturation (DOS)**: is the ratio of the arrival traffic flow to the capacity of the approach during the same period. The theoretical intersection capacity is exceeded for an un-signalised intersection where DOS > 0.80;
- **95% Queue:** is the statistical estimate of the queue length up to or below which 95% of all observed queues would be expected;
- **Average Delay:** is the average of all travel time delays for vehicles through the intersection. An unsignalised intersection is considered to be operated at capacity where the average delay exceeds 40 seconds for any movement; and
- **Level of Service (LOS)**: is the qualitative measure describing operational conditions within a traffic stream and the perception by motorists and/or passengers.

## 6.7 Scenario 1 - Current Year 2024

The following presents the analysis of the key access points as noted above assuming current traffic flows on the road network and without the Ascot Racecourse developed.

**Figure 6-4: Current Performance – Grandstand Rd/Waterways Cres**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Grandstand Rd E | 0.45 | 4 | A | 26 |
| Precinct A | 0.03 | 7 | A | 1 |
| Grandstand Rd W | 0.20 | 4 | A | 12 |
| Waterway Cres | 0.05 | 10 | A | 2 |
| **Intersection** | **0.45** | **4** | **A** | **26** |

**Figure 6-5: Current Performance – Grandstand Rd/Raconteur Dr**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Grandstand Rd E | 0.45 | 0 | A | 0 |
| Raconteur Dr | NA | NA | NA | NA |
| Grandstand Rd W | 0.33 | 0 | A | 0 |
| **Intersection (based on minor leg appr/mvt)** | **0.45** | **0** | **A** | **0** |

**Figure 6-6: Current Performance – Grandstand Rd/Resolution Dr/Stoneham St**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Stoneham St S | 0.62 | 9 | A | 54 |
| Resolution Dr E | 0.74 | 15 | B | 47 |
| Grandstand Rd N | 0.33 | 4 | A | 21 |
| Resolution Dr W | 0.16 | 13 | B | 7 |
| **Intersection** | **0.74** | **9** | **A** | **55** |

**Figure 6-7: Current Performance – Resolution Dr/Raconteur Dr**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Resolution Dr E | 0.21 | 0 | A | 0 |
| Resolution Dr E RT | 0.003 | 4 | A | 0.1/0.5 |
| Raconteur Dr RT | 0.02 | 6 | A | 0.5 |
| Resolution Dr W | 0.16 | 0 | A | 0 |
| **Intersection (based on minor leg appr/mvt)** | **0.02** | **6** | **A** | **0.1/0.5** |

**Figure 6-8: Current Performance – Great Eastern Hwy/Resolution Dr/Hardey Rd**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Hardey Rd E | 0.52 | 76 | E | 99 |
| GEH N | 0.75(T)/0.90(R) | 44 | D | 306 |
| Resolution Dr W | 0.93 | 64 | E | 75 |
| GEH S | 0.83(T)/0.65(R) | 31 | C | 319 |
| **Intersection** | **0.93** | **42** | **D** | **319** |

**Figure 6-9: Current Performance – Great Eastern Hwy/Stoneham St/Belgravia St**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Belgravia St E | 0.81 | 72 | E | 172 |
| GEH N | 0.70(T)/0.63(R) | 17 | B | 173 |
| Stoneham St W | 0.93 | 92 | F | 129 |
| GEH S | 0.80(T)/0.88(R) | 25 | C | 294 |
| **Intersection** | **0.93** | **34** | **C** | **294** |

As summarised, apart from Great Eastern Highway, intersections all typically operate at a good level of service, with typically LoS A on all leg/movements, with some LoS B on the Resolution Drive approaches to the Resolution Drive / Stoneham Street / Grandstand Road Roundabout. The largest amount of queueing occurs at this same roundabout where it has a DoS (a

measure of how much traffic takes up the available traffic carrying capacity) of 0.74, this maximum being on the Resolution Drive eastern approach to the roundabout and considered acceptable. Intersections on Great Eastern Highway at Resolution Drive and Stoneham Street operate with DoS of approximately 0.7 to 0.85 on Great Eastern Highway with higher DoS on the western leg approaches (Resolution Drive and Stoneham Street) where DoS is approaching 0.93.

## 6.8 Scenario 2 – 2036 No Development, Background Traffic Growth

The following presents the analysis of the same intersections assuming a future growth horizon to 2036 with NO build out of the development. The intersections have been assessed based on the current geometries.

**Ascot LSP Area Intersections: Grandstand Road and Raconteur Drive**

**Figure 6-10: 2036 Performance – Grandstand Rd/Waterways Cres**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Grandstand Rd E | 0.54 | 4 | A | 38 |
| Precinct A | 0.03 | 7 | A | 1 |
| Grandstand Rd W | 0.25 | 4 | A | 15 |
| Waterway Cres | 0.06 | 13 | B | 3 |
| **Intersection** | **0.54** | **4** | **A** | **38** |

**Figure 6-11: 2036 Performance – Grandstand Rd/Raconteur Dr**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Grandstand Rd E | 0.54 | 0 | A | 0 |
| Raconteur Dr | NA | NA | NA | NA |
| Grandstand Rd W | 0.35 | 0 | A | 0 |
| **Intersection (based on minor leg appr/mvt)** | **0.54** | **0** | **A** | **0** |

**Figure 6-12: 2036 Performance – Grandstand Rd/Resolution Dr/Stoneham St**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Stoneham St S | 0.69 | 11 | B | 68 |
| Resolution Dr E | 0.81 | 17 | B | 59 |
| Grandstand Rd N | 0.35 | 4 | A | 23 |
| Resolution Dr W | 0.19 | 14 | B | 8 |
| **Intersection** | **0.81** | **10** | **A** | **68** |

**Figure 6-13: 2036 Performance – Resolution Dr/Raconteur Dr**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Resolution Dr E | 0.22 | 0 | A | 0 |
| Resolution Dr E RT | 0.002 | 6 | A | 0.6 |
| Raconteur Dr RT | 0.02 | 7 | A | 0.5/0.6 |
| Resolution Dr W | 0.17 | 0 | A | 0 |
| **Intersection (based on minor leg appr/mvt)** | **0.02** | **7** | **A** | **0.5/0.6** |

With no development, and with continued anticipated background traffic growth on the adjacent road network, the intersections are expected to still operate satisfactorily. Noted performance changes to each intersection are:

- Grandstand Road/Waterways Crescent

  This intersection is expected to be operating well, with an overall LoS A, the same as now. There is expected to be a lengthening of vehicle queues on Grandstand Road and a slight increase in the DoS, notably for the Grandstand Road eastern approach to the roundabout.

- Grandstand Road/Raconteur Drive

  Raconteur Drive is presently closed to traffic on non-race days.

- Grandstand Road/Resolution Drive/Stoneham Street

  With the background traffic growth, this intersection is still expected to operate satisfactorily in 2036. Queues are expected to slightly lengthen with the DoS increasing from 0.74 to 0.81. Overall, the intersection is expected to operate at a LoS A.

- Resolution Drive/Raconteur Drive

  This intersection is expected to operate in almost identical manner to how it presently operates. There is still expected to be minimal delays and good corresponding LoS. The DoS for the critical right turn from Raconteur Drive onto Resolution Drive is low at 0.02, this being a measure of good operational performance for this intersection.

**Great Eastern Highway Intersections**

**Figure 6-14: 2036 Performance – Great Eastern Hwy/Resolution Dr/Hardey Rd**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Hardey Rd E | 0.54 | 75 | E | 106 |
| GEH N | 0.71(T)/1.25(R) | 70 | E | 411 |
| Resolution Dr W | 1.24 | 132 | F | 126 |
| GEH S | 0.90(T)/0.90(R) | 30 | C | 410 |
| **Intersection** | **1.25** | **56** | **E** | **411** |

**Figure 6-15: 2036 Performance – Great Eastern Hwy/Stoneham St/Belgravia St**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Belgravia St E | 1.12 | 199 | F | 389 |
| GEH N | 0.65(T)/0.82(R) | 12 | B | 127 |
| Stoneham St W | 1.13 | 237 | F | 232 |
| GEH S | 0.91(T)/1.13(R) | 38 | D | 525 |
| **Intersection** | **1.13** | **67** | **E** | **525** |

- Great Eastern Highway/Resolution Drive/Hardey Road

  With the background traffic growth, this intersection is expected to be oversaturated in 2036. Queues are expected to slightly lengthen with the DoS increasing from 0.93 to 1.25, this high DoS as a result of the right turn lane on the northern Great Eastern Highway approach being over saturated. Overall, the intersection is expected to operate at a LoS E. Options tested to improve this intersection included the introduction of an additional right turn lane on the northern Great Eastern Highway approach, this was found to reduce the DoS to 0.99, based on the Resolution Drive approach.

- Great Eastern Highway/Stoneham Street/Belgravia Street

  Similar to the intersection above, with the background traffic growth, this intersection is expected to be oversaturated in 2036. Queues are expected to lengthen with the DoS increasing from 0.93 to 1.13, this high DoS as a result of the right turn lane on the southern Great Eastern Highway approach along with the Stoneham Street approach being over saturated. Overall, the intersection is expected to operate at a LoS E. Options tested to improve this intersection included the introduction of an additional right turn lane on the southern Great Eastern Highway approach, this was found to still have a similar overall DoS of 1.17, based on the Stoneham Street approach. But the DoS for the right turn movement on the southern approach on Great Eastern Highway reducing to 0.79.

## 6.9 Scenario 3 – 2036 With Ascot LSP Development

The following presents the analysis of the assessment of the road network assuming a future growth horizon to 2036 with full build out of the Ascot Racecourse LSP development for a comprehensive assessment.

**Ascot LSP Area Intersections: Grandstand Road and Raconteur Drive**

**Figure 6-16: 2036 Performance with Development – Grandstand Rd/Waterways Cres**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Grandstand Rd E | 0.54 | 5 | A | 38 |
| Precinct A | 0.10 | 8 | A | 3 |
| Grandstand Rd W | 0.28 | 4 | A | 16 |
| Waterway Cres | 0.06 | 13 | B | 3 |
| **Intersection** | **0.54** | **5** | **A** | **38** |

**Figure 6-17: 2036 Performance with Development – Grandstand Rd/Raconteur Dr**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Grandstand Rd E | 0.48 | 0 | A | 0 |
| Grandstand Rd E RT | 0.09 | 4 | A | 2 |
| Raconteur Dr | 0.08 | 6 | A | 2 |
| Grandstand Rd W | 0.18 | 0 | A | 0 |
| **Intersection (based on minor leg appr/mvt)** | **0.48** | **0.5** | **A** | **2** |

**Figure 6-18: 2036 Performance with Development – Grandstand Rd/Resolution Dr/Stoneham St**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Stoneham St S | 0.85 | 23 | C | 136 |
| Resolution Dr E | 0.86 | 17 | B | 79 |
| Grandstand Rd N | 0.28 | 5 | A | 16 |
| Resolution Dr W | 0.28 | 18 | B | 13 |
| **Intersection** | **0.86** | **17** | **B** | **136** |

**Figure 6-19: 2036 Performance with Development – Resolution Dr/Raconteur Dr**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Resolution Dr E | 0.22 | 0 | A | 0 |
| Resolution Dr E RT | 0.09 | 2.2 | A | 2 |
| Raconteur Dr RT | 0.19 | 8 | A | 3.9/4.9 |
| Resolution Dr W | 0.17 | 0 | A | 0 |
| **Intersection (based on minor leg appr/mvt)** | **0.19** | **8** | **A** | **3.9/4.9** |

With full development of the Ascot Racecourse LSP area, and with continued background traffic growth on the adjacent road network, the intersections are expected to still operate satisfactorily in Scenario 3 and only minor changes to performance results to each intersection as compared to the previous Scenario 2:

- Grandstand Road/Waterways Crescent

  This intersection is expected to continue to operate well, with an overall LoS A, the same as for the no-development Scenario 2. Other metrics for this intersection are expected to be similar to the 2036 scenario and thus there is expected to be no detrimental impact issues caused by the LSP development.

- Grandstand Road/Raconteur Drive

  This intersection is proposed to be open permanently to traffic with left and right turns allowed from Grandstand Road into Raconteur Drive and only a left turn out from Raconteur Drive onto Grandstand Road. These are the same

movements currently permitted at this intersection when the intersection is open on race days to allow racecourse patrons to park. It is noted that the critical right turn from Grandstand Road onto Raconteur Drive and the left turn from Raconteur Drive onto Grandstand Road are both expected to operate at LoS A with DoS of 0.8 to 0.9, acceptable queues and delays. Queues are expected to be able to be contained within the current right turn pocket length on Grandstand Road.

- Grandstand Road/Resolution Drive/Stoneham Street

  With the background traffic growth and the Ascot LSP development traffic, this intersection is still expected to operate satisfactorily in 2036. Queues are expected to lengthen to 136m (68m) on Stoneham Street and 79m (from 59m) on Resolution Drive eastern approach. Overall, the DoS for the intersection is expected to be 0.86, this again acceptable with a total average delay of 17s and overall LoS B. Across all measures, this intersection is expected to operate satisfactorily.

- Resolution Drive/Raconteur Drive

  This intersection is expected to still operate similar to 2024 as in 2036 without any development. The DoS for the right turn from Raconteur Drive onto Resolution Drive is expected to be 0.19 with slightly longer queues, but no more than a single vehicle queued either at Raconteur Drive prior to entering Resolution Drive, or within the median waiting to entering the western traffic flow back towards the roundabout at the intersection of Grandstand Road/Resolution Drive/Stoneham Street.

**Great Eastern Highway Intersections**

**Figure 6-20: 2036 Performance with Development – Great Eastern Hwy/Resolution Dr/Hardey Rd**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Hardey Rd E | 0.60 | 81 | F | 116 |
| GEH N | 0.72(T)/1.53(R) | 126 | F | 634 |
| Resolution Dr W | 1.51 | 204 | F | 195 |
| GEH S | 0.91(T)/0.90(R) | 30 | C | 417 |
| **Intersection** | **1.53** | **86** | **F** | **634** |

**Figure 6-21: 2036 Performance with Development – Great Eastern Hwy/Stoneham St/Belgravia St**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Belgravia St E | 1.20 | 252 | F | 461 |
| GEH N | 0.63(T)/1.10(R) | 15 | B | 98 |
| Stoneham St W | 1.40 | 480 | F | 354 |
| GEH S | 0.88(T)/1.38(R) | 40 | D | 468 |
| **Intersection** | **1.40** | **103** | **F** | **468** |

- Great Eastern Highway/Resolution Drive/Hardey Road

  The addition of the LSP development traffic is expected to exacerbate the performance of this intersection, which is expected to be over capacity in 2036 without the development. The intersection is expected to be oversaturated with 2036 queues expected to lengthen and the DoS increasing from 1.25 to 1.53. This high DoS is a result of the right turn lane on the northern (or north-east orientated) Great Eastern Highway approach being oversaturated (demand exceeds capacity). Overall, the intersection is expected to operate at a LoS F, slightly worse than the expected E without the LSP development.

- Great Eastern Highway/Stoneham Street/Belgravia Street

  Similar to the highway intersection above, with the background traffic growth and the addition of the LSP development traffic, this intersection is expected to also be oversaturated in 2036. Queues are expected to lengthen with the DoS increasing from 1.13 to 1.40, this high DoS as a result of the right turn lane on the southern (or south-west orientated) Great Eastern Highway approach along with the Stoneham Street approach being oversaturated. Overall, the intersection is expected to operate at a LoS F, slightly worse than the expected E without the LSP development.

## 6.10 SIDRA Intersection Results

Analysis of the intersections in the Ascot LSP area at the 2024 (base) and 2036 (full development) design horizons shows that there is predicted to be no detrimental issues with respect to traffic queuing and delays for any movement in the PM peak period where the highest traffic flows are expected. This is on the basis that the existing intersection of Grandstand Road and Resolution Drive is able to be opened permanently to traffic as a LILO-RI as currently occurs on race days.

The Great Eastern Highway signalised intersections at Resolution Drive and Stoneham Street were also checked for performance in 2036. Unsurprisingly, these highway intersections are expected to be oversaturated in 2036, even without the Ascot LSP development, primarily due to increasing demands on Great Eastern Highway.

In summary, outside of the highway intersections, all parameters of this capacity assessment are within recognised thresholds for acceptable intersection operation.

# 7 Conclusions & Recommendations

This Transport Impact Assessment (TIA) for Ascot Racecourse has been prepared in accordance with the Western Australian Planning Commission (WAPC) *Transport Impact Assessment Guidelines Volume 2 – Planning Schemes, Structure Plans & Activity Centre Plans (2016)*, which is the most appropriate level of TIA for a proposed Scheme Amendment and Local Structure Plan submission.

The Site, which is the subject of this assessment, is currently zoned as Place of Public Assembly across the proposed five development Precinct. This zoning is proposed be changed to mixed use, place of public assembly, and residential across the five precincts to allow development in keeping with the Applicant's intention for this Site as a multi-use development and complements the intention for the proposed Golden Gateway LSP.

The following conclusions and recommendations have been made regarding the proposed development with respect to this TIA:

## 7.1 Overall Integration with Surrounding Attractors / Generators

As Ascot Racecourse is already very well established in the local area, a variety of uses including retail, food, beverage and recreational uses are available in the local area primarily along the route of the Great Eastern Highway and on the Racecourse site itself. In addition, as an attractor and employment location itself, the racecourse is located in close proximity to large residential areas of Redcliffe, Belmont, Rivervale and Maylands surrounding the site.

Approximately 1.2 km to the south of the Site, is situated Belmont Primary School.

## 7.2 Road Network Accessibility and Parking

The site is well located in relation to the existing road network with access available from the major road network through Ascot via current intersections.

The following key intersections are located on the main road network within the Ascot area and will be immediately affected by traffic flows to and from the development site:

- Resolution Drive / Stoneham Street / Grandstand Road Roundabout
- Raconteur Drive / Grandstand Road Intersection
- Grandstand Road and Waterways Cresent Roundabout
- Resolution Drive / Raconteur Drive intersection.

Under the WAPC Guidelines for TIAs, a Scheme Amendment requires a 'broad brush' assessment of the impacts of the development. While individual lot driveway access arrangements and car parking typically fall outside the scope of a general Structure Plan-level transport assessment outlined in the WAPC Guidelines, the Ascot LSP Applicant is proactively presenting discussions/solutions to enhance future lot access arrangements and network performance. These suggestions are subject to further refinement in subsequent stages of development planning.

Given the Ascot LSP restrictions for most access points will be LILOs due to geometrical constraints, a relief valve is needed to support northbound traffic (right turning vehicular demands from the east). In this regard, the existing intersection of Grandstand Road and Raconteur Drive is proposed to be opened permanently to traffic with left and right turns allowed from Grandstand Road into Raconteur Drive and a left turn out from Raconteur Drive onto Grandstand Road (LILO-RI). These are the same movements currently permitted at this intersection on race days to allow racecourse patrons to park and exit. This critical left turn out to, and right turn in from Grandstand Road are both expected to operate satisfactorily with acceptable queues and delays to support the Ascot LSP. Ultimate development queues are expected to be able to be contained within the current right turn pocket length on Grandstand Road.

Additionally, the Applicant has undertaken a high-level parking appraisal for the Ascot LSP, even though this is not a standard requirement of a Structure Plan assessment under the WAPC Guidelines. The exiting net parking availability of Ascot on a race day and the proposed new development areas combined, is estimated to be able to adequately meet the currently observed parking demand for a busy typical race day at Ascot. For non-typical large events (such as the New Years Perth Cup) the traffic management plan for the racecourse would be appropriate for continued adoption. To further ensure that racecourse patrons are well informed of parking distribution and pick up / set down areas, it is a recommendation of this TIA to implement a Travel Demand Plan to assist traffic management and actively discourage patrons from using their private motor vehicle to drive to and from the racecourse. This plan may include both the encouragement in the use of the currently available public transport services near the racecourse, improvement in private high occupancy services, and the uptake of ride share services (MaaS).

## 7.3 Pedestrian and Cycle Accessibility

The existing footpath network on the northern side of Grandstand Road provides good links to the area surrounding Ascot Racecourse. This will be further enhanced by the improvements proposed through the LSP and Scheme Amendment, as well as the Public Realm Strategy being developed as part of the Golden Gateway LSP.

It is a recommendation of this report that, investigations be undertaken to extend the existing footpath network surrounding the racecourse, including south of Grandstand Road and improving pedestrian and cycle connections towards the local amenities on Great Eastern Highway. If feasible, this would encourage trips on foot to local centres and help increase public transport usage to reduce the reliance on private vehicle modes.

## 7.4 Public Transport Accessibility

The main bus stops accessible from the site are on Grandstand Road immediately adjacent to one of the key pedestrian access points to the racecourse. Based on a desktop review, the infrastructure provided at these stops is limited as a shelter with seating is only available on the south-western side while a raised kerb to assist with reduced mobility access is only available for a short distance on the north-eastern side of Grandstand Road. It would be recommended that a review of these bus stops is undertaken irrespective of any development, particularly as they serve a significant destination, it could also be considered that the proposed development provides a contribution to these improvements.

Additional frequent bus services are accessible from the site along the Great Eastern Highway towards the new Bayswater Railway Sation, Redcliffe Station, central Perth and Perth Airport.

## 7.5 Analysis of the Transport Network

Analysis of the intersections in the Ascot area with and without the Ascot LSP has been assessed at the 2024 (current) and 2036 (ultimate) design horizons. The comparison of results show that there is predicted to be no detrimental issues with respect to traffic queuing and delays for any movement in the PM peak period (PM peak is when the highest traffic flows are expected). All parameters of this capacity assessment are within recognised thresholds for acceptable intersection operation.

The downstream Great Eastern Highway intersections were also assessed for completeness and were shown to operate above their capacity in 2036, this without the addition of the Ascot LSP development.

It is important to note that at the time of preparing this report, the details of the Golden Gateway Local Structure Plan were still under revision. Whilst every endeavour was made to interrogate the previous traffic modelling and road network proposals in the draft reports and liaise with key project members for updates, the details were still unfinished and presented too many unknowns to be adequately and accurately incorporated into this traffic modelling intersection analyses.

## 7.6 Recommendations

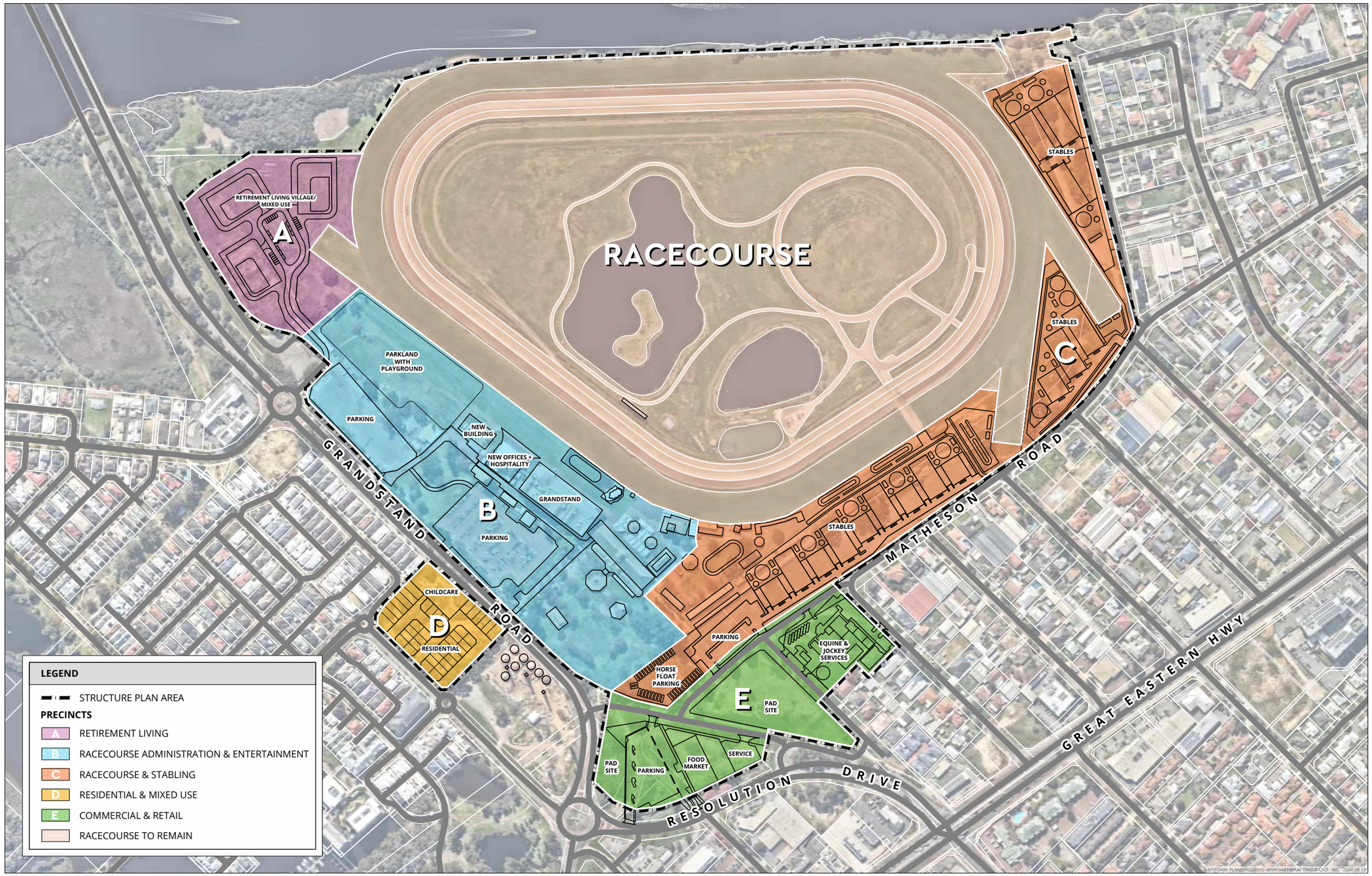
It is the recommendation of this TIA that:

- the existing intersection of Grandstand Road and Raconteur Drive be opened permanently to traffic as a LILO-RI as currently occurs on race days.
- Travel Demand Plan be undertaken to assist Ascot Racecourse patrons better utilise the parking available around the racecourse on race days and/or address this within the Ascot Event Traffic Management Plan.
- When GGLSP details are finalised, the external highway intersections be re-assessed in terms of their capacity to accommodate future development-generated traffic of the wider network and their anticipated background growth:
    - Great Eastern Highway/Resolution Drive/Hardey Road
    - Great Eastern Highway/Stoneham Street/Belgravia Street.

## Appendix A TIA Checklist

| Item | Provided | Comments/Proposals |
|---|---|---|
| Summary | Y | |
| Introduction / Background | Y | |
| Structure Plan Proposal | | |
| Regional context | Y | |
| Proposed land uses | Y | |
| Table of land uses and quantities | Y | |
| Major attractors / generators | Y | |
| Specific issues | Y | |
| Existing Situation | | |
| Existing land uses within structure plan | Y | |
| Existing land uses within 800m of structure plan area | Y | |
| Existing road network within structure plan area | Y | |
| Existing pedestrian / cycle network within structure plan area | Y | |
| Existing public transport services within structure plan area | Y | |
| Existing road network within 2 (or 5) km of the structure plan area | Y | |
| Traffic flows on roads within the structure plan area (PM and/or AM peak hours) | Y | |
| Existing pedestrian / cycle networks within 800m of the structure plan area. | Y | |
| Existing public transport services within 800m of the structure plan area. | Y | |
| Proposed Internal Transport Networks | | |
| Changes / additions to existing road network or proposed new road network | Y | |
| Road reservation widths | Y | |
| Road cross-sections & speed limits | Y | |
| Intersection controls | Y | |
| Pedestrian / cycle networks and crossing facilities | Y | |
| Changes to External Transport Networks | | |
| Road network | Y | |
| Intersection controls | Y | |
| Pedestrian/cycle networks and crossing facilities | Y | |
| Public transport services | Y | |
| Integration with the surrounding area | | |
| Trip attractors / generators within 800 metres | Y | |
| proposed changes to land uses within 800 metres | Y | |
| travel desire lines from development to these attractors/ generators | Y | |
| adequacy of external transport networks | Y | |
| deficiencies in external transport networks | Y | |
| remedial measures to address deficiencies | Y | |
| Analysis of internal transport networks | | |
| assessment years | Y | |
| time periods | Y | |
| Structure plan generated traffic | Y | |
| Extraneous (through) traffic | Y | |
| Design traffic flows (that is, total traffic) | Y | |
| Road cross-sections | Y | |
| Intersection controls | Y | |
| Access strategy | Y | |
| Pedestrian / cycle networks | Y | |
| Safe routes to schools | Y | |
| Pedestrian permeability & efficiency | Y | |
| Access to public transport | Y | |
| Analysis of external transport networks | | |
| Extent of analysis | Y | |
| Base flows for assessment year(s) | Y | |
| Total traffic flows | Y | |
| Road cross-sections | Y | |
| Intersection layouts and controls | Y | |
| Pedestrian / cycle networks | Y | |
| Conclusions | Y | |

## Appendix B Proposed Masterplan Precincts




**DRAFT MASTER PLAN CONCEPT**
VARIOUS LOTS - ASCOT RACECOURSE
ASCOT

N
0 100 m
SCALE @ A3: 1:4000
**9481-CON-01-D**

DRAWN: WC
DATE CREATED: 2024.08.19
PROJECTION: MGA50 GDA94
CADASTRE: LANDGATE
AERIAL: NEARMAP 20230831

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ROWE GROUP DESIGN

# Appendix C SIDRA Modelling Outputs

# LANE SUMMARY

**Site: 103a [Leg 1 PM (Site Folder: Raconteur T)]**

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

**Network: N101 [Raconteur PM with Dev (Network Folder: AM)]**

New Site
Site Category: Existing Design
Give-Way (Two-Way)
Design Life Analysis: Constant Number of Years = 12

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Median | | | | | | | | | | | | | | | |
| Lane 1 | 101 | 0.0 | 101 | 0.0 | 1149 | 0.088 | 100 | 2.2 | LOS A | 0.3 | 2.5 | Full | 6 | 0.0 | 0.0 |
| Approach | 101 | 0.0 | 101 | 0.0 | | 0.088 | | 2.2 | LOS A | 0.3 | 2.5 | | | | |
| North: Racecourse | | | | | | | | | | | | | | | |
| Lane 1 | 172 | 0.0 | 172 | 0.0 | 1298 | 0.132 | 100 | 5.7 | LOS A | 0.6 | 4.5 | Short | 50 | 0.0 | NA |
| Lane 2 | 150 | 0.0 | 150 | 0.0 | 1122 | 0.133 | 100 | 4.6 | LOS A | 0.5 | 3.9 | Full | 500 | 0.0 | 0.0 |
| Approach | 322 | 0.0 | 322 | 0.0 | | 0.133 | | 5.2 | LOS A | 0.6 | 4.5 | | | | |
| West: Raconteur Dr | | | | | | | | | | | | | | | |
| Lane 1 | 78 | 0.0 | 78 | 0.0 | 1772 | 0.044 | 100 | 5.6 | LOS A | 0.0 | 0.0 | Short | 75 | 0.0 | NA |
| Lane 2 | 314 | 2.5 | 314 | 2.5 | 1883 | 0.167 | 100 | 0.0 | LOS A | 0.0 | 0.0 | Full | 550 | 0.0 | 0.0 |
| Approach | 392 | 2.0 | 392 | 2.0 | | 0.167 | | 1.1 | NA | 0.0 | 0.0 | | | | |
| All Vehicles | 815 | 1.0 | 815 | 1.0 | | 0.167 | | 2.9 | NA | 0.6 | 4.5 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Approach Lane Flows (veh/h)**

South: Median

| Mov. From S To Exit: | T1 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|
| Lane 1 | 101 | 101 | 0.0 | 1149 | 0.088 | 100 | NA | NA |
| Approach | 101 | 101 | 0.0 | | 0.088 | | | |

North: Racecourse

| Mov. From N To Exit: | L2 E | T1 S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 172 | - | 172 | 0.0 | 1298 | 0.132 | 100 | 0.0 | 2 |
| Lane 2 | - | 150 | 150 | 0.0 | 1122 | 0.133 | 100 | NA | NA |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Approach | 172 | 150 | 322 | 0.0 | | 0.133 | | | |
| West: Raconteur Dr | | | | | | | | | |
| Mov. From W To Exit: | L2 N | T1 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 78 | - | 78 | 0.0 | 1772 | 0.044 | 100 | 0.0 | 2 |
| Lane 2 | - | 314 | 314 | 2.5 | 1883 | 0.167 | 100 | NA | NA |
| Approach | 78 | 314 | 392 | 2.0 | | 0.167 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | |
| All Vehicles | 815 | 1.0 | | 0.167 | | | | | |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| South: Median | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| North: Racecourse | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Raconteur Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |

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Project: C:\PJA\Phil Jones Associates\SharedData - 07575 Ascot Racecourse Local Structure Plan & Scheme Amendment\4. Technical\4.3 Analysis\4.3.1 Transport\07575_M_01_A_Ascot Racecourse LSP&SA.sip9

# LANE SUMMARY

## Site: 103b [Leg 2 PM (Site Folder: Raconteur T)]

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

**Network: N101 [Raconteur PM with Dev (Network Folder: AM)]**

New Site
Site Category: Existing Design
Give-Way (Two-Way)
Design Life Analysis: Constant Number of Years = 12

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| East: Raconteur Dr | | | | | | | | | | | | | | | |
| Lane 1 | 417 | 3.8 | 417 | 3.8 | 1860 | 0.224 | 100 | 0.1 | LOS A | 0.0 | 0.0 | Full | 780 | 0.0 | 0.0 |
| Lane 2 | 101 | 0.0 | 101 | 0.0 | 1773 | 0.057 | 100 | 5.7 | LOS A | 0.0 | 0.0 | Short | 85 | 0.0 | NA |
| Approach | 518 | 3.0 | 518 | 3.0 | | 0.224 | | 1.2 | NA | 0.0 | 0.0 | | | | |
| North: Median | | | | | | | | | | | | | | | |
| Lane 1 | 150 | 0.0 | 150 | 0.0 | 781 | 0.192 | 100 | 3.4 | LOS A | 0.7 | 4.9 | Full | 6 | 0.0 | 0.0 |
| Approach | 150 | 0.0 | 150 | 0.0 | | 0.192 | | 3.4 | LOS A | 0.7 | 4.9 | | | | |
| All Vehicles | 668 | 2.3 | 668 | 2.3 | | 0.224 | | 1.7 | NA | 0.7 | 4.9 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Approach Lane Flows (veh/h)**

East: Raconteur Dr

| Mov. From E To Exit: | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 417 | - | 417 | 3.8 | 1860 | 0.224 | 100 | NA | NA |
| Lane 2 | - | 101 | 101 | 0.0 | 1773 | 0.057 | 100 | 0.0 | 1 |
| Approach | 417 | 101 | 518 | 3.0 | | 0.224 | | | |

North: Median

| Mov. From N To Exit: | R2 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|
| Lane 1 | 150 | 150 | 0.0 | 781 | 0.192 | 100 | NA | NA |
| Approach | 150 | 150 | 0.0 | | 0.192 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 668 | 2.3 | 0.224 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| East: Raconteur Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| North: Median | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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Project: C:\PJA\Phil Jones Associates\SharedData - 07575 Ascot Racecourse Local Structure Plan & Scheme Amendment\4. Technical\4.3 Analysis\4.3.1 Transport\07575_M_01_A_Ascot Racecourse LSP&SA.sip9

# LANE SUMMARY

## Site: 103a [Leg 1 PM (Site Folder: Grandstand/Raconteur)]

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

**Network: N101 [Grandstand PM with Dev (Network Folder: AM)]**

New Site
Site Category: Existing Design
Give-Way (Two-Way)
Design Life Analysis: Constant Number of Years = 19

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NorthEast: Raconteur Dr | | | | | | | | | | | | | | | |
| Lane 1 | 100 | 0.0 | 100 | 0.0 | 1237 | 0.081 | 100 | 5.7 | LOS A | 0.3 | 2.4 | Short | 50 | 0.0 | NA |
| Lane 2 | 1 | 0.0 | 1 | 0.0 | 871 | 0.001 | 100 | 5.6 | LOS A | 0.0 | 0.0 | Full | 500 | 0.0 | 0.0 |
| Approach | 101 | 0.0 | 101 | 0.0 | | 0.081 | | 5.7 | LOS A | 0.3 | 2.4 | | | | |
| NorthWest: Grandstand Rd | | | | | | | | | | | | | | | |
| Lane 1 | 98 | 0.0 | 98 | 0.0 | 1548 | 0.063 | 100 | 5.8 | LOS A | 0.3 | 1.9 | Short | 75 | 0.0 | NA |
| Lane 2 | 345 | 3.5 | 345 | 3.5 | 1864 | 0.185 | 100 | 0.1 | LOS A | 0.0 | 0.0 | Full | 550 | 0.0 | 0.0 |
| Lane 3 | 345 | 3.5 | 345 | 3.5 | 1864 | 0.185 | 100 | 0.1 | LOS A | 0.0 | 0.0 | Full | 550 | 0.0 | 0.0 |
| Approach | 788 | 3.1 | 788 | 3.1 | | 0.185 | | 0.8 | LOS A | 0.3 | 1.9 | | | | |
| SouthWest: Median | | | | | | | | | | | | | | | |
| Lane 1 | 76 | 0.0 | 76 | 0.0 | 869 | 0.087 | 100 | 3.7 | LOS A | 0.3 | 2.2 | Full | 6 | 0.0 | 0.0 |
| Approach | 76 | 0.0 | 76 | 0.0 | | 0.087 | | 3.7 | LOS A | 0.3 | 2.2 | | | | |
| All Vehicles | 964 | 2.5 | 964 | 2.5 | | 0.185 | | 1.5 | NA | 0.3 | 2.4 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Approach Lane Flows (veh/h)**

NorthEast: Raconteur Dr

| Mov. From NE To Exit: | L2 SE | T1 SW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 100 | - | 100 | 0.0 | 1237 | 0.081 | 100 | 0.0 | 2 |
| Lane 2 | - | 1 | 1 | 0.0 | 871 | 0.001 | 100 | NA | NA |
| Approach | 100 | 1 | 101 | 0.0 | | 0.081 | | | |

NorthWest: Grandstand Rd

| Mov. From NW To Exit: | L2 NE | T1 SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 98 | - | 98 | 0.0 | 1548 | 0.063 | 100 | 0.0 | 2 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Lane 2 | - | 345 | 345 | 3.5 | 1864 | 0.185 | 100 | NA | NA |
| Lane 3 | - | 345 | 345 | 3.5 | 1864 | 0.185 | 100 | NA | NA |
| Approach | 98 | 690 | 788 | 3.1 | | 0.185 | | | |
| SouthWest: Median | | | | | | | | | |
| Mov. From SW To Exit: | T1 NE | Total | %HV | | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 76 | 76 | 0.0 | | 869 | 0.087 | 100 | NA | NA |
| Approach | 76 | 76 | 0.0 | | | 0.087 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | |
| All Vehicles | 964 | 2.5 | 0.185 | | | | | | |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| NorthEast: Raconteur Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthWest: Grandstand Rd | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| SouthWest: Median | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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# LANE SUMMARY

## Site: 103b [Leg 2 PM (Site Folder: Grandstand/Raconteur)]

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

**Network: N101 [Grandstand PM with Dev (Network Folder: AM)]**

New Site
Site Category: Existing Design
Give-Way (Two-Way)
Design Life Analysis: Constant Number of Years = 19

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Grandtand Rd | | | | | | | | | | | | | | | |
| Lane 1 | 912 | 2.2 | 912 | 2.2 | 1888 | 0.483 | 100 | 0.3 | LOS A | 0.0 | 0.0 | Full | 780 | 0.0 | 0.0 |
| Lane 2 | 912 | 2.2 | 912 | 2.2 | 1888 | 0.483 | 100 | 0.3 | LOS A | 0.0 | 0.0 | Full | 780 | 0.0 | 0.0 |
| Lane 3 | 76 | 0.0 | 76 | 0.0 | 1770 | 0.043 | 100 | 5.7 | LOS A | 0.0 | 0.0 | Short | 50 | 0.0 | NA |
| Approach | 1900 | 2.1 | 1900 | 2.1 | | 0.483 | | 0.5 | NA | 0.0 | 0.0 | | | | |
| NorthEast: Median | | | | | | | | | | | | | | | |
| Lane 1 | 1 | 0.0 | 1 | 0.0 | 115 | 0.009 | 100 | 30.2 | LOS D | 0.0 | 0.2 | Full | 6 | 0.0 | 0.0 |
| Approach | 1 | 0.0 | 1 | 0.0 | | 0.009 | | 30.2 | LOS D | 0.0 | 0.2 | | | | |
| All Vehicles | 1901 | 2.1 | 1901 | 2.1 | | 0.483 | | 0.5 | NA | 0.0 | 0.2 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Approach Lane Flows (veh/h)**

SouthEast: Grandtand Rd

| Mov. From SE To Exit: | T1 NW | R2 NE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 912 | - | 912 | 2.2 | 1888 | 0.483 | 100 | NA | NA |
| Lane 2 | 912 | - | 912 | 2.2 | 1888 | 0.483 | 100 | NA | NA |
| Lane 3 | - | 76 | 76 | 0.0 | 1770 | 0.043 | 100 | 0.0 | 2 |
| Approach | 1824 | 76 | 1900 | 2.1 | | 0.483 | | | |

NorthEast: Median

| Mov. From NE To Exit: | R2 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|
| Lane 1 | 1 | 1 | 0.0 | 115 | 0.009 | 100 | NA | NA |
| Approach | 1 | 1 | 0.0 | | 0.009 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|

| | | | |
|---|---|---|---|
| All Vehicles | 1901 | 2.1 | 0.483 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| SouthEast: Grandtand Rd | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: Median | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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# LANE SUMMARY

**Site: 103a [Leg 1 PM - No Dev (Site Folder: Raconteur T)]**

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

**Network: N101 [Raconteur Current PM (Network Folder: AM)]**

New Site
Site Category: Existing Design
Give-Way (Two-Way)
Design Life Analysis: Constant Number of Years = 12

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Median | | | | | | | | | | | | | | | |
| Lane 1 | 4 | 0.0 | 4 | 0.0 | 1200 | 0.004 | 100 | 1.8 | LOS A | 0.0 | 0.1 | Full | 6 | 0.0 | 0.0 |
| Approach | 4 | 0.0 | 4 | 0.0 | | 0.004 | | 1.8 | LOS A | 0.0 | 0.1 | | | | |
| North: Racecourse | | | | | | | | | | | | | | | |
| Lane 1 | 23 | 0.0 | 23 | 0.0 | 1298 | 0.018 | 100 | 5.5 | LOS A | 0.1 | 0.6 | Short | 50 | 0.0 | NA |
| Lane 2 | 21 | 0.0 | 21 | 0.0 | 1202 | 0.018 | 100 | 4.1 | LOS A | 0.1 | 0.5 | Full | 500 | 0.0 | 0.0 |
| Approach | 45 | 0.0 | 45 | 0.0 | | 0.018 | | 4.9 | LOS A | 0.1 | 0.6 | | | | |
| West: Raconteur Dr | | | | | | | | | | | | | | | |
| Lane 1 | 2 | 0.0 | 2 | 0.0 | 1838 | 0.001 | 100 | 5.5 | LOS A | 0.0 | 0.0 | Short | 75 | 0.0 | NA |
| Lane 2 | 314 | 2.5 | 314 | 2.5 | 1883 | 0.167 | 100 | 0.0 | LOS A | 0.0 | 0.0 | Full | 550 | 0.0 | 0.0 |
| Approach | 316 | 2.5 | 316 | 2.5 | | 0.167 | | 0.1 | NA | 0.0 | 0.0 | | | | |
| All Vehicles | 365 | 2.1 | 365 | 2.1 | | 0.167 | | 0.7 | NA | 0.1 | 0.6 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Approach Lane Flows (veh/h)**

South: Median

| Mov. From S To Exit: | T1 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|
| Lane 1 | 4 | 4 | 0.0 | 1200 | 0.004 | 100 | NA | NA |
| Approach | 4 | 4 | 0.0 | | 0.004 | | | |

North: Racecourse

| Mov. From N To Exit: | L2 E | T1 S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 23 | - | 23 | 0.0 | 1298 | 0.018 | 100 | 0.0 | 2 |
| Lane 2 | - | 21 | 21 | 0.0 | 1202 | 0.018 | 100 | NA | NA |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Approach | 23 | 21 | 45 | 0.0 | | 0.018 | | | |
| West: Raconteur Dr | | | | | | | | | |
| Mov. From W To Exit: | L2 N | T1 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 2 | - | 2 | 0.0 | 1838 | 0.001 | 100 | 0.0 | 2 |
| Lane 2 | - | 314 | 314 | 2.5 | 1883 | 0.167 | 100 | NA | NA |
| Approach | 2 | 314 | 316 | 2.5 | | 0.167 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | |
| All Vehicles | 365 | 2.1 | | 0.167 | | | | | |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| South: Median | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| North: Racecourse | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Raconteur Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |

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# LANE SUMMARY

**Site: 103b [Leg 2 PM - No Dev (Site Folder: Raconteur T)]**

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

**Network: N101 [Raconteur Current PM (Network Folder: AM)]**

New Site
Site Category: Existing Design
Give-Way (Two-Way)
Design Life Analysis: Constant Number of Years = 12

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| East: Raconteur Dr | | | | | | | | | | | | | | | |
| Lane 1 | 417 | 3.8 | 417 | 3.8 | 1860 | 0.224 | 100 | 0.1 | LOS A | 0.0 | 0.0 | Full | 780 | 0.0 | 0.0 |
| Lane 2 | 4 | 0.0 | 4 | 0.0 | 1838 | 0.002 | 100 | 5.7 | LOS A | 0.0 | 0.0 | Short | 85 | 0.0 | NA |
| Approach | 421 | 3.7 | 421 | 3.7 | | 0.224 | | 0.2 | NA | 0.0 | 0.0 | | | | |
| North: Median | | | | | | | | | | | | | | | |
| Lane 1 | 21 | 0.0 | 21 | 0.0 | 850 | 0.025 | 100 | 2.5 | LOS A | 0.1 | 0.6 | Full | 6 | 0.0 | 0.0 |
| Approach | 21 | 0.0 | 21 | 0.0 | | 0.025 | | 2.5 | LOS A | 0.1 | 0.6 | | | | |
| All Vehicles | 443 | 3.5 | 443 | 3.5 | | 0.224 | | 0.3 | NA | 0.1 | 0.6 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Approach Lane Flows (veh/h)**

East: Raconteur Dr

| Mov. From E To Exit: | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 417 | - | 417 | 3.8 | 1860 | 0.224 | 100 | NA | NA |
| Lane 2 | - | 4 | 4 | 0.0 | 1838 | 0.002 | 100 | 0.0 | 1 |
| Approach | 417 | 4 | 421 | 3.7 | | 0.224 | | | |

North: Median

| Mov. From N To Exit: | R2 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|
| Lane 1 | 21 | 21 | 0.0 | 850 | 0.025 | 100 | NA | NA |
| Approach | 21 | 21 | 0.0 | | 0.025 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 443 | 3.5 | 0.224 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| East: Raconteur Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| North: Median | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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# LANE SUMMARY

## Site: 101 [Grandstand/Garratt/Waterway 2041 PM - with GG/ Dev (Site Folder: Grandstand/Garratt/Waterway)]

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Roundabout
Design Life Analysis: Constant Number of Years = 12

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Grandstand Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 917 | 0.9 | 917 | 0.9 | 1695 | 0.541 | 100 | 4.3 | LOS A | 5.1 | 38.1 | Full | 300 | 0.0 | 0.0 |
| Lane 2 | 772 | 0.9 | 772 | 0.9 | 1427 | 0.541 | 100 | 4.8 | LOS A | 5.0 | 36.9 | Full | 300 | 0.0 | 0.0 |
| Approach | 1689 | 0.9 | 1689 | 0.9 | | 0.541 | | 4.6 | LOS A | 5.1 | 38.1 | | | | |
| NorthEast: Racecourse | | | | | | | | | | | | | | | |
| Lane 1[d] | 74 | 1.4 | 74 | 1.4 | 710 | 0.104 | 100 | 8.0 | LOS A | 0.4 | 3.3 | Full | 500 | 0.0 | 0.0 |
| Approach | 74 | 1.4 | 74 | 1.4 | | 0.104 | | 8.0 | LOS A | 0.4 | 3.3 | | | | |
| NorthWest: Garratt Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 472 | 1.3 | 472 | 1.3 | 1686 | 0.280 | 100 | 4.2 | LOS A | 2.2 | 16.1 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 400 | 1.3 | 400 | 1.3 | 1429 | 0.280 | 100 | 4.7 | LOS A | 2.1 | 15.8 | Full | 500 | 0.0 | 0.0 |
| Approach | 872 | 1.3 | 872 | 1.3 | | 0.280 | | 4.4 | LOS A | 2.2 | 16.1 | | | | |
| SouthWest: Waterway Cres | | | | | | | | | | | | | | | |
| Lane 1[d] | 35 | 0.0 | 35 | 0.0 | 588 | 0.059 | 100 | 11.7 | LOS B | 0.4 | 2.8 | Full | 500 | 0.0 | 0.0 |
| Approach | 35 | 0.0 | 35 | 0.0 | | 0.059 | | 11.7 | LOS B | 0.4 | 2.8 | | | | |
| All Vehicles | 2669 | 1.0 | 2669 | 1.0 | | 0.541 | | 4.7 | LOS A | 5.1 | 38.1 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

SouthEast: Grandstand Road

| Mov. From SE To Exit: | L2 SW | T1 NW | R2 NE | U SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 15 | 902 | - | - | 917 | 0.9 | 1695 | 0.541 | 100 | NA | NA |
| Lane 2 | - | 722 | 48 | 1 | 772 | 0.9 | 1427 | 0.541 | 100 | NA | NA |
| Approach | 15 | 1624 | 48 | 1 | 1689 | 0.9 | | 0.541 | | | |

NorthEast: Racecourse

| Mov. From NE To Exit: | L2 SE | T1 SW | R2 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 41 | 1 | 32 | 74 | 1.4 | | 710 | 0.104 | 100 | NA | NA |
| Approach | 41 | 1 | 32 | 74 | 1.4 | | | 0.104 | | | |
| NorthWest: Garratt Road | | | | | | | | | | | |
| Mov. From NW To Exit: | L2 NE | T1 SE | R2 SW | U NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 47 | 424 | - | - | 472 | 1.3 | 1686 | 0.280 | 100 | NA | NA |
| Lane 2 | - | 365 | 32 | 3 | 400 | 1.3 | 1429 | 0.280 | 100 | NA | NA |
| Approach | 47 | 789 | 32 | 3 | 872 | 1.3 | | 0.280 | | | |
| SouthWest: Waterway Cres | | | | | | | | | | | |
| Mov. From SW To Exit: | L2 NW | T1 NE | R2 SE | Total | %HV | | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 19 | 1 | 15 | 35 | 0.0 | | 588 | 0.059 | 100 | NA | NA |
| Approach | 19 | 1 | 15 | 35 | 0.0 | | | 0.059 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | | | |
| All Vehicles | 2669 | 1.0 | 0.541 | | | | | | | | |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| SouthEast: Grandstand Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: Racecourse | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthWest: Garratt Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| SouthWest: Waterway Cres | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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Project: C:\PJA\Phil Jones Associates\SharedData - 07575 Ascot Racecourse Local Structure Plan & Scheme Amendment\4. Technical\4.3 Analysis\4.3.1 Transport\07575_M_01_A_Ascot Racecourse LSP&SA.sip9

# LANE SUMMARY

## Site: 101 [Grandstand/Garratt/Waterway Current AM (Site Folder: Grandstand/Garratt/Waterway)]

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Roundabout

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Grandstand Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 342 | 2.8 | 342 | 2.8 | 1747 | 0.196 | 100 | 4.0 | LOS A | 1.1 | 8.4 | Full | 300 | 0.0 | 0.0 |
| Lane 2 | 290 | 2.9 | 290 | 2.9 | 1483 | 0.196 | 100 | 4.2 | LOS A | 1.1 | 8.3 | Full | 300 | 0.0 | 0.0 |
| Approach | 633 | 2.8 | 633 | 2.8 | | 0.196 | | 4.1 | LOS A | 1.1 | 8.4 | | | | |
| NorthEast: Racecourse | | | | | | | | | | | | | | | |
| Lane 1[d] | 18 | 29.1 | 18 | 29.1 | 455 | 0.039 | 100 | 11.0 | LOS B | 0.1 | 1.5 | Full | 500 | 0.0 | 0.0 |
| Approach | 18 | 29.1 | 18 | 29.1 | | 0.039 | | 11.0 | LOS B | 0.1 | 1.5 | | | | |
| NorthWest: Garratt Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 589 | 1.4 | 589 | 1.4 | 1747 | 0.337 | 100 | 4.1 | LOS A | 2.8 | 20.9 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 498 | 1.4 | 498 | 1.4 | 1476 | 0.337 | 100 | 4.3 | LOS A | 2.8 | 20.6 | Full | 500 | 0.0 | 0.0 |
| Approach | 1086 | 1.4 | 1086 | 1.4 | | 0.337 | | 4.2 | LOS A | 2.8 | 20.9 | | | | |
| SouthWest: Waterway Cres | | | | | | | | | | | | | | | |
| Lane 1[d] | 53 | 4.0 | 53 | 4.0 | 866 | 0.061 | 100 | 7.4 | LOS A | 0.3 | 2.2 | Full | 500 | 0.0 | 0.0 |
| Approach | 53 | 4.0 | 53 | 4.0 | | 0.061 | | 7.4 | LOS A | 0.3 | 2.2 | | | | |
| All Vehicles | 1789 | 2.2 | 1789 | 2.2 | | 0.337 | | 4.3 | LOS A | 2.8 | 20.9 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

SouthEast: Grandstand Road

| Mov. From SE To Exit: | L2 SW | T1 NW | R2 NE | U SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 14 | 328 | - | - | 342 | 2.8 | 1747 | 0.196 | 100 | NA | NA |
| Lane 2 | - | 280 | 9 | 1 | 290 | 2.9 | 1483 | 0.196 | 100 | NA | NA |
| Approach | 14 | 608 | 9 | 1 | 633 | 2.8 | | 0.196 | | | |

NorthEast: Racecourse

| Mov. From NE To Exit: | L2 SE | T1 SW | R2 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 9 | 1 | 7 | 18 | 29.1 | 455 | 0.039 | 100 | NA | NA |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | 9 | 1 | 7 | 18 | 29.1 | | | 0.039 | | | |
| NorthWest: Garratt Road | | | | | | | | | | | |
| Mov. From NW To Exit: | L2 NE | T1 SE | R2 SW | U NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 8 | 580 | - | - | 589 | 1.4 | 1747 | 0.337 | 100 | NA | NA |
| Lane 2 | - | 481 | 16 | 1 | 498 | 1.4 | 1476 | 0.337 | 100 | NA | NA |
| Approach | 8 | 1061 | 16 | 1 | 1086 | 1.4 | | 0.337 | | | |
| SouthWest: Waterway Cres | | | | | | | | | | | |
| Mov. From SW To Exit: | L2 NW | T1 NE | R2 SE | Total | %HV | | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 25 | 1 | 26 | 53 | 4.0 | | 866 | 0.061 | 100 | NA | NA |
| Approach | 25 | 1 | 26 | 53 | 4.0 | | | 0.061 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 1789 | 2.2 | 0.337 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| SouthEast: Grandstand Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: Racecourse | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthWest: Garratt Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| SouthWest: Waterway Cres | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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# LANE SUMMARY

## Site: 101 [Grandstand/Garratt/Waterway Current PM (Site Folder: Grandstand/Garratt/Waterway)]

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Roundabout
Design Life Analysis: Constant Number of Years = 12

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Grandstand Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 956 | 1.0 | 956 | 1.0 | 1758 | 0.544 | 100 | 4.2 | LOS A | 5.1 | 37.6 | Full | 300 | 0.0 | 0.0 |
| Lane 2 | 804 | 1.0 | 804 | 1.0 | 1480 | 0.544 | 100 | 4.3 | LOS A | 5.0 | 36.9 | Full | 300 | 0.0 | 0.0 |
| Approach | 1760 | 1.0 | 1760 | 1.0 | | 0.544 | | 4.2 | LOS A | 5.1 | 37.6 | | | | |
| NorthEast: Racecourse | | | | | | | | | | | | | | | |
| Lane 1[d] | 21 | 5.0 | 21 | 5.0 | 706 | 0.030 | 100 | 7.1 | LOS A | 0.1 | 0.9 | Full | 500 | 0.0 | 0.0 |
| Approach | 21 | 5.0 | 21 | 5.0 | | 0.030 | | 7.1 | LOS A | 0.1 | 0.9 | | | | |
| NorthWest: Garratt Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 438 | 1.7 | 438 | 1.7 | 1781 | 0.246 | 100 | 4.0 | LOS A | 2.0 | 15.1 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 370 | 1.5 | 370 | 1.5 | 1506 | 0.246 | 100 | 4.5 | LOS A | 2.0 | 14.6 | Full | 500 | 0.0 | 0.0 |
| Approach | 808 | 1.6 | 808 | 1.6 | | 0.246 | | 4.2 | LOS A | 2.0 | 15.1 | | | | |
| SouthWest: Waterway Cres | | | | | | | | | | | | | | | |
| Lane 1[d] | 35 | 0.0 | 35 | 0.0 | 610 | 0.057 | 100 | 12.7 | LOS B | 0.4 | 3.1 | Full | 500 | 0.0 | 0.0 |
| Approach | 35 | 0.0 | 35 | 0.0 | | 0.057 | | 12.7 | LOS B | 0.4 | 3.1 | | | | |
| All Vehicles | 2624 | 1.2 | 2624 | 1.2 | | 0.544 | | 4.4 | LOS A | 5.1 | 37.6 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

SouthEast: Grandstand Road

| Mov. From SE To Exit: | L2 SW | T1 NW | R2 NE | U SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 15 | 941 | - | - | 956 | 1.0 | 1758 | 0.544 | 100 | NA | NA |
| Lane 2 | - | 799 | 4 | 1 | 804 | 1.0 | 1480 | 0.544 | 100 | NA | NA |
| Approach | 15 | 1740 | 4 | 1 | 1760 | 1.0 | | 0.544 | | | |

NorthEast: Racecourse

| Mov. From NE To Exit: | L2 SE | T1 SW | R2 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 15 | 1 | 5 | 21 | 5.0 | | 706 | 0.030 | 100 | NA | NA |
| Approach | 15 | 1 | 5 | 21 | 5.0 | | | 0.030 | | | |
| NorthWest: Garratt Road | | | | | | | | | | | |
| Mov. From NW To Exit: | L2 NE | T1 SE | R2 SW | U NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 3 | 435 | - | - | 438 | 1.7 | 1781 | 0.246 | 100 | NA | NA |
| Lane 2 | - | 335 | 32 | 4 | 370 | 1.5 | 1506 | 0.246 | 100 | NA | NA |
| Approach | 3 | 769 | 32 | 4 | 808 | 1.6 | | 0.246 | | | |
| SouthWest: Waterway Cres | | | | | | | | | | | |
| Mov. From SW To Exit: | L2 NW | T1 NE | R2 SE | Total | %HV | | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 19 | 1 | 15 | 35 | 0.0 | | 610 | 0.057 | 100 | NA | NA |
| Approach | 19 | 1 | 15 | 35 | 0.0 | | | 0.057 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 2624 | 1.2 | 0.544 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| SouthEast: Grandstand Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: Racecourse | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthWest: Garratt Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| SouthWest: Waterway Cres | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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# LANE SUMMARY

## Site: 101 [Grandstand/Garratt/Waterway 2041 AM (Site Folder: Grandstand/Garratt/Waterway)]

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Roundabout
Design Life Analysis: Constant Number of Years = 24

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Grandstand Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 384 | 2.8 | 384 | 2.8 | 1751 | 0.220 | 100 | 4.0 | LOS A | 1.3 | 9.8 | Full | 300 | 0.0 | 0.0 |
| Lane 2 | 326 | 2.8 | 326 | 2.8 | 1484 | 0.220 | 100 | 4.2 | LOS A | 1.3 | 9.6 | Full | 300 | 0.0 | 0.0 |
| Approach | 710 | 2.8 | 710 | 2.8 | | 0.220 | | 4.1 | LOS A | 1.3 | 9.8 | | | | |
| NorthEast: Racecourse | | | | | | | | | | | | | | | |
| Lane 1[d] | 18 | 29.1 | 18 | 29.1 | 421 | 0.042 | 100 | 11.7 | LOS B | 0.2 | 1.6 | Full | 500 | 0.0 | 0.0 |
| Approach | 18 | 29.1 | 18 | 29.1 | | 0.042 | | 11.7 | LOS B | 0.2 | 1.6 | | | | |
| NorthWest: Garratt Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 662 | 1.4 | 662 | 1.4 | 1750 | 0.379 | 100 | 4.1 | LOS A | 3.3 | 24.8 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 559 | 1.4 | 559 | 1.4 | 1477 | 0.379 | 100 | 4.3 | LOS A | 3.3 | 24.5 | Full | 500 | 0.0 | 0.0 |
| Approach | 1221 | 1.4 | 1221 | 1.4 | | 0.379 | | 4.2 | LOS A | 3.3 | 24.8 | | | | |
| SouthWest: Waterway Cres | | | | | | | | | | | | | | | |
| Lane 1[d] | 53 | 4.0 | 53 | 4.0 | 839 | 0.063 | 100 | 7.6 | LOS A | 0.3 | 2.2 | Full | 500 | 0.0 | 0.0 |
| Approach | 53 | 4.0 | 53 | 4.0 | | 0.063 | | 7.6 | LOS A | 0.3 | 2.2 | | | | |
| All Vehicles | 2002 | 2.2 | 2002 | 2.2 | | 0.379 | | 4.3 | LOS A | 3.3 | 24.8 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

SouthEast: Grandstand Road

| Mov. From SE To Exit: | L2 SW | T1 NW | R2 NE | U SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 14 | 371 | - | - | 384 | 2.8 | 1751 | 0.220 | 100 | NA | NA |
| Lane 2 | - | 315 | 9 | 1 | 326 | 2.8 | 1484 | 0.220 | 100 | NA | NA |
| Approach | 14 | 686 | 9 | 1 | 710 | 2.8 | | 0.220 | | | |

NorthEast: Racecourse

| Mov. From NE To Exit: | L2 SE | T1 SW | R2 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 9 | 1 | 7 | 18 | 29.1 | | 421 | 0.042 | 100 | NA | NA |
| Approach | 9 | 1 | 7 | 18 | 29.1 | | | 0.042 | | | |
| NorthWest: Garratt Road | | | | | | | | | | | |
| Mov. From NW To Exit: | L2 NE | T1 SE | R2 SW | U NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 8 | 654 | - | - | 662 | 1.4 | 1750 | 0.379 | 100 | NA | NA |
| Lane 2 | - | 542 | 16 | 1 | 559 | 1.4 | 1477 | 0.379 | 100 | NA | NA |
| Approach | 8 | 1196 | 16 | 1 | 1221 | 1.4 | | 0.379 | | | |
| SouthWest: Waterway Cres | | | | | | | | | | | |
| Mov. From SW To Exit: | L2 NW | T1 NE | R2 SE | Total | %HV | | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 25 | 1 | 26 | 53 | 4.0 | | 839 | 0.063 | 100 | NA | NA |
| Approach | 25 | 1 | 26 | 53 | 4.0 | | | 0.063 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | | | |
| All Vehicles | 2002 | 2.2 | 0.379 | | | | | | | | |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| SouthEast: Grandstand Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: Racecourse | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthWest: Garratt Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| SouthWest: Waterway Cres | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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# LANE SUMMARY

## Site: 101 [Grandstand/Garratt/Waterway 2041 PM (Site Folder: Grandstand/Garratt/Waterway)]

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Roundabout
Design Life Analysis: Constant Number of Years = 24

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Grandstand Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 880 | 1.0 | 880 | 1.0 | 1756 | 0.501 | 100 | 4.1 | LOS A | 4.3 | 31.9 | Full | 300 | 0.0 | 0.0 |
| Lane 2 | 742 | 1.0 | 742 | 1.0 | 1479 | 0.501 | 100 | 4.3 | LOS A | 4.2 | 31.4 | Full | 300 | 0.0 | 0.0 |
| Approach | 1622 | 1.0 | 1622 | 1.0 | | 0.501 | | 4.2 | LOS A | 4.3 | 31.9 | | | | |
| NorthEast: Racecourse | | | | | | | | | | | | | | | |
| Lane 1[d] | 21 | 5.0 | 21 | 5.0 | 729 | 0.029 | 100 | 6.9 | LOS A | 0.1 | 0.9 | Full | 500 | 0.0 | 0.0 |
| Approach | 21 | 5.0 | 21 | 5.0 | | 0.029 | | 6.9 | LOS A | 0.1 | 0.9 | | | | |
| NorthWest: Garratt Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 404 | 1.7 | 404 | 1.7 | 1779 | 0.227 | 100 | 4.0 | LOS A | 1.8 | 13.5 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 342 | 1.5 | 342 | 1.5 | 1506 | 0.227 | 100 | 4.5 | LOS A | 1.8 | 13.1 | Full | 500 | 0.0 | 0.0 |
| Approach | 747 | 1.6 | 747 | 1.6 | | 0.227 | | 4.2 | LOS A | 1.8 | 13.5 | | | | |
| SouthWest: Waterway Cres | | | | | | | | | | | | | | | |
| Lane 1[d] | 35 | 0.0 | 35 | 0.0 | 643 | 0.054 | 100 | 11.3 | LOS B | 0.4 | 2.6 | Full | 500 | 0.0 | 0.0 |
| Approach | 35 | 0.0 | 35 | 0.0 | | 0.054 | | 11.3 | LOS B | 0.4 | 2.6 | | | | |
| All Vehicles | 2424 | 1.2 | 2424 | 1.2 | | 0.501 | | 4.3 | LOS A | 4.3 | 31.9 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

SouthEast: Grandstand Road

| Mov. From SE To Exit: | L2 SW | T1 NW | R2 NE | U SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 15 | 866 | - | - | 880 | 1.0 | 1756 | 0.501 | 100 | NA | NA |
| Lane 2 | - | 736 | 4 | 1 | 742 | 1.0 | 1479 | 0.501 | 100 | NA | NA |
| Approach | 15 | 1602 | 4 | 1 | 1622 | 1.0 | | 0.501 | | | |

NorthEast: Racecourse

| Mov. From NE To Exit: | L2 SE | T1 SW | R2 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 15 | 1 | 5 | 21 | 5.0 | | 729 | 0.029 | 100 | NA | NA |
| Approach | 15 | 1 | 5 | 21 | 5.0 | | | 0.029 | | | |
| NorthWest: Garratt Road | | | | | | | | | | | |
| Mov. From NW To Exit: | L2 NE | T1 SE | R2 SW | U NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 3 | 401 | - | - | 404 | 1.7 | 1779 | 0.227 | 100 | NA | NA |
| Lane 2 | - | 307 | 32 | 4 | 342 | 1.5 | 1506 | 0.227 | 100 | NA | NA |
| Approach | 3 | 708 | 32 | 4 | 747 | 1.6 | | 0.227 | | | |
| SouthWest: Waterway Cres | | | | | | | | | | | |
| Mov. From SW To Exit: | L2 NW | T1 NE | R2 SE | Total | %HV | | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 19 | 1 | 15 | 35 | 0.0 | | 643 | 0.054 | 100 | NA | NA |
| Approach | 19 | 1 | 15 | 35 | 0.0 | | | 0.054 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 2424 | 1.2 | 0.501 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| SouthEast: Grandstand Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: Racecourse | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthWest: Garratt Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| SouthWest: Waterway Cres | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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Project: C:\PJA\Phil Jones Associates\SharedData - 07575 Ascot Racecourse Local Structure Plan & Scheme Amendment\4. Technical\4.3 Analysis\4.3.1 Transport\07575_M_01_A_Ascot Racecourse LSP&SA.sip9

# LANE SUMMARY

## Site: 101 [Grandstand/Garratt/Waterway 2041 AM - with GG/ Dev (Site Folder: Grandstand/Garratt/Waterway)]

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Roundabout
Design Life Analysis: Constant Number of Years = 24

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Grandstand Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 479 | 2.3 | 479 | 2.3 | 1626 | 0.295 | 100 | 4.3 | LOS A | 2.0 | 15.4 | Full | 300 | 0.0 | 0.0 |
| Lane 2 | 407 | 2.2 | 407 | 2.2 | 1379 | 0.295 | 100 | 4.8 | LOS A | 2.0 | 14.9 | Full | 300 | 0.0 | 0.0 |
| Approach | 886 | 2.2 | 886 | 2.2 | | 0.295 | | 4.5 | LOS A | 2.0 | 15.4 | | | | |
| NorthEast: Racecourse | | | | | | | | | | | | | | | |
| Lane 1[d] | 125 | 4.2 | 125 | 4.2 | 556 | 0.225 | 100 | 10.5 | LOS B | 1.0 | 7.6 | Full | 500 | 0.0 | 0.0 |
| Approach | 125 | 4.2 | 125 | 4.2 | | 0.225 | | 10.5 | LOS B | 1.0 | 7.6 | | | | |
| NorthWest: Garratt Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 683 | 1.3 | 683 | 1.3 | 1713 | 0.399 | 100 | 4.2 | LOS A | 3.5 | 26.4 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 577 | 1.3 | 577 | 1.3 | 1446 | 0.399 | 100 | 4.4 | LOS A | 3.5 | 26.0 | Full | 500 | 0.0 | 0.0 |
| Approach | 1260 | 1.3 | 1260 | 1.3 | | 0.399 | | 4.3 | LOS A | 3.5 | 26.4 | | | | |
| SouthWest: Waterway Cres | | | | | | | | | | | | | | | |
| Lane 1[d] | 53 | 4.0 | 53 | 4.0 | 741 | 0.071 | 100 | 8.4 | LOS A | 0.3 | 2.6 | Full | 500 | 0.0 | 0.0 |
| Approach | 53 | 4.0 | 53 | 4.0 | | 0.071 | | 8.4 | LOS A | 0.3 | 2.6 | | | | |
| All Vehicles | 2324 | 1.9 | 2324 | 1.9 | | 0.399 | | 4.8 | LOS A | 3.5 | 26.4 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

SouthEast: Grandstand Road

| Mov. From SE To Exit: | L2 SW | T1 NW | R2 NE | U SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 14 | 466 | - | - | 479 | 2.3 | 1626 | 0.295 | 100 | NA | NA |
| Lane 2 | - | 378 | 27 | 1 | 407 | 2.2 | 1379 | 0.295 | 100 | NA | NA |
| Approach | 14 | 844 | 27 | 1 | 886 | 2.2 | | 0.295 | | | |

NorthEast: Racecourse

| Mov. From NE To Exit: | L2 SE | T1 SW | R2 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 63 | 1 | 61 | 125 | 4.2 | | 556 | 0.225 | 100 | NA | NA |
| Approach | 63 | 1 | 61 | 125 | 4.2 | | | 0.225 | | | |
| NorthWest: Garratt Road | | | | | | | | | | | |
| Mov. From NW To Exit: | L2 NE | T1 SE | R2 SW | U NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 26 | 657 | - | - | 683 | 1.3 | 1713 | 0.399 | 100 | NA | NA |
| Lane 2 | - | 560 | 16 | 1 | 577 | 1.3 | 1446 | 0.399 | 100 | NA | NA |
| Approach | 26 | 1217 | 16 | 1 | 1260 | 1.3 | | 0.399 | | | |
| SouthWest: Waterway Cres | | | | | | | | | | | |
| Mov. From SW To Exit: | L2 NW | T1 NE | R2 SE | Total | %HV | | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 25 | 1 | 26 | 53 | 4.0 | | 741 | 0.071 | 100 | NA | NA |
| Approach | 25 | 1 | 26 | 53 | 4.0 | | | 0.071 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | | | |
| All Vehicles | 2324 | 1.9 | 0.399 | | | | | | | | |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| SouthEast: Grandstand Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: Racecourse | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthWest: Garratt Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| SouthWest: Waterway Cres | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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# LANE SUMMARY

## Site: 101 [Grandstand/Resolution/Stoneham Current AM (Site Folder: Grandstand/Raconteur/Stoneham)]

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Roundabout
Design Life Analysis: Constant Number of Years = 7

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Stoneham St | | | | | | | | | | | | | | | |
| Lane 1[d] | 234 | 2.8 | 234 | 2.8 | 1458 | 0.160 | 100 | 4.3 | LOS A | 1.0 | 7.3 | Full | 300 | 0.0 | 0.0 |
| Lane 2 | 187 | 3.0 | 187 | 3.0 | 1167 | 0.160 | 100 | 5.2 | LOS A | 0.9 | 6.9 | Full | 300 | 0.0 | 0.0 |
| Approach | 421 | 2.9 | 421 | 2.9 | | 0.160 | | 4.7 | LOS A | 1.0 | 7.3 | | | | |
| East: Resolution Dr | | | | | | | | | | | | | | | |
| Lane 1[d] | 271 | 2.9 | 271 | 2.9 | 773 | 0.351 | 100 | 10.2 | LOS B | 1.8 | 14.0 | Full | 500 | 0.0 | 0.0 |
| Approach | 271 | 2.9 | 271 | 2.9 | | 0.351 | | 10.2 | LOS B | 1.8 | 14.0 | | | | |
| North: Grandstand Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 580 | 3.0 | 580 | 3.0 | 1649 | 0.352 | 100 | 4.0 | LOS A | 2.9 | 22.1 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 479 | 3.0 | 479 | 3.0 | 1361 | 0.352 | 100 | 4.2 | LOS A | 2.8 | 21.5 | Full | 500 | 0.0 | 0.0 |
| Approach | 1059 | 3.0 | 1059 | 3.0 | | 0.352 | | 4.1 | LOS A | 2.9 | 22.1 | | | | |
| West: Resolution Dr | | | | | | | | | | | | | | | |
| Lane 1[d] | 99 | 1.0 | 99 | 1.0 | 864 | 0.115 | 100 | 7.3 | LOS A | 0.6 | 4.1 | Full | 500 | 0.0 | 0.0 |
| Approach | 99 | 1.0 | 99 | 1.0 | | 0.115 | | 7.3 | LOS A | 0.6 | 4.1 | | | | |
| All Vehicles | 1850 | 2.8 | 1850 | 2.8 | | 0.352 | | 5.3 | LOS A | 2.9 | 22.1 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

South: Stoneham St

| Mov. From S To Exit: | L2 W | T1 N | R2 E | U S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 28 | 205 | - | - | 234 | 2.8 | 1458 | 0.160 | 100 | NA | NA |
| Lane 2 | - | 172 | 13 | 2 | 187 | 3.0 | 1167 | 0.160 | 100 | NA | NA |
| Approach | 28 | 377 | 13 | 2 | 421 | 2.9 | | 0.160 | | | |

East: Resolution Dr

| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 38 | 16 | 217 | 271 | 2.9 | | 773 | 0.351 | 100 | NA | NA |
| Approach | 38 | 16 | 217 | 271 | 2.9 | | | 0.351 | | | |
| North: Grandstand Road | | | | | | | | | | | |
| Mov. From N To Exit: | L2 E | T1 S | R2 W | U N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 297 | 283 | - | - | 580 | 3.0 | 1649 | 0.352 | 100 | NA | NA |
| Lane 2 | - | 469 | 5 | 4 | 479 | 3.0 | 1361 | 0.352 | 100 | NA | NA |
| Approach | 297 | 752 | 5 | 4 | 1059 | 3.0 | | 0.352 | | | |
| West: Resolution Dr | | | | | | | | | | | |
| Mov. From W To Exit: | L2 N | T1 E | R2 S | Total | %HV | | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 5 | 42 | 51 | 99 | 1.0 | | 864 | 0.115 | 100 | NA | NA |
| Approach | 5 | 42 | 51 | 99 | 1.0 | | | 0.115 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 1850 | 2.8 | 0.352 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| South: Stoneham St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| East: Resolution Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| North: Grandstand Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Resolution Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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# LANE SUMMARY

## Site: 101 [Grandstand/Resolution/Stoneham Current PM (Site Folder: Grandstand/Raconteur/Stoneham)]

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Roundabout
Design Life Analysis: Constant Number of Years = 19

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Stoneham St | | | | | | | | | | | | | | | |
| Lane 1[d] | 751 | 2.8 | 751 | 2.8 | 1084 | 0.693 | 100 | 9.7 | LOS A | 9.0 | 68.1 | Full | 300 | 0.0 | 0.0 |
| Lane 2 | 561 | 3.0 | 561 | 3.0 | 810 | 0.693 | 100 | 12.2 | LOS B | 8.0 | 60.7 | Full | 300 | 0.0 | 0.0 |
| Approach | 1312 | 2.9 | 1312 | 2.9 | | 0.693 | | 10.8 | LOS B | 9.0 | 68.1 | | | | |
| East: Resolution Dr | | | | | | | | | | | | | | | |
| Lane 1[d] | 618 | 2.9 | 618 | 2.9 | 763 | 0.810 | 100 | 17.2 | LOS B | 7.7 | 58.7 | Full | 500 | 0.0 | 0.0 |
| Approach | 618 | 2.9 | 618 | 2.9 | | 0.810 | | 17.2 | LOS B | 7.7 | 58.7 | | | | |
| North: Grandstand Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 581 | 3.0 | 581 | 3.0 | 1677 | 0.346 | 100 | 3.8 | LOS A | 3.0 | 23.1 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 481 | 3.0 | 481 | 3.0 | 1388 | 0.346 | 100 | 4.1 | LOS A | 2.9 | 22.3 | Full | 500 | 0.0 | 0.0 |
| Approach | 1062 | 3.0 | 1062 | 3.0 | | 0.346 | | 3.9 | LOS A | 3.0 | 23.1 | | | | |
| West: Resolution Dr | | | | | | | | | | | | | | | |
| Lane 1[d] | 75 | 1.0 | 75 | 1.0 | 404 | 0.186 | 100 | 13.9 | LOS B | 1.1 | 8.3 | Full | 500 | 0.0 | 0.0 |
| Approach | 75 | 1.0 | 75 | 1.0 | | 0.186 | | 13.9 | LOS B | 1.1 | 8.3 | | | | |
| All Vehicles | 3066 | 2.9 | 3066 | 2.9 | | 0.810 | | 9.8 | LOS A | 9.0 | 68.1 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

South: Stoneham St

| Mov. From S To Exit: | L2 W | T1 N | R2 E | U S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 71 | 680 | - | - | 751 | 2.8 | 1084 | 0.693 | 100 | NA | NA |
| Lane 2 | - | 543 | 16 | 1 | 561 | 3.0 | 810 | 0.693 | 100 | NA | NA |
| Approach | 71 | 1223 | 16 | 1 | 1312 | 2.9 | | 0.693 | | | |

East: Resolution Dr

| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 60 | 28 | 530 | 618 | 2.9 | | 763 | 0.810 | 100 | NA | NA |
| Approach | 60 | 28 | 530 | 618 | 2.9 | | | 0.810 | | | |
| North: Grandstand Road | | | | | | | | | | | |
| Mov. From N To Exit: | L2 E | T1 S | R2 W | U N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 255 | 326 | - | - | 581 | 3.0 | 1677 | 0.346 | 100 | NA | NA |
| Lane 2 | - | 469 | 6 | 6 | 481 | 3.0 | 1388 | 0.346 | 100 | NA | NA |
| Approach | 255 | 795 | 6 | 6 | 1062 | 3.0 | | 0.346 | | | |
| West: Resolution Dr | | | | | | | | | | | |
| Mov. From W To Exit: | L2 N | T1 E | R2 S | Total | %HV | | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 7 | 29 | 39 | 75 | 1.0 | | 404 | 0.186 | 100 | NA | NA |
| Approach | 7 | 29 | 39 | 75 | 1.0 | | | 0.186 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 3066 | 2.9 | 0.810 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| South: Stoneham St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| East: Resolution Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| North: Grandstand Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Resolution Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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Project: C:\PJA\Phil Jones Associates\SharedData - 07575 Ascot Racecourse Local Structure Plan & Scheme Amendment\4. Technical\4.3 Analysis\4.3.1 Transport\07575_M_01_A_Ascot Racecourse LSP&SA.sip9

# LANE SUMMARY

## Site: 101 [Grandstand/Resolution/Stoneham 2036 AM - No Change (Site Folder: Grandstand/Raconteur/Stoneham)]

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Roundabout
Design Life Analysis: Constant Number of Years = 19

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Stoneham St | | | | | | | | | | | | | | | |
| Lane 1[d] | 247 | 2.8 | 247 | 2.8 | 1440 | 0.172 | 100 | 4.4 | LOS A | 1.1 | 8.0 | Full | 300 | 0.0 | 0.0 |
| Lane 2 | 197 | 3.0 | 197 | 3.0 | 1149 | 0.172 | 100 | 5.3 | LOS A | 1.0 | 7.5 | Full | 300 | 0.0 | 0.0 |
| Approach | 445 | 2.9 | 445 | 2.9 | | 0.172 | | 4.8 | LOS A | 1.1 | 8.0 | | | | |
| East: Resolution Dr | | | | | | | | | | | | | | | |
| Lane 1[d] | 287 | 2.9 | 287 | 2.9 | 751 | 0.382 | 100 | 10.7 | LOS B | 2.1 | 16.1 | Full | 500 | 0.0 | 0.0 |
| Approach | 287 | 2.9 | 287 | 2.9 | | 0.382 | | 10.7 | LOS B | 2.1 | 16.1 | | | | |
| North: Grandstand Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 614 | 3.0 | 614 | 3.0 | 1640 | 0.375 | 100 | 4.0 | LOS A | 3.2 | 24.2 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 506 | 3.0 | 506 | 3.0 | 1351 | 0.375 | 100 | 4.3 | LOS A | 3.1 | 23.4 | Full | 500 | 0.0 | 0.0 |
| Approach | 1120 | 3.0 | 1120 | 3.0 | | 0.375 | | 4.1 | LOS A | 3.2 | 24.2 | | | | |
| West: Resolution Dr | | | | | | | | | | | | | | | |
| Lane 1[d] | 105 | 1.0 | 105 | 1.0 | 846 | 0.124 | 100 | 7.5 | LOS A | 0.6 | 4.5 | Full | 500 | 0.0 | 0.0 |
| Approach | 105 | 1.0 | 105 | 1.0 | | 0.124 | | 7.5 | LOS A | 0.6 | 4.5 | | | | |
| All Vehicles | 1957 | 2.8 | 1957 | 2.8 | | 0.382 | | 5.4 | LOS A | 3.2 | 24.2 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

South: Stoneham St

| Mov. From S To Exit: | L2 W | T1 N | R2 E | U S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 30 | 218 | - | - | 247 | 2.8 | 1440 | 0.172 | 100 | NA | NA |
| Lane 2 | - | 181 | 14 | 2 | 197 | 3.0 | 1149 | 0.172 | 100 | NA | NA |
| Approach | 30 | 399 | 14 | 2 | 445 | 2.9 | | 0.172 | | | |

East: Resolution Dr

| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 40 | 17 | 229 | 287 | 2.9 | | 751 | 0.382 | 100 | NA | NA |
| Approach | 40 | 17 | 229 | 287 | 2.9 | | | 0.382 | | | |
| North: Grandstand Road | | | | | | | | | | | |
| Mov. From N To Exit: | L2 E | T1 S | R2 W | U N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 315 | 300 | - | - | 614 | 3.0 | 1640 | 0.375 | 100 | NA | NA |
| Lane 2 | - | 496 | 6 | 5 | 506 | 3.0 | 1351 | 0.375 | 100 | NA | NA |
| Approach | 315 | 795 | 6 | 5 | 1120 | 3.0 | | 0.375 | | | |
| West: Resolution Dr | | | | | | | | | | | |
| Mov. From W To Exit: | L2 N | T1 E | R2 S | Total | %HV | | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 6 | 45 | 54 | 105 | 1.0 | | 846 | 0.124 | 100 | NA | NA |
| Approach | 6 | 45 | 54 | 105 | 1.0 | | | 0.124 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | | | |
| All Vehicles | 1957 | 2.8 | 0.382 | | | | | | | | |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| South: Stoneham St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| East: Resolution Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| North: Grandstand Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Resolution Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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# LANE SUMMARY

## Site: 101 [Grandstand/Resolution/Stoneham 2036 PM - No Change (Site Folder: Grandstand/Raconteur/Stoneham)]

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Roundabout
Design Life Analysis: Constant Number of Years = 24

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Stoneham St | | | | | | | | | | | | | | | |
| Lane 1[d] | 776 | 2.8 | 776 | 2.8 | 1037 | 0.749 | 100 | 11.2 | LOS B | 10.5 | 79.9 | Full | 300 | 0.0 | 0.0 |
| Lane 2 | 574 | 3.0 | 574 | 3.0 | 767 | 0.749 | 100 | 14.1 | LOS B | 9.2 | 70.1 | Full | 300 | 0.0 | 0.0 |
| Approach | 1350 | 2.9 | 1350 | 2.9 | | 0.749 | | 12.4 | LOS B | 10.5 | 79.9 | | | | |
| East: Resolution Dr | | | | | | | | | | | | | | | |
| Lane 1[d] | 636 | 2.9 | 636 | 2.9 | 752 | 0.846 | 100 | 20.7 | LOS C | 10.5 | 79.7 | Full | 500 | 0.0 | 0.0 |
| Approach | 636 | 2.9 | 636 | 2.9 | | 0.846 | | 20.7 | LOS C | 10.5 | 79.7 | | | | |
| North: Grandstand Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 598 | 3.0 | 598 | 3.0 | 1673 | 0.358 | 100 | 3.8 | LOS A | 3.2 | 24.1 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 495 | 3.0 | 495 | 3.0 | 1384 | 0.358 | 100 | 4.1 | LOS A | 3.1 | 23.2 | Full | 500 | 0.0 | 0.0 |
| Approach | 1093 | 3.0 | 1093 | 3.0 | | 0.358 | | 4.0 | LOS A | 3.2 | 24.1 | | | | |
| West: Resolution Dr | | | | | | | | | | | | | | | |
| Lane 1[d] | 77 | 1.0 | 77 | 1.0 | 371 | 0.208 | 100 | 14.3 | LOS B | 1.2 | 8.9 | Full | 500 | 0.0 | 0.0 |
| Approach | 77 | 1.0 | 77 | 1.0 | | 0.208 | | 14.3 | LOS B | 1.2 | 8.9 | | | | |
| All Vehicles | 3156 | 2.9 | 3156 | 2.9 | | 0.846 | | 11.2 | LOS B | 10.5 | 79.9 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

South: Stoneham St

| Mov. From S To Exit: | L2 W | T1 N | R2 E | U S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 74 | 703 | - | - | 776 | 2.8 | 1037 | 0.749 | 100 | NA | NA |
| Lane 2 | - | 556 | 17 | 1 | 574 | 3.0 | 767 | 0.749 | 100 | NA | NA |
| Approach | 74 | 1259 | 17 | 1 | 1350 | 2.9 | | 0.749 | | | |

East: Resolution Dr

| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 62 | 28 | 546 | 636 | 2.9 | | 752 | 0.846 | 100 | NA | NA |
| Approach | 62 | 28 | 546 | 636 | 2.9 | | | 0.846 | | | |
| North: Grandstand Road | | | | | | | | | | | |
| Mov. From N To Exit: | L2 E | T1 S | R2 W | U N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 262 | 336 | - | - | 598 | 3.0 | 1673 | 0.358 | 100 | NA | NA |
| Lane 2 | - | 483 | 6 | 6 | 495 | 3.0 | 1384 | 0.358 | 100 | NA | NA |
| Approach | 262 | 819 | 6 | 6 | 1093 | 3.0 | | 0.358 | | | |
| West: Resolution Dr | | | | | | | | | | | |
| Mov. From W To Exit: | L2 N | T1 E | R2 S | Total | %HV | | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 7 | 30 | 40 | 77 | 1.0 | | 371 | 0.208 | 100 | NA | NA |
| Approach | 7 | 30 | 40 | 77 | 1.0 | | | 0.208 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | | | |
| All Vehicles | 3156 | 2.9 | 0.846 | | | | | | | | |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| South: Stoneham St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| East: Resolution Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| North: Grandstand Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Resolution Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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# LANE SUMMARY

## Site: 101 [Grandstand/Resolution/Stoneham 2036 PM - NO GG & Ascott (Site Folder: Grandstand/Raconteur/Stoneham)]

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Roundabout
Design Life Analysis: Constant Number of Years = 19

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Stoneham St | | | | | | | | | | | | | | | |
| Lane 1[d] | 821 | 2.7 | 821 | 2.7 | 963 | 0.852 | 100 | 20.8 | LOS C | 17.9 | 135.6 | Full | 300 | 0.0 | 0.0 |
| Lane 2 | 590 | 2.7 | 590 | 2.7 | 692 | 0.852 | 100 | 26.1 | LOS C | 14.9 | 112.5 | Full | 300 | 0.0 | 0.0 |
| Approach | 1411 | 2.7 | 1411 | 2.7 | | 0.852 | | 23.0 | LOS C | 17.9 | 135.6 | | | | |
| East: Resolution Dr | | | | | | | | | | | | | | | |
| Lane 1[d] | 741 | 2.4 | 741 | 2.4 | 866 | 0.855 | 100 | 17.2 | LOS B | 10.5 | 79.1 | Full | 500 | 0.0 | 0.0 |
| Approach | 741 | 2.4 | 741 | 2.4 | | 0.855 | | 17.2 | LOS B | 10.5 | 79.1 | | | | |
| North: Grandstand Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 444 | 3.0 | 444 | 3.0 | 1615 | 0.275 | 100 | 3.9 | LOS A | 2.1 | 15.9 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 363 | 2.3 | 363 | 2.3 | 1321 | 0.275 | 100 | 5.9 | LOS A | 2.0 | 15.2 | Full | 500 | 0.0 | 0.0 |
| Approach | 807 | 2.7 | 807 | 2.7 | | 0.275 | | 4.8 | LOS A | 2.1 | 15.9 | | | | |
| West: Resolution Dr | | | | | | | | | | | | | | | |
| Lane 1[d] | 85 | 0.9 | 85 | 0.9 | 306 | 0.277 | 100 | 18.2 | LOS B | 1.7 | 12.7 | Full | 500 | 0.0 | 0.0 |
| Approach | 85 | 0.9 | 85 | 0.9 | | 0.277 | | 18.2 | LOS B | 1.7 | 12.7 | | | | |
| All Vehicles | 3043 | 2.6 | 3043 | 2.6 | | 0.855 | | 16.6 | LOS B | 17.9 | 135.6 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

South: Stoneham St

| Mov. From S To Exit: | L2 W | T1 N | R2 E | U S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 72 | 749 | - | - | 821 | 2.7 | 963 | 0.852 | 100 | NA | NA |
| Lane 2 | - | 524 | 65 | 1 | 590 | 2.7 | 692 | 0.852 | 100 | NA | NA |
| Approach | 72 | 1273 | 65 | 1 | 1411 | 2.7 | | 0.852 | | | |

East: Resolution Dr

| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 95 | 28 | 618 | 741 | 2.4 | | 866 | 0.855 | 100 | NA | NA |
| Approach | 95 | 28 | 618 | 741 | 2.4 | | | 0.855 | | | |
| North: Grandstand Road | | | | | | | | | | | |
| Mov. From N To Exit: | L2 E | T1 S | R2 W | U N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 251 | 193 | - | - | 444 | 3.0 | 1615 | 0.275 | 100 | NA | NA |
| Lane 2 | - | 282 | 6 | 75 | 363 | 2.3 | 1321 | 0.275 | 100 | NA | NA |
| Approach | 251 | 474 | 6 | 75 | 807 | 2.7 | | 0.275 | | | |
| West: Resolution Dr | | | | | | | | | | | |
| Mov. From W To Exit: | L2 N | T1 E | R2 S | Total | %HV | | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 7 | 29 | 49 | 85 | 0.9 | | 306 | 0.277 | 100 | NA | NA |
| Approach | 7 | 29 | 49 | 85 | 0.9 | | | 0.277 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | | | |
| All Vehicles | 3043 | 2.6 | 0.855 | | | | | | | | |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| South: Stoneham St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| East: Resolution Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| North: Grandstand Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Resolution Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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# LANE SUMMARY

## Site: 103av [TCS PM - Current (Site Folder: GEH/Resolution)]

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated  Cycle Time = 180 seconds (Site Optimum Cycle Time - Minimum Delay)

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Hardey Rd | | | | | | | | | | | | | | | |
| Lane 1 | 121 | 5.8 | 121 | 5.8 | 307 | 0.393 | 87[6] | 75.6 | LOS E | 9.4 | 73.9 | Short | 60 | 0.0 | NA |
| Lane 2 | 144 | 5.8 | 144 | 5.8 | 319 | 0.452 | 100 | 72.1 | LOS E | 11.4 | 89.1 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 158 | 5.8 | 158 | 5.8 | 303 | 0.522 | 100 | 78.9 | LOS E | 12.7 | 99.1 | Short | 60 | 0.0 | NA |
| Approach | 423 | 5.8 | 423 | 5.8 | | 0.522 | | 75.6 | LOS E | 12.7 | 99.1 | | | | |
| NorthEast: GEH | | | | | | | | | | | | | | | |
| Lane 1 | 117 | 5.8 | 117 | 5.8 | 1329 | 0.088 | 12[5] | 18.9 | LOS B | 2.3 | 17.7 | Short | 120 | 0.0 | NA |
| Lane 2 | 579 | 6.3 | 579 | 6.3 | 771[1] | 0.750 | 100 | 39.1 | LOS D | 36.0 | 283.5 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 614 | 6.3 | 614 | 6.3 | 818 | 0.750 | 100 | 31.0 | LOS C | 38.8 | 305.7 | Full | 500 | 0.0 | 0.0 |
| Lane 4 | 561 | 6.3 | 561 | 6.3 | 748[1] | 0.750 | 100 | 36.3 | LOS D | 34.6 | 272.4 | Full | 500 | 0.0 | 0.0 |
| Lane 5 | 308 | 5.8 | 308 | 5.8 | 342 | 0.903 | 100 | 101.5 | LOS F | 29.6 | 231.4 | Short | 125 | 0.0 | NA |
| Approach | 2179 | 6.2 | 2179 | 6.2 | | 0.903 | | 43.8 | LOS D | 38.8 | 305.7 | | | | |
| NorthWest: Resolution Dr | | | | | | | | | | | | | | | |
| Lane 1 | 157 | 5.8 | 157 | 5.8 | 742 | 0.211 | 100 | 23.7 | LOS C | 6.4 | 50.1 | Short | 90 | 0.0 | NA |
| Lane 2 | 37 | 5.8 | 37 | 5.8 | 103 | 0.362 | 39[6] | 92.4 | LOS F | 3.3 | 25.7 | Full | 430 | 0.0 | 0.0 |
| Lane 3 | 95 | 5.8 | 95 | 5.8 | 103 | 0.926 | 100 | 109.3 | LOS F | 9.5 | 74.6 | Short | 140 | 0.0 | NA |
| Lane 4 | 32 | 5.8 | 32 | 5.8 | 98 | 0.323 | 100 | 97.3 | LOS F | 2.8 | 21.7 | Short | 58 | 0.0 | NA |
| Approach | 321 | 5.8 | 321 | 5.8 | | 0.926 | | 64.4 | LOS E | 9.5 | 74.6 | | | | |
| SouthWest: GEH | | | | | | | | | | | | | | | |
| Lane 1 | 57 | 5.8 | 57 | 5.8 | 781 | 0.073 | 9[5] | 52.7 | LOS D | 2.8 | 21.8 | Short | 75 | 0.0 | NA |
| Lane 2 | 610 | 11.7 | 610 | 11.7 | 731[1] | 0.834 | 100 | 36.4 | LOS D | 34.4 | 291.3 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 641 | 11.7 | 641 | 11.7 | 768 | 0.834 | 100 | 20.1 | LOS C | 37.6 | 319.0 | Full | 500 | 0.0 | 0.0 |
| Lane 4 | 641 | 11.7 | 641 | 11.7 | 768 | 0.834 | 100 | 20.1 | LOS C | 37.6 | 319.0 | Full | 500 | 0.0 | 0.0 |
| Lane 5 | 221 | 5.8 | 221 | 5.8 | 342 | 0.647 | 100 | 77.8 | LOS E | 17.9 | 140.2 | Short | 240 | 0.0 | NA |
| Approach | 2169 | 10.9 | 2169 | 10.9 | | 0.834 | | 31.4 | LOS C | 37.6 | 319.0 | | | | |
| All Vehicles | 5093 | 8.2 | 5093 | 8.2 | | 0.926 | | 42.5 | LOS D | 38.8 | 319.0 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.
5 Lane under-utilisation found by the program
6 Lane under-utilisation due to downstream effects

**Approach Lane Flows (veh/h)**

| SouthEast: Hardey Rd | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Mov. From SE To Exit: | L2 SW | T1 NW | R2 NE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 85 | 36 | - | 121 | 5.8 | 307 | 0.393 | 87[6] | 23.9 | 2 |
| Lane 2 | - | 144 | - | 144 | 5.8 | 319 | 0.452 | 100 | NA | NA |
| Lane 3 | - | - | 158 | 158 | 5.8 | 303 | 0.522 | 100 | 51.1 | 2 |
| Approach | 85 | 180 | 158 | 423 | 5.8 | | 0.522 | | | |
| NorthEast: GEH | | | | | | | | | | |
| Mov. From NE To Exit: | L2 SE | T1 SW | R2 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 117 | - | - | 117 | 5.8 | 1329 | 0.088 | 12[5] | 0.0 | 2 |
| Lane 2 | - | 579 | - | 579 | 6.3 | 771[1] | 0.750 | 100 | NA | NA |
| Lane 3 | - | 614 | - | 614 | 6.3 | 818 | 0.750 | 100 | NA | NA |
| Lane 4 | - | 561 | - | 561 | 6.3 | 748[1] | 0.750 | 100 | NA | NA |
| Lane 5 | - | - | 308 | 308 | 5.8 | 342 | 0.903 | 100 | 61.9 | 4 |
| Approach | 117 | 1754 | 308 | 2179 | 6.2 | | 0.903 | | | |
| NorthWest: Resolution Dr | | | | | | | | | | |
| Mov. From NW To Exit: | L2 NE | T1 SE | R2 SW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 157 | - | - | 157 | 5.8 | 742 | 0.211 | 100 | 0.0 | 2 |
| Lane 2 | - | 37 | - | 37 | 5.8 | 103 | 0.362 | 39[6] | NA | NA |
| Lane 3 | - | 95 | - | 95 | 5.8 | 103 | 0.926 | 100 | 0.0 | 2 |
| Lane 4 | - | - | 32 | 32 | 5.8 | 98 | 0.323 | 100 | 0.0 | 3 |
| Approach | 157 | 133 | 32 | 321 | 5.8 | | 0.926 | | | |
| SouthWest: GEH | | | | | | | | | | |
| Mov. From SW To Exit: | L2 NW | T1 NE | R2 SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 57 | - | - | 57 | 5.8 | 781 | 0.073 | 9[5] | 0.0 | 2 |
| Lane 2 | - | 610 | - | 610 | 11.7 | 731[1] | 0.834 | 100 | NA | NA |
| Lane 3 | - | 641 | - | 641 | 11.7 | 768 | 0.834 | 100 | NA | NA |
| Lane 4 | - | 641 | - | 641 | 11.7 | 768 | 0.834 | 100 | NA | NA |
| Lane 5 | - | - | 221 | 221 | 5.8 | 342 | 0.647 | 100 | 0.0 | 4 |
| Approach | 57 | 1892 | 221 | 2169 | 10.9 | | 0.834 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 5093 | 8.2 | 0.926 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.

5 Lane under-utilisation found by the program

6 Lane under-utilisation due to downstream effects

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast Exit: Hardey Rd Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 45 | 0.0 | 316 | 326 | 3.09 | 2.06 | 154 | 1413 | 0.109 | 0.5 | 0.7 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 316 | 1800 | 0.176 | 0.0 | 0.0 |
| NorthEast Exit: GEH | | | | | | | | | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 120 | 0.0 | 610 | 642 | 3.09 | 2.06 | 157 | 1076 | 0.146 | 1.3 | 1.7 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 610 | 1800 | 0.339 | 0.0 | 0.0 |
| NorthWest Exit: Resolution Dr<br>Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 140 | 0.0 | 453 | 466 | 3.09 | 2.06 | 92 | 1265 | 0.073 | 0.8 | 1.0 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 453 | 1800 | 0.252 | 0.0 | 0.0 |

**Variable Demand Analysis**

| | Initial Queued Demand<br>veh | Residual Queued Demand<br>veh | Time for Residual Demand to Clear<br>sec | Duration of Oversatn<br>sec |
|---|---|---|---|---|
| SouthEast: Hardey Rd | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: GEH | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 5 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthWest: Resolution Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| SouthWest: GEH | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 5 | 0.0 | 0.0 | 0.0 | 0.0 |

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Project: C:\PJA\Phil Jones Associates\SharedData - 07575 Ascot Racecourse Local Structure Plan & Scheme Amendment\4. Technical\4.3 Analysis\4.3.1 Transport\07575_M_01_A_Ascot Racecourse LSP&SA.sip9

# LANE SUMMARY

## Site: 103av [TCS PM - 2036 (Site Folder: GEH/Resolution)]

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated  Cycle Time = 180 seconds (Site Optimum Cycle Time - Minimum Delay)
Design Life Analysis: Constant Number of Years = 14

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Hardey Rd | | | | | | | | | | | | | | | |
| Lane 1 | 141 | 5.8 | 141 | 5.8 | 318 | 0.442 | 87[6] | 75.2 | LOS E[11] | 11.0 | 86.3 | Short | 60 | 0.0 | NA |
| Lane 2 | 167 | 5.8 | 167 | 5.8 | 329 | 0.508 | 100 | 72.2 | LOS E[11] | 13.3 | 104.1 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 169 | 5.8 | 169 | 5.8 | 312[1] | 0.542 | 100 | 78.5 | LOS E[11] | 13.5 | 106.0 | Short | 60 | 0.0 | NA |
| Approach | 477 | 5.8 | 477 | 5.8 | | 0.542 | | 75.3 | LOS E[11] | 13.5 | 106.0 | | | | |
| NorthEast: GEH | | | | | | | | | | | | | | | |
| Lane 1 | 125 | 5.8 | 125 | 5.8 | 1341 | 0.093 | 13[5] | 16.1 | LOS B | 2.6 | 20.0 | Short | 120 | 0.0 | NA |
| Lane 2 | 619 | 6.3 | 619 | 6.3 | 866[1] | 0.714 | 100 | 28.6 | LOS C | 33.7 | 265.4 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 650 | 6.3 | 650 | 6.3 | 910 | 0.714 | 100 | 23.7 | LOS C | 36.0 | 283.4 | Full | 500 | 0.0 | 0.0 |
| Lane 4 | 608 | 6.3 | 608 | 6.3 | 852[1] | 0.714 | 100 | 29.4 | LOS C | 32.9 | 259.6 | Full | 500 | 0.0 | 0.0 |
| Lane 5 | 330 | 5.8 | 330 | 5.8 | 264 | 1.252 | 100 | 333.4 | LOS F[11] | 52.6 | 411.1 | Short | 125 | 0.0 | NA |
| Approach | 2331 | 6.2 | 2331 | 6.2 | | 1.252 | | 69.9 | LOS E[11] | 52.6 | 411.1 | | | | |
| NorthWest: Resolution Dr | | | | | | | | | | | | | | | |
| Lane 1 | 168 | 5.8 | 168 | 5.8 | 628 | 0.267 | 100 | 31.7 | LOS C | 8.4 | 65.5 | Short | 90 | 0.0 | NA |
| Lane 2 | 40 | 5.8 | 40 | 5.8 | 82 | 0.485 | 39[6] | 96.0 | LOS F[11] | 3.6 | 28.2 | Full | 430 | 0.0 | 0.0 |
| Lane 3 | 102 | 5.8 | 102 | 5.8 | 82 | 1.239 | 100 | 320.5 | LOS F[11] | 16.0 | 125.5 | Short | 140 | 0.0 | NA |
| Lane 4 | 34 | 5.8 | 34 | 5.8 | 78 | 0.433 | 100 | 100.9 | LOS F[11] | 3.1 | 23.9 | Short | 58 | 0.0 | NA |
| Approach | 344 | 5.8 | 344 | 5.8 | | 1.239 | | 131.7 | LOS F[11] | 16.0 | 125.5 | | | | |
| SouthWest: GEH | | | | | | | | | | | | | | | |
| Lane 1 | 61 | 5.8 | 61 | 5.8 | 869 | 0.070 | 8[5] | 44.9 | LOS D | 2.7 | 21.2 | Short | 75 | 0.0 | NA |
| Lane 2 | 735 | 11.7 | 735 | 11.7 | 813[1] | 0.903 | 100 | 31.6 | LOS C | 42.6 | 360.7 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 772 | 11.7 | 772 | 11.7 | 855 | 0.903 | 100 | 17.9 | LOS B | 48.4 | 410.3 | Full | 500 | 0.0 | 0.0 |
| Lane 4 | 772 | 11.7 | 772 | 11.7 | 855 | 0.903 | 100 | 17.9 | LOS B | 48.4 | 410.3 | Full | 500 | 0.0 | 0.0 |
| Lane 5 | 237 | 5.8 | 237 | 5.8 | 264 | 0.897 | 100 | 100.4 | LOS F[11] | 22.8 | 178.1 | Short | 240 | 0.0 | NA |
| Approach | 2576 | 11.0 | 2576 | 11.0 | | 0.903 | | 30.0 | LOS C | 48.4 | 410.3 | | | | |
| All Vehicles | 5728 | 8.3 | 5728 | 8.3 | | 1.252 | | 56.1 | LOS E[11] | 52.6 | 411.1 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.
5 Lane under-utilisation found by the program
6 Lane under-utilisation due to downstream effects
11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

**Approach Lane Flows (veh/h)**

SouthEast: Hardey Rd

| Mov. From SE To Exit: | L2 SW | T1 NW | R2 NE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 91 | 49 | - | 141 | 5.8 | 318 | 0.442 | 87[6] | 38.2 | 2 |
| Lane 2 | - | 167 | - | 167 | 5.8 | 329 | 0.508 | 100 | NA | NA |
| Lane 3 | - | - | 169 | 169 | 5.8 | 312[1] | 0.542 | 100 | 57.5 | 2 |
| Approach | 91 | 217 | 169 | 477 | 5.8 | | 0.542 | | | |

NorthEast: GEH

| Mov. From NE To Exit: | L2 SE | T1 SW | R2 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 125 | - | - | 125 | 5.8 | 1341 | 0.093 | 13[5] | 0.0 | 2 |
| Lane 2 | - | 619 | - | 619 | 6.3 | 866[1] | 0.714 | 100 | NA | NA |
| Lane 3 | - | 650 | - | 650 | 6.3 | 910 | 0.714 | 100 | NA | NA |
| Lane 4 | - | 608 | - | 608 | 6.3 | 852[1] | 0.714 | 100 | NA | NA |
| Lane 5 | - | - | 330 | 330 | 5.8 | 264 | 1.252 | 100 | 100.0 | 4 |
| Approach | 125 | 1876 | 330 | 2331 | 6.2 | | 1.252 | | | |

NorthWest: Resolution Dr

| Mov. From NW To Exit: | L2 NE | T1 SE | R2 SW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 168 | - | - | 168 | 5.8 | 628 | 0.267 | 100 | 0.0 | 2 |
| Lane 2 | - | 40 | - | 40 | 5.8 | 82 | 0.485 | 39[6] | NA | NA |
| Lane 3 | - | 102 | - | 102 | 5.8 | 82 | 1.239 | 100 | 0.0 | 2 |
| Lane 4 | - | - | 34 | 34 | 5.8 | 78 | 0.433 | 100 | 0.0 | 3 |
| Approach | 168 | 142 | 34 | 344 | 5.8 | | 1.239 | | | |

SouthWest: GEH

| Mov. From SW To Exit: | L2 NW | T1 NE | R2 SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 61 | - | - | 61 | 5.8 | 869 | 0.070 | 8[5] | 0.0 | 2 |
| Lane 2 | - | 735 | - | 735 | 11.7 | 813[1] | 0.903 | 100 | NA | NA |
| Lane 3 | - | 772 | - | 772 | 11.7 | 855 | 0.903 | 100 | NA | NA |
| Lane 4 | - | 772 | - | 772 | 11.7 | 855 | 0.903 | 100 | NA | NA |
| Lane 5 | - | - | 237 | 237 | 5.8 | 264 | 0.897 | 100 | 0.0 | 4 |
| Approach | 61 | 2278 | 237 | 2576 | 11.0 | | 0.903 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 5728 | 8.3 | 1.252 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.

5 Lane under-utilisation found by the program

6 Lane under-utilisation due to downstream effects

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast Exit: Hardey Rd<br>Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 45 | 0.0 | 319 | 328 | 3.09 | 2.06 | 165 | 1411 | 0.117 | 0.5 | 0.7 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 319 | 1800 | 0.177 | 0.0 | 0.0 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NorthEast Exit: GEH<br>Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 120 | 0.0 | 735 | 773 | 3.09 | 2.06 | 168 | 935 | 0.179 | 1.8 | 2.3 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 735 | 1800 | 0.408 | 0.0 | 0.0 |
| NorthWest Exit: Resolution Dr<br>Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 140 | 0.0 | 431 | 443 | 3.09 | 2.06 | 110 | 1289 | 0.086 | 0.8 | 1.0 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 431 | 1800 | 0.239 | 0.0 | 0.0 |

**Variable Demand Analysis**

| | Initial Queued Demand<br>veh | Residual Queued Demand<br>veh | Time for Residual Demand to Clear<br>sec | Duration of Oversatn<br>sec |
|---|---|---|---|---|
| SouthEast: Hardey Rd | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: GEH | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 5 | 0.0 | 33.2 | 453.8 | NA |
| NorthWest: Resolution Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 9.8 | 429.8 | NA |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| SouthWest: GEH | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 5 | 0.0 | 0.0 | 0.0 | 0.0 |

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Project: C:\PJA\Phil Jones Associates\SharedData - 07575 Ascot Racecourse Local Structure Plan & Scheme Amendment\4. Technical\4.3 Analysis\4.3.1 Transport\07575_M_01_A_Ascot Racecourse LSP&SA.sip9

# LANE SUMMARY

## Site: 103av [TCS PM - 2036 - mod (Site Folder: GEH/ Resolution)]

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated  Cycle Time = 180 seconds (Site Optimum Cycle Time - Minimum Delay)
Design Life Analysis: Constant Number of Years = 14

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Hardey Rd | | | | | | | | | | | | | | | |
| Lane 1 | 148 | 5.8 | 148 | 5.8 | 351 | 0.422 | 87[6] | 54.2 | LOS D | 9.6 | 75.3 | Short | 60 | 0.0 | NA |
| Lane 2 | 160 | 5.8 | 160 | 5.8 | 329 | 0.486 | 100 | 71.9 | LOS E[11] | 12.7 | 99.0 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 169 | 5.8 | 169 | 5.8 | 312[1] | 0.542 | 100 | 78.5 | LOS E[11] | 13.5 | 106.0 | Short | 60 | 0.0 | NA |
| Approach | 477 | 5.8 | 477 | 5.8 | | 0.542 | | 68.8 | LOS E[11] | 13.5 | 106.0 | | | | |
| NorthEast: GEH | | | | | | | | | | | | | | | |
| Lane 1 | 125 | 5.8 | 125 | 5.8 | 1326 | 0.094 | 13[5] | 16.6 | LOS B | 2.7 | 21.5 | Short | 120 | 0.0 | NA |
| Lane 2 | 614 | 6.3 | 614 | 6.3 | 868[1] | 0.707 | 100 | 28.2 | LOS C | 33.2 | 261.5 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 644 | 6.3 | 644 | 6.3 | 910 | 0.707 | 100 | 23.6 | LOS C | 35.3 | 278.3 | Full | 500 | 0.0 | 0.0 |
| Lane 4 | 619 | 6.3 | 619 | 6.3 | 875[1] | 0.707 | 100 | 27.6 | LOS C | 33.5 | 264.2 | Full | 500 | 0.0 | 0.0 |
| Lane 5 | 149 | 5.8 | 149 | 5.8 | 239 | 0.624 | 83[6] | 90.3 | LOS F[11] | 12.5 | 98.0 | Short | 125 | 0.0 | NA |
| Lane 6 | 181 | 5.8 | 181 | 5.8 | 239 | 0.756 | 100 | 89.4 | LOS F[11] | 15.8 | 124.0 | Short | 125 | 0.0 | NA |
| Approach | 2331 | 6.2 | 2331 | 6.2 | | 0.756 | | 34.8 | LOS C | 35.3 | 278.3 | | | | |
| NorthWest: Resolution Dr | | | | | | | | | | | | | | | |
| Lane 1 | 168 | 5.8 | 168 | 5.8 | 628 | 0.267 | 100 | 31.7 | LOS C | 8.4 | 65.5 | Short | 90 | 0.0 | NA |
| Lane 2 | 40 | 5.8 | 40 | 5.8 | 103 | 0.387 | 39[6] | 92.6 | LOS F[11] | 3.5 | 27.5 | Full | 430 | 0.0 | 0.0 |
| Lane 3 | 102 | 5.8 | 102 | 5.8 | 103 | 0.991 | 100 | 128.6 | LOS F[11] | 11.1 | 87.1 | Short | 140 | 0.0 | NA |
| Lane 4 | 34 | 5.8 | 34 | 5.8 | 98 | 0.346 | 100 | 97.5 | LOS F[11] | 3.0 | 23.3 | Short | 58 | 0.0 | NA |
| Approach | 344 | 5.8 | 344 | 5.8 | | 0.991 | | 74.0 | LOS E[11] | 11.1 | 87.1 | | | | |
| SouthWest: GEH | | | | | | | | | | | | | | | |
| Lane 1 | 61 | 5.8 | 61 | 5.8 | 869 | 0.070 | 8[5] | 44.7 | LOS D | 2.7 | 21.2 | Short | 75 | 0.0 | NA |
| Lane 2 | 735 | 11.7 | 735 | 11.7 | 813[1] | 0.903 | 100 | 31.6 | LOS C | 42.6 | 360.7 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 772 | 11.7 | 772 | 11.7 | 855 | 0.903 | 100 | 17.9 | LOS B | 48.4 | 410.3 | Full | 500 | 0.0 | 0.0 |
| Lane 4 | 772 | 11.7 | 772 | 11.7 | 855 | 0.903 | 100 | 17.9 | LOS B | 48.4 | 410.3 | Full | 500 | 0.0 | 0.0 |
| Lane 5 | 237 | 5.8 | 237 | 5.8 | 244 | 0.969 | 100 | 120.5 | LOS F[11] | 25.2 | 197.2 | Short | 240 | 0.0 | NA |
| Approach | 2576 | 11.0 | 2576 | 11.0 | | 0.969 | | 31.9 | LOS C | 48.4 | 410.3 | | | | |
| All Vehicles | 5728 | 8.3 | 5728 | 8.3 | | 0.991 | | 38.7 | LOS D | 48.4 | 410.3 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.
5 Lane under-utilisation found by the program
6 Lane under-utilisation due to downstream effects

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

**Approach Lane Flows (veh/h)**

SouthEast: Hardey Rd

| Mov. From SE To Exit: | L2 SW | T1 NW | R2 NE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 91 | 57 | - | 148 | 5.8 | 351 | 0.422 | 87[6] | 25.6 | 2 |
| Lane 2 | - | 160 | - | 160 | 5.8 | 329 | 0.486 | 100 | NA | NA |
| Lane 3 | - | - | 169 | 169 | 5.8 | 312[1] | 0.542 | 100 | 57.5 | 2 |
| Approach | 91 | 217 | 169 | 477 | 5.8 | | 0.542 | | | |

NorthEast: GEH

| Mov. From NE To Exit: | L2 SE | T1 SW | R2 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 125 | - | - | 125 | 5.8 | 1326 | 0.094 | 13[5] | 0.0 | 2 |
| Lane 2 | - | 614 | - | 614 | 6.3 | 868[1] | 0.707 | 100 | NA | NA |
| Lane 3 | - | 644 | - | 644 | 6.3 | 910 | 0.707 | 100 | NA | NA |
| Lane 4 | - | 619 | - | 619 | 6.3 | 875[1] | 0.707 | 100 | NA | NA |
| Lane 5 | - | - | 149 | 149 | 5.8 | 239 | 0.624 | 83[6] | 4.2 | 4 |
| Lane 6 | - | - | 181 | 181 | 5.8 | 239 | 0.756 | 100 | 4.2 | 5 |
| Approach | 125 | 1876 | 330 | 2331 | 6.2 | | 0.756 | | | |

NorthWest: Resolution Dr

| Mov. From NW To Exit: | L2 NE | T1 SE | R2 SW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 168 | - | - | 168 | 5.8 | 628 | 0.267 | 100 | 0.0 | 2 |
| Lane 2 | - | 40 | - | 40 | 5.8 | 103 | 0.387 | 39[6] | NA | NA |
| Lane 3 | - | 102 | - | 102 | 5.8 | 103 | 0.991 | 100 | 0.0 | 2 |
| Lane 4 | - | - | 34 | 34 | 5.8 | 98 | 0.346 | 100 | 0.0 | 3 |
| Approach | 168 | 142 | 34 | 344 | 5.8 | | 0.991 | | | |

SouthWest: GEH

| Mov. From SW To Exit: | L2 NW | T1 NE | R2 SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 61 | - | - | 61 | 5.8 | 869 | 0.070 | 8[5] | 0.0 | 2 |
| Lane 2 | - | 735 | - | 735 | 11.7 | 813[1] | 0.903 | 100 | NA | NA |
| Lane 3 | - | 772 | - | 772 | 11.7 | 855 | 0.903 | 100 | NA | NA |
| Lane 4 | - | 772 | - | 772 | 11.7 | 855 | 0.903 | 100 | NA | NA |
| Lane 5 | - | - | 237 | 237 | 5.8 | 244 | 0.969 | 100 | 0.0 | 4 |
| Approach | 61 | 2278 | 237 | 2576 | 11.0 | | 0.969 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 5728 | 8.3 | 0.991 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.

5 Lane under-utilisation found by the program

6 Lane under-utilisation due to downstream effects

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast Exit: Hardey Rd | | | | | | | | | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 45 | 0.0 | 339 | 348 | 3.09 | 2.06 | 165 | 1389 | 0.119 | 0.6 | 0.7 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 339 | 1800 | 0.188 | 0.0 | 0.0 |
| NorthEast Exit: GEH<br>Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 120 | 0.0 | 735 | 773 | 3.09 | 2.06 | 168 | 935 | 0.179 | 1.8 | 2.3 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 735 | 1800 | 0.408 | 0.0 | 0.0 |
| NorthWest Exit: Resolution Dr<br>Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 140 | 0.0 | 341 | 351 | 3.09 | 2.06 | 267 | 1387 | 0.192 | 0.6 | 0.8 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 341 | 1800 | 0.189 | 0.0 | 0.0 |

**Variable Demand Analysis**

| | Initial Queued Demand<br>veh | Residual Queued Demand<br>veh | Time for Residual Demand to Clear<br>sec | Duration of Oversatn<br>sec |
|---|---|---|---|---|
| SouthEast: Hardey Rd | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: GEH | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 5 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 6 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthWest: Resolution Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| SouthWest: GEH | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 5 | 0.0 | 0.0 | 0.0 | 0.0 |

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Project: C:\PJA\Phil Jones Associates\SharedData - 07575 Ascot Racecourse Local Structure Plan & Scheme Amendment\4. Technical\4.3 Analysis\4.3.1 Transport\07575_M_01_A_Ascot Racecourse LSP&SA.sip9

# LANE SUMMARY

## Site: 103av [TCS PM - 2036 - with LSP (Site Folder: GEH/ Resolution)]

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated  Cycle Time = 180 seconds (Site Optimum Cycle Time - Minimum Delay)
Design Life Analysis: Constant Number of Years = 14

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Hardey Rd | | | | | | | | | | | | | | | |
| Lane 1 | 168 | 5.4 | 168 | 5.4 | 321 | 0.522 | 87[6] | 81.3 | LOS F[11] | 13.4 | 104.2 | Short | 60 | 0.0 | NA |
| Lane 2 | 184 | 4.8 | 184 | 4.8 | 307[1] | 0.600 | 100 | 78.8 | LOS E[11] | 14.9 | 115.6 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 169 | 5.8 | 169 | 5.8 | 312[1] | 0.542 | 100 | 83.8 | LOS F[11] | 13.5 | 106.0 | Short | 60 | 0.0 | NA |
| Approach | 521 | 5.3 | 521 | 5.3 | | 0.600 | | 81.2 | LOS F[11] | 14.9 | 115.6 | | | | |
| NorthEast: GEH | | | | | | | | | | | | | | | |
| Lane 1 | 125 | 5.8 | 125 | 5.8 | 1341 | 0.093 | 13[5] | 16.2 | LOS B | 2.6 | 20.0 | Short | 120 | 0.0 | NA |
| Lane 2 | 620 | 6.3 | 620 | 6.3 | 866[1] | 0.716 | 100 | 28.8 | LOS C | 33.9 | 266.7 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 652 | 6.3 | 652 | 6.3 | 910 | 0.716 | 100 | 23.7 | LOS C | 36.2 | 285.0 | Full | 500 | 0.0 | 0.0 |
| Lane 4 | 605 | 6.3 | 605 | 6.3 | 844[1] | 0.716 | 100 | 44.8 | LOS D | 32.7 | 257.9 | Full | 500 | 0.0 | 26.6[8] |
| Lane 5 | 405 | 4.7 | 405 | 4.7 | 265 | 1.529 | 100 | 593.6 | LOS F[11] | 81.9 | 633.9 | Short | 125 | 0.0 | NA |
| Approach | 2406 | 6.0 | 2406 | 6.0 | | 1.529 | | 125.8 | LOS F[11] | 81.9 | 633.9 | | | | |
| NorthWest: Resolution Dr | | | | | | | | | | | | | | | |
| Lane 1 | 207 | 4.7 | 207 | 4.7 | 631 | 0.328 | 100 | 33.4 | LOS C | 11.1 | 85.8 | Short | 90 | 0.0 | NA |
| Lane 2 | 49 | 4.7 | 49 | 4.7 | 83 | 0.590 | 39[6] | 96.8 | LOS F[11] | 4.5 | 34.6 | Full | 430 | 0.0 | 0.0 |
| Lane 3 | 125 | 4.7 | 125 | 4.7 | 83 | 1.508 | 100 | 559.7 | LOS F[11] | 25.2 | 194.9 | Short | 140 | 0.0 | NA |
| Lane 4 | 41 | 4.8 | 41 | 4.8 | 78 | 0.525 | 100 | 101.5 | LOS F[11] | 3.7 | 29.0 | Short | 58 | 0.0 | NA |
| Approach | 422 | 4.7 | 422 | 4.7 | | 1.508 | | 203.7 | LOS F[11] | 25.2 | 194.9 | | | | |
| SouthWest: GEH | | | | | | | | | | | | | | | |
| Lane 1 | 75 | 4.7 | 75 | 4.7 | 872 | 0.085 | 9[5] | 44.8 | LOS D | 3.4 | 25.9 | Short | 75 | 0.0 | NA |
| Lane 2 | 729 | 11.7 | 729 | 11.7 | 805[1] | 0.906 | 100 | 31.8 | LOS C | 42.2 | 357.5 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 774 | 11.7 | 774 | 11.7 | 855 | 0.906 | 100 | 18.3 | LOS B | 49.3 | 417.3 | Full | 500 | 0.0 | 0.0 |
| Lane 4 | 774 | 11.7 | 774 | 11.7 | 855 | 0.906 | 100 | 18.3 | LOS B | 49.3 | 417.3 | Full | 500 | 0.0 | 0.0 |
| Lane 5 | 237 | 5.8 | 237 | 5.8 | 264 | 0.897 | 100 | 100.4 | LOS F[11] | 22.8 | 178.1 | Short | 240 | 0.0 | NA |
| Approach | 2589 | 11.0 | 2589 | 11.0 | | 0.906 | | 30.4 | LOS C | 49.3 | 417.3 | | | | |
| All Vehicles | 5939 | 8.0 | 5939 | 8.0 | | 1.529 | | 85.8 | LOS F[11] | 81.9 | 633.9 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.
5 Lane under-utilisation found by the program
6 Lane under-utilisation due to downstream effects
8 Probability of Blockage has been set on the basis of a queue that overflows from a short lane.

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

**Approach Lane Flows (veh/h)**

SouthEast: Hardey Rd

| Mov. From SE To Exit: | L2 SW | T1 NW | R2 NE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 91 | 77 | - | 168 | 5.4 | 321 | 0.522 | 87[6] | 55.9 | 2 |
| Lane 2 | - | 184 | - | 184 | 4.8 | 307[1] | 0.600 | 100 | NA | NA |
| Lane 3 | - | - | 169 | 169 | 5.8 | 312[1] | 0.542 | 100 | 57.5 | 2 |
| Approach | 91 | 261 | 169 | 521 | 5.3 | | 0.600 | | | |

NorthEast: GEH

| Mov. From NE To Exit: | L2 SE | T1 SW | R2 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 125 | - | - | 125 | 5.8 | 1341 | 0.093 | 13[5] | 0.0 | 2 |
| Lane 2 | - | 620 | - | 620 | 6.3 | 866[1] | 0.716 | 100 | NA | NA |
| Lane 3 | - | 652 | - | 652 | 6.3 | 910 | 0.716 | 100 | NA | NA |
| Lane 4 | - | 605 | - | 605 | 6.3 | 844[1] | 0.716 | 100 | NA | NA |
| Lane 5 | - | - | 405 | 405 | 4.7 | 265 | 1.529 | 100 | 100.0 | 4 |
| Approach | 125 | 1876 | 405 | 2406 | 6.0 | | 1.529 | | | |

NorthWest: Resolution Dr

| Mov. From NW To Exit: | L2 NE | T1 SE | R2 SW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 207 | - | - | 207 | 4.7 | 631 | 0.328 | 100 | 0.7 | 2 |
| Lane 2 | - | 49 | - | 49 | 4.7 | 83 | 0.590 | 39[6] | NA | NA |
| Lane 3 | - | 125 | - | 125 | 4.7 | 83 | 1.508 | 100 | 35.2 | 2 |
| Lane 4 | - | - | 41 | 41 | 4.8 | 78 | 0.525 | 100 | 0.0 | 3 |
| Approach | 207 | 175 | 41 | 422 | 4.7 | | 1.508 | | | |

SouthWest: GEH

| Mov. From SW To Exit: | L2 NW | T1 NE | R2 SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 75 | - | - | 75 | 4.7 | 872 | 0.085 | 9[5] | 0.0 | 2 |
| Lane 2 | - | 729 | - | 729 | 11.7 | 805[1] | 0.906 | 100 | NA | NA |
| Lane 3 | - | 774 | - | 774 | 11.7 | 855 | 0.906 | 100 | NA | NA |
| Lane 4 | - | 774 | - | 774 | 11.7 | 855 | 0.906 | 100 | NA | NA |
| Lane 5 | - | - | 237 | 237 | 5.8 | 264 | 0.897 | 100 | 0.0 | 4 |
| Approach | 75 | 2278 | 237 | 2589 | 11.0 | | 0.906 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 5939 | 8.0 | 1.529 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.

5 Lane under-utilisation found by the program

6 Lane under-utilisation due to downstream effects

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast Exit: Hardey Rd<br>Merge Type: **Priority** | | | | | | | | | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Exit Short Lane | 1 | 45 | 0.0 | 320 | 329 | 3.08 | 2.05 | 174 | 1413 | 0.123 | 0.5 | 0.7 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 320 | 1800 | 0.178 | 0.0 | 0.0 |
| NorthEast Exit: GEH<br>Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 120 | 0.0 | 729 | 768 | 3.07 | 2.05 | 207 | 952 | 0.217 | 1.7 | 2.3 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 729 | 1800 | 0.405 | 0.0 | 0.0 |
| NorthWest Exit: Resolution Dr<br>Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 140 | 0.0 | 449 | 460 | 3.07 | 2.05 | 151 | 1281 | 0.118 | 0.8 | 1.0 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 449 | 1800 | 0.250 | 0.0 | 0.0 |

**Variable Demand Analysis**

| | Initial Queued Demand<br>veh | Residual Queued Demand<br>veh | Time for Residual Demand to Clear<br>sec | Duration of Oversatn<br>sec |
|---|---|---|---|---|
| SouthEast: Hardey Rd | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: GEH | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 5 | 0.0 | 70.0 | 952.5 | NA |
| NorthWest: Resolution Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 21.1 | 914.4 | NA |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| SouthWest: GEH | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 5 | 0.0 | 0.0 | 0.0 | 0.0 |

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# LANE SUMMARY

## Site: 103av [TCS PM - Current (Site Folder: GEH/Stoneham)]

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated  Cycle Time = 150 seconds (Site Optimum Cycle Time - Minimum Delay)

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Belgravia St | | | | | | | | | | | | | | | |
| Lane 1 | 268 | 13.0 | 268 | 13.0 | 332 | 0.806 | 100 | 69.0 | LOS E | 19.9 | 172.3 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 247 | 13.0 | 247 | 13.0 | 306[1] | 0.806 | 100 | 74.3 | LOS E | 18.4 | 159.3 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 173 | 13.0 | 173 | 13.0 | 320 | 0.540 | 67[5] | 71.6 | LOS E | 11.5 | 99.3 | Short | 73 | 0.0 | NA |
| Approach | 687 | 13.0 | 687 | 13.0 | | 0.806 | | 71.5 | LOS E | 19.9 | 172.3 | | | | |
| NorthEast: GEH | | | | | | | | | | | | | | | |
| Lane 1 | 136 | 4.6 | 136 | 4.6 | 1226 | 0.111 | 16[5] | 13.6 | LOS B | 3.2 | 24.9 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 587 | 6.2 | 587 | 6.2 | 835 | 0.702 | 100 | 13.8 | LOS B | 22.0 | 173.4 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 587 | 6.2 | 587 | 6.2 | 835 | 0.702 | 100 | 13.8 | LOS B | 22.0 | 173.4 | Full | 500 | 0.0 | 0.0 |
| Lane 4 | 587 | 6.2 | 587 | 6.2 | 835 | 0.702 | 100 | 13.8 | LOS B | 22.0 | 173.4 | Full | 500 | 0.0 | 0.0 |
| Lane 5 | 82 | 5.8 | 82 | 5.8 | 129 | 0.637 | 100 | 82.4 | LOS F | 6.2 | 48.2 | Short | 180 | 0.0 | NA |
| Approach | 1978 | 6.1 | 1978 | 6.1 | | 0.702 | | 16.7 | LOS B | 22.0 | 173.4 | | | | |
| NorthWest: Stoneham St | | | | | | | | | | | | | | | |
| Lane 1 | 11 | 5.8 | 11 | 5.8 | 199 | 0.053 | 100 | 71.4 | LOS E | 0.7 | 5.4 | Short | 75 | 0.0 | NA |
| Lane 2 | 194 | 5.8 | 194 | 5.8 | 210 | 0.926 | 100 | 88.9 | LOS F | 16.5 | 128.7 | Full | 300 | 0.0 | 0.0 |
| Lane 3 | 188 | 5.8 | 188 | 5.8 | 203[1] | 0.926 | 100 | 92.5 | LOS F | 15.9 | 124.6 | Full | 300 | 0.0 | 0.0 |
| Lane 4 | 184 | 5.8 | 184 | 5.8 | 199 | 0.926 | 100 | 95.8 | LOS F | 15.7 | 122.6 | Short | 60 | 0.0 | NA |
| Approach | 577 | 5.8 | 577 | 5.8 | | 0.926 | | 91.9 | LOS F | 16.5 | 128.7 | | | | |
| SouthWest: GEH | | | | | | | | | | | | | | | |
| Lane 1 | 712 | 5.8 | 712 | 5.8 | 1261 | 0.564 | 70[5] | 13.5 | LOS B | 21.0 | 164.6 | Short | 145 | 0.0 | NA |
| Lane 2 | 646 | 6.8 | 646 | 6.8 | 804 | 0.803 | 100 | 25.6 | LOS C | 34.9 | 277.3 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 665 | 6.8 | 665 | 6.8 | 828 | 0.803 | 100 | 26.0 | LOS C | 36.9 | 293.5 | Full | 500 | 0.0 | 0.0 |
| Lane 4 | 665 | 6.8 | 665 | 6.8 | 828 | 0.803 | 100 | 26.0 | LOS C | 36.9 | 293.5 | Full | 500 | 0.0 | 0.0 |
| Lane 5 | 114 | 4.6 | 114 | 4.6 | 130 | 0.877 | 100 | 91.6 | LOS F | 9.3 | 72.0 | Short | 210 | 0.0 | NA |
| Approach | 2802 | 6.5 | 2802 | 6.5 | | 0.877 | | 25.4 | LOS C | 36.9 | 293.5 | | | | |
| All Vehicles | 6044 | 7.0 | 6044 | 7.0 | | 0.926 | | 34.1 | LOS C | 36.9 | 293.5 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.
5 Lane under-utilisation found by the program

**Approach Lane Flows (veh/h)**

SouthEast: Belgravia St

| Mov. From SE To Exit: | L2 SW | T1 NW | R2 NE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 84 | 184 | - | 268 | 13.0 | 332 | 0.806 | 100 | NA | NA |
| Lane 2 | - | 247 | - | 247 | 13.0 | 306[1] | 0.806 | 100 | NA | NA |
| Lane 3 | - | - | 173 | 173 | 13.0 | 320 | 0.540 | 67[5] | 33.0 | 2 |
| Approach | 84 | 431 | 173 | 687 | 13.0 | | 0.806 | | | |
| NorthEast: GEH | | | | | | | | | | |
| Mov. From NE To Exit: | L2 SE | T1 SW | R2 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 136 | - | - | 136 | 4.6 | 1226 | 0.111 | 16[5] | NA | NA |
| Lane 2 | - | 587 | - | 587 | 6.2 | 835 | 0.702 | 100 | NA | NA |
| Lane 3 | - | 587 | - | 587 | 6.2 | 835 | 0.702 | 100 | NA | NA |
| Lane 4 | - | 587 | - | 587 | 6.2 | 835 | 0.702 | 100 | NA | NA |
| Lane 5 | - | - | 82 | 82 | 5.8 | 129 | 0.637 | 100 | 0.0 | 4 |
| Approach | 136 | 1760 | 82 | 1978 | 6.1 | | 0.702 | | | |
| NorthWest: Stoneham St | | | | | | | | | | |
| Mov. From NW To Exit: | L2 NE | T1 SE | R2 SW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 11 | - | - | 11 | 5.8 | 199 | 0.053 | 100 | 0.0 | 2 |
| Lane 2 | - | 194 | - | 194 | 5.8 | 210 | 0.926 | 100 | NA | NA |
| Lane 3 | - | 100 | 87 | 188 | 5.8 | 203[1] | 0.926 | 100 | NA | NA |
| Lane 4 | - | - | 184 | 184 | 5.8 | 199 | 0.926 | 100 | 71.4 | 3 |
| Approach | 11 | 295 | 272 | 577 | 5.8 | | 0.926 | | | |
| SouthWest: GEH | | | | | | | | | | |
| Mov. From SW To Exit: | L2 NW | T1 NE | R2 SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 712 | - | - | 712 | 5.8 | 1261 | 0.564 | 70[5] | 16.5 | 2 |
| Lane 2 | - | 646 | - | 646 | 6.8 | 804 | 0.803 | 100 | NA | NA |
| Lane 3 | - | 665 | - | 665 | 6.8 | 828 | 0.803 | 100 | NA | NA |
| Lane 4 | - | 665 | - | 665 | 6.8 | 828 | 0.803 | 100 | NA | NA |
| Lane 5 | - | - | 114 | 114 | 4.6 | 130 | 0.877 | 100 | 0.0 | 4 |
| Approach | 712 | 1977 | 114 | 2802 | 6.5 | | 0.877 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 6044 | 7.0 | 0.926 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.

5 Lane under-utilisation found by the program

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NorthEast Exit: GEH Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 100 | 0.0 | 646 | 667 | 3.09 | 2.06 | 11 | 1049 | 0.010 | 1.4 | 1.5 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 646 | 1800 | 0.359 | 0.0 | 0.0 |
| SouthWest Exit: GEH Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 100 | 0.0 | 587 | 604 | 3.16 | 2.11 | 84 | 1069 | 0.079 | 1.3 | 1.6 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | 587 | 1800 | 0.326 | 0.0 | 0.0 |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| SouthEast: Belgravia St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: GEH | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 5 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthWest: Stoneham St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| SouthWest: GEH | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 5 | 0.0 | 0.0 | 0.0 | 0.0 |

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Project: C:\PJA\Phil Jones Associates\SharedData - 07575 Ascot Racecourse Local Structure Plan & Scheme Amendment\4. Technical\4.3 Analysis\4.3.1 Transport\07575_M_01_A_Ascot Racecourse LSP&SA.sip9

# LANE SUMMARY

## Site: 103av [TCS PM - 2036 (Site Folder: GEH/Stoneham)]

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated  Cycle Time = 180 seconds (Site Optimum Cycle Time - Minimum Delay)
Design Life Analysis: Constant Number of Years = 14

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Belgravia St | | | | | | | | | | | | | | | |
| Lane 1 | 333 | 13.0 | 333 | 13.0 | 296 | 1.123 | 100 | 213.6 | LOS F[11] | 44.9 | 389.1 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 276 | 13.0 | 276 | 13.0 | 246[1] | 1.123 | 100 | 241.7 | LOS F[11] | 37.5 | 324.9 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 185 | 13.0 | 185 | 13.0 | 275[1] | 0.672 | 60[5] | 108.9 | LOS F[11] | 15.3 | 132.5 | Short | 73 | 0.0 | NA |
| Approach | 793 | 13.0 | 793 | 13.0 | | 1.123 | | 199.0 | LOS F[11] | 44.9 | 389.1 | | | | |
| NorthEast: GEH | | | | | | | | | | | | | | | |
| Lane 1 | 145 | 4.6 | 145 | 4.6 | 1296 | 0.112 | 17[5] | 12.9 | LOS B | 3.6 | 27.8 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 628 | 6.2 | 628 | 6.2 | 962 | 0.652 | 100 | 7.1 | LOS A | 16.1 | 127.1 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 628 | 6.2 | 628 | 6.2 | 962 | 0.652 | 100 | 7.1 | LOS A | 16.1 | 127.1 | Full | 500 | 0.0 | 0.0 |
| Lane 4 | 628 | 6.2 | 628 | 6.2 | 962 | 0.652 | 100 | 7.1 | LOS A | 16.1 | 127.1 | Full | 500 | 0.0 | 0.0 |
| Lane 5 | 88 | 5.8 | 88 | 5.8 | 107 | 0.818 | 100 | 104.3 | LOS F[11] | 8.3 | 64.6 | Short | 180 | 0.0 | NA |
| Approach | 2116 | 6.1 | 2116 | 6.1 | | 0.818 | | 11.5 | LOS B | 16.1 | 127.1 | | | | |
| NorthWest: Stoneham St | | | | | | | | | | | | | | | |
| Lane 1 | 11 | 5.8 | 11 | 5.8 | 185 | 0.061 | 100 | 97.0 | LOS F[11] | 0.9 | 7.0 | Short | 75 | 0.0 | NA |
| Lane 2 | 221 | 5.8 | 221 | 5.8 | 195[1] | 1.129 | 100 | 232.6 | LOS F[11] | 29.7 | 232.7 | Full | 300 | 0.0 | 0.0 |
| Lane 3 | 194 | 5.8 | 194 | 5.8 | 172[1] | 1.129 | 100 | 241.9 | LOS F[11] | 26.2 | 205.2 | Full | 300 | 0.0 | 0.0 |
| Lane 4 | 191 | 5.8 | 191 | 5.8 | 170[1] | 1.129 | 100 | 245.0 | LOS F[11] | 25.9 | 202.8 | Short | 60 | 0.0 | NA |
| Approach | 617 | 5.8 | 617 | 5.8 | | 1.129 | | 236.9 | LOS F[11] | 29.7 | 232.7 | | | | |
| SouthWest: GEH | | | | | | | | | | | | | | | |
| Lane 1 | 761 | 5.8 | 761 | 5.8 | 1254 | 0.607 | 67[5] | 18.4 | LOS B | 30.1 | 235.3 | Short | 145 | 0.0 | NA |
| Lane 2 | 665 | 6.8 | 665 | 6.8 | 729[1] | 0.912 | 100 | 36.5 | LOS D | 46.1 | 366.3 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 870 | 6.8 | 870 | 6.8 | 954 | 0.912 | 100 | 30.8 | LOS C | 66.1 | 525.0 | Full | 500 | 0.0 | 9.4 |
| Lane 4 | 846 | 6.8 | 846 | 6.8 | 928[1] | 0.912 | 100 | 36.9 | LOS D | 63.4 | 503.5 | Full | 500 | 0.0 | 5.6 |
| Lane 5 | 122 | 4.6 | 122 | 4.6 | 108 | 1.126 | 100 | 233.7 | LOS F[11] | 16.3 | 127.0 | Short | 210 | 0.0 | NA |
| Approach | 3264 | 6.5 | 3264 | 6.5 | | 1.126 | | 38.2 | LOS D | 66.1 | 525.0 | | | | |
| All Vehicles | 6791 | 7.1 | 6791 | 7.1 | | 1.129 | | 66.7 | LOS E[11] | 66.1 | 525.0 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.
5 Lane under-utilisation found by the program
11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

| Approach Lane Flows (veh/h) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Belgravia St | | | | | | | | | | | |
| Mov. From SE To Exit: | L2 SW | T1 NW | R2 NE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 90 | 242 | - | 333 | 13.0 | 296 | 1.123 | 100 | NA | NA |
| Lane 2 | - | 276 | - | 276 | 13.0 | 246[1] | 1.123 | 100 | NA | NA |
| Lane 3 | - | - | 185 | 185 | 13.0 | 275[1] | 0.672 | 60[5] | 60.0 | 2 |
| Approach | 90 | 519 | 185 | 793 | 13.0 | | 1.123 | | | |
| NorthEast: GEH | | | | | | | | | | |
| Mov. From NE To Exit: | L2 SE | T1 SW | R2 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 145 | - | - | 145 | 4.6 | 1296 | 0.112 | 17[5] | NA | NA |
| Lane 2 | - | 628 | - | 628 | 6.2 | 962 | 0.652 | 100 | NA | NA |
| Lane 3 | - | 628 | - | 628 | 6.2 | 962 | 0.652 | 100 | NA | NA |
| Lane 4 | - | 628 | - | 628 | 6.2 | 962 | 0.652 | 100 | NA | NA |
| Lane 5 | - | - | 88 | 88 | 5.8 | 107 | 0.818 | 100 | 0.0 | 4 |
| Approach | 145 | 1883 | 88 | 2116 | 6.1 | | 0.818 | | | |
| NorthWest: Stoneham St | | | | | | | | | | |
| Mov. From NW To Exit: | L2 NE | T1 SE | R2 SW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 11 | - | - | 11 | 5.8 | 185 | 0.061 | 100 | 0.0 | 2 |
| Lane 2 | - | 221 | - | 221 | 5.8 | 195[1] | 1.129 | 100 | NA | NA |
| Lane 3 | - | 95 | 99 | 194 | 5.8 | 172[1] | 1.129 | 100 | NA | NA |
| Lane 4 | - | - | 191 | 191 | 5.8 | 170[1] | 1.129 | 100 | 100.0 | 3 |
| Approach | 11 | 315 | 291 | 617 | 5.8 | | 1.129 | | | |
| SouthWest: GEH | | | | | | | | | | |
| Mov. From SW To Exit: | L2 NW | T1 NE | R2 SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 761 | - | - | 761 | 5.8 | 1254 | 0.607 | 67[5] | 49.5 | 2 |
| Lane 2 | - | 665 | - | 665 | 6.8 | 729[1] | 0.912 | 100 | NA | NA |
| Lane 3 | - | 870 | - | 870 | 6.8 | 954 | 0.912 | 100 | NA | NA |
| Lane 4 | - | 846 | - | 846 | 6.8 | 928[1] | 0.912 | 100 | NA | NA |
| Lane 5 | - | - | 122 | 122 | 4.6 | 108 | 1.126 | 100 | 0.0 | 4 |
| Approach | 761 | 2381 | 122 | 3264 | 6.5 | | 1.126 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | | |
| All Vehicles | 6791 | 7.1 | 1.129 | | | | | | | |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.

5 Lane under-utilisation found by the program

| Merge Analysis | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
| NorthEast Exit: GEH Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 100 | 0.0 | 665 | 686 | 3.09 | 2.06 | 11 | 1029 | 0.011 | 1.4 | 1.6 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 665 | 1800 | 0.369 | 0.0 | 0.0 |
| SouthWest Exit: GEH | | | | | | | | | | | | |

| Merge Type: **Priority** | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Exit Short Lane | 1 | 100 | 0.0 | 628 | 647 | 3.16 | 2.11 | 80 | 1024 | 0.078 | 1.4 | 1.7 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 628 | 1800 | 0.349 | 0.0 | 0.0 |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| SouthEast: Belgravia St | | | | |
| Lane 1 | 0.0 | 18.2 | 221.7 | NA |
| Lane 2 | 0.0 | 15.1 | 221.7 | NA |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: GEH | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 5 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthWest: Stoneham St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 12.6 | 232.6 | NA |
| Lane 3 | 0.0 | 11.1 | 232.6 | NA |
| Lane 4 | 0.0 | 11.0 | 232.6 | NA |
| SouthWest: GEH | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 5 | 0.0 | 6.8 | 226.7 | NA |

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Project: C:\PJA\Phil Jones Associates\SharedData - 07575 Ascot Racecourse Local Structure Plan & Scheme Amendment\4. Technical\4.3 Analysis\4.3.1 Transport\07575_M_01_A_Ascot Racecourse LSP&SA.sip9

# LANE SUMMARY

## Site: 103av [TCS PM - 2036 - mod (Site Folder: GEH/ Stoneham)]

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 180 seconds (Site Optimum Cycle Time - Minimum Delay)
Design Life Analysis: Constant Number of Years = 14

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Belgravia St | | | | | | | | | | | | | | | |
| Lane 1 | 336 | 13.0 | 336 | 13.0 | 303 | 1.109 | 100 | 184.7 | LOS F[11] | 43.9 | 380.6 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 272 | 13.0 | 272 | 13.0 | 245[1] | 1.109 | 100 | 229.8 | LOS F[11] | 36.2 | 313.9 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 185 | 13.0 | 185 | 13.0 | 275[1] | 0.671 | 61[5] | 108.1 | LOS F[11] | 15.3 | 132.5 | Short | 73 | 0.0 | NA |
| Approach | 793 | 13.0 | 793 | 13.0 | | 1.109 | | 182.4 | LOS F[11] | 43.9 | 380.6 | | | | |
| NorthEast: GEH | | | | | | | | | | | | | | | |
| Lane 1 | 145 | 4.6 | 145 | 4.6 | 1336 | 0.109 | 17[5] | 11.7 | LOS B | 3.3 | 25.5 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 628 | 6.2 | 628 | 6.2 | 1003 | 0.626 | 100 | 4.6 | LOS A | 11.5 | 90.6 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 628 | 6.2 | 628 | 6.2 | 1003 | 0.626 | 100 | 4.6 | LOS A | 11.5 | 90.6 | Full | 500 | 0.0 | 0.0 |
| Lane 4 | 628 | 6.2 | 628 | 6.2 | 1003 | 0.626 | 100 | 4.6 | LOS A | 11.5 | 90.6 | Full | 500 | 0.0 | 0.0 |
| Lane 5 | 88 | 5.8 | 88 | 5.8 | 78 | 1.125 | 100 | 228.7 | LOS F[11] | 11.8 | 92.3 | Short | 180 | 0.0 | NA |
| Approach | 2116 | 6.1 | 2116 | 6.1 | | 1.125 | | 14.4 | LOS B | 11.8 | 92.3 | | | | |
| NorthWest: Stoneham St | | | | | | | | | | | | | | | |
| Lane 1 | 11 | 5.8 | 11 | 5.8 | 312 | 0.036 | 100 | 83.0 | LOS F[11] | 0.8 | 6.3 | Short | 75 | 0.0 | NA |
| Lane 2 | 217 | 5.8 | 217 | 5.8 | 185 | 1.173 | 100 | 268.7 | LOS F[11] | 31.2 | 244.1 | Full | 300 | 0.0 | 0.0 |
| Lane 3 | 196 | 5.8 | 196 | 5.8 | 167[1] | 1.173 | 100 | 279.5 | LOS F[11] | 28.2 | 220.2 | Full | 300 | 0.0 | 0.0 |
| Lane 4 | 193 | 5.8 | 193 | 5.8 | 165[1] | 1.173 | 100 | 282.6 | LOS F[11] | 27.8 | 217.6 | Short | 60 | 0.0 | NA |
| Approach | 617 | 5.8 | 617 | 5.8 | | 1.173 | | 273.1 | LOS F[11] | 31.2 | 244.1 | | | | |
| SouthWest: GEH | | | | | | | | | | | | | | | |
| Lane 1 | 761 | 5.8 | 761 | 5.8 | 1276 | 0.597 | 68[5] | 20.2 | LOS C | 28.6 | 224.0 | Short | 145 | 0.0 | NA |
| Lane 2 | 635 | 6.8 | 635 | 6.8 | 722[1] | 0.880 | 100 | 32.6 | LOS C | 41.0 | 325.4 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 875 | 6.8 | 875 | 6.8 | 995 | 0.880 | 100 | 21.9 | LOS C | 57.4 | 456.4 | Full | 500 | 0.0 | 0.0 |
| Lane 4 | 870 | 6.8 | 870 | 6.8 | 990[1] | 0.880 | 100 | 22.9 | LOS C | 56.9 | 452.1 | Full | 500 | 0.0 | 0.0 |
| Lane 5 | 61 | 4.6 | 61 | 4.6 | 77 | 0.790 | 100 | 107.4 | LOS F[11] | 5.8 | 44.8 | Short | 210 | 0.0 | NA |
| Lane 6 | 61 | 4.6 | 61 | 4.6 | 77 | 0.790 | 100 | 106.3 | LOS F[11] | 5.8 | 44.8 | Short | 210 | 0.0 | NA |
| Approach | 3264 | 6.5 | 3264 | 6.5 | | 0.880 | | 27.0 | LOS C | 57.4 | 456.4 | | | | |
| All Vehicles | 6791 | 7.1 | 6791 | 7.1 | | 1.173 | | 63.6 | LOS E[11] | 57.4 | 456.4 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.
5 Lane under-utilisation found by the program
11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

**Approach Lane Flows (veh/h)**

SouthEast: Belgravia St

| Mov. From SE To Exit: | L2 SW | T1 NW | R2 NE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 90 | 246 | - | 336 | 13.0 | 303 | 1.109 | 100 | NA | NA |
| Lane 2 | - | 272 | - | 272 | 13.0 | 245[1] | 1.109 | 100 | NA | NA |
| Lane 3 | - | - | 185 | 185 | 13.0 | 275[1] | 0.671 | 61[5] | 60.0 | 2 |
| Approach | 90 | 519 | 185 | 793 | 13.0 | | 1.109 | | | |

NorthEast: GEH

| Mov. From NE To Exit: | L2 SE | T1 SW | R2 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 145 | - | - | 145 | 4.6 | 1336 | 0.109 | 17[5] | NA | NA |
| Lane 2 | - | 628 | - | 628 | 6.2 | 1003 | 0.626 | 100 | NA | NA |
| Lane 3 | - | 628 | - | 628 | 6.2 | 1003 | 0.626 | 100 | NA | NA |
| Lane 4 | - | 628 | - | 628 | 6.2 | 1003 | 0.626 | 100 | NA | NA |
| Lane 5 | - | - | 88 | 88 | 5.8 | 78 | 1.125 | 100 | 0.0 | 4 |
| Approach | 145 | 1883 | 88 | 2116 | 6.1 | | 1.125 | | | |

NorthWest: Stoneham St

| Mov. From NW To Exit: | L2 NE | T1 SE | R2 SW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 11 | - | - | 11 | 5.8 | 312 | 0.036 | 100 | 0.0 | 2 |
| Lane 2 | - | 217 | - | 217 | 5.8 | 185 | 1.173 | 100 | NA | NA |
| Lane 3 | - | 98 | 98 | 196 | 5.8 | 167[1] | 1.173 | 100 | NA | NA |
| Lane 4 | - | - | 193 | 193 | 5.8 | 165[1] | 1.173 | 100 | 100.0 | 3 |
| Approach | 11 | 315 | 291 | 617 | 5.8 | | 1.173 | | | |

SouthWest: GEH

| Mov. From SW To Exit: | L2 NW | T1 NE | R2 SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 761 | - | - | 761 | 5.8 | 1276 | 0.597 | 68[5] | 44.9 | 2 |
| Lane 2 | - | 635 | - | 635 | 6.8 | 722[1] | 0.880 | 100 | NA | NA |
| Lane 3 | - | 875 | - | 875 | 6.8 | 995 | 0.880 | 100 | NA | NA |
| Lane 4 | - | 870 | - | 870 | 6.8 | 990[1] | 0.880 | 100 | NA | NA |
| Lane 5 | - | - | 61 | 61 | 4.6 | 77 | 0.790 | 100 | 0.0 | 4 |
| Lane 6 | - | - | 61 | 61 | 4.6 | 77 | 0.790 | 100 | 0.0 | 5 |
| Approach | 761 | 2381 | 122 | 3264 | 6.5 | | 0.880 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 6791 | 7.1 | 1.173 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.

5 Lane under-utilisation found by the program

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NorthEast Exit: GEH Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 100 | 0.0 | 635 | 656 | 3.09 | 2.06 | 11 | 1061 | 0.011 | 1.3 | 1.5 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | 635 | 1800 | 0.353 | 0.0 | 0.0 |
| SouthWest Exit: GEH<br>Merge Type: **Priority** | | | | | | | | | | | |
| Exit Short Lane | 1 | 100 | 0.0 | 628 | 647 | 3.16 | 2.11 | 81 | 1024 | 0.079 | 1.4 | 1.7 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | 628 | 1800 | 0.349 | 0.0 | 0.0 |

**Variable Demand Analysis**

| | Initial Queued Demand<br>veh | Residual Queued Demand<br>veh | Time for Residual Demand to Clear<br>sec | Duration of Oversatn<br>sec |
|---|---|---|---|---|
| SouthEast: Belgravia St | | | | |
| Lane 1 | 0.0 | 16.6 | 196.5 | NA |
| Lane 2 | 0.0 | 13.4 | 196.5 | NA |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: GEH | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 5 | 0.0 | 4.9 | 224.9 | NA |
| NorthWest: Stoneham St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 16.0 | 311.0 | NA |
| Lane 3 | 0.0 | 14.4 | 311.0 | NA |
| Lane 4 | 0.0 | 14.2 | 311.0 | NA |
| SouthWest: GEH | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 5 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 6 | 0.0 | 0.0 | 0.0 | 0.0 |

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Project: C:\PJA\Phil Jones Associates\SharedData - 07575 Ascot Racecourse Local Structure Plan & Scheme Amendment\4. Technical\4.3 Analysis\4.3.1 Transport\07575_M_01_A_Ascot Racecourse LSP&SA.sip9

# LANE SUMMARY

## Site: 103av [TCS PM - 2036 - with LSP (Site Folder: GEH/ Stoneham)]

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated  Cycle Time = 180 seconds (Site Optimum Cycle Time - Minimum Delay)
Design Life Analysis: Constant Number of Years = 14

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Belgravia St | | | | | | | | | | | | | | | |
| Lane 1 | 359 | 12.1 | 359 | 12.1 | 299 | 1.199 | 100 | 276.3 | LOS F[11] | 53.7 | 460.6 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 302 | 11.8 | 302 | 11.8 | 251[1] | 1.199 | 100 | 307.9 | LOS F[11] | 45.3 | 387.2 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 185 | 13.0 | 185 | 13.0 | 274[1] | 0.674 | 56[5] | 112.9 | LOS F[11] | 15.3 | 132.5 | Short | 73 | 0.0 | NA |
| Approach | 845 | 12.2 | 845 | 12.2 | | 1.199 | | 251.8 | LOS F[11] | 53.7 | 460.6 | | | | |
| NorthEast: GEH | | | | | | | | | | | | | | | |
| Lane 1 | 145 | 4.6 | 145 | 4.6 | 1336 | 0.109 | 17[5] | 11.7 | LOS B | 3.3 | 25.5 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 628 | 6.2 | 628 | 6.2 | 1003 | 0.626 | 100 | 4.6 | LOS A | 11.5 | 90.6 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 628 | 6.2 | 628 | 6.2 | 1003 | 0.626 | 100 | 4.6 | LOS A | 11.5 | 90.6 | Full | 500 | 0.0 | 0.0 |
| Lane 4 | 628 | 6.2 | 628 | 6.2 | 1003 | 0.626 | 100 | 4.6 | LOS A | 11.5 | 90.6 | Full | 500 | 0.0 | 0.0 |
| Lane 5 | 97 | 5.2 | 97 | 5.2 | 88 | 1.105 | 100 | 212.0 | LOS F[11] | 12.7 | 98.4 | Short | 180 | 0.0 | NA |
| Approach | 2126 | 6.0 | 2126 | 6.0 | | 1.105 | | 14.6 | LOS B | 12.7 | 98.4 | | | | |
| NorthWest: Stoneham St | | | | | | | | | | | | | | | |
| Lane 1 | 13 | 4.9 | 13 | 4.9 | 167 | 0.080 | 100 | 108.2 | LOS F[11] | 1.1 | 8.4 | Short | 75 | 0.0 | NA |
| Lane 2 | 247 | 5.0 | 247 | 5.0 | 176 | 1.402 | 100 | 479.2 | LOS F[11] | 45.6 | 353.6 | Full | 300 | 0.0 | 19.9 |
| Lane 3 | 228 | 5.0 | 228 | 5.0 | 163[1] | 1.402 | 100 | 490.1 | LOS F[11] | 42.2 | 327.1 | Full | 300 | 0.0 | 12.8 |
| Lane 4 | 225 | 5.0 | 225 | 5.0 | 161[1] | 1.402 | 100 | 493.2 | LOS F[11] | 41.6 | 322.6 | Short | 60 | 0.0 | NA |
| Approach | 714 | 5.0 | 714 | 5.0 | | 1.402 | | 480.2 | LOS F[11] | 45.6 | 353.6 | | | | |
| SouthWest: GEH | | | | | | | | | | | | | | | |
| Lane 1 | 846 | 5.2 | 846 | 5.2 | 1264 | 0.669 | 76[5] | 22.6 | LOS C | 31.9 | 247.9 | Short | 145 | 0.0 | NA |
| Lane 2 | 627 | 6.8 | 627 | 6.8 | 709[1] | 0.885 | 100 | 34.1 | LOS C | 41.4 | 328.6 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 881 | 6.8 | 881 | 6.8 | 995 | 0.885 | 100 | 22.6 | LOS C | 58.9 | 468.1 | Full | 500 | 0.0 | 0.0 |
| Lane 4 | 873 | 6.8 | 873 | 6.8 | 986[1] | 0.885 | 100 | 23.6 | LOS C | 58.0 | 460.5 | Full | 500 | 0.0 | 0.0 |
| Lane 5 | 122 | 4.6 | 122 | 4.6 | 88 | 1.376 | 100 | 448.3 | LOS F[11] | 22.1 | 171.7 | Short | 210 | 0.0 | NA |
| Approach | 3348 | 6.3 | 3348 | 6.3 | | 1.376 | | 40.5 | LOS D | 58.9 | 468.1 | | | | |
| All Vehicles | 7033 | 6.8 | 7033 | 6.8 | | 1.402 | | 102.7 | LOS F[11] | 58.9 | 468.1 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.
5 Lane under-utilisation found by the program
11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

**Approach Lane Flows (veh/h)**

SouthEast: Belgravia St

| Mov. From SE To Exit: | L2 SW | T1 NW | R2 NE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 90 | 269 | - | 359 | 12.1 | 299 | 1.199 | 100 | NA | NA |
| Lane 2 | - | 302 | - | 302 | 11.8 | 251[1] | 1.199 | 100 | NA | NA |
| Lane 3 | - | - | 185 | 185 | 13.0 | 274[1] | 0.674 | 56[5] | 60.1 | 2 |
| Approach | 90 | 570 | 185 | 845 | 12.2 | | 1.199 | | | |

NorthEast: GEH

| Mov. From NE To Exit: | L2 SE | T1 SW | R2 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 145 | - | - | 145 | 4.6 | 1336 | 0.109 | 17[5] | NA | NA |
| Lane 2 | - | 628 | - | 628 | 6.2 | 1003 | 0.626 | 100 | NA | NA |
| Lane 3 | - | 628 | - | 628 | 6.2 | 1003 | 0.626 | 100 | NA | NA |
| Lane 4 | - | 628 | - | 628 | 6.2 | 1003 | 0.626 | 100 | NA | NA |
| Lane 5 | - | - | 97 | 97 | 5.2 | 88 | 1.105 | 100 | 0.0 | 4 |
| Approach | 145 | 1883 | 97 | 2126 | 6.0 | | 1.105 | | | |

NorthWest: Stoneham St

| Mov. From NW To Exit: | L2 NE | T1 SE | R2 SW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 13 | - | - | 13 | 4.9 | 167 | 0.080 | 100 | 0.0 | 2 |
| Lane 2 | - | 247 | - | 247 | 5.0 | 176 | 1.402 | 100 | NA | NA |
| Lane 3 | - | 118 | 111 | 228 | 5.0 | 163[1] | 1.402 | 100 | NA | NA |
| Lane 4 | - | - | 225 | 225 | 5.0 | 161[1] | 1.402 | 100 | 100.0 | 3 |
| Approach | 13 | 365 | 336 | 714 | 5.0 | | 1.402 | | | |

SouthWest: GEH

| Mov. From SW To Exit: | L2 NW | T1 NE | R2 SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 846 | - | - | 846 | 5.2 | 1264 | 0.669 | 76[5] | 54.4 | 2 |
| Lane 2 | - | 627 | - | 627 | 6.8 | 709[1] | 0.885 | 100 | NA | NA |
| Lane 3 | - | 881 | - | 881 | 6.8 | 995 | 0.885 | 100 | NA | NA |
| Lane 4 | - | 873 | - | 873 | 6.8 | 986[1] | 0.885 | 100 | NA | NA |
| Lane 5 | - | - | 122 | 122 | 4.6 | 88 | 1.376 | 100 | 0.0 | 4 |
| Approach | 846 | 2381 | 122 | 3348 | 6.3 | | 1.376 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 7033 | 6.8 | 1.402 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.

5 Lane under-utilisation found by the program

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NorthEast Exit: GEH<br>Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 100 | 0.0 | 627 | 648 | 3.07 | 2.05 | 13 | 1079 | 0.012 | 1.3 | 1.5 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 627 | 1800 | 0.349 | 0.0 | 0.0 |
| SouthWest Exit: GEH | | | | | | | | | | | | |

| Merge Type: **Priority** | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Exit Short Lane | 1 | 100 | 0.0 | 628 | 647 | 3.16 | 2.11 | 75 | 1024 | 0.073 | 1.4 | 1.7 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 628 | 1800 | 0.349 | 0.0 | 0.0 |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| SouthEast: Belgravia St | | | | |
| Lane 1 | 0.0 | 29.8 | 358.4 | NA |
| Lane 2 | 0.0 | 25.0 | 358.4 | NA |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: GEH | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 5 | 0.0 | 4.6 | 189.6 | NA |
| NorthWest: Stoneham St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 35.4 | 723.2 | NA |
| Lane 3 | 0.0 | 32.7 | 723.2 | NA |
| Lane 4 | 0.0 | 32.3 | 723.2 | NA |
| SouthWest: GEH | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 5 | 0.0 | 16.6 | 677.1 | NA |

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Project: C:\PJA\Phil Jones Associates\SharedData - 07575 Ascot Racecourse Local Structure Plan & Scheme Amendment\4. Technical\4.3 Analysis\4.3.1 Transport\07575_M_01_A_Ascot Racecourse LSP&SA.sip9

Cr Sekulla disclosed at Item 3 of the Agenda "Disclosure of Interest" an Impartiality Interest in the following item in accordance with Regulation 22 of the *Local Government (Model Code of Conduct) Regulations 2021*.

# 12.1 Ascot Racecourse Precinct Structure Plan

| | | |
|---|---|---|
| Voting Requirement | : | Simple Majority |
| Subject Index | : | 128/019 |
| Location/Property Index | : | Lots 1 (No. 88), 3 (No.96), 13, 50, and 9002 (No. 71) and Lot 452 (No. 70) Grandstand Road, Lot 7005 (No. 71) Matheson Road, and Lots 51 (No. 2) and 100 (No. 1) Raconteur Drive, Ascot |
| Application Index | : | N/A |
| Disclosure of any Interest | : | Nil |
| Previous Items | : | N/A |
| Applicant | : | Rowe Group |
| Owner | : | The Western Australian Turf Club<br>Western Australian Planning Commission |
| Responsible Division | : | Development and Communities |

## Council role

| | |
|---|---|
| **Legislative** | Includes adopting local laws, local planning schemes and policies. |

## Purpose of report

For Council to consider the draft Ascot Racecourse Precinct Structure Plan following public advertising and make a recommendation to the Western Australian Planning Commission (WAPC).

## Summary and key issues

- Rowe Group on behalf of Perth Racing has prepared the draft Ascot Racecourse Precinct Structure Plan (PSP) to guide the future use and development of the land in and around Ascot Racecourse.
- The draft PSP was advertised for 43 days between 24 October 2024 and 6 December 2024. At the close of the advertising period, a total of 103 submissions were received.
- The key matters raised in submissions relate to:

– Concerns, including on the appropriateness of certain instances of Crown Land and Road Reserves being able to accommodate the proposed development.

  - The clearing of trees.
  - Safe crossing points to and from the Racecourse across Grandstand Road.
  - The interface between future development on Lot 452 and the adjacent single houses.
  - Amenity impacts of future stables development within Precinct C.
  - Increased traffic congestion including concerns with increased movements within the 'Residential and Stables' zone.
  - Concerns about the loss of parking bays due to commercial development in Precinct E and the potential for increased street parking.
  - The amount of retail floor space proposed within the precinct.
- Several modifications to the draft PSP are proposed in response to the submissions and following an assessment of the document, with key changes relating to:
  - Aligning documentation with the latest draft Golden Gateway Local Structure Plan.
  - Providing further justification in the Transport Impact Assessment regarding parking availability, traffic impacts within the residential and stables area, and pedestrian crossings.
  - Updating the Retail Needs Assessment to include measures that justify the incremental expansion of retail development over time, tied to justified milestones and the associated provisions for this.
  - Updating land use permissibility.
  - Investigating and identifying trees for protection.
  - Adjusting the boundary of Precinct A to exclude development within the Crown Grant in Trust land.
  - Introducing additional development provisions to manage interfaces with Ascot Waters, Matheson Road, and the Central Belmont Main Drain.
- It is recommended that Council recommends the draft Ascot Racecourse PSP be approved by the WAPC, subject to modifications.

**Officer Recommendation**

That Council, pursuant to Schedule 2, Part 4, Clause 20 of the *Planning and Development (Local Planning Schemes) Regulations 2015*, recommends the draft Ascot Racecourse Precinct Structure Plan (Attachment 12.1.1) and supporting appendices (Attachments 12.1.2 through 12.1.8), incorporating the modifications detailed in Attachment 12.1.9, be approved by the Western Australian Planning Commission.

**Note:**

**Cr Marks put forward the following Alternative Motion.**

**Alternative Councillor Motion**

**Marks moved, Kulczycki seconded**

That Council, pursuant to Schedule 2, Part 4, Clause 20 of the *Planning and Development (Local Planning Schemes) Regulations 2015*, recommends the draft Ascot Racecourse Precinct Structure Plan (Attachment 12.1.1) and supporting appendices (Attachments 12.1.2 through 12.1.8), incorporating the modifications detailed in Attachment 12.1.9, be approved by the Western Australian Planning Commission, subject to:

1. The draft Ascot Racecourse Precinct Structure Plan and supporting appendices being updated to reflect the existing gates on Matheson Road and Hardey Road remaining in place and continuing to operate as they currently do and updating modifications 52 and 81 within the schedule of modifications to reflect this.

**Reason**

- Opening the development to the Residential and Stables Zone is detrimental to the operation of the zones traffic and horse component.

**Note: Cr Kulczycki put forward the following foreshadowed motion.**

**Alternative Councillor Motion**

That Council, pursuant to Schedule 2, Part 4, Clause 20 of the Planning and Development (Local Planning Schemes) Regulations 2015, recommends the draft Ascot Racecourse Precinct Structure Plan (Attachment 12.1.1) and supporting appendices (Attachments 12.1.2 through 12.1.8), incorporating the modifications detailed in Attachment 12.1.9, be approved by the Western Australian Planning Commission, subject to updating modification 71 to include:

1. Update the entire report to address and identify trees across on the site worthy of protection at development and subdivision stage. The report should adopt a default position that remnant vegetation is to be retained in the first instance through the avoidance of development, and, where necessary, identify built form controls that reflect and respond to these environmental values and opportunities.
2. As part of the above, in relation to Precinct E, there shall be a detailed analysis of the currently unzoned land, the Parks and Recreation reserve, and the Central Belmont Main Drain area. The analysis should acknowledge the presence of mature 'suitable' and 'potential' nesting trees, the significance of the site as the largest remaining pocket of native vegetation within the precinct, and the potential opportunity for a future living stream along the Central Belmont Main Drain.

**Reasons**

- The proposed amended Precinct Structure Plan (PSP) is an endeavour pursued by the proponent, Perth Racing, to advance their commercial interests. Council must seriously consider the merits and consequences of the proposal and weigh up the strategic objectives of Council on behalf of the community and the proponent's aspirations in a considered manner.
- Construction of a car park would negatively impact upon the environmental value of the existing land, containing a high density of mature "suitable" and "potential" nesting trees as demonstrated by the proponent's own Environmental Assessment Report.
- The location also contains the most significant remaining pocket of native vegetation across the entire PSP site.
- Positioning a car park upon Water Corporation assets, which forms part of the Central Belmont Main Drain would result in an environmentally deficient outcome, removing the potential to form a future living stream and puts into conflict land zoned Parks and Recreation.
- Without amendment, habitat destruction occurring as a result from the proposed amended PSP, is inconsistent with Council's strategic objectives as outlined in the endorsed Environment and Sustainability Strategy and Strategic Community Plan.
- This amendment balances Council's obligations to its own strategic direction and planning, community expectations as outlined via public comments, and accommodates the commercial interests of Perth Racing through the broader objectives outlined in their PSP.

**The Mover and Seconder agreed to amend the Alternative Councillor Motion to include Cr Kulczycki's foreshadowed motion.**

**Amended Alternative Councillor Motion**

**Marks moved, Kulczycki seconded**

That Council, pursuant to Schedule 2, Part 4, Clause 20 of the *Planning and Development (Local Planning Schemes) Regulations 2015*, recommends the draft Ascot Racecourse Precinct Structure Plan (Attachment 12.1.1) and supporting appendices (Attachments 12.1.2 through 12.1.8), incorporating the modifications detailed in Attachment 12.1.9, be approved by the Western Australian Planning Commission, subject to:

1. The draft Ascot Racecourse Precinct Structure Plan and supporting appendices being updated to reflect the existing gates on Matheson Road and Hardey Road remaining in place and continuing to operate as they currently do and updating modifications 52 and 81 within the schedule of modifications to reflect this.
2. Update the entire report to address and identify trees across on the site worthy of protection at development and subdivision stage. The report should adopt a default position that remnant vegetation is to be retained in the first instance through the avoidance of development, and, where necessary, identify built form controls that reflect and respond to these environmental values and opportunities.
3. As part of the above, in relation to Precinct E, there shall be a detailed analysis of the currently unzoned land, the Parks and Recreation reserve, and the Central Belmont Main Drain area. The analysis should acknowledge the presence of mature 'suitable' and 'potential' nesting trees, the significance of the site as the largest remaining pocket of native vegetation within the precinct, and the potential opportunity for a future living stream along the Central Belmont Main Drain.

**Reasons**

- Opening the development to the Residential and Stables Zone is detrimental to the operation of the zones traffic and horse component.
- The proposed amended Precinct Structure Plan (PSP) is an endeavour pursued by the proponent, Perth Racing, to advance their commercial interests. Council must seriously consider the merits and consequences of the proposal and weigh up the strategic objectives of Council on behalf of the community and the proponent's aspirations in a considered manner.
- Construction of a car park would negatively impact upon the environmental value of the existing land, containing a high density of mature "suitable" and "potential" nesting trees as demonstrated by the proponent's own Environmental Assessment Report.
- The location also contains the most significant remaining pocket of native vegetation across the entire PSP site.

- Positioning a car park upon Water Corporation assets, which forms part of the Central Belmont Main Drain would result in an environmentally deficient outcome, removing the potential to form a future living stream and puts into conflict land zoned Parks and Recreation.
- Without amendment, habitat destruction occurring as a result from the proposed amended PSP, is inconsistent with Council's strategic objectives as outlined in the endorsed Environment and Sustainability Strategy and Strategic Community Plan.
- This amendment balances Council's obligations to its own strategic direction and planning, community expectations as outlined via public comments and accommodates the commercial interests of Perth Racing through the broader objectives outlined in their PSP.

**Carried 7 votes to 1**

For: Davis, Harris, Kulczycki, Marks, Ryan, Sekulla and Sessions

Against: Rossi

## Location

The draft PSP encompasses 61.3ha of land bound by the Swan River, Ascot Waters Estate, Grandstand Road, Resolution Drive, the Residential and Stables zone, Hardey Road, Carbine Street and Matheson Road in Ascot (refer to Figure 1 below).

More specifically, the draft PSP applies to nine lots, eight of which are owned by Perth Racing. The remaining lot located within Precinct E (shaded yellow on Figure 1) adjacent to Grandstand Road is owned by the WAPC.

A further description of the land and tenure is included within the Report section.




Figure 1: Ascot Racecourse Precinct Structure Plan Area (outlined red)

## Consultation

The draft Ascot Racecourse PSP was advertised between 24 October 2024 and 6 December 2024 by:

- Sending letters to relevant State agencies and landowners and occupiers of properties outlined on Figure 2;
- Publishing a public notice in the 24 October 2024 edition of the PerthNow newspaper; and
- Displaying a public notice and information on the City's website, Belmont Connect and at the Civic Centre.




Figure 2: Referral Area (outlined red)

At the close of the advertising period, a total of 103 submissions were received. A summary of the submissions received, and officer's responses are included in the Schedule of Submissions contained as Attachment 12.1.10 and Confidential Attachment 12.1.11.

The key matters raised in submissions relate to:

- Land tenure concerns, including a portion of Precinct E being Crown Land, another designated as Road Reserve, and a portion of Precinct A subject to a Crown Grant in Trust.
- The clearing of trees.
- Safe crossing points to and from the Racecourse across Grandstand Road.
- The interface between future development on Lot 452 and the adjacent single houses.
- Amenity impacts of future stables development within Precinct C.
- Increased traffic congestion including concerns with increased movements within the 'Residential and Stables' zone.
- Concerns about the loss of parking bays due to commercial development in Precinct E and the potential for increased street parking.
- The amount of retail floor space proposed within the precinct.

The above matters will be further discussed in the report section.

## Strategic Community Plan implications

In accordance with the 2024–2034 Strategic Community Plan:

**Key Performance Area: Place**

**Outcome:** 6. Sustainable population growth with responsible urban planning.

**Key Performance Area: Performance**

**Outcome:** 11. A happy, well informed and engaged community.

## Policy implications

There are no policy implications associated with this report.

## Statutory environment

**Strategic Planning Framework**

Perth and Peel @ 3.5 Million

Perth and Peel @ 3.5 Million provides a strategic framework to guide development across the Perth and Peel regions, in response to a projected population of 3.5 million by 2050. The document divides the Perth metropolitan area into four sub-regions: Central, North-West, North-East, and South. The subject land is located within the Central Sub-region.

The strategy also outlines Urban Consolidation Principles and identifies corresponding precincts. Of particular relevance to this draft PSP are the 'Green Network', 'Urban Corridor' and 'Activity Centres' principles and precincts.

The racecourse is identified as part of the 'Green Network' that extends along the Swan River. The document highlights the importance of supporting population growth and higher-density living with a connected network of public and private open spaces.

Great Eastern Highway, located south of the subject land, is identified as an 'Urban Corridor', intended to accommodate higher-density residential development that leverages proximity to public transport while minimising impacts on surrounding areas and maintaining the efficiency of the regional transport network. Great Eastern Highway, Grandstand Road, and Resolution Drive are also identified as high-frequency public transit routes.

The document references State Planning Policy SPP 4.2 (SPP 4.2) and the hierarchy of centres based on the future importance of each centre from a network perspective. Additionally, the document identifies the important role that activity centres have in being a focal point for commercial and social activity and

the importance of these areas being designed to be walkable and near public transport to support these means of access.

Local Planning Strategy

The City of Belmont Local Planning Strategy is the strategic planning document that broadly sets out the long-term planning direction for the City. The Strategy also informed the preparation of Local Planning Scheme No. 15 (LPS 15). The key objectives of the Local Planning Strategy and relevant

sub-strategies for this precinct are as follows:

- To enhance the north-west entrance to the City.
- To encourage landmark development.
- Acknowledge that Ascot Racecourse and the Swan River are 'strategic tourism sites' of State significance to benefit future tourism development.

Activity Centre Planning Strategy

The Activity Centre Planning Strategy (ACPS) was prepared to guide the future planning and coordination of activity centres within the City of Belmont and was adopted by Council at the February 2024 Ordinary Council Meeting (OCM). The ACPS identifies a future local centre within the broader Golden Gateway precinct, which includes a portion of Perth Racing's land and outlines that it is to be 1,200m² in the first instance. The ACPS states that following further residential development within the Golden Gateway precinct, it may be appropriate for this figure to be reviewed through a Needs Assessment or Net Benefit Test.

**Statutory Planning Framework**

Metropolitan Region Scheme

The subject land area is primarily zoned 'Private Recreation' under the Metropolitan Region Scheme (MRS), with the balance zoned 'Urban' and land abutting the Swan River reserved 'Parks and Recreation' (Figure 3).




Figure 3: MRS zones and reserves (subject site outlined red and proposed MRS Amendment area outlined yellow)

The draft PSP proposes rezoning the area shown in yellow in Figure 3 above to 'Mixed Use' under LPS 15. To facilitate this, Perth Racing is seeking an MRS amendment to apply an 'Urban' zone. However, this is subject to a separate planning process.

*Planning and Development (Local Planning Schemes) Regulations 2015 (WA)*

Part 4, Schedule 2 – Deemed Provisions of the *Planning and Development (Local Planning Schemes) Regulations 2015 (WA)* (Regulations) outlines the procedure for the preparation, advertising and consideration of a structure plan. The key requirements under Part 4 of the Regulations are as follows:

- The local government must advertise a structure plan for at least 42 days unless otherwise approved by the WAPC.
- Within 60 days (or an alternative date agreed to by Department of Planning, Lands and Heritage) from the last day for making submissions, the local government must consider all submissions made on the proposed structure plan and prepare a report for the WAPC. In this case, the WAPC has granted an extension until 25 April 2025. The report must include the following:

– A list of the submissions considered by the local government;

– Any comments by the local government in respect of those submissions;

- A schedule of any proposed modifications to address issues raised in the submissions;
- The local government's assessment of the proposal based on appropriate planning principles;
- A recommendation by the local government on whether the proposed structure plan should be approved by the WAPC.

- If the WAPC is not given a report on a proposed structure plan they may make a decision on the proposed structure plan in the absence of a report. In making a decision, the WAPC may request technical advice or further information from the local government and if the local government fails to provide this, the WAPC may obtain the information themselves. If the WAPC incur any costs during this process, they may seek to recover these from the local government.
- On receipt of a report on a proposed structure plan from the local government, the WAPC must within 120 days, consider the plan and determine whether to approve the structure plan, require the structure plan to be modified or refuse the structure plan.
- The WAPC may direct the local government to readvertise the structure plan where it considers that major modifications have been made; however, it cannot direct the local government to readvertise the structure plan on more than one occasion.

Local Planning Scheme No. 15

The subject land is predominantly zoned 'Place of Public Assembly – Racecourse' under LPS 15. The southern portion of the subject land, abutting Resolution Drive, is zoned 'Mixed Use', and a separate portion of land adjacent to Grandstand Road is not currently assigned a zone or reserve (refer to Figure 4).



Figure 4: LPS 15 zones and reserves *(subject land outlined yellow)*

The draft PSP proposes to rezone land within Precincts A, D and E as detailed within the Report section. It is important to note that while the Structure Plan outlines the intended zoning, it does not itself rezone land. Instead, it provides the framework for a future scheme amendment to formally implement the proposed zoning changes.

Local Planning Scheme No. 15 includes objectives for the various zones. The objectives relevant to the draft PSP are as follows:

Commercial Zone:

> "The Town Centre and Commercial Zones are intended to provide for the retail commercial function and entertainment."

Mixed Use Zone:

> "The Mixed Use Zone is intended to allow for the development of a mix of varied but compatible land uses such as housing, offices, showrooms, amusement centres, eating establishments and appropriate industrial activities which do not generate nuisances detrimental to the amenity of the district or to the health, welfare and safety of its residents. Buildings should be of a high standard of architectural design set in pleasant garden surrounds with limited vehicular access from properties to primary roads."

Residential Zone:

> "The purpose and intent of the Residential Zone is to increase the population base of the City of Belmont by permitting a mix of single housing and other housing types to reflect household composition and thereby increase the resident population."

Place of Public Assembly Zone:

> "The 'Places of Public Assembly' zone is intended to allow for special places of assembly, such as halls, private schools, grounds for athletics, sports grounds with provision for spectators, racecourses, trotting track, stadia and/or showgrounds."

Residential and Stables Zone:

> "The Residential and Stables Zone is intended to provide for compatible and environmentally responsible use of land in proximity to the Ascot Racecourse and the Swan River by residential accommodation and stables and ancillary functions of the horse racing industry."

As the zones proposed to be applied to Precincts A, D and E are inconsistent with the existing zonings under LPS 15, and because the list of 'additional uses' is

proposed to be expanded and 'restricted uses' introduced, a scheme amendment will be required. This will occur separate to the structure planning process.

Regarding land use permissibility, Schedule 1 of LPS 15 includes land use definitions, while Table 1 – Zoning Table sets permissibility for these across the various zones. There are several uses defined within Schedule 1 which are not listed within the Zoning Table (e.g. 'Animal Establishment'). Such uses are to be treated as 'use not listed', must be publicly advertised, and generally submitted to Council for determination.

Clause 3.5 of LPS 15 addresses 'Additional Uses' and outlines that, regardless of the use class designation in the Zoning Table, land uses for areas specified in Schedule 2 can receive approval, subject to the specific conditions being met. Land zoned 'Place of Public Assembly – Racecourse' is currently assigned Additional Use 18 for 'Horse Sales' and 'Stables'. Further 'Additional Uses' are proposed by the draft PSP as discussed in the Report section.

Clause 3.6 of LPS 15 relates to 'Restricted Uses' and outlines that only the uses contained within Schedule 3 (Restricted Use Table) can be considered. The draft PSP proposes 'Restricted Uses' be applied to Precincts A, D and E. Further information on this is included within the Report section.

Draft Golden Gateway Local Structure Plan

The draft Golden Gateway Local Structure Plan (draft Golden Gateway LSP) has been prepared to coordinate future subdivision, zoning and development of land generally bound by Great Eastern Highway to the south, the Swan River to the west, the Ascot Waters precinct to the north, and the Ascot Racecourse/Residential and Stables precinct to the east (refer to Figure 5).

The draft Golden Gateway LSP originally proposed zoning changes and development provisions for part of the subject land. However, Perth Racing subsequently indicated its intent to pursue a separate planning framework for its landholdings. In response, the draft Golden Gateway LSP acknowledges that part of Perth Racing's land will be subject to a separate planning process. Retaining a portion of Perth Racing's land within the Golden Gateway precinct is considered appropriate to facilitate a coordinated and holistic approach to planning for both areas.

The Golden Gateway LSP indicates that a 1,200m$^2$ local centre may be appropriate within the precinct (including over Perth Racing's land). Further discussion on this is included within the Report section.




Figure 5: Draft Golden Gateway Local Structure Plan Area (outlined red)

The draft Golden Gateway Local Structure Plan was presented to Council at the 25 February 2025 OCM, where it was resolved to recommend that the WAPC approve the Structure Plan, subject to modifications. The document has been forwarded to the WAPC for their consideration.

State Planning Policy 3.0 – Urban Growth and Settlement

State Planning Policy 3.0 – Urban Growth and Settlement ('SPP 3.0') outlines key principles and considerations to guide sustainable urban growth and settlement across Western Australia. The objectives of SPP 3.0 are:

- To promote a sustainable and well-planned pattern of settlement across the State, with sufficient and suitable land to provide for a wide variety of housing, employment, recreation facilities and open space.
- To build on existing communities with established local and regional economies, concentrate investment in the improvement of services and infrastructure, and enhance the quality of life in those communities.
- To manage the growth and development of urban areas in response to the social and economic needs of the community and in recognition of relevant climatic, environmental, heritage, and community values and constraints.

- To promote the development of a sustainable and liveable neighbourhood form which reduces energy, water, and travel demand, while ensuring safe and convenient access to employment and services by all modes, provides choice and affordability of housing, and creates an identifiable sense of place for each community.
- To coordinate new development with the efficient, economic, and timely provision of infrastructure and services.

These matters have been considered through the assessment of the draft PSP and are further discussed in the Report section.

State Planning Policy 4.2 – Activity Centres

State Planning Policy 4.2 guides the planning and development of activity centres in the Perth and Peel region. The document emphasises the importance of activity centres having a compact urban form with

pedestrian-focused streetscapes. The City's ACPS identifies a local centre within the Golden Gateway precinct, including part of Perth Racing's landholdings subject to the draft PSP. State Planning Policy 4.2 states that neighbourhood and local centres should cater to daily and weekly household shopping needs, provide community facilities, and offer a small range of convenience services. Neighbourhood centres typically include a supermarket, personal services, and convenience shops, supported by small-scale offices. Local centres share these characteristics but operate on a smaller scale.

State Planning Policy 4.2 highlights that it is important to ensure that development of activity centre uses within an area generally comply with the floorspace need identified for specific activity centres in local planning strategies or structure plans. Where a proposal exceeds that floorspace need, the proposal is to demonstrate a net benefit to the community. A net benefit test is to be prepared in accordance with Section 7.8 of SPP 4.2 and address matters included in Section 5.3 of the Implementation Guidelines as follows:

- Is there a demand for additional floorspace, and how does the proposal meet this demand?
- How will the proposed development impact on the role of the activity centre and/or the viability and vibrancy of other activity centres in the hierarchy?
- What is the anticipated loss and/or gain of services to the community?
- What is the anticipated impact on access (distance, time, mode of travel) to services by the community?
- Will the proposal contribute to a net increase in employment? Does the proposal align with the objectives and outcomes of this policy and the planning framework?
- Are any potential impacts reduced over the longer term?

A Net Benefit Test has been prepared in support of the draft PSP. Further discussion on this is included in the Report section.

The draft PSP proposes part of Precinct E for 'showrooms.' State Planning Policy 4.2 states that these should be located in an Activity Centre Frame but notes that smaller centres may not have a frame. It also identifies bulky goods showrooms as a desired use within the frame of district centres but not for the frame of local or neighbourhood centres.

State Planning Policy 5.4 – Road and Rail Noise

State Planning Policy 5.4 – Road and Rail Noise ('SPP 5.4') applies to proposals for noise-sensitive land uses located near major transport and freight corridors. Under SPP 5.4, the proposed 'Mixed Use' zone within the draft PSP is partially situated within the noise buffer zone of Great Eastern Highway, a key freight and traffic route.

A Transportation Noise Assessment has been prepared in support of the draft PSP. The assessment found:

- The screening effect of existing buildings ensures that any ground-floor noise-sensitive uses would comply with the outdoor noise target.
- Noise-sensitive uses above the ground floor and within 200 metres of Great Eastern Highway would need to meet the requirements of Package A, including a notification on the title. Alternatives to the Deemed-to-Comply Package A may be considered if supported by a report from a qualified acoustical consultant (a member of the Association of Australasian Acoustical Consultants (AAAC)) once detailed plans are available.

The implementation of these requirements will be addressed as a condition of subdivision or development approval, as applicable.

State Planning Policy 7.2 – Precinct Design

State Planning Policy 7.2 – Precinct Design ('SPP 7.2') and the associated Precinct Design Guidelines provide direction on the design, planning, assessment, and implementation of precinct structure plans, local development plans, subdivisions, and developments within designated precinct areas.

State Planning Policy 7.2 identifies six precinct design elements that guide decision-makers in assessing such proposals: urban ecology, urban structure, public realm, movement, land use, and built form. These design elements have been addressed by the draft Ascot Racecourse PSP in the Design Response section of the document.

State Planning Policy 7.3 – Residential Design Codes

The Residential Design Codes (R-Codes) establish built form controls for all residential development within Western Australia and are used in the assessment of residential development and subdivision proposals. Volume 1 of the R-Codes establishes standards for single houses, grouped dwellings, and multiple dwellings up to R60. Volume 2 of the R-Codes specifically relates to multiple dwelling developments at the R80 code and above.

## Background

Rowe Group prepared the draft Ascot Racecourse Precinct Structure Plan on behalf of Perth Racing, lodging it on 21 August 2024. The WAPC granted consent to prepare the Precinct Structure Plan on 19 September 2024. The draft PSP has been prepared to address the following:

- The proposed zoning, reservation and density coding of land within the precinct.
- The proposed permissibility of certain land uses.
- Built form controls including plot ratio, building heights, setbacks and car parking requirements.
- The road network and vehicle access arrangements.
- Strategies for the management and treatment of stormwater.
- The identification of infrastructure and servicing requirements to facilitate development within the precinct.

The following reports have been prepared in support of the draft PSP:

- Attachment 12.1.2 – Local Water Management Strategy
- Attachment 12.1.3 – Environmental Assessment Report
- Attachment 12.1.4 – Engineering Servicing Report
- Attachment 12.1.5 – Transport Impact Assessment
- Attachment 12.1.6 – Retail Assessment (Net Benefit Test)
- Attachment 12.1.7 – Transportation Noise Assessment
- Attachment 12.1.8 – Landscape Master Plan.

An assessment of the draft PSP is detailed in the Report section.

Separately from this structure planning process, Perth Racing submitted a development application for stables and related facilities in Precinct C, which the Metro Inner Development Assessment Panel approved on 13 March 2025. This approval does not render this aspect of the draft PSP redundant, as the structure plan provides a broader framework for future planning and coordination.

Additionally, the approval is time limited and may not be acted upon, so the PSP will guide future development proposals.

## Report

The draft Ascot Racecourse PSP was advertised between 24 October 2024 and 6 December 2024. Following a review of the submissions and an assessment of the draft PSP, several modifications are proposed as detailed within the Schedule of Modifications (Attachment 12.1.10 and Confidential Attachment 12.1.11).

The draft PSP identifies five precinct areas, as shown in Figure 6 below.

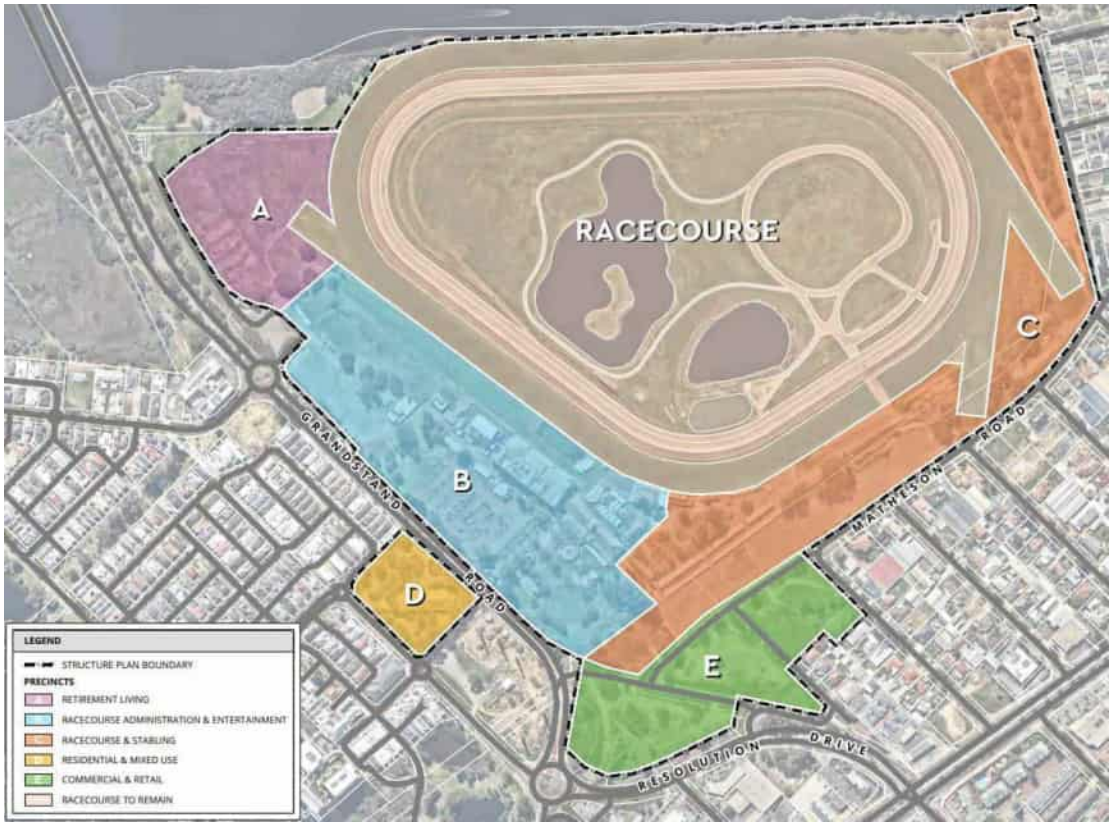



Figure 6: Structure Plan Precincts

An overview of the zoning, density and development provisions for Precinct A – E and the racecourse is outlined below.

Precinct wide matters relating to restricted use, the movement network, public open space, environment, heritage and general modification are also subsequently detailed.

### Precinct A

Zoning

Land within Precinct A is currently zoned 'Place of Public Assembly' under the City's LPS 15. The draft Ascot Racecourse PSP proposes that a 'Mixed Use' zone be applied to this land. In considering the suitability of this zone, the following is noted:

- The Department of Planning, Lands and Heritage Land Use Management team has advised that a portion of Precinct A is held by the WA Turf Club as a conditional freehold tenure (Crown Grant in Trust). A key condition of this tenure is that the land must be used solely for activities relating to the running of a public racecourse under the *Land Administration Act 1997*.
- A plan showing the outline of the Crown Grant in Trust Land is shown in Figure 7.

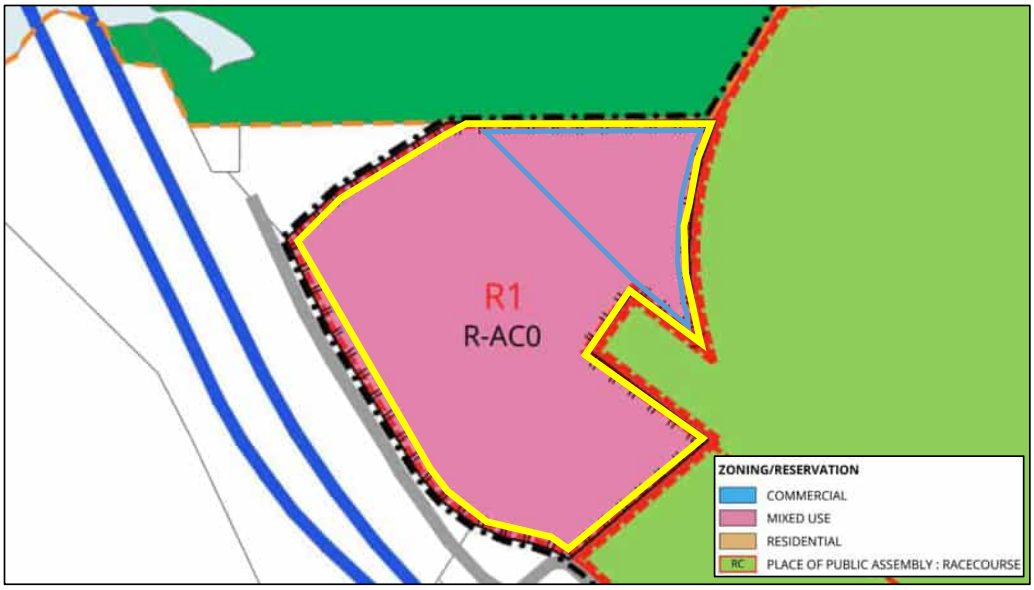



Figure 7: Precinct A and Crown Grant in Trust Identification (Precinct A outlined yellow and the area subject to the Crown Grant In Trust outlined blue)

- A 'Mixed Use' zoning of this land is not considered to align with the tenure requirements, particularly in relation to the 'Retirement Village' proposed in the development concept plan, as this land use does not directly relate to the operation of a public racecourse.
- Consequently, it is recommended that the draft Structure Plan be modified so that Precinct A does not encroach into the Crown Grant in Trust Land.
- Regarding the appropriateness of the 'Mixed Use' zone being applied to the balance of Precinct A the following is relevant:

– It is not considered necessary for the land to be zoned 'Mixed Use' to facilitate the proposed 'Retirement Village' shown in the development concept, as this type of development can be appropriately accommodated within a 'Residential' zone. However, the 'Residential' zone does not

ordinarily permit certain commercial uses that could enhance the function and amenity of the 'Retirement Village'.

- To address this, it is considered appropriate for the land to be subject to a different set of restricted uses than those currently proposed by the draft Precinct Structure Plan. This approach would allow for greater flexibility to accommodate complementary uses, while still ensuring that commercial activity remains focused in closer proximity to Great Eastern Highway and does not expand into other areas.
- Accordingly, it is recommended that a different set of restricted uses be applied to the land, including 'Nursing Home', 'Multiple Dwelling', and 'Restaurant/Café'. A modification is recommended to reflect this change.

Density and Proposed Development Provisions

An R-ACO density code is proposed for Precinct A which provides for development requirements to be prescribed by the draft PSP. A plot ratio of 2.5 and a building height of 15 storeys are proposed. In considering the appropriateness of this height and plot ratio the following is relevant:

- Based on the findings of a feasibility study, a plot ratio of 5.0 is proposed for 15 storeys within the Golden Gateway Precinct. Therefore, the proposed plot ratio of 2.5 may not be realistic for the proposed height, and unlikely to be applied without variation.
- Several submitters raised concerns that a 15-storey building is inconsistent with the scale of nearby development and that an entry statement into the City of Belmont is unnecessary. In response, it is not considered that a 15-storey development will negatively impact nearby residents in terms of visual privacy, noise, or overshadowing. It is considered that this is a distinct and separate site that is well separated from other residential areas, including Ascot Waters. Furthermore, Precinct A offers an opportunity for development to capitalise on its outlook over the Swan River and Ascot Racecourse. Any future proposal will still be subject to assessment at the development application stage, where potential impacts will be considered against the specific plans lodged.

Based on these considerations, no changes to the proposed building height are recommended. However, a modification is proposed to further investigate the plot ratio and make necessary adjustments to the draft PSP.

**Precinct B**

Zoning

Land within Precinct B is currently zoned 'Place of Public Assembly' under LPS 15. No changes are proposed to the zoning of this land under the draft PSP (Figure 8).

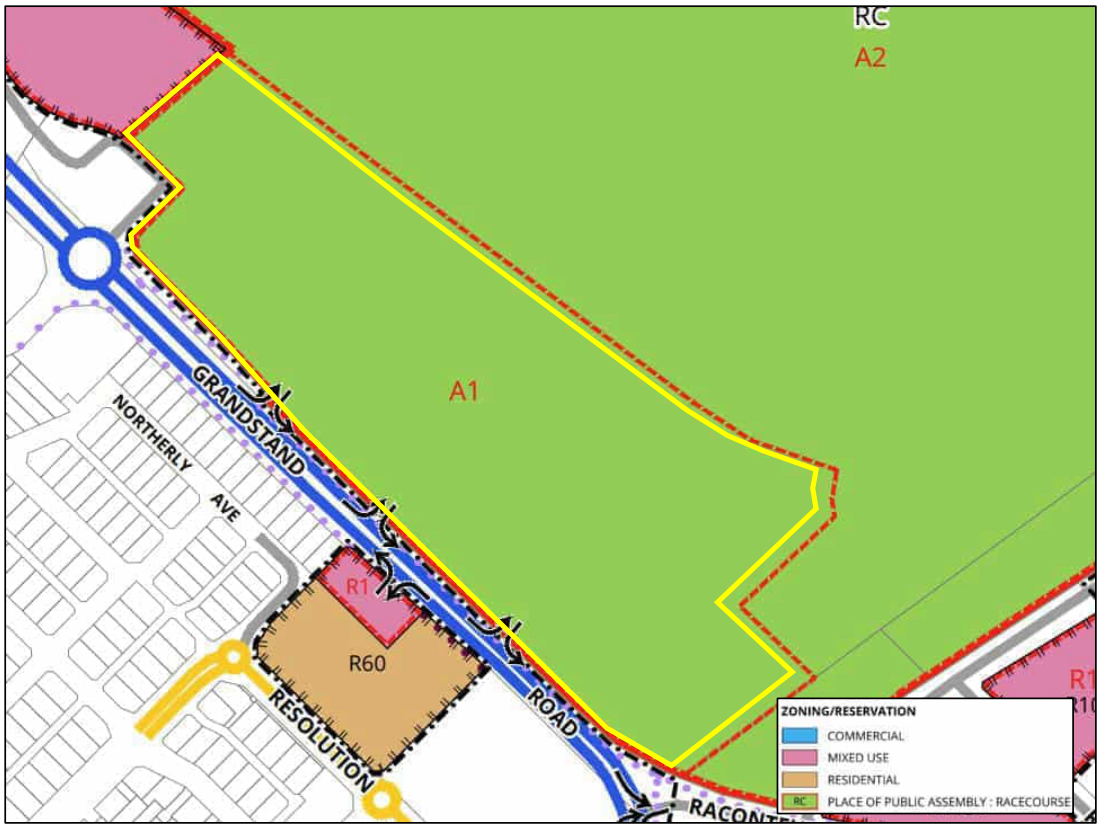



Figure 8: Precinct B zoning and Additional Use identification (Precinct B outlined yellow and Additional Use area outlined Red and notated A1)

The land within this precinct is currently subject to the 'Additional Uses' of 'Horse Sales' and 'Stables' under LPS 15. This allows these uses to be considered, regardless of the permissibility outlined for them in the Zoning Table. Whilst this is the case, the draft PSP does not propose to continue to provide for these uses within Precinct B.

Instead, and to align with the objective of the precinct as a 'Racecourse Administration and Entertainment Precinct', the following 'Additional Uses' are proposed to be introduced:

- Office
- Hotel
- Reception Centre
- Restaurant
- Tavern.

It is considered that these additional uses are appropriate as they will support the continuation of racecourse entertainment functions and provide for Perth Racing's administrative functions.

Density and Proposed Development Provisions

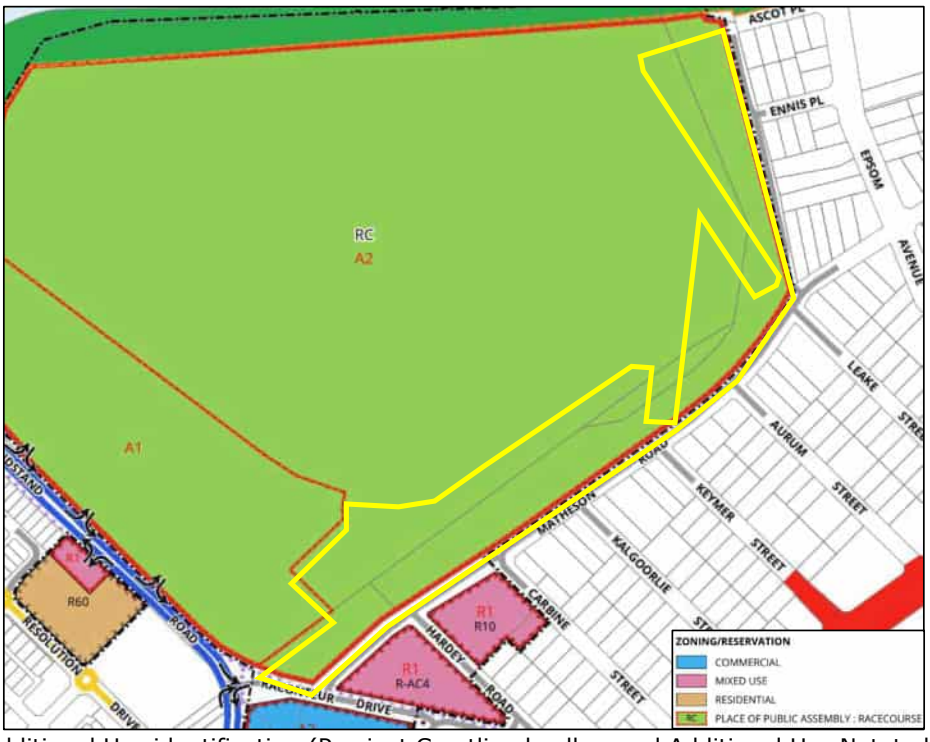
No density code is proposed to be applied to land within Precinct B, as it is proposed to retain its existing 'Place of Public Assembly' zone. The draft PSP proposes to apply a building height of six storeys to Precinct B. This building height is considered acceptable noting that the precinct is well separated from any existing residential development by Grandstand Road.

**Precinct C**

Zoning

Land within Precinct C is currently zoned 'Place of Public Assembly' under LPS 15, with no proposed changes to its zoning under the draft PSP (Figure 9).

Figure 9: Precinct C and Additional Use identification (Precinct C outlined yellow and Additional Use Notated A2)




Precinct C is currently subject to the 'Additional Uses' of 'Horse Sales' and 'Stables.' The draft PSP proposes the removal of 'Horse Sales,' which is deemed appropriate as it is not listed in Table 1 – Zoning Table of LPS 15. The draft PSP also recommends introducing 'Veterinary Centre' and 'Animal Establishment' as additional uses within Precinct C. The 'Veterinary Centre' is considered appropriate as an 'Additional Use' as it would support the function of the racecourse and stabling area.

In terms of 'Animal Establishment,' while this use is considered acceptable within the precinct, it should not be listed as an 'Additional Use'. This is because 'Animal Establishment' is not included in the Zoning Table of LPS 15. While it can still be considered in the precinct, it would need to be treated as a 'Use not Listed'.

Density and Proposed Development Provisions

Similar to Precinct B, no density code is proposed to be applied to land within Precinct C as it is proposed to retain its existing 'Place of Public Assembly' zone. In terms of other development controls, a building height of three storeys is proposed for Precinct C. This height is considered appropriate, as there are also provisions requiring future development to be setback a minimum of 10 metres from adjacent properties and 7.5 metres from Matheson Road.

To further facilitate an appropriate interface between development within this precinct, adjacent single houses and Matheson Road, it is considered appropriate to require a minimum landscaping width of 3 metres adjacent to these areas. While this arrangement is not reflected in the approved development plans relating to this precinct, that approval is time-limited and may not proceed. As such, it is appropriate to consider the Matheson Road interface independently of the approved development application.

**Precinct D**

Zoning

Land within Precinct D is currently zoned 'Place of Public Assembly' under LPS 15. The draft PSP proposes to apply a 'Residential' and 'Mixed Use' zone to this land as per Figure 10.




Figure 10:'Residential' and 'Mixed Use' zone applied to Precinct D (outlined Black)

It is considered that the proposed 'Residential' zone is appropriate as it will largely provide for a residential interface to Ascot Waters.

Several submissions raised concerns with the proposed 'Mixed Use' zone due to it being located directly adjacent to existing residential development. Additionally, there was concern that this land may be used for more intensive uses such as shops, offices, showrooms and other uses.

In considering these submissions and the appropriateness of the proposed 'Mixed Use' zone the following is noted:

- The objective of the 'Mixed Use' zone is to enable the development of a mix of compatible land uses, such as housing, offices, restaurants, cafes, and high-quality designed buildings. This zone is considered appropriate for the location; however, due to the wide range of uses that can currently be considered within this zone, there is a need for a greater level of control to manage potential amenity impacts.
- The draft PSP proposes to restrict the permissibility of uses within this precinct to those generally allowed under the 'Mixed Use' zone, with the exception of 'Amusement Facility,' 'Amusement Parlour,' 'Auction Mart,' 'Garden Centre,' 'Industry – Light,' 'Industry – Service,' 'Motor Vehicle Repair,' and 'Warehouse.'
- Despite these restrictions, it is considered necessary to impose additional limitations on the uses that can occur in this precinct. This will be further discussed in the 'Restricted Uses' section.

Density and Proposed Development Provisions

The draft PSP proposes to apply an R60 density code to Precinct D and a height of three storeys. Several submitters have raised concerns about the proposed three-storey height for Precinct D and the potential for commercial development adjacent to residential areas within Ascot Waters. In response:

- The proposed three-storey building height is consistent with buildings within the Ascot Waters Estate which in this locality ranges between two and four storeys.
- Most of the interface with Ascot Waters consists of 'Residential' lots, with only one lot abutting the proposed 'Mixed Use' zoned lot.
- For the 'Mixed Use' zoned lot, the draft PSP applies side setback requirements for non-residential development in line with Volume 1 of the R-Codes. However, the R-Codes allow setbacks to be reduced to nil, which is not considered to provide an appropriate interface to the adjacent residential development.

To address this, a modification is proposed to require non-residential development in Precinct D to have a minimum 3 metre setback from adjoining residential properties, with this area to be landscaped. Additionally, a modification to the precinct objectives is also proposed to highlight the need for non-residential uses to be compatible with surrounding residential development.

With these modifications, future development in Precinct D is expected to provide an appropriate interface to Ascot Waters.

**Precinct E**

Zoning

Land within Precinct E is currently zoned 'Mixed Use', 'Place of Public Assembly', 'Residential and Stables' or is unzoned, as shown in Figure 12. The Central Belmont Main Drain directly abuts Precinct E and is reserved 'Parks and Recreation'. As the drain forms part of the precinct, a modification is proposed to update all PSP maps to extend the Precinct E boundary over the drain as shown in Figure 11 below. The drain should remain reserved 'Parks and Recreation'.

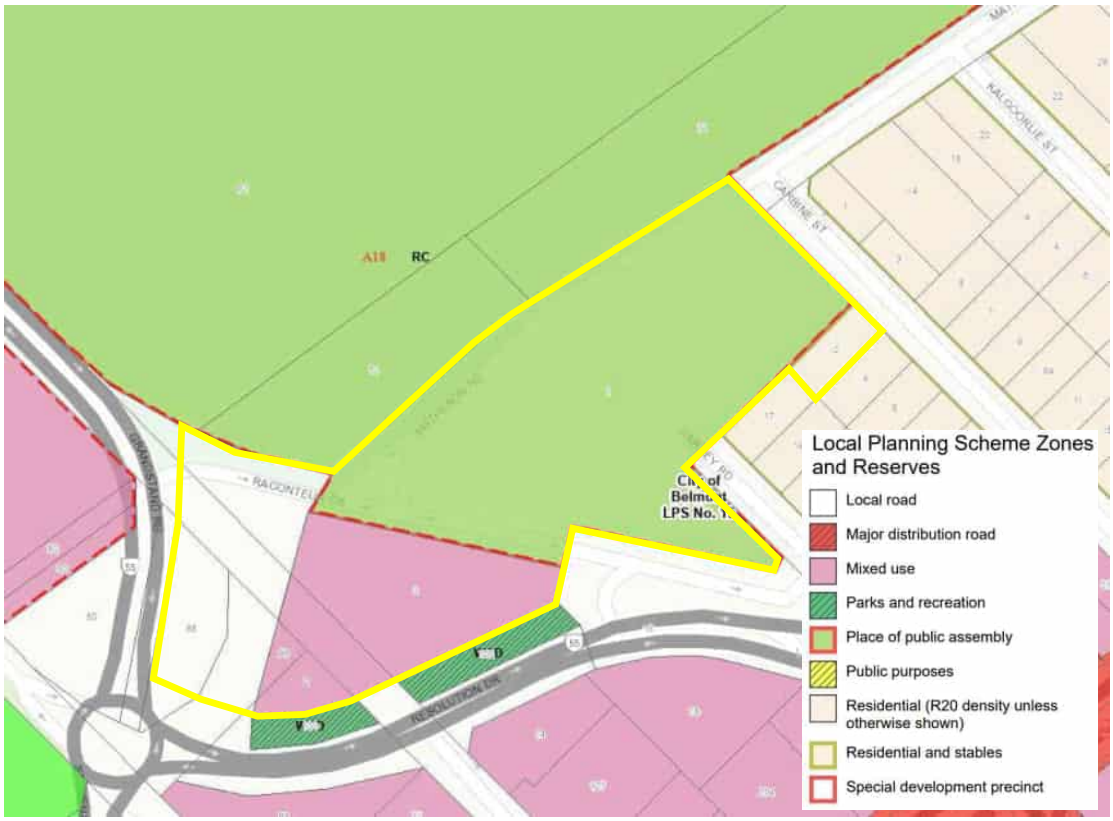



Figure 11: Existing Zoning Precinct E (existing precinct boundary outlined yellow)

The draft PSP proposes to apply a 'Commercial' zone over the portion of land that is currently zoned 'Mixed Use' and to land that is currently unzoned (white area) as per Figure 12. An 'Additional Use' of 'Health Centre' is also proposed over this portion of Precinct E which is considered an appropriate land use to locate within an activity centre.

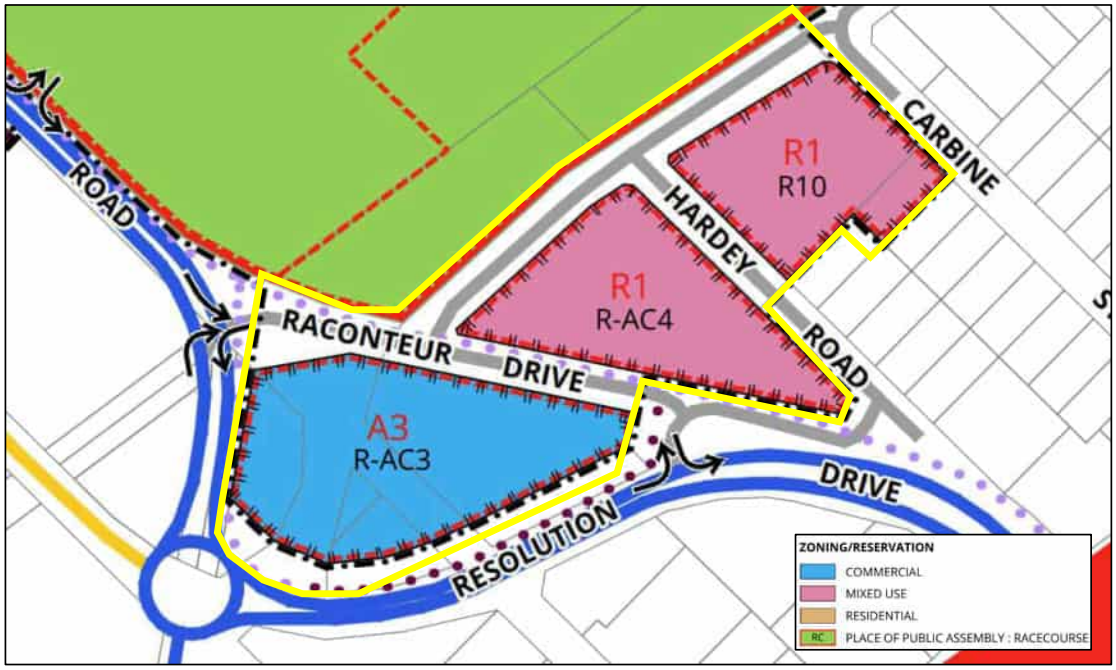



Figure 12:'Commercial' and 'Mixed Use' zone applied to Precinct E (proposed boundary of Precinct E outlined yellow)

In considering the appropriateness of the 'Commercial' zone the following is noted:

- The draft Golden Gateway LSP and draft Ascot Racecourse PSP both support the development of a local centre within the precincts. The proposed 'Commercial' zone would facilitate this and is therefore considered appropriate.
- Land subject to the proposed 'Commercial' zone is fragmented. Part of the land is held in freehold ownership by the WAPC (highlighted blue on Figure 13), while the remainder is designated as road reserve (highlighted yellow on Figure 13).
- The Department of Planning, Lands and Heritage (DPLH) has raised concerns regarding the intended use of the land, noting that leases for Crown Land can only be granted if the proposed use aligns with the land's purpose (e.g. public use of the road). In response, the applicant has clarified that the road reserve is intended to be used for parking, and advice provided to the applicant from DPLH indicates this is possible. A modification to the draft PSP is proposed to reflect this arrangement. If Perth Racing wish to pursue changing the road reserve to zoned land, this would be subject to a separate process in the future.
- The 'Commercial' zoned portion of Precinct E also accommodates major water distribution mains owned and managed by the Water Corporation. While zoning applied to land does not automatically enable development

without due consideration of existing infrastructure and assets, Water Corporation have opposed the rezoning of the land stating that the infrastructure cannot be moved or built on. However, the applicant has further engaged with Water Corporation who have now advised that car parking over the assets is possible. A modification is proposed to the draft PSP for this to be further detailed within the PSP documentation.



Figure 13: WAPC Freehold Land highlighted blue, and Road Reserve highlighted yellow

While the 'Commercial' zone is considered appropriate in light of the above points, concerns remain regarding the proposed level of retail floorspace within the precinct and the justification provided in the draft PSP. These concerns are further addressed in the Retail Floorspace section of the report.

Regarding the portions of Precinct E intended to be zoned 'Mixed Use', the following is relevant:

- Part of this land is adjacent to the 'Residential and Stables' zone. Given this proximity and the draft PSP concept plan designating the land for an Equine Welfare Centre and Jockey Services, officers inquired whether the applicant would consider applying the 'Residential and Stables' zone to this land. It is considered these uses align with the objectives of this zone.
- The applicant did not support this suggestion and advised that the draft PSP appropriately restricts certain uses. The applicant also advised that this zone offers flexibility and that development provisions could ensure a sympathetic built form interface with residential areas.
- Officers have considered the applicant's position and similar to the approach taken for Precinct D, consider that if a 'Mixed Use' zone were applied to this

land, further land use controls would be necessary to manage potential land use conflicts or amenity impacts. These are further discussed in the 'Restricted Uses' section.

- If further land use controls are not applied, it would be more appropriate to apply a 'Residential and Stables' zoning to the land bound by Hardey Road, Matheson Road, Carbine Street and residential and stables properties.
- Regarding the other portion of Precinct E intended to be zoned 'Mixed Use' (bound by Raconteur Drive, Matheson Road and Hardey Road) the proposed zoning is considered appropriate. However, further land use controls are also considered necessary as detailed in subsequent sections of this Report.

Density and Proposed Development Provisions

The draft PSP proposes applying an R10 density code to the portion of Precinct E bound by Hardey Road, Matheson Road, Carbine Street, and 'Residential and Stables' zoned properties. This density is considered acceptable, as development within the adjoining 'Residential and Stables' zone is also assessed against the R10 development controls.

The draft PSP proposes a maximum building height of two storeys, along with setback provisions to Carbine Street and adjoining properties. The proposed setbacks in the draft PSP are as follows:

- Primary and secondary street setback to Carbine Street: Minimum 3.75 metres.
- Average Primary and secondary street setback to Carbine Street: 7.5 metres
- Side setback (as per R10 development requirements under the R-Codes):

– Nil setback where the wall abuts an existing or simultaneously constructed boundary wall of equal or greater dimension.

– Minimum 1 metre where no major opening is proposed.

– Minimum 1.5 metres where a major opening is proposed.

It is considered that these provisions ensure that new developments align with the scale of residential buildings within the residential stables area and create a suitable interface.

- A density code of R-AC4 is proposed for the portion of Precinct E bound by Raconteur Drive, Matheson Road, and Hardey Road, with a maximum building height of three storeys. It is considered that the proposed heights are acceptable, as future development will be sufficiently separated from existing residential development. The setbacks outlined in the draft PSP, combined with those in LPS 15, are considered appropriate. Therefore, no modifications to these controls are recommended.

For the portion of Precinct E designated as 'Commercial,' a density code of

R-AC3 is proposed, with a maximum height of six storeys. It is considered that the proposed heights are acceptable due to the separation from residential areas. However, there are concerns that this could result in six-storey retail or commercial development. As outlined later in this report, there are concerns with excessive retail and commercial floor space within the precinct. Given this, it is considered necessary to recommended that the draft PSP be modified to restrict heights above two storeys to residential and office developments. The setbacks outlined in the draft PSP, combined with those in LPS 15, are considered appropriate. Therefore, no modifications to these controls are considered necessary.

The Central Belmont Main Drain runs along the southern portion of the 'Commercial' area in Precinct E. Although the draft PSP currently suggests addressing this interface at the development application stage, it is considered beneficial to include specific requirements within the draft PSP to ensure certainty at the subsequent development stage. These provisions aim to ensure a positive interface with the drain, enhance the streetscape along Resolution Drive, and provide an appropriate transition to the Golden Gateway precinct. Therefore, modifications are proposed to:

- Include development provisions in Table 4 addressing the interface with the Central Belmont Main Drain.
- Explicitly reference this interface under Design Element Objective 1.1 (Urban Ecology) and 03.3 (Public Realm).
- Require activation of all street frontages to enhance the interface with the drain and contribute positively to streetscapes.

Retail Floorspace

The draft PSP identifies two areas for potential retail development within Precinct E:

- A Neighbourhood Centre within the 'Commercial' zoned land, with a net lettable area (NLA) of 3,400m²; and
- Up to 9,600m² of 'Shop/Retail' floorspace within the 'Mixed Use' area bounded by Raconteur Drive, Matheson Road and Hardey Road.

Further discussion on each component is provided below.

Neighbourhood Centre

The City's ACPS was informed by a 2020 Retail Needs Assessment and supports a 1,200m² net lettable area (NLA) local centre in this location. It also identifies the potential to expand this to a 2,700–3,000m² neighbourhood centre. This future expansion of floorspace and category of centre is intended to align with further

development within the Golden Gateway Precinct, and will be subject to a Net Benefit Test to assess the need for additional floorspace in response to increased population. The draft PSP proposes a larger 3,400m² neighbourhood centre. One submitter has objected to this scale, noting it is inconsistent with the City's adopted Strategy.

In considering the proposed centre classification, level of retail floor space, and the matters raised in the submission, the following is relevant:

- A Retail Assessment (Net Benefit Test) has been prepared in support of the draft PSP. While the assessment concludes that the proposed retail floorspace aligns with the City's strategic framework, this view is not considered to reflect the intent of the City's ACPS. The City's ACPS anticipates incremental expansion over time, whereas the draft PSP proposes delivery a 3,400m$^2$ neighbourhood centre from the outset.
- The Retail Assessment states that the centre will be sustainable by 2026 without broader precinct development and with minimal impact on adjacent centres. This assumption relies on sufficient demand from the immediate trade area. However, as the draft Golden Gateway LSP has not been finalised, development within the precinct is unlikely to progress within this timeframe.
- Population growth projections also indicate that growth may not materialise until 2031–2041. As a result, the local population base in 2026 may be insufficient to support a 3,400m$^2$ neighbourhood centre without significantly drawing sales from existing centres. The claim that the centre will be sustainable by 2026 is therefore considered overly optimistic and requires further justification.
- Section 2.1 of theRetail Assessment mentions the key considerations outlined in SPP 4.2's Implementation Guidelines for preparation and assessment of retail assessments. However, the report does not provide clear responses to address these matters. The Retail Assessment is therefore not satisfactory in its current form.

Having regard to the above, modifications are proposed to require the Retail Assessment to address the inconsistency with the City's ACPS, particularly its approach to incremental expansion, and to provide further justification for the claim that the centre will be sustainable by 2026. In doing so, the assessment should not focus solely on whether the proposed centre is sustainable but also consider the proposal to establish a full neighbourhood centre from the outset rather than progressing incrementally, as intended in the City's Strategy. Additionally, it should justify why the proposed floorspace exceeds the final outcome anticipated in the Strategy, particularly given the very limited development expected by 2026. Furthermore, clear answers to the questions raised within Section 2.1 of the Retail Assessment should be provided within the conclusions of the report.

Other Retail Floorspace

As outlined earlier, the portion of Precinct E bound by Raconteur Drive, Matheson Road, and Hardey Road is proposed to accommodate 9,600m$^2$ of 'Other Retail' floorspace, with a focus on 'Showrooms'. In considering the level of 'Other Retail' floorspace, the following is relevant:

- The Retail Assessment states that the proposed bulky goods showroom will result in insignificant/low risk impacts on the surrounding existing and planned activity centre network, with the potential sales impact offset by the potential for substantial growth in the trade area over the next 15 years.
- The addition of 9,600m² of retail floorspace represents a significant change that is not contemplated in the City's strategic planning framework. Existing planned precincts, such as those along Great Eastern Highway and within the City's business park, are more appropriate to accommodate this use.
- The assessment also indicates that, similar to the neighbourhood centre, the level of retail floorspace will be sustainable in 2026. However, it is unclear what level of development is expected to occur to support the bulky goods showrooms within this timeframe. Given the limited development anticipated by 2026.
- The proposed 'Other Retail' includes more retail floorspace than the designated centre itself, which could undermine the intended role and hierarchy of the centre by effectively making it the secondary destination. Irrespective of the floor space matter above, the appropriateness of bulky goods showrooms in this location must be further considered having regard to the following:

– There are distinct differences between establishing a bulky goods showroom on Great Eastern Highway compared to locating it adjacent to a local or neighbourhood centre. The latter is subject to significant transformation under relevant Structure Plans, with a key focus on active uses that foster walking and cycling.

– The land identified for bulky goods showrooms is located directly adjacent to the designated future local centre. In accordance with the principles of SPP 4.2, local centres should have a compact urban form with pedestrian-oriented streetscapes, where activity is concentrated along key public streets and open spaces. Introducing bulky goods showrooms in this location contradicts these outcomes. The use is inherently car dependent and fundamentally undermines the intended function of the local centre as a pedestrian-friendly, mixed-use environment.

– State Planning Policy 4.2 designates 'Showroom' as a desired use adjacent to district centres but does not extend this designation to local and neighbourhood centres. Furthermore, while SPP 4.2 states that 'Showrooms' are appropriate within activity centre frame areas, it also

acknowledges that smaller centres may not have a frame. In this instance, a frame is not considered appropriate, particularly where the retail floorspace within the frame exceeds that of the centre itself.

Having regard to the above, modifications are proposed to prevent 'Showrooms' from being approved on any 'Mixed Use' zoned land within the precinct. This will result in all references to 'Showrooms' being deleted from the draft PSP and supporting reports, and Figure 16 being updated to remove the activity centre frame designation.

**Restricted Uses**

Restricted Use areas are a mechanism in local planning schemes that limit land to specific permitted uses. This means that only the designated use(s) are allowed on a particular site, and any other uses that would typically be permissible within the zone are not permitted.

The draft PSP proposes to restrict the permissible uses within the 'Mixed Use' zoned land so that the following cannot be approved:

- 'Amusement Facility'
- 'Amusement Parlour'
- 'Auction Mart'
- 'Garden Centre'
- 'Industry – Light'
- 'Industry – Service'
- 'Motor Vehicle Repair'
- 'Warehouse'.

While this approach is supported, the current wording in the 'Restricted Use' table states: "uses permissible in the Mixed Use zone, but excluding the following uses," followed by a list of the abovementioned uses. To better reflect the intent of 'Restricted Use' areas, it is considered more appropriate to include a full list of uses capable of approval in Table 2. A modification is therefore proposed to explicitly list all permissible uses, ensuring clearer alignment with the purpose of the 'Restricted Use' mechanism.

Further, it is considered necessary to expand the list of uses not permissible in Precincts D and E to include the following:

- 'Fast Food Outlet/Lunch Bar'
- 'Funeral Parlour'
- 'Garden Centre'

- 'Pet Day Care'
- 'Night Club'
- 'Radio or TV Installation'
- 'Restricted Premises'
- 'Service Station'
- 'Vet Hospital'
- 'Showroom'.

These uses are not considered appropriate within proximity to residential development as they are likely to have adverse amenity impacts or do not align with the intent of these precincts. Therefore, a modification is proposed to ensure that the list of 'Restricted Uses' within Table 2 does not include the abovementioned uses.

Restricted Uses are also proposed to apply to Precinct A as discussed earlier in the report.

**Racecourse**

The balance of the subject land outside Precincts A – E is the Racecourse. This land is currently predominantly zoned 'Place of Public Assembly' and partly reserved 'Parks and Recreation' (refer to Figure 14). The draft PSP does not propose any changes to the zoning or reserve applied to this area of land.




Figure 14: Existing zoning applied to the Racecourse

The Department of Biodiversity Conservation and Attractions requested that the portion reserved 'Parks and Recreation' be ceded to the State Government and that a Foreshore Management Plan should be prepared. In considering this feedback, the following is relevant:

- The Draft PSP does not propose any changes to the Racecourse.
- As the PSP does not alter the Racecourse, there is not considered to be a sufficient need or nexus to reasonably justify ceding the Foreshore Reserve.
- A strategic planning tool such as the PSP is not the appropriate mechanism for requiring land to be ceded. If development or subdivision were proposed in this area, the PSP could identify potential opportunities, but in the absence of such changes, ceding the Foreshore Reserve is not justified.
- Since no changes to the Racecourse are proposed, there is no need or mechanism for requiring a Foreshore Management Plan. However, this may be appropriate for Precincts A and C, and it is recommended that Section 4.3 is updated to address this.

Having regard to the above, the requirement for ceding a portion of the racecourse (land reserved 'Parks and Recreation') is not supported.

**Public Open Space**

The draft PSP does not propose public open space within the precinct. While Liveable Neighbourhoods typically requires a 10% public open space contribution for residential development, this does not apply to 'Commercial' or 'Mixed Use' zoned land.

In terms of the proposed 'Residential' zoned land it is considered appropriate for the requirement for public open space to be further considered as part of future subdivision and development applications relating to the site. A modification is recommended to the draft PSP to capture this.

In the case of the 'Commercial' and 'Mixed Use' zoned land there is a requirement for existing open space within 300m of the site to be considered. In considering this, the following is relevant:

- The precinct is located in close proximity to and within 300 metres of the Swan River foreshore, Belmont Trust land, and future open space opportunities at the Ascot Kilns site, as outlined in the draft Golden Gateway LSP.
- The draft PSP also identifies an opportunity for a 1.4ha privately owned, publicly accessible parkland between Precincts A and B, incorporating landscaping, picnic facilities, and a playground. Further information regarding this space is required in the draft PSP; open space on private land would not ordinarily constitute public open space.

A modification is also recommended to the draft PSP to reflect this information.

**Movement**

Road Network and Intersection Upgrades

The road network within and around the precinct will largely remain in its existing configuration (refer to Figure 15). The only intersection modifications specifically mentioned within the draft PSP and Traffic Impact Assessment (TIA) are restricting the Resolution Drive and Raconteur Drive intersection to

left-in/left-out access and permanently opening the gates at Raconteur Drive and Grandstand Road. It is also not clear if the gates along Hardey Road and Matheson Road will be opened.

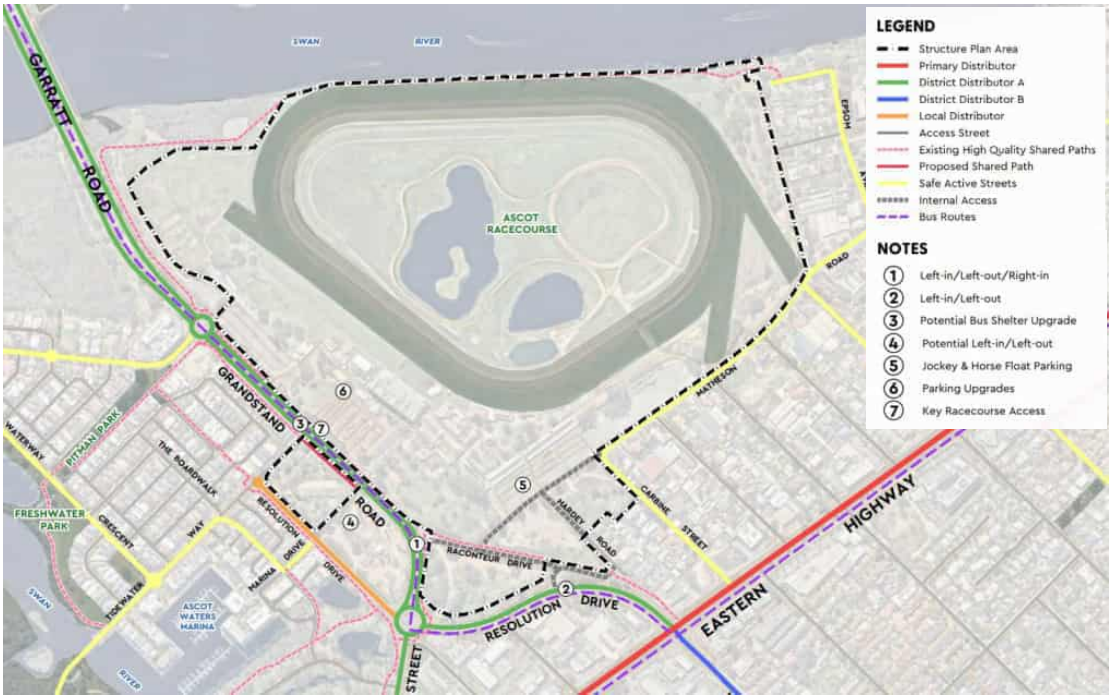



Figure 15*: Proposed Movement Network*

Submitters raised several concerns regarding the road network and vehicle movements, including:

- Increased traffic and congestion specifically:
  - On race days.
  - Due to development within the precinct and the Golden Gateway Precinct.
  - Through the 'Residential and Stables' precinct.
  - At the roundabouts along Grandstand Road.
- Amenity impacts associated with access from Ennis Place.
- Traffic flow concerns caused by right turns from Grandstand Road onto Raconteur Drive and from Stoneham Street into Daly Street, as shown in Figure 16 of the draft PSP (refer to Figure 16).




Figure 16: Extract of Figure 16 from the draft PSP

In considering these concerns the following is relevant:

- A TIA has been prepared to assess the likely impacts on road network's performance. It factors in anticipated trip generation rates and concludes that the network and all intersections will operate at an acceptable level of service. Despite this, there are updates required to the TIA as detailed in subsequent points.
- The TIA was prepared before details of the Golden Gateway LSP were available. Now that these details are known, the assessment should be updated to address traffic within the Golden Gateway precinct, with conclusions in both the draft PSP and assessment updated accordingly. Despite this, it should be noted that the Movement and Access Strategy prepared in support of the Golden Gateway LSP factors in movements associated with future racecourse development and concludes that the road network and intersections are able to operate at an acceptable level of service.
- Regarding congestion associated with race day, the TIA indicates that peak racecourse activity occurs outside AM and PM weekday peak periods and that traffic management will continue to be in place on race days. As such,

traffic impacts are expected to be appropriately managed. It is also important to note that this is an existing activity that is not being introduced by the draft PSP.

- The TIA states that the gate providing access to Raconteur Drive from Grandstand Road will remain open permanently, leading to increased traffic within the Residential and Stables precinct. While no mention is made of it, it is also not clear if the gates along Hardey Road and Matheson Road will be opened. It is considered that the assessment does not adequately address any associated traffic impacts. The draft PSP and TIA need to be updated to explicitly state whether these gates are proposed to be permanently opened and to provide a more comprehensive analysis of any impacts, and if necessary, mitigation measures.
- Regarding access from Ennis Place, this has been considered in the assessment of the recently approved development for Precinct C, which found it to be suitable. However, the draft PSP and TIA do not identify the potential for access from Ennis Place. Therefore, a modification is proposed that this arrangement be mentioned within the draft PSP and TIA. There may need to be restrictions on vehicle types and access hours. Additionally, this would require access through Lot 10194 which is owned by the State of WA. Therefore, permission may also be required for access through this lot. These matters shall be referenced in the draft PSP.
- Regarding right turns from Grandstand Road into Raconteur Drive, it should be noted these are already accommodated under the existing intersection configuration, and the assessment confirms this arrangement will operate satisfactorily.
- Regarding the right turn from Stoneham Street into Daly Street, a modification is proposed to remove all vehicle movement arrows from Figure 16. The draft Golden Gateway LSP proposes a cul-de-sac at Daly Street, consistent with Main Roads Western Australia's Vehicle Access Strategy for Great Eastern Highway.

Beyond submitter comments, officers have identified further matters requiring attention:

- The assessment assumes no vehicle movements during peak hours for Precincts B and C, whereas some movements are expected, even if low. A modification is proposed to update the assessment to reflect this.
- Figure 14 of the draft PSP shows a left-in/left-out arrangement over the Ascot Kilns site. Clarification is needed on what this relates to, when this land is located within the Golden Gateway precinct and is identified as requiring further planning.
- The Structure Plan states that road reserves are to be maintained in their existing configuration and tenure in accordance with the Structure Plan Map. It is noted that currently Perth Racing own a section of Raconteur Drive. However, this road is shown as a local road on the Structure Plan Map.

Officers queried whether this road would stay in private ownership under the care and control of Perth Racing noting that it will purely provide access to Perth Racing's landholdings. Perth Racing have advised that they wish to retain flexibility until future development outcomes are known. It is considered appropriate for Section 4.1.3 of the draft PSP to be updated accordingly.

Crossover Locations

The draft PSP outlines proposed vehicle access arrangements for each precinct and includes indicative crossover locations on the Masterplan. While it is acknowledged that the TIA notes these locations and details will be confirmed at later stages, it is considered more appropriate for the Masterplan to omit the crossover locations at this stage, as they will require technical justification and assessment in later design phases.

Parking

Submitters raised concerns about the loss of parking bays due to commercial development in Precinct E and the potential for increased street parking. It is important to note that the adequacy of parking for future development will be assessed in accordance LPS 15, giving due regard to parking provisions included within the draft PSP. Irrespective of this, officers have identified the following updates required to the draft PSP and TIA as follows:

- The TIA states that parking lost in Precincts C and E will be offset by surplus bays elsewhere on the site and upgrades to a parking area in Precinct B. While officers have reviewed the parking calculations, it is considered that a clearer explanation of the calculations and parking availability should be provided. In addition, the draft PSP and TIA should be updated to ensure consistency. For example, the TIA notes: "Based on observations of parking demand within the grassed area in Precincts B and E, approximately 110 to 125 cars park within this area on a busy race day". However, the draft PSP states: "The Southern Precinct B patron parking area would be upgraded to accommodate an improved layout, accommodating approximately 110 to 125 cars". This creates uncertainty as to whether the 110 to 125 spaces refer to existing capacity or a planned upgrade.
- The TIA indicates that a Travel Demand Plan will be prepared to assist with traffic management, actively discourage patrons from using private motor vehicles, and ensure that racecourse patrons are well informed about parking distribution and pick-up/set-down areas. While this initiative is supported, it is recommended that more specific details of the Travel Demand Plan be included in the draft PSP, and that Part 1 explicitly reference the requirement for such a plan as part of future development

applications relating to the racecourse activities. A modification is proposed to address this.

Submitters also raised general concerns about the availability of parking within new developments.

The structure plan applies parking rates in accordance with LPS 15 and the

R-Codes, except for 'Shop,' 'Office,' and 'Bulky Goods Showroom' uses in Precinct E, which are proposed to align with the DPLH's *Guidance for*

*Non-Residential Car Parking Requirements*. When a new structure plan is being prepared, this planning manual recommends that the minimum and maximum car parking rates set out in the document are adopted. However, as outlined earlier in this report, officers do not support the establishment of 'Bulky Goods Showroom' uses within the precinct.

Pedestrian/Cyclist Movements and Crossings

Submitters advocated for enhanced pedestrian infrastructure, specifically requesting the installation of a pedestrian crossing signal at the bus stop on Grandstand Road, along with railings to prevent crossings at other locations. In response:

- The draft PSP proposes improved pedestrian connectivity, including new shared paths. However, officers note that specific details on implementation and responsibility are lacking. For instance, while a shared path is mentioned along Resolution Drive adjacent to Precinct E, the implementation details, such as who is responsible for its development, are not provided.
- The TIA recommends investigating footpath extensions around the racecourse, including south of Grandstand Road, as well as improved connections to local amenities on Great Eastern Highway. However, specific upgrade details are not outlined.
- Neither the draft PSP nor the TIA addresses improvements to pedestrian crossings. Main Roads Western Australia (MRWA) has requested an updated TIA to assess and determine necessary pedestrian facility upgrades around Ascot Racecourse, including modelling the potential impacts on the road network.
- In response to submitters' suggestions for crossing lights and railings on Grandstand Road, officers consider that while restricting crossing points is unnecessary, further investigations into pedestrian safety, including the potential for crossing lights, are warranted. This would also address another submitter's suggestion for improved pedestrian connectivity to the proposed publicly accessible private open space.

Having regard to the above, it is recommended that further investigations be undertaken for improvements to pedestrian and cyclist infrastructure and that

specific details be included within both the draft PSP and the TIA. These details should include details on who will be responsible for delivering this infrastructure.

**Environment**

Site Contamination

The draft PSP classifies Precincts A, B, and C as "possibly contaminated – investigation required" due to horse racing activities and potential runoff from animal storage and agistment areas nearby. The PSP indicates that Perth Racing is conducting monitoring and investigations into potential contamination, with findings to be reviewed by the Department of Water and Environmental Regulation (DWER). The Local Water Management Strategy mentions that detailed site investigations have been conducted in a separate report. As contamination could affect future development, a modification is proposed to include additional details in the documentation and address its potential impacts.

Acid Sulphate Soils

The DWER's Acid Sulphate Soils (ASS) risk mapping shows that most of the site has a high to moderate risk of ASS occurrence within 3 meters of the natural surface. However, parts of Precincts B, C, and the racecourse are classified as having a moderate to low risk. A modification is proposed to the Structure Plan to specify in Part One, Section 4.3.7 that if ASS is encountered in a moderate to low-risk area, an ASS Management Plan will be required at the subdivision and/or development stage. Additionally, a modification to Section 2.1.4.2 is recommended to clarify that in high to moderate-risk areas, an ASS assessment will be required for subdivision and/or development, and an ASS Management Plan and dewatering plan may also be necessary as a condition of approval.

Tree Retention

Before addressing specific matters raised in submissions and referral responses, it is important to clarify the respective roles of planning and environmental legislation in Western Australia. While planning decisions under the *Planning and Development Act 2005* may consider environmental matters, they do not in themselves grant approval to undertake activities such as vegetation clearing. Such activities are subject to separate requirements under the *Environmental Protection Act 1986*, including the need to obtain a clearing permit. The environmental surveys undertaken to inform planning proposals are intended to support the planning level consideration, noting that more detailed further flora and fauna surveys may still be required to support applications under the *Environmental Protection Act 1986*. It is important not to conflate the role of environmental assessment under the *Environmental Protection Act 1986* with that of assessment under the *Planning and Development Act 2005*. From a planning

perspective, the surveys submitted are considered adequate and appropriate for the planning consideration at this stage of the process.

There are existing mature trees on the subject land, particularly within Precincts C and E. Several submissions raised concerns about the potential loss of habitat for Carnaby's Black Cockatoos due to future development in these precincts. The referral response from the Department of Biodiversity, Conservation and Attractions (DBCA) also states that there are opportunities for retaining mature vegetation including potential Carnaby Cockatoo habitat trees. In considering these comments, the following is relevant:

- An Environmental Assessment Report prepared for the draft PSP identifies 1.27ha of Carnaby's Black Cockatoo (CBC) foraging habitat of which 0.35ha comprised primary foraging habitat. A total of 0.84ha of foraging habitat for Forest Red-Tailed Black Cockatoo (FRTBC) was also recorded of which 0.28ha comprised primary foraging habitat. A total of 66 habitat trees were recorded with five trees containing hollows potentially suitable for black cockatoo breeding while the remaining 61 did not contain hollows.
- The majority of the vegetation on the site has been heavily disturbed with limited intact native vegetation present. The vegetation was therefore mostly determined to be in 'degraded – completely degraded' and 'completely degraded' condition, with a small portion determined to be 'very good – good' in part of the site not impacted by the stables development.
- The black cockatoo foraging habitat identified by the field survey is patchily distributed across the site and interspersed with plant species not used by CBC or FRTBC. Additionally, the trees identified as cockatoo foraging habitat are located in parts of the site categorised as being in a degraded condition.
- Although trees were identified as being potential habitat, no signs of use were identified during the targeted black cockatoo survey, such as chew marks, droppings or moulted feathers within any of the habitat trees with potential hollows.
- The consultant comments that the potential habitat trees for CBC and FRTBC within the site are unlikely to represent critical foraging or breeding habitat, given its small extent within an urban setting with minimal potentially suitable hollows and no evidence of use by CBC or FRTBC.
- A recent approval for stables within Precinct C proposes the removal of trees identified as potential nesting/foraging trees. As detailed below, officers were satisfied that the environmental consultant's investigations adequately addressed this matter within the scope of planning legislation. However, separate legislative requirements under the *Environmental Protection Act 1986* must still be satisfied before any clearing can occur.
- The recent Development Assessment Panel report for stables recognise that prior to any clearing, a clearing permit is required to be applied for and granted under the *Environmental Protection Act 1986*.

- A separate condition of the development approval requires the applicant to provide a Conservation Management Plan prepared by a suitably qualified ecologist. This plan is required to identify existing trees to be retained, how they will be protected and other management measures that are to be implemented to mitigate any potential impacts during construction and ongoing use of the development.
- Potential habitat trees exist outside Precinct C, presenting an opportunity through the PSP process to proactively identify trees worthy of protection in future development proposals.
- Although the Environmental Assessment Report states that trees will be retained where possible, it does not specify which trees should be prioritised for protection. To strengthen this, the report should include details on trees worthy of retention, with corresponding protection measures incorporated into Part 1 of the PSP. Additionally, the draft PSP's Urban Ecology objectives should be updated to emphasise tree retention opportunities.

Having regard to the above, modifications are proposed to the draft PSP and Environmental Assessment Report to better identify opportunities for tree retention.

**Heritage**

*Aboriginal Heritage Act 1972*

The draft PSP identifies two Aboriginal heritage sites within and adjacent to the subject land: Site 3756 (Swan River) and Site 3753, which intersects the western edge of Precinct B. Section 5.2.6 of the draft PSP states that while the Master Plan does not propose development within these sites, if development within Precinct B intersects the boundary of Site 3753, a DPLH file search should be undertaken to confirm the site's extent before works commence. These details are not included in Part One, Section 4.3.2 – Heritage of the Structure Plan, and modifications are proposed to address this. Additional modifications are also proposed to:

- Identify the potential need for an Aboriginal Heritage Management Plan; and
- Require the location of the two sites to be shown on Figure 83 as per the Aboriginal Heritage Inquiry System Mapping Tool.

Heritage under the *Heritage Act 2018* and Local Planning Scheme No. 15

The precinct includes two places on the City's Heritage List: the Ascot Racecourse Complex and the Ascot Residential and Stables Area. It also contains Lee-Steere House and the Matheson Rail Line, which are included on the City's Local Heritage Survey. The Bristile Kilns site, which adjoins the subject land, is also on the City's Heritage List.

The Structure Plan mandates a Heritage Impact Statement for any proposal to demolish, alter, or significantly impact a heritage-listed place, ensuring that heritage values are considered in future development. Part Two of the draft PSP specifies that a photographic record must be made of Lee-Steere House before its demolition to facilitate residential development in Precinct D. However, this requirement is absent from Part One, and a modification to Section 4.3.2 is proposed to address this.

Further modifications are proposed to improve the accuracy and consistency of heritage information throughout the draft PSP. These include clarifying that the Ascot Residential and Stables Area is only partly within the precinct and ensuring the Matheson Rail Line is consistently referenced and shown on Figure 83.

**General Modifications**

There are a range of general modifications required to the draft PSP and supporting attachments as detailed below. There are also a range of other administrative modifications as detailed within the Schedule of Modifications.

References to the Golden Gateway Local Structure Plan

The draft PSP contains incorrect text and map references related to the draft Golden Gateway LSP. These references, including those for building height and descriptions of Council's previous resolutions should be updated to align with the current version of the draft Golden Gateway LSP.

Additionally, the draft PSP incorrectly assumes that Perth Racing's land will be removed from the Golden Gateway precinct. However, the decision to retain Perth Racing's land within the precinct was made in consultation with officers and Perth Racing. This approach allows Perth Racing to proceed with its own planning while enabling the draft Golden Gateway LSP to move forward. Retaining Perth Racing's land within the broader Golden Gateway precinct ensures coordinated planning for both areas. Therefore, modifications are proposed to correct the assumption that Perth Racing's land will be removed from the Golden Gateway precinct.

Indicative Development Staging

The draft PSP includes an indicative development staging section however there is limited detail provided. Therefore, a modification is proposed to update this section to include specific staging details. This could make reference to small scale food and beverage and commercial uses within Precinct A and describe infrastructure considerations that may be required to deliver development mentioned in the table.

Walkable Catchments

The draft PSP states that Precinct A is within the walkable catchment of the future Golden Gateway Activity Centre. Noting that Precinct A is in excess of 500 metres from Precinct E, Precinct A is not within the walkable catchment of the future centre. A modification is proposed to address this, and a separate modification is proposed to Figure 11 for walkable catchments to be shown on the plan.

Section 4.3 – Other Requirements

Section 4.3 of the draft PSP describes other requirements for future development. Prior to approval of the draft PSP by the WAPC, a Local Planning Scheme Amendment will be required to formalise aspects of the draft PSP such as zoning and land use permissibility changes under LPS 15. A modification is proposed that requires mention of this to be included within Section 4.3.

Section 5.0 - Additional Details

Section 5.0 of the draft PSP includes a list of additional information that may be required to be submitted as part of future development applications. Officers have considered this list and note there are five other reports that may be required as part of subsequent stages of planning. These include:

- Geotechnical Report
- Foreshore Management Plan
- Acoustic Report
- Environmental Impact Assessment
- Aboriginal Heritage Management Plan.

A modification is proposed to require Section 5.0 to be updated with details of these reports.

Figure 17 – Built Form

Design Element 6 of SPP 7.2 – Precinct Design Guidelines requires that built form support a precinct environment that is appropriate in character, intensity, bulk, and scale. Considering the existing built form character within the precinct, particularly in Precinct B. It is therefore deemed appropriate to update Figure 17 to identify all buildings to be retained. A modification to the draft PSP is proposed to reflect this.

Subsurface Drainage

The Local Water Management Strategy (LWMS) states that surface runoff generated by lots, stables and hardstand/car park areas will be directed into subsurface storage. It also states that these storage areas will be located beneath road reserves/verges or other available areas. It is recommended that the LWMS be modified to remove all references to subsurface storage beneath road reserves to avoid impacts on utility services, maintenance, liability, and future infrastructure expansion. Such storage may also compromise pavement integrity, increase the risk of pavement failure and water pressure issues.

Existing Power Services

Figure 16 of the Engineering Servicing Report identifies existing power services within the precinct. However, it does not show the existing power lines running through a portion of Lot 100 Raconteur Drive. Therefore, a modification is proposed to address this.

**Conclusion**

The Ascot Racecourse PSP has been prepared to guide the future use and development of the land in and around Ascot Racecourse. Having regard to matters raised during assessment of the PSP and comments received from the public consultation period, a number of modifications are proposed to the draft PSP. It is recommended that Council support the draft PSP with modifications, with a recommendation that it is approved by the WAPC.

## Financial implications

There are no financial implications evident at this time.

## Environmental implications

The draft PSP includes areas where vegetation clearing is anticipated. While vegetation clearing has been considered from a planning perspective, it remains subject to separate assessment and approval under the *Environmental Protection Act 1986*, including the requirement to obtain a clearing permit. Modifications are proposed to the draft PSP and Environmental Assessment Report to strengthen the identification and protection of trees worthy of retention, with further investigation of tree retention opportunities to be undertaken as part of future development proposals.

## Social implications

The draft Ascot Racecourse PSP proposes land uses that will enhance the range of services and facilities in the area.

## Attachment details

| Attachment No and title |
|---|
| 1. Ascot Racecourse Precinct Structure Plan [**12.1.1** - 140 pages] |
| 2. Local Water Management Strategy [**12.1.2** - 165 pages] |
| 3. Environmental Assessment Report [**12.1.3** - 300 pages] |
| 4. Engineering Servicing Report [**12.1.4** - 320 pages] |
| 5. Transport Impact Assessment [**12.1.5** - 92 pages] |
| 6. Retail Assessment [**12.1.6** - 38 pages] |
| 7. Transportation Noise Assessment [**12.1.7** - 18 pages] |
| 8. Landscape Master Plan [**12.1.8** - 41 pages] |
| 9. Schedule of Modifications [**12.1.9** - 7 pages] |
| 10. Schedule of Submissions [**12.1.10** - 41 pages] |
| 11. CONFIDENTIAL REDACTED - Schedule of Submissions - (Confidential matter in accordance with Local Government Act 1995 (W A) Section 5.23(2)(b)) [**12.1.11** - 42 pages] |

Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

# Ascot Racecourse Precinct Structure Plan

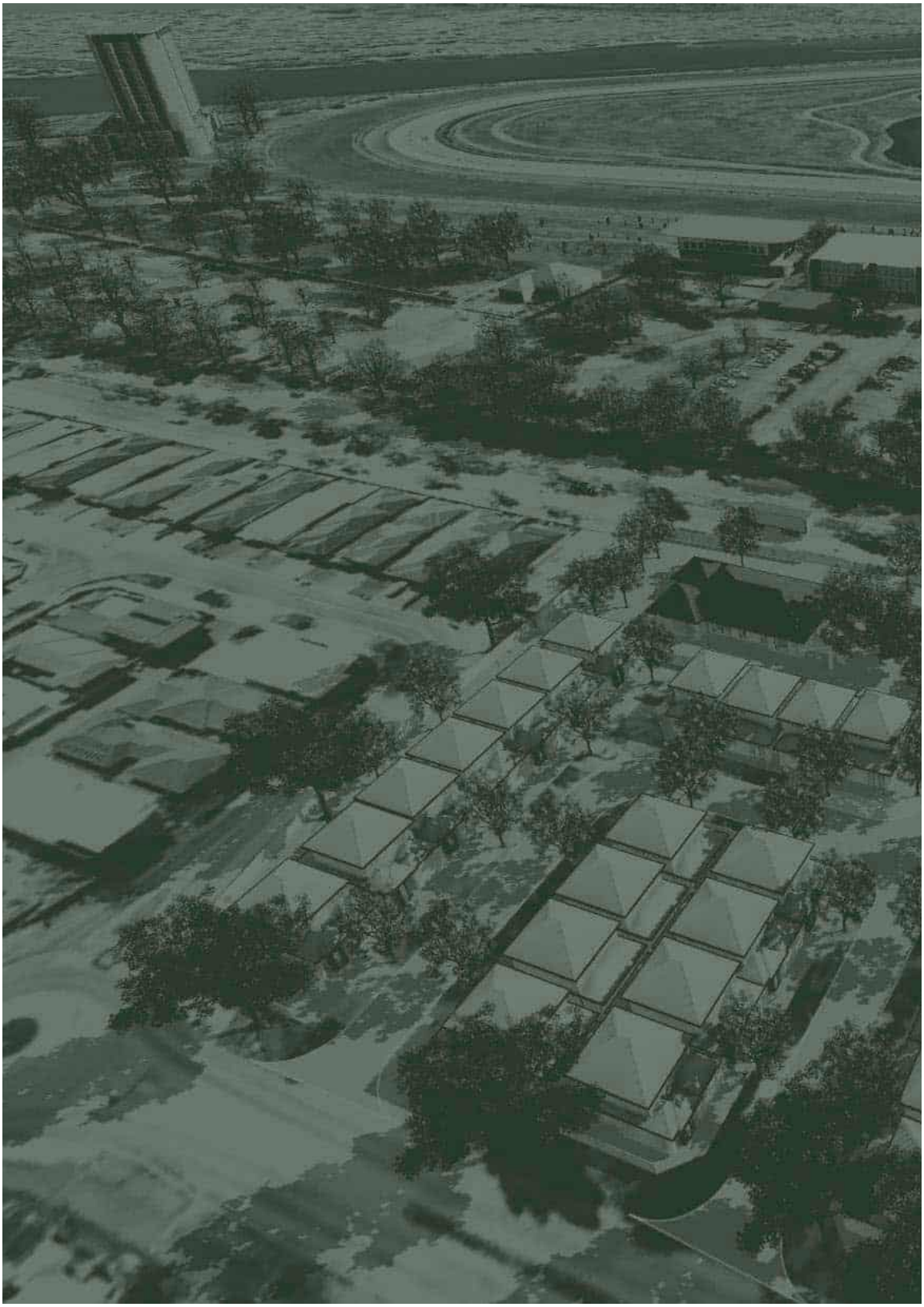
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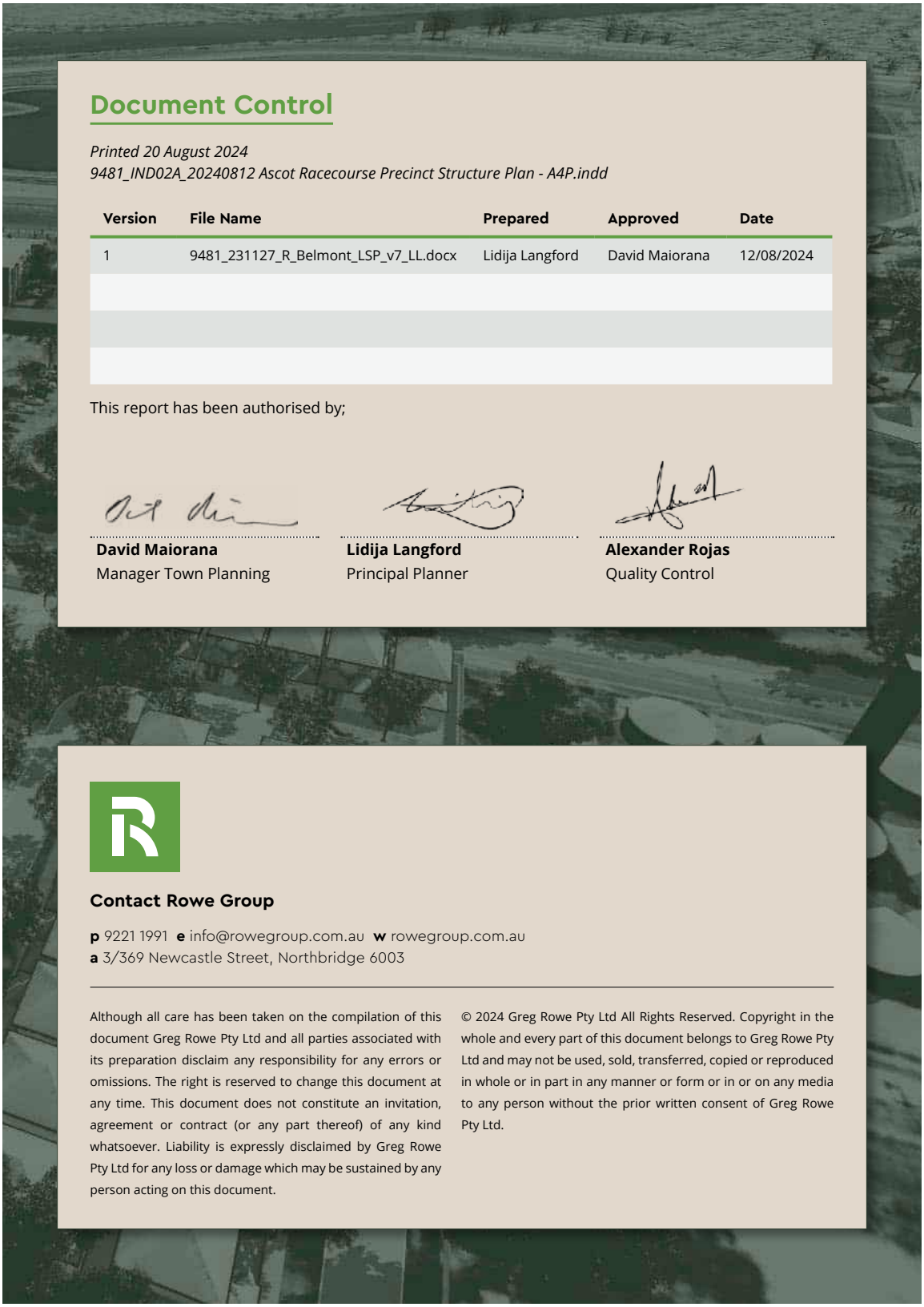
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Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan



## Document Control

*Printed 20 August 2024*
*9481_IND02A_20240812 Ascot Racecourse Precinct Structure Plan - A4P.indd*

| Version | File Name | Prepared | Approved | Date |
|---|---|---|---|---|
| 1 | 9481_231127_R_Belmont_LSP_v7_LL.docx | Lidija Langford | David Maiorana | 12/08/2024 |
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Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan



## Record of Endorsement

This structure plan is prepared under the provisions of the City of Belmont Local Planning Scheme No. 15.

IT IS CERTIFIED THAT THIS STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON:

..... Date

Signed for and on behalf of the Western Australian Planning Commission:

an officer of the Commission duly authorised by the Commission pursuant to section 16

of the Planning and Development Act 2005 for that purpose, in the presence of:

..... Witness

..... Date

..... Date of Expiry

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Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan



## Table of Amendments

| Amendment No. | Summary of the Amendment | Amendment Type | Date Approved by WAPC |
|---|---|---|---|
| | | | |
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| | | | |
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| | | | |

Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

## Executive Summary

The Ascot Racecourse Precinct Structure Plan has been prepared to guide the future use and development of Perth Racing's landholdings in Ascot, including and surrounding the existing Ascot Racecourse. This Report has been prepared in accordance with the requirements of the *Planning and Development (Local Planning Schemes) Regulations 2015* and the Western Australian Planning Commission's ('WAPC') Guidance for Structure Plans.

The PSP area comprises nine (9) lots with a total area 61.3294ha, all of which are owned by Perth Racing, except for one (1) lot which is owned by the WAPC. The area is generally bound by the Swan River to the north, the Ascot Residential and Stables area and Matheson Road to the east and south-east, Resolution Drive to the south and south-west, and Grandstand Road to the west.

The Ascot Racecourse PSP is divided into three parts, being:

- **Part One: Implementation** – Part One outlines the implementation requirements to be applied when considering land use, development and subdivision proposals in the PSP area.
- **Part Two: Explanatory Section** – Part Two outlines all relevant information that has informed the preparation of the PSP, incorporating material from more detailed technical studies.
- **Technical Appendices** – A substantial number of technical studies have been completed to inform the PSP. These are provided in Part Three and include:
  - Local Water Management Strategy
  - Environmental Assessment Report
  - Engineering Servicing Report
  - Transport Impact Assessment
  - Retail Assessment (Net Benefit Test)
  - Transportation Noise Assessment
  - Landscape Master Plan



Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

## Precinct Structure Plan Summary

| Item | Data | Section number referenced in Part 2 of report |
|---|---|---|
| Total area covered by the Precinct Structure Plan | 61.3294ha | Section 1 |
| Area of each land use proposed: | | Section 5.6 |
| Residential | 0.94 hectares | |
| Commercial | 1.36 hectares | |
| Mixed Use | 4.96 hectares | |
| Place of Public Assembly: Racecourse | 51.25 hectares | |
| Parks & Recreation | 2.28 hectares | |
| Estimated number of dwellings | 400 dwellings | |
| Estimated population | 920 people | |
| Estimated commercial floor space | 15,000m² | |
| Number of school sites | N/A | - |
| Estimated area and percentage of public open space given over to Local Open Space: | N/A | - |

*Note: All information and areas are approximate only and are subject to survey and detailed design.*




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Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan




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Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

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## Attachments

1. Certificates of Title
2. Local Water Management Strategy
3. Environmental Assessment Report
4. Engineering Servicing Report
5. Transport Impact Assessment
6. Retail Assessment (Net Benefit Test)
7. Transportation Noise Assessment
8. Landscape Master Plan

Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

## Technical Appendices

| Appendix Number | Document Title | Nature of Document | Referral/Approval Agency | Approval status and Modifications |
|---|---|---|---|---|
| 1 | Certificates of Title | Supporting | - | - |
| 2 | Local Water Management Strategy | Requires Approval | City of Belmont, DWER | - |
| 3 | Environmental Assessment Report | Supporting | City of Belmont, DBCA | - |
| 4 | Engineering Servicing Report | Supporting | - | - |
| 5 | Transport Impact Assessment | Supporting | City of Belmont | - |
| 6 | Retail Assessment (Net Benefit Test) | Supporting | - | - |
| 7 | Transportation Noise Assessment | Supporting | - | - |
| 8 | Landscape Master Plan | Supporting | - | - |

Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

# Part One Implementation



Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan



## 1. Structure Plan Area & Operation

This Precinct Structure Plan ('Structure Plan') applies to Lots 1 (No. 88), 3 (No. 96), 13, 50, and 9002 (Nos. 71), and Lot 452 (No. 70) Grandstand Road, Lot 7005 (No. 71) Matheson Road, and Lots 51 (No. 2) and Lots 51 (No. 2) and 100 (No. 1) Raconteur Drive, Ascot. The Structure Plan area is defined as the land contained within the inner edge of the line denoting the Structure Plan area on the Structure Plan Map).

Refer **Plan 1 – Structure Plan Map**.

This Structure Plan has effect from the date stated on the cover and for a period of 10 years (or for any other period approved by the WAPC) commencing on the day on which approval of the Ascot Racecourse Precinct Structure Plan is granted.

The operation of the Structure Plan shall be in accordance with the City of Belmont Local Planning Scheme No. 15 ('LPS 15') and the *Planning and Development (Local Planning Schemes) Regulations 2015* ('the Regulations').

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## 2. Purpose & Objectives

The purpose of this Precinct Structure Plan is to guide the future use and development of Perth Racing's landholdings in Ascot, including and surrounding Ascot Racecourse.

### 2.1. Precinct Objectives

The Structure Plan designates five (5) precinct areas subject to different objectives and planning requirements. The precincts are summarised below. Refer **Plan 2 – Structure Plan Precincts**.



**Precinct A (Retirement Living)**

a) Facilitate the development of a vertical residential living village to accommodate retiring members of the horse racing industry.

b) Provide for small scale food and beverage and commercial uses that are ancillary to, and integrated with, the residential housing village.

c) Facilitate development that will serve as a landmark in the locality, capitalising on its position at the northern gateway to the City of Belmont, its high amenity values, proximity to the future Golden Gateway activity centre, and high frequency public transport accessibility.



**Precinct B (Racecourse Administration & Entertainment)**

a) Support the continuation of the Racecourse spectator and entertainment area.

b) Integrate Perth Racing's administration functions within the Ascot Racecourse site.

c) Enhance public and spectator amenity through attractive built form, expansive open spaces, and landscaping.

d) Respect existing heritage values of the site.



**Precinct C (Racecourse & Stabling)**

a) Facilitate land use and development that supports, and is complementary to, the horse racing industry.

b) Provide for the planned development of on-course horse stabling and ancillary functions to support the ongoing viability of Ascot Racecourse.

c) Mitigate potential land use conflict through appropriate design and management practices.

Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

### Precinct D (Residential & Mixed Use)

a) Provide for medium density residential development of a scale that is consistent and/or compatible with surrounding residential area.

b) Support the development of small-scale non-residential uses fronting Grandstand Road, including but not limited to a 'Child Care Premises'.

### Precinct E (Commercial)

a) Facilitate the development of an activity centre at the intersection of Grandstand Road and Resolution Drive.

b) Support retail, commercial, and other land uses that are consistent and complementary with the role and function of an activity centre.

c) Support land use and development that is complementary to Racecourse operations.

d) Satisfy existing and future demand for convenience retail and amenities in the local area.



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## 3. Staging

The staging of development has not yet been defined, nonetheless it will be primarily influenced by Perth Racing's requirements, funding availability, and market demand. The indicative staging for development within the Precinct Structure Plan area is outlined by **Table 1** below.

| Indicative Timeframe | Precinct Area | Development |
|---|---|---|
| Short Term (0-5 years) | Precinct B | New Racecourse Administration Building & Hospitality Venue |
| | Precinct C | On-Course Stabling |
| | Precinct D | Residential Development |
| | Precinct E | Commercial Development |
| Medium Term (5-10 years) | Precinct E | Commercial Development |
| Long Term (10+ years) | Precinct A | Retirement Village |
| | Precinct E | Commercial Development |

*Table 1: Indicative Development Staging*



# 4. Subdivision & Development Requirements

## 4.1. Zones & Land Use

### 4.1.1. Zones

**Plan 1 – Structure Plan Map** designates proposed zones in the Structure Plan area, as follows:

- Precinct A: 'Mixed Use' zone
- Precinct B: 'Place of Public Assembly: Racecourse' zone
- Precinct C: 'Place of Public Assembly: Racecourse' zone
- Precinct D: 'Residential' and 'Mixed Use' zones
- Precinct E: 'Commercial' and 'Mixed Use' zones

### 4.1.2. Land Use Permissibility

Land use permissibility within the Structure Plan area shall be in accordance with the City of Belmont Local Planning Scheme No. 15, with Additional Uses and Restricted Uses, as follows:

| No. | Description of Land | Restricted Use | Conditions |
|---|---|---|---|
| 1. | All land contained within Precinct A, Precinct D and Precinct E of the Structure Plan area subject of the 'Mixed Use' zone. | Uses permissible in the Mixed Use zone, but excluding the following uses:<br>Amusement Facility<br>Amusement Parlour<br>Auction Mart<br>Garden Centre<br>Industry – Light<br>Industry – Service<br>Motor Vehicle Repair<br>Warehouse | Nil. |

*Table 2: Restricted Uses*

| No. | Description of Land | Additional Use | Conditions |
|---|---|---|---|
| 1. | All land contained within Precinct B of the Structure Plan area. | Office<br>Hotel<br>Reception Centre<br>Restaurant<br>Tavern | Nil. |
| 2. | All land contained within Precinct C of the Structure Plan area. | Animal Establishment<br>Stables<br>Veterinary Centre | Nil. |
| 3. | All land contained within Precinct E subject of the 'Commercial' zone. | Health Centre | Nil. |

*Table 3: Additional Uses*

### 4.1.3. Road Reserves

Road reserves are to be maintained in their existing configuration and tenure in accordance with **Plan 1 – Structure Plan Map**.

### 4.1.4. Public Open Space

This Structure Plan does not propose any areas of public open space within the Structure Plan area.

### 4.1.5. Foreshore Reserves

**Plan 1 – Structure Plan Map** depicts the Parks and Recreation Metropolitan Region Scheme ('MRS') reserve and Swan Canning Development Control Area applicable to the Structure Plan area.

## 4.2. Density & Development

### 4.2.1. Density & R-Codes

**Plan 1 – Structure Plan Map** designates the R-Coding applicable to subdivision and development within the Structure Plan area, as follows:

- Precinct A: 'R-AC0'
- Precinct D: 'R60'
- Precinct E: 'R-AC3', 'R-AC4' & 'R10'

Subdivision and development within the Structure Plan area is to be in accordance with the residential density code prescribed by the Precinct Structure Plan, or where no residential density code is prescribed, the provisions of Local Planning Scheme No. 15.

### 4.2.2. Development Provisions

All development within the Structure Plan area shall be in accordance with the provisions of Local Planning Scheme No. 15, the Residential Design Codes, and any applicable Local Planning Policy, unless otherwise provided below.

| Precinct Area | Requirement | Provision(s) |
|---|---|---|
| **Precinct A (Retirement Living)** | Building Height | (i) Maximum building height of 15 storeys (refer to **Plan 3 – Building Height Plan**).<br>(ii) Maximum podium height of 3 storeys.<br>(iii) Boundary walls shall not exceed a maximum height of 3 storeys. |
| | Setbacks | (iv) Minimum primary street setback of nil.<br>(v) Development shall be setback a minimum 10m from the Swan River Development Control Area. |
| | Plot Ratio | (vi) Maximum plot ratio of 2.5. |
| **Precinct B (Racecourse Administration & Entertainment)** | Building Height | (i) Maximum building height of 6 storeys (refer to **Plan 3 – Building Height Plan**). |
| **Precinct C (Racecourse & Stabling)** | Building Height | (i) Maximum building height of 3 storeys (refer to **Plan 3 – Building Height Plan**). |
| | Setbacks | (ii) Development shall be setback minimum 10m from the Swan River Development Control area.<br>(iii) Buildings setback minimum 7.5m to Matheson Road.<br>(iv) Stables, associated buildings, yards, and training/walking rings setback minimum 10m from any dwelling on adjacent property. |
| | Landscaping | (v) Minimum 1 shade tree for every 4 open air parking bays. |
| **Precinct D (Residential & Mixed Use)** | Building Height | (i) Maximum building height of 3 storeys (refer to **Plan 3 – Building Height Plan**). |
| | Setbacks | (ii) Non-residential development setback minimum 2m from Grandstand Road.<br>(iii) Non-residential development adjoining land used for residential purposes shall confirm with the setback requirements under Volume 1 of the Residential Design Codes. |
| | Landscaping | (iv) Minimum 1 shade tree for every 4 open air parking bays for non-residential development. |
| | Access | (v) Direct access to Grandstand Road is restricted to left-in/ left-out movements only. |

| Precinct Area | Requirement | Provision(s) | | |
|---|---|---|---|---|
| **Precinct E (Commercial)** | Building Height | (i) Maximum building heights as per **Plan 3 – Building Height Plan**. | | |
| | Setbacks | (ii) Minimum primary and secondary street setback to Carbine Street – 3.75m<br>(iv) Average primary and secondary street setback to Carbine Street – 7.5m<br>(v) Minimum primary and secondary street setback to all other roads (including private roads) – nil setback (non-residential development only).<br>(vi) Residential development setback from street and lot boundaries as per the Residential Design Codes.<br>(vii) Non-residential development adjoining land used for residential purposes shall conform with setback requirements under Volume 1 of the Residential Design Codes. | | |
| | Landscaping | (viii) Minimum 1 shade tree for every 4 open air parking bays.<br>(ix) Minimum 3m wide landscaping to Grandstand Road frontage. | | |
| | Access | (x) Direct lot access to Resolution Drive is restricted to left-in/ left-out movements only.<br>(xi) The existing Grandstand Road and Raconteur Drive intersection is restricted to left-in, left-out and right-in movements only. | | |
| | Parking | **Land Use** | **Minimum** | **Maximum** |
| | | Shop | 1 / 50m² FA | 1 / 20m² FA |
| | | Office | 1 / 200m² FA | 1/ 50m² FA |
| | | Bulky Goods Showroom | 1 / 100m² FA | 1 / 50m² FA |

*Table 4: Development Provisions*

## 4.3. Other Requirements

### 4.3.1. Activity Centre

This Precinct Structure Plan includes a portion of the Golden Gateway Activity Centre (within Precinct E) and is supported by a Net Benefit Test to assess the economic demand and implications for potential retail and commercial development in this area. **Refer Appendix 6 – Retail Assessment (Net Benefit Test)**.

Development within the Golden Gateway Activity Centre shall be in accordance with the provisions of this Precinct Structure Plan and the requirements of State Planning Policy 4.2 – Activity Centres ('SPP 4.2').

Development of Shop/Retail floorspace up to 3,400m² NLA is permitted within the Golden Gateway Activity Centre without requiring further assessment. Any development proposal involving net additional Shop/Retail floorspace above 3,400m² NLA within the Golden Gateway Activity Centre constitutes 'major development' and shall be supported by a further Net Benefit Test prepared in accordance with SPP 4.2.

### 4.3.2. Heritage

The Structure Plan area contains the 'Ascot Racecourse Complex' (Place Number 6123), the 'Ascot Residential & Stables Precinct' (Place Number 16779), and 'Lee Steere House' (Place Number 27274) which are identified under the City of Belmont's Local Heritage Survey, and in the case of the 'Ascot Racecourse Complex', also the Heritage List, as having local heritage significance.

A Heritage Impact Statement is to be prepared by an appropriately qualified and experienced Heritage Consultant and provided with the application for development approval pertaining to any development proposal to demolish, modify or otherwise significantly impact the heritage values of the abovementioned heritage places.

### 4.3.3. Land Assembly

The Structure Plan area includes areas of redundant road reservation that fragment developable land within Precinct E. To achieve a coordinated development outcome, land assembly will be required by way of a road closure and subsequent amalgamation, or lease arrangement, prior to the commencement of development on the affected land.

Satisfactory arrangements are to be made with servicing authorities to provide for the modification and/or protection of existing services within land, as required.

### 4.3.4. Transport Noise

This Structure Plan is supported by a Transportation Noise Assessment prepared in accordance with State Planning Policy 5.4 – Road and Rail Noise ('SPP 5.4'). **Refer Appendix 7 – Transportation Noise Assessment**.

Subdivision and development of land proposing noise-sensitive land uses within 200 metres of Great Eastern Highway shall accord with any recommendations outlined in the Assessment, and may require:

- The preparation of a Noise Management Plan.
- Implementing any 'Quiet House Design' package requirements.
- A notification being placed on the Certificate of Title(s) of the lots to advise prospective purchasers of potential for noise impacts from major transport corridors.

The management of transport noise will ultimately be considered as part of future applications to subdivide or develop land within the Structure Plan area, in accordance with the requirements of SPP 5.4. A condition of subdivision or development approval, where applicable, may be required at that time.

### 4.3.5. Water Management

This Precinct Structure Plan is supported by a Local Water Management Strategy ('LWMS') prepared in accordance with the WAPC's Better Urban Water Management Guidelines. **Refer Appendix 2 – Local Water Management Strategy**.

An Urban Water Management Plan or Stormwater Management Plan (as appropriate) addressing water (including groundwater) management measures in accordance with the adopted LWMS will be required as a condition of subdivision or development approval. The preparation of these plans shall be informed by geotechnical investigations, where appropriate.

### 4.3.6. Flood Management

Precincts A, D and E of the Structure Plan area are affected by the Swan River 1% Annual Exceedance Probability ('AEP') floodway and/or flood fringe. All lots within the Structure Plan area must achieve a minimum 500mm clearance above the 1% AEP flood level of the Swan River.

### 4.3.7. Acid Sulphate Soils

Subdivision and development of land within the Structure Plan area that is within a 'high to moderate' acid sulphate soil ('ASS') risk area will be required to undertake an ASS assessment and may require the preparation of an ASS management plan and dewatering management plan as a condition of approval.

### 4.3.8. Environmental Protection & Management

This Structure Plan is supported by an Environmental Assessment Report that outlines environmental factors to be considered in progressing subdivision and development within the Structure Plan area. **Refer Appendix 3 – Environmental Assessment Report**.

To minimise potential impacts to the retained vegetation and fauna during construction works, a Conservation and Environmental Management Plan will be required as a condition of development approval for any works affecting or within proximity to a Threatened Ecological Community ('TEC').

Where any future development works within the site will result in potential impacts to Black Cockatoos, a fauna management plan will be required as a condition of development approval to minimise impacts to fauna through clearing and construction works.

### 4.3.9. Infrastructure & Servicing

Infrastructure necessary to service the subdivision and development within the Structure Plan area will be upgraded, modified, or extended, where applicable, as part of future subdivision and development.

## 5. Additional Details

The details of additional information required to be submitted and the stage which it is to be submitted, are summarised below.

| Additional Information | Approval Stage | Consultation Required |
|---|---|---|
| Transport Impact Statement/ Assessment | Development Application | City of Belmont |
| Heritage Impact Statement | Development Application | City of Belmont |
| Net Benefit Test | Development Application (if required) | City of Belmont |
| Waste Management Plan | Development Application | City of Belmont |

*Table 5: Information to be Submitted with an Application*

The following additional information, studies or plans are to be required as a condition of subdivision or development approval.

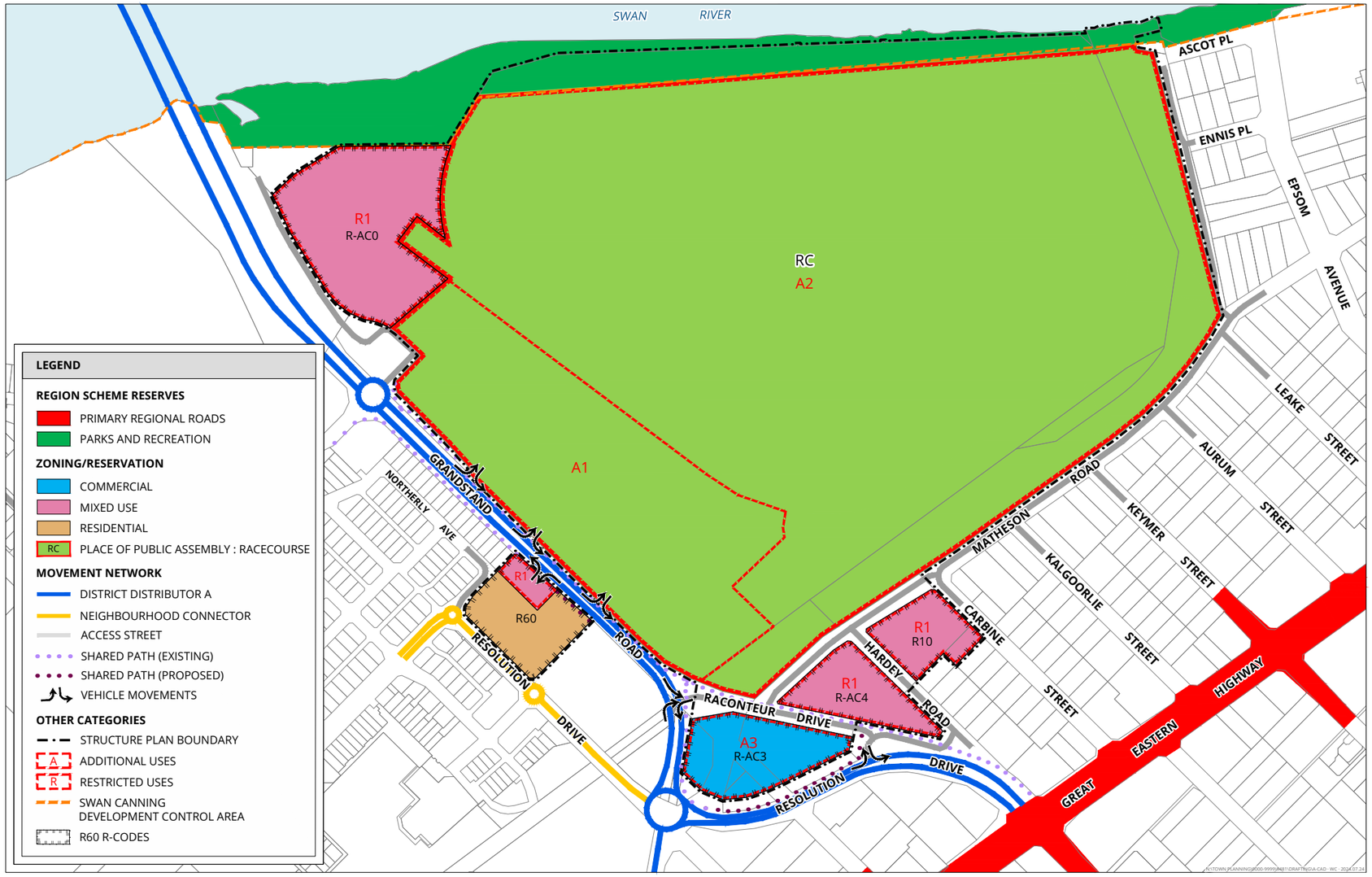
| Condition of Approval | Responsible Agency |
|---|---|
| Landscaping Plan | City of Belmont |
| Fauna Management Plan | City of Belmont, DBCA |
| Conservation & Environmental Management Plan | City of Belmont, DBCA |
| Urban Water Management Plan / Stormwater Management Plan | City of Belmont, DBCA |
| Acid Sulphate Soil Management Plan | DWER |

*Table 6: Information Required as a Condition of Approval*



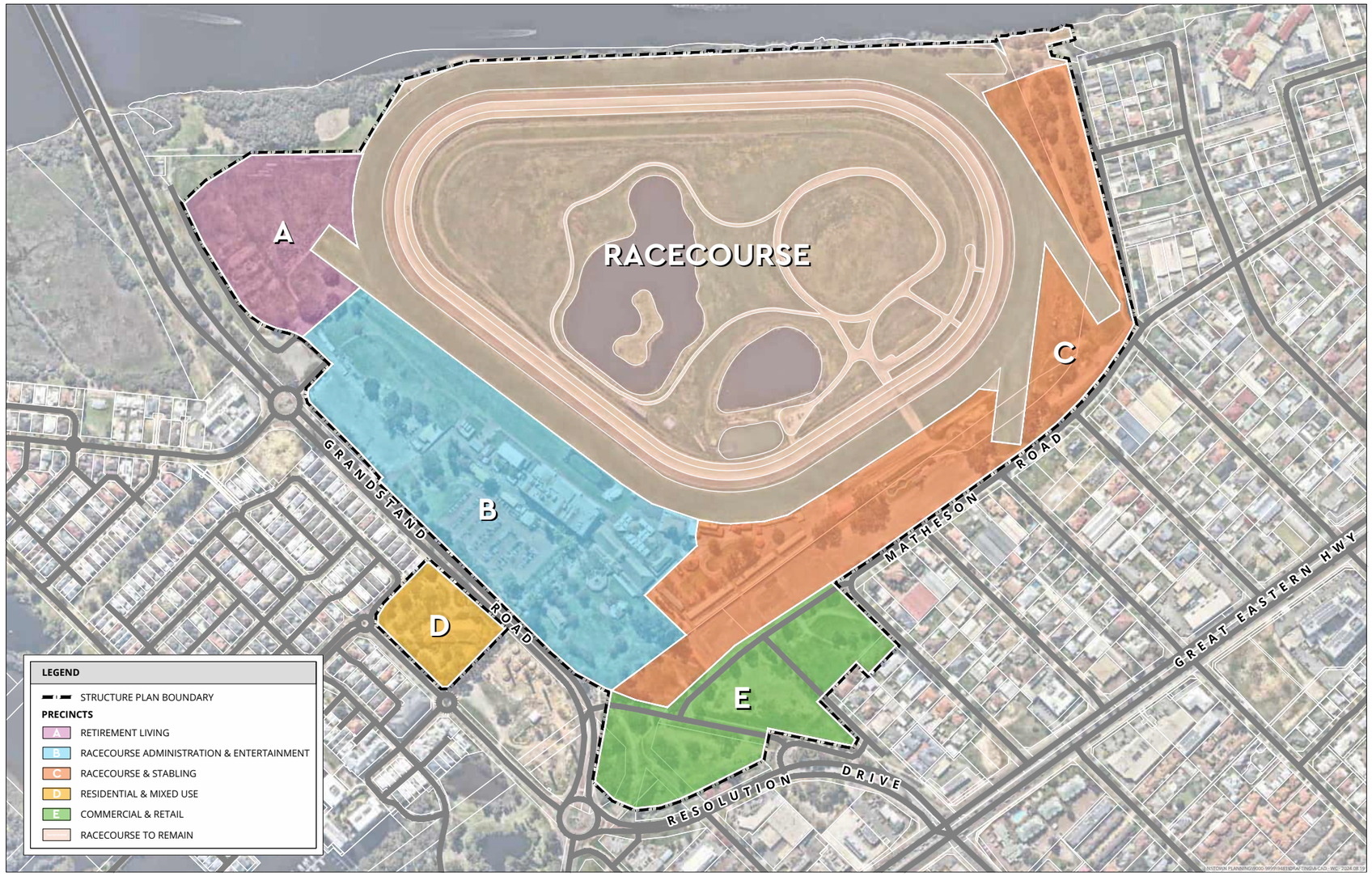
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Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan




*Plan 1 – Structure Plan Map*

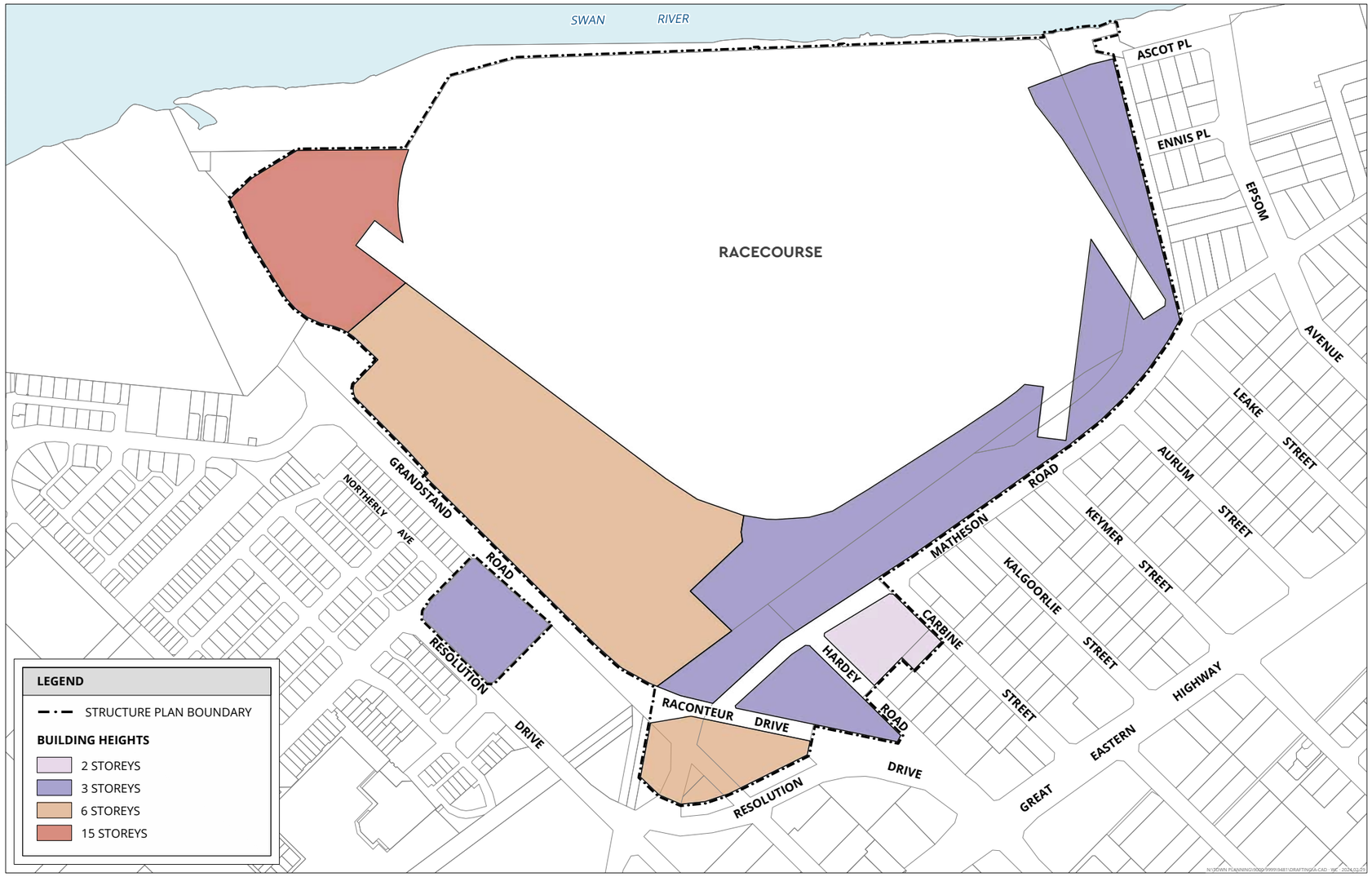
Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan




*Plan 2 – Structure Plan Precincts*

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Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan




*Plan 3 – Building Height Plan*

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# Part 2
# Explanatory Section



Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

## 1. Introduction & Purpose

The purpose of the Ascot Racecourse Precinct Structure Plan is to guide future use and development of the Precinct Structure Plan area. The Precinct Structure Plan has been prepared on behalf of Perth Racing and encompasses approximately 61.3ha of land bound by the Swan River, Ascot Waters Estate, Grandstand Road, Resolution Drive, Hardey Road, and Carbine Street, in Ascot.

Refer **Figure 1 – Site Plan**.

### 1.1. Purpose

The purpose of this Report is to provide the relevant planning background and explanatory information that has formed the basis for preparing the Ascot Racecourse Precinct Structure Plan. This Report includes:

- A site and context analysis outlining the physical, community, and planning and governance context relevant to the area and the Precinct Structure Plan.
- An opportunities and constraints analysis of the subject site and the identification of the key design objectives and considerations.
- An overview of stakeholder engagement that has occurred to inform the preparation of the Precinct Structure Plan.
- A detailed explanation of the design response to the site and context analysis, opportunities and constraints analysis, and stakeholder feedback.

The Precinct Structure Plan will guide future land use and development over the subject land and provide a framework for more detailed planning at development application and/or subdivision stage. The following sections provide further detail and explanation for the Structure Plan Part 1 provisions.



Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

## 1.2. Objectives

The objectives of the Ascot Racecourse Precinct Structure Plan are to:

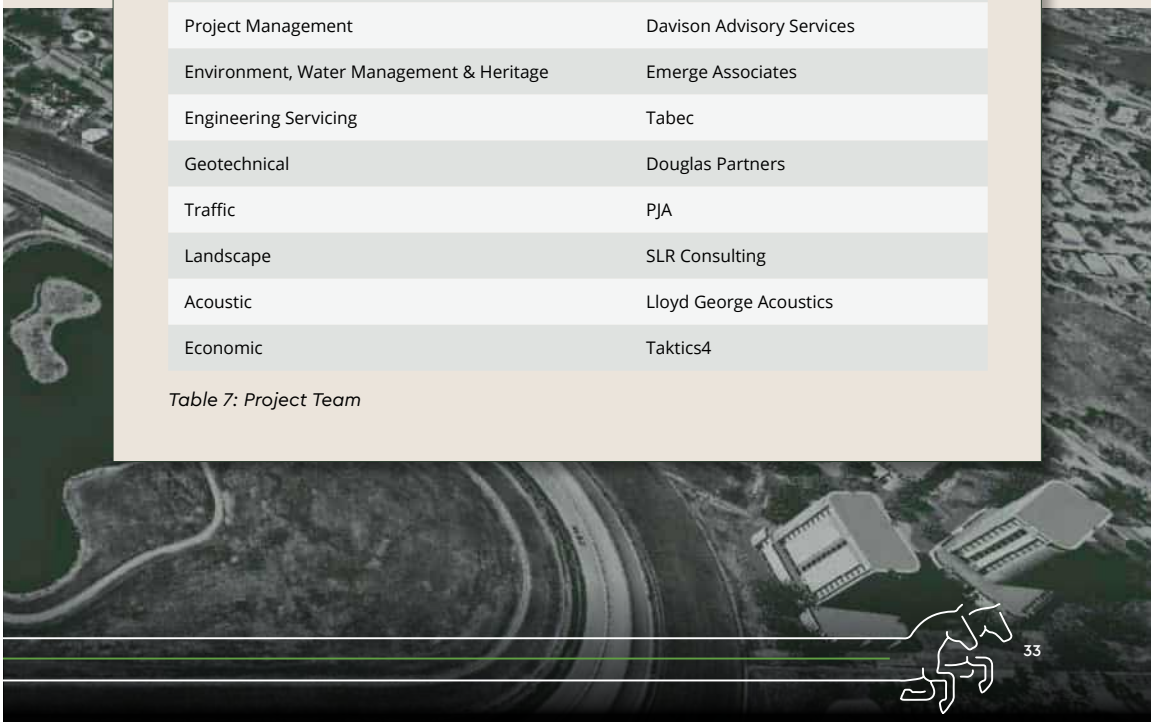
- Provide a framework to guide the use and development of Perth Racing's landholdings including and surrounding Ascot Racecourse.
- Identify Perth Racing's vision and feasible development aspirations for its landholdings, having regard to landownership restrictions and the need to support the ongoing viability of horse racing operations at Ascot Racecourse.
- Identify zoning, density, built form, and other requirements that will enable Perth Racing's vision to be realised, and inform subsequent stages of planning, having regard to the site context, opportunities, and constraints of the area.

## 1.3. Project Team

The following multidisciplinary project team have progressed the preparation of the Ascot Racecourse Precinct Structure Plan:

| Discipline | Consultant |
|---|---|
| Town Planning & Urban Design | Rowe Group |
| Project Management | Davison Advisory Services |
| Environment, Water Management & Heritage | Emerge Associates |
| Engineering Servicing | Tabec |
| Geotechnical | Douglas Partners |
| Traffic | PJA |
| Landscape | SLR Consulting |
| Acoustic | Lloyd George Acoustics |
| Economic | Taktics4 |

*Table 7: Project Team*



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Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan




*1. Site Plan*

# 2. Site Context & Analysis

## 2.1. Physical Context

### 2.1.1. Location

The subject land is in the municipality of the City of Belmont ('City'), in the Perth Metropolitan Region. The site is located approximately 7.7 kilometres east of the Perth Central Business District.

Refer **Figure 2 – Regional Location**.

The subject land is situated in the suburb of Ascot, and is bound by the Swan River to the north, the Ascot Residential and Stables area and Matheson Road to the east and south-east, Resolution Drive to the south and south-west, and Grandstand Road to the west.

Grandstand Road provides access to the regional road network including Tonkin Highway and Graham Farmer Freeway via Garrat Road and Guildford Road to the north, and Great Eastern Highway to the south via Resolution Drive and Stoneham Street. The southern portion of the subject land is bound by Resolution Drive and Matheson Road providing access to local residential streets to the south, west and east of the subject area.

Refer **Figure 3 – Local Location**.

### 2.1.2. Tenure, Ownership & Buildings

The Structure Plan area comprises several landholdings totalling 61.3294ha in area, legally described below.

| Lot | Deposited Plan | Volume | Folio | Area | Landowner |
|---|---|---|---|---|---|
| 1 | 55346 | 1724 | 276 | 2,452m² | Western Australian Planning Commission |
| 3 | 55346 | 1742 | 278 | 350m² | The Chair of the Committee of the Western Australian Turf Club |
| 13 | 26760 | 1883 | 670 | 7,312m² | The Chair of the Committee of the Western Australian Turf Club |
| 50 | 5729 | 1041 | 934 | 3,516m² | The Chair of the Committee of the Western Australian Turf Club |
| 51 | 15104 | 1883 | 668 | 6,939m² | The Chair of the Committee of the Western Australian Turf Club |
| 100 | 60341 | 2723 | 304 | 25,725m² | The Chair of the Committee of the Western Australian Turf Club |
| 452 | 60339 | 2723 | 355 | 11,441m² | The Chair of the Committee of the Western Australian Turf Club |
| 7705 | 209359 | 1789 | 567 | 43,318m² | The Chair of the Committee of the Western Australian Turf Club |
| 9002 | 60342 | 2723 | 303 | 512,241m² | The Chair of the Committee of the Western Australian Turf Club |

*Table 8: Summary of Land*

Refer **Appendix 1 – Certificates of Title**.

The Structure Plan area includes the Ascot Racecourse complex, including the Racecourse, entertainment/ hospitality areas, and car parking, forming the 'core' of the site. To the south of the Racecourse is vacant land, which is currently used for overflow car parking on event days. Lee-Steere House, being Perth Racing's administration building, is located to the west of the Racecourse, adjacent to Ascot Waters Estate.

### 2.1.3. Surrounding Area & Land Uses

The Structure Plan area abuts the Swan River foreshore located to the north, the Ascot Residential and Stables area to the south and east, light industrial/commercial development to the south, and the Ascot Waters residential estate and Bristile Kilns (also known as the 'Ascot Kilns') to the west.

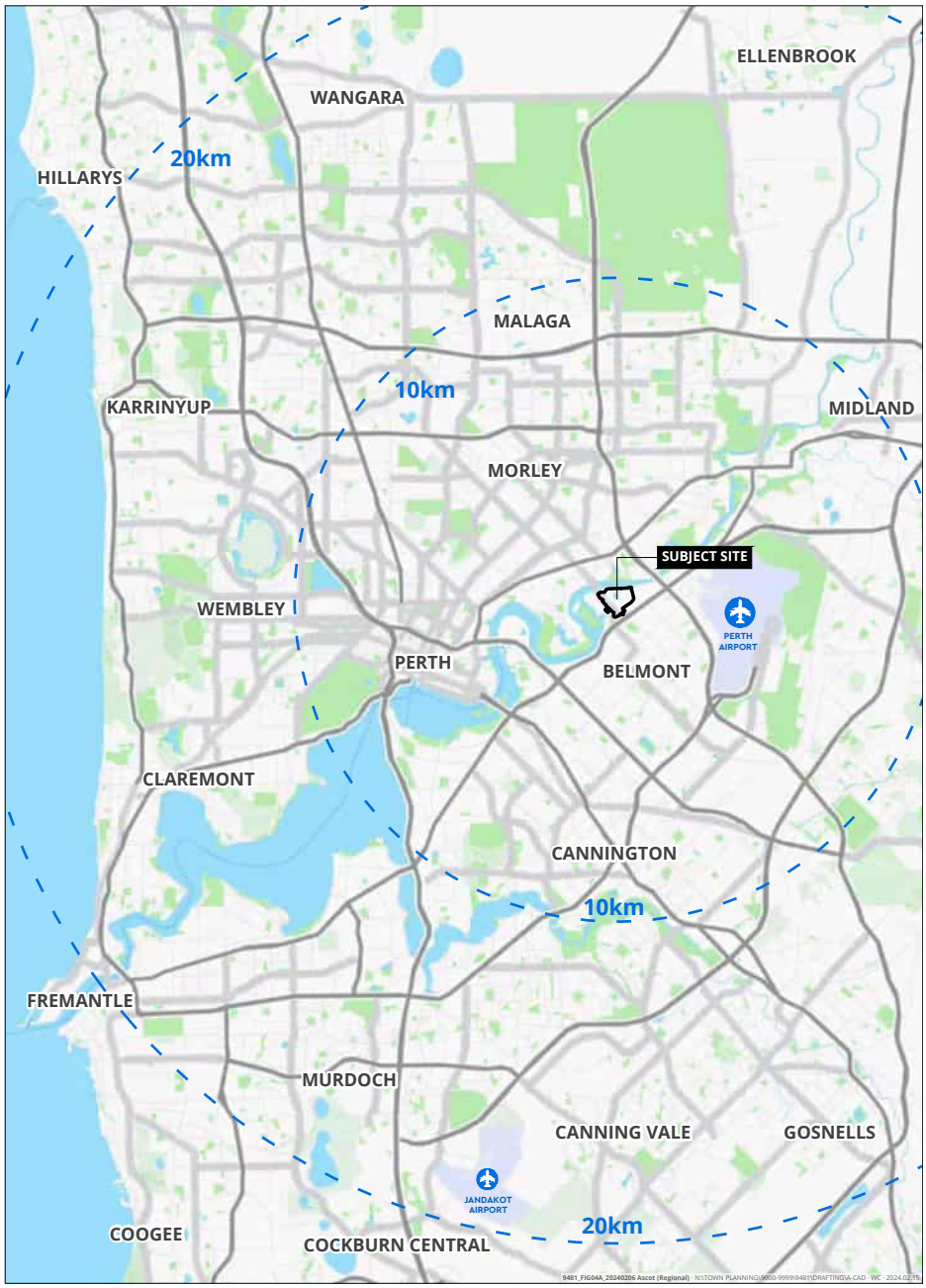
The Ascot Residential and Stables area to the south and east of the subject land is inherently linked to the horse racing industry and the operation of Ascot Racecourse. The existing zoning applicable to the area permits the keeping of horses within private stable complexes, enabling horse trainers to operate in the area and utilise the Racecourse for training purposes.

Land to the west and south-west of the Precinct Structure Plan area includes a historical landmark being the Bristile Kilns located on the border of the Ascot Waters residential estate.

The light industrial/commercial development to the south comprises of a range of land uses including corporate offices, fast food outlets, and service stations.

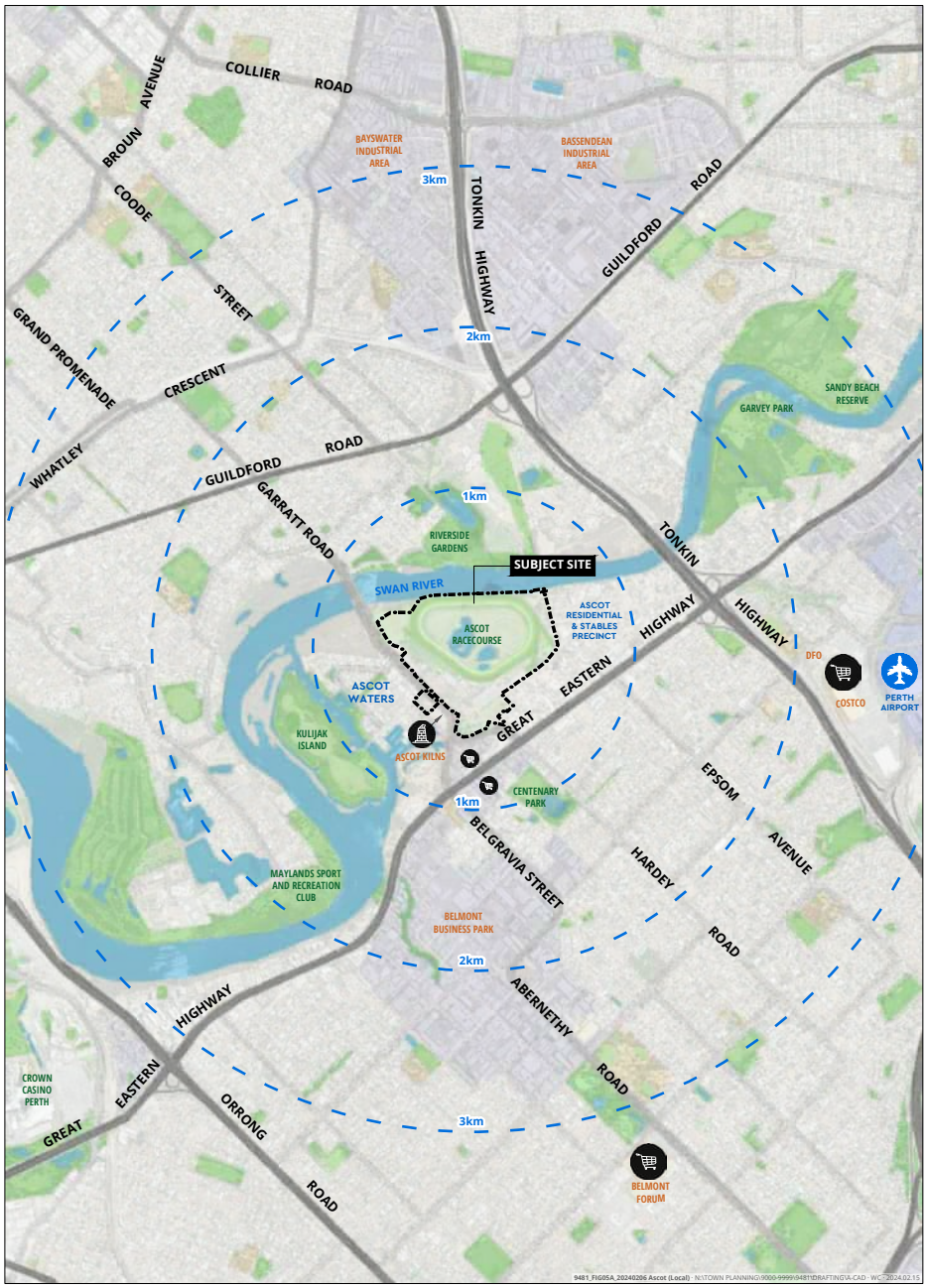


Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan




2. *Regional Location*

Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan




*3. Local Location*

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## 2.1.4. Environment

### 2.1.4.1. Landform & Soils

The subject site is generally flat, with a slight increase in elevation in its eastern extent. The northern portion of the site, adjacent to the Swan River, is the lowest point within the subject site at 0m Australian Height Datum (AHD). The remainder of the site is elevated at 2m AHD to the north-west and 7.5m AHD to the east.

The subject site falls within the Swan River Terrace system and contains Guildford formation of Alluvial and leached yellow sands. The soil types present at the subject site include:

- **Ms2** – Sandy Silt: Strong brown to mid grey, mottled, blocky, disseminated fine sand, hard when dry, variable clay content of alluvial origin.
- **Ms4** – Sandy Silt: light yellow brown, blocky, mottled with some fine to medium sand, soft when moist, variable clay content.
- **S8** – Sand: very light grey at surface, yellow at depth, fine to medium-grained, sub rounded quartz, moderately well sorted of eolian origin.

Geotechnical investigations were undertaken specifically for Precinct A (Douglas Partners, 2014), Precinct C (Douglas Partners, 2023) and Precinct D (Galt, 2024). Each investigation confirms the regional geological mapping generally consisting of shallow layers of sand overlying sandy clay of the Guildford formation, which is generally unsuitable for on-site stormwater disposal.

From a site classification perspective, Precinct A would be 'Class P', Precinct C is also 'Class P' but can be re-classified to 'Class S' with appropriate site preparation, and Precinct D is 'Class S'. It is assumed that Precinct B will have ground conditions similar to Precincts A and C, however further geotechnical investigations will be required to ensure adequate treatment of ground conditions before future development. For Precinct E, it is anticipated that ground conditions would be consistent with the natural material from the geotechnical investigations and geological mapping.

Refer **Appendix 4 – Engineering Servicing Report**.

### 2.1.4.2. Acid Sulphate Soils

The Department of Water and Environmental Regulation Acid Sulphate Soils ('ASS') risk mapping indicates that the majority of the site is considered to have a 'high to moderate' risk of ASS occurrence within 3 m of the natural surface. A portion of the site, including parts of Precinct B, Precinct C and the Racecourse are mapped as having a 'moderate to low' risk of ASS occurring within the 3m of the natural surface. Should ASS be encountered, an ASS Management Plan will be prepared and implemented at subdivision and/or development stage.

### 2.1.4.3. Site Contamination

A review of the Department of Water and Environmental Regulation's ('DWER') Contaminated Sites Database indicates that no areas within the subject site are registered as a 'contaminated site' under the *Contaminated Sites Act 2003*.

A basic summary of records of Lot 9002 on DP60342 was requested from DWER which indicated that Precincts A, B and C are classified as 'possibly contaminated – investigation required'. The possible contamination is associated with the site's historical use for horse-racing and runoff from animal storage on the site and agistment in the surrounding areas. Perth Racing are currently undertaking monitoring and investigation into the potential contamination of the site which will be reviewed by DWER.

Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

### 2.1.4.4. Groundwater & Surface Water

The Perth Groundwater Map (DWER, 2023) indicates that the regional groundwater level sits at 0.5m AHD across the site. The groundwater clearance from south-east to north-west of the site therefore ranges from 6.5m to 0.5m. Local groundwater monitoring undertaken in August 2022 indicates that annual maximum groundwater levels were measured at 1.26m AHD and 1.70m AHD.

In terms of future development, it is anticipated that additional fill may be required to satisfy minimum groundwater clearance of 1.2m above maximum groundwater levels. This would be subject to further investigations on final development requirements and land uses.

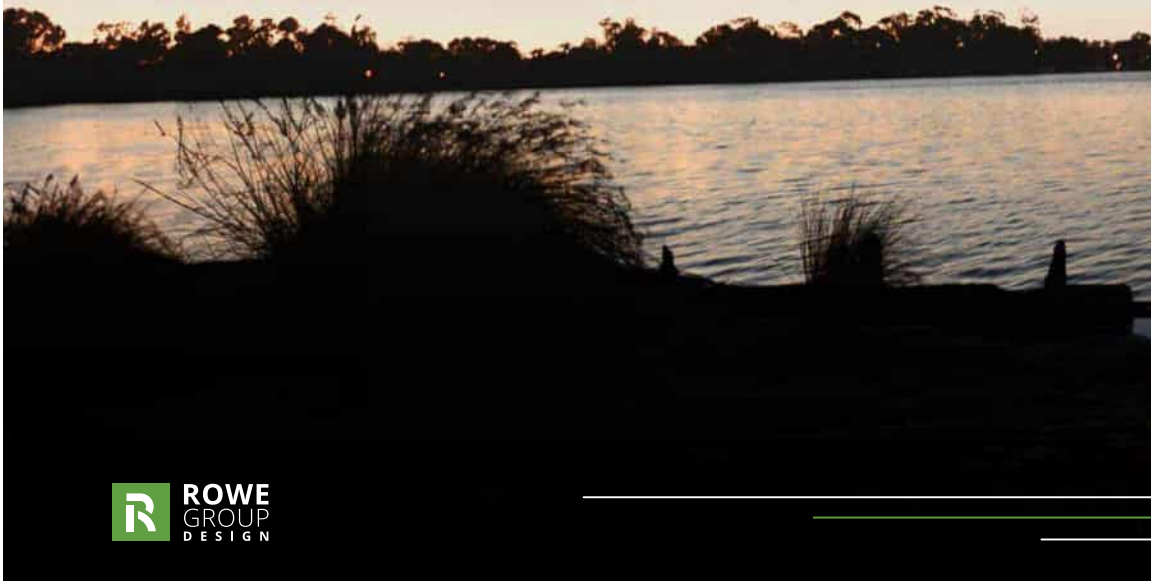
Groundwater is abstracted from an artesian production bore assigned to the Leederville Aquifer to meet the irrigation demand of the Racecourse and surrounds. The bore is located adjacent to the Irrigation Lake at the south corner of the racetrack.

Water quality monitoring indicates that electrical conductivity (EC), total dissolved solids (TDS), and hydrogen (pH) values do not exceed guideline trigger values, however nitrogen (TN) and phosphorous (TP) concentrations continually exceed Australian and New Zealand Environment and Conservation Council (ANZEC) guideline trigger values.

### 2.1.4.5. Hydrology

The dominant hydrological feature of the site is the Swan River, which adjoins the northern boundary of the site and falls within the Swan Canning Development Control Area and Swan Canning River Park. Online floodplain mapping indicates flood levels in proximity to the Swan River at 2.8m AHD. All lots must have a minimum 500mm elevation above this Swan River flood level and a minimum of 300mm clearance above the 1% AEP top of water level of drainage basins.

There are three lakes located within the centre of the Racecourse (Irrigation Lake, Lined Lake and Wetland Lake). These lakes receive runoff from the grandstand buildings in Precinct B and stables/buildings in Precinct C.



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### 2.1.4.6. Wetlands

The Geomorphic Wetlands of the Swan Coastal Plain dataset indicates the following wetlands within the site:

- Multiple Use Wetland (UFI 8424, UFI 8425, UFI 8426)
- Resource Enhancement Wetland (UF 8423).

The adjacent Swan River is classified as a Conservation Category Wetland (UFI 1316 – Estuary waterbody) and has significant ecological, cultural and heritage values. The associated riparian vegetation associated with the Swan River extends into the north-eastern portion of the site and would provide habitat for waterbirds and aquatic fauna species.

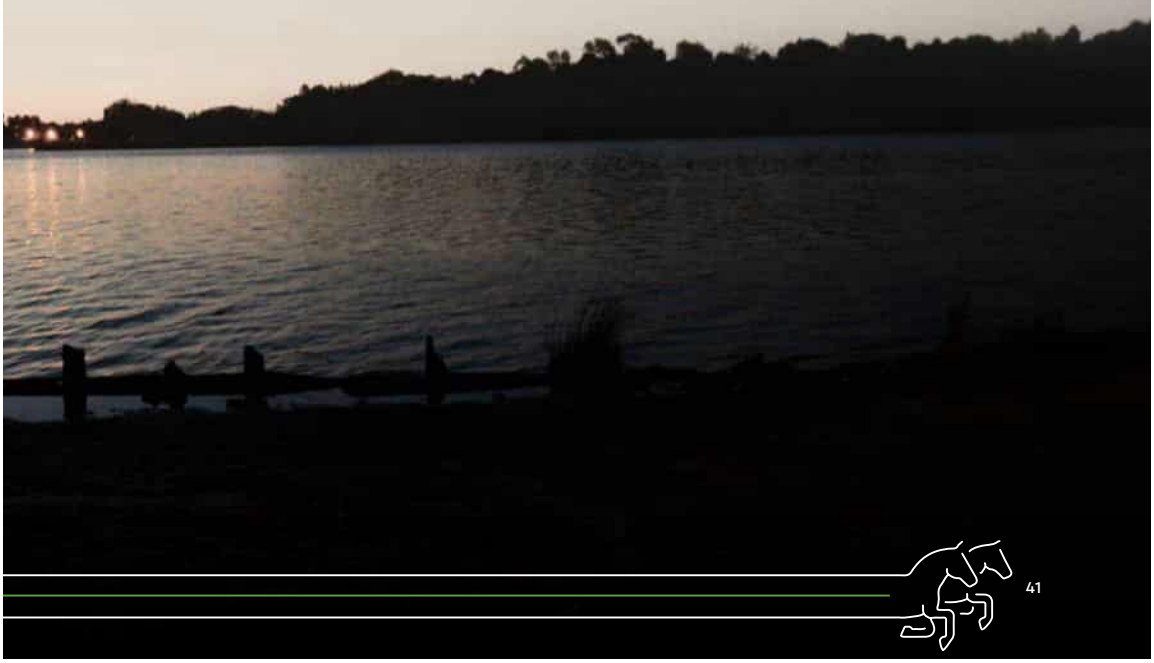
### 2.1.4.7. Biodiversity & Natural Area Assets

A flora and fauna survey of the subject site undertaken in March 2023 by Emerge Associates identified a total of 1.1ha of native vegetation, comprising of scattered flooded gum (*Eucalyptus rudis*) and marri (*Corymbia calophylla*) trees, and fringing vegetation (vegetation type ErJkSt). The survey found the majority of the subject site is heavily disturbed with limited intact native vegetation. Most of the vegetation was deemed to be in a 'degraded' and 'completely degraded' state.

A small portion of native vegetation in the north-eastern corner of on the site, comprising approximately 70m², was identified as being in 'Good – Very Good' condition. This area includes the 'subtropical and temperate coastal saltmarsh' ecological community which is listed as a Threatened Ecological Community ('TEC') ('vulnerable') under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and as a Priority Ecological Community (Priority 3) under the *Biodiversity Conservation Act 2016*.

The survey found no threatened or priority flora species or suitable habitat for threatened or priority species. Whilst a desktop search indicated potential for two threatened and priority flora species, these were not considered likely to occur on the site due to lack of suitable habitat.

The northern portion of the site (along the Swan River) is identified as an environmentally sensitive area ('ESA') which are prescribed protection under the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*.



#### 2.1.4.8. Fauna

A basic fauna and targeted black cockatoo survey undertaken by Emerge Associates found that fauna habitat values within the site are limited by historical disturbance and are primarily suited to widespread fauna species with non-specific habitat requirements. The survey found 24 fauna species were recorded within the site including two (2) conservation significant species.

The two conservation significant species recorded at the time of survey include one threatened species, being the Forest Red-Tailed Black Cockatoo (*Zanda banksia naso*) and one Priority 4 species (blue-billed duck (*Oxyura australis*).

A total of 1.27ha of Carnaby's Black Cockatoo foraging habitat was recorded on the site, of which 0.35ha comprised primary foraging habitat and 0.92ha of secondary foraging habitat. A total of 0.84ha of Forest Red-Tailed Black Cockatoo foraging habit was recorded on the site, comprising 0.28ha of primary native habitat, 0.56ha of secondary foraging habitat.

A total of 32 Black Cockatoo habitat trees were recorded during the survey, of which 29 were located within the subject site. Of the trees located on the site, four (4) trees contained hollows potentially suitable for Black Cockatoo breeding.

### 2.1.5. Physical Infrastructure & Services

An Engineering Servicing Report has been prepared by TABEC in support of this Precinct Structure Plan. The purpose of the report is to provide servicing and infrastructure advice on the development area and associated future requirements. The findings of the report are summarised below.

Refer **Appendix 4 – Engineering Servicing Report**.

#### 2.1.5.1. Sewer

Precinct A is located in proximity to an existing sewer at Waterway Crescent, however it is anticipated that the existing pipe network will not have sufficient cover below finished ground levels to extend from its current location to the subject site. Alternative options include:

1. Connecting to the existing wastewater pump station to the east located on Ascot Place, requiring the construction of a private pump station and the construction of 950m of DN100 pressure main and new gravity sewer through Ascot Racecourse that discharges into the pump station.
2. Extending the existing 225mm sewer up Grandstand Road from the Marina Drive/ Resolution Drive roundabout. This connection would trigger downstream upgrades due to capacity constraints, with the existing 225mm sewer on Great Eastern Highway requiring an upgrade to a 300mm sewer.

Precinct B is currently serviced by an existing sewer connection located at Raconteur Drive, however Water Corporation do not have any record of this connection and therefore wastewater flows from this Precinct have not been included in their planning assumptions. As such, if there is a substantial increase in wastewater flows to this connection, further discussions will be required with Water Corporation.

In the case of Precinct C, which will include the development of on-course stabling complexes along the outer edge of the Racecourse, multiple sewer connections will be required to service the site. The western portion of the Precinct (between Kalgoorlie Street and Raconteur Drive) is expected to be conveyed to the west to the existing internal sewer. The central area of the Precinct, along Matheson Road, is proposed to be serviced via an existing connection from Kalgoorlie Street. The eastern portion of the Precinct will require two new connections along the eastern boundary to the existing sewer network.

Precinct D can be serviced by the existing sewer network located near the intersection of Marina Drive and Resolution Drive, as confirmed by the Water Corporation.

In terms of Precinct E, there is an existing sewer network located along Resolution Drive which continues north-east from Raconteur Drive towards Carbine Street via Lot 100, which can service future development on Lots 51 and 100.

#### 2.1.5.2. Water

Investigations indicate that the existing water reticulation network within the area can service the subject land depending on final water usage requirements, specifically:

- Precinct A can be serviced by an existing water main located in the western verge of the Waterway Crescent / Grandstand Road roundabout, which will need to be extended to the development site to provide water supply.
- Precinct B is currently serviced by an existing 100mm water main, however if additional water supply is required, this water main may require upgrading.
- Precinct C has access to an existing 100mm water main located along the southern verge of Matheson Road which can service the Precinct area. If, however greater supply is required above the capacity of the pipework, there may be a need to upgrade the size of the water main to Precinct C.
- Precinct D has access to an existing 150mm water main on the western verge of Resolution Drive and a 100mm water main on Grandstand Road which provide adequate opportunity for connection and water supply.
- Precinct E can be serviced by an existing DN100mm water main located within the existing redundant road reserves dissecting this Precinct area.

#### 2.1.5.3. Power

Preliminary estimates on power demand indicate that the site has a total power requirement of 5.4MVA with the proposed new developments requiring an additional 4.2MVA. Western Power's Capacity Mapping indicates there is sufficient capacity within the network (30MVA) to accommodate the proposed development, as contemplated by this Precinct Structure Plan.

#### 2.1.5.4. Stormwater Drainage

There are two significant drainage systems that convey stormwater from the subject area to the Swan River. The first is the Central Belmont Main Drain which is managed by Water Corporation, and the second is the local drainage network located near Matheson Road which conveys water from the surrounding road reserves into the lake system at the centre of the Racecourse.

The lake systems are interconnected, with flows discharging from the lakes to the Swan River via a 450mm and 375mm concrete pipe at peak water level, with its outlet being controlled to restrict tidal influence on the internal lake system.

In terms of precinct-specific stormwater drainage management:

- Precinct A does not currently have access to a stormwater connection, and as part of future development, drainage from this area would be treated and captured within the precinct area.

- Precinct B currently captures and infiltrates water at source, with overland flow being graded towards the existing track.
- Precinct C will be a combination of infiltration at source where levels and soil conditions allow, and discharge to the lake system.
- Precinct D will include stormwater storage and infiltration at the site, with the 1% AEP event discharging into the local drainage network on Resolution Drive.
- Precinct E is anticipated to be treated via bio-retention swale before overflowing to a proposed detention basin storage for the 1% AEP event, with overflow from the basin discharging into the Water Corporation's drainage system.

Refer **Appendix 2 – Local Water Management Strategy**.

### 2.1.6. People Movement

A detailed review of the existing movement network has been undertaken through the preparation of a Transport Impact Assessment ('TIA'), a summary of which is outlined below. Refer **Appendix 5 – Transport Impact Assessment**.

The Structure Plan area is bound by Grandstand Road to the west, Resolution Drive to the south, and Matheson Road to the south-east. All roads abutting the site are under the care and control of the City of Belmont, though the extent of Matheson Road and Raconteur Drive that sits within the site boundary is owned privately by Perth Racing with access controlled through gates.

Grandstand Road is classified as a 'Distributor A' road under the Main Roads WA Functional Road Hierarchy and forms as a dual carriageway carrying volumes of approximately 16,700 vehicles per day (2018). There are no on-road cycle lane facilities on Grandstand Road. A single continuous shared use path exists along the north-eastern side of Grandstand Road, with intermittent provision on the south-western side. A high-quality shared path extends from the Grandstand Road/Garratt Road bridge to Ascot Place, adjacent to the Swan River and along the northern boundary of the Racecourse.



Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

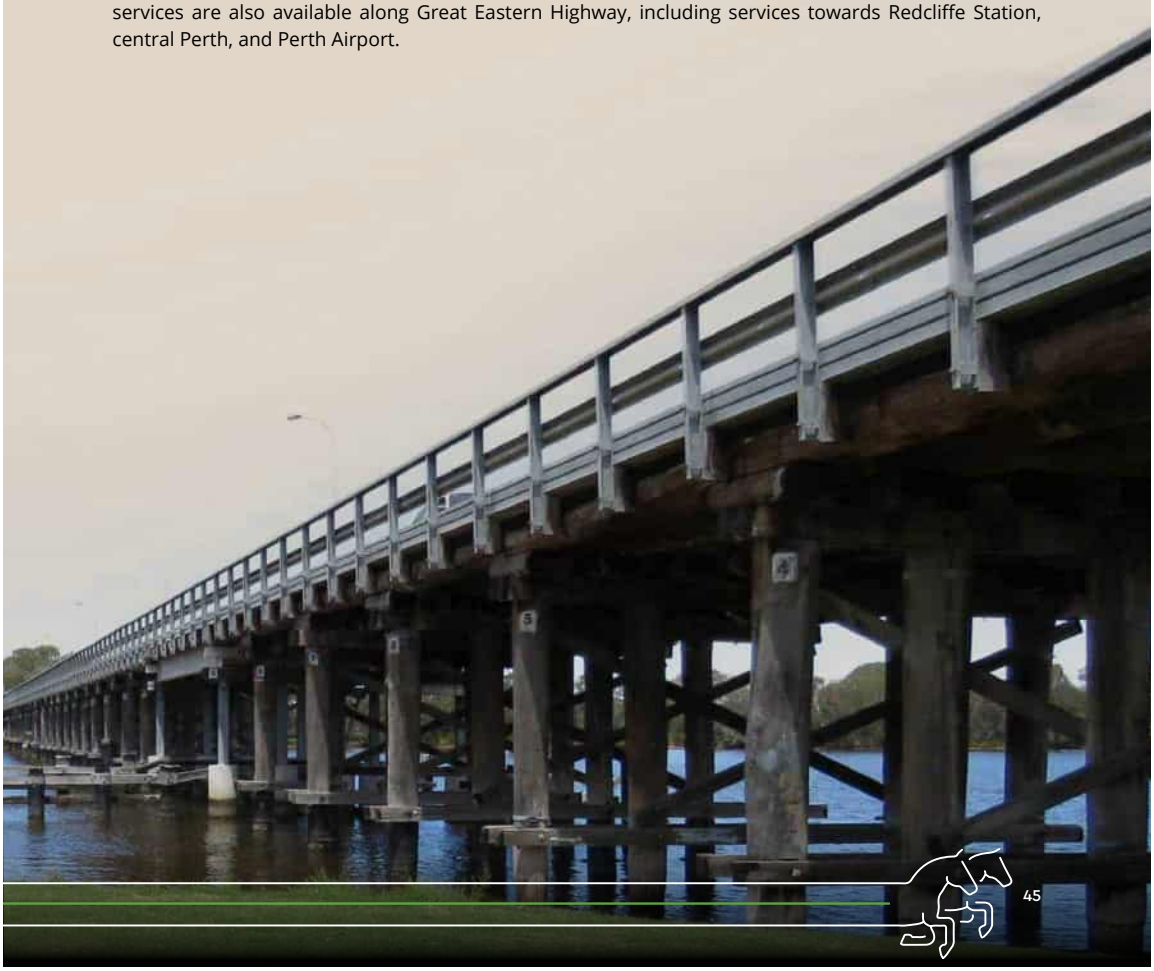
Resolution Drive, to the south of the subject area, is classified as a 'Distributor A' road and forms as a single carriageway, extending between the four-lane Grandstand Road / Stoneham Street / Resolution Drive roundabout to the signalised intersection at Great Eastern Highway and Hardey Road. Based on 2021 traffic count data, Resolution Drive carries approximately 7,900 vehicles per day.

Raconteur Drive diverts east from Grandstand Road, in the form of a three-way priority-controlled intersection, with left-in and right-in movements from each side of Grandstand Road. Raconteur Drive forms as a one-way single-lane carriageway providing access (albeit gated) to Matheson Road and the existing car park for Ascot Racecourse. A pedestrian footpath exists along the northern side of Raconteur Drive connecting to Grandstand Road and Resolution Drive.

Matheson Road is classified as an 'Access Road' and forms as a single-lane carriageway servicing the Residential and Stables area. A shared path exists along the south-eastern side of Matheson Road, with a dedicated horse trail along the northern side.

Great Eastern Highway, to the south of the subject land, is classified as a 'Primary Distributor' under the Functional Road Hierarchy and carries significant volumes of traffic. Great Eastern Highway includes on-road cycle laneways with no physical separation and are combined with bus lanes.

There are existing bus stops located along Grandstand Road, immediately adjacent to one of the key pedestrian access points to the Racecourse, which are served by the 998/999 circle route which has good frequency and provides connectivity through central Perth and Bayswater Train Station. Frequent bus services are also available along Great Eastern Highway, including services towards Redcliffe Station, central Perth, and Perth Airport.



## 2.2. Community Context

### 2.2.1. Culture, Values & Identity

The Ascot locality is renowned for its connection to the horse racing industry, with the historical Ascot Racecourse and surrounding Residential and Stables area forming a significant role in the contemporary culture and identity of the area. Ascot Racecourse was established in 1853, importing the English notions of society and social pastimes within a colonial setting. Since that time, the Racecourse has been a site of social interaction, particularly over the summer months, which contributes to the sense of place of both the local area and the wider State.

The continuation of the Residential and Stables area, integrating horse stabling with housing, is reflective of the community's values for ongoing provision of horse racing at Ascot Racecourse, and its association with the individuals and families who are significant in the history of the local area. In recent years, however, it is understood that many emerging horse trainers are now locating on the outskirts of the Perth metropolitan area and travelling to Ascot for training and racing.

The Swan River forms a key feature that signifies the area, extending along the northern boundary of the Racecourse. The Swan River foreshore serves a significant amenity and environmental feature in the area, and a recreational asset for the wider community.

Situated opposite the Ascot Racecourse is a prominent landmark featuring eight (8) brick circular downdraught kilns and five (5) tall brick chimneys, known as the Bristile Kilns (or Ascot Kilns). Becoming known beyond the local community due to heritage significance and prominent location adjacent to Ascot Racecourse and at the gateway to the City of Belmont.



## 2.2.2. History & Heritage

### 2.2.2.1. Aboriginal Heritage

A search of the Aboriginal Cultural Heritage Inquiry System identified two (2) Aboriginal heritage places located within and adjacent to the subject land, as follows:

- Site ID 3753 – Registered site, Name: Perth, Type: Historical, Mythological, Hunting Place, Named Place, Natural Feature.
- Site ID 3536 – Registered site, Name: Swan River, Type: Creation / Dreaming Narrative.

Site 3753 partially intersects with the western edge of the site and the boundary is a broader area, with the exact area not being defined. Site 3756 is located immediately adjacent to the site.

### 2.2.2.2. European Heritage

A search of the 'Inherit' database of the Western Australian Heritage Council ('WAHC') and the City of Belmont Local Heritage Survey and Heritage List identifies five (5) European heritage listings within and adjacent to the Precinct Structure Plan area.

| Inherit Id | Name | Address | Local Heritage Survey Management Category |
|---|---|---|---|
| 6123 | Ascot Racecourse Complex | 71 Grandstand Road, Ascot | 1 |
| 868 | Bristile Kilns (Ascot Kilns) | 80 Grandstand Road, Ascot | 1 |
| 16779 | Ascot Residential and Stables Area | Area bound by Great Eastern Highway, Hardy Road, Swan River and Tonkin Highway, Ascot | 2 |
| 27274 | Lee-Steere House | 70 Grandstand Road, Ascot | 4 |
| 16863 | Rail Line - site | Matheson Road, Ascot | 4 |
| 18987 | Swan and Canning Rivers | Swan River | N/A |

*Table 9: Heritage Places*



Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

#### 2.2.2.2.1. State Register of Heritage Places

The Bristile Kilns – Heritage Place No. 868, located immediately outside of the Precinct Structure Plan area, is included in the State Register of Heritage Places, in recognition of its cultural heritage significance. The Bristile Kilns is an industrial site comprising eight (8) brick circular downdraught kilns and five (5) tall brick chimneys and is the largest cluster of circular downdraught kilns and associated stacks in Australia, which are an increasingly rare industrial structure nationally.

The place represents the development of the clay industry in the Belmont area and has had a significant impact on the development of the City of Belmont from 1905 to 1982. The Bristile Kilns now form part of the Ascot skyline with both aesthetic and social value due to its landmark qualities.

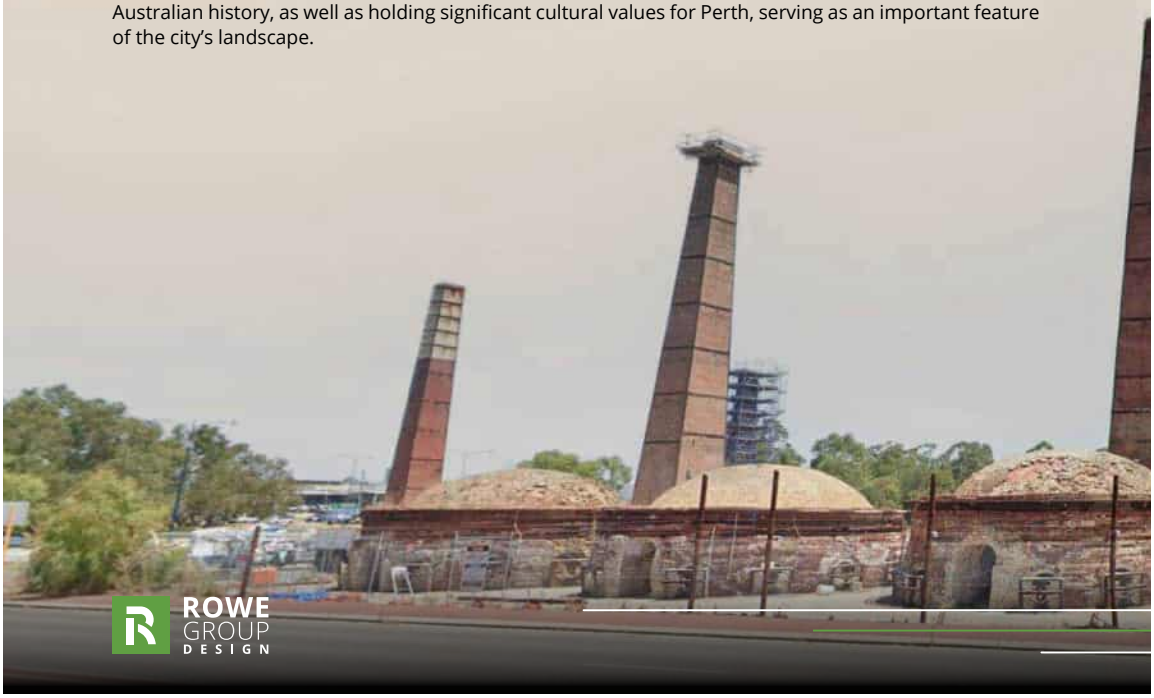
The proposed Precinct Structure Plan will not cause harm or impact the significance of the Bristile Kilns heritage place. Any future development application proposed in proximity to the heritage site may be subject to further heritage assessments.

#### 2.2.2.2.2. State Register Assessment Program Places

There are two (2) places within the Precinct Structure Plan area included on the Western Australian Heritage Council's Assessment Program for consideration for inclusion on the State Register of Heritage Places, being the Ascot Racecourse Complex – Place No. 6123 and the Swan and Canning Rivers – Place No. 18987.

The Ascot Racecourse Complex comprises a complex of buildings surrounding the horse racing track, established in 1850. The place demonstrates the popularity of horseracing in Western Australia, and the allocation of public funds by Government in order to provide facilities for the sport and maintain revenue generated by gambling. The Ascot Racecourse Complex represents the economic prosperity and population increase generated by the Gold Boom of the 1890s, which resulted in dramatically increased building activity. The place remains a rare example of a largely intact group of buildings including parts of a horse racing complex, that still relates to the original form and function of the surrounding area.

The Swan and Canning Rivers (or Swan Canning Riverpark) cover 72.1 square kilometres of river reserve and adjoining public lands. The Swan Canning Riverpark supports a diverse array of plant and animal life, some endemic to the region. The Swan and Canning Rivers stretch and snake their way for 280 kilometres from Wickepin to the Indian Ocean in Fremantle, representing an important slice of Western Australian history, as well as holding significant cultural values for Perth, serving as an important feature of the city's landscape.



Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

#### 2.2.2.2.3. Local Heritage Survey and Heritage List

The City of Belmont's Local Heritage Survey and Heritage List (June 2023) identifies and records places that are, or may become of, cultural heritage significance to the local community within the Local Heritage Survey. Those places considered to contain cultural heritage significance requiring protection and conservation are included on the Heritage List.

The Ascot Racecourse Complex, the Ascot Residential and Stables Area, and Bristile Kilns are all included on the City's Heritage List, with the former being the only site contained within the subject area. Lee-Steere House and the Rail Line are contained within the subject area, however, are not included on the Heritage List based on their Management Category.

The Ascot Residential & Stables Precinct is located immediately adjacent to the subject area and provides evidence in the built environment of a long association with the horse racing industry and Ascot Racecourse. The area presents a rare surviving example of a suburban area that has retained a significant number of actively used stables integrated into the urban subdivisions. The precinct has social value to the community for the ongoing provision of horse racing at the Ascot Racecourse and for its association with the individuals and families who are significant in the history of the local area and / or the racing profession.

The Local Heritage Survey also identifies two (2) places that contribute to Belmont's history and community as a Management Category 4 (little significance) place. These places include the Rail Line – Site and the Lee-Steere House, which are both situated within the Precinct Structure Plan area.

The former Rail Line site is located on a portion of Matheson Road, Ascot. The site has historic value for its association with the rail link which connected Belmont to the Perth to Guildford railway line. This brought racegoers to Ascot and provided essential deliveries to local businesses. The former Rail line demonstrates how significant the racing industry was to the development of the Belmont district. It should be noted that the site does not contain any original infrastructure and its former use is acknowledged via a plaque located onsite.

Lee-Steere House has historic and social value for the members of the horse racing industry for its provision of services since the 1980s. It is noted that the building is not of any distinct architectural merit but is connected to the racing industry and built in the style of similar clubhouses from that era. The intended use of the building continues to perform the functions for which it was built, being an administration centre, however it is proposed to be decommissioned with administrative functions of Perth Racing being consolidated into the Racecourse site.



### 2.2.3. People

Ascot Racecourse operates as both a racetrack and training facility, with more than 500 horses training at the Racecourse during a typical week.

Ascot Racecourse, through both racing and non-racing events attracts a range of community members, irrespective of socio-economic status, age or gender, and supports the development and preservation of social and community benefits throughout the Perth Region through club activities and partnerships with community organisations. Amongst the community, horse racing is a profession, sport, hobby and leisure activity.

Perth Racing is the only thoroughbred racing club established within the Perth Region, with racing occurring between Ascot Racecourse (summer months) and Belmont Racecourse (winter months). There are 7,366 people who participate in the thoroughbred horse racing industry within the Perth Region, including 4,928 people who participate in producing racing animals, 1,498 racing club and industry staff, and 541 stable employees (IER, May 2023).

In terms of the wider area, the population of Ascot has steadily grown over the past five (5) years reflecting an increasing trend of an aging population. The key demographic statistics that comprise the Ascot community are summarised in the table below.

| Statistic | Ascot (2016) | Ascot (2021) | Western Australia (2021) |
|---|---|---|---|
| Population | 2,572 people | 3,095 people | - |
| Median Age | 42 years | 46 years | 38 years |
| Population over 65 years | 15.6% | 22% | 14.2% |
| Median Weekly Household Income | $1,687 | $2,166 | $1,480 |
| Family Composition | | | |
| ▪ Couple family without children | 50% | 52.2% | 38.8% |
| ▪ Couple family with children | 35.8% | 34.5% | 43.7% |
| ▪ One parent family | 12.3% | 9.1% | 15.9% |

*Table 10: Ascot Demographic Profile (ABS Census Data 2016 and 2021)*



Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

### 2.2.4. Economy

Within the Perth Region, the thoroughbred horse racing is responsible for generating $467.9 million in value-added contribution to Gross State Product and sustaining a total of 3,633 full-time equivalent jobs in the region (IER, May 2023). In terms of contribution to the Belmont area, Perth Racing provides an economic contribution of almost $250 million annually, over 1,500 jobs and almost 2,000 participants and volunteers, and household income of over $116 million (IER data, May 2022).

A significant number of racing participants have skills that are not easily transferable to other employment sectors, in particular trainers, jockeys, drivers and breeders, and therefore are heavily reliant on the success of the racing industry.

The Ascot locality is characterised by typical labour force participation and an above average proportion of workers who are employed on a full-time basis (ABS Census Data, 2021). The key employment industries for the portion of Ascot defined by Ascot Racecourse and the Residential and Stables area are 'Accommodation & Food Services', 'Arts & Recreational Services' and 'Tourism'. These industries generate a total of 426 jobs in area, representing 64% of all jobs within the area, and a combined economic output of over $82 million (REMPLAN, 2024).



## 2.3. Governance Context

### 2.3.1. Planning Strategies

#### 2.3.1.1. Perth and Peel @ 3.5 Million and Central Sub-Regional Planning Framework

The Perth and Peel @ 3.5 Million suite of documents provides a framework for the development of the Perth and Peel regions as the population reaches an estimated 3.5 million people by 2050. The suite of documents includes four planning frameworks for the Central, North-West, North-East and South Metropolitan sub-regions. These documents provide the detailed commentary and analysis accompanying the overall 'Spatial Plan for Perth and Peel @ 3.5 million'.

The subject site lies within the Central Sub-Regional Planning Framework. Under the Framework, Ascot Racecourse is identified as forming part of a 'Green Network' that extends along the Swan River. Great Eastern Highway is identified as an 'Urban Corridor' where focus should be given to investigating increased residential densities, with potential for mixed land uses where appropriate. Both Great Eastern Highway, and Grandstand Road and Resolution Drive immediately abutting Perth Racing's landholdings are identified as a 'high-frequency public transit' route.

#### 2.3.1.2. City of Belmont Local Planning Scheme No. 15 – Report of Review

In accordance with the requirements of the *Planning and Development (Local Planning Schemes) Regulations 2015*, the City undertook a review of LPS 15, preparing a 'Report of Review' analysing the operation of the existing local planning framework. The Report of Review acknowledged the Council had adopted a number of supporting documents and sub-planning strategies to LPS 15, however it was concluded that these documents were considered outdated (adoptions dating from 2008 to 2011).

The Report of Review states that due to the extent of the review required and the age of the strategy, a new local planning strategy and associated sub-strategies should be prepared. The recommendations of the Report of Review were supported by the WAPC on 9 February 2021.

#### 2.3.1.3. City of Belmont Activity Centres Planning Strategy

The City's Activity Centre Planning Strategy ('ACPS') is a holistic guide for the future planning of activity centres within the City of Belmont, based on the current strategic planning framework, future economic trends and analysis of best practice activity centre planning, as outlined by State Planning Policy 4.2 – Activity Centres ('SPP 4.2').

Of relevance to the Precinct Structure Plan area, the ACPS identifies a future 'Local Centre' within the Ascot Waters residential estate (500m2 NLA) and the Golden Gateway Precinct (1,200m2 NLA). It is intended that the 'Local Centre' would capture a 200m walkable radius which would include a portion of the Precinct area. Further to this, it is noted that a Retail Needs Assessment commissioned by the DPLH in 2016, predicts that the nearby Ascot Kilns site could accommodate a total of 515m2 of retail floor area.

During the ACPS consultation period, a submission was prepared on behalf of Perth Racing seeking to designate the future Golden Gateway Local Centre on Perth Racing's landholdings, immediately adjacent to Resolution Drive. Additionally, and as part of this Precinct Structure Plan, a Net Benefit Test has been prepared to justify the appropriateness of the proposed Local Centre in this location to address future planning of its landholdings. This is discussed further in Section 5.6 of this Report.

Refer **Appendix 6 – Retail Assessment (Net Benefit Test)**.

#### 2.3.1.4. City of Belmont draft Great Eastern Highway Urban Corridor Strategy

The City's draft Great Eastern Highway Urban Corridor Strategy ('Corridor Strategy') has been prepared to guide land use planning along Great Eastern Highway, which is identified as an 'Urban Corridor' under the Central Sub-Regional Planning Framework. The Corridor Strategy establishes a 'vision' for the corridor, addressing matters relating to land use, built form, the public realm, and access arrangements.

Of relevance to the Precinct Structure Plan area, the Corridor Strategy identifies land fronting Great Eastern Highway, within the Golden Gateway Precinct as an 'Activity Node'. This Activity Node will provide convenience for residents to the north within the Golden Gateway Precinct, being a portion of the Precinct Structure Plan area.

Following the consideration of submissions, at the Council meeting held on 26 September 2023, the Corridor Strategy was endorsed for further modifications and readvertising for a period of 28 days. One of the modifications include updating the Corridor Strategy to be consistent with the principles of SPP 4.2 and the activity centres identified in the ACPS. At the time of writing this Structure Plan, the Corridor Strategy had not yet been adopted.

### 2.3.2. Zoning & Reservations

#### 2.3.2.1. Metropolitan Region Scheme

The Precinct Structure Plan area is primarily zoned 'Private Recreation' under the Metropolitan Region Scheme ('MRS'), with the balance of the land zoned 'Urban'. Land abutting the Swan River within the Precinct Structure Plan area is reserved 'Parks and Recreation' and is situated within the 'Swan and Canning River Development Control' area. The surrounding land is zoned 'Urban', notwithstanding 'Bush Forever Site No. 313' situated to the north-west of the subject land and Garratt Road.

The Structure Plan identifies the rezoning of Precinct A to 'Mixed Use' under LPS 15, which is currently subject to a 'Private Recreation' zone under the MRS. To provide consistency with the MRS, it may be necessary to progress an MRS Amendment to facilitate the 'Mixed Use' zoning of the site under LPS 15.

Refer **Figure 4 – Metropolitan Region Scheme Zoning**.

#### 2.3.2.2. City of Belmont Local Planning Scheme No. 15

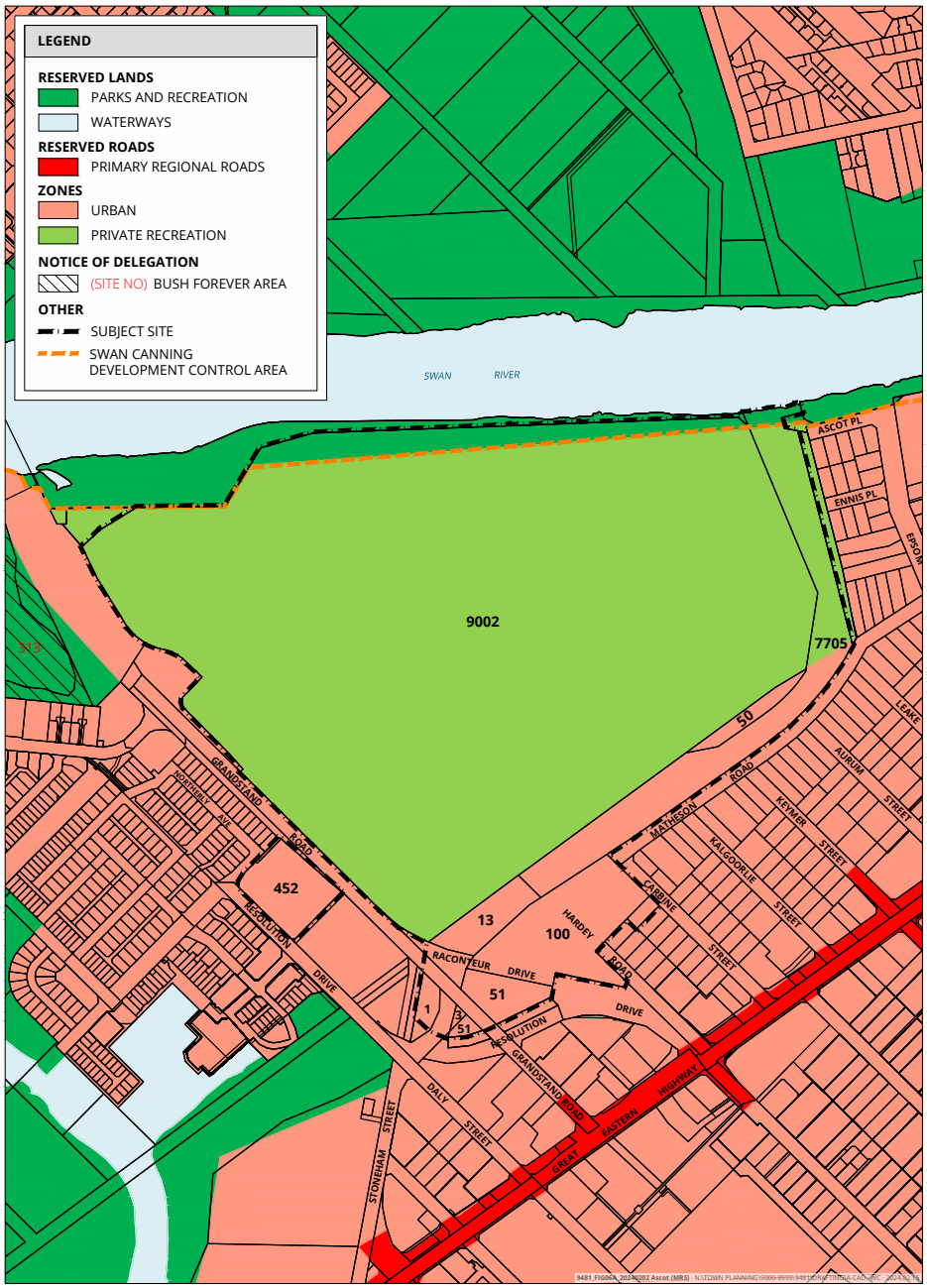
The Precinct Structure Plan area is predominantly zoned 'Place of Public Assembly – Racecourse' and identified as 'Additional Use 18' ('A18') under the City of Belmont's LPS 15. The southern portion of the subject land, abutting Resolution Drive, is zoned 'Mixed Use' under LPS 15.

Under the provisions of LPS 15, A18 enables the subject land to be considered for the additional uses of 'Horse Sales' and 'Stables' which are not otherwise permissible under the 'Place of Public Assembly' zone. This Precinct Structure Plan proposes to modify the scope of Additional Uses applicable to the Place of Public Assembly zone, but retain the general intent and nature of the uses provided.

The proposed zoning under Plan 1 – Local Structure Plan would be inconsistent with the existing zonings applicable to Precincts A, D, and E. A Scheme Amendment will be required to ensure consistency between the Structure Plan and LPS 15.

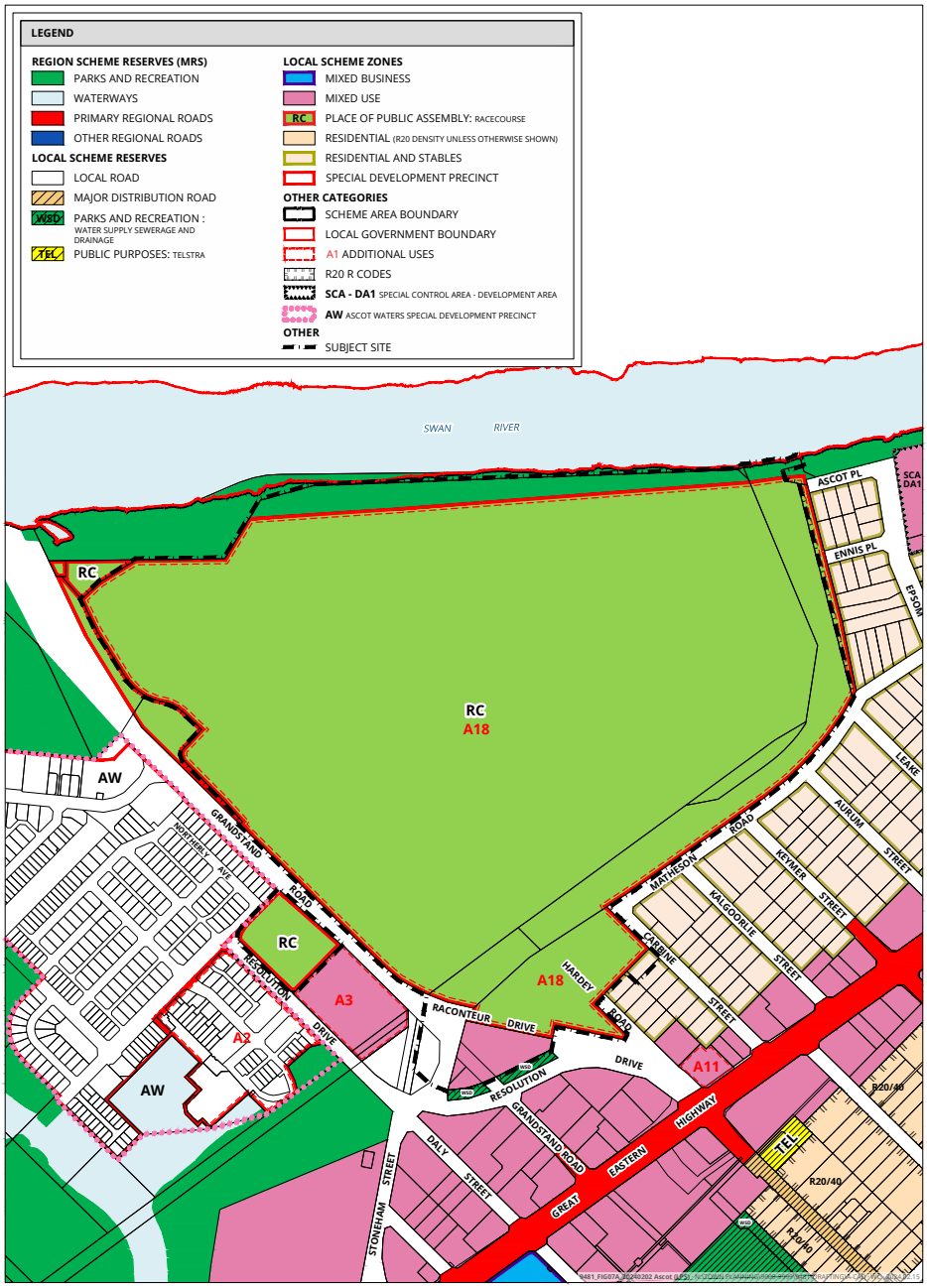
Refer **Figure 5 – City of Belmont Local Planning Scheme No. 15 Zoning**.

Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan




4. *Metropolitan Region Scheme*

Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan




*5. LPS 15 Zoning Plan*

### 2.3.3. Draft Golden Gateway Local Structure Plan

The City's draft Golden Gateway Structure Plan was prepared to coordinate future subdivision, zoning and development of land generally bound by Great Eastern Highway to the south, the Swan River to the west, the Ascot Waters precinct to the north, and the Ascot Racecourse/Residential and Stables precinct to the east.

The Golden Gateway Structure Plan proposes 'Mixed Use' and 'Residential' zones that enables development ranging from 2 to 20 storeys, including approximately 5.1ha of Perth Racing landholdings, and proposes to establish a 'Local Centre' along Daly Street.

On 23 June 2020, the Golden Gateway Structure Plan was presented to Council following the conclusion of public consultation. During the advertising period, 127 submissions were received, raising issues relating to traffic, built form, public open space, land use, car parking and the future of the Ascot Kilns and Belmont Trust sites.

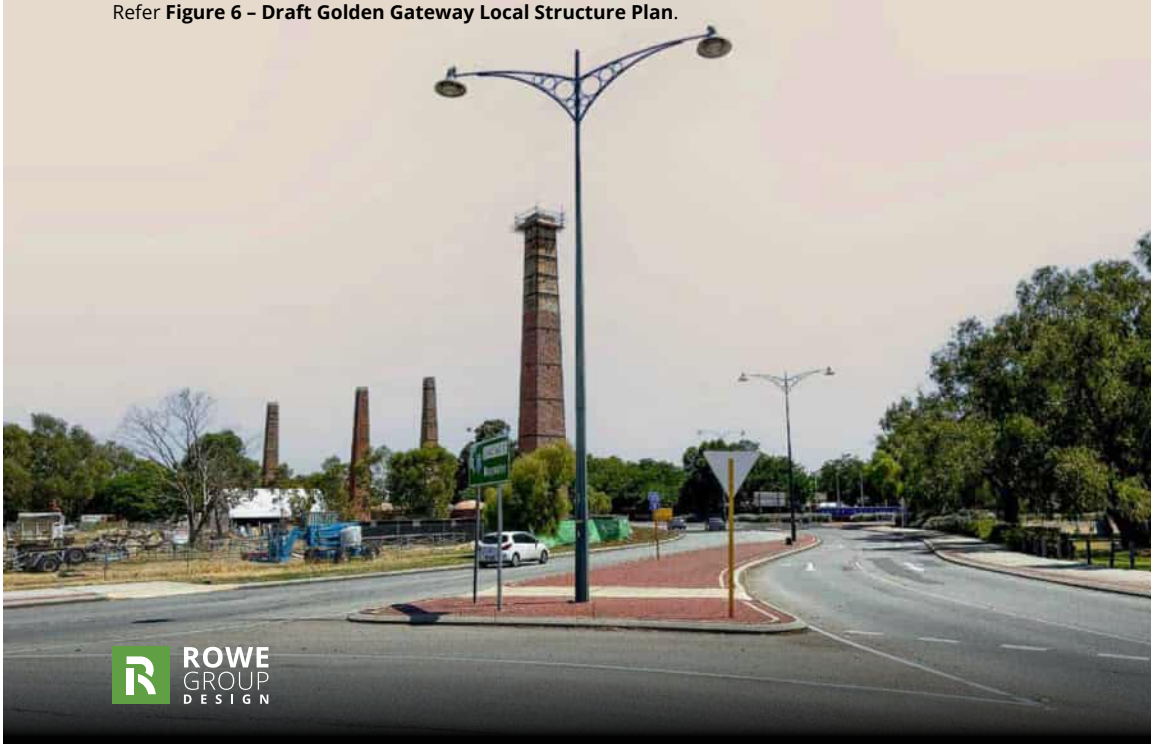
In response to the above and of relevance to the Precinct Structure Plan area, Council resolved to:

- Revisit the proposed changes to the movement network, including the realignment of Resolution Drive along Raconteur Drive.
- Reduce the building heights to facilitate an appropriate interface to the existing Ascot Waters Estate and Residential and Stables area.

Council also noted their desire to see the Ascot Kiln site developed into a park to allow for the wider community to access and interact with the heritage structures.

At the time of writing this report, we understand that the City is seeking to proceed with the option of retaining the existing road network as is, namely maintaining the existing alignment of Resolution Drive. It is also understood that the City are open to reviewing the position of the future Local Centre within the Precinct, with a view that it could be predominantly located on Perth Racing's landholdings.

Refer **Figure 6 – Draft Golden Gateway Local Structure Plan**.



Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan




6. *Draft Golden Gateway Local Structure Plan*

Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

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### 2.3.4. State Planning Policies & Guidelines

#### 2.3.4.1. State Planning Policy 2.10 – Swan-Canning River System

State Planning Policy 2.10 – Swan-Canning River System ('SPP 2.10') is an overarching framework that sets out guiding principles for decision making in relation to planning proposals over the Swan and Canning River and its foreshore.

SPP 2.10 contains four (4) guiding principles of social benefit, environmental values, cultural and natural heritage and design and development, and nine (9) precinct areas. The Precinct Structure Plan area is identified within the 'Lower Swan' precinct which is a broad area around the Burswood, Maylands, and Garvey Park peninsulas. The precinct area is subject to certain objectives concerning landscape values which aims to:

- Establish protection measures for riparian vegetation on foreshores;
- Promote an aesthetic environment for new riverside development appropriate to its surroundings, and establish a sense of place by the river;
- Recognise the importance of the river for transport, commerce, tourism and leisure as well as its conservation value;
- Enhance the appearance and function of existing recreation, tourism and commercial nodes and of proposed nodes identified in an adopted Swan-Canning precinct plan;
- Protect places of cultural significance, in particular places on the Register of Heritage Places and the Department of Indigenous Affairs register of significant places; and
- Ensure that subdivisions incorporate adequate foreshore reserves and building setbacks.

The Precinct Structure Plan promotes development outcomes that respect the values of the Swan River. No clearing is proposed within the Swan River foreshore area and the Precinct Structure Plan stipulates minimum setback distances from the foreshore in accordance with DBCA policy.

#### 2.3.4.2. State Planning Policy 3.0 – Urban Growth & Settlement

State Planning Policy 3.0 – Urban Growth and Settlement ('SPP 3.0') is a broad sector policy that sets out the principles and considerations to facilitate sustainable patterns of urban growth and settlement in Western Australia. The objectives of SPP 3.0, are as follows:

- To promote a sustainable and well-planned pattern of settlement across the State, with sufficient and suitable land to provide for a wide variety of housing, employment, recreation facilities and open space.
- To build on existing communities with established local and regional economies, concentrate investment in the improvement of services and infrastructure and enhance the quality of life in those communities.
- To manage the growth and development of urban areas in response to the social and economic needs of the community and in recognition of relevant climatic, environmental, heritage and community values and constraints.

- To promote the development of a sustainable and liveable neighbourhood form which reduces energy, water and travel demand whilst ensuring safe and convenient access to employment and services by all modes, provides choice and affordability of housing and creates an identifiable sense of place for each community.
- To coordinate new development with the efficient, economic, and timely provision of infrastructure and services.

The Precinct Structure Plan is consistent with (and promotes) a number of key principles contained within SPP 3.0 including the following:

- Sufficient and suitable serviced land in the right locations for housing, employment, commercial, recreational and other purposes, coordinated with the efficient and economic provision of transport, essential infrastructure and human services.
- Variety and choice in the size, type and affordability of housing to support a range of household sizes, ages and incomes and which is responsive to housing demand and preferences.
- Making the most efficient use of land in existing urban areas through the use of vacant and under-utilised land and buildings, and higher densities where these can be achieved without detriment to neighbourhood character and heritage values; the cost-effective use of urban land and buildings, schools and community services, infrastructure systems and established neighbourhoods; and promoting and encouraging urban development that is consistent with the efficient use of energy.
- Supporting higher residential densities in the most accessible locations, such as, in and around town and neighbourhood centres, high frequency public transport nodes and interchanges, major tertiary institutions and hospitals, and adjacent to high amenity areas such as foreshores and parks.



- Giving priority to infill development in established urban areas, particularly through urban regeneration and intensification of development of under-utilised urban land, whilst respecting neighbourhood character.
- Locating higher residential densities in locations accessible to transport and services, such as in and around the CBD, regional and district centres, activity corridors and higher education campuses, and in selected areas of high amenity on the coast and river foreshores.

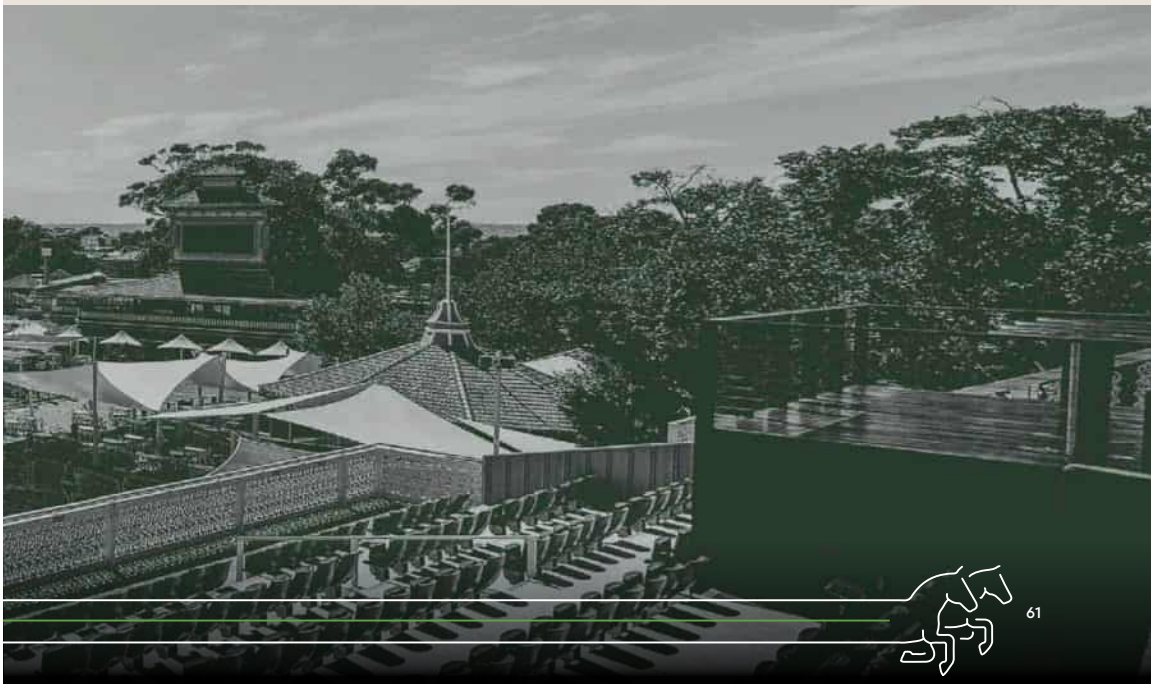
In this regard, the proposed Precinct Structure Plan is consistent with the objectives and principles for future urban growth. The proposal promotes a well-planned pattern of development within the existing urban area of the Ascot Racecourse and surrounding land.

Furthermore, the provisions of the Precinct Structure Plan will ensure that development and subdivision over the subject land responds well to the existing context through the promotion and coordination of sustainable development, consistent with the objectives of SPP 3.0.

### 2.3.4.3. State Planning Policy 4.2 – Activity Centres

SPP 4.2 provides a hierarchy and network of activity centres that meets the needs of the community , and provides economic and environmental benefits, enables the distribution of goods and services, and facilitates retail, commercial and mixed used developments.

SPP 4.2 applies to the Precinct Structure Plan as Precinct E is intended to facilitate the development of an activity centre at the intersection of Grandstand Road and Resolution Drive, forming part of the wider Golden Gateway activity centre. The size and scale of the proposed Golden Gateway activity centre would be akin to a 'Local Centre' or a 'Neighbourhood Centre' under SPP 4.2.



SPP 4.2 outlines the role and characteristics of a 'Local Centre' and 'Neighbourhood Centre' as follows:

> *Local centres provide for the convenience and incidental needs of local communities. These centres provide an important role in providing walkable access to services and facilities for local communities.*
>
> *Neighbourhood centres are important focal points that provide for daily to weekly household shopping needs, community facilities and a small range of other convenience services. They are also a focus for medium density housing. These centres play an important* role in providing walkable access to services and facilities for local communities.

In this regard, the proposed Golden Gateway activity centre, partially located within the Precinct E of the Structure Plan area, will provide for the required convenience, services and community facilities to sufficiently cater for the proposed housing density and future community.

Refer **Appendix 6 – Retail Assessment (Net Benefit Test)**.

### 2.3.4.4. State Planning Policy 5.4 – Road and Rail Noise

State Planning Policy 5.4 – Road and Rail Noise ('SPP 5.4') applies where a noise sensitive land use is proposed within proximity to major transport and freight corridors. Under SPP 5.4, the proposed 'Mixed Use' zone of the Precinct Structure Plan is partially located within the noise buffer zone of Great Eastern Highway, being a strategic freight and major traffic route.

In this regard, a Transportation Noise Assessment has been prepared by Lloyd George Acoustics in support of the proposed Precinct Structure Plan. The Transportation Noise Assessment concluded that:

- Due to the screening effect of existing buildings, any ground floor noise sensitive uses would be compliant with the outdoor noise target; and
- Noise sensitive uses above ground floor and within 200 metres of Great Eastern Highway would be subject to Package A, including a notification on title. Alternatives to the Deemed to Comply Package A can be accepted if supported by a report from a suitably qualified acoustical consultant (member firm of the Association of Australasian Acoustical Consultants (AAAC)) once the specific plans are available.

Implementation of the abovementioned requirements will be applied as a condition of subdivision or development approval (as applicable).

Refer **Appendix 7 – Transportation Noise Assessment**.

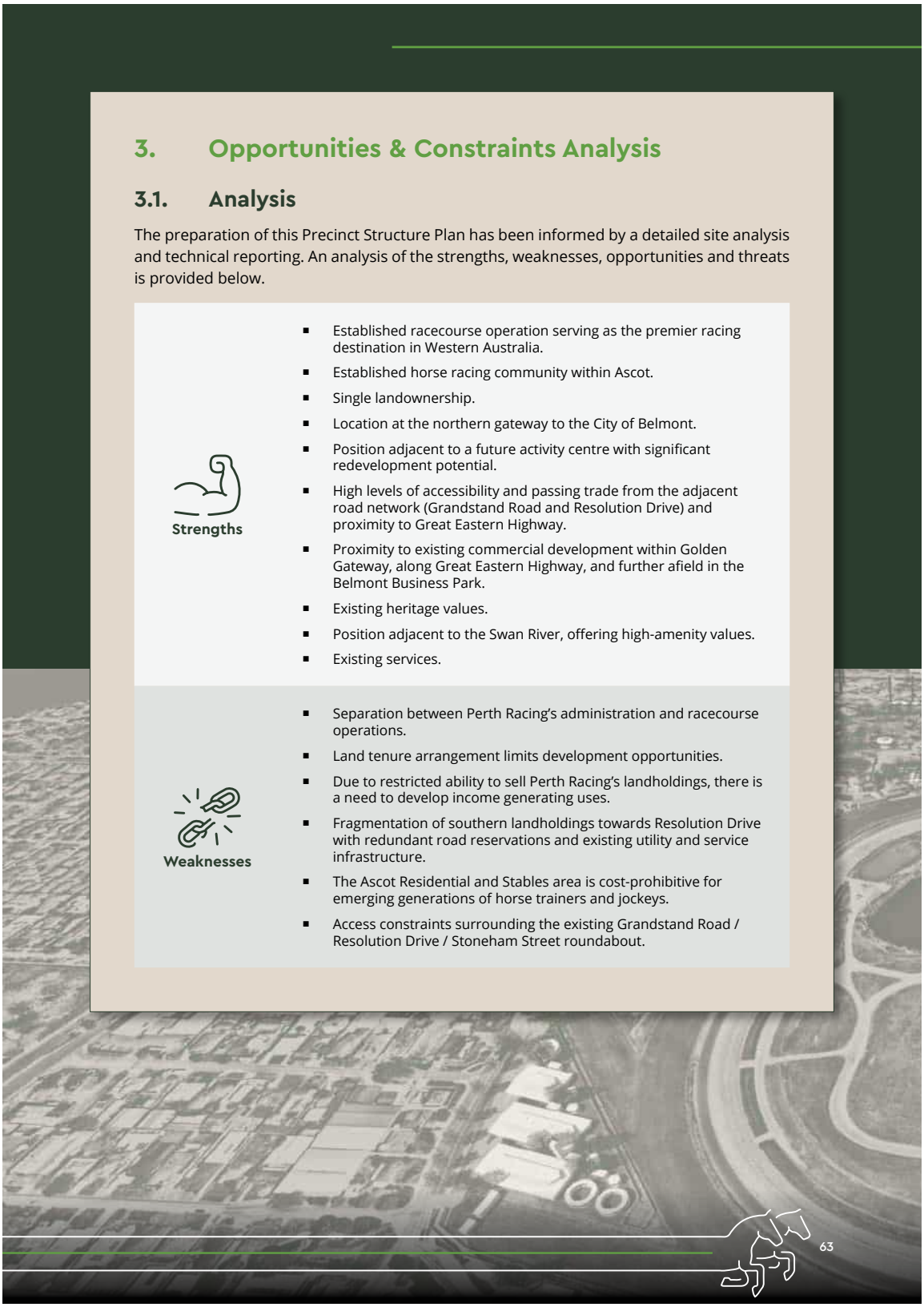
### 2.3.4.5. State Planning Policy 7.2 – Precinct Design

State Planning Policy 7.2 – Precinct Design ('SPP 7.2') and associate Precinct Design Guidelines provides guidance on the design, planning, assessment and implementation of precinct structure plans, local development plans, subdivision and development in areas identified as precincts.

SPP 7.2 contains six (6) precinct design elements which set out specific considerations for decisionmakers when considering the above proposals. These include, urban ecology, urban structure, public realm, movement, land use and built form.

Each of the design principles has been considered and informs the design objectives for the Precinct Structure Plan, as set out in the Design Response section of this Report.

Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan



# 3. Opportunities & Constraints Analysis

## 3.1. Analysis

The preparation of this Precinct Structure Plan has been informed by a detailed site analysis and technical reporting. An analysis of the strengths, weaknesses, opportunities and threats is provided below.

**Strengths**

- Established racecourse operation serving as the premier racing destination in Western Australia.
- Established horse racing community within Ascot.
- Single landownership.
- Location at the northern gateway to the City of Belmont.
- Position adjacent to a future activity centre with significant redevelopment potential.
- High levels of accessibility and passing trade from the adjacent road network (Grandstand Road and Resolution Drive) and proximity to Great Eastern Highway.
- Proximity to existing commercial development within Golden Gateway, along Great Eastern Highway, and further afield in the Belmont Business Park.
- Existing heritage values.
- Position adjacent to the Swan River, offering high-amenity values.
- Existing services.

**Weaknesses**

- Separation between Perth Racing's administration and racecourse operations.
- Land tenure arrangement limits development opportunities.
- Due to restricted ability to sell Perth Racing's landholdings, there is a need to develop income generating uses.
- Fragmentation of southern landholdings towards Resolution Drive with redundant road reservations and existing utility and service infrastructure.
- The Ascot Residential and Stables area is cost-prohibitive for emerging generations of horse trainers and jockeys.
- Access constraints surrounding the existing Grandstand Road / Resolution Drive / Stoneham Street roundabout.

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Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

**Opportunities**

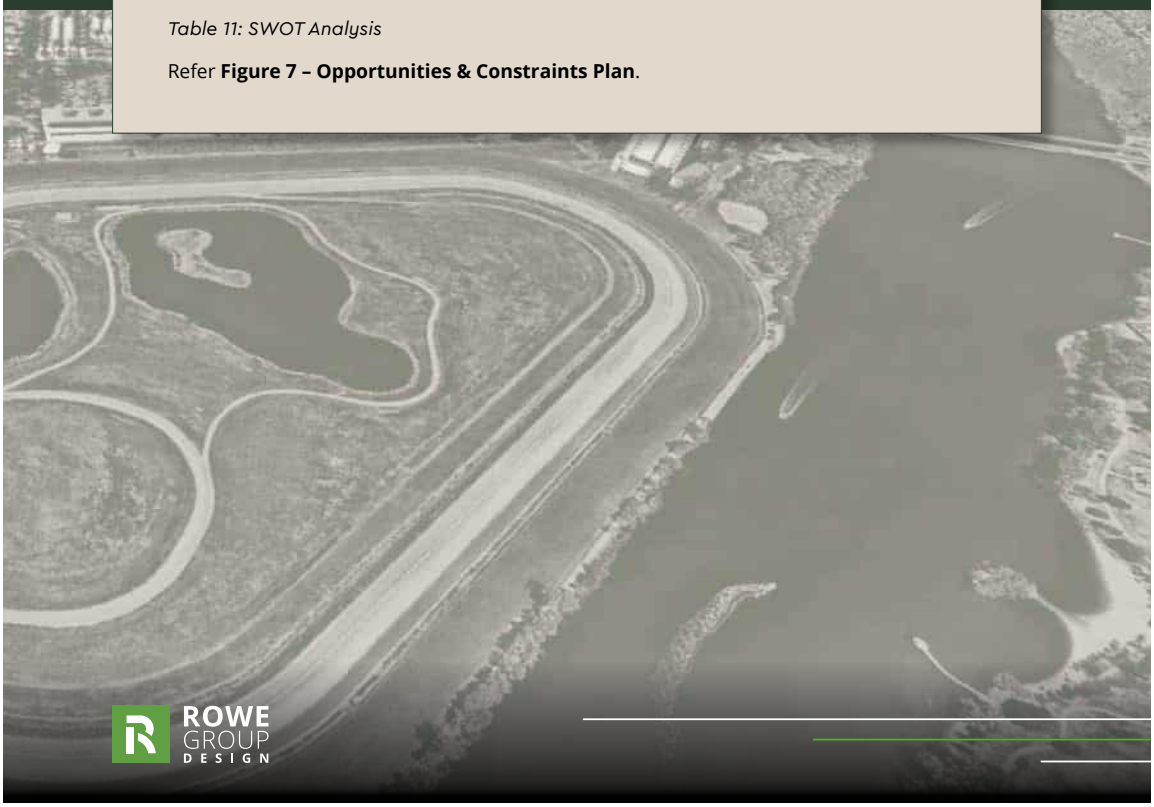
- Large landholding with significant areas of vacant, underutilised land that can be developed.
- Development of income-generating uses to support on-going racing operations.
- Consolidation of racecourse administration and operations.
- Development of on-course horse stabling and improved horse training and welfare infrastructure that is complimentary to the racecourse adjacent the Residential and Stables area.
- Consolidation of southern landholdings in liaison with DPLH, WAPC and service agencies.
- Creation of landmark entry at the northern gateway to the City of Belmont.
- Delivery of amenities and open spaces that attract visitors outside of racecourse events.
- Consolidation of the residential neighbourhood on the western side of Grandstand Road.
- Demand for convenience retail uses within the Golden Gateway precinct.

**Threats**

- Commercial competition in the creation of an activity centre.
- Land tenure restrictions.

*Table 11: SWOT Analysis*

Refer **Figure 7 – Opportunities & Constraints Plan**.



## 3.2. Design Objectives

The design objectives of this Precinct Structure Plan are as follows:

- Respect the history and importance of Ascot Racecourse and the wider horse racing industry through the protection and enhancement of racecourse operations.
- Provide appropriate land use and built form transition and interface with the Residential and Stables area.
- Facilitate land uses that support the development of the Golden Gateway activity centre and provide income-streams to support racing operations.
- Support land use and development adjacent to Ascot Waters Estate that is consistent and compatible with the residential nature and built form scale of this area.
- Utilise high amenity land adjacent to the Swan River and Racecourse for landmark development, reflective of its position at the northern gateway to the City of Belmont.
- Enhance the public interface, amenity, and accessibility of Ascot Racecourse.

The above objectives have been considered through the development of a Master Plan and the Structure Plan. It ultimately provides a site responsive design that integrates the aspirations of Perth Racing with the characteristics of the local area.



## 3.3. Concept Development

A Master Plan was prepared as a reflection of the findings of the site analysis and design objectives. The purpose of the Master Plan exercise was to examine the physical attributes of the Structure Plan area and its surrounding context, to ultimately underpin the design and development of the subject land.

The design process began by mapping the existing physical characteristics of the subject land and surrounding area, such as:

- The location of the existing Racecourse and supporting infrastructure.
- Land tenure arrangement and degree of land consolidation/fragmentation.
- The identification of vacant, underutilised land.
- The prevailing land use and development pattern in the surrounding area, notably the Residential and Stables area to the south and east, Ascot Waters Estate to the west, commercial development to the south, and the Swan River to the north.
- The wider public open space and movement network, including traffic routes, key access points, the pedestrian and cycling network, and recreational nodes.
- Existing character elements of the site and surrounding area, noting historical features within Ascot Racecourse and adjacent Ascot Kilns.
- Land and environmental considerations, considering topography, soil, environmental attributes and associated requirements.
- Availability of existing servicing infrastructure.

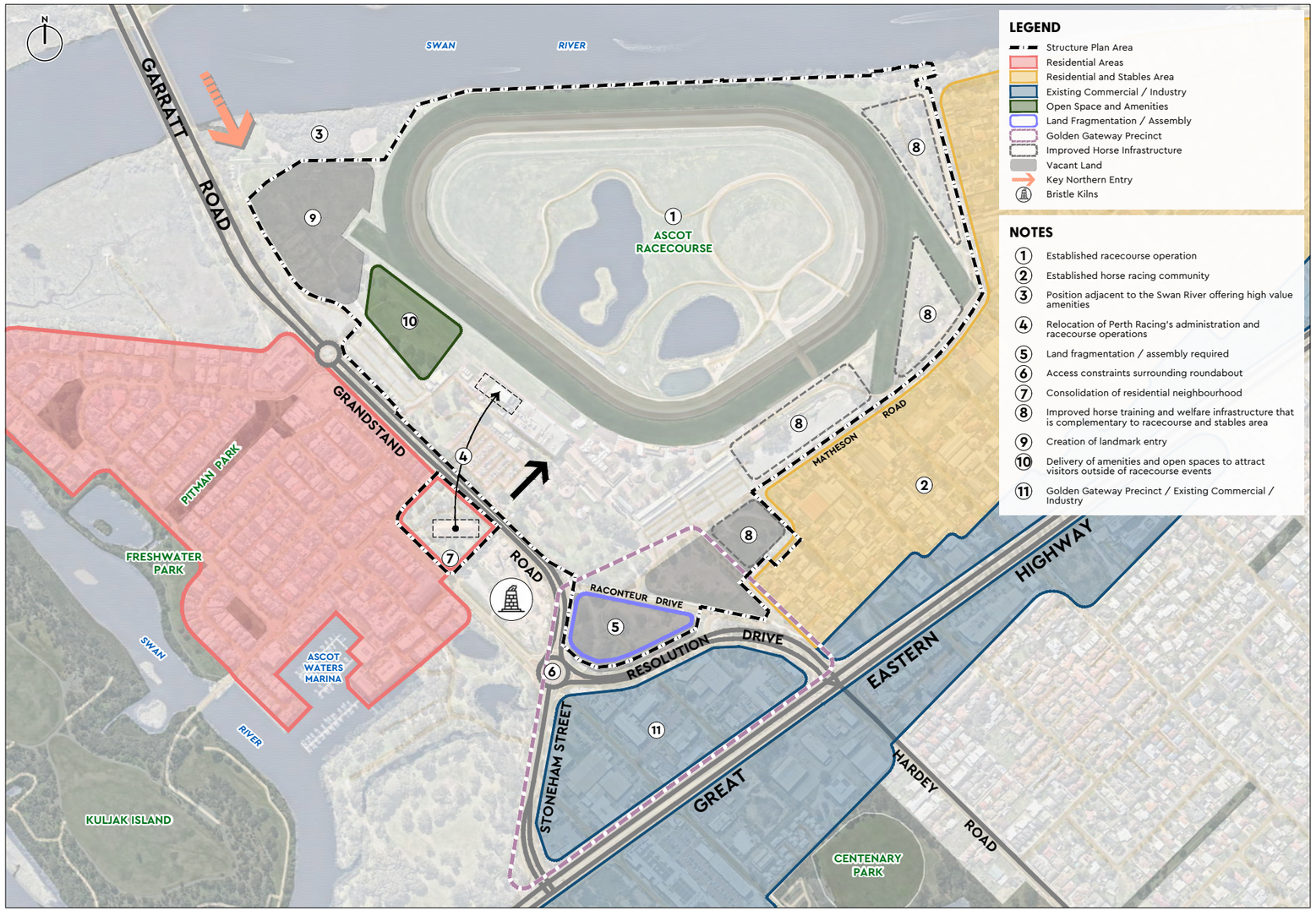
The design was then developed into an overall Master Plan for the land, considering the key design objectives for the site. The key features of the Master Plan include:

- The development of on-course horse stabling, horse training and horse welfare infrastructure (equine welfare centre) along the site's southern and eastern boundaries, adjacent to the Racecourse and Residential and Stables area.
- Utilising Perth Racing's southern landholdings to develop a range of commercial uses that support the development of the Golden Gateway activity centre.
- The development of a retirement village at the north-western gateway of the site overlooking the Swan River and Racecourse.
- The development of a new Perth Racing administrative building, hospitality venue, and parkland area at the Racecourse, adjacent to existing facilities.
- The redevelopment of the existing administrative building adjacent to Ascot Waters Estate for residential uses.

Refer **Figure 8 – Master Plan**.

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Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan




*7. Opportunities & Constraints Plan*

Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan




*8. Master Plan*

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# 4. Stakeholder & Community Engagement

## 4.1. Pre-Lodgement Engagement

### 4.1.1. City of Belmont

The Project Team have had ongoing discussions with the City of Belmont in relation to planning work being undertaken in the area, specifically the Golden Gateway Structure Plan, Perth Racing's development aspirations, and the progression of its own Structure Plan for its landholdings.

In terms of initial engagement, in October 2019, Perth Racing prepared a submission on the draft Golden Gateway Structure Plan, which encompassed Perth Racing's southern and eastern landholdings. Perth Racing were generally supportive of the Structure Plan intent and zoning proposed, however raised concerns in relation to the proposed movement network. At that time, Perth Racing had not developed a vision for its landholdings.

Since 2021, Perth Racing have been developing a long-term vision for their landholdings, including both land within and outside of the Golden Gateway Precinct. It became apparent through this work that the development aspirations outlined in the Golden Gateway Structure Plan, being predominantly focussed on mixed commercial/residential development, did not align with the development outcomes that could be realistically delivered by Perth Racing or appropriately planned by the City of Belmont.

On this basis, Perth Racing, in consultation with the City of Belmont, made the decision to proceed with preparing a separate Structure Plan for the entirety of its landholdings. It is understood that the City of Belmont are supportive of this approach and would look to excise Perth Racing's landholdings from the draft Golden Gateway Structure Plan.

In terms of this Structure Plan, initial feedback was received from the City in relation to the proposed zoning and development provisions. Key feedback provided by the City included:



- The need to adequately justify the proposed elements of the Structure Plan such as building height, plot ratio, and retail floorspace provision.
- Managing the interface and access arrangements of commercial development to Resolution Drive and the Belmont Main Drain.
- The inclusion of provisions to manage the heritage values of the site.
- The inclusion of provisions to address landscape interfaces, particularly along Grandstand Road and Matheson Road.

The above key feedback has been considered and addressed in the preparation of this Structure Plan.

### 4.1.2. Department of Planning, Lands & Heritage

The Project Team met with officers at the Department of Planning, Lands & Heritage ('DPLH') on two occasions in April 2024 to discuss the preparation and progression of a Structure Plan for Perth Racing's landholdings in Ascot.

The purpose of the initial meeting was to brief DPLH on Perth Racing's development aspirations and initial concept and seek support for the preparation of a Structure Plan to facilitate zoning changes to enable those aspirations to be realised. The DPLH provided high-level feedback only, focussing on the need for a Structure Plan to be prepared rather than commenting on specific elements of the draft concept.

The second meeting with DPLH included officers from the City of Belmont. Discussion focussed on the relationship between the draft Golden Gateway Structure Plan and the proposed Ascot Racecourse Precinct Structure Plan, and the manner in which they can holistically plan over the area. Particular consideration was given to Precinct E, the portion of Perth Racing's landholdings which falls within, and will interface with, the draft Golden Gateway Structure Plan area. The consensus with the City of Belmont was that these matters can be appropriately managed through collaboration with Perth Racing's Project Team. The DPLH concluded that they would permit concurrent structure plans being prepared.



### 4.1.3. Department of Biodiversity, Conservation & Attractions

The Project Team met with officers from the Department of Biodiversity, Conservation & Attractions ('DBCA') in March 2024 to receive preliminary feedback on the concept plan. The key themes raised by DBCA included the following:

- The importance of wastewater management, ensuring no increase in nutrient loading to groundwater given the site's proximity to the Swan River.
- The need for development and infrastructure to be setback a minimum of 10m from the Swan River foreshore.
- The need to consider the aesthetics of proposed development from the foreshore river, including colour schemes and fencing.
- Support for any landscape screening and/or revegetation with native plantings, including trees that provide shade and habitat.
- Support for stormwater recycling on-site for irrigation purposes, depending on flood management requirements and water quality management.

The DBCA encouraged further preliminary engagement ahead of the lodgement of applications for development approval for works adjacent to the Swan River foreshore.

### 4.1.4. Community Engagement

Extensive community engagement was undertaken by the City of Belmont in the preparation and review of the draft Golden Gateway Structure Plan, which included consideration of Perth Racing's landholdings. The key concerns raised through the engagement process related to:

- The proposed building heights and their appropriateness for the area.
- The appropriateness of certain land uses within the 'Mixed Use' zone.
- The adequacy of public open space provision.
- Potential built form outcomes.
- The design of the movement network.
- Traffic increases and the capacity of the existing road network.
- Car parking requirements.

The feedback was subject to deliberation by the City and Council, with an Officer Report prepared for Council's consideration at their 23 June 2020 Ordinary Council Meeting. In considering the draft Structure Plan, Council resolved to require a series of modifications to the plan. Of relevance to the Ascot Racecourse Precinct Structure Plan, key modifications included:

- Applying a 'Residential' and 'Mixed Use' zoning over Lot 452 Grandstand Road (Precinct D) and applying densities of 'R40' and 'R100' with maximum building height limits of 3 to 5 storeys.
- Maintaining the 'Mixed Use' zoning to land immediately fronting Resolution Drive (Lot 3 Grandstand Road and Lot 51 Raconteur Drive within Precinct E) and applying a density of 'R-AC3' with a maximum building height of 6 storeys.

- Applying a 'Residential and Stables' zoning and a density of 'R10' to the portion of Lot 100 Raconteur Drive (Precinct E), bound by Hardey Road, Matheson Road and Carbine Street, to align with the zoning of the adjacent area.
- Applying a 'Residential' zoning and densities of 'R50' and 'R100' to the portion of Lot 100 Raconteur Drive (Precinct E), bound by Hardey Road and Raconteur Drive to serve as a transition between the 'Mixed Use' and 'Residential and Stables' zones.

The abovementioned modifications have been considered in the preparation of the Ascot Racecourse Precinct Structure Plan, whilst also having regard to Perth Racing's vision for their landholdings which has significantly evolved since Council's consideration of the Golden Gateway Structure Plan.

## 4.2. Post-Lodgement Engagement

In accordance with the requirements of the *Planning and Development (Local Planning Schemes) Regulations 2015* – Schedule 2 – Deemed Provisions ('Regulations'), the Precinct Structure Plan is required to be publicly advertised and referred to any public authority or utility service provider, as relevant.

Public advertising would typically occur by way of letters being sent to owners and occupiers who, in the opinion of the City, are likely to be affected by the proposed Precinct Structure Plan. In addition, advertising of the Structure Plan must occur by way of a notice being published on the City's website. Advertising may also occur by way of newspaper advertising, a sign being placed on the site, and documents being made available at the City's office.

In terms of service agencies and utility providers, the Precinct Structure Plan should, at the very least, be referred to the following agencies/utility providers:

- Main Roads WA
- Water Corporation
- ATCO
- Western Power
- Heritage Council of WA
- Department of Biodiversity, Conservation and Attractions
- Department of Water & Environmental Regulation

Following public advertising, the City is required in accordance with the Regulations, to consider all submissions received and provide a recommendation to the WAPC on the progression of the Precinct Structure Plan.

Further engagement may also be required to satisfy obligations under the *Aboriginal Heritage Act 1972*, the *Environmental Protection Act 1986*, and the *Environment Protection and Biodiversity Conservation Act 1999*.

Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

## 5. Design Response

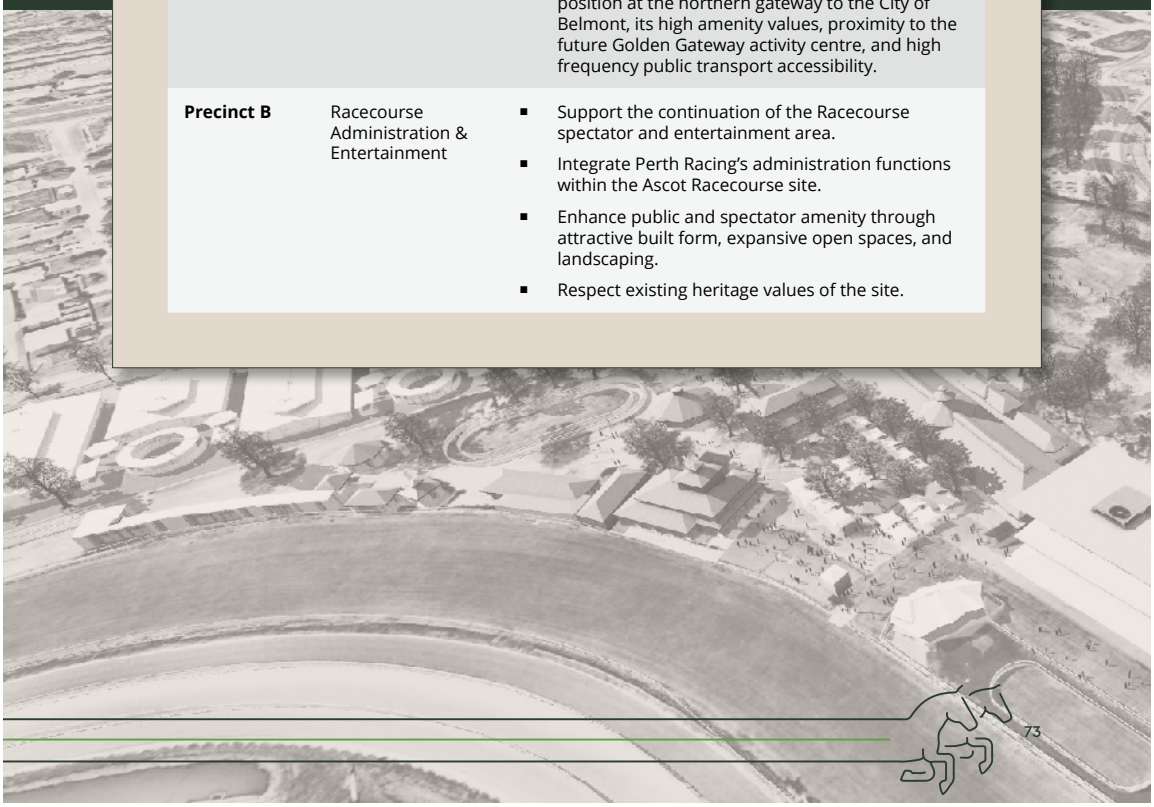
### 5.1. Vision & Objectives

The Vision of this Precinct Structure Plan is as follows:

> *To support ongoing horse racing activities at Ascot Racecourse through improved facilities and community infrastructure, and business development opportunities, planned in a manner that is financially sustainable and responsive to site context and community needs.*

Having regard to the above Vision and the Opportunities & Constraints Analysis, the Precinct Structure Plan designates five (5) precinct areas subject to a distinctive vision and associated objectives, as outlined below.

| Precinct Area | Vision | Objectives |
|---|---|---|
| **Precinct A** | Retirement Living | ▪ Facilitate the development of a vertical residential living village to accommodate retiring members of the horse racing industry.<br>▪ Provide for small scale food and beverage and commercial uses that are ancillary to, and integrated with, the residential housing village.<br>▪ Facilitate development that will serve as a landmark in the locality, capitalising on its position at the northern gateway to the City of Belmont, its high amenity values, proximity to the future Golden Gateway activity centre, and high frequency public transport accessibility. |
| **Precinct B** | Racecourse Administration & Entertainment | ▪ Support the continuation of the Racecourse spectator and entertainment area.<br>▪ Integrate Perth Racing's administration functions within the Ascot Racecourse site.<br>▪ Enhance public and spectator amenity through attractive built form, expansive open spaces, and landscaping.<br>▪ Respect existing heritage values of the site. |



Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

| Precinct Area | Vision | Objectives |
|---|---|---|
| **Precinct C** | Racecourse & Stabling | ▪ Facilitate land use and development that supports, and is complementary to, the horse racing industry.<br>▪ Provide for the planned development of on-course horse stabling and ancillary functions to support the ongoing viability of Ascot Racecourse.<br>▪ Mitigate potential land use conflict through appropriate design and management practices. |
| **Precinct D** | Residential & Mixed Use | ▪ Provide for medium density residential development of a scale that is consistent and/or compatible with surrounding residential area.<br>▪ Support the development of small-scale non-residential uses fronting Grandstand Road, including but not limited to a 'Child Care Premises'. |
| **Precinct E** | Commercial | ▪ Facilitate the development of an activity centre at the intersection of Grandstand Road and Resolution Drive.<br>▪ Support retail, commercial, and other land uses that are consistent and complimentary with the role and function of an activity centre.<br>▪ Support land use and development that is complementary to Racecourse operations.<br>▪ Satisfy existing and future demand for convenience retailing and amenities in the local area. |

*Table 12: Precinct Vision & Objectives*

Refer **Figure 9 – Structure Plan Precincts**.

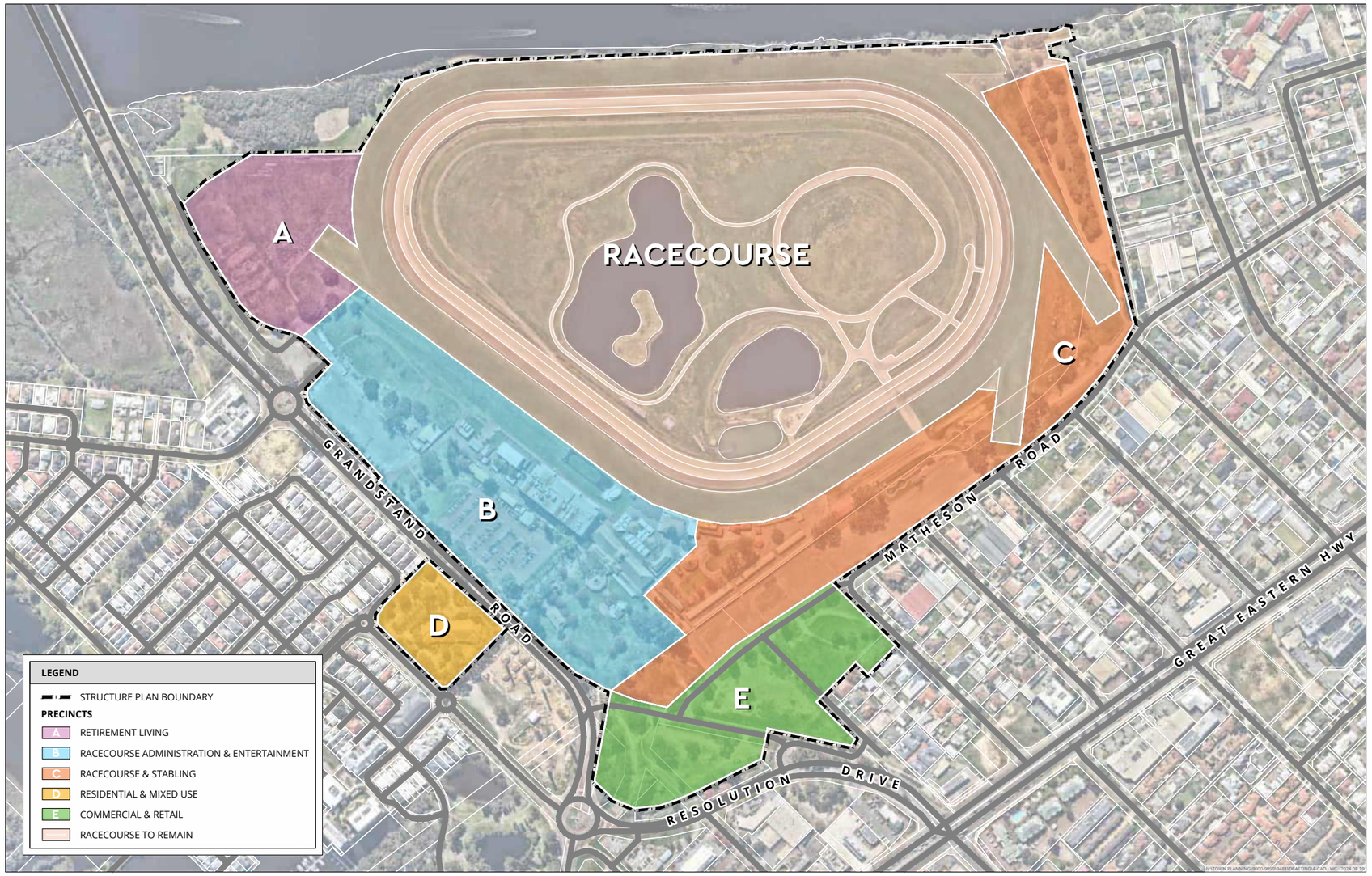
In order to realise the abovementioned vision and objectives, this Precinct Structure Plan provides a framework to guide the use and development of Perth Racing's landholdings in Ascot to support the ongoing viability of horse racing operations at Ascot Racecourse. More specifically, this Precinct Structure Plan seeks to:

- Identify development objectives on a precinct basis, responding to site characteristics, development opportunities, and design responses.
- Provide an indication of likely development outcomes and staging.
- Establish appropriate zoning, land use permissibility, density allocation, and built form requirements that are reflective of precinct objectives and responsive to site context.
- Identify planning requirements applicable to the future subdivision and development of land within the Structure Plan area, having regard to State Planning Policy and other legislative requirements.

Having regard to SPP 7.2, the specific design responses provided by this Structure Plan are discussed below.

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Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan




9. *Structure Plan Precincts*

Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

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Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

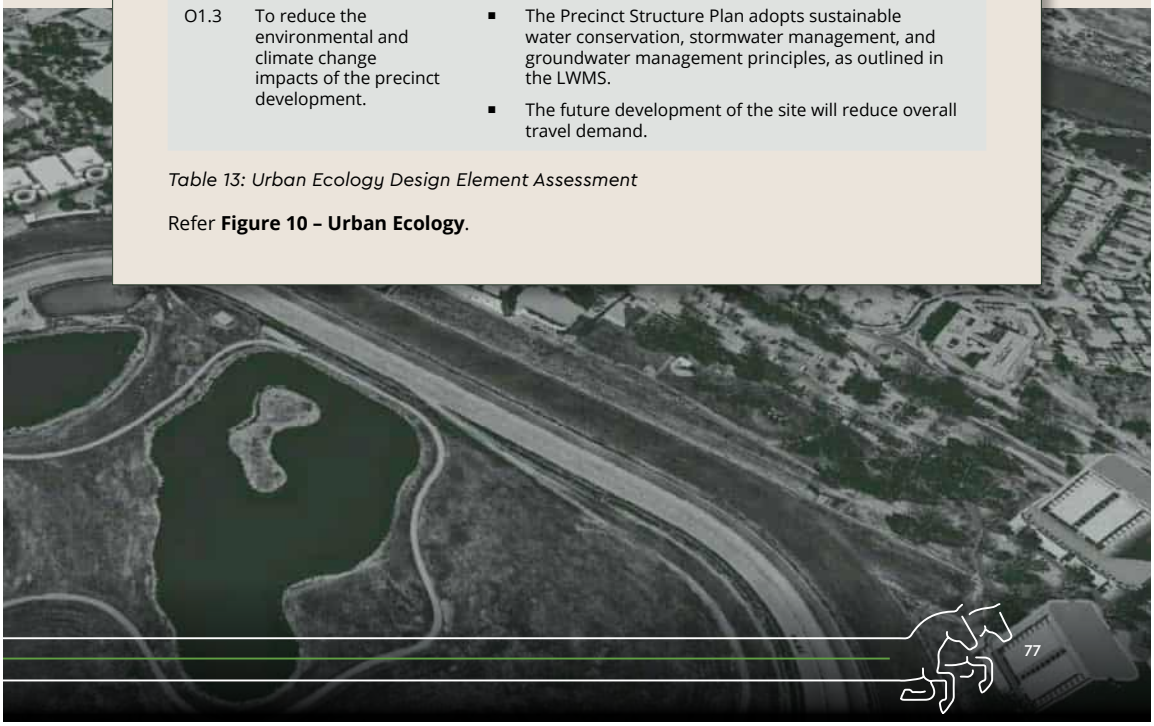
## 5.2. Urban Ecology

Design Element 1 of the SPP 7.2 Precinct Design Guidelines requires consideration of 'Urban Ecology', specifically in developing a holistic understanding of the built and natural environment of the site and its wider context. The SPP 7.2 Design Element Objectives and Design Responses are summarised below, with key considerations outlined in further detail thereafter.

| No. | Design Element Objective | Design Element Response |
|---|---|---|
| O1.1 | To protect, enhance and respond to the ecological systems of the precinct. | ▪ The Precinct Structure Plan responds to the ground conditions, understanding the likely fill requirements to address soil and groundwater conditions and flood level clearance.<br>▪ The Precinct Structure Plan identifies principles and development outcomes that respond to, and seek to enhance existing green networks, through development layout, landscaping provision and interface. |
| O1.2 | To enhance the sense of place by recognising and responding to Aboriginal, cultural and built heritage. | ▪ The development outcomes proposed by the Structure Plan do not impact any areas of Aboriginal cultural heritage significance.<br>▪ The development outcomes proposed by the Precinct Structure Plan, being predominantly related to horse racing, is entirely consistent with the heritage of the site and wider area.<br>▪ The Precinct Structure Plan limits built scale adjacent to the Bristile Kilns to respect its heritage and landmark values. |
| O1.3 | To reduce the environmental and climate change impacts of the precinct development. | ▪ The Precinct Structure Plan adopts sustainable water conservation, stormwater management, and groundwater management principles, as outlined in the LWMS.<br>▪ The future development of the site will reduce overall travel demand. |

*Table 13: Urban Ecology Design Element Assessment*

Refer **Figure 10 – Urban Ecology**.



### 5.2.1. Topography & Ground Conditions

The subject site is generally flat, with a slight grade with its highest elevation (7.5m AHD) at the eastern corner of the site, adjacent to Matheson Road, and the lowest elevation (2m AHD) at the north-western area of the site adjacent to the Swan River foreshore reserve. Ground conditions are generally unsuitable for on-site stormwater disposal and due to the flood and regional groundwater levels across the site, some level of fill will likely be required.

Notably, Precinct A will need to accommodate an addition 1-2m of fill to achieve clearance from flood levels. Given Precinct A's interface to an existing road reserve on its western boundary and foreshore reserve on its northern boundary, consideration will need to be given to battering and landscaping to ensure an appropriate interface, noting opportunities to provide connectivity to the foreshore reserve. This will be addressed at the development stage.

A majority of the site is considered to have a 'high to moderate' risk of ASS occurrence within 3m of the natural surface. A detailed ASS investigation and management plan will be required for any intrusive works in areas mapped as having a 'high to moderate' ASS risk.

Refer to **Appendix 4 – Engineering Servicing Report**.

### 5.2.2. Climate

The site experiences a dry Mediterranean climate of hot dry summers and cool wet winters and is in an area of moderate to high rainfall. Addressing climate change is imperative to future planning, specifically encouraging the adoption of more sustainable practices.

Ascot Racecourse currently holds a groundwater licence with a significant allocation to meet the irrigation requirements of the site and surrounding areas. The Precinct Structure Plan seeks to adopt water conservation measures to limit demand on existing groundwater for irrigation purposes, as outlined in the LWMS. Other water conservation measures are also proposed to generally limit water consumption across the site.

Ascot Racecourse is positioned close to the Perth Central Business District and connected via frequent public transport services, supporting alternative modes of transport to the site. The development of an activity centre accommodating convenience uses will reduce travel demand across the local area.

The development of on-course stables at Ascot Racecourse will enable horses to be kept on premises and thereby reduce travel demand for trainers and jockeys, many of whom are travelling from outer areas of the Perth region.



### 5.2.3. Water Management

A LWMS has been prepared in support of this Precinct Structure Plan, functioning as a broad drainage strategy for the subject site addressing the management of water associated with future development. The LWMS has been prepared in accordance with the WAPC's Better Urban Water Management document, addressing the principles, objectives, and key criteria.

The principle behind stormwater management at the site is to mimic pre-development hydrological conditions and utilise existing infrastructure where sensible to do so. In the case of groundwater management, the strategy is to maintain existing groundwater hydrology.

The water management criteria of the LWMS are outlined below.

**Water Management Criteria**

| | |
|---|---|
| **Water Conservation** | |
| WC1 | For residential dwellings, consumption target of 60 kL/person/year |
| WC2 | Ensure the efficient use of all water resources. |
| WC3 | Non-potable irrigation water to be sourced from existing groundwater licences held over the area. |
| **Stormwater Management** | |
| SW1 | Retain and treat the first 15mm of rainfall as close to source as possible and within site. |
| SW2 | Detain up to 1% AEP rainfall event on-site. |
| SW3 | Post-development critical 1% AEP peak flows leaving the site to mimic pre-development peak flows. |
| SW4 | Finished floor levels must have a minimum of 300mm clearance above the 1% AEP TWL in the FSA. |
| SW5 | All lots must have a minimum of 500mm clearance above the 1% AEP flood level of the Swan River. |
| SW6 | Nutrient concentrations within surface water discharging from the site to the Swan River are to meet regional water quality targets. |
| SW7 | Reduce nutrient loads by applying appropriate non-structural measures. |
| SW8 | Design infiltration areas to avoid creating mosquito habitat. |
| **Groundwater Management** | |
| GW1 | Surface based infiltration structures should have 300mm clearance above MGL. |
| GW2 | Habitable floor levels should have a clearance to MGL of at least 1.2m. |

*Table 14: LWMS Water Management Criteria*

The LWMS details implementation measures to apply the abovementioned water management criteria to particular elements of the site. Part One of the Precinct Structure Plan identifies the requirement for an Urban Water Management Plan or Stormwater Management Plan to be prepared as a condition of approval to addressing the water management measures outlined by the LWMS.

Refer **Appendix 2 – Local Water Management Strategy**.

### 5.2.4. Environmental Values

The subject site is predominantly cleared with limited intact native vegetation present or environmental values. Notwithstanding, an assessment undertaken by Emerge Associates identified a small area of 'subtropical and temperate coastal saltmarsh' native vegetation in the north-eastern corner of the site, adjacent to the Swan River, which is listed as a TEC. In addition, the Swan River and adjacent foreshore is identified as a 'Environmentally Sensitive Area' and comprises the Swan River Development Control Area ('DCA'), with the river itself identified as a Conservation Category Wetland ('CCW').

Preliminary consultation with DBCA indicated that any future development will require a minimum 10m setback from the Swan River DCA boundary, which has been reflected as a requirement in Part One of this Structure Plan. Notwithstanding, the Master Plan concept for the site does not propose any development in proximity to the DCA and CCW boundaries or the TEC in the north-eastern corner of the site. Any clearing of native vegetation on the site will require a Clearing Permit pursuant to Part V of the EP Act.

Emerge Associates also found that the site contains 1.27ha of Black Cockatoo foraging habitat and 29 habitat trees, of which four (4) trees contained hollows potentially suitable for Black Cockatoo breeding. These areas are primarily located within the eastern and southern portions of Precinct C, with a small area also located in the north-eastern corner of Precinct E. These areas generally conflict with plans for the on-course stabling and the equine welfare centre, however there may be opportunities to retain some limited areas. This will be considered further through detailed design, however in any event, a referral under the EPBC Act may be warranted prior to works being undertaken.

Part One of the Structure Plan includes requirements for the preparation of a Conservation and Environmental Management Plan and Fauna Management Plan to minimise potential impacts of development works on the abovementioned environmental values.



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### 5.2.5. Green Network

The established nature of Ascot Racecourse limits opportunities to create new 'green networks' within the site. Notwithstanding, it is pertinent that consideration be given to the existing green network surrounding the site and opportunities for the Structure Plan area to relate to and enhance that green network.

The existing green network surrounding the site is heavily influenced by the Swan River, generally following the foreshore, including along the northern boundary of Ascot Racecourse. Noting the amenity value of this green network, future development within Precinct A will seek to maximise interaction and linkages to this space.

There is a disconnect in the foreshore green network on the western side of the Garratt Road Bridge, requiring pedestrians and cyclists to travel along Grandstand Road to connect to the green network extending westwards from Waterway Crescent, or travel further towards Resolution Drive to connect to the green network south of Ascot Waters Estate. In terms of the latter, to support this linkage, treatments along Ascot Racecourse's existing interface to Grandstand Road are relevant and have been addressed in the supporting Landscape Master Plan.

To the south and east of Ascot Racecourse, there is an existing horse path/trail network that provides safe access between nearby stables and the racecourse. Whilst this does not form a 'green network', it nonetheless influences the layout of the site, noting its connectivity to the proposed on-course stables development along the south and eastern side of the Racecourse.



### 5.2.6. Heritage

In terms of Aboriginal heritage, the DPLH's Aboriginal Cultural Heritage Inquiry System identified two Aboriginal heritage places located within and adjacent to the subject land. One of the sites (Site 3756 – Swan River) is located outside, but immediately adjacent to the subject land, with the other site (Site 3753: Perth) intersects the western edge of the site (Precinct B), with the boundary being a broader area not accurately defined.

The Master Plan does not propose any development within the boundaries of the identified Aboriginal heritage places. Notwithstanding, should development occur within Precinct B that intersects the boundary of Site 3753, a DPLH file search should be undertaken to accurately determine the extent of the site, prior to any works commencing.

In terms of European heritage, the 'Ascot Racecourse Complex' and 'Lee-Steere House' are heritage places located within the Structure Plan area, both of which are identified under the City of Belmont's Local Heritage Survey with a Management Category of '1' and '4', respectively. Outside of the site, Bristile Kilns (Ascot Kilns), located adjacent to Precinct C, is listed on the State Register of Heritage Places, and the 'Ascot Residential and Stables Area' is included in the City's Local Heritage Survey.

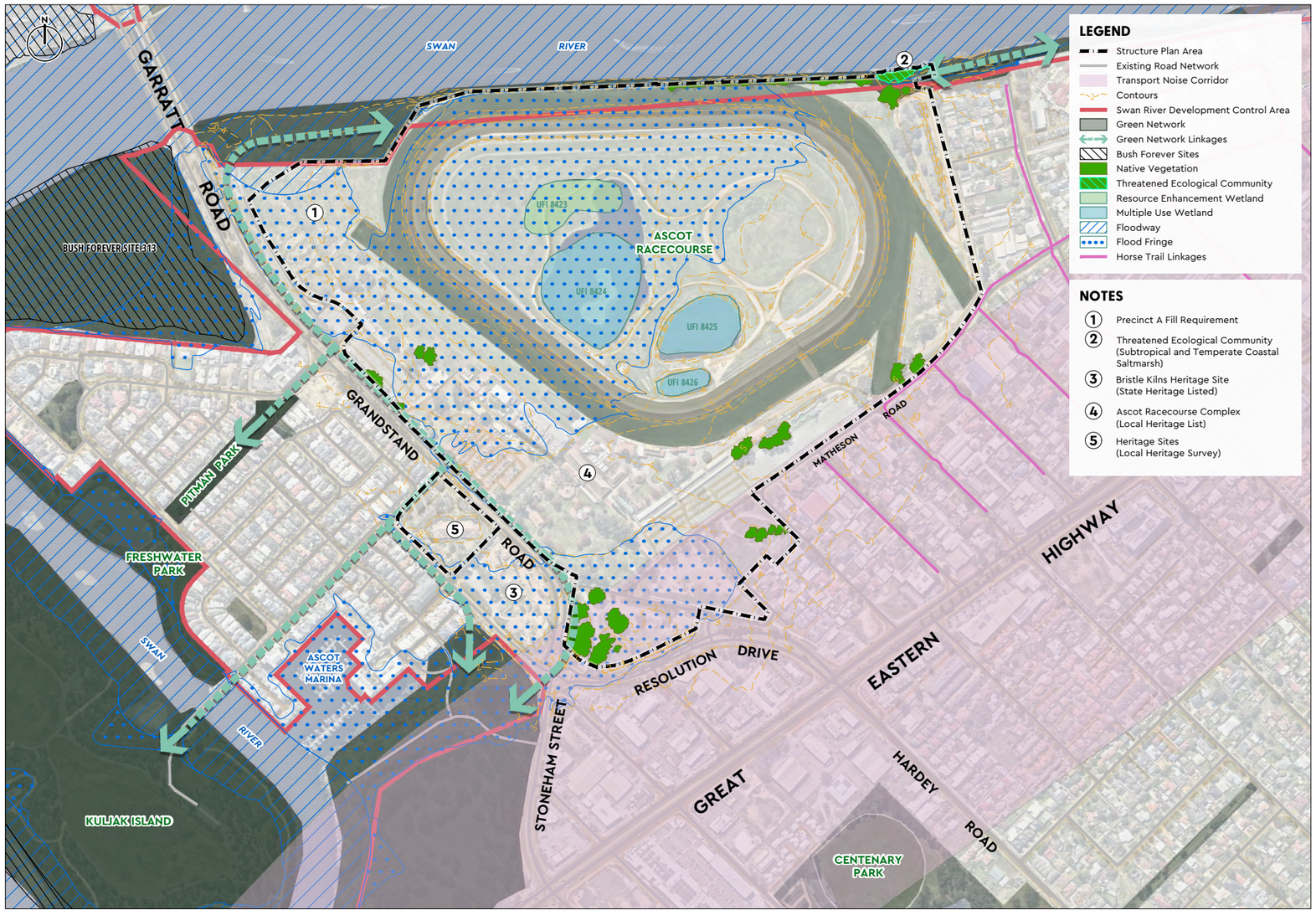
Any future development in relation to the heritage sites within the Structure Plan area may require the preparation of a Heritage Impact Statement, which is addressed in Part One of this Structure Plan. Aside from Lee-Steere House, which is expected to be demolished to accommodate residential development as per the vision for Precinct D, the development outcomes proposed by the Structure Plan, being predominantly related to horse racing, is entirely consistent with the heritage of the area. Prior to the demolition of Lee-Steere House, the site should be photographically recorded, as per the recommendations of the City's Local Heritage Survey.

Noting sensitivities surrounding the Ascot Kilns, consideration has been given to minimising the scale and bulk of future development immediately adjacent to the site. More specifically, Part One of this Structure Plan limits the built scale of development within the immediately vicinity of the Ascot Kilns to 3-storeys, affecting Precinct D. These limitations are considered appropriate in ensuring that the Ascot Kilns remains a landmark heritage feature in the area.



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Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan




*10. Urban Ecology*

Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

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Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

## 5.3. Urban Structure

Design Element 2 of the SPP 7.2 Precinct Design Guidelines requires consideration of 'Urban Structure' with the intent that it should be robust, flexible and legible, and designed to support the intended function and built form of the precinct. The SPP 7.2 Design Element Objectives and Design Responses are summarised below, with key considerations outlined in further detail thereafter.

| No. | Design Element Objective | Design Element Response |
|---|---|---|
| O2.1 | To ensure the pattern of blocks, streets, buildings and open space responds and contributes to a distinct, legible precinct character. | ▪ Utilising the existing urban structure, the Structure Plan facilitates development outcomes that will better define Ascot Racecourse and improve upon visual connectivity of the site. |
| O2.2 | To promote an urban structure that supports accessibility and connectivity within and outside the precinct. | ▪ The Structure Plan is not proposing outcomes that would undermine existing accessibility and connectivity within the area.<br>▪ The Structure Plan provides for the extension of the existing shared path network, improving wider accessibility (discussed further under the Movement section). |
| O2.3 | To ensure the urban structure supports the built form, public realm and activity intended for the precinct. | ▪ The Structure Plan facilitates the creation of development cells that are appropriately sized to accommodate the intended form of development, whilst also providing flexibility to adapt to change. |
| O2.4 | To ensure an adaptable urban structure that can respond to and facilitate change within a precinct. | |

*Table 15: Urban Structure Design Element Assessment*

Ascot Racecourse forms an established urban structure that is influenced by the land requirements of Ascot Racecourse, existing supporting infrastructure, and the Swan River. Beyond Ascot Racecourse, the structuring of the surrounding landholdings is influenced by the prevailing road network and existing land use patterns. The Precinct Structure Plan has been formulated having regard to this context and the identification of 'Precinct Areas'.

Refer **Figure 11 – Urban Structure**.

### 5.3.1. Northern Gateway

Precinct A comprises vacant land of approximately 2.8ha in area, with full movement access being available from Grandstand Road. The site has been identified as a 'landmark' location, reflective of its prominence at the northern gateway to the City of Belmont and opportunities to maximise on the amenity and connectivity of the Swan River and views of the Racecourse. Precinct A is located within the walkable catchment to the future Golden Gateway activity centre, and given its position adjacent to Grandstand Road, is afforded access to high-frequency public transport services.

The identification of high-density residential development in this location represents an attractive proposition for the development of infill housing. Compared to landholdings along Great Eastern Highway, the site is afforded high levels of amenity making it attractive for development. Furthermore, this location is separated from existing residential development to the south-west of the site, giving rise to standalone considerations of built form scale.

### 5.3.2. Racecourse Operations & Stabling

Precincts B and C encompass existing Racecourse operations, with the former accommodating existing Racecourse entertainment areas (grandstand and pavilions) and the latter accommodating Racecourse stabling and training areas. From a structuring perspective, it is logical to retain and consolidate Precinct B as the Racecourse administration and entertainment area, shifting the existing Perth Racing headquarters to this area. The establishment of on-course stabling along the southern and eastern edge of the Racecourse maximises land use efficiency due to its proximity to the Racecourse and access to Matheson Road and is compatible with the adjacent Residential and Stables area.

### 5.3.3. Residential Precinct

Precinct D, comprising the existing Perth Racing headquarters, is located on the western side of Grandstand Road and sits amongst Ascot Waters Estate, with adjacent low to medium scale built form. The site also abuts Ascot Kilns, a prominent site with significant heritage values. The redevelopment of Precinct D for residential purposes would represent a logical 'rounding-off' of residential development on the western side of Grandstand Road. Noting the site's position on Grandstand Road, there are opportunities for low-intensity community or commercial uses to be provided fronting Grandstand Road, such as a Child Care Premises.

### 5.3.4. Commercial Precinct

Precinct E forms part of the wider Golden Gateway activity centre, which encompasses a triangular area of land between Great Eastern Highway, Resolution Drive and Stoneham Street. Planning for this wider area will facilitate a mixed-use environment with commercial and residential uses. The existing street network in this precinct is established and defining, with Stoneham Street, Resolution Drive, Great Eastern Highway, and Grandstand Road forming the key access routes that accommodate high volumes of traffic, passing trade, and public transport access.

The existing land use pattern surrounding Precinct E makes it suitable for commercial development, with retail (convenience and bulky goods showrooms) fronting Resolution Drive, maximising on passing trade, view corridors from Great Eastern Highway, and supporting integration with the Golden Gateway activity centre.

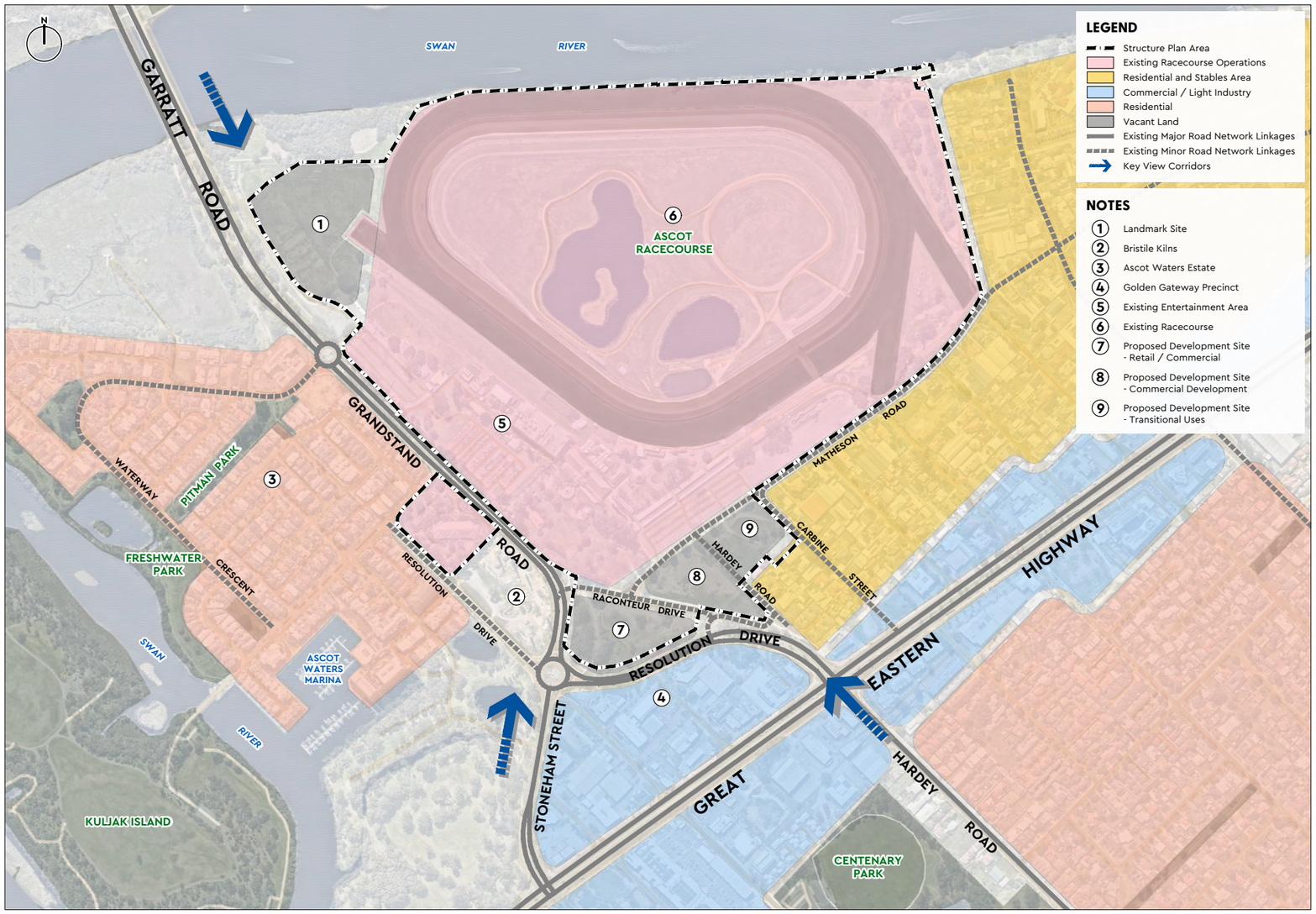
Future development sites, ranging from approximately 8,000m² to 14,000m² in area have been identified within Precinct E, which are sized and configured appropriately to accommodate commercial development. The former Raconteur Drive reservation can provide access to these future development sites. Complementary and/or transitional uses can be supported in the eastern portion of Precinct E, abutting Ascot Racecourse and the Residential and Stables area.

Land assembly will be required to create a future development within Precinct E, specifically Lot 3 (No. 96) Grandstand Road, Lot 51 (No. 2) Raconteur Drive, and Lot 1 (No. 88) Grandstand Road, Ascot. This area includes redundant road reservations which fragment these lots. To achieve a coordinated development outcome, land assembly will be required through a road closure and subsequent amalgamation, or a lease arrangement. Given the presence of existing service alignments within this Precinct, satisfactory arrangements are to be made with servicing authorities to provide for the modification and/or protection of existing services.

Refer **Figure 12 – Precinct E Land Assembly Plan**.

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Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan




*11. Urban Structure*

Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan




*12. Land Assembly Plan*

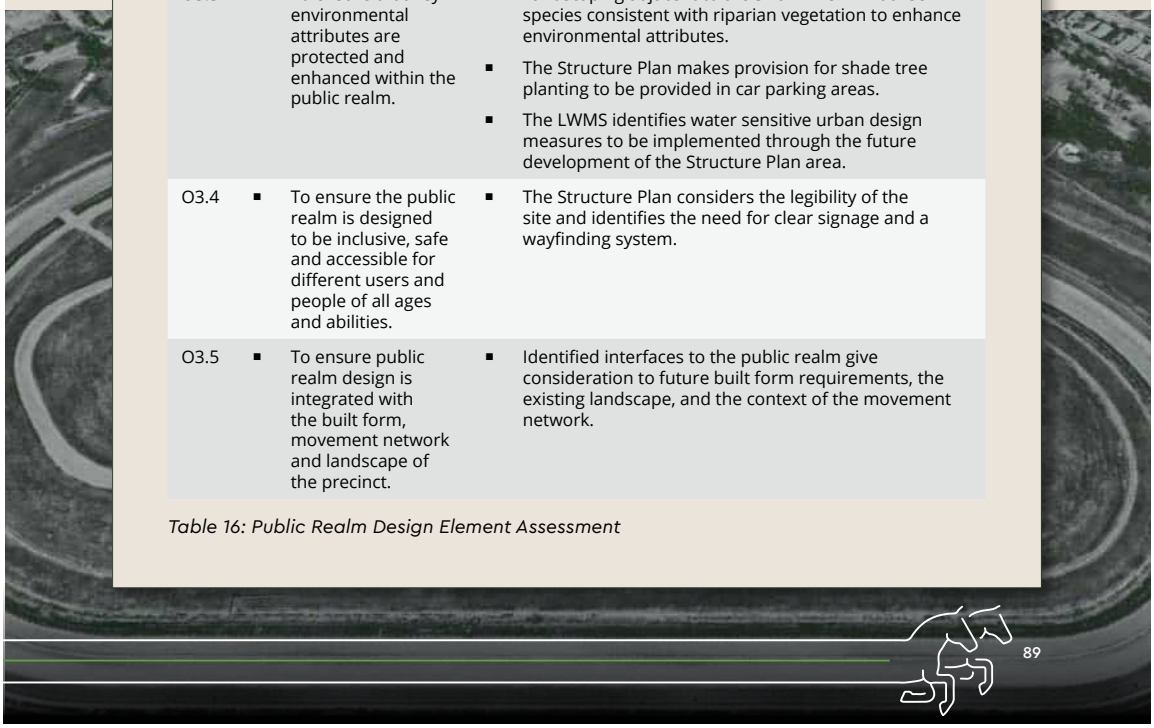
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## 5.4. Public Realm

Design Element 3 of the SPP 7.2 Precinct Design Guidelines requires consideration of 'Public Realm' with a view to providing a range of well-connected, functional and enriching places, appropriate to the function, scale and character of the precinct. The SPP 7.2 Design Element Objectives and Design Responses are summarised below, with key considerations outlined in further detail thereafter.

| No. | Design Element Objective | Design Element Response |
|---|---|---|
| O3.1 | ▪ To ensure the public realm is designed to promote community health and wellbeing. | ▪ The Parkland area will provide an exciting local recreational destination that will contribute to the community's health and wellbeing.<br>▪ The proposed Parkland area will support the usage of the site beyond racing events both informally (passive recreation) and formally (private and community events).<br>▪ The proposed Parkland area is positioned to maximise solar access during winter months and will be appropriately landscaped to provide shade for summer months. |
| O3.2 | ▪ To enable local character and identity to be expressed in public realm design to enhance sense of place. | ▪ Landscaping will reinforce the visual and landscape linkages between the racecourse and Swan River.<br>▪ Materials and finishes, plant species and artwork will make reference to the historical and cultural values of the site.<br>▪ Consideration will be given to the character and identity of the site through design preparation and statutory review processes. |
| O3.3 | ▪ To ensure that key environmental attributes are protected and enhanced within the public realm. | ▪ Landscaping adjacent to the Swan River will utilise species consistent with riparian vegetation to enhance environmental attributes.<br>▪ The Structure Plan makes provision for shade tree planting to be provided in car parking areas.<br>▪ The LWMS identifies water sensitive urban design measures to be implemented through the future development of the Structure Plan area. |
| O3.4 | ▪ To ensure the public realm is designed to be inclusive, safe and accessible for different users and people of all ages and abilities. | ▪ The Structure Plan considers the legibility of the site and identifies the need for clear signage and a wayfinding system. |
| O3.5 | ▪ To ensure public realm design is integrated with the built form, movement network and landscape of the precinct. | ▪ Identified interfaces to the public realm give consideration to future built form requirements, the existing landscape, and the context of the movement network. |

*Table 16: Public Realm Design Element Assessment*



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This Precinct Structure Plan is supported by a Landscape Master Plan prepared by SLR Consulting which identifies a landscape vision, objectives, and design responses for the future development of the subject area.

Refer **Figure 13 – Public Realm and Appendix 8 – Landscape Master Plan**.

### 5.4.1. Character & Identity

The character and identity of the subject site area is heavily influenced by its existing and historical use as a racecourse. Whilst there is a mix of built form styles and materials, there are consistent elements such as the use of red bricks, terra cotta tiled gable roofs, open/permeable fencing and feature trees. The Ascot Racecourse design itself has a 'village' feel around the entry gates and entertainment areas, with 'equine' character elements such as post and rail fencing, grass areas, and formal planting (both native and exotic) throughout the site.

The future development of the subject area should consider the character and identity of the site, as outlined in the Landscape Master Plan, and having regard to the principles of State Planning Policy 7.0 – Design of the Built Environment through design preparation and statutory review processes. Any proposal that may impact the heritage values of the site will require the preparation of a Heritage Impact Statement.



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### 5.4.2. Parkland Area

The Ascot Racecourse Master Plan identifies an opportunity to develop a parkland area of approximately 1.4ha immediately adjacent to the Racecourse and existing public car parking area, within Precinct B. The area will provide a public interface to the Racecourse from Grandstand Road and serve as a green link between future development in Precinct A and the existing Racecourse facilities in Precinct B.

The parkland area is intended to be publicly accessible, attracting visitors to the site outside of racing events, and will be developed to include landscaping, a playground, and picnic facilities. The position of the area adjacent to existing car parking makes it suitable for public access, and along with its position adjacent to existing racecourse facilities, allow for future use as part of racecourse events. The site has an uninterrupted northern aspect, allowing for maximum solar access during winter, and with appropriate landscape planting, shade can be provided for summer.

### 5.4.3. Internal Treatments

The Landscape Master Plan identifies a number of treatments and design responses to enhance the internal public realm, including:

- Creating a pedestrian link between Precincts A and B, including an entry point (vehicles and pedestrians) from Precinct B into Precinct A. The landscape in this area is to remain open to allow views to the Racecourse and Swan River foreshore.
- Within the existing Racecourse entertainment area (Precinct B), ensure the pedestrian access system is shaded, safe and legible, with a clear signage and wayfinding system throughout the site that complements the branding and character of the racecourse.
- Provide shade tree planting in open areas and car parking areas.

Consideration will be given to the above treatments through the future design processes.



### 5.4.4. Public Realm Interface

#### 5.4.4.1. Commercial Precinct

The proposed commercial precinct (Precinct E) is currently vacant land with scattered trees, particularly along existing drainage corridors and roads/driveways. The area is predominantly fenced/gated and is utilised for overflow parking for events at Ascot Racecourse. The area generally has a low level of visual amenity with limited visible connection to the Racecourse.

As part of the development of this land, there is an opportunity to improve the public realm interface of Precinct E, particularly to Grandstand Road and Resolution Drive, and enhance the connection and relationship to the Racecourse and wider Golden Gateway Precinct. These opportunities include:

- The creation of edges to proposed development that focuses towards key entry points and vistas to the Racecourse.
- Enhance the interface of the Water Corporation's open drain along the Resolution Drive frontage with appropriate landscaping and high-quality fencing.
- Incorporate street tree planting with theming reflective of the character of the site.
- Building frontages addressing the street to improve personal safety through increased surveillance and activity, with sleeved car parking areas.

The above opportunities have been highlighted in the Landscape Master Plan and will be implemented through the future development process of those sites.

#### 5.4.4.2. Matheson Road

The south-eastern portion of Precinct C, fronting Matheson Road, is currently characterised by open hardstand areas associated with jockey and horse float parking, fencing, street trees, and views of the Racecourse. Land on the opposite side of Matheson Road forms part of the Residential and Stables area and presents to the public realm as a low-density residential area, however noting that these properties contain stables typically to the rear of lots.

The south-eastern portion of Precinct C is intended to be developed for on-course stabling, resulting in the future removal of a significant portion of the open hardstand area. The on-course stabling complex is intended to accommodate a stables development with associated amenities and infrastructure, including horse walks, parade rings, sand rolls and horse walkers. Structures visible to the Matheson Road interface include stables buildings, all of which will be consistent with the character of the area.

The Landscape Master Plan identifies opportunities to screen the remaining hardstand area (jockey and horse float parking) and reinforce pedestrian entry and arrival points along Matheson Road. Car parking areas fronting Matheson Road can be softened by on-site tree planting/landscaping. The avenue of street trees along Matheson Road can be further enhanced to harmonise the stables development with the surrounding area and better define the edge and enhance the character of the Racecourse.

The treatment of the Matheson Road frontage will be addressed through the development application process for the on-course stables development.

### 5.4.4.3. Racecourse Entry / Grandstand Road

The key entry to Ascot Racecourse is provided from Grandstand Road via several vehicle and pedestrian access points. Whilst the interface to Grandstand Road is very 'green' with landscaping both within the road reserve and site itself, the existing landscaping does not maximise opportunities to allow or screen views at appropriate points. Parking areas are currently very visible and prominent from Grandstand Road, whereas landscaping, along with fencing and signage, block views into key public areas of the racecourse from Grandstand Road.

The Landscape Master Plan identifies the following key opportunities to improve the streetscape interface of the Racecourse entry from Grandstand Road:

- Create views from the entry points along Grandstand Road to the racecourse and open space areas.
- Limit views to car parks and 'back-of-house' areas through screening landscaping and high-quality fencing.
- Upgrade entry points to improve legibility and access to key areas in the racecourse using pavement changes, landscaping and signage.
- Upgrade the presentation to Grandstand Road with high quality fencing.

Whilst the abovementioned upgrades do not form part of any specific development plans, consideration will be given to these improvements where coinciding with proposed development and/or upgrades, including the new Perth Racing administration building, the proposed parkland area, and development within Precinct A.



#### 5.4.4.4. Swan River Foreshore

The Swan River foreshore extends along the northern boundary of the site, with Precinct A interfacing the foreshore to the west and Precinct C to the east, with the racecourse extending between the two precinct areas. The foreshore is predominantly narrow, flat, low-lying, and accommodates an existing shared path and riparian vegetation.

Precinct A currently represents a flat open space with views of the racetrack. There are currently limited views to the Swan River from ground level, however there would be potential for views from higher points in future development. There are opportunities for future development to provide physical path links to the foreshore reserve, connecting to the existing path network within the reserve thereby providing significant amenity benefit to future residents.

In order to accommodate future development in Precinct A, there will be a requirement to fill the site by 1-2m to achieve clearance from flood levels. At the development stage, detailed consideration will be given to the management of fill and battering to ensure an appropriate interface in this area. Landscaping within Precinct A is to borrow from riparian vegetation along the Swan River (species and character).

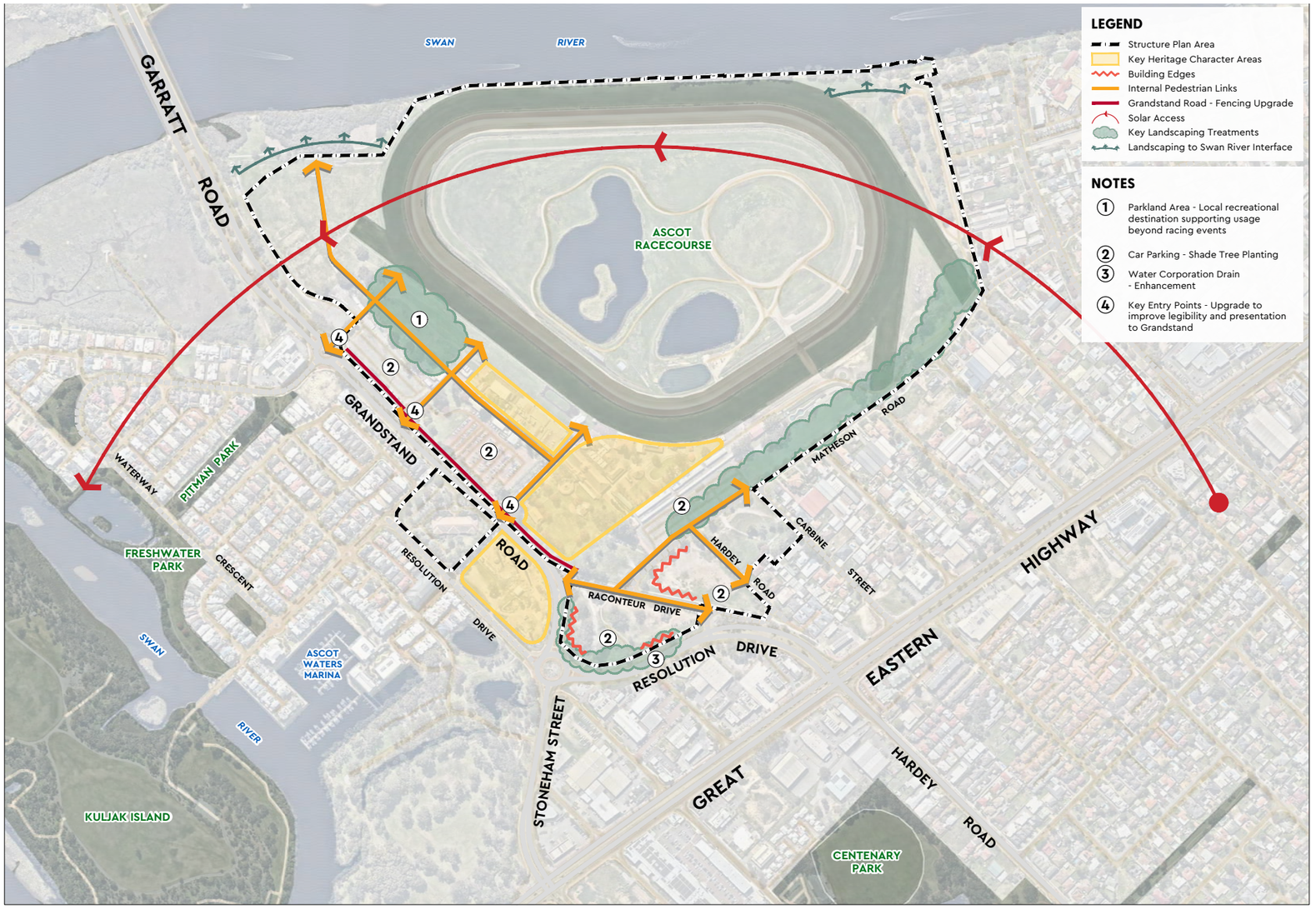
To the north-eastern part of the site, within Precinct C, the existing interface consists of open style fencing adjacent to a horse training arena. Future development plans within this location include a stable complex, with stables, washdown areas, sand roll areas, horse walkers and holding stalls. Open areas, including sand roll areas and horse walkers, will interface with the northern boundary of Precinct C, with the stables (building) setback from the foreshore thereafter.

At the development stage, consideration will need to be given to the interface of stables development to the north-eastern boundary, having regard to the aesthetics as viewed from the foreshore including colour schemes, fencing barriers, and landscape treatments.



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Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan




*13. Public Realm*

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Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

## 5.5. Movement

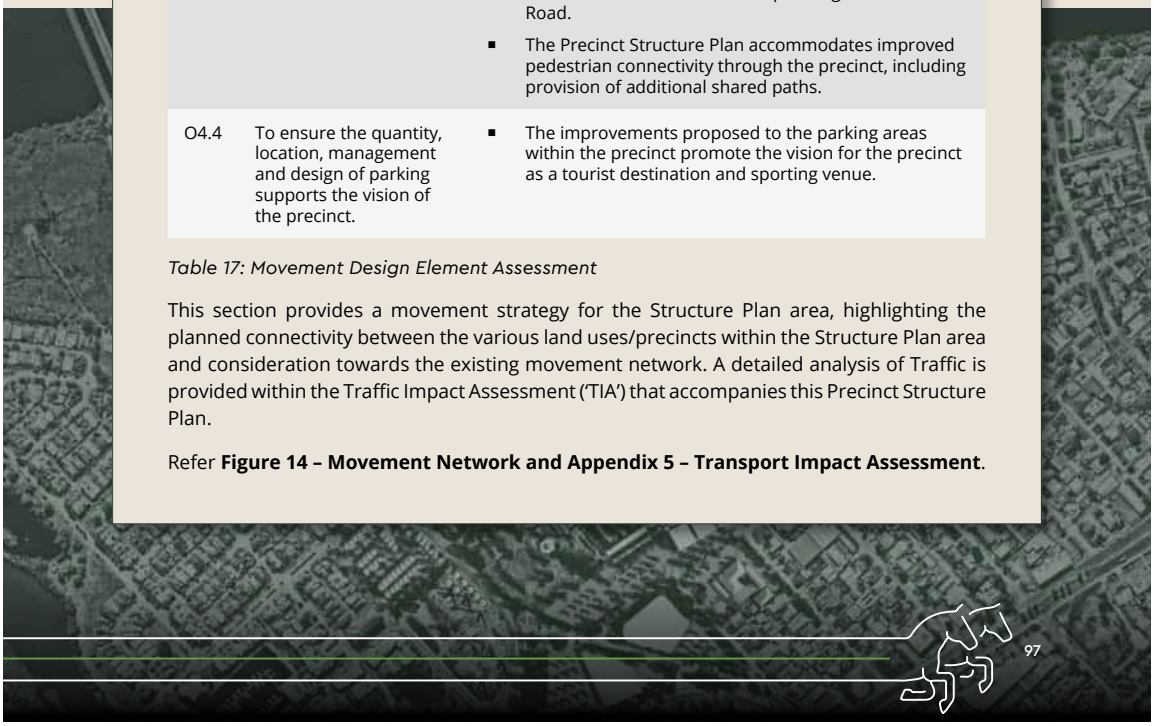
Design Element 4 of the SPP 7.2 Precinct Design Guidelines requires consideration of 'Movement', noting that the movement network should respond to the identified movement and place function of the precinct and provide for a range of transport modes. The SPP 7.2 Design Element Objectives and Design Responses are summarised below, with key considerations outlined in further detail thereafter.

| No. | Design Element Objective | Design Element Response |
|---|---|---|
| O4.1 | To ensure the movement network supports the function and ongoing development of the precinct. | ▪ The Precinct Structure Plan facilitates the function and ongoing development of the precinct, including leasing of un-used road reserve land. |
| O4.2 | To ensure a resilient movement network that prioritises affordable, efficient, sustainable and healthy modes of transport. | ▪ The Precinct Structure Plan promotes sustainable and healthy modes of transport, reducing reliance on the private motor vehicle. |
| O4.3 | To enable a range of transport choices that meet the needs of residents, workers and visitors. | ▪ Through the preparation of a Travel Demand Plan, implementation of the Precinct Structure Plan will see use of private motor vehicles discouraged and encourage use of public transport and ride share options.<br>▪ The Precinct Structure Plan encourages upgrades to the infrastructure at bus stops along Grandstand Road.<br>▪ The Precinct Structure Plan accommodates improved pedestrian connectivity through the precinct, including provision of additional shared paths. |
| O4.4 | To ensure the quantity, location, management and design of parking supports the vision of the precinct. | ▪ The improvements proposed to the parking areas within the precinct promote the vision for the precinct as a tourist destination and sporting venue. |

*Table 17: Movement Design Element Assessment*

This section provides a movement strategy for the Structure Plan area, highlighting the planned connectivity between the various land uses/precincts within the Structure Plan area and consideration towards the existing movement network. A detailed analysis of Traffic is provided within the Traffic Impact Assessment ('TIA') that accompanies this Precinct Structure Plan.

Refer **Figure 14 – Movement Network and Appendix 5 – Transport Impact Assessment**.



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### 5.5.1. Proposed Vehicle Access & Intersection Upgrades

Vehicle access to the Ascot Racecourse complex is achieved from several locations along Grandstand Road, Resolution Drive, and Matheson Road. Intersection arrangements to Grandstand Road will remain the same for the Ascot Racecourse complex.

There is an opportunity for a left-in/left-out access from Precinct D (opposite the racecourse) to Grandstand Road to serve a future commercial/community use. This will need to ensure the access is integrated safely with the operations of the crossover on the opposite side of the road to the racecourse. Detailed assessment of the anticipated traffic impacts associated with a commercial development on this site will occur in later planning stages. Precinct D also accommodates future residential uses, however access to residential lots in this location will be provided from Resolution Drive.

In terms of Precinct E, this Precinct Structure Plan proposes modifications to the existing access arrangement at Grandstand Road/Raconteur Drive to facilitate left-in, left-out and right-in movements only. Access from the existing Resolution Drive/Raconteur Drive intersection is proposed to be restricted to left-in/left-out movements only.

Access to Precinct A will be provided via the existing Waterway Crescent/Grandstand Road roundabout.

### 5.5.2. Proposed Pedestrian Network

The Precinct Structure Plan proposes the continuation of pedestrian access within the precinct, including along Grandstand Road, adjacent to Precinct D. The ability exists (for others) to extend this past the Bristile Kilns should this be required.

The shared path is proposed to be extended along Resolution Drive, adjacent to Precinct E, connecting to the existing shared path network along Grandstand Road and Raconteur Drive.



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### 5.5.3. Parking Improvements

Precinct B accommodates the Ascot Racecourse, the use of which relies on parking currently located within Precincts B, C and E. The proposed redevelopment of Precinct C (for on course stabling purposes) and Precinct E (for a commercial development) will remove some on-site parking. In this regard, parking arrangements are proposed to be improved as follows:

- The jockey and horse float parking will be relocated towards the southern extent of Precinct C.
- The southern Precinct B patron parking area would be upgraded to accommodate an improved layout, accommodating approximately 110 to 125 cars.
- On a typical busy race day, investigations suggest there is an oversupply of parking within the northern end of Precinct B, suggesting approximately 40 parking bays are underutilised.
- A Travel Demand Plan will therefore be implemented for typical race days to actively discourage patrons from using private motor vehicles and instead encouraging the use of readily available public transport options and private ride share services, recognising the non-typical nature of parking at the racecourse, being reflective of a tourist destination/ sporting venue.
- For non-typical large event days, such as the Perth Cup, implementation of the adopted traffic management plan for the Racecourse will continue.



Parking for future commercial development within Precinct E is to be provided having regard to the DPLH's Interim Guidance for Non-Residential Car Parking Requirements, through the application of minimum and maximum parking standards. This is reflective of a move towards reducing the traditional over-supply of under-utilised parking, better meeting the parking demands for different centres and responding to the preferred approach for precinct planning.

Car parking for residential development within Precinct D will be provided in accordance with the Residential Design Codes.

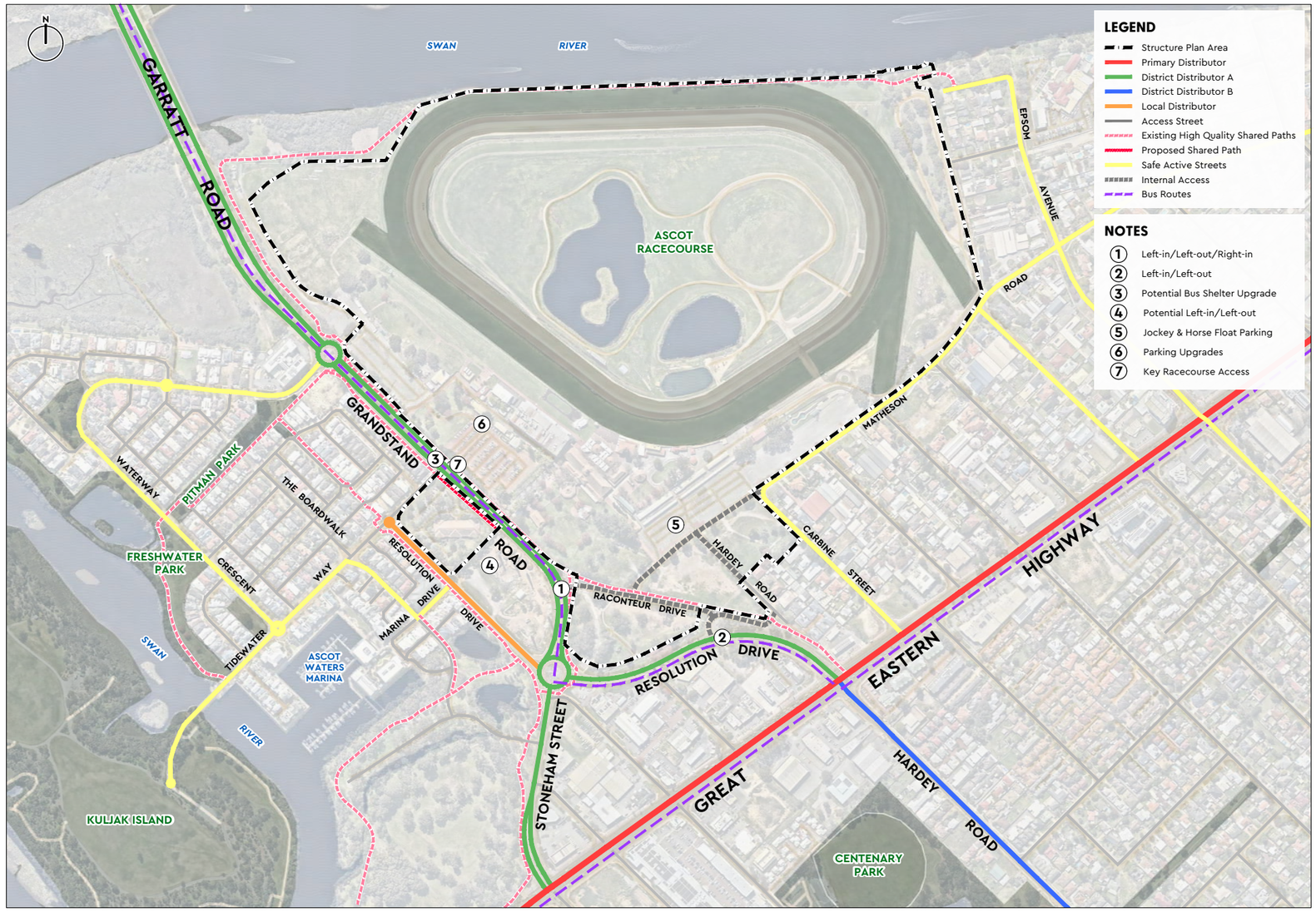
### 5.5.4. Public Transport

There are existing bus stops along Grandstand Road, immediately adjacent to one of the key pedestrian access points to the Racecourse, which is served by the 998/999 circle route, providing connectivity to the central Perth and Bayswater Train Stations. Frequent bus services are also available along Great Eastern Highway, providing access to Redcliffe Station, central Perth and Perth Airport.

Development of the site will utilise the existing public transport network, with opportunities to upgrade the infrastructure at the stops along Grandstand Road.



Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan




14. *Movement Network*

Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

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Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

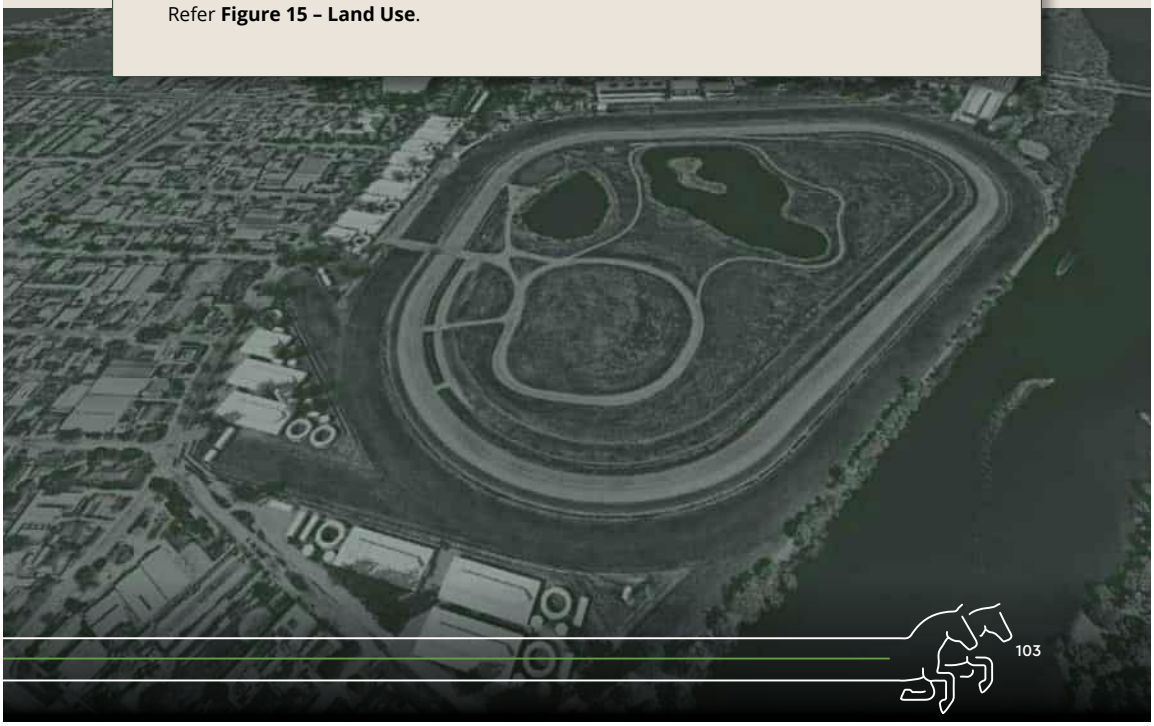
## 5.6. Land Use

Design Element 5 of the SPP 7.2 Precinct Design Guidelines requires consideration of 'Land Use', noting that land use planning should reflect the role of the precinct in its wider context and respond to community needs, current and intended future activities and functions, alongside broader trends. The SPP 7.2 Design Element Objectives and Design Responses are summarised below, with key considerations outlined in further detail thereafter.

| No. | Design Element Objective | Design Element Response |
|---|---|---|
| O5.1 | To ensure current and planned land uses respond to the needs and expectations of the community. | ▪ The Precinct Structure Plan provides for the development of retail convenience uses which respond to an identified need within the Ascot locality.<br>▪ The Precinct Structure Plan facilitates a residential interface to Ascot Waters Estate. |
| O5.2 | To ensure the planned land use types contribute positively to the precinct character and amenity. | ▪ The Precinct Structure Plan maintains and facilitates equine-focussed land uses adjacent to the established Ascot Racecourse and Residential and Stables area.<br>▪ Higher trip-generating land uses are focussed on the existing distributor road and public transport network. |
| O5.3 | To achieve a mix of land uses and activity that supports the precinct vision. | ▪ Through the application of appropriate zoning and land use controls, the Precinct Structure Plan provides for a mix of land uses that respond to the characteristics of the locality and site-specific opportunities identified by the Master Plan. |

*Table 18: Land Use Design Element Assessment*

Refer **Figure 15 – Land Use**.



Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

### 5.6.1. Land Use & Zoning

The subject area is currently zoned 'Place of Public Assembly' under the City of Belmont's LPS 15, except for Lot 3 (No. 96) Grandstand Road and Lot 51 (No. 2) Raconteur Drive, Ascot, in the southern part of the site (Precinct E), which are currently zoned 'Mixed Use'. The Racecourse component of the site is subject to 'Additional Uses' under LPS 15 which permit the land uses 'Horse Sales' and 'Stables', which are not otherwise permissible in the 'Place of Public Assembly' zone.

#### 5.6.1.1. Precinct A

In accordance with the Master Plan, Precinct A is intended to be developed for a residential housing village to accommodate retiring members of the horse racing industry, with small-scale food and beverage and commercial uses that are ancillary to, and integrated with, the residential housing village. Overall, it is estimated that this development could yield up to 360 apartments and a maximum 300m² café.

This development outcome is responsive to the land tenure restrictions of the site, specifically the inability for the site to be subdivided/on-sold and the limitation on use to horse-racing related activities. This Structure Plan applies a 'Mixed Use' zoning to Precinct A to support the abovementioned development outcomes, with 'Restricted Uses' that limit the scope of land uses that can be applied to the site to ensure an appropriate interface with the Swan River.

#### 5.6.1.2. Precincts B & C

Precinct B, which contains the entertainment areas associated with Ascot Racecourse, it intended to be developed to include a new administration building for Perth Racing (approximately 700m²), along with a hospitality venue (approximately 1,000m²). Precinct C, comprising the existing Racecourse, is intended to be developed with approximately 400 on-course stables across three (3) stabling complexes.

The objective of the 'Place of Public Assembly' zone, along with the land uses that are currently permissible on the site under LPS 15, are considered appropriate for the existing Racecourse operations, which are proposed to be retained (Precincts B and C). This includes retaining the existing Additional Uses applicable to Precinct C which will support the proposed on-course stables development. To provide flexibility for future administration and hospitality uses within Precinct B, the Structure Plan provides for several Additional Uses including 'Office', 'Hotel', 'Reception Centre', 'Restaurant', and 'Tavern'.



### 5.6.1.3. Precinct D

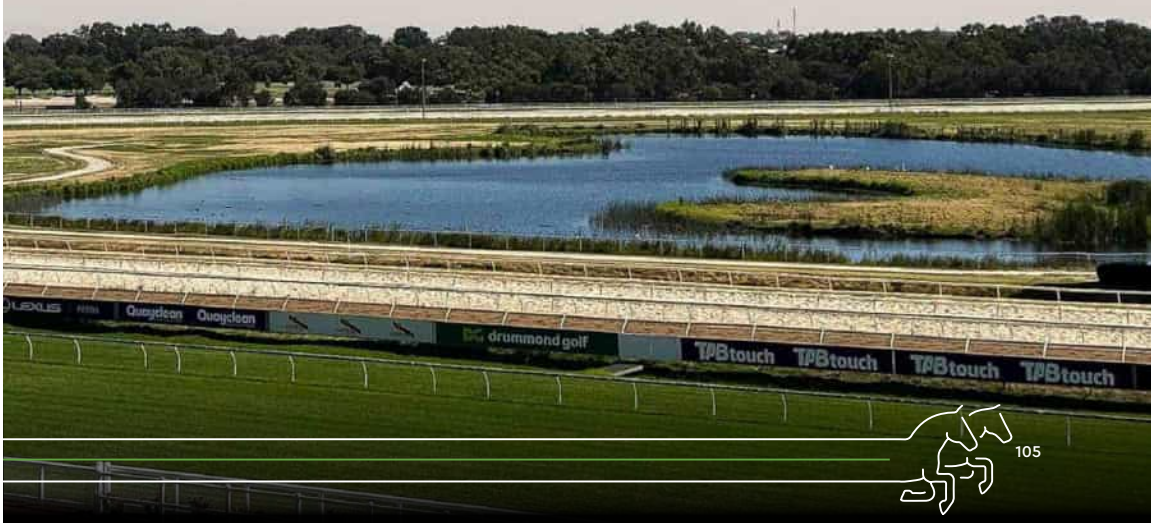
Following the relocation of Perth Racing's administration building, Precinct D is intended to be redeveloped for residential purposes, with a small-scale commercial/community use (such as a Child Care Premises) fronting Grandstand Road. It is estimated that this development could yield approximately 41 residential lots and a potential 2,000m² commercial lot. This outcome would be consistent with the residential character of the adjacent Ascot Waters Estate, whilst noting that some opportunity exists for low intensity and compatible non-residential uses that would benefit from frontage to a distributor road.

This Precinct Structure Plan applies a 'Residential' zoning to a majority of Precinct D, with a 'Mixed Use' zone applied to a portion fronting Grandstand Road. Given the extent of permitted uses afforded by the 'Mixed Use' zone, this Precinct Structure Plan applies 'Restricted Uses' to limit the intensity/scale of development on the site to ensure compatibility with surrounding development.

### 5.6.1.4. Precinct E

Precinct E has been identified for future commercial development, reflective of its position within the Golden Gateway activity centre. The Structure Plan provides for Precinct E to be zoned 'Commercial' and 'Mixed Use' to facilitate a range of commercial uses. Land immediately adjacent to Resolution Drive and Grandstand Road, proposed to be zoned 'Commercial', would be suitable for active land uses such as a supermarket and speciality retail uses, and could form as the 'core' of the activity centre, positioned centrally within the activity centre and having suitable access and exposure to passing trade.

To provide an appropriate transition to the adjacent 'Residential and Stables' precinct, Perth Racing are also exploring opportunities to develop transitional commercial and/or equine focussed development, such as bulky goods showroom, offices, a gym, and/or vet consulting rooms, to the north-east of Raconteur Drive. The application of the 'Mixed Use' zoning by the Precinct Structure Plan will support the development of these land uses. Like Precincts A and D, 'Restricted Uses' are proposed to be applied to the 'Mixed Use' zone to ensure compatibility with surrounding development.



Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

### 5.6.2. Golden Gateway Activity Centre

#### 5.6.2.1. Activity Centre Considerations

The City of Belmont's Activity Centres Planning Strategy ('ACPS') identifies a future activity centre ('Golden Gateway activity centre') within the Golden Gateway Precinct in Ascot, in the area bound by Great Eastern Highway, the Swan River, Resolution Drive (north), Grandstand Road (north), the south-eastern boundary of Ascot Racecourse, Carbine Street and Hardey Road. This area encompasses the southern portion of Perth Racing's landholdings identified as Precinct E in this Structure Plan.

Refer **Figure 16 – Golden Gateway Activity Centre**.

There are unique considerations in the planning of the Golden Gateway activity centre including, but not limited to, the extent of land fragmentation, the type and nature of existing land uses/development, and access constraints. The centre's proximity to Great Eastern Highway makes it attractive for uses reliant upon passing trade, such as bulky goods showrooms. Similarly, its proximity to the Perth Central Business District and Belmont Business Park, coupled with high levels of accessibility afforded by the road network and public transport services, makes it attractive for service industries and offices to locate.

There is currently no residential development within the centre, with the residential catchment being limited to that of the surrounding area. The draft Golden Gateway Structure Plan identified a desire for intensive residential development to be undertaken within the Golden Gateway activity centre, which would support the development of the activity centre. In the case of Perth Racing's land, there is an inability to subdivide and sell-off landholdings in Precinct E, meaning that any proposition of residential development cannot be realised in Precinct E.



As outlined, Perth Racing's vision for Precinct E is to develop active commercial/retail land uses adjacent to Resolution Drive and Grandstand Road and transitioning to less intensive retail (i.e. bulky goods showrooms), commercial, and/or equine focussed development to the north-east of Raconteur Drive, adjacent to the Residential and Stables area. These land uses would be consistent with the intent of an activity centre in this location, whilst also responding to the existing 'equine-focus' of the area.

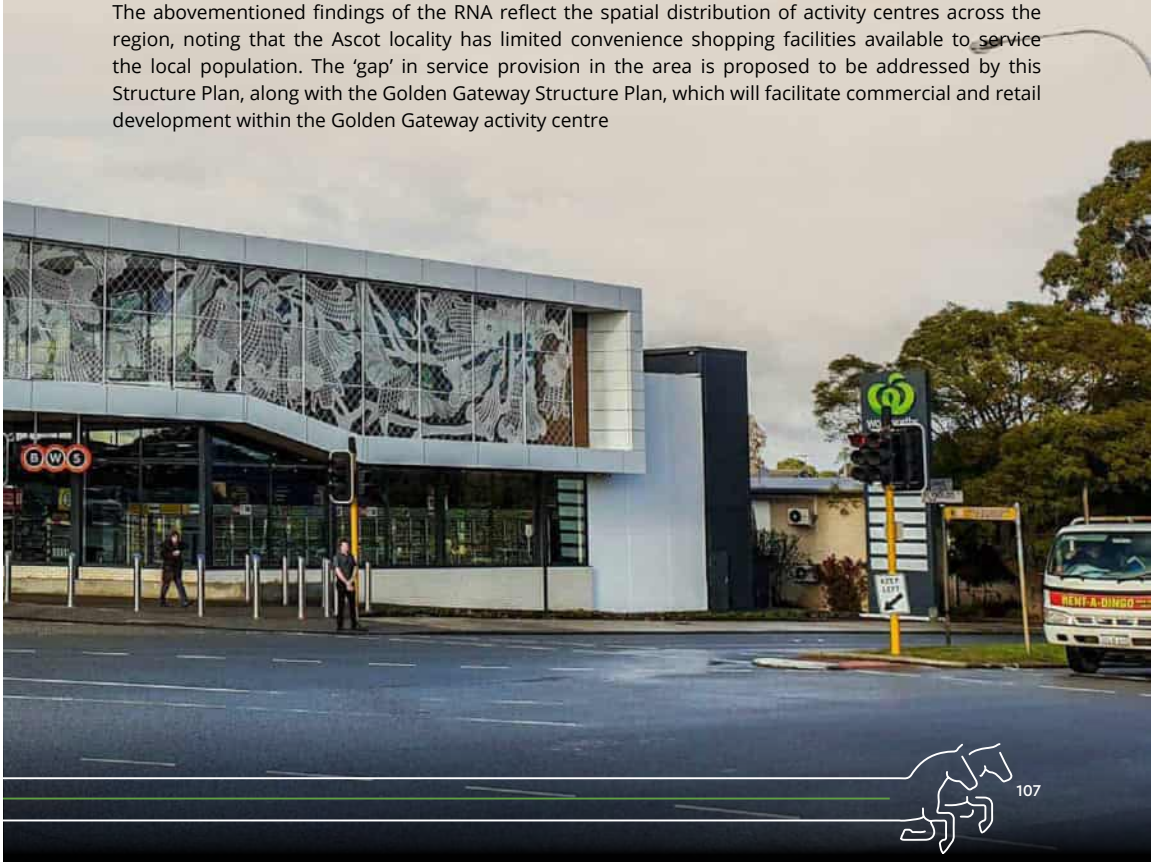
Given the size, positioning, and current vacant status of Perth Racing's landholdings, there is a real opportunity for development in this location to serve as a catalyst for future development within the Golden Gateway activity centre. It is anticipated that other land within the activity centre will transition to mixed-use development outcomes over time as amenity and land values improve, opportunities will exist to better utilise land.

The size and configuration of Perth Racing's landholdings in Precinct E are such that development outcomes could not reasonably or practically exceed that of a local or neighbourhood centre, nor similarly be developed in such a way that would be conducive to the creation of a standalone bulky good showroom precinct. Any development in this locality would be reflective of local community needs, having regard to locational characteristics and market demands.

### 5.6.2.2. Retail Needs Assessment

The ACPS has been informed by a Retail Needs Assessment ('RNA') undertaken in accordance with the requirements of SPP 4.2. The findings of the RNA, as outlined by the ACPS, anticipates a 7,000m² retail floorspace increase within the Precinct by 2036, and an increase in retail floorspace to approximately 7,000m² by 2036, providing for the establishment of a neighbourhood centre with 2,700m² to 3,000m² of retail floorspace. This demand is reflective of the limited-service provision within the Ascot locality.

The abovementioned findings of the RNA reflect the spatial distribution of activity centres across the region, noting that the Ascot locality has limited convenience shopping facilities available to service the local population. The 'gap' in service provision in the area is proposed to be addressed by this Structure Plan, along with the Golden Gateway Structure Plan, which will facilitate commercial and retail development within the Golden Gateway activity centre



### 5.6.2.3. Net Benefit Test

In accordance with SPP 4.2, a Net Benefit Test has been prepared by Taktics4 in support of this Structure Plan to assess the economic demand and implications for potential retail development in this area. Through this assessment, particular attention was given to the 'Shop/Retail' (PLUC: 5-SHP) and 'Other Retail' (PLUC: 6-RET) planning land use categories.

Under SPP 4.2, the 'Shop/Retail' (PLUC: 5-SHP) planning land use category captures the land uses 'Shop', 'Liquor Store – Large', 'Fast Food Outlet/Lunch Bar', and 'Restaurant/Café'. The 'Other Retail' (PLUC: 6-RET) planning land use category applies to the land uses 'Bulky Goods Showroom' and 'Motor Vehicle, Boat, or Caravan Sales', noting the latter of which is not permitted under the 'Mixed Use' zone.

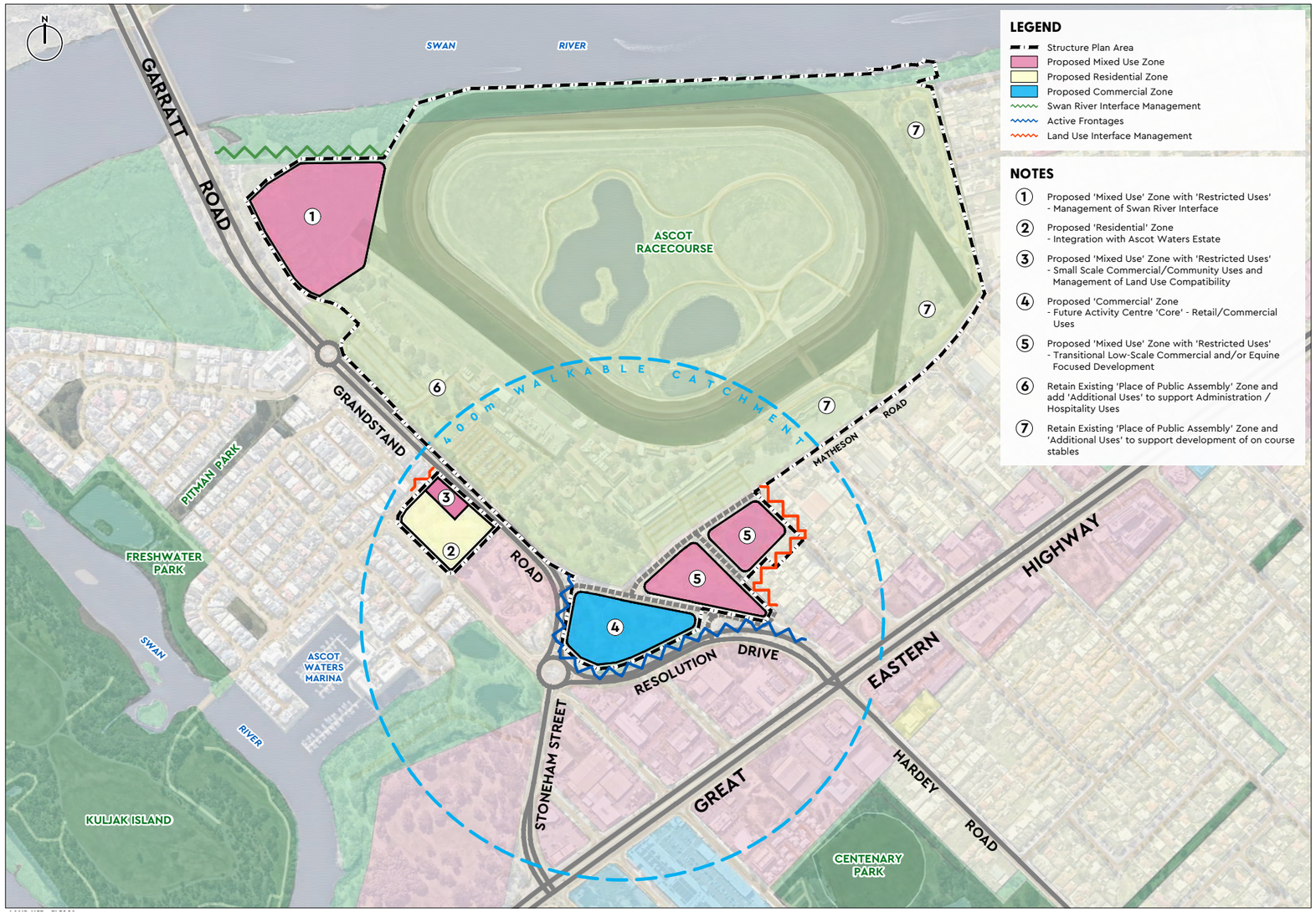
The Net Benefit Test assesses the potential for 3,400m² net lettable area ('NLA') of 'Shop/Retail' floorspace and 9,600m² NLA of 'Other Retail', representing a 'worst-case' maximum retail floorspace scenario for Precinct E. The findings of the Net Benefit Test indicate the following:

- The proposed development of 'Shop/Retail' and 'Other Retail' within the activity centre will have low/insignificant impacts on the existing and future activity centre network, with any impacts likely offset by potential sales growth generated by additional population and spending over the next 15 years.
- The creation of an activity centre in the area will reduce the number of vehicle kilometres required to be travelled by residents in the immediate trade area, and overall will save up to 700,000 vehicle trips per annum outside of the trade area.
- The development could create up to 205 full-time equivalent jobs.
- The 'Shop/Retail' floorspace will be sustainable from 2026 and satisfy an existing resident trade area, filling an existing demand in the market.
- Any development of 'Other Retail' will complement existing offerings in the vicinity.

Refer **Appendix 6 – Retail Assessment (Net Benefit Test)**.

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Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan




*15. Land Use*

Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan




*16. Golden Gateway Activity Centre*

ROWE GROUP DESIGN

Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

## 5.7. Built Form

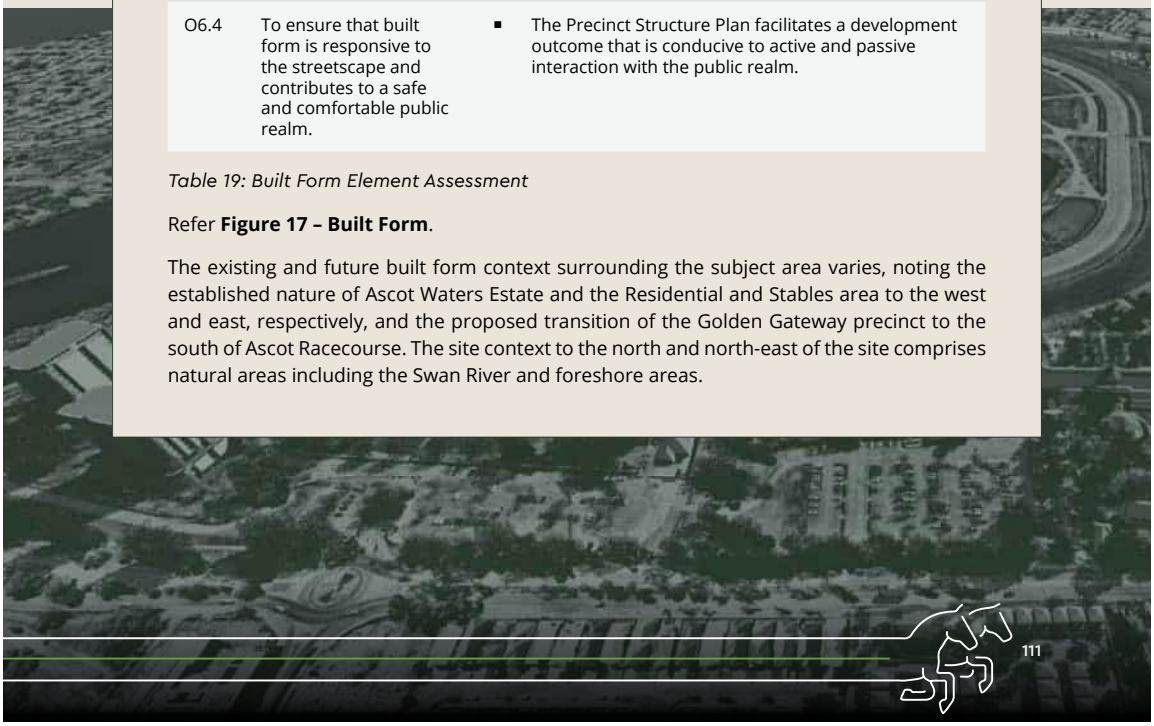
Design Element 6 of the SPP 7.2 Precinct Design Guidelines requires consideration of 'Built Form', outlining that built form should support a precinct environment that is place and functionally appropriate in character, intensity, bulk and scale. The SPP 7.2 Design Element Objectives and Design Responses are summarised below, with key considerations outlined in further detail thereafter.

| No. | Design Element Objective | Design Element Response |
|---|---|---|
| O6.1 | To ensure that the built form is responsive to the purpose, context and intended character of the precinct. | ▪ Built form outcomes provided by this Structure Plan align with the future context and character of the Golden Gateway Precinct.<br>▪ The Precinct Structure Plan provides for built form outcomes which are consistent with the character of Ascot Waters Estate and the Residential and Stables area.<br>▪ In recognising the strategic positioning of Perth Racing's north-western corner, the Precinct Structure Plan seeks to facilitate a landmark development.<br>▪ The intended placement of buildings is responsive to site context and configuration. |
| O6.2 | To ensure building placement, scale and massing is appropriate for the intended precinct and streetscape character. | |
| O6.3 | To ensure that built form design reduces energy demand across the precinct by facilitating climate-responsive design. | ▪ Street block configuration and built form scale support solar access to buildings and the public realm and do not undermine natural ventilation on adjoining properties and the public realm.<br>▪ The Precinct Structure Plan makes provision for increased tree canopy to reduce heat-island effect. |
| O6.4 | To ensure that built form is responsive to the streetscape and contributes to a safe and comfortable public realm. | ▪ The Precinct Structure Plan facilitates a development outcome that is conducive to active and passive interaction with the public realm. |

*Table 19: Built Form Element Assessment*

Refer **Figure 17 – Built Form**.

The existing and future built form context surrounding the subject area varies, noting the established nature of Ascot Waters Estate and the Residential and Stables area to the west and east, respectively, and the proposed transition of the Golden Gateway precinct to the south of Ascot Racecourse. The site context to the north and north-east of the site comprises natural areas including the Swan River and foreshore areas.



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### 5.7.1. Commercial Precinct

Under the draft Golden Gateway LSP, the Golden Gateway precinct is intended to be transformed into a mixed-use precinct with maximum building heights of 9 storeys with an 'R-AC1' coding along Great Eastern Highway and 6 storeys with an 'R-AC3' coding across the remainder of the precinct, inclusive of Perth Racing's properties fronting Grandstand Road within Precinct E.

As per Perth Racing's vision, the portion of Precinct E fronting Resolution Drive is intended to be developed for commercial and retail purposes, with no intention to undertake residential development or any form of intensive built form development. Notwithstanding, in acknowledging that this land will have the potential to be developed for residential purposes and to provide consistency with the Golden Gateway Structure Plan, this Structure Plan applies an 'R-AC3' coding and a maximum 6 storey building height.

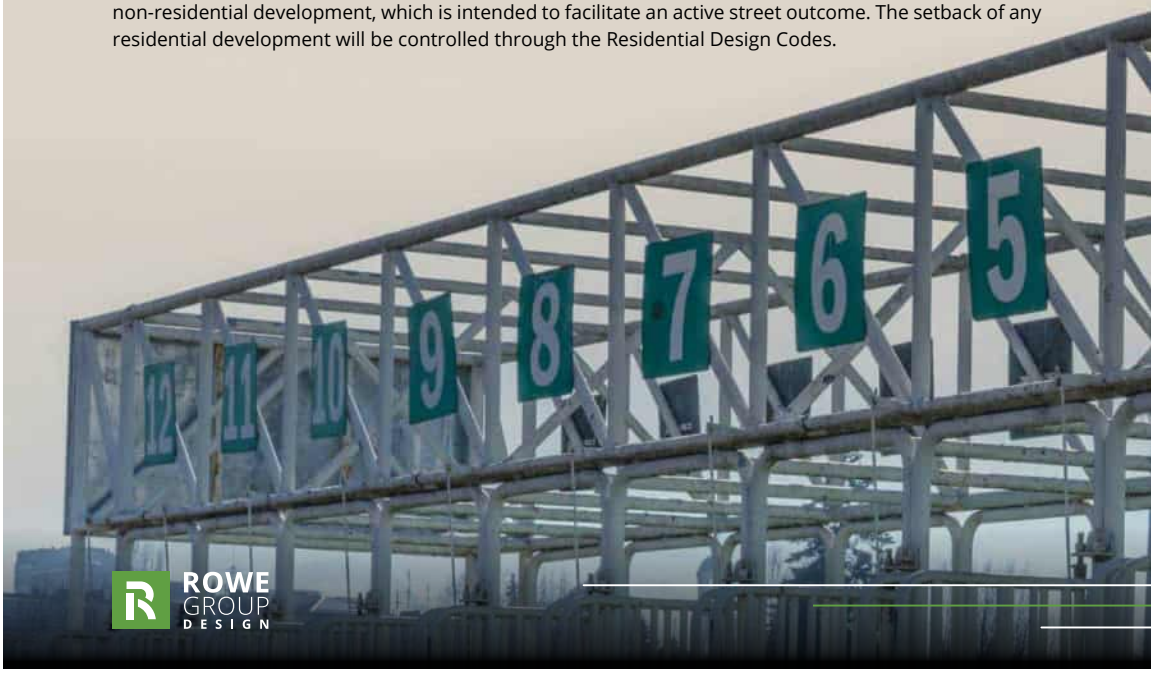
Development fronting Resolution Drive is intended to accommodate more 'active' land uses and should be designed accordingly in line with contemporary planning practice. There are some limitations to the positioning of buildings on this site due to the presence of existing services, however, as shown in the Master Plan, there are opportunities to position buildings such that they address and interface with the street and sleeve parking areas from key viewpoints.

Given the presence of the Belmont Main Drain along the site's frontage to Resolution Drive, consideration should be given to its presentation through the detailed design process. This includes the potential for landscaping within and/or surrounding the drain, and the upgrade of fencing.

To reduce the dominance of car parking and heat-island effect, Part One of the Precinct Structure Plan applies a requirement for shade trees within car parking areas.

To provide a transition to the Residential and Stables area, built form is intended to 'step down', with an 'R-AC4' coding applied to the portion of Precinct E comprising the southern part of Lot 100 Raconteur Drive and a maximum 3-storey building height. This site is 'triangular' in shape, meaning that the positioning of buildings will likely occur on the wider north-western portion of the site, with parking placed towards the south-eastern portion, adjacent to Raconteur Drive and Hardey Road.

In terms of boundary setbacks, the control of non-residential development will be provided through LPS 15. Part One of the Precinct Structure Plan does however identify a nil street setback requirement for non-residential development, which is intended to facilitate an active street outcome. The setback of any residential development will be controlled through the Residential Design Codes.




ROWE GROUP DESIGN

Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

### 5.7.2. Residential & Stables Interface

The Ascot Residential and Stables area to the south and east of the Structure Plan area is unique from a land use and built form perspective. The area is characterised by large rectangular lots ranging from approximately 800m² to 2,000m² in area and typically containing a single house at the front (facing the street) with stables provided to the rear within the backyard area of each respective lot. Development within this area is typically single storey in scale, but intensive site coverage, with stables development often occupying significant portions of the lot with nil or limited setbacks provided to side boundaries.

Under the City's LPS 15, the Residential and Stables area is not subject to a density code, however the Scheme Text states that the provisions of the 'R10' code apply with regard to 'open space' and 'minimum setbacks from boundaries' (for residential development only). In accordance with Volume 1 of the R-Codes, the primary street setback under the 'R10' coding is a minimum of 3.75m and an average of 7.5m. There are no building height limits that apply to the Residential and Stables zone.

Under this Structure Plan, both Precincts C and E interface with the Residential and Stables area. In the case of Precinct C, which is subject to the proposed on-course stables development, Part One of this Precinct Structure Plan includes development provisions pertaining to the setback of development from Matheson Road to the south (7.5m setback) and the setback of stables and yard areas to private properties to the east (10m setback). The minimum setbacks identified align with the primary street setback requirement under the R-Codes and the City's Local Laws pertaining to stable and yard setbacks from dwellings.

In terms of the Precinct E interface, as outlined in Perth Racing's vision, development immediately adjacent to the Residential and Stables area is intended to be equine focussed, potentially in the form of an equine welfare centre and jockey support centre. Such a development would likely be of a low-scale and predominantly single-storey in nature. Part One of the Precinct Structure Plan provides for a maximum 2-storey building height in this location, a maximum residential density of 'R10', and a minimum and average primary and secondary street setback of 3.75m and 7.5m, respectively, to be consistent with that of the surrounding area.



### 5.7.3. Ascot Waters & Bristile Kilns Interface

Built form within Ascot Waters Estate is residential and mixed use in nature, ranging from two to four-storeys in height and at a scale equivalent to the 'R30', 'R40' and 'R100' density codes. In Council's deliberations on the draft Golden Gateway LSP, consideration was given to this context in relation to Lot 452 Grandstand Road (Precinct D) where it was determined appropriate to apply densities of 'R40' and 'R100' with maximum building height limits of 3 to 5 storeys.

This Structure Plan applies an 'R60' coding with a maximum building height of 3 storeys to Lot 452 Grandstand Road (Precinct D). Whilst this approach does not strictly align with Council's previous decision, it represents a balanced approach to built form on the site and avoids a situation where requirements differ across a lot, proving more flexibility from a development perspective. Furthermore, it is considered that a maximum building height provided by this Precinct Structure Plan would not impose upon or undermine the heritage values of the adjacent Bristile Kilns.

In terms of Precinct B, there is limited built form interrelationship with Ascot Waters Estate given the substantial building setbacks within Ascot Racecourse and the positioning and treatment of Grandstand Road is serving as a logical separation between these areas.

### 5.7.4. Swan River Interface

Perth Racing's vision for Precinct A, which interfaces to Swan River, is to develop a residential housing village with small-scale integrated commercial uses. It is envisioned that future development could comprise three (3) tower buildings developed up to a maximum of 15 storeys, and oriented such that they provide outlook to the Swan River and Racecourse. This vision is reflective of the site's notable prominence, being strategically positioned on the Swan River and at the northern gateway to the City of Belmont.

Precinct A is situated on the southern side of the Swan River and is devoid of surrounding development, meaning that any implications associated with intensive built form scale, such as overshadowing and privacy, will be negligible. Whilst there will be a need to undertake earthworks on the site to lift ground levels, there are opportunities through the detailed design process to consider appropriate setbacks, battering and/or retaining to the Swan River interface.

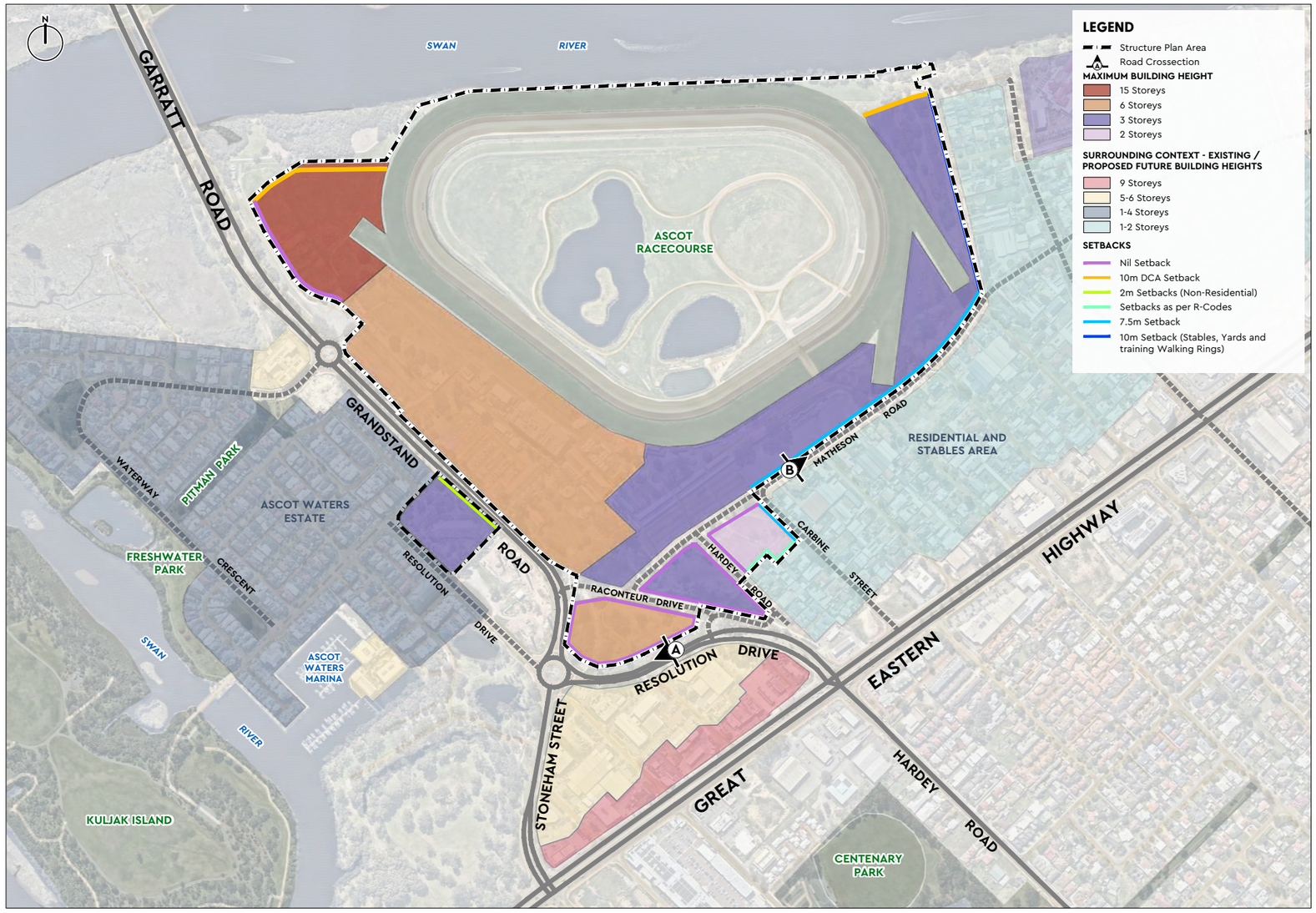
In terms of density, an 'R-AC0' coding has been applied to Precinct A to enable this Precinct Structure Plan to identify specific built form primary controls pertaining to building height, plot ratio, and setbacks. Specifically, Part One of the Precinct Structure Plan identifies a maximum building height of 15-storeys with a maximum 3-storey podium height, and a maximum plot ratio of 2.5 which is reflective of the vision for the site. In accordance with DBCA requirements, the Precinct Structure Plan identifies a minimum 10m setback requirement from the Swan River foreshore. Given Precinct A's existing substantive setback to Grandstand Road, the Precinct Structure Plan allows for a nil setback to the primary street.

Noting the limitations posed by groundwater hydrology and flood levels in Precinct A, basement structures in this location will likely be impractical, meaning that car parking areas will likely be a combination of at-grade and above-ground parking integrated into the building. The design process for these buildings will need to ensure that car parking areas are designed in such a way that they do not dominate or detract from the overall design of the site and its interface to the Swan River.

All other development controls applicable to Precinct A will be provided by LPS 15 and Volume 2 of the R-Codes.

ROWE GROUP DESIGN

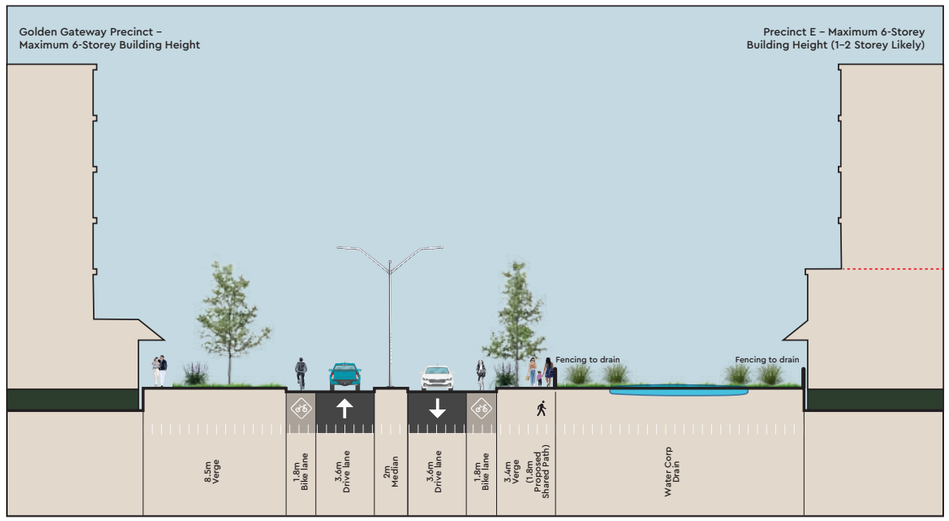
Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan



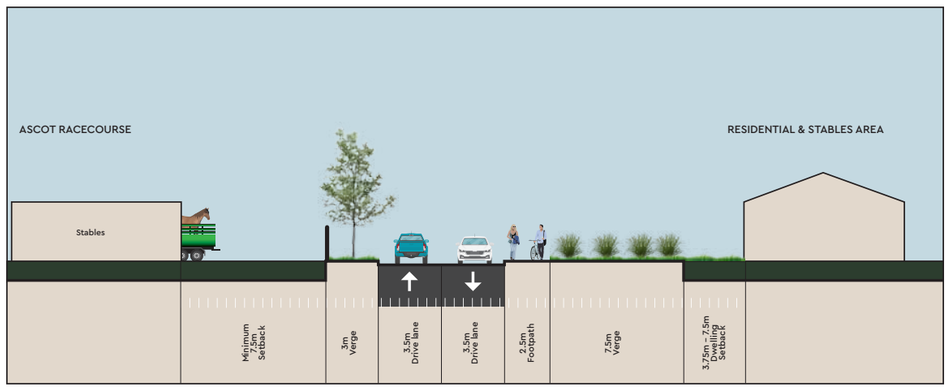

*17. Built Form*

Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

## Cross Section A – Resolution Drive




## Cross Section B – Matheson Road

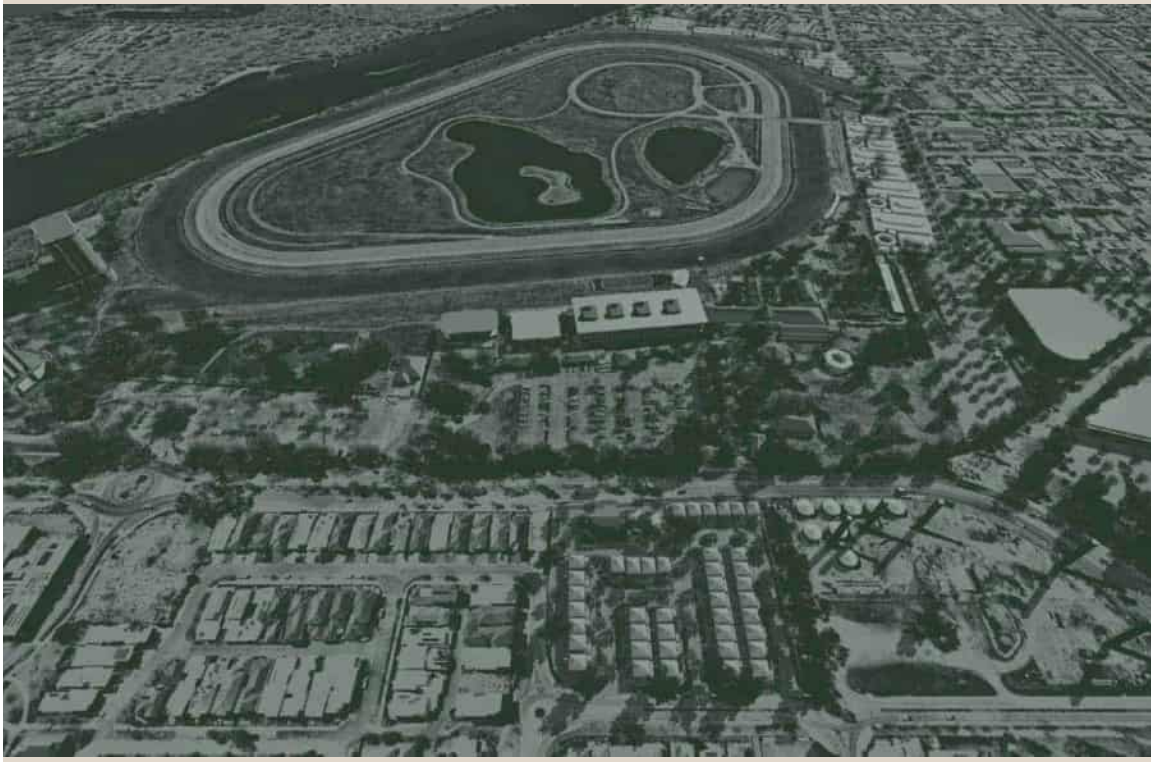



*18. Indicative Cross Sections*

Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

# Appendix 1

## Certificates of Title



Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

WESTERN AUSTRALIA

| TITLE NUMBER | |
|---|---|
| Volume | Folio |
| **1041** | **934** |

# RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

REGISTRAR OF TITLES

**LAND DESCRIPTION:**

LOT 50 ON PLAN 5729

**REGISTERED PROPRIETOR:**
(FIRST SCHEDULE)

THE CHAIRMAN OF THE COMMITTEE OF THE WESTERN AUSTRALIAN TURF CLUB OF 70 GRANDSTAND ROAD ASCOT WA 6104

(AN N508676 ) REGISTERED 13/12/2016

**LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:**
(SECOND SCHEDULE)

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required. Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

**STATEMENTS:**

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

| | |
|---|---|
| SKETCH OF LAND: | P5729 |
| PREVIOUS TITLE: | 1041-164 |
| PROPERTY STREET ADDRESS: | 71 GRANDSTAND RD, ASCOT. |
| LOCAL GOVERNMENT AUTHORITY: | CITY OF BELMONT |

LANDGATE COPY OF ORIGINAL NOT TO SCALE 12/08/2024 02:14 PM Request number: 66993454

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WESTERN AUSTRALIA

| TITLE NUMBER | |
|---|---|
| Volume | Folio |
| **2723** | **355** |

# RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

REGISTRAR OF TITLES

**LAND DESCRIPTION:**

LOT 452 ON DEPOSITED PLAN 60339

**REGISTERED PROPRIETOR:**
(FIRST SCHEDULE)

THE CHAIRMAN OF THE COMMITTEE OF THE WESTERN AUSTRALIAN TURF CLUB OF 70 GRANDSTAND ROAD ASCOT WA 6104

(AN N508676 ) REGISTERED 13/12/2016

**LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:**
(SECOND SCHEDULE)

1. EASEMENT BURDEN CREATED UNDER SECTION 167 P. & D. ACT FOR DRAINAGE PURPOSES TO CITY OF BELMONT - SEE DEPOSITED PLAN 60339.
2. L014556 EASEMENT TO CITY OF BELMONT FOR RIGHT OF FOOTWAY PURPOSES - SEE SKETCH ON DEPOSITED PLAN 60339. REGISTERED 30/7/2009.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required. Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

**STATEMENTS:**

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

| | |
|---|---|
| SKETCH OF LAND: | DP60339 |
| PREVIOUS TITLE: | 1776-799 |
| PROPERTY STREET ADDRESS: | 70 GRANDSTAND RD, ASCOT. |
| LOCAL GOVERNMENT AUTHORITY: | CITY OF BELMONT |

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Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

WESTERN AUSTRALIA

| TITLE NUMBER | |
|---|---|
| Volume | Folio |
| **2723** | **304** |

# RECORD OF CERTIFICATE OF TITLE

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REGISTRAR OF TITLES

**LAND DESCRIPTION:**

LOT 100 ON DEPOSITED PLAN 60341

**REGISTERED PROPRIETOR:**
(FIRST SCHEDULE)

THE CHAIRMAN OF THE COMMITTEE OF THE WESTERN AUSTRALIAN TURF CLUB OF 70 GRANDSTAND ROAD ASCOT WA 6104

(AN N508676 ) REGISTERED 13/12/2016

**LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:**
(SECOND SCHEDULE)

1. EASEMENT BURDEN CREATED UNDER SECTION 27A T.P. & D. ACT FOR GAS PURPOSES TO S.E.C. - SEE SKETCH ON DEPOSITED PLAN 60341 AS CREATED ON PLAN 15104.
2. L014550 EASEMENT TO WA GAS NETWORKS PTY LTD FOR GAS PIPELINE PURPOSES - SEE DEPOSITED PLAN 60341 REGISTERED 21/7/2009.
3. M230259 EASEMENT TO ELECTRICITY NETWORKS CORPORATION FOR TRANSMISSION OF ELECTRICITY PURPOSES - SEE SKETCH ON DEPOSITED PLAN 76199 REGISTERED 4/4/2013.
4. M230260 EASEMENT TO ELECTRICITY NETWORKS CORPORATION FOR TRANSMISSION OF ELECTRICITY PURPOSES - SEE SKETCH ON DEPOSITED PLAN 76199 REGISTERED 4/4/2013.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required. Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

**STATEMENTS:**

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

| | |
|---|---|
| SKETCH OF LAND: | DP60341 |
| PREVIOUS TITLE: | 1883-667 |
| PROPERTY STREET ADDRESS: | 1 RACONTEUR DR, ASCOT. |
| LOCAL GOVERNMENT AUTHORITY: | CITY OF BELMONT |

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Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

WESTERN AUSTRALIA

| TITLE NUMBER | |
|---|---|
| Volume | Folio |
| **2723** | **303** |

# RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

REGISTRAR OF TITLES

**LAND DESCRIPTION:**

LOT 9002 ON DEPOSITED PLAN 60342

**REGISTERED PROPRIETOR:**
(FIRST SCHEDULE)

THE CHAIRMAN OF THE COMMITTEE OF THE WESTERN AUSTRALIAN TURF CLUB OF 70 GRANDSTAND ROAD ASCOT WA 6104

(AN N508676 ) REGISTERED 13/12/2016

**LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:**
(SECOND SCHEDULE)

1. CROWN GRANT IN TRUST. SEE CROWN GRANT FOR CONDITIONS. AS TO THE PORTION OF SWAN LOCATION 823 FORMERLY COMPRISED IN VOLUME 1771 FOLIO 332 ONLY.
2. H712859 LEASE TO VODAFONE NETWORK PTY LTD OF 799 PACIFIC HIGHWAY, CHATSWOOD, NEW SOUTH WALES EXPIRES: SEE LEASE. AS TO PORTION ONLY. REGISTERED 4/4/2001.
   - H970091 TRANSFER OF LEASE H712859, LESSEE NOW CROWN CASTLE AUSTRALIA PTY LTD OF CARE OF LEVEL 1, 754 PACIFIC HIGHWAY, CHATSWOOD, NEW SOUTH WALES REGISTERED 24/12/2001.
   - K929949 EXTENSION OF LEASE H712859. REGISTERED 5/5/2009.
3. I041460 LEASE TO OPTUS MOBILE PTY LTD OF OPTUS CENTRE, 101 MILLER STREET, NORTH SYDNEY, NEW SOUTH WALES AS TO PORTION ONLY. EXPIRES: SEE LEASE. REGISTERED 13/3/2002.
4. K929948 LEASE TO CROWN CASTLE AUSTRALIA PTY LTD OF LEVEL 1, 754 PACIFIC HIGHWAY, CHATSWOOD, NEW SOUTH WALES EXPIRES: SEE LEASE. AS TO PORTION ONLY. REGISTERED 5/5/2009.
5. K944992 CAVEAT BY CROWN CASTLE AUSTRALIA PTY LTD AS TO PORTION ONLY. LODGED 19/5/2009.
6. EASEMENT BURDEN CREATED UNDER SECTION 167 P & D ACT FOR ELECTRICITY PURPOSES TO ELECTRICITY NETWORKS CORPORATION - SEE DEPOSITED PLAN 60342.
7. L399948 MEMORIAL. CONTAMINATED SITES ACT 2003 REGISTERED 13/8/2010.
8. M813804 LEASE TO OPTUS MOBILE PTY LTD OF 1 LYONPARK ROAD, MACQUARIE PARK, NEW SOUTH WALES EXPIRES: SEE LEASE. AS TO PORTION ONLY REGISTERED 31/10/2014.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required. Lot as described in the land description may be a lot or location.

END OF PAGE 1 - CONTINUED OVER

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## Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

RECORD OF CERTIFICATE OF TITLE

REGISTER NUMBER: 9002/DP60342 VOLUME/FOLIO: 2723-303 PAGE 2

----------END OF CERTIFICATE OF TITLE----------

**STATEMENTS:**

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

| | |
|---|---|
| SKETCH OF LAND: | DP60342 |
| PREVIOUS TITLE: | 2216-686 |
| PROPERTY STREET ADDRESS: | 71 GRANDSTAND RD, ASCOT. |
| LOCAL GOVERNMENT AUTHORITY: | CITY OF BELMONT |

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Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

WESTERN AUSTRALIA

| TITLE NUMBER | |
|---|---|
| Volume | Folio |
| **1883** | **670** |

# RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

REGISTRAR OF TITLES

**LAND DESCRIPTION:**

LOT 13 ON DIAGRAM 26760

**REGISTERED PROPRIETOR:**
(FIRST SCHEDULE)

THE CHAIRMAN OF THE COMMITTEE OF THE WESTERN AUSTRALIAN TURF CLUB OF 70 GRANDSTAND ROAD ASCOT WA 6104

(AN N508676 ) REGISTERED 13/12/2016

**LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:**
(SECOND SCHEDULE)

1. THE LAND THE SUBJECT OF THIS CERTIFICATE OF TITLE EXCLUDES ALL PORTIONS OF THE LOT DESCRIBED ABOVE EXCEPT THAT PORTION SHOWN IN THE SKETCH OF THE SUPERSEDED PAPER VERSION OF THIS TITLE. VOL 1883 FOL 670.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required. Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

**STATEMENTS:**

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

| | |
|---|---|
| SKETCH OF LAND: | 1883-670 (13/D26760) |
| PREVIOUS TITLE: | 202-100A |
| PROPERTY STREET ADDRESS: | 71 GRANDSTAND RD, ASCOT. |
| LOCAL GOVERNMENT AUTHORITY: | CITY OF BELMONT |

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Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

WESTERN AUSTRALIA

| TITLE NUMBER | |
|---|---|
| Volume | Folio |
| **1883** | **668** |

# RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

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REGISTRAR OF TITLES

**LAND DESCRIPTION:**

LOT 51 ON PLAN 15104

**REGISTERED PROPRIETOR:**
(FIRST SCHEDULE)

THE CHAIRMAN OF THE COMMITTEE OF THE WESTERN AUSTRALIAN TURF CLUB OF 70 GRANDSTAND ROAD ASCOT WA 6104

(AN N508676 ) REGISTERED 13/12/2016

**LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:**
(SECOND SCHEDULE)

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required. Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

**STATEMENTS:**

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| | |
|---|---|
| SKETCH OF LAND: | 1883-668 (51/P15104) |
| PREVIOUS TITLE: | 1883-666 |
| PROPERTY STREET ADDRESS: | 2 RACONTEUR DR, ASCOT. |
| LOCAL GOVERNMENT AUTHORITY: | CITY OF BELMONT |

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Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

WESTERN AUSTRALIA

| TITLE NUMBER | |
|---|---|
| Volume | Folio |
| **1789** | **567** |

# RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

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REGISTRAR OF TITLES

**LAND DESCRIPTION:**

LOT 7705 ON DEPOSITED PLAN 209359

**REGISTERED PROPRIETOR:**
(FIRST SCHEDULE)

THE CHAIRMAN OF THE COMMITTEE OF THE WESTERN AUSTRALIAN TURF CLUB OF 70 GRANDSTAND ROAD ASCOT WA 6104

(AN N508676 ) REGISTERED 13/12/2016

**LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:**
(SECOND SCHEDULE)

1. THE LAND THE SUBJECT OF THIS CERTIFICATE OF TITLE EXCLUDES ALL PORTIONS OF THE LOT DESCRIBED ABOVE EXCEPT THAT PORTION SHOWN IN THE SKETCH OF THE SUPERSEDED PAPER VERSION OF THIS TITLE.
2. CROWN GRANT IN TRUST. SEE CROWN GRANT FOR CONDITIONS.
3. K930699 EASEMENT TO WATER CORPORATION FOR TANK AND PIPELINE PURPOSES - SEE DEPOSITED PLAN 58026 REGISTERED 5/5/2009.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required. Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

**STATEMENTS:**

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SKETCH OF LAND: 1789-567 (7705/DP209359)
PREVIOUS TITLE: 1259-989
PROPERTY STREET ADDRESS: 71 MATHESON RD, ASCOT.
LOCAL GOVERNMENT AUTHORITY: CITY OF BELMONT

NOTE 1: K364458 DEPOSITED PLAN (INTEREST ONLY) 58026 LODGED

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Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

WESTERN AUSTRALIA

| TITLE NUMBER | |
|---|---|
| Volume | Folio |
| **1742** | **278** |

# RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

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REGISTRAR OF TITLES

**LAND DESCRIPTION:**

LOT 3 ON DIAGRAM 55346

**REGISTERED PROPRIETOR:**
(FIRST SCHEDULE)

THE CHAIRMAN OF THE COMMITTEE OF THE WESTERN AUSTRALIAN TURF CLUB OF 70 GRANDSTAND ROAD ASCOT WA 6104

(AN N508676 ) REGISTERED 13/12/2016

**LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:**
(SECOND SCHEDULE)

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required. Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

**STATEMENTS:**

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| | |
|---|---|
| SKETCH OF LAND: | 1742-278 (3/D55346) |
| PREVIOUS TITLE: | 1742-275 |
| PROPERTY STREET ADDRESS: | 96 GRANDSTAND RD, ASCOT. |
| LOCAL GOVERNMENT AUTHORITY: | CITY OF BELMONT |

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Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

WESTERN AUSTRALIA

| TITLE NUMBER | |
|---|---|
| Volume | Folio |
| **1742** | **276** |

# RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

REGISTRAR OF TITLES

**LAND DESCRIPTION:**

LOT 1 ON DIAGRAM 55346

**REGISTERED PROPRIETOR:**
(FIRST SCHEDULE)

STATE PLANNING COMMISSION OF 22 ST. GEORGE'S TERRACE, PERTH

(T D398174 ) REGISTERED 15/1/1987

**LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:**
(SECOND SCHEDULE)

1. D367664 CAVEAT BY DIAMOND SYNDICATE PTY LTD LODGED 24/11/1986.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required. Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

**STATEMENTS:**

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

| | |
|---|---|
| SKETCH OF LAND: | 1742-276 (1/D55346) |
| PREVIOUS TITLE: | 1742-275 |
| PROPERTY STREET ADDRESS: | 88 GRANDSTAND RD, ASCOT. |
| LOCAL GOVERNMENT AUTHORITY: | CITY OF BELMONT |
| RESPONSIBLE AGENCY: | WESTERN AUSTRALIAN PLANNING COMMISSION |

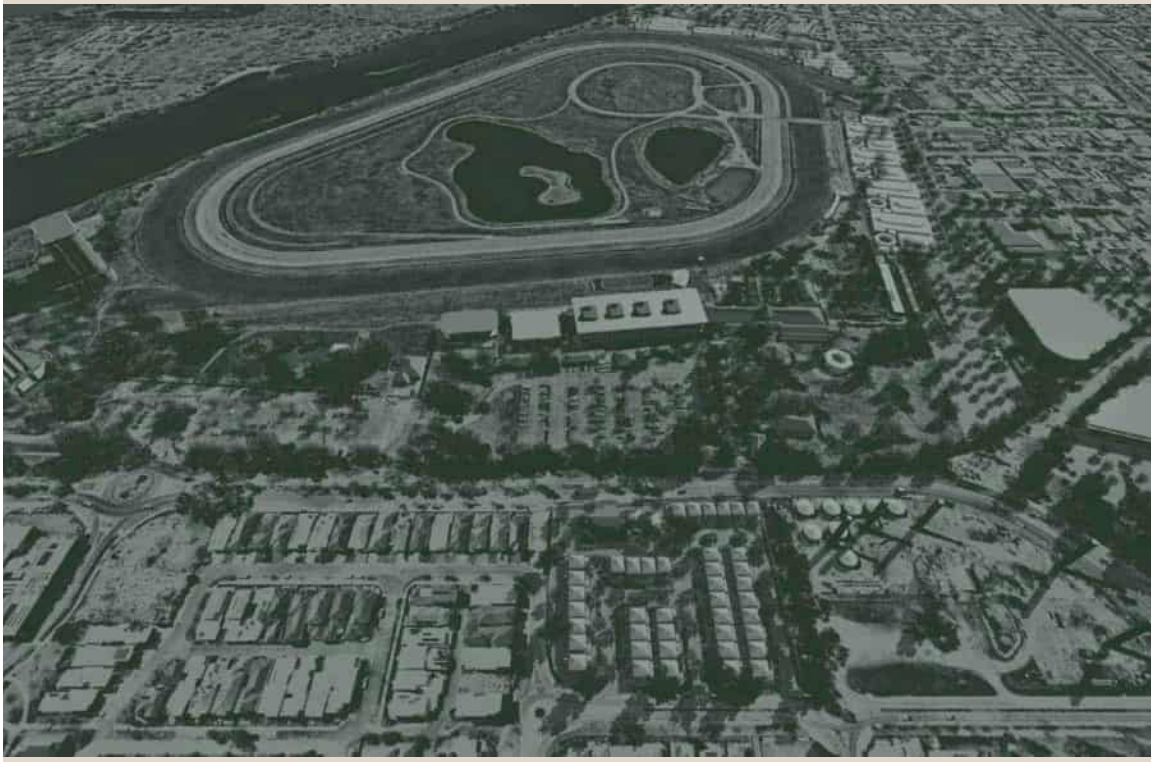
LANDGATE COPY OF ORIGINAL NOT TO SCALE 12/08/2024 02:14 PM Request number: 66993454

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Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

# Appendix 2

## Local Water Management Strategy



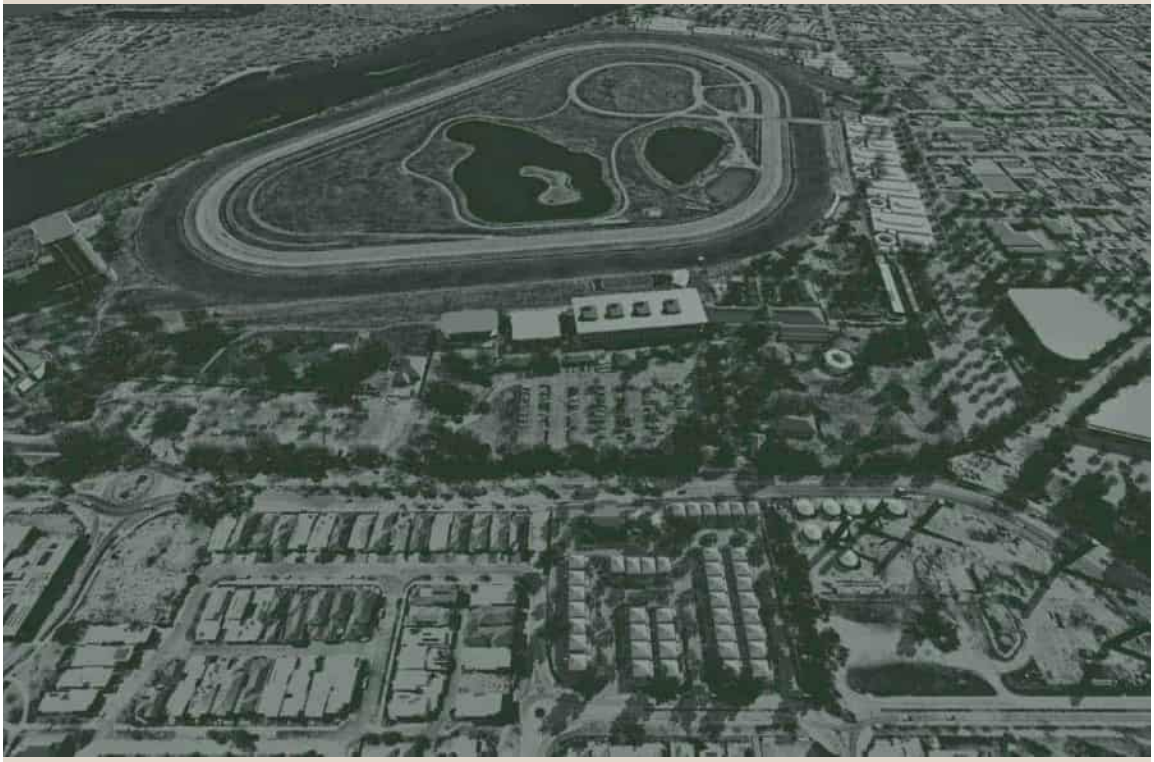
Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

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Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

# Appendix 3

## Environmental Assessment Report



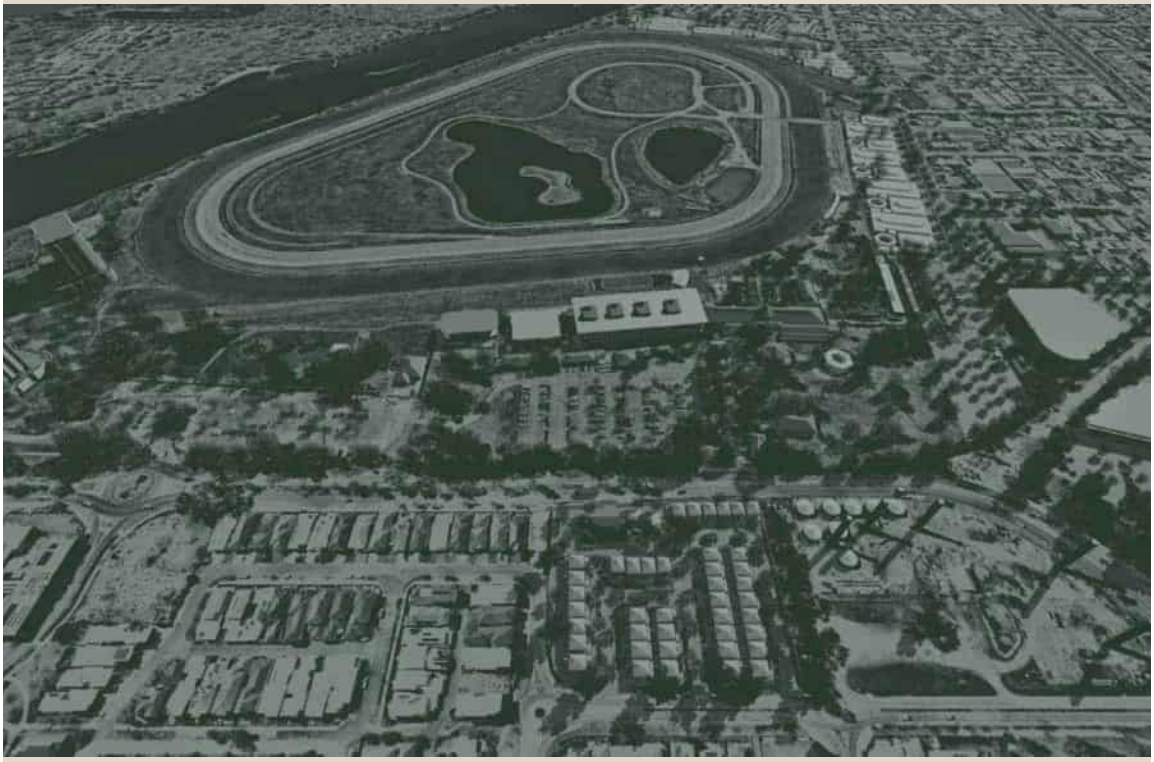
Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

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Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

# Appendix 4

## Engineering Servicing Report



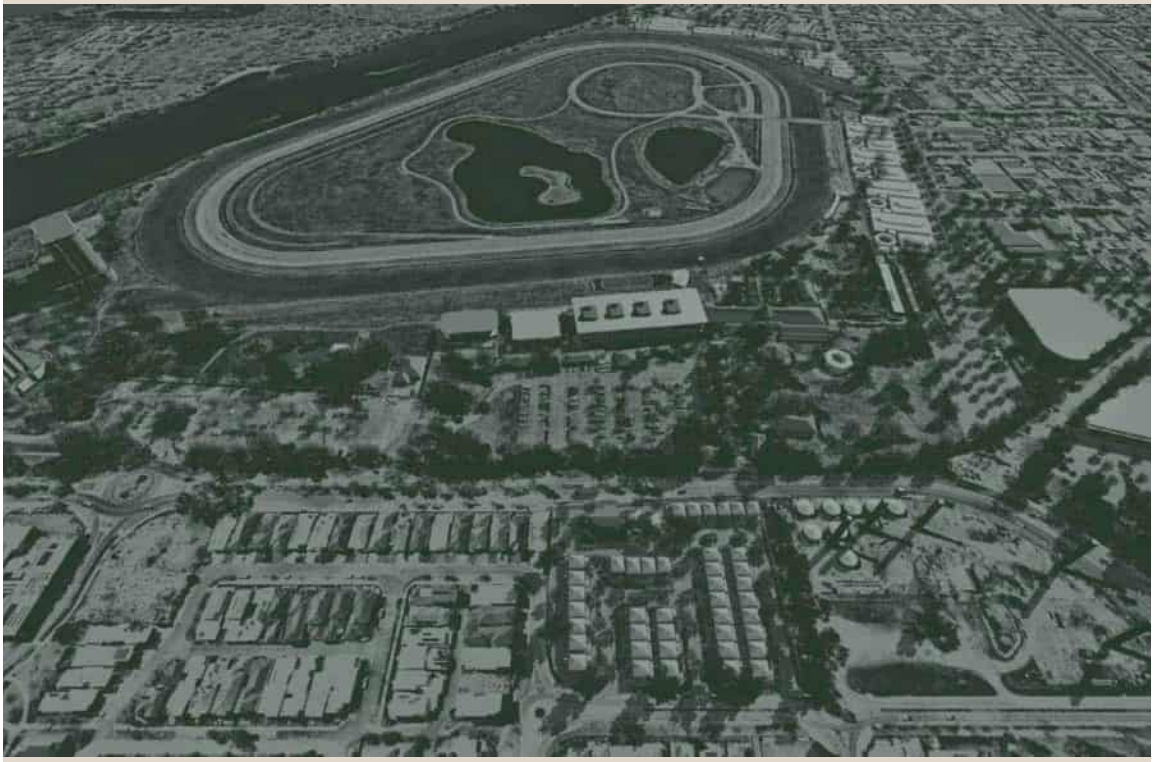
Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

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Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

# Appendix 5

## Transport Impact Assessment



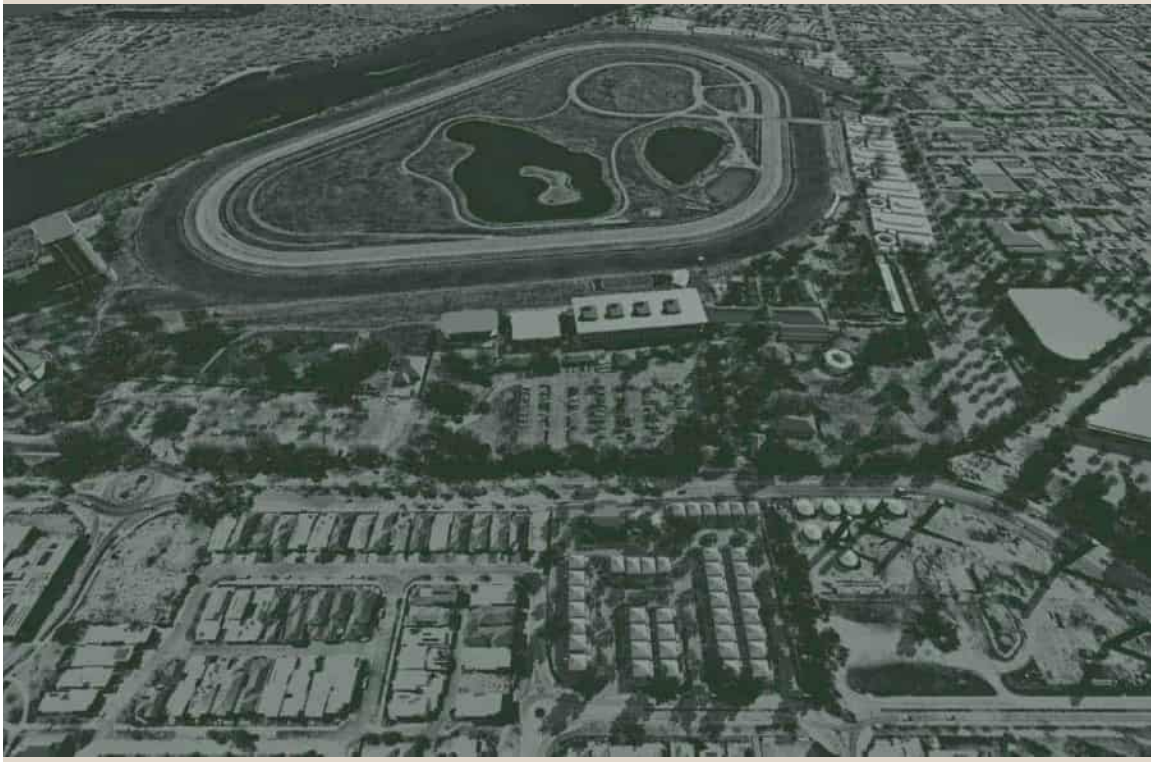
Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

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Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

# Appendix 6

## Retail Assessment (Net Benefit Test)



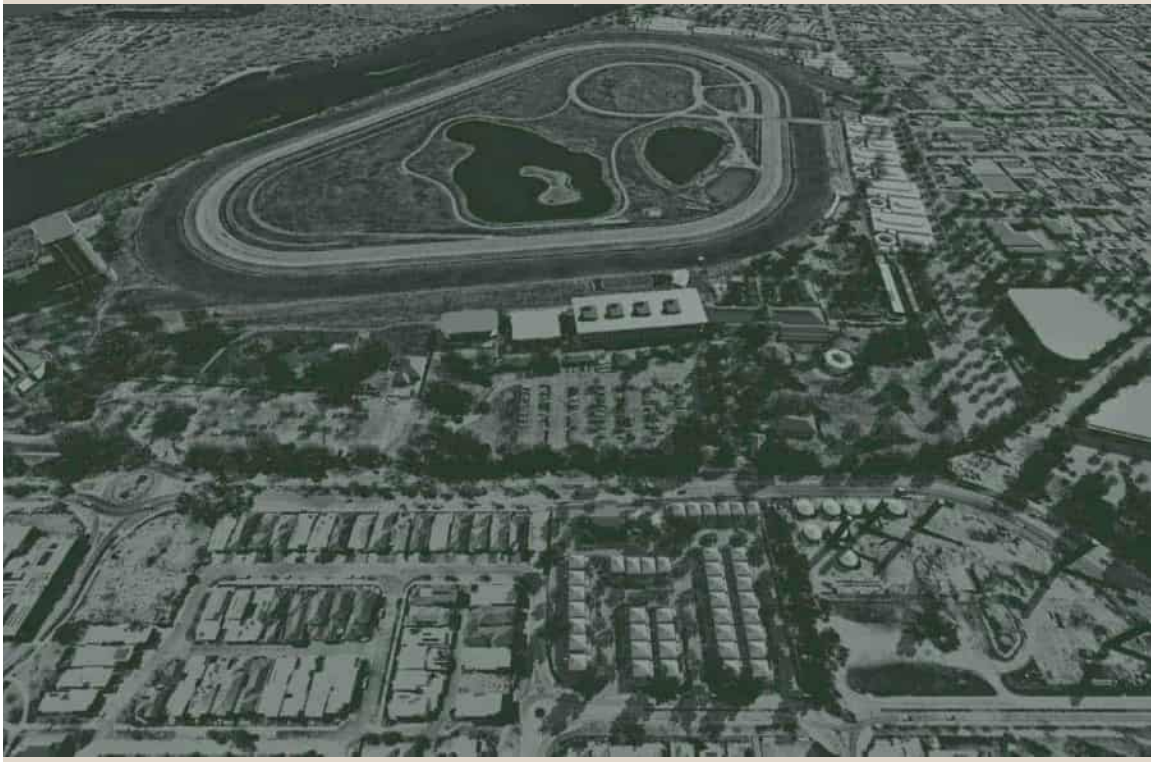
Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

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Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

# Appendix 7

## Transportation Noise Assessment



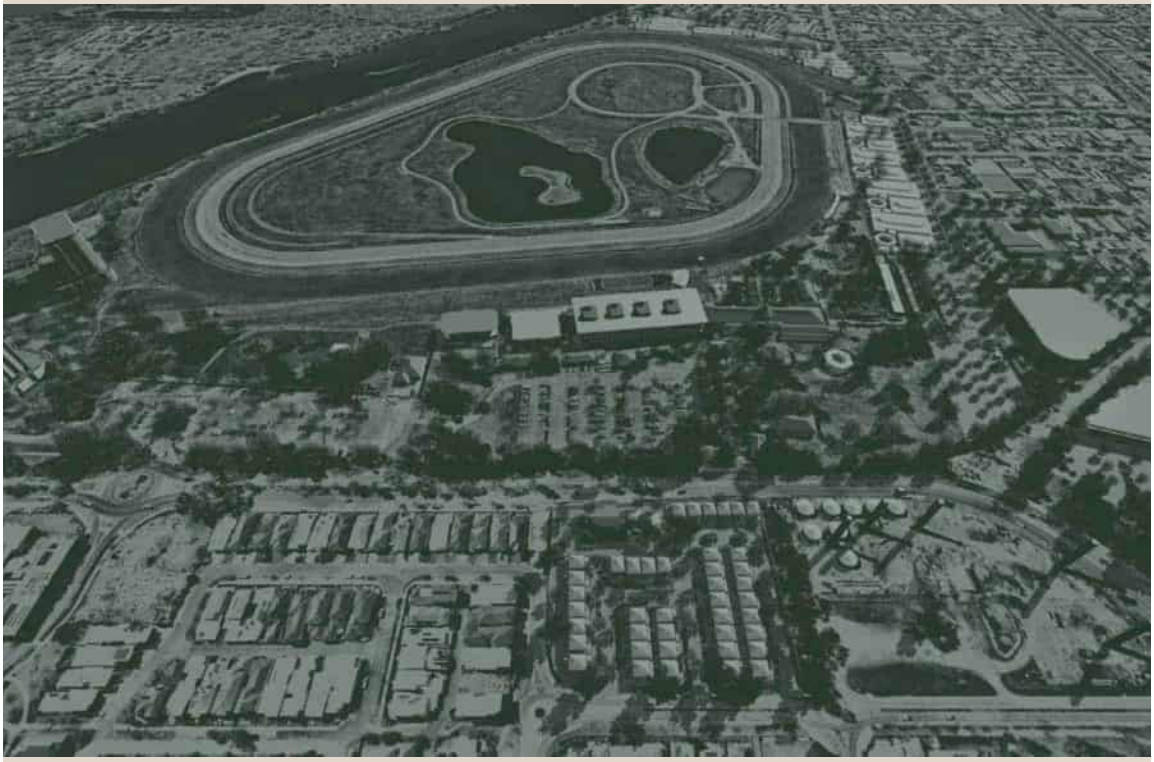
Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

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Attachment 12.1.1 Ascot Racecourse Precinct Structure Plan

# Appendix 8

## Landscape Master Plan

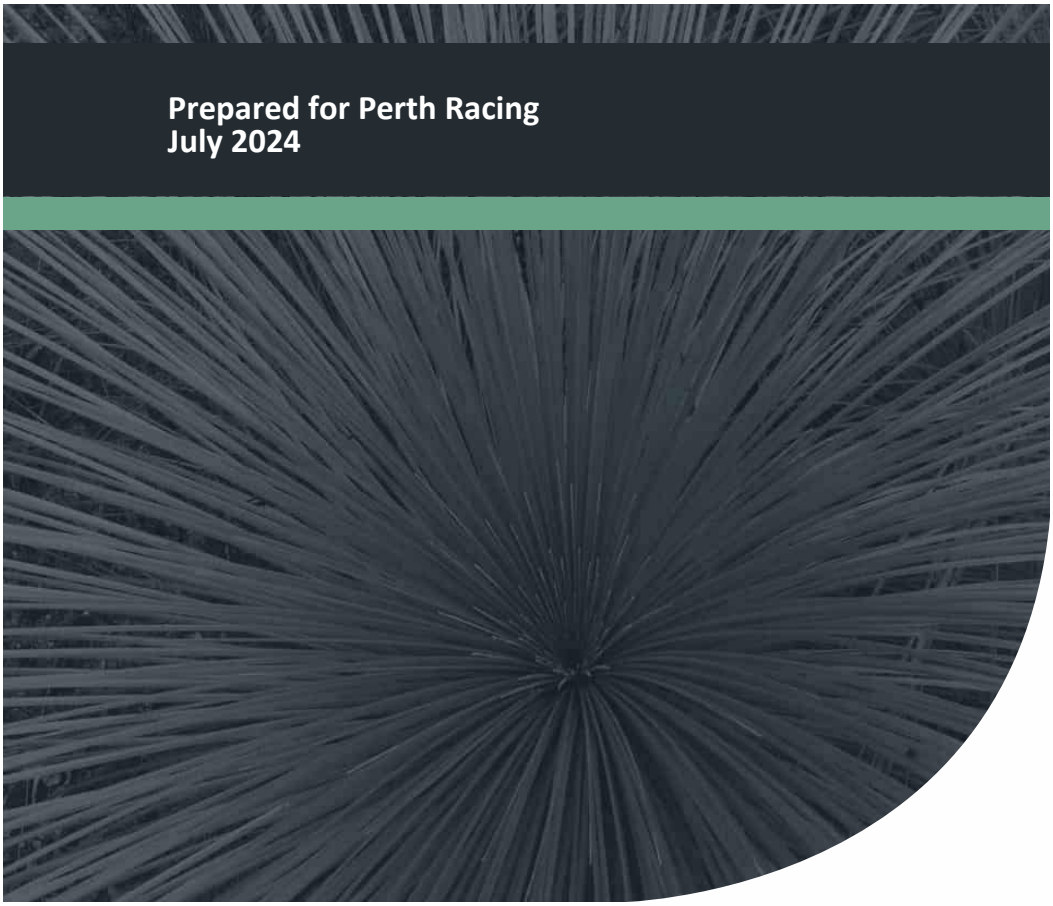


Attachment 12.1.2 Local Water Management Strategy

# Local Water Management Strategy

## Ascot Racecourse Local Structure Plan

Project No: EP23-109(03)



Attachment 12.1.2 Local Water Management Strategy



## Document Control

| Doc name: | Local Water Management Strategy<br>Ascot Racecourse Local Structure Plan | | | | |
|---|---|---|---|---|---|
| Doc no.: | EP23-109(03)--001B JM | | | | |
| Version | Date | Author | | Reviewer | |
| 1 | May 2024 | Joyti Mabruk | JM | David Coremans | DPC |
| | For project team review | | | | |
| A | May 2024 | Joyti Mabruk | JM | David Coremans | DPC |
| | For submission to Agencies | | | | |
| B | July 2024 | Joyti Mabruk | JM | David Coremans | DPC |
| | For submission to Agencies | | | | |

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Attachment 12.1.2 Local Water Management Strategy



# Local Water Management Strategy

**Ascot Racecourse Local Structure Plan**

## Executive Summary

Perth Racing (the 'proponent') proposes to progress a local structure plan (LSP) over its landholdings in Ascot. The area is bounded by the Swan River to the North, Grandstand Road to the west and south, Matheson Road and Resolution Drive to the south and residential areas to the east, referred to herein as 'the site'. The structure plan area also includes the existing Ascot Racecourse. The site is located approximately 8.5 km east of Perth central business district (CBD) and is approximately 62 ha in size, within City of Belmont (CoB). The LSP consists of six precincts: Precinct A, Precinct B (largely unchanged form existing), Precinct C, Precinct D, Precinct E, and the racecourse. The layout of LSP and precinct plan is shown on **Figure 1** and provided in **Appendix A**. The site is currently zoned "Urban", "Parks and Recreation", and "Private Recreation" under the Metropolitan Regional Scheme (MRS) (WAPC 2023b). Under the Local Planning Scheme (LPS) No. 15 (WAPC 2023a), the site is zoned as "RC – Place of Public Assembly: Racecourse", Mixed Use", "Parks and Recreation" and "Parks and Recreation: Water Supply Sewerage and Drainage".

This Local Water Management Strategy (LWMS) outlines the water management approach as required for the site by *Better Urban Water Management* (WAPC 2008b) and supports the Ascot Racecourse Structure Plan. It is intended to satisfy the expectations of the Department of Water and Environmental Regulation (DWER) and City of Belmont (CoB). The LWMS also aids in achieving the goals and objectives outlined in the *Kep Katitjin – Gabi Kaadadjan – Waterwise Perth Action Plan 2* (DWER 2023d).

The first step in applying integrated water cycle management in urban catchments is to establish agreed environmental values for receiving environments. In summary, the environmental investigations conducted to date indicate that:

- The site is being used for horse racing, mixed uses (i.e. car park, stables and entertainment/hospitality venues, and commercial). Some portions of the site are only used infrequently (e.g. for parking or events).
- The site is located in an area of moderate to high rainfall, receiving 756.3 mm on average annually with the majority of rainfall received between June and August.
- The majority of the site has a relatively flat topography of 1 mAHD at the northwest (along the Swan River) and 2 mAHD to the south and rising to 7 mAHD to the east of the site.
- The site is within the Swan River Terraces system and displays Guildford formation soils of alluvial and leached yellow sand described as:
  - **Ms2 –** Sandy Silt: Strong brown to mid grey, mottled, blocky, fine sand, hard when dry, variable clay content of alluvial origin
  - **Ms4 –** Sandy Silt: light yellow brown, blocky, mottled some fine to medium sand, soft when moist, variable clay content
  - **S8 –** Sand: very light grey at surface, yellow at depth, fine to medium-grained, sub rounded quartz, moderately well sorted of eolian origin
- The groundwater depth below the surface of Precinct A varies from 1.09 m mBGL to 2.37 mBGL (Douglas Partners 2024).
- The highest groundwater level beneath the site is reported 3.03 mBGL during February 2024 (Galt 2024), located beneath Precinct D.

Attachment 12.1.2 Local Water Management Strategy



- Most of the site is considered to have a high to moderate risk of ASS occurring, however some portions of Precinct B, Precinct C and the Racecourse are considered to have a moderate to low risk of ASS occurring within the 3 m of the natural surface.
- The northern portion of the site along the Swan River is identified as an ESA.
- The entirety of the site is classified as a SSA and classified as:
  - a) Estuary catchments on the Swan and Scott Coastal Plains.
  - f) The area is <1 km up-groundwater-gradient and 250 m down-gradient of a significant wetland; or where the groundwater gradient is unknown within 1 km of the significant wetland.
- The following wetlands are located within the site and these are classified as:
  - Multiple Use category wetland (MUW) area (UFI 8424, UFI 8425, UFI 8426).
  - Resource Enhancement wetland (REW) area (UFI 8423).
- The dominant hydrological feature of the site is the Swan River estuary. The northern boundary of the site falls within the Swan Canning Development Control Area (DCA) (CoB 2018) and Swan Canning River Park.
- The floodway of the Swan River is immediately adjacent to but not within the site. The 1% AEP flood elevation of the Swan River adjacent to the site is 2.8 mAHD.
- There are two existing major drainage network systems within or adjacent to the site include:
  - The Central Belmont Main Drain (CBMD), managed by the Water Corporation. This currently receives runoff from Precinct C (via the CoB drainage network) and Precinct E.
  - The CoB local piped drainage network, which exists along Matheson Road, Grandstand Road and the northern portion of Resolution Drive.
- There are three lakes (Irrigation Lake, Lined Lake and Wetland Lake) located within the centre of the racecourse. These are understood to receive runoff from the Grandstand buildings in Precinct B and stables/buildings in Precinct C.
- The groundwater beneath the site is a multi-layered system consisting of the Superficial, Kings Park Formation, Leederville and Yarragadee aquifers.
- Regional groundwater mapping indicates that the groundwater levels across the site are at approximately 0.5 m AHD.
- Local groundwater level monitoring indicates that annual maximum groundwater levels (recorded in August 2022) were measured at 1.26 m AHD and 1.70 m AHD at Bore 1 and Bore 2 respectively. Groundwater levels in adjacent areas included Precinct A levels at 1.09 mBGL to 2.37 mBGL and Precinct D levels of approximately 3.03 mBGL.
- Water quality monitoring indicates that EC, TDS and pH values do not exceed guideline trigger values. However, TN and TP concentrations continually exceed the ANZECC guideline trigger value of 1.2 mg/L and 0.065 mg/L respectively.

The design criteria and the manner in which they are proposed to be achieved are presented in **Table E1**.

Attachment 12.1.2 Local Water Management Strategy



*Table E1: Water management criteria and compliance summary*

| Management Aspect | Criteria Number | Criteria Description | Manner in which compliance will be achieved | Responsibility for implementation | Timing of implementation |
|---|---|---|---|---|---|
| Water Conservation | WC1 | For residential dwellings consumption target of 60 kL/person/year scheme water. | Provide advice to Precinct A and Precinct D residents on water conservation measures | Proponent | Point of sale |
| | | | RWTs can be utilised for non-potable uses | Lot owner | Post-house construction |
| | | | Promotion and use of WWG in lots within Precinct D and other open spaces across all precincts | Proponent/Lot owner | Point of sale/Post-house construction |
| | | | Promotion and use of water efficient appliances within Precinct A and Precinct D | Proponent/Lot owner | Point of sale/Post-house construction |
| | | | Mandate water efficient fittings within Precinct A and Precinct D | CoB | Building approval |
| | WC2 | Ensure the efficient use of all water resources. | Use of waterwise landscaping principles in all open spaces and verges | Proponent | Landscape design |
| | | | Open spaces designed to use no more than allocated groundwater | | |
| | | | Minimise water requirements for open spaces and verge maintenance | | |
| | | | Use of water efficient appliances within Precinct A and Precinct D | Lot owner | Post-house construction |
| | | | Use of WWG principles within Precinct A and Precinct D | | |
| | WC3 | Non-potable irrigation water to be sourced from existing groundwater licences held over the area. | The proponent holds a groundwater Licence with an allocation of 347,000 kL per annum which will meet the irrigation requirements of the racecourse. | Proponent | Landscape design |

Attachment 12.1.2 Local Water Management Strategy



*Table E1: Water management criteria and compliance summary (Continued)*

| Management Aspect | Criteria Number | Criteria Description | Manner in which compliance will be achieved | Responsibility for implementation | Timing of implementation |
|---|---|---|---|---|---|
| Stormwater Management | SW1 | Retain and treat the first 15 mm of rainfall as close to source as possible | Lots within Precinct D and Precinct E to retain the first 15 mm of rainfall on lot in soakwells/soakage. Lot storage will be the responsibility of the lot owners. | Lot owner/developer | Construction |
| | SW2 | Retain up to 1% AEP rainfall event on-site. | Runoff up to the 1% AEP to be detained within the FSA in Precinct A. Precinct A and a portion of Precinct C will ultimately discharge to the centre of the track. | Proponent | Construction |
| | | | Runoff up to 1% AEP to be managed with the sub-surface storage in Precinct D. | Proponent | Construction |
| | SW3 | Post-development critical 1% AEP peak flows leaving the site to mimic pre-development peak flows. | Runoff up to 1% AEP event to be detained in the detention basin and subsurface storage which will maintain the pre-development peak flow of 0.95 $m^3/s$ from Precinct E and 0.463 $m^3/s$ from Precinct D respectively. | Proponent | Construction |
| | SW4 | Finished floor levels must have a minimum of 300 mm clearance above the 1% AEP TWL in the FSA. | It is anticipated that the FSA and detention basin invert will be set so that the Finished floor levels must have a minimum of 300 mm clearance above the 1% AEP TWL in the basins. | Proponent | Detailed drainage design |
| | SW5 | All lots must have a minimum of 500 mm clearance above the 1% AEP flood level in the Swan River. | The 1% AEP flood level in the Swan River is 2.8 mAHD. The preliminary bulk earthworks concept provided in shows that finished floor level will be at 4.0 mAHD. | Proponent | Detailed drainage design |
| | SW6 | Nutrient concentrations within surface water discharging from the site to the Swan River are to meet regional water quality targets. | BRA will be designed so that after treatment the nutrient concentrations within surface water meet the regional water quality target. | Proponent | Detailed drainage design |
| | SW7 | Reduce nutrient loads by applying appropriate non-structural measures | • Minimise use of fertilisers within POS and road verges.<br>• Street sweeping at regular intervals.<br>• Use of drought tolerant turf species.<br>• Education of residents regarding fertiliser use | Landscape/Maintenance Contactor/Proponent | Landscape Implementation/ Point of Sale |
| | SW8 | Design infiltration areas to avoid creating mosquito habitat | Stormwater infrastructure will be designed to ensure all runoff is infiltrated within 96 hours. | Proponent | Detailed drainage design |

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*Table E1: Water management criteria and compliance summary (Continued)*

| Management Aspect | Criteria Number | Criteria Description | Manner in which compliance will be achieved | Responsibility for implementation | Timing of implementation |
|---|---|---|---|---|---|
| Groundwater Management | GW1 | Surface based infiltration should have 300 mm clearance above MGL. | Basin inverts will be set at 300 mm above the MGL, and subsoil drainage will be provided in the POS. | Proponent | Detailed drainage design |
| | GW2 | Finished floor levels should have a clearance to the MGL of at least 1.2 m. | Lots will be set at least 1.2 m above the MGL. | Proponent | Detailed drainage design |

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# Appendices

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Concept plan

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Central Belmont Main Drain Water Corporation

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# Local Water Management Strategy

**Ascot Racecourse Local Structure Plan**

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## Abbreviation Tables

*Table A1: Abbreviations – Organisations*

| Organisations | |
|---|---|
| ANZECC | Australian and New Zealand Environment and Conservation Council |
| BoM | Bureau of Meteorology |
| DBCA | Department of Biodiversity, Conservation and Attractions |
| DWER | Department of Water and Environmental Regulation |
| EPA | Environmental Protection Authority |
| CoB | City of Belmont |
| WC | Water Corporation of Western Australia (Water Corp) |

*Table A2: Abbreviations – General terms*

| General terms | |
|---|---|
| AEP | Annual exceedance probability |
| ASS | Acid sulfate soils |
| CCW | Conservation category wetland |
| CEMP | Construction Environmental Management Plan |
| DCA | Development Control Area |
| DMP | Drainage management plan |
| EC | Electrical conductivity |
| FMP | Foreshore management plan |
| LWMS | Local Water Management Strategy |
| MGL | Maximum groundwater level |
| MRS | Metropolitan Region Scheme |
| NWQMS | National Water Quality Management Strategy |
| POS | Public open space |
| SCWQIP | Swan and Canning Water Quality Improvement Plan |
| SRA | Swan River Alluvium |
| TDS | Total dissolved solids |
| TEC | Threatened ecological community |
| TKN | Total Kjeldahl nitrogen |
| TN | Total nitrogen |
| TP | Total phosphorus |
| TSS | Total suspended solids |

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| General terms | |
|---|---|
| TWL | Top water level |
| UFI | Unique feature identifier |
| UWMP | Urban Water Management Plan |
| WSUD | Water sensitive urban design |
| WWG | Water wise gardening |

*Table A3: Abbreviations – units of measurement*

| Units of measurement | |
|---|---|
| cm | centimetre |
| ha | hectare |
| m | metre |
| $m^2$ | square metre |
| $m^3$ | cubic metre |
| $m^3$ / s | cubic metres per second |
| mAHD | metres in relation to the Australian height datum |
| mBGL | metres below ground level |
| mm | millimetre |
| mS / cm | millisiemens per centimetre |
| µg/L | micrograms per litre |
| mg / L | milligrams per litre |

*Table A4: Terminology – design rainfall*

| Rainfall event | Annual exceedance probability (AEP) | Approximate equivalent average recurrence interval (ARI) |
|---|---|---|
| Small | 1 exceedance year (EY) event (frequent) | 1 in 1 year ARI event |
| Minor (residential purposes) | 20% AEP event | 1 in 5 year ARI event |
| Minor (commercial purposes) | 10% AEP event | 1 in 10 year ARI event |
| Major | 1% AEP event | 1 in 100 year ARI event |

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# 1 Introduction

## 1.1 Background

Perth Racing (the 'proponent') proposes to progress a local structure plan (LSP) over its landholdings in Ascot. The area is bounded by the Swan River to the North, Grandstand Road to the west and south, Matheson Road and Resolution Drive to the south and residential areas to the east, referred to herein as 'the site'. The structure plan area also includes the existing Ascot Racecourse and Perth Racing Administration lot/building on Grandstand Road. The site is located approximately 8.5 km east of Perth central business district (CBD) and is approximately 62 ha in size, within City of Belmont (CoB). The LSP consists of six precincts: Precinct A, Precinct B, Precinct C, Precinct D, Precinct E, and the racecourse. The layout of LSP and precinct plan is shown on **Figure 1** and provided in **Appendix A**.

## 1.2 Town planning context

The site is currently zoned "Urban", "Parks and Recreation", and "Private Recreation" under the Metropolitan Regional Scheme (MRS) (WAPC 2023b). Under the Local Planning Scheme (LPS) No. 15 (WAPC 2023a), the site is zoned as "RC – Place of Public Assembly: Racecourse", Mixed Use", "Parks and Recreation" and "Parks and Recreation: Water Supply Sewerage and Drainage".

## 1.3 Purpose of this report

This Local Water Management Strategy (LWMS) outlines the water management approach as required for the site by *Better Urban Water Management* (WAPC 2008b) and supports the Ascot Racecourse Structure Plan. It is intended to satisfy the expectations of the Department of Water and Environmental Regulation (DWER) and CoB. The LWMS also aids in achieving the goals and objectives outlined in the *Kep Katitjin – Gabi Kaadadjan – Waterwise Perth Action Plan 2* (DWER 2023d).

## 1.4 Policy Framework

There are a number of State Government legislation and policies of relevance to the site. These policies include:

- *Kep Katitjin – Gabi Kaadadjan – Waterwise Perth Action Plan 2* (DWER 2023d)
- *Swan and Canning Rivers Management Act 2006* (Government of WA 2006)
- *Policy 49 – Planning for stormwater management affecting the Swan Canning Development Control Area* (DPaW 2016)
- *Local Planning Scheme No. 15 (City of Belmont)* (WAPC 2023a)
- *State Water Plan* (Government of WA 2007)
- *Draft State Planning Policy 2.9: Planning for Water Guidelines* (DPLH 2021)
- *State Planning Policy 2.10 Swan Canning River System* (WAPC 2006b)
- *Guidance Statement No. 33: Environmental Guidance for Planning and Development* (EPA 2008)
- *Liveable Neighbourhoods* (WAPC 2009a)
- *Planning Bulletin No. 64: Acid Sulfate Soils* (WAPC 2009b)

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In addition to the above policies, there are a number of published guidelines and standards available that provide direction regarding the water management characteristics that urban developments should aim to achieve. These are key inputs that relate either directly or indirectly to the site and include:

- *Better Urban Water Management* (WAPC 2008b)
- *Urban Water Management Plans: Guidelines for Preparing Plans and for Complying with Subdivision Conditions* (DoW 2008)
- *National Water Quality Management Strategy (NWQMS)* (ANZECC 2000)
- *Australian Runoff Quality* (Wong et al. 2006)
- *National Water Quality Management Strategy* (ANZECC 2000)
- *Stormwater Management Manual for Western Australia* (DoW 2007)
- *Decision Process for Stormwater Management in Western Australia* (DWER 2017)
- *Australian Rainfall and Runoff* (Ball J et al. 2019)
- *Swan and Canning Water Quality Improvement Plan* (SCWQIP) (SWT 2009)
- *Swan and Canning Rivers Foreshore Assessment and Management Strategy* (SRT 2008)
- *Golden Gateway Structure Plan* (CoB 2019).

## 1.5 Previous Studies

### 1.5.1 Golden Gateway Local Water Management Strategy

The draft Golden Gateway LWMS (Essential Environmental 2018b) was prepared to support the Golden Gateway Structure Plan (CoB 2019) by Essential Environmental. The LWMS was prepared in consideration of *Better Urban Water Management* (WAPC 2008b) and *State Planning Policy 2.9: Water Resources* (WAPC 2006a). The key objectives and design criteria of the draft LWMS (Essential Environmental 2018b) included:

**Water Conservation:**

- Ensure the efficient use of all water resources in the redeveloped urban form and aim to achieve highest value use of fit-for-purpose water.
- Maintain opportunities for future generations by using water more efficiently.

**Stormwater management:**

- The first 15 mm of rainfall is to be retained within all lots through a combination of raingardens, water tanks and soakwell systems.
- Raingardens and tree-pits are to be installed in all new or upgraded streets to provide infiltration of the first 15 mm of rainfall.
- Minor event runoff from events larger than 15mm total depth are to be managed in accordance with serviceability requirements of the City of Belmont.
- Roads and public open spaces are to be designed to cater for the surface overflow for more severe storm events with habitable floors at least 0.3 m above the 1% AEP flood or storage level at any location.
- Habitable floors are to be constructed at least 0.5m above the 1% AEP flood level in the Swan River adjacent to the development area.

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- Water quality treatment systems and stormwater management structures should be designed in accordance with the *Stormwater Management Manual for Western Australia* (DoW 2007) and *Australian Runoff Quality: A guide to water sensitive urban design* (Wong et al. 2006).

**Groundwater management:**

- Groundwater management systems are to be designed as free discharging under normal operating conditions.
- Flows from groundwater management systems are to be treated prior to discharge.

## 1.6 LWMS objectives

Whilst the criteria proposed in the Golden Gateway LWMS are relevant to some parts of the Ascot Racecourse structure plan area, it is not representative of all areas and site characteristics and therefore only partially applicable. This LWMS supports the Ascot Racecourse Structure Plan, which proposes an alternate layout (to the Golden Gateway Structure Plan) to some of the land uses surrounding the Ascot Racecourse. The design criteria and objectives proposed in this LWMS are generally based on those proposed in the Golden Gateway LWMS, though with additional consideration for site and Precinct- specific characteristics. This LWMS adopts the following major objectives:

- Protect water quality in the Swan River by providing appropriate water quality treatment at source.
- Mitigate potential flooding within the Structure Plan area and immediate surrounds.
- Take account of existing drainage infrastructure capacity and ensure that sufficient land is set aside to manage stormwater.
- Provide a broad level stormwater management framework to support future urban development.
- Incorporate appropriate best management practices (BMPs) into the drainage systems that address the environmental and stormwater management issues identified.
- Minimise development construction costs, which will result in reduced land costs for future home owners.
- Minimise transport of nutrients/pollutants to groundwater.
- Develop a non-potable water conservation strategy that will accommodate existing groundwater allocation constraints for the area.
- Gain support from DWER, DBCA, CoB and Water Corporation for the proposed method to manage stormwater within the site.

Detailed objectives for water management within the site are further discussed in **Section 4**.

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# 2 Proposed Development

A total of approximately 62.0 ha is proposed to be developed as shown on **Figure 1**. The Ascot Racecourse Structure Plan proposes six precincts with different objectives and character, and these include:

- **Precinct A –** Approximately 3.0 ha for retirement living/village and mixed use purposes
- **Precinct B –** Approximately 9.3 ha for the use of public assembly (i.e. entertainment/office purposes)
- **Precinct C –** Approximately 8.0 ha for the use of public assembly (i.e. racecourse/stabling purposes)
- **Precinct D –** Approximately 1.5 ha for residential/childcare purposes
- **Precinct E –** Approximately 4.2 ha for mixed use (i.e. commercial/retail purposes)
- **The Racecourse –** Approximately 36.0 ha of retained 'Place of Public Assembly: Racecourse' uses.

The proposed land uses surrounding Ascot Racecourse will be integrated into the Racecourse Precinct. Management of surface and groundwater will take a water sensitive urban design (WSUD) approach that will integrate the management of water within the Precincts with the Racecourse and immediately surrounding infrastructure.

The WSUD measures that will be adopted within the Structure Plan area will include:

- Bio-retention areas (BRAs) to meet water quality treatment requirements
- Subsurface infiltration cells that will facilitate at-source infiltration
- Flood storage integrated into existing surface water bodies located centrally within the Racecourse
- Flood storage areas (FSAs) to provide flood detention, retention and infiltration as close to source as possible.

The WSUD approaches are further discussed in **Section 6**.The detailed concept plan and preliminary civil drawings are provided in **Appendix A** and **Appendix C**.

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# 3 Pre-development Environment

## 3.1 Sources of information

The following sources of information were used to provide a broad regional environmental context for the site:

- *Geological Survey of Western Australia* (Gozzard 2007)
- *Map Viewer Plus* (Landgate 2023)
- *Water Register* (DWER 2024c)
- *Perth Groundwater Map* (DWER 2024a)
- *Weather and Climate Statistics Data* (BoM 2024)
- *Acid Sulfate Soil Mapping* (DWER 2023a)
- *Water Information Reporting* (DWER 2024b).

In addition to the above information, site-specific investigations have been conducted. These have aimed at providing more detail to the existing regional information. These site-specific investigations and information have been available from the following sources:

- *Draft Golden Gateway Structure Plan* (CoB 2019)
- *Draft Golden Gateway LWMS* (Essential Environmental 2018b)
- *Draft Golden Gateway Environmental Report* (Essential Environmental 2018a)
- *Draft Infrastructure Assessment Report : Golden Gateway Precinct* (Cardno 2017)
- *Swan and Canning Water Quality Improvement Plan* (SCWQIP) (SWT 2009)
- *Swan and Canning Rivers Foreshore Assessment and Management Strategy* (SRT 2008).

## 3.2 Land use context

The site has been used as the Ascot Racecourse since 1892 (Landgate 2023). The northeast portion of the site is being used for horse racing and training purposes and the surrounding area is being used for stabling, training and entertainment venues which support the above purposes. Some portions of the site are predominantly cleared (e.g. Precinct A, Precinct E) and are occasionally used for parking or other temporary uses. The Precinct D area is used for commercial purposes, being the current Perth Racing administration building.

## 3.3 Climate

The site experiences a dry Mediterranean climate of hot dry summers and cool wet winters and is located in an area of moderate to high rainfall, receiving 756.3 mm on average annually with the majority of rainfall received between June and August (BoM 2024). The region experiences rainfall for 84.8 days annually (on average).

## 3.4 Topography

The site is mostly flat with a slight downward slope from east to north and northwest, with a few low points. The variance in topography of the Precincts is described further as:

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- The Racecourse slopes from Precinct C towards the Swan River with topography approximately 7 m Australian Height Datum (mAHD) to 1m AHD and from 7 mAHD (east) to 3 mAHD (west). There are a few local depressions (i.e., lakes and swale) observed within the centre of the racecourse.
- Precinct A has a generally flat topography of 2 mAHD with a high point of 3 mAHD to the west adjacent to Grandstand Road.
- Precinct B slopes from south to north (4 mAHD to 2 mAHD) and from west to east (3 mAHD to 2 mAHD). Precinct D and E are generally flat with a topography of 3 mAHD and 2 mAHD respectively.
- Parts of Precinct C (existing stables and buildings) drain towards the Racecourse, however most of Precinct C is currently carpark that drains towards Precinct E and the Southern Main Drain.
- Precinct D is generally flat with a topographic level 3 mAHD.
- Precinct E has a gentle slope from east to west. The topography of the precinct ranges from 4 mAHD to the east to 2 mAHD to the west.

The topographic contours of the site are shown on **Figure 2**.

## 3.5 Geotechnical conditions

### 3.5.1 Geology and soils

*The Perth Metropolitan Region 1:50,000 Environmental Geology Series* (Gozzard 1986) *and Sea to scarp - geology, landscape, and land use planning in the southern Swan Coastal Plain* (Gozzard 2011) describes that the site lies in the Swan River Terraces system, being underlain by the Guildford formation of alluvial and leached yellow sand. The regional geological mapping indicates that the site soils include:

- **Ms2 –** Sandy Silt: Strong brown to mid grey, mottled, blocky, fine sand, hard when dry, variable clay content of alluvial origin
- **Ms4 –** Sandy Silt: light yellow brown, blocky, mottled some fine to medium sand, soft when moist, variable clay content
- **S8 –** Sand: very light grey at surface, yellow at depth, fine to medium-grained, sub rounded quartz, moderately well sorted of eolian origin

The regional geological mapping is shown on **Figure 3**.

### 3.5.2 Precinct A geotechnical investigation

A detailed geological investigation has been carried out in January 2024 (Douglas Partners 2024) for Precinct A (see **Appendix B**). This investigation generally confirms the regional geological mapping, and the ground conditions of Precinct A are described as:

- Uncontrolled Fill
  - Granular FILL - SAND, Organic SAND, Gravelly SAND, Silty SAND and Sandy GRAVEL
  - Cohesive FILL - Clayey SAND, Sandy CLAY, CLAY
- Overlying natural soils includes
  - Clayey soils including Clayey SAND and CLAY
  - Sandy soils including SAND and Silty SAND

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Douglas Partners (2024) concluded that if unmodified, Precinct A is considered unsuitable for on-site stormwater disposal due to the low permeability soils and shallow groundwater depth. To meet geotechnical requirements, stormwater should be managed by connecting to a suitable outflow (Douglas Partners 2024).

### 3.5.3 Precinct D geotechnical investigation

Galt has undertaken a geotechnical study in March 2024 (Galt 2024) for Precinct D (provided in **Appendix B**) and has described the Precinct D ground conditions as:

- **Surficial Topsoil** (in landscaped areas) up to 0.3 m thick and **Hardstand Fill Layers** (in carparks and access ways); overlying
- **FILL: SAND / SAND (SP)**, fine to medium grained, sub-rounded to sub-angular, yellow / brown / grey layers, includes trace gravel / Sandy GRAVEL layers, trace / with fines, some typically medium dense to dense, extending to depths of about 0.4 m to 0.9 m; overlying
- **In BH03 and BH04 only: Silty SAND / Clayey SAND (SM/SC)** fine to medium grained, sub-rounded to sub-angular, brown / grey, low to medium plasticity fines, some typically medium dense to dense, extending to depths of about 0.7 m to 1.2 m; overlying
- **Sandy CLAY / CLAY (CI)**, medium plasticity, brown / orange / grey, trace sand to sandy, trace gravel in some zones, desiccated, CPT traces indicate presence of occasional sand layers, typically very stiff to hard, extending to the maximum depth investigated of 10 m.

Whilst detailed geotechnical investigations have not been undertaken in each Precinct, it is expected that the soils encountered will be generally consistent with regional geological mapping and the investigations undertaken for Precincts A and D and will consist of generally shallow layers of sand overlying sandy clay of the Guildford formation. Such soils are unlikely to be suitable for onsite infiltration of all stormwater and onsite detention unless modified and stormwater management will need to be supplied with an outlet so that flood storage areas have a way to drain between storm events.

### 3.5.4 Acid sulfate soils

The acid sulfate soil (ASS) risk mapping (DWER 2023b) indicates that most of the site is considered to have a high to moderate risk of ASS occurring within the 3 m of the natural surface. Some portions of Precinct B, Precinct C and the Racecourse are mapped to have a moderate to low risk of ASS occurring within the 3 m of the natural surface.

The ASS risk mapping is shown on **Figure 4**.

## 3.6 Environmental assets

### 3.6.1 Environmentally sensitive area

The northern portion of the site (along the Swan River) is identified as an environmentally sensitive area (ESA). ESAs are shown on **Figure 5**.

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#### 3.6.2 Sewerage sensitive area

The entirety of the site is classified as a sewage sensitive area (SSA) by the *Government Sewerage Policy* (DPLH 2019). The two classifications of relevance to the site define a SSA as:

- a) Estuary catchments on the Swan and Scott Coastal Plains.
- f) The area is <1 km up-groundwater-gradient and 250 m down-gradient of a significant wetland; or where the groundwater gradient is unknown within 1 km of the significant wetland.

#### 3.6.3 Geomorphic wetlands

The *Geomorphic Wetlands of the Swan Coastal Plain* dataset indicates the following wetlands within the site:

- Multiple Use Category Wetland (MUW) area (UFI 8424, UFI 8425, UFI 8426).
- Resource Enhancement Wetland (REW) area (UFI 8423)

The Swan River, situated immediately adjacent to the northern boundary of the site, is recognised as a "Conservation Category Wetland" (CCW) (UFI 1316 - Estuary waterbody) within the *Geomorphic Wetlands of the Swan Coastal Plain* dataset and has additional significant ecological, cultural and heritage values (DEC 2011).

The location of the geomorphic wetlands is shown on **Figure 5.**

### 3.7 Hydrology

#### 3.7.1 Surface water

##### 3.7.1.1 Water Resources

The dominant hydrological feature of the site is the Swan River estuary. The estuary is subject to marked seasonality, which controls the salinity of the site, and particularly the foreshore area. This seasonality is a result of the short winter rainfall patterns, a small tidal range and the landform of the estuary (Hodgkin and John 1986).

The northern boundary of the site falls within the Swan Canning Development Control Area (DCA) (CoB 2018) and Swan Canning River Park (shown on **Figure 6**). Any proposed development on land adjacent river within the DCA and/or partly within DCA are subject to assessed and approved by the Department of Biodiversity, Conservation and Attraction (DBCA) under Part 5 of the *Swan and Canning Rivers Management Act 2006* and the *Swan and Canning River Management Regulations 2007* (CoB 2018).

Water management strategies will be needed to ensure protection (i.e. water quality improvement) of the Swan River. The catchments of the Swan Canning River system are the subject of the Swan Canning Water Quality Improvement Plan (SRT 2009) which contains catchment management measures and control actions.

The major event flood levels in the Swan River have been documented in recent studies undertaken on behalf of DWER (DWER 2023c).These flood levels, along with the extent of floodway/floodplain

are shown in the DWER online floodplain mapping tool. This tool indicates that the anticipated 1% AEP flood level adjacent to the site is 2.8 mAHD – noting that this level includes consideration for future climate change. The extent of floodway/floodplain from the Swan River adjacent to the site is shown on **Figure 6**.

#### 3.7.1.2 Lakes

There are three lakes within the racecourse including:

- **Irrigation lake** – located adjacent to the Production Bore 1 (PB01) and has a volume of 6,000 $m^3$ to 7,000 $m^3$. Water is pumped out from PB01 into the lake, and irrigation water is drawn from the Irrigation Lake. During winter the Irrigation Lake overflows into the adjacent Lined Lake. The current irrigation demand for the Racecourse is approximately 3,000 $m^3$/day, there is no shortage of irrigation water supply as the lake has sufficient storage capacity. The top water level (TWL) of the Irrigation Lake is approximately 3.1 mAHD.
- **Lined Lake** – this Lake is sealed with a natural clay liner and fed via a 225 mm overflow pipe from the Irrigation Lake. The Lined Lake overflows into the Wetland Lake. The elevation of the Lined Lake is approximately 2.1 mAHD.
- **Wetland lake** – is the largest of the three lakes and has approximately 2.6 ha of surface area. The Wetland Lake has a TWL of approximately 0.4 mAHD. Two overflow pipes at the northern end of the Wetland Lake allow excess water within the Lake to flow to the Swan River.

Peak water levels within the Lined Lake and Wetland Lake were predicted for a 10% AEP storm event (Evangelisti & Associates 1997). The peak water level for was 2.68 mAHD in the Lined Lake which then discharged to the Wetland Lake. The Wetland Lake discharged to the Swan River after reaching the peak water level of 0.53 mAHD. The lakes are connected by 450 mm RCP pipes. The outfall into the Swan River is directed via two pipes (450 mm RCP and 375 mm RCP). The pipes are fitted with headwall and tidal control gate to mitigate inundation from the Swan River (Evangelisti & Associates 1997).

The location of the lakes and overflow pipes are shown on **Figure 6**.

#### 3.7.1.3 Drainage network systems

The Central Belmont Main Drain (CBMD) is managed by the Water Corporation and is the regional drainage system and has a catchment area of 189 ha and which discharges into the Swan River. Catchment plans for the CBMD indicate that inflow from the site occurs in the southwestern corner of Precinct E, where an open drain connects to the CBMD at node CAN008 as shown in **Appendix E** and **Figure 6**.

The CoB has a local drainage piped network located beneath Hardey Road adjacent to Precinct C and which discharges to the CBMD within Precinct E. A larger local CoB network extends along Matheson Road to the East. This is currently connected to the 900 mm pipe that discharges northwards to the lined lake within the centre of the racecourse.

CoB local drainage pipes also exist beneath Grandstand Road adjacent to Precinct A however there is no current connection between Precinct A and the local drainage network. The same network also extends past/adjacent to Precinct D along the northern end of Resolution Drive, however there is no

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current connection from Precinct D to the local pipe network. The pipe network along Resolution Drive includes a 450 mm and 525 mm pipe which are understood to discharges into the CBMD. Whilst the CoB catchment has not been modelled to determine peak flows under differing storm durations, an estimate can be made based on the capacity of the pipes which discharge to the CBMD. The combined capacity of the two existing pipes is estimated to be 0.62 $m^3/s$, and therefore the allowable discharge from Precinct C and Precinct E is estimated to be 0.33 $m^3/s$.

Within the Racecourse an existing swale is being used around the racecourse to convey water from the track into the central Wetland Lake.

The location of the swales within the Racetrack Precinct and outlet to Swan River from the Wetland Lake is shown on **Figure 6**.

### 3.7.2 Groundwater

#### 3.7.2.1 Groundwater Resource

The groundwater beneath the site is a multi-layered system comprised of the following:

**City of Bayswater – Perth Superficial Swan unconfined aquifer**. The Superficial Aquifer is approximately 20 m thick under the Ascot Racecourse, with the base of the aquifer under the racecourse at approximately - 20 mAHD (Davidson, 1995). The aquifer is recharged directly by rainfall and from the Swan River.

**King Park Aquifer**. The Kings Park Aquifer is 155 m thick starting from - 20 mAHD and is recharged laterally from the adjacent northern Mirrabooka Aquifer and Superficial Aquifer. The Kings Park Aquifer comprises 2 members: the Mullaloo Sandstone and Como Sandstone. Only the Mullaloo Sandstone member is present at the Ascot site (Davidson, 1995). The Mullaloo Sandstone member is underlain by the Kardinya Shale confining bed of the Osborne Formation.

The groundwater salinity in the aquifer in 1995 was mapped as 500 mg/L to 1,000 mg/L TDS (Davidson, 1995). However, data in recent years indicates the aquifer salinity levels are increasing due to saltwater intrusion.

**Perth South – Perth Leederville** confined aquifer is below -160 mAHD and is approximately 370 m thick. In the Ascot area the Leederville Aquifer is confined but further to the south and north of Perth it is hydraulically connected to the Superficial Aquifer. The Leederville Aquifer comprises of four formations under the Ascot Racecourse, namely Henley Sandstone, Pinjar Member, Wanneroo Member and the Mariginiup Member.

Groundwater flow is generally westwards through the Leederville Aquifer. Lateral discharge can occur to the Kings Park Aquifer but depends on levels of abstraction in the Leederville Aquifer adjacent to the discharge area.

Generally, groundwater salinity in the Leederville Aquifer can be divided into an upper and a lower zone. The upper zone is generally fresh with salinity ranging from 250 to 1,000 mg/L. Salinity in the lower zone (below -400 mAHD) ranges from 1,000 mg/L to greater than 3,000 mg/L.

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Groundwater is abstracted from an artesian production bore (PB1) assigned to the Leederville Aquifer to meet the irrigation demand of the Racecourse and surrounds. The bore is located adjacent the Irrigation Lake at the south corner of the Ascot Racecourse track. The bore is screen in the upper Leederville Formation which extends between -160 mAHD and -400 mAHD.

The allocation status of aquifers is further discussed in **Section 5.1.2**.

### 3.7.2.2 Groundwater levels

Perth Groundwater Map indicates (DWER 2023e) that the regional groundwater level sits at 0.5 m AHD across the site. Therefore, the groundwater clearance from southeast to northwest of the site ranges from 6.5 m to 0.5 m.

There are two groundwater level and quality monitoring bores (Bore1 and Bore2) and one production bore (PB1) within the Racecourse (see **Figure 2**) which are monitored by Perth Racing. Groundwater levels in these are monitored monthly.

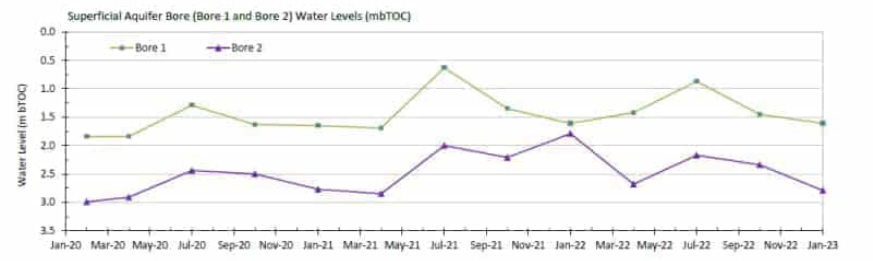



*Plate 1: Groundwater levels within the Superficial Aquifer at Bore1 and Bore2 (JDA 2023)*

**Plate 1** depicts the groundwater levels observed within the Racecourse which clearly indicates the rise and fall of groundwater levels seasonally. The peak groundwater level at Bore 1 and Bore 2 were recorded 1.26 m AHD and 1.70 m AHD respectively, during August 2022.

Monitoring has recently been undertaken within Precinct A. Six monitoring wells were installed for the Precinct A geotechnical investigation. The groundwater depth below the surface of the Precinct A (during January 2024) varied from 1.09 m below ground level (mBGL) to 2.37 mBGL (Douglas Partners 2024).

Monitoring has also recently been undertaken within Precinct D by Galt Geotechnics during the geotechnical investigation. The highest groundwater level beneath Precinct D is reported as 3.03 mBGL during February 2024 (Galt 2024).The various monitoring data/sources have been collated to prepare estimated maximum groundwater contours beneath the site. These have also considered the surface elevation of swales adjacent to the racetrack and the reported TWL of the Wetland Lake. The regional groundwater levels are shown in **Figure 2,** with spot heights recorded at the various locations also provided. It is noted that these do not necessarily represent the annual maximum groundwater levels at all parts of the site given the various timing of measurement of groundwater. Notwithstanding the variability of timing, it is likely that the management of stormwater (and in

particular infiltration) will more likely be influenced by localised soil conditions than seasonal peak groundwater levels in the superficial aquifer.

#### 3.7.2.3 Groundwater quality

Water quality monitoring was conducted monthly at PB1 and quarterly at Bore1 (JDA 2023). Water quality parameters those were analysed during the monitoring period include:

**Monitoring Bore (Bore1)**

- EC
- pH
- TDS
- Total phosphorus (TP)
- Filterable Reactive Phosphorus or Phosphorus in Orthophosphate ($PO_4$-P)
- Total Nitrogen (TN)
- Nitrogen in Total Oxidised Nitrogen ($NO_x$-N)
- Nitrogen in Ammonia ($NH_3$-N)
- Total Kjeldahl Nitrogen (TKN)

**Production Bore (PB1)**

- Electrical conductivity (EC)
- pH
- Total Dissolved Solids (TDS)

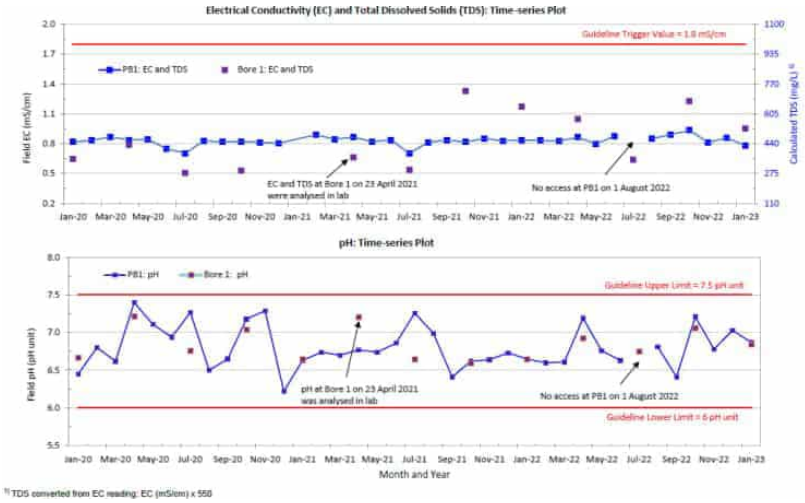



*Plate 2: Water Quality (EC, TDS and pH) Monitoring results* (JDA 2023)

**Plate 2** and **Plate 3** illustrate the water quality of the groundwater within the site is generally consistent over the monitoring periods with typically low variance in parameters tested. EC, TDS and

pH values did not display any exceedances of the trigger values. However, TN and TP regularly exceeded the ANZECC guideline trigger value of 1.2 mg/L and 0.065 mg/L (respectively). It is also noted a large exceedance in TN occurred in August 2022 however this does not appear to be representative of long-term values.




*Plate 3: Water Quality (TN and TP) Monitoring results (JDS 2023)*

## 3.8 Summary of existing environment

In summary, the environmental investigations conducted to date indicate that:

- The site is being used for horse racing, mixed uses (i.e. car park, stables and entertainment/hospitality venues, and commercial). Some portions of the site are only used infrequently (e.g. for parking or events).
- The site is located in an area of moderate to high rainfall, receiving 756.3 mm on average annually with the majority of rainfall received between June and August.
- The majority of the site has a relatively flat topography of 1 mAHD at the northwest (along the Swan River) and 2 mAHD to the south and rising to 7 mAHD to the east of the site.
- The site is within the Swan River Terraces system and displays Guildford formation soils of alluvial and leached yellow sand described as:
  - **Ms2 –** Sandy Silt: Strong brown to mid grey, mottled, blocky, fine sand, hard when dry, variable clay content of alluvial origin
  - **Ms4 –** Sandy Silt: light yellow brown, blocky, mottled some fine to medium sand, soft when moist, variable clay content
  - **S8 –** Sand: very light grey at surface, yellow at depth, fine to medium-grained, sub rounded quartz, moderately well sorted of eolian origin
- The groundwater depth below the surface of Precinct A varies from 1.09 m mBGL to 2.37 mBGL (Douglas Partners 2024).

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- The highest groundwater level beneath Precinct D is reported 3.03 mBGL during February 2024 (Galt 2024).
- Most of the site is considered to have a high to moderate risk of ASS occurring, however some portions of Precinct B, Precinct C and the Racecourse are considered to have a moderate to low risk of ASS occurring within the 3 m of the natural surface.
- The northern portion of the site along the Swan River is identified as an ESA.
- The entirety of the site is classified as a SSA and classified as:
  - a) Estuary catchments on the Swan and Scott Coastal Plains.
  - f) The area is <1 km up-groundwater-gradient and 250 m down-gradient of a significant wetland; or where the groundwater gradient is unknown within 1 km of the significant wetland.
- The following wetlands are located within the site and these are classified as:
  - Multiple Use category wetland (MUW) area (UFI 8424, UFI 8425, UFI 8426).
  - Resource Enhancement wetland (REW) area (UFI 8423).
- The dominant hydrological feature of the site is the Swan River estuary. The northern boundary of the site falls within the Swan Canning Development Control Area (DCA) (CoB 2018) and Swan Canning River Park.
- The floodway of the Swan River is immediately adjacent to but not within the site. The 1% AEP flood elevation of the Swan River adjacent to the site is 2.8 mAHD.
- There are two existing major drainage network systems within or adjacent to the site include:
  - The CBMD, managed by the Water Corporation. This currently receives runoff from Precinct C (via the CoB drainage network) and Precinct E.
  - The CoB local piped drainage network, which exists along Mathieson Road, Grandstand Road and the northern portion of Resolution Drive.
- There are three lakes (Irrigation Lake, Lined Lake and Wetland Lake) located within the centre of the Racecourse. These are understood to receive runoff from the grandstand buildings in Precinct B and stables/buildings in Precinct C.
- Allowable discharge to the CBMD from the local drainage network is 0.95 $m^3/s$ based on Water Corporation modelling.
- The groundwater beneath the site is a multi-layered system consisting of the Superficial, Kings Park Formation, Leederville and Yarragadee aquifers.
- Regional groundwater mapping indicates that the groundwater levels across the site are at approximately 0.5 m AHD.
- Local groundwater level monitoring indicates that annual maximum groundwater levels (recorded in August 2022) were measured at 1.26 m AHD and 1.70 m AHD at Bore 1 and Bore 2 respectively. Groundwater levels in adjacent areas included Precinct A levels at 1.09 mBGL to 2.37 mBGL and Precinct D levels of approximately 3.03 mBGL.
- Water quality monitoring indicates that EC, TDS and pH values do not exceed guideline trigger values. However, TN and TP concentrations continually exceed the ANZECC guideline trigger value of 1.2 mg/L and 0.065 mg/L respectively.

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# 4 Design Criteria and Objectives

This section outlines the objectives and design criteria that this LWMS and future management plans must achieve. The water management strategy includes water conservation, groundwater management and stormwater management.

## 4.1 Integrated water cycle management

*Better Urban Water Management* (WAPC 2008a) endorses the promotion of integrated water cycle management and application of WSUD principles to provide improvements in the management of stormwater, and to increase the efficient use of other existing water supplies.

The key principles of integrated water cycle management include:

- Considering all water sources, including wastewater, stormwater and groundwater
- Integrating water and land use planning
- Allocating and using water sustainably and equitably
- Integrating water use with natural water processes
- Adopting a whole catchment integration of natural resource use and management.

Integrated water cycle management addresses not only physical and environmental aspects of water resource use and planning, but also integrates other social and economic concerns. Water management design objectives should therefore seek to deliver better outcomes in terms of:

- Potable water consumption
- Stormwater quality management
- Groundwater management.

The first step in applying integrated water cycle management in urban catchments is to establish agreed environmental values for receiving environments. The existing environmental context of the site has been discussed in **Section 3** of this document. Guidance regarding environmental values and criteria is provided by a number of national and state policies/guidelines and site-specific studies undertaken in and around the site. These were detailed in **Section 1.4** and **Section 1.5** respectively.

## 4.2 Water conservation

This LWMS proposes the following water conservation criteria:

**Criteria WC1** For residential dwellings, consumption target of 60 kL/person/year.

**Criteria WC2** Ensure the efficient use of all water resources

**Criteria WC3** Non-potable irrigation water to be sourced from existing groundwater licences held over the area.

The manner in which this objective will be achieved is further detailed in **Section 5**.

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## 4.3 Stormwater management

The principle behind stormwater management at the site is to mimic the pre-development hydrological conditions and utilise existing infrastructure where sensible to do so, as described in **Section 3.7**. This principle and the guidance documents discussed in **Section 1.4** and **Section 1.5** and have guided the stormwater management criteria.

**Criteria SW1** Retain and treat the first 15 mm of rainfall as close to source as possible and within site.

**Criteria SW2** Detain up to 1% AEP rainfall event on-site.

**Criteria SW3** Post-development critical 1% AEP peak flows leaving the site to mimic pre-development peak flows.

**Criteria SW4** Finished floor levels must have a minimum of 300 mm clearance above the 1 % AEP TWL in the FSA.

**Criteria SW5** All lots must have a minimum of 500 mm clearance above the 1 % AEP flood level in the Swan River.

**Criteria SW6** Nutrient concentrations within surface water discharging from the site to the Swan River are to meet regional water quality targets.

**Criteria SW7** Reduce nutrient loads by applying appropriate non-structural measures.

**Criteria SW8** Design infiltration areas to avoid creating mosquito habitat.

The manner in which these objectives will be achieved is further detailed in **Section 6**.

## 4.4 Groundwater management

The principle behind the groundwater management strategy is to maintain the existing groundwater hydrology. The groundwater management criteria for the site include:

**Criteria GW1** Surface based infiltration structures should have 300 mm clearance above the MGL.

**Criteria GW2** Habitable floor levels should have a clearance to the MGL of at least 1.2 m.

The manner in which the groundwater management objectives will be achieved is further detailed in **Section 7**.

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# 5 Water Conservation Strategy

## 5.1 Fit for purpose water use

Conservation of water through fit-for-purpose use and best management practices is encouraged so that scheme water is not wasted. Fit-for-purpose describes the use of water that is of a quality suitable for the required use of the water. Fit-for-purpose principles have been utilised in the water conservation strategy for the site and will achieve **Criteria WC1**.

### 5.1.1 Scheme water supply

Scheme water will be supplied by the Water Corporation Integrated Water Supply System. Scheme water is proposed to be used for all potable uses. Scheme water will also service some external uses, where fit-for-purpose alternatives are not available.

### 5.1.2 Groundwater

As discussed in **Section 3.7.2.1**, the site is located beneath a multi-layered system comprising of the Superficial Swan, Kings Park Formation, Leederville and Yarragadee aquifers.

The proponent holds a groundwater allocation from the Perth South Leederville confined aquifer for the following:

- GWL 178519 - 347,000 kL

This licence will be used to meet the irrigation requirements for the Racecourse Precinct, Precinct A, Precinct B and part of Precincts C and E.

The above-mentioned measure will achieve **Criteria WC3**.

### 5.1.3 Rainwater tanks

Rainwater tanks (RWTs) can be used within private lots to harvest roof runoff. This water is considered non-potable but can be used to supplement non-potable water uses.

## 5.2 Lot scale water conservation measures

This LWMS proposes that the water conservation measures to be adopted would include RWTs, waterwise principles for lot scale gardens and within estate landscaping (WWG) and water efficient fixtures and appliances (WEFA) to ensure that the residential portion of the development minimises the use of water. These are summarised in the following sections.

### 5.2.1 Rainwater tanks

The use of RWTs will not be mandated, and the stormwater quantity management strategy does not rely on their use. They are therefore only considered to be a water conservation measure. Given that rainwater tanks will not be mandated or supplied by the proponent, it has been assumed that these would be implemented by 7.5% of households within Precinct D. Whilst they may be considered for

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Precinct A they are not proposed to be taken up in other Precincts. The assumed uptake rate has been based on data obtained from the Australian Bureau of Statistics (ABS 2013). It is assumed (for the purposes of the water balance analysis) that all rainwater tanks have a capacity of 3 kL.

#### 5.2.2 Water efficient fixtures and appliances

Water conservation strategy for the site proposes the use of WEFA. Water efficient fittings will be mandated through the building licence, while uptake of water efficient appliances can be encouraged by State and Local Government rebates in addition to education from the proponent at point of sale. WEFA are relevant to Precinct A and Precinct D. It is assumed that water efficient appliances will be implemented by 40% of households within Precinct A and Precinct D, which has been based on data obtained from the Australian Bureau of Statistics (ABS 2013, 2014).

#### 5.2.3 Waterwise gardens

Landscape packages will not be provided as a part of the land sale contract. Lot scale waterwise gardening principles (WWG) are only relevant for Precinct D. These will be achieved by promoting Waterwise gardening principles (WWG) (WC 2003) at the time of sale of land within Precinct D. It is assumed that 75% of households in Precinct D will implement WWG principles within lot gardens (ABS 2013). WWG principles include:

- Soil to be improved with soil conditioner certified to Australian Standard (AS) 4454 to a minimum depth of 150 mm where turf is to be planted and a minimum depth of 300 mm for garden beds.
- The irrigation system shall be designed and installed according to best water efficient practices:
  - The controller must be 'hydrozoned'.
  - Emitters must disperse coarse droplets or be subterranean.
- Garden beds to be mulched to 75mm with a product certified to AS4454.
- Increasing community awareness of water conservation by promoting Waterwise practices, fixtures and fittings at the point of sale.

WWG principles will also be considered for Precinct A and Precinct E, however it is anticipated that these areas will have minimal irrigated landscaping to which this would apply. The current approach to irrigation within the Racecourse Precinct, Precinct B and Precinct C adopts a range of water conservation measures (including non-irrigated area and retention of existing trees/vegetation) to ensure that Perth Racing operates within the available groundwater allocation. This approach is not proposed to be significantly modified.

The above measures will assist in achieving **Criteria WC1** and **WC2**.

### 5.3 Water use analysis

#### 5.3.1 Lot scale water use analysis

A water use analysis has been undertaken for Precinct D to estimate the expected individual residential lot water use to demonstrate the effectiveness of the water conservation strategy. The water use analysis has been based on the rates and calculation methodology presented in the Water

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Corporation (2011) spreadsheet *AltWaterSupply_Water_Use_Model.xls*. This spreadsheet has been adapted to model the effects of using the water conservation measures proposed, and key assumptions include:

- Lot area has been based on a conceptual lot layout (see **Appendix A**).
- Average residency of 2.6 people per single lot dwelling. This value has been calculated from data provided by ABS for new housing developments in Perth (ABS 2022).
- Assumed up-take rates include:
  - 100% uptake of water efficient fittings
  - 40% uptake of water efficient appliances
  - 7.5% uptake of RWTs
  - 55% uptake of WWG principles.

The results of the water balance indicate that if households in Precinct A and Precinct D adopt the proposed water conservation measures (e.g. efficient fittings, RWT, WWG principals) at typical uptake rates they will use an average of 33.0 kL/year/person. This achieves the water target of no more than 60 kL/year/person of scheme water and satisfies **Criteria WC1**.

## 5.4 Wastewater management

The wastewater generated from the site will be managed by connecting the development to the Water Corporation deep sewer network.

## 5.5 Water conservation management criteria compliance

A summary of the proposed water conservation management criteria and how these are addressed is provided within **Table 1.**

*Table 1: Water conservation management criteria compliance*

| Criteria number | Criteria description | Manner in which compliance will be achieved |
|---|---|---|
| WC1 | Residential consumption target of 60 kL/person/year scheme water. | Provide advice to residents in Precinct A and Precinct D on water conservation measures |
| | | RWTs can be utilised for non-potable uses within Precinct D |
| | | Promotion and use of WWG in lots within Precinct D |
| | | Promotion and use of water efficient appliances to Precinct A and Precinct D |
| | | Mandate water efficient fittings within Precinct A and Precinct D |
| WC2 | Ensure the efficient use of all water resources. | Use of waterwise landscaping principles in open spaces |
| | | Open spaces designed to use no more than allocated groundwater |
| | | Minimise water requirements for open space and verge maintenance |
| | | Use of water efficient appliances within Precinct A and Precinct D |
| | | Use of WWG principles in lots in Precinct D |

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*Table 2: Water conservation management criteria compliance (Continued)*

| Criteria number | Criteria description | Manner in which compliance will be achieved |
|---|---|---|
| WC3 | Non-potable irrigation water to be sourced from existing groundwater licences held over the area. | The proponent holds a groundwater Licence with an allocation of 347,000 kL per annum which will meet the irrigation requirements of the Racecourse and surrounding Precincts. |

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# 6 Stormwater Management

The principle behind the stormwater management strategy for the site is to maintain the existing hydrology by detaining, retaining and treating runoff from the small rainfall event (i.e. first 15 mm) as close to source as possible and detaining/retaining the major event (1% AEP) on site prior to discharge to either the centre of the Racecourse (i.e. self-retained) or to the CBMD the pre-development outflow rates. Due to the existing soil conditions (See **Section 3.5**), the site is not well suited for structural controls utilising infiltration of stormwater unless modified. However, given that fill will be utilised to ensure that habitable floor levels are above the 1% AEP flood elevation of the Swan River, final elevations will be approximately 4 mAHD. Where fill is used to achieve this there will be sufficient clearance to MGL and permeability of soils to adopt WSUD measures which utilise infiltration.

WSUD measures proposed will vary across the Precincts and will include:

- BRAs to achieve water quality treatment (Precincts A, C, D and E)
- FSAs to detain runoff prior to discharge to the adjacent road network system
- Subsurface infiltration cells that will facilitate at-source infiltration (Precinct D)
- Flood storage integrated into existing surface water bodies located centrally within the Racecourse (for Precinct A and C)
- FSAs to provide flood detention and infiltration as close to source as possible (Precinct E).

The overall approach to precinct drainage is shown on **Figure 7**.

The WSUD measures that will be implemented as a part of the development are described in the following sections. Precinct B has been assumed to be self-retained and a portion of Precinct C (already connected to the Lakes in the centre of the track) has been assumed to be the same as it is now. Surface runoff modelling undertaken using XPSWMM has been used to inform the design of stormwater infrastructure as detailed in the following sections. Assumptions used to represent the post-development environment are provided in the modelling assumptions report in **Appendix D**.

## 6.1 Lot scale drainage measures

Lots within Precinct D and Precinct E will retain the first 15 mm rainfall event runoff within soakwells/soakage which will need a capacity of 150 $m^3$/ha. Lot storage is the responsibility of the lot owner and will be assessed as part of the building approval process prior to construction.

The use of soakwells/soakage areas will assist in achieving **Criteria SW1**.

## 6.2 Development drainage measures

### 6.2.1 Bio-retention areas

Runoff from the first 15 mm of rainfall will be captured and retained within a vegetated BRA located in open spaces. The BRA is assumed to have a depth of 500 mm with 1:3 side slopes. Treatment of

runoff will be provided through interaction with vegetation and adsorption to sand particles through infiltration prior to reaching groundwater.

The BRA will be underlain by material with an appropriate PRI (nominally a PRI of 20 at 150 mm or equivalent). It is acceptable for this to be achieved with a thicker layer of lower PRI soil (e.g. 300 mm of PRI 10). This will be finalised prior to detailed design. The location of the BRA will either be in a drainage reserve, an open space or they may be within the centre of the Racecourse as a separate treatment area (separate from the existing Lakes). The sizing and spatial requirements of BRAs will be confirmed in the detailed designs.

The use of BRA will assist in achieving **Criteria SW1, SW6,** and **SW8**.

### 6.2.2 Flood detention/storage

An FSA will be utilised to detain runoff above the first 15 mm and up to the 1% AEP rainfall event. To achieve this, the invert of the FSA will have sufficient clearance above groundwater 300 mm. FSAs are assumed to be 1.2 m depth with 1:6 side slope and will be integrated into POS or drainage reserve, and will overflow to the Water Corporation drainage network. The sizes and spatial requirements for the FSA will be confirmed in the detailed designs and development stages.

The use of an FSA will assist in achieving **Criteria SW1, SW2, SW4,** and **SW6.**

### 6.2.3 Subsurface storage

Surface runoff generated by lots, stables and hardstand/carpark areas will be directed into sub-surface storage. Precinct D will have an independent drainage pipe network within individual precincts which convey flows to downstream sub-surface retention structures.

These structures have been sized to accommodate up to the 1% AEP rainfall event and have been designed as a 1 m deep structure. The detailed configurations could be modified to suit site constraints. These will either be location beneath road reserve/verge or beneath an open space and will require an overflow connection to the local (CoB) drainage network to ensure that they can dry out. The sizes and spatial requirements for the subsurface storages are provided in **Table 2** and illustrated in **Figure 7A**: Precinct A Stormwater Management Plan

*Figure 7B: Precinct C Stormwater Management Plan*

Figure .

The use of the sub-surface storage will assist in achieving **Criteria SW1, SW2,** and **SW6.**

### 6.2.4 Lake storage

Precinct A and Precinct C (stables) will first direct runoff to a bio-retention areas, however overflow from these will be catered for in the Wetland Lake. In a 1% AEP storm event an additional 78 mm of depth will occur within the Wetland Lake from both Precincts.

As indicated in **Section 3.7.1.2**, the Wetland Lake is connected/discharges to the Swan River via a 375 mm and 450 mm culvert. These are not proposed to be modified. The combined nominal flow capacity of the 375 mm and 450 mm pipes is approximately 0.4 $m^3/s$. The inlet, length, grade, etc of

these pipes is not proposed to be modified and therefore the current overflow regime from the site to the Swan River will remain unchanged.

The use of the Wetland Lake storage will assist in achieving **Criteria SW1, SW2, SW3,** and **SW6.**

## 6.3 Precinct based drainage approach

### 6.3.1 Precinct A

There is no current connection point for drainage to be exported from site to the local CoB network. Runoff will therefore need to be managed within Precinct A and the Racecourse. Precinct A will require a single BRA that will address treatment of water quality; this will be located within Precinct A as close to source as possible. The BRA should have the following characteristics:

- Base will be vegetated with reeds/rushes as per a biofilter
- 1:3 side slopes
- Depth of 300 – 500 mm pending final design
- Volume of the BRA will need to achieve 194 $m^3$
- Nominal surface area of 450 $m^2$.

In addition to the volume achieved by the BRA, in a major (1% AEP) storm event a further 1,345$m^3$ of flood retention storage will be required. The proposed earthwork level of Precinct A (4.0 mAHD) means that it is possible to direct runoff exceeding BRA capacity to the Wetland Lake in the centre of the Racecourse. This approach will add approximately 52 mm to the central 2.6 ha Wetland Lake.

The volumes of storage required and locations of storage across the Precincts is summarised in **Table 2**. The approach to water management in Precinct A is shown in **Figure 7A**.

### 6.3.2 Precinct B and Racecourse

As indicate previously, there are no substantial changes proposed to Precinct B. Precinct B currently manages surface runoff within the precinct and adjacent Racecourse, largely via at source infiltration, swales around the perimeter of the track surface and the existing lake system Precinct B and the Racecourse are proposed to be retained largely as is.

As indicated in **Section 3**, the Wetland Lake currently has a piped overflow connection to the Swan River. This overflow pipe(s) reportedly rarely overflow and can be controlled via a structure at the outlet (which also prevents tidal influence on the Wetland Lake). The Wetland Lake has a 2.6 ha surface area, and therefore can provide significant volume of stormwater retention in the event of a major storm event. There are no new connections proposed to the Swan River and there are no changes proposed to the management approach currently taken for the Wetland Lake and the current piped outlets.

### 6.3.3 Precinct C

Precinct C is the existing stables area, adjacent carparks and future stables areas along the south and east of the Structure Plan area. The existing buildings currently either infiltrate runoff at source or

discharge to the Lined Lake in the centre of the Racecourse. This approach is proposed to be retained.

Surface runoff generated by hardstand/carpark areas of Precinct C will be directed and discharged towards Precinct E via the existing connections to the CoB drainage network along Matheson Road or via the existing pipe connection in the southwest of the Structure Planning area to the existing connection to the CBMD (Water Corporation drainage system) within Precinct E.

The drainage requirements for the southern (carpark) portion of Precinct C are therefore detailed with those proposed for Precinct E.

For the two currently undeveloped portions of Precinct C (future stables along the south and east of the Structure Plan area), the post-development drainage system will collect the runoff from these areas and direct them to the centre of the Racecourse. Initial treatment will be provided by a BRA which accommodates 418 $m^3$, with a nominal surface area of 924 $m^2$.

Runoff exceeding the capacity of the BRA (which will be 684 $m^3$) will be directed to the Wetland Lake. The direction of major event stormwater runoff to the Wetland Lake will add 26 mm to the top water level of the Wetland Lake.

The volumes required to be treated and for flood mitigation for Precinct C are summarised in **Table 2**. The approach to water management in Precinct A is shown in **Figure 7B**.

### 6.3.4 Precinct D

As indicated in **Section 6.1**, private lots and the childcare building within Precinct D are assumed to retain the first 15 mm within the lot boundary, most likely within soakwells, which should be appropriate given that some measure of imported fill will be required to meet clearance above regional flood levels. Based on the density of lots proposed in Precinct and lack of open space, this precinct will need 42 $m^3$ of subsurface storage to accommodate and detain the 1% AEP storm event to ensure that the post development peak flow rates will mimic the pre -development conditions. This is assumed to be located adjacent to Resolution Drive as shown in **Figure 7C**. The outflow from this Precinct will likely be predominantly overland flow once the first 15 mm of storage has reached capacity, however a low flow to ensure that these can adequately drain between storm events is recommended.

The volumes required to be treated and for flood mitigation for Precinct D are summarised in **Table 2**.

### 6.3.5 Precinct E

Surface runoff from across Precinct E (inclusive of Precinct C hardstand/carpark) will be conveyed via the drainage network firstly to a BRA for water quality treatment and then this will overflow to an FSA (detention drainage structure) at the south western corner of Precinct E for detention of the 1% AEP storm event. Overflow from Precinct E basin will discharge into the CBMD (Water Corporation drainage system) at existing flow rates. The Water Corporation surface runoff modelling of the CBMD indicates that the local drainage network contributes 0.95 $m^3/s$ at node CNA008. This is understood to be contributed to by existing 450 mm and 525 mm pipes beneath Resolution Drive and therefore it is assumed that 0.62 $m^3/s$ is taken up by the existing pipe network, and approximately 0.33 $m^3/s$ of

capacity is available to convey runoff from Precinct C, Precinct E and upstream contributing catchments.

The volumes required to be treated and for flood mitigation for Precinct E are summarised in **Table 2**. The approach to water management in Precinct E is shown in **Figure 7D**.

### 6.3.6 Precinct drainage summary

The requirements for water quality treatment within the Precincts is summarised in **Table 2**.

*Table 2: Precinct drainage summary*

| Precinct | First 15 mm requirement ($m^3$) | Location of first 15 mm | 1% AEP flood mitigation requirement ($m^3$) | Location of 1% AEP flood mitigation requirement | 1% AEP outflow from site |
|---|---|---|---|---|---|
| Precinct A | 194 | BRA located within Precinct A | 1,345 | Wetland Lake, centre of Racecourse | 0 |
| Precinct B | No change to existing | Precinct B | No change to existing | Precinct B | Self-retained |
| Precinct C (Stables) | 418 | BRA located in the centre of the Racecourse | 684 | Wetland Lake in centre of Racecourse | 0 |
| Precinct C (carpark) | Combined with Precinct E volumes | BRA in Precinct E | Combined with Precinct E volumes | FSA in Precinct E | |
| Precinct D | 28 | Subsurface storage cells beneath road reserve/drainage reserve | 42 | Subsurface storage cells beneath road reserve/drainage reserve | 0.402 $m^3/s$ to local drainage network/road pavement |
| Precinct E | 365 | Southwest corner of Precinct E, adjacent to FSA | 930 | South west corner of Precinct E | 0.32 $m^3/s$ to CBMD |

There will be no new connections to the Swan River or to the CBMD, and the existing flow regimes at these outlet points will be maintained. Specifically with regard to overflow from the Wetland Lake which occurs via gravity, the peak flow rates that the existing 375 mm and 450 mm pipes are capable of achieving (approximately 0.4 $m^3/s$) will not change given that the inlet, length, grade and outlet of these pipes is not proposed to be modified.

Precinct D will require a connection to the local drainage network, however the outflow rate will be nominal, and has not been accounted for when sizing the subsurface storage cells within Precinct D. The direction of runoff from Precinct A and a portion of Precinct C to the centre of the Racecourse will require a BRA with a surface area of 1,105 $m^2$ (for Precinct C) and will add a total of 78 mm depth to the top water levels within the Wetland Lake.

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The precinct areas and a summary of the approach to surface water management are shown on **Figure 7**.

### 6.3.7 Non-structural measures

A number of non-structural measures will be implemented to help reduce nutrient loads within stormwater runoff. These measures include:

- Minimising fertiliser use to establish and maintain vegetation within POS and road verges.
- Street sweeping at regular intervals.
- Ongoing management of nutrient application to Precinct B and the Racecourse.
- Precinct A to adopt a similar nutrient application management regime as that currently applied to Precinct B.
- Minimising the use of turf within open spaces.
- Active management of equine waste within Precinct C and the Racecourse. This includes manual collection and remove of manure from site.
- Education of residents regarding fertiliser use and nutrient absorbing vegetation species within lots.

The above measures will assist in achieving **Criteria SW7**.

### 6.3.8 Earthwork levels

Finished floor levels of the entire development will be set at minimum of 4.0 mAHD (See **Appendix C**) which will assist in achieving **Criteria SW5**.

## 6.4 Stormwater criteria compliance

A summary of the proposed stormwater design criteria and how these are addressed is provided in **Table 3**.

*Table 3: Stormwater management criteria compliance*

| Criteria number | Criteria description | Manner in which compliance will be achieved |
|---|---|---|
| SW1 | Retain and treat the first 15 mm of rainfall as close to source as possible | Lots within Precinct D and Precinct E to retain the first 15 mm of rainfall on lot in soakwells/soakage. Lot storage will be the responsibility of the lot owners. |
| SW2 | Retain up to 1% AEP rainfall event on-site. | Runoff up to the 1% AEP to be detained within the FSA in Precinct A. Precinct A and a portion of Precinct C will ultimately discharge to the centre of the track. |
| | | Runoff up to 1% AEP to be managed with the sub-surface storage in Precinct D. |
| SW3 | Post-development critical 1% AEP peak flows leaving the site to mimic pre-development peak flows. | Runoff up to 1% AEP event to be detained in the detention basin and subsurface storage which will maintain the pre-development peak flow of 0.32 $m^3/s$ from Precinct E and 0.463 $m^3/s$ from Precinct D respectively. |
| SW4 | Finished floor levels must have a minimum of 300 mm clearance above the 1% AEP TWL in the FSA. | It is anticipated that the FSA and detention basin invert will be set so that the habitable floor levels must have a |

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| | | |
|---|---|---|
| | | minimum of 300 mm clearance above the 1% AEP TWL in the basins. |
| SW5 | All lots must have a minimum of 500 mm clearance above the 1% AEP flood level in the Swan River. | The 1% AEP flood level in the Swan River is 2.8 mAHD. The preliminary bulk earthworks concept provided in shows that finished floor level will be at 4.0 mAHD. |
| SW6 | Nutrient concentrations within surface water discharging from the site to the Swan River are to meet regional water quality targets. | BRA will be designed so that after treatment the long term nutrient concentrations within surface water meet the regional water quality targets. |

*Table 4: Stormwater management criteria compliance (Continued)*

| Criteria number | Criteria description | Manner in which compliance will be achieved |
|---|---|---|
| SW7 | Reduce nutrient loads by applying appropriate non-structural measures | • Minimise use of fertilisers within open space and road verges.<br>• Street sweeping at regular intervals.<br>• Use of drought tolerant turf species.<br>• Education of residents regarding fertiliser use |
| SW8 | Design infiltration areas to avoid creating mosquito habitat | Stormwater infrastructure will be designed to ensure all runoff is infiltrated within 96 hours. |

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# 7 Groundwater Management

## 7.1 Groundwater management approach

The principle behind groundwater management is to maintain the existing hydrology across the site, provide appropriate protection from groundwater inundation, and maintain or improve existing groundwater quality.

## 7.2 Groundwater level management

The regional groundwater map (DWER 2023e), localised measurement of groundwater and the surface contours of the site (see **Section 3.4** and **Figure 2**) indicate that there is sufficient clearance to groundwater beneath the site to facilitate infiltration of stormwater runoff, on the basis that fill is being imported to raise finished levels to 4.0 mAHD.

Whilst the underlying parent soils have demonstrated generally low permeability, the earthworks approach will require import of fill to 4.0 mAHD to achieve clearance above the 1% AEP flood level in the Swan River for Precinct A, Precinct D and Precinct E. Therefore, stormwater will be encouraged to infiltrate at source wherever possible to minimise stormwater runoff and to adopt an at-source approach to management of runoff where possible. This will occur within soakwells, permeable portions of lots and BRAs which will have at least 300 mm of clearance above the MGL. The above-mentioned measure will assist in achieving **Criteria GW1**.

For Precinct C (stables) runoff will be directed to the centre of the racetrack. The stables facilities do not require a specific separation from groundwater, and in order to accommodate equine uses the land between buildings/facilities should be as flat as possible. The most appropriate response is therefore to accommodate stormwater quality treatment and flood retention within the centre of the racetrack. Given the low permeability of soils in the centre of the racetrack, the BRA is unlikely to achieve separation from groundwater or the low permeability soil layer. This is however considered acceptable as it is consistent with the presence of the three Lakes currently within the centre of the racetrack.

The control of groundwater by subsoil drainage is not proposed due to requirements to provide adequate clearance above the 1% AEP flood levels and the proximity of the Swan River. Rather, groundwater separation requirements will be achieved by the use of imported fill as described above. The earthworks strategy provided in **Appendix C** shows that all habitable floor levels will be greater than 1.2 m above the MGL. The above-mentioned measure will assist in achieving **Criteria GW2**.

As previously discussed, there are no changes proposed to the form of development within Precinct B or to the Racecourse. These areas are currently managed by the swales aligned with the existing racetrack which control soil moisture conditions in these areas, and which discharge to the Wetland Lake. This approach will be retained in the post-development environment.

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## 7.3 Groundwater quality management

Whilst not specified in a design criterion, the main objective for groundwater quality management is to maintain or improve the existing groundwater quality. This can be achieved by reducing the total nutrient load into the groundwater that originates from the site. Groundwater that originates from the site is surface runoff that has infiltrated into the soil profile. Therefore, improving groundwater quality can be achieved by treatment of the surface runoff prior to infiltrating to groundwater.

The reduction of nutrient load to the groundwater will be achieved by:

- Retention of existing trees within open spaces wherever possible.
- Directing stormwater to a vegetated (with native wetland species) BRA.
- The BRA will be underlain by material with an appropriate PRI (nominally a PRI of 20 at 150 mm or equivalent). It is acceptable for this to be achieved with a thicker layer of lower PRI soil (e.g. 300 mm of PRI 10).
- Minimise fertiliser use to establish and maintain vegetation within open space areas and road verges.
- Ongoing management of nutrient application to Precinct B and the Racecourse.
- Precinct A to adopt a similar nutrient application management regime as that currently applied to Precinct B.
- The use of turf will be minimised, however where adopted a drought tolerant turf species that require minimal water, and nutrients will be used.
- Roll-on turf will be used within the open space areas and road verges, to prevent the high nutrient input requirement during establishment of the turf.
- Garden beds should not be immediately adjacent to BRAs to reduce nutrient transportation into these infiltration areas.
- Active management of equine waste within Precinct C and the Racecourse. This includes manual collection and remove of manure from site.

The above measures will improve the quality of water prior to it infiltrating into the underlying groundwater.

## 7.4 Groundwater criteria compliance summary

A summary of the proposed groundwater quantity design criteria and how these are addressed within the site is provided in **Table 4**.

*Table 4: Groundwater criteria compliance summary*

| Criteria number | Criteria description | Manner in which compliances will be achieved |
|---|---|---|
| GW1 | Surface based infiltration should have 300 mm clearance above MGL. | Basin inverts will be set at 300 mm above the MGL, the exception being the BRA in the centre of the racetrack. |
| GW2 | Finished floor levels should have a clearance to the MGL of at least 1.2 m. | Lots will be set at least 1.2 m above the MGL. |

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# 8 Subdivision and Urban Water Management Plans

The requirements to undertake preparation of more detailed water management plans to support subdivision is generally imposed as a condition of subdivision. This will be most relevant to Precinct D. Other precincts may be developed under a Development Approval and therefore water management will likely be documented within a Stormwater Management Plan (SMP). The development of future UWMP/SMPs should follow *Urban Water Management Plans: Guidelines for preparing plans and for Complying with Subdivision Conditions* (DoW 2008).

While strategies have been provided within this LWMS that address planning for water management within the site, it is a logical progression that future subdivision designs and the supportive UWMP/SMP will clarify details not provided within the LWMS. The main areas that will require further clarification within future UWMP/SMPs may include (pending which precinct is being addressed):

- Extent of land uses within Precincts
- Connection to local and Main Drainage networks
- Surface runoff modelling
- Implementation of water conservation strategies
- Non-structural water quality improvement measures
- Management and maintenance requirements
- Construction period management strategy.

These are further detailed in the following sections. As stated above, ongoing (post-development) monitoring of groundwater will be detailed in the UWMP/SPM, however in this LWMS is outlined broadly in **Section 9**.

## 8.1 Extent of land uses within Precincts

It is expected that the layout and extent of land uses within Precincts may evolve over time. Future water planning documents will need to be updated to align with the most up to date spatial plans for each Precinct. Changes to the spatial plans will likely have an implication on the size of stormwater infrastructure and possibly their location, and should be revised and clarified in future UWMP/SMPs.

## 8.2 Connection to local and Main Drainage networks

This LWMS has made assumptions regarding connectivity to the CoB local drainage network and to the Water Corporation's CBMD. These are assumptions are made based on the information available at the time of preparing this LWMS and may need to be revised pending feedback from these agencies. This could result in updates to surface runoff modelling (see **Section 8.3**).

## 8.3 Surface runoff modelling

It is acknowledged that the water management strategies documented in this LWMS are based upon broad-scale assumptions and to some extent regional data. These assumptions are considered

adequate for development of this LWMS and are of an appropriate level of detail. However, verification of proposed subdivision drainage designs will be undertaken once the specific basin designs and extent of inclusion of finer scale WSUD elements are confirmed.

It is expected that future UWMP/SMPs will update surface runoff modelling as appropriate, and this may result in evolution of the spatial layout of the structure plan/future subdivisions or detailed civil design approach.

## 8.4 Implementation of water conservation strategies

The non-potable water needs from the Precincts are to be accommodated from the existing groundwater allocation and therefore, track water usage is a significant consideration. Notwithstanding licensed volumes available, there is minimal new open space areas proposed within the Precincts that would demand significant additional groundwater allocation, and it is therefore anticipated that non-potable water needs can be met by the existing licence held by Perth Racing.

A number of potential measures to conserve water have been presented within this LWMS. These water conservation strategies will be incorporated into design and the on-going maintenance of the Precinct A, B and C open spaces and where relevant. Landscape concept design measures that will be incorporated into the water conservation strategy will be further detailed within the future UWMP/SMPs produced for the development.

The manner in which the developer intends to promote water conservation measures discussed in this LWMS to future lot owners will also be discussed within the future UWMP/SMPs.

## 8.5 Non-structural water quality improvement measures

Guidance for the development and implementation of non-structural water quality improvement measures is provided within the *Stormwater Management Manual for Western Australia* (DWER 2022). Some measures will be more appropriately implemented by CoB for local roads, such as street sweeping, however many can be implemented relatively easily within the design and maintenance of the subdivision and the open space areas. It is expected that any privately managed development areas (e.g. Precinct A, Precinct B and Precinct C) will be managed by Perth Racing or another appropriate management body, and that the management of areas exposed to equine uses (Precinct C and the Racecourse) will continue to adopt contemporary best practice nutrient management.

Future UWMP/SMPs will provide an implementation plan/timing/responsibility for measures such as street sweeping, public education (through measures such as signage that may be implemented to raise awareness), etc.

## 8.6 Management and maintenance requirements

The management measures to be implemented to address surface water quality (such as the use of vegetation within WSUD assets) will require ongoing maintenance. It is therefore expected that the future UWMP/SMPs will detail management and maintenance procedures that will set out required maintenance actions (e.g. gross pollutant removal), timing (e.g. how often it will occur), locations (e.g. exactly where it will occur) and responsibilities (e.g. who will be responsible for carrying out the

actions). Given that approval from the CoB will be sought for the proposed measures, it is anticipated that consultation will be undertaken and referral to guiding policies and documents will be made.

## 8.7 Construction period management strategy

It is anticipated that the construction stage will require some management of various aspects (e.g. soil erosion, sedimentation of downstream water bodies, dust, surface runoff, noise, traffic etc.). The management measures undertaken for construction management will be addressed either in the future UWMP/SMPs or a separate Construction Management Plan (CMP).

# 9 Monitoring

## 9.1 Post-development monitoring

The post-development monitoring of water quality should be undertaken within groundwater immediately upstream and downstream of BRAs within Precinct A, Precinct C and Precinct E. It should also be undertaken at the outlet to or adjacent to the subsurface detention system in Precinct D. This should be undertaken via shallow groundwater bores installed immediately upstream and immediately downstream based on local groundwater flow direction, based on information available at the time (or in the case of Precinct D it could be at the outlet from the subsurface storage cells).

The monitoring should also consider and be generally consistent in the approach with the monitoring undertaken to comply with conditions of Groundwater Licence GWL 178519.

The WSUD measures (BRAs) should also be monitored to ensure their continued effectiveness. This should occur at the outlets from BRAs prior to their discharge to the Wetland Lake. It is noted that this may be difficult to achieve as it will require a rainfall event > 15 mm and to be timed to occur when overflow is occurring or alternatively auto samplers could be employed.

Monitoring of the outlet to the Swan River from the Wetland Lake is not proposed to be undertaken given the infrequent nature of overflow from the Lake to the River. Further, the Lake intersects shallow groundwater and any discharge from the pipes to the River is likely to be influenced by local groundwater quality.

### 9.1.1 Trigger values

The water quality targets from the *National Water Quality Management Strategy* (ANZECC and ARMCANZ 2000) and the trigger criteria are acknowledged as long term targets for the site, being 1.2 mg/L for TN and 0.065 mg/L for TP. However, it is also recognised that recent site monitoring undertaken (and reported in **Section 3**) shows repeated exceedances of the NWQMS default trigger criteria. Therefore, short term trigger values are proposed based on the approximate average nutrient concentrations measured in groundwater, and these are shown in **Table 5**.

*Table 5: Post-development trigger values*

| Analyte | pH | EC (uS/cm) | TN (mg/L) | TP (mg/L) |
|---|---|---|---|---|
| Value | 6-7.5 | 1800 | 3.0 | 0.15 |

Monitoring should be undertaken on a quarterly basis and should include:

- pH
- Conductivity
- Dissolved oxygen
- Temperature
- Nutrients (TN, TP)
- Nutrient Species (Ammonium, $NH_4$, Oxides of nitrogen, $NO_x$ ortho-phosphorous (ORP))

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### 9.1.2 Condition monitoring

It is proposed that the overall condition of the Precincts will be monitored on a bi-annual basis. This monitoring will be implemented after the completion of the civil and landscaping works and will continue for a period of two years.

A visual assessment will be undertaken to monitor the overall condition of the Precincts, with the aim to ascertain that the maintenance activities are achieving the overall management objectives for the development. The parameters that will be monitored include:

- Gross pollutants
- Terrestrial weeds
- Irrigation
- Vegetation density
- Paths, benches, walkways and other infrastructure.

The management and maintenance objectives will be detailed within future UWMPs along with details of the corresponding monitoring program.

### 9.1.3 Contingency Action Plan

If the results from the initial monitoring occasion indicate that nutrient concentrations exceed the nominated (short term) trigger values, a number of contingency measures may be employed.

The first action that should be undertaken if groundwater trigger criteria are exceeded is to repeat the monitoring to remove the potential for sampling error. If the repeat monitoring still shows results which breach the trigger value, the next action will be to compare the upstream (incoming) nutrient concentrations with the outgoing (downstream) nutrient concentrations. If the downstream nutrient concentrations are >50% higher than the upstream nutrient concentrations, the following actions should be undertaken:

- Review open space nutrient application practices to identify source if possible.
- Conduct surveillance of Precincts and drainage infrastructure to determine any other potential and obvious nutrient inputs.
- Remove source if possible (i.e. fertiliser input, etc.).
- Remove sediment–bound nutrients by removing basin sediments.
- Manual removal of plant material from BRAs to facilitate further nutrient uptake.

If the downstream nutrient concentrations are found to be generally consistent with the upstream concentrations the next action will be to conduct a site – specific comparison of long-term background data presented in this LWMS. There is some amount of variability (temporally) in nutrient concentrations experienced across the site, and this is the reason for the proposed short and long term trigger values. The comparison of measured values to trigger values and historical monitoring data should then be used as a management tool to determine if the trigger values should be revised.

Following the implementation of the above contingency measures the groundwater quality will be re – sampled. If the results of the analysis still show water quality characteristics which breach the trigger values an additional set of upstream/downstream monitoring bores may be installed. The

additional bores would be sampled as per the ongoing sampling regime already being undertaken for the first two bores. If the additional locations demonstrate results consistent with the initial monitoring, an assessment will be undertaken as to whether the results are representative of a broader site management concern, and whether any additional contingency actions need to be implemented onsite.

## 9.2 Reporting

A post-development monitoring report will be prepared on conclusion of the two-year monitoring period and will be provided to CoB on request. This will be undertaken per Precinct once development within the Precinct has occurred. Interim results (spreadsheet) can be provided to either CoB, DWER or DBCA on request during the monitoring program.

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# 10 Implementation

## 10.1 Roles and responsibility

The LWMS provides a framework that the proponent can utilise to assist in establishing stormwater management methods that have been based upon site-specific investigations, are consistent with relevant State and Local Government policies and have been endorsed by DWER, DBCA and CoB. The responsibility for working within the framework established within the LWMS rests initially with the proponent, although it is anticipated that a future UWMP/SMP will be developed in consideration of other relevant policies and documents. A summary of roles and responsibilities relevant to the current and future planning stages and ongoing management of the site is summarised in **Table 6**.

*Table 6: Roles and responsibilities for various planning stages*

| Stakeholder | Perth Racing | City of Belmont | Water Corporation | DWER | DBCA | WAPC |
|---|---|---|---|---|---|---|
| LWMS preparation | √ | | | | | |
| LWMS review and advice | | √ | √ | √ | √ | |
| LWMS approval | | | | √ | | √ |
| UWMP/SMP & civil design preparation | √ | | | | | |
| UWMP/SMP review and approval | | √ | | | | |
| Precinct implementation | √ | | | | | |
| Post development Precinct management | √ | | | | | |
| Public roads/open space ongoing management | √ | √ | | | | |

## 10.2 Funding

The proponent will fund all subdivision, civil and landscape works within the public realm (roads and open spaces) and within Precincts that are being privately managed (Precinct A, Precinct B and Precinct C). Development of individual lots will be the responsibility of the lot owner at the lot-scale development application stage.

## 10.3 Review

It is not anticipated that this LWMS will be reviewed unless the Ascot Racecourse Structure plan undergoes significant change post-lodgement of the LWMS. If the proposed layout of the

development is substantially modified, the surface runoff modelling undertaken for this LWMS may need to be reviewed and the criteria revised to ensure that all are still appropriate.

The next stage of water management for most of the Precincts is UWMP preparation to support subdivision (relevant to Precinct D) or SMP preparation to support Development Approval (relevant to all other precincts). The UWMP/SMP is largely an extension of the LWMS, as it should provide detail to the designs proposed within this LWMS and will demonstrate compliance with the criteria proposed in **Section 4**. Regardless of whether a UWMP or SMP is prepared, these should be prepared as per *Better Urban Water Management*.

The next stage of development following the UWMP is single lot development. It is recognised that certain elements of the LWMS and the UWMP will not be implemented until this late stage, and that there is little or no statutory control that can be applied to ensure the implementation of any remaining measures. While the remaining measures are unlikely to be enforced at this stage their implementation could be encouraged by the CoB through policy (or modification of these where necessary), building licence or awareness programs (such as the Water Corporation Waterwise program).

Attachment 12.1.2 Local Water Management Strategy



# 11 References

## 11.1 General references

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## 11.2 Online references

The online resources that have been utilised in the preparation of this report are referenced in **Section 11.1**, with access date information provided in **Table R1**.

*Table R1 Access dates for online references*

| Reference | Date accessed | Website or dataset name |
|---|---|---|
| (ABS 2013) | 19/4/2024 | ABS: Water Use and Conservation Data |
| (ABS 2014) | 19/4/2024 | ABS: Energy Use and Conservation Data |
| (DWER 2023a) | 12/04/2024 | Acid Sulfate Soil Risk Map |
| (BoM 2024) | 12/04/2024 | Climate Data |
| (Landgate 2023) | 31/01/2024 | Landgate Map Viewer Plus |
| (WAPC 2023a) | 11/12/2023 | Local Planning Scheme No. 15 Map |
| (DWER 2024a) | 12/04/2024 | Perth Groundwater Map |
| (DWER 2024b) | 12/04/2024 | Water Information Reporting |
| (DWER 2024c) | 12/04/2024 | Water Register |
| (DWER 2023c) | 26/04/2024 | FPM Floodplain Area (DWER-020) |

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Attachment 12.1.2 Local Water Management Strategy




**Figure 1: Site Location**

| | |
|---|---|
| **Project:** | Local Water Management Plan<br>Golden Gateway Local Structure Plan |
| **Client:** | Perth Racing |

| | |
|---|---|
| **Plan Number:** | **EP23-109(03)--F23** |
| Drawn: | WJC |
| Date: | 26/04/2024 |
| Checked: | JM |
| Approved: | DPC |
| Date: | 17/05/2024 |

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**Figure 2:** **Topographic and Groundwater Contours**

**Project:** Local Water Management Plan
Golden Gateway Local Structure Plan

**Client:** Perth Racing

**Plan Number:**
**EP23-109(03)--F24**
Drawn: WJC
Date: 26/04/2024
Checked: JM
Approved: DPC
Date: 17/05/2024

N

0 100 200 300
Metres
Scale: 1:8,000@A4
GDA2020 MGA Zone 50

emerge ASSOCIATES

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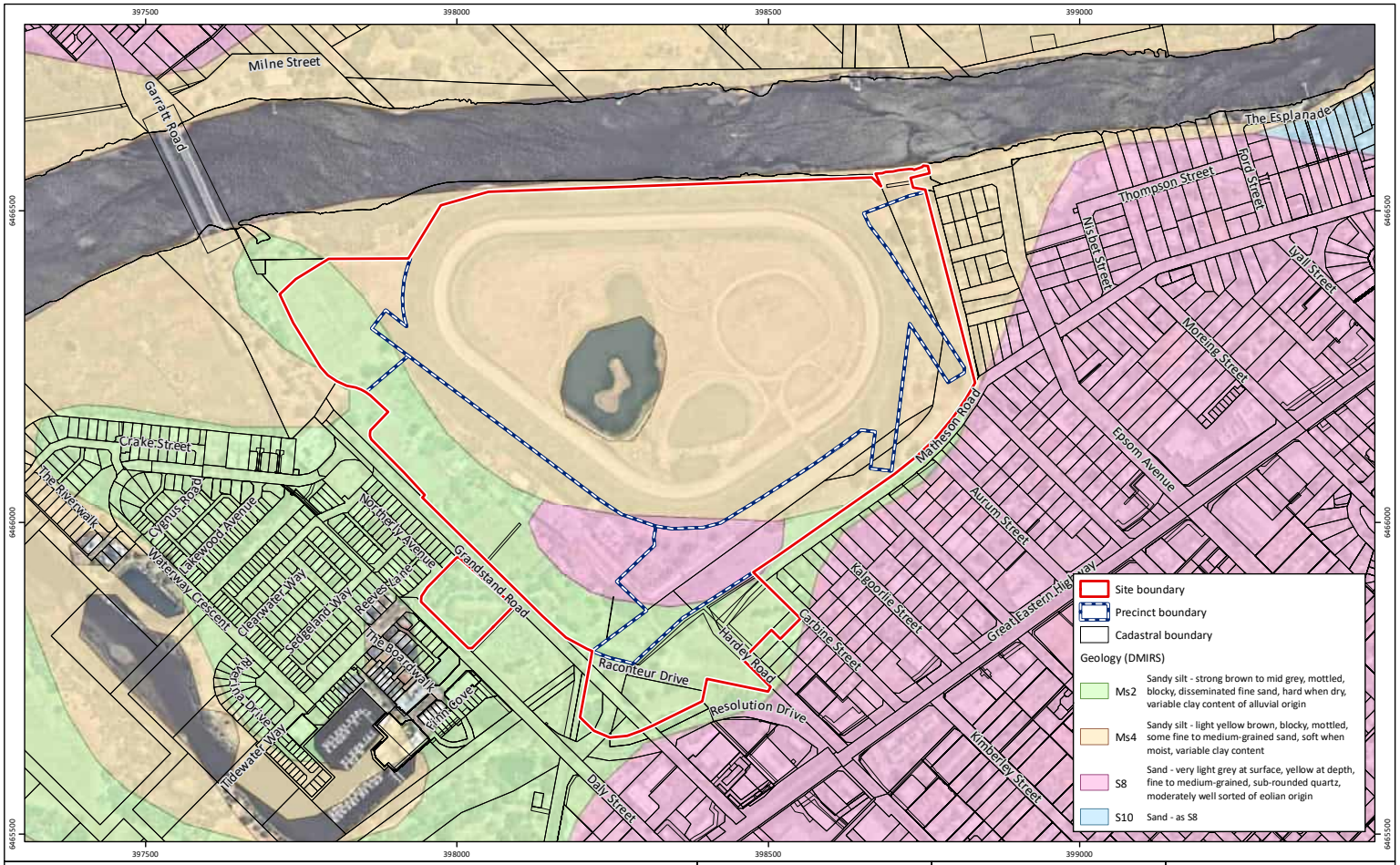



**Figure 3: Geological Mapping**

| | |
|---|---|
| **Project:** | Local Water Management Plan<br>Golden Gateway Local Structure Plan |
| **Client:** | Perth Racing |

**Plan Number:** EP23-109(03)--F25
Drawn: WJC
Date: 26/04/2024
Checked: JM
Approved: DPC
Date: 17/05/2024

N

0 100 200 300
Metres
Scale: 1:8,000@A4
GDA2020 MGA Zone 50

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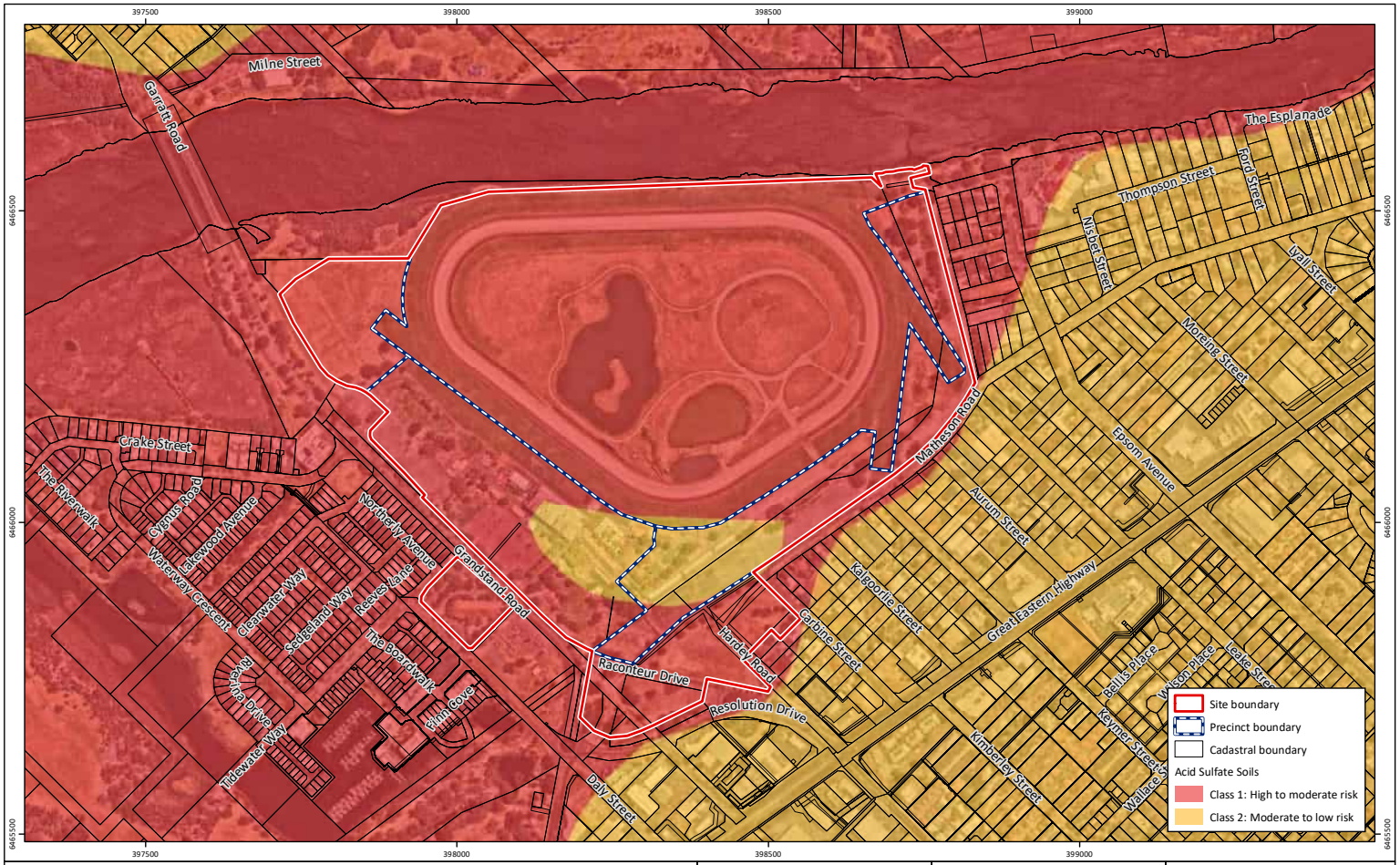



**Figure 4:** **Acid Sulfate Soil Mapping**

**Project:** Local Water Management Plan
Golden Gateway Local Structure Plan

**Client:** Perth Racing

**Plan Number:** EP23-109(03)--F26
Drawn: WJC
Date: 26/04/2024
Checked: JM
Approved: DPC
Date: 17/05/2024

N

0 100 200 300
Metres
Scale: 1:8,000@A4
GDA2020 MGA Zone 50

emerge ASSOCIATES

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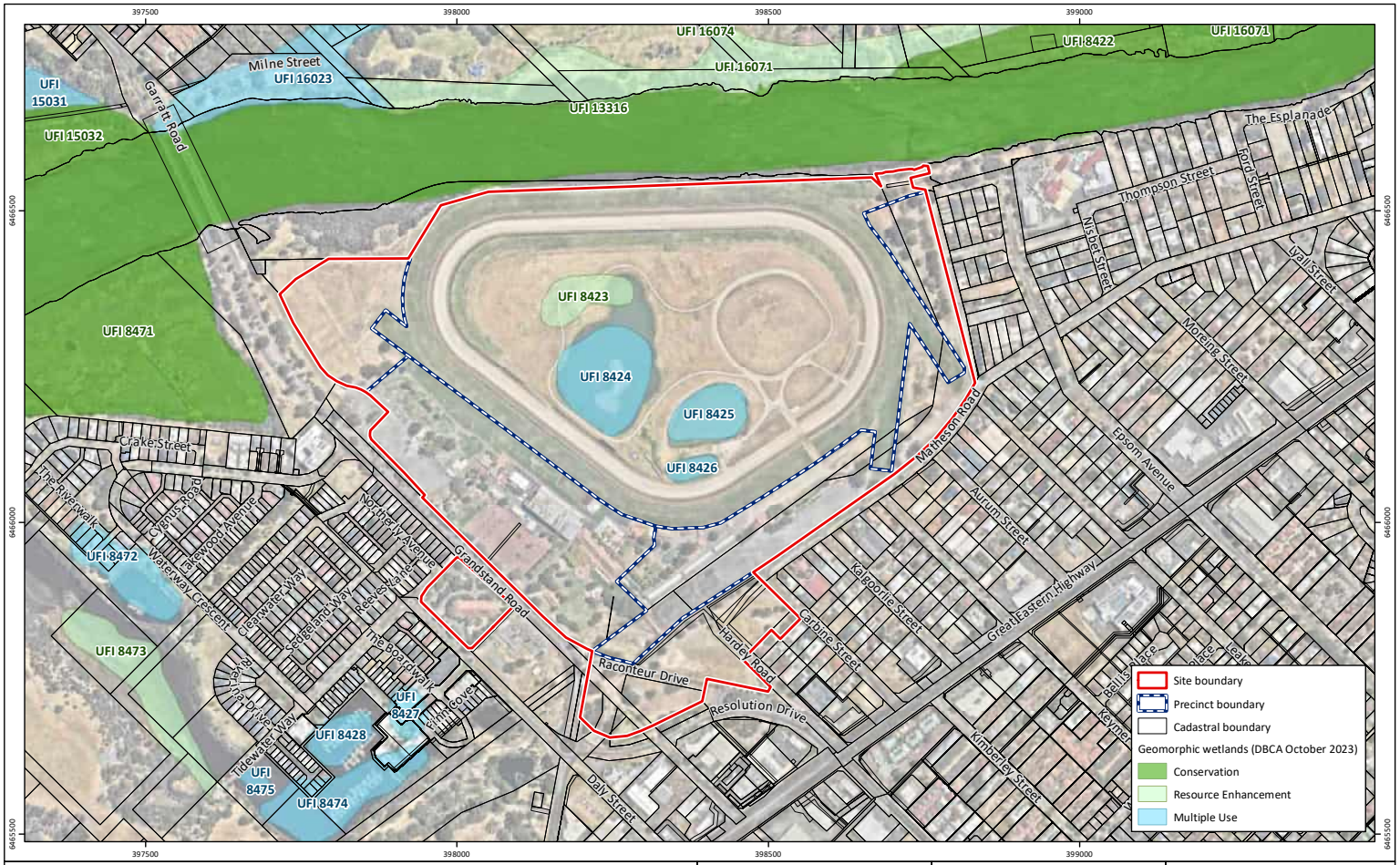



**Figure 5: Environmental Assets**

| | |
|---|---|
| **Project:** | Local Water Management Plan<br>Golden Gateway Local Structure Plan |
| **Client:** | Perth Racing |

| | |
|---|---|
| **Plan Number:** | **EP23-109(03)--F27** |
| Drawn: | WJC |
| Date: | 26/04/2024 |
| Checked: | JM |
| Approved: | DPC |
| Date: | 17/05/2024 |

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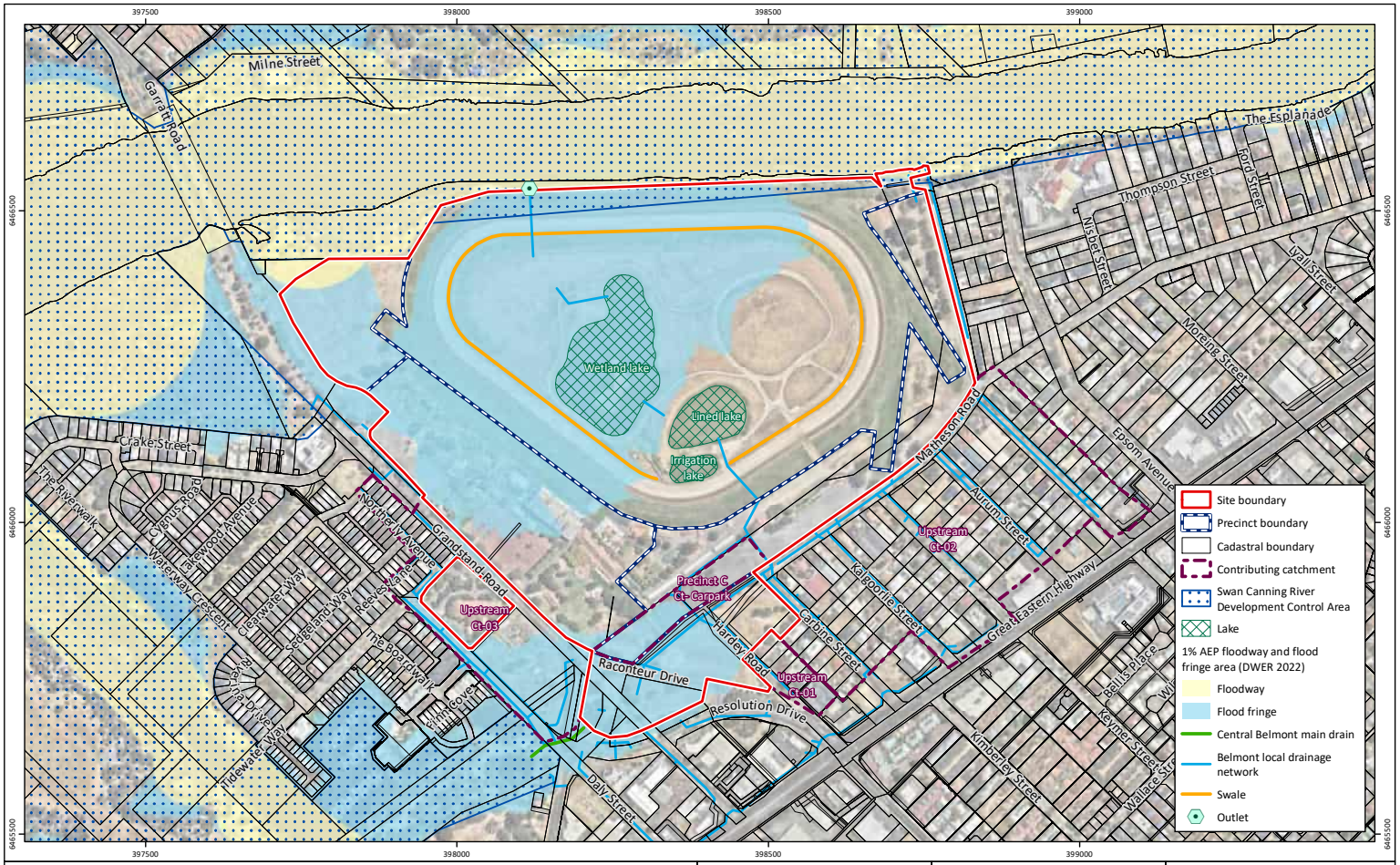



**Figure 6: Hydrological Features**

**Project:** Local Water Management Plan
Golden Gateway Local Structure Plan

**Client:** Perth Racing

**Plan Number:** EP23-109(03)--F28
Drawn: WJC
Date: 26/04/2024
Checked: JM
Approved: DPC
Date: 17/05/2024

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Metres
Scale: 1:8,000@A4
GDA2020 MGA Zone 50

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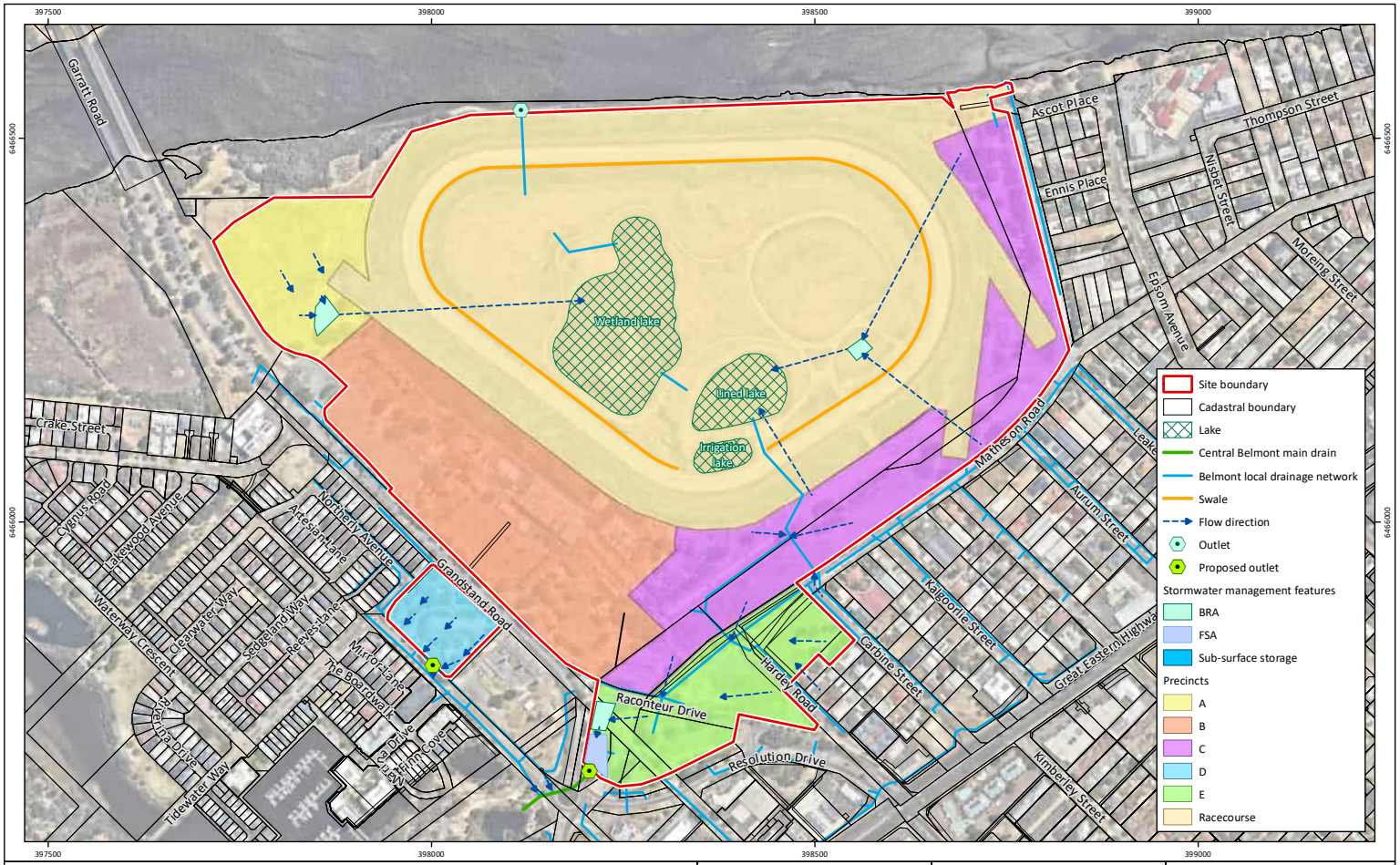



**Figure 7: Ascot LSP Precinct Plan**

| | |
|---|---|
| **Project:** | Local Water Management Plan<br>Golden Gateway Local Structure Plan |
| **Client:** | Perth Racing |

| | |
|---|---|
| **Plan Number:** | **EP23-109(03)--F29** |
| Drawn: | WJC |
| Date: | 01/05/2024 |
| Checked: | JM |
| Approved: | DPC |
| Date: | 17/05/2024 |

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Metres
Scale: 1:6,500@A4
GDA2020 MGA Zone 50

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**Figure 7A: Precinct A Stormwater Management Plan**

**Project:** Local Water Management Plan
Golden Gateway Local Structure Plan
**Client:** Perth Racing

**Plan Number:** EP23-109(03)--F32
Drawn: WJC
Date: 01/05/2024
Checked: JM
Approved: DPC
Date: 17/05/2024

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Metres
Scale: 1:2,500@A4
GDA2020 MGA Zone 50

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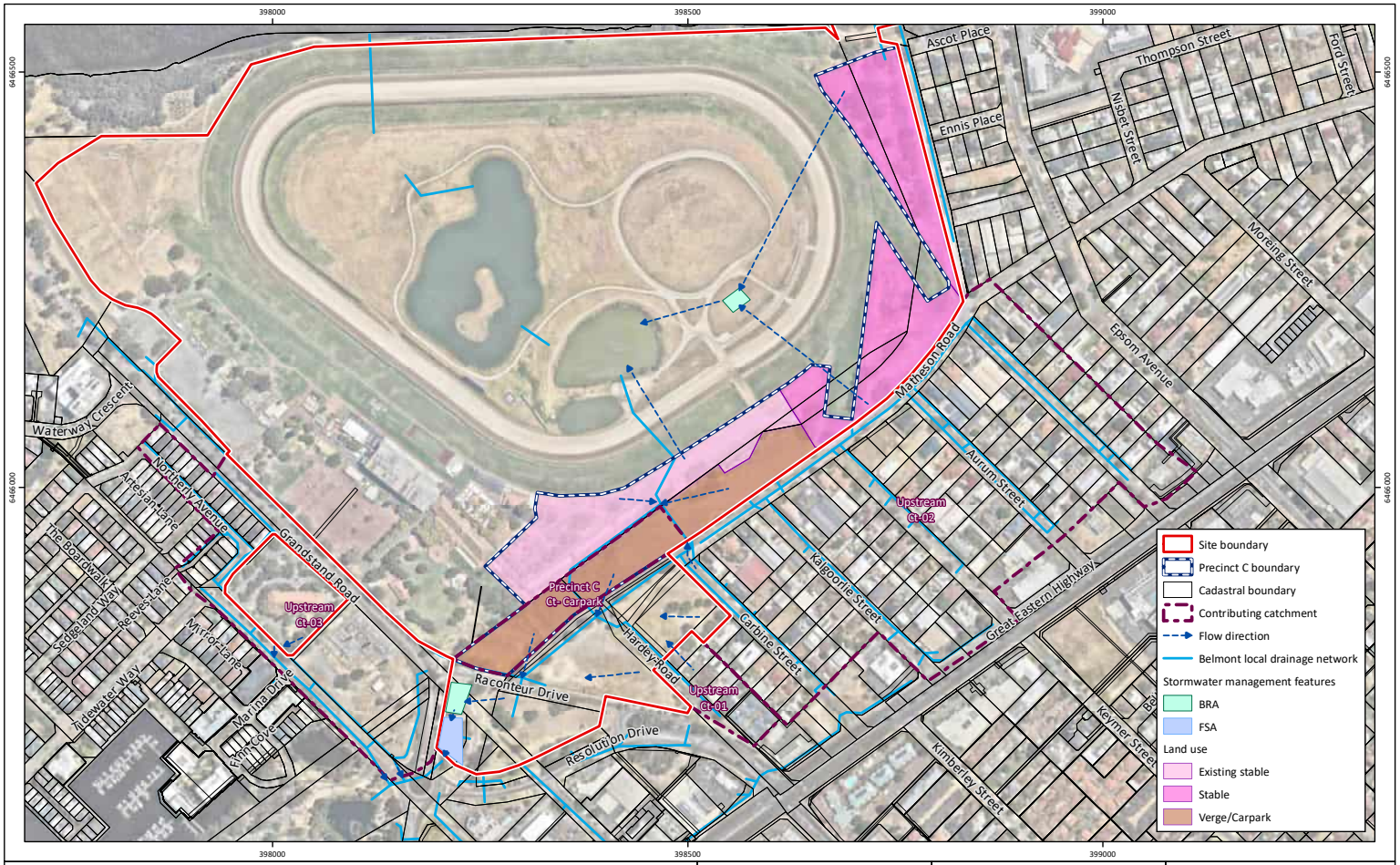



**Figure 7B: Precinct C Stormwater Management Plan**

| | |
|---|---|
| **Project:** | Local Water Management Plan<br>Golden Gateway Local Structure Plan |
| **Client:** | Perth Racing |

| | |
|---|---|
| **Plan Number:** | **EP23-109(03)--F33** |
| Drawn: | WJC |
| Date: | 01/05/2024 |
| Checked: | JM |
| Approved: | DPC |
| Date: | 17/05/2024 |

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0 100 200
Metres
Scale: 1:6,000@A4
GDA2020 MGA Zone 50

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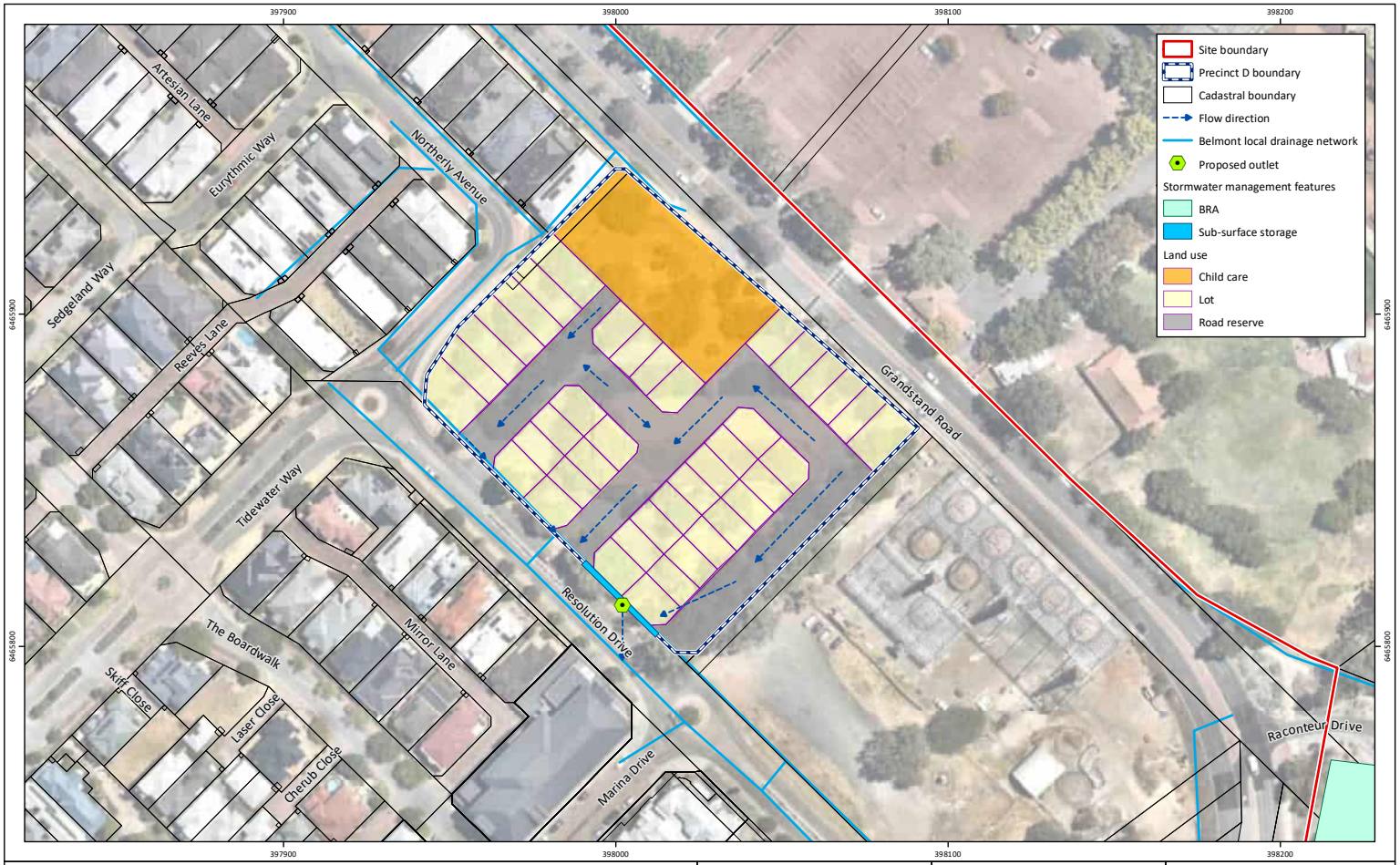



**Figure 7C: Precinct D Stormwater Management Plan**

| | |
|---|---|
| **Project:** | Local Water Management Plan<br>Golden Gateway Local Structure Plan |
| **Client:** | Perth Racing |

| | |
|---|---|
| **Plan Number:** | **EP23-109(03)--F34** |
| Drawn: | WJC |
| Date: | 01/05/2024 |
| Checked: | JM |
| Approved: | DPC |
| Date: | 17/05/2024 |

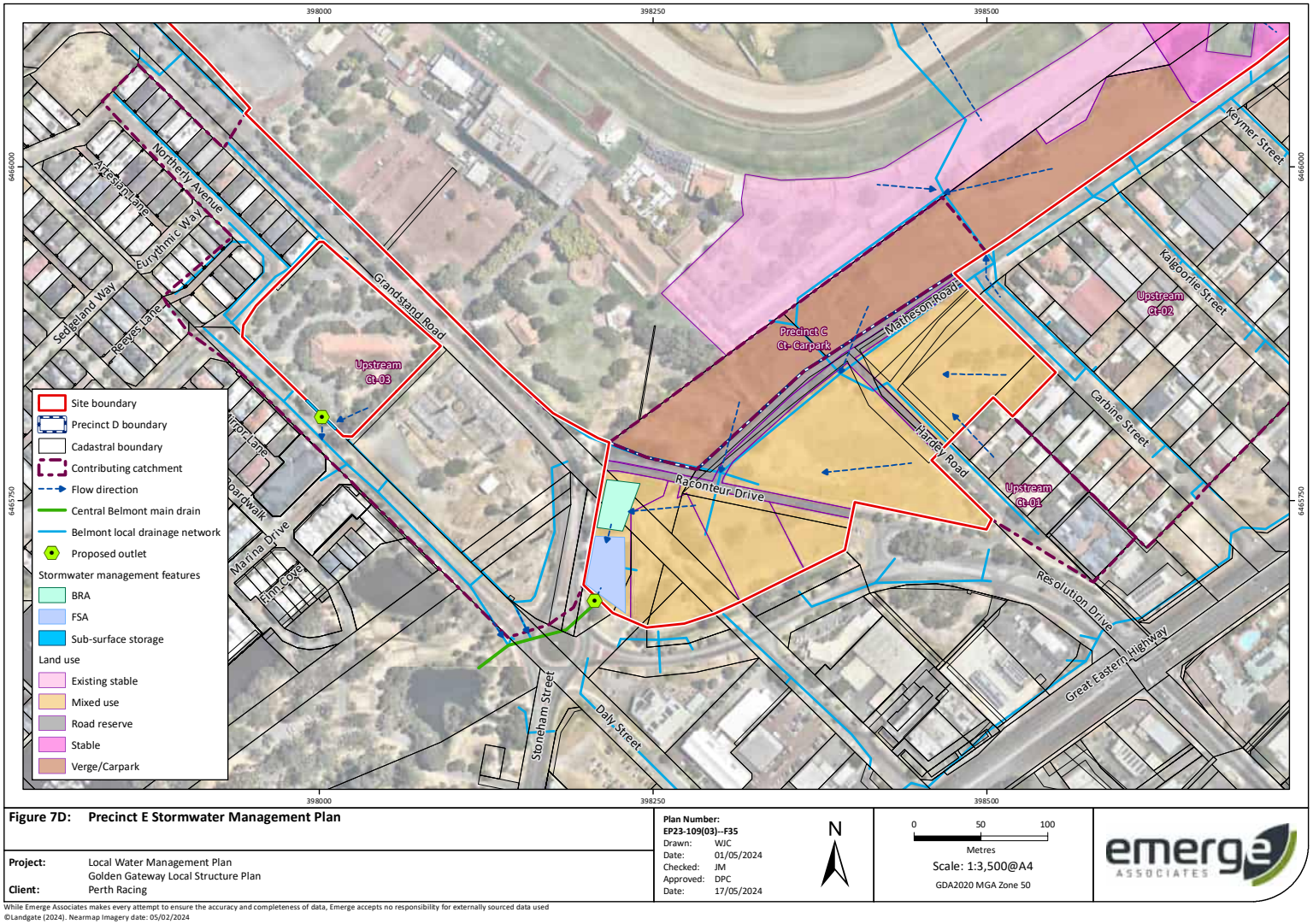
N

0 25 50
Metres
Scale: 1:1,500@A4
GDA2020 MGA Zone 50

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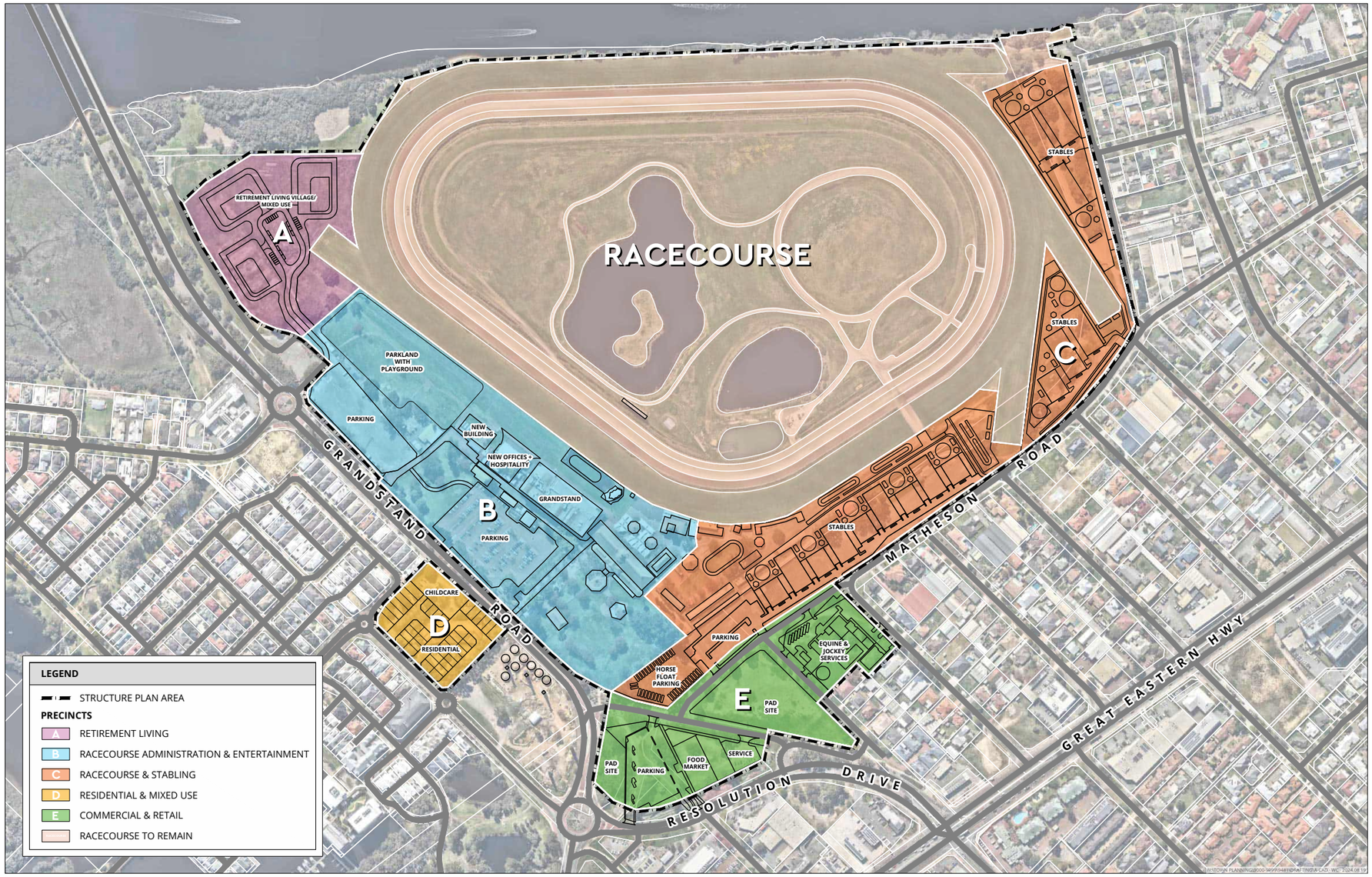
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# Appendix A

Concept plan

*ROWE Group Design (2023)*

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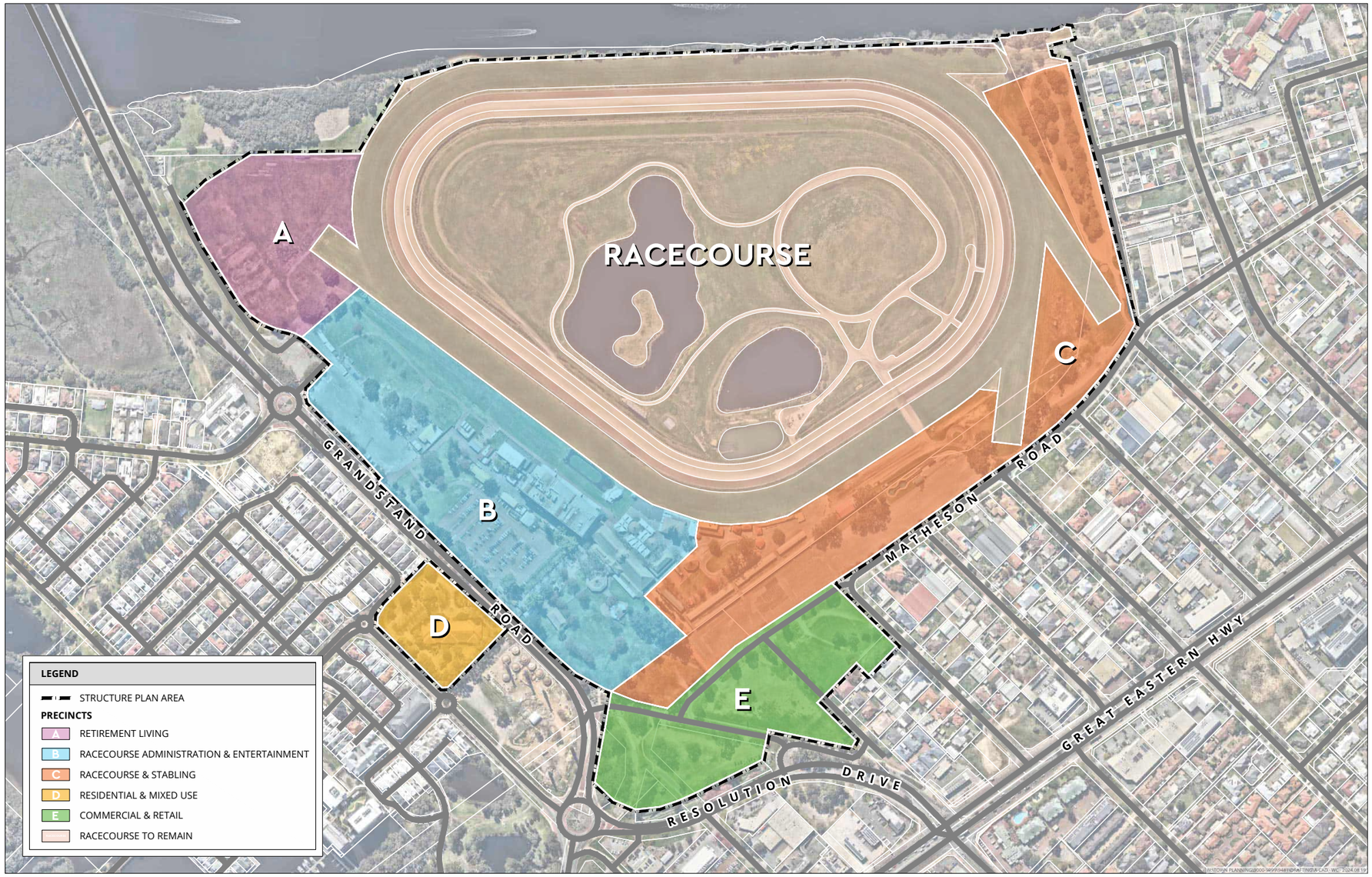

**DRAFT MASTER PLAN CONCEPT**
VARIOUS LOTS - ASCOT RACECOURSE
ASCOT

N
0 100 m
SCALE @ A3: 1:4000
**9481-CON-01-D**

DRAWN: WC
DATE CREATED: 2024.08.19
PROJECTION: MGA50 GDA94
CADASTRE: LANDGATE
AERIAL: NEARMAP 20230831
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ROWE GROUP DESIGN

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**STRUCTURE PLAN PRECINCTS**
VARIOUS LOTS - ASCOT RACECOURSE
ASCOT

N
0 100 m
SCALE @ A3: 1:4000
**9481-FIG-02-C**

DRAWN: WC
DATE CREATED: 2024.08.19
PROJECTION: MGA50 GDA94
CADASTRE: LANDGATE
AERIAL: NEARMAP 20230831

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# Appendix B

## Geotechnical Reports

*Precinct A – Douglas Partners 2024*

*Precinct D – Galt 2024*

Attachment 12.1.2 Local Water Management Strategy

Douglas PARTNERS | GROUNDED EXPERTISE

# Report on Preliminary Geotechnical Investigation

**Proposed Residential Development**

**Part of Lot 9002 Grandstand Road, Ascot WA**

**Prepared for Perth Racing**

**Project 219164.03**

**25 January 2024**

Attachment 12.1.2 Local Water Management Strategy

Douglas Partners Pty Ltd
ABN 75 053 980 117
douglaspartners.com.au
**36 O'Malley Street, Osborne Park,** WA 6017
**(08) 9204 3511**

## Document History
## Details

| | |
|---|---|
| **Project No.** | 219164.03 |
| **Document Title** | Report on Preliminary Geotechnical Investigation |
| **Site Address** | Part of Lot 9002 Grandstand Road, Ascot WA |
| **Report Prepared For** | Perth Racing |
| **Filename** | 219164.03.R.001.Rev0 |

## Status and Review

| Status | Prepared by | Reviewed by | Date issued |
|---|---|---|---|
| Revision 0 | Venkat Vallurapalli/Brendan Divilly | Frederic Verheyde | 25 January 2024 |

## Distribution of Copies

| Status | Issued to |
|---|---|
| Revision 0 | Perth Racing |

The undersigned, on behalf of Douglas Partners Pty Ltd, confirm that this document and all attached drawings, logs and test results have been checked and reviewed for errors, omissions and inaccuracies.

| | Signature | Date |
|---|---|---|
| **Author** | | 25 January 2024 |
| **Reviewer** | | 25 January 2024 |

FS604853

Douglas Partners acknowledges Australia's First Peoples as the Traditional Owners of the Land and Sea on which we operate. We pay our respects to Elders past and present and to all Aboriginal and Torres Strait Islander peoples across the many communities in which we live, visit and work. We recognise and respect their ongoing cultural and spiritual connection to Country.

Attachment 12.1.2 Local Water Management Strategy

Douglas PARTNERS | GROUNDED EXPERTISE

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**Appendix A:** About This Report

**Appendix B:** Test Location Plan

Attachment 12.1.2 Local Water Management Strategy



Test Pit and Borehole Logs

CPT Results

**Appendix C:** Geotechnical Laboratory Test Certificates

FS604853

Douglas Partners acknowledges Australia's First Peoples as the Traditional Owners of the Land and Sea on which we operate. We pay our respects to Elders past and present and to all Aboriginal and Torres Strait Islander peoples across the many communities in which we live, visit and work. We recognise and respect their ongoing cultural and spiritual connection to Country.

Attachment 12.1.2 Local Water Management Strategy



# Report on Preliminary Geotechnical Investigation
# Proposed Residential Development
# Part of Lot 9002 Grandstand Road, Ascot WA

## 1. Introduction

This report presents the results of a preliminary geotechnical investigation undertaken for a proposed residential development across Part of Lot 9002 Grandstand Road, Ascot WA. The investigation was commissioned by Mr. James Oldring of Perth Racing in a signed order to proceed dated 8 August 2023 and was undertaken in accordance with Douglas' proposal dated 8 May 2023.

It is understood that Perth Racing is evaluating the feasibility of developing the northwest portion of Lot 9002 for possible residential use (the 'site').

The objective of the investigation is to assess the subsurface soil and groundwater conditions at across the site to provide preliminary comments on:

- The geotechnical suitability of the site for the proposed development.
- Geotechnical opportunities and constraints relevant to the proposed development.
- Areas of foundation risk including the presence of aggressive soils and strategies to address identified risks.
- Site preparation, including the possible reuse of existing soil as controlled fill.
- Excavation conditions.
- The likely site classification in accordance with the requirements of AS 2870-2011.
- Appropriate earthquake design factor for the site, in accordance with AS 1170.4-2007.
- Suitable foundation systems, including preliminary design parameters.
- Preliminary design parameters for the design of retaining structures and batter slopes.
- Depth to groundwater at the time of the investigation.
- Recommendations on additional geotechnical investigation at detailed design phase or to address specific ground conditions encountered.

The investigation included eight cone penetration tests, 16 test pits and one borehole excavated and drilled as a part of detailed site investigation (for contamination), and laboratory testing of selected samples. The details of the field work are presented in this report, together with comments and recommendations on the items listed above.

The investigation was conducted concurrently with a detailed site investigation (for contamination), which has been reported under separate cover (219164.01.R.001.Rev0). The detailed site investigation (for contamination) report should be read in conjunction with this report.

## 2. Site Description

The site comprises an irregular shaped area, approximately 36.2 ha in size, that covers a part of Lot 9002 Grandstand Road, within the Ascot Racecourse.

At the time of the field work, the majority of the site was vacant and vegetated with short grass. A few mature trees, about 5 m to 10 m in height, occupied the southern part of the site. A parking lot and small loading area were located at the south-western corner of the site. Some fly-tipped rubbish, including fences and posts, were observed at several locations across the site.

According to publicly available LiDAR data (DEM derived to 5 m), the topography across Lot 9002 is relatively flat with existing surface levels ranging from approximately RL 2 m relative to the Australian Height Datum (AHD) in the western part of the site to RL 3.5 in the north-eastern corner of the site.

The Perth 1: 50 000 Environmental Geology sheet indicates that shallow sub surface conditions beneath the western two thirds of the site comprise sandy silt of the Guildford Formation, and beneath the north-eastern corner and eastern corner of the site comprise alluvium.

The Perth Groundwater Atlas (2004) indicates that in May 2003, the groundwater level beneath the site was less than RL 1 m, or between approximately 1.0 m and 2.5 m below the existing surface level. The Atlas also indicates that the groundwater flow direction beneath the site in May 2003 was approximately northwest towards the Swan River.

The published acid sulfate soil risk mapping indicates that the site is located within an area which is mapped as "*high to moderate risk of acid sulfate soils occurring within 3 m of natural soil surface*".

## 3. Field Work Methods

Field work for the investigation was carried out between 11 October and 9 November 2023 and comprised:

- The excavation of 16 test pits.
- The drilling of one borehole.
- Perth sand penetrometer (PSP) or Dynamic cone penetrometer (DCP) testing adjacent to each test pit or borehole location.
- The performance of cone penetration tests at 8 locations (CPT24 to CPT31A). A total of 14 CPTs were undertaken after repeating CPTs at some locations in attempt to achieve greater testing depth following shallow refusal in uncontrolled fill.

The test pits (locations 7 to 22) were excavated using a 5-tonne excavator, equipped with 450 mm toothed bucket, and the borehole (location 23) was drilled using a 250 mm diameter power auger attached to the same excavator. The ground conditions at each test pit and borehole were logged in accordance with Australian Standard (AS 1726, 2017) by a geo-environmental engineer from Douglas. Soil samples were recovered from selected locations for subsequent laboratory testing.

Dynamic cone penetrometer (DCP) and Perth sand penetrometer (PSP) tests were undertaken adjacent to the test pit and borehole locations in accordance with Australian Standards (AS 1289.6.3.3, 1997; AS 1289.6.3.2, 1997) to assess the in-situ density of the shallow soils.

The CPTs use a 36 mm diameter instrumented cone with a following 130 mm long friction sleeve attached to rods of the same diameter, pushed continuously at a rate of 20 mm/sec into the soil by hydraulic thrust from a truck rig. Strain gauges in the cone and sleeve measure resistance to penetration and friction along the sleeve during penetration. This data is recorded on a computer and analysed to assess the type, properties and condition of the materials penetrated. The CPT's were pushed to termination depths of up to 20.2 m. Upon withdrawing the CPT probe, each test hole was dipped in an attempt to measure groundwater levels. CPTs were repeated at several test locations to attempt achieving greater testing depth following shallow CPT refusal on inferred hard foreign inclusions in the uncontrolled fill.

Test locations were determined using a handheld GPS and site features and are marked on Drawing 1, Appendix B. Surface elevations were recorded using a differential GPS with a reported accuracy of 0.1 m.

## 4. Field Work Results

### 4.1 Ground Conditions

The logs of the ground conditions and results of the field testing are presented in Appendix B, together with notes defining descriptive terms and classification methods, in Appendix A.

- **Uncontrolled FILL**
    - **Granular FILL - SAND, Organic SAND, Gravelly SAND, Silty SAND and Sandy GRAVEL (SP, SP-SM, SM and GP-GM)** – generally sandy fill (or gravelly material associated with pavement layers at location 23), uncontrolled (apart from the pavement layers), from surface to depths of between 0.6 m and 3.6 m depth, encountered at all locations. A layer of organic sandy fill layer was observed between 1.4 m and 1.8 m depth at location TP8. The sandy fill was generally loose to medium.
    - **Cohesive FILL - Clayey SAND, Sandy CLAY, CLAY (SM, SC, CI and CL-CI)** – generally stiff to very stiff, either underlying the aforementioned sandy fill material or interbedded within layers of sandy fill, encountered at test pit locations 9, 20, 21, 23, and CPT locations 24, 24A, 29 and 29A.

  A considerable amount of foreign inclusions such as fragments of brick, glass, timber, geo-fabric, concrete, plastic, rubber, scrap metal, terracotta pipes, redundant cables and PACMs were observed at all test pit locations, except location 22. A layer of asphalt was encountered at 0.95 m depth at TP9. The fill materials across the site are uncontrolled.

  It is noted that the fill extended below groundwater level at many locations.

Overlying natural soils including:

- **Clayey soils including Clayey SAND and CLAY** – ranging between very soft to soft and stiff to very stiff, encountered under the fill materials at CPTs 25, 30 and 31A to depths between 4.2 m and 14.9 m.
- **Sandy soils including SAND and Silty SAND** – underlying and interbedded within the above clayey soils at CPTs 25, 30 and 31A. The sand was generally very loose and loose to medium dense to depths between 10.5 m and 14.9 m, becoming medium dense and dense below.

### 4.2 Groundwater

Groundwater level observations between 18 September and 9 November 2023 are summarised in Table 1 and are shown on the logs in Appendix B.

The test holes were immediately backfilled following sampling, which precluded longer-term monitoring of groundwater levels. Six monitoring wells (MW01 to MW06) were installed as part of the preliminary environmental investigation (reported separately) and groundwater observations available from these wells at the time of report writing have been included in Table 1.

**Table 1: Summary of Groundwater Levels**

| Location | Date of Measurement | Ground Surface Level [1] (m AHD) | Groundwater Depth (m) | Groundwater Level [2] (RL m AHD) |
|---|---|---|---|---|
| MW01 | 18 September 2023 | 1.9 | 1.30 | 0.6 |
| MW02 | | 2.0 | 1.46 | 0.5 |
| MW03 | | 3.2 | 2.37 | 0.8 |
| MW04 | | 2.4 | 1.59 | 0.8 |
| MW05 | | 2.5 | 1.21 | 1.3 |
| MW06 | | 2.2 | 1.09 | 1.1 |
| TP7 | 9 November 2023 | 2.9 | 2.30 | 0.6 |
| TP9 | | 2.1 | 2.10 | 0.0 |
| TP12 | | 2.1 | 2.10 | 0.0 |
| TP13 | | 2.8 | 2.50 | 0.3 |
| TP15 | | 2.2 | 2.40 | -0.2 |
| TP16 | | 2.6 | 2.50 | -0.1 |
| TP17 | | 2.2 | 2.10 | 0.1 |
| TP19 | | 2.2 | 1.80 | 0..4 |
| TP20 | | 2.0 | 2.10 | -0.1 |
| TP21 | | 2.1 | 1.80 | 0.3 |
| TP22 | | 2.3 | 1.80 | 0.5 |
| BH23 | | 2.4 | 1.70 | 0.7 |
| CPT25 | 11 October 2023 | 3.4 | 3.00 | 0.4 |
| CPT28 | | 1.9 | 1.30 | 0.6 |
| CPT29A | | 2.3 | 2.20 | 0.1 |
| CPT30 | | 3.2 | 2.80 | 0.4 |
| CPT31A | | 2.1 | 2.00 | 0.1 |

Notes for Table 1: [1]: Surface level measured using a differential GPS.
[2]: Groundwater Level = Surface Level – Groundwater Depth.

It should be noted that groundwater levels are affected by climatic conditions and land usage and will therefore vary with time. In addition, owing to the proximity of the Swan River, the groundwater levels are expected to be impacted by the tidal river conditions and river flood levels.

## 5. Laboratory Testing

A geotechnical laboratory testing programme was carried out by a NATA accredited laboratory and comprised:

- the particle size distributions on seven samples;
- the Atterberg Limits and linear shrinkage on three samples; and
- the organic content on four samples.

Results of the laboratory testing are summarised in Tables 2. The test certificates are presented in Appendix C.

**Table 2: Results of Laboratory Testing for Soil Identification**

| Location | Depth (m) | Fines (%) | Sand (%) | Gravel (%) | LL (%) | PL (%) | PI (%) | LS (%) | OC (%) | Material |
|---|---|---|---|---|---|---|---|---|---|---|
| TP8 | 1.5 | 9 | 61 | 30 | - | - | - | - | 6.8 | FILL / Organic SAND SP-SM, with gravel and silt |
| TP13 | 1.5 | 4 | 95 | 1 | - | - | - | - | 1.6 | FILL / SAND SP, trace gravel and silt |
| TP19 | 2.5 | 5 | 83 | 12 | - | - | - | - | 1.5 | FILL / SAND SP, trace gravel and silt |
| TP21 | 2.0 | 40 | 51 | 9 | 37 | 24 | 13 | 8.5 | - | Sandy CLAY CI, medium plasticity, trace gravel |
| TP22 | 2.0 | 7 | 93 | 0 | NO | NP | NP | - | - | SAND SP-SM, with silt |
| TP23 | 2.0 | 45 | 48 | 7 | 44 | 22 | 22 | 9.5 | - | FILL / Sandy CLAY CI, medium plasticity, trace gravel |
| TP23 | 2.5 | 12 | 87 | 1 | - | - | - | - | 1.2 | FILL / SAND SP-SM, with silt, trace gravel |

Notes: Fines = Finer than 75 µm.
Sand = Between 2.36 mm and 75 µm.
Gravel = Larger than 2.36 mm.
LL – liquid limit PL – plastic limit PI – plasticity index LS – linear shrinkage
OC – organic content NO – not obtainable NP – non plastic

## 6. Proposed Development

At the time of preparing this report, the details for the proposed development were not yet available. Notwithstanding, it is understood that the proposed development is likely to be residential and, given the location, is presumed would likely be multistorey and possibly include a basement level.

## 7. Comments

### 7.1 Site Suitability

The investigation indicates that the site is generally underlain by uncontrolled fill overlying very soft to stiff clayey materials and very loose sandy soils becoming medium dense and dense with depth as described in Section 4.1 above.

From a geotechnical standpoint, there are several significant geotechnical constraints that will adversely impact on any development of the site including;

- Deep uncontrolled fill, unsuitable to support shallow foundations, and will impact on construction activities associated with deep piled foundations.
- Deep very soft and very loose natural soils under the uncontrolled fill, unsuitable to support shallow foundations.
- Shallow groundwater which will make earthworks across the site any possible remediation works of the above difficult. It should be noted that the abovementioned uncontrolled fill and soft soils both extend below groundwater.

Owing to the significant geotechnical constraints, any possible development will likely require a piled foundation solution into the medium dense and dense sandy soils, encountered below depths of approximately 10 m to 15 m. Additional geotechnical investigation will be required to confirm the foundation design and suitable pile design parameters. Also, noting that any proposed additional loading of the ground (for instance from the placement of fill to raise site levels, if proposed) would generate further consolidation of the soft soils underlying the site and cold result in some possible significant ground settlement. Therefore, surcharging areas (by placing temporary fill prior to construction of any structure) outside the proposed building envelopes might also be required during the site preparation to manage the risk of differential settlements between proposed buildings and adjacent ground, following their construction.

### 7.2 Site Classification

The shallow ground conditions beneath the site comprise uncontrolled fill materials and deep loose and soft soil deposits. Based on the results of the investigation and in accordance with Australian Standard (AS 2870, 2011), a site classification of 'Class P' applies to the site, owing to the presence of the uncontrolled fill and deep loose and soft soil.

### 7.3 Site Seismic Classification

Owing to the uncontrolled fill and deep very loose and very soft soil deposits across the site, an earthquake design soil sub-class of Ee is considered appropriate for this site in accordance with Australian Standard (AS 1170.4, 2007). The Hazard Factor (Z) for the site is 0.09, according to Australian Standard (AS 1170.4, 2007). Due to the deep loose soil below the water table, the site also has a significant potential for liquefaction. An assessment on the liquefaction potential of the site should be considered during any detailed investigation, when more details can be collected on the extent of deep loose soils.

### 7.4 Excavation Conditions

The encountered ground conditions generally comprise uncontrolled fill, with some large foreign inclusions within the fill, extending below groundwater. Conventional earthmoving equipment (such as large excavators, say at least 20 t) should be generally suitable for shallow excavations in the surficial uncontrolled fill. Shallow groundwater is likely to impact excavations across the site.

The majority of the uncontrolled fill encountered during this preliminary investigation is considered to be geotechnically unsuitable for re-use as structural fill in its current condition. Any further consideration to reuse the uncontrolled fill would require some specific geotechnical provisions, such as screening and disposing its unsuitable components. Separating the re-useable granular components (e.g. the sandy fill) from its cohesive components (e.g. clayey fill) might also prove to be practically difficult. Owing to the significant variability of uncontrolled fill materials across the site, any re-use potential from a geotechnical standpoint should be confirmed on-site by a geotechnical engineer. Some environmental considerations (i.e. contamination) are also anticipated to be required. Overall, at this stage of the study, the reuse of the encountered uncontrolled fill should be considered to be associated with some significant constraints that might preclude such reuse.

### 7.5 Slope Stability

During construction, it is recommended that temporary batter slopes across the site are maintained flatter than 2:1 (H:V) if not retained. This batter angle is valid provided no surcharge loads (including live loads such as vehicles and machinery) apply at the top of the slope. In uncontrolled fill materials, a safe batter angler not steeper than 3:1 (H:V) is recommended for design for slopes not greater than 3 m in height, however, owing to variability of the uncontrolled fill materials, this value should be adjusted during construction based on the encountered conditions.

The design of unpropped flexible or rigid walls should be undertaken using a triangular pressure distribution and the earth pressure parameters given in Table 4. In addition to the soil pressure, wall design should also allow for external loads such as buildings, live loads and hydrostatic pressure. Owing to the likely significant settlements associated with the uncontrolled fill and deep soft soils, the requirement to adopt a piles foundation system to support proposed retaining walls is anticipated.

**Table 4: Preliminary Soil Parameters for Earth Retaining Design**

| Soil Type and Density | Soil Unit Weight Above Water $\gamma$ (kN/m$^3$) | Submerged Soil Unit Weight $\gamma'$ (kN/m$^3$) | Drained Angle of Friction $\Phi'$ (°) | Undrained Shear Strength Cu (kPa) | Coefficient of Earth Pressure – Active $K_a$ | Coefficient of Earth Pressure – Passive $K_p$ | Coefficient of Earth Pressure – at Rest $K_0$ |
|---|---|---|---|---|---|---|---|
| Uncontrolled Fill Materials | 16 | 6 | 28 | - | 0.36 | 2.7 | 0.5 |

It should be noted that the passive earth pressure coefficient (second last column of Table 4) is an ultimate value and does not incorporate a factor of safety. Because the stress-strain relationship curve for lateral loading is not linear, relatively large strains are required to mobilise full passive pressure, but only relatively small strains are required to mobilise half the passive pressure, therefore it would be prudent to incorporate a factor of safety of at least 2 for uncontrolled fill materials, to derive design values from the ultimate values.

### 7.6 Foundation Options

Shallow footings are not considered suitable across this site, owing to the significant thickness of uncontrolled fill and deep loose and soft soils.

#### 7.6.1 Piles

It is anticipated that a piled foundation system, with deep bored piles that penetrate the deep loose and soft soils into the medium dense and dense sandy soils at depth, would likely be required for any foundations on-site.

Bored piles will require temporary or permanent casing throughout the uncontrolled fill materials, noting that possible obstructions within the uncontrolled might cause some difficulties when driving the casing or drilling the pile hole. This pile type will involve soil excavation to target founding level and hence would produce spoil that needs to be handled and disposed of in a suitable manner, which will need to also be considered from an environmental standpoint.

Installation through the uncontrolled fill materials could be affected by the possible presence of large, hard inclusions and the design of the pile installation methodology should take this possibility into consideration.

The settlement of the uncontrolled fill will exert negative skin friction on the piles, which the piles will need to be designed to accommodate or be constructed in sleeves.

Additional deep geotechnical boreholes will be required across the site to inform on the pile design.

#### 7.6.1 Controlled Modulus Columns

Controlled modulus columns could be installed as an alternative to conventional pile foundations, allowing shallow footings to be used whilst controlling settlements to acceptable limits.

Installation of controlled modulus columns involves displacing a column of material using a reverse flight auger, densifying the soil around the auger, and backfilling the resulting hole with cement ground under moderate pressure to create a 'hard' inclusion in the ground. The columns are typically 250 mm to 500 mm in diameter. Column spacings of columns typically 1.8 m to 2.5 m but would need input from a specialist ground improvement contractor. Columns can be installed to depths of up to 50 m, so could penetrate to the base of the uncontrolled fill and deep loose and soft soils. However, if large hard inclusions such as concrete slabs or beams, are encountered then the auger may experience refusal, as the CPTs did at several locations during the preliminary geotechnical investigation.

A load transfer platform, such as a granular, well compacted fill layer, possibly reinforced with geogrid or geotextile, would be needed to transfer loads from shallow foundations to the columns.

One main benefit of this ground improvement option (compared to piling) would be to minimise differential settlement across the site and notably between buildings and surrounding grounds. However, it would likely be limited to low level development (say 2 to 3 level buildings), and this option is anticipated to likely be prohibitively expensive, with likely significant mobilisation and installation costs. The advice of a specialist ground improvement contractor, such as Menard Oceania, is suggested to be sought to further assess the suitability of this ground improvement to the proposed development.

### 7.7 Pavement Construction

The uncontrolled fill across the site does not form a suitable subgrade material for pavement in its current condition. Depending on the expected loading of proposed pavement, the requirement for some over-excavation of uncontrolled fill is likely. Construction should involve the use of a geo-composite layer (such as Global Synthetics' Combigrid) across the base of the over-excavation, overlain by a 500 mm thick layer of compacted crushed limestone, placement of a layer of geogrid (such as Global Synthetics' Secugrid), and a further 500 mm of compacted sand fill. The base of the constructed floating pavement footprint should be at least 2 m wider on each side than the total pavement width (4 m wider in total) to account for a suitable batter and transfer of load. Standard flexible pavements could then be constructed on the 1 m thick raft of stiffened subgrade. Placement of the initial base layer of composite geogrid may be difficult across areas of exposed uncontrolled fill. As such, depending on the site conditions, a 300 mm thick capping layer of clean fill may be required.

Regardless of the above site preparation, some settlement of the pavement should be expected over its service life and should be considered in the selection of the pavement surfacing. The use of pavers should be considered as such surfacing treatment would deform without cracking. Alternatively, a bituminous seal should be preferred over say an asphalt, owing to greater flexibility and to decrease maintenance and repair requirements, noting however that seals are less resistant than asphalt to shearing forces from tyres of turning heavy vehicles. The use a specialised asphalt, such as a stone mastic asphalt, could also be considered, noting it would be less resistant to the risk of cracking than a seal. Some allowance for regular maintenance and repairs should be allowed during the serviceability of the pavement.

### 7.8 Stormwater Drainage

Owing to the occurrence of low permeability soils and groundwater at shallow depth, the site is considered unsuitable for on-site stormwater disposal. It is suggested that stormwater is controlled using positive drainage or a subsoil drainage network, connected to a suitable outflow.

### 7.9 Additional Geotechnical Investigation

Additional geotechnical investigation across the site, by way of deep geotechnical boreholes (as a minimum), further CPT and additional laboratory testing, should be undertaken to help refine the ground model, provide pile design parameters, confirm suitable bearing strata for piles, and assess the soil aggressivity and exposure classification for piles. It is recommended that the detailed investigation programme be developed once some details of the proposed development

are known, if possible, in order to target specific geotechnical issues associated with the development.

The investigation covered in this report should be considered preliminary and as noted in selected sections of the report, additional detailed geotechnical testing at a greater testing frequency is anticipated once the project design has progressed.

## 8. References

AS 1170.4. (2007). *Structural Design Actions, Part 4: Earthquake Actions in Australia.* Reconfirmed 2018. Incorporating Amendments 1 & 2: Standards Australia.

AS 1289.6.3.2. (1997). *Methods for testing soils for engineering purposes - Soil strength and consolidation tests - Determination of the penetration resistance of a soil - 9kg dynamic cone penetrometer test.* Reconfirmed 2013: Standards Australia.

AS 1289.6.3.3. (1997). *Methods for testing soils for engineering purposes - Soil strength and consolidation tests - Determination of the penetration resistance of a soil - Perth sand penetrometer test.* Reconfimed 2013: Standards Australia.

AS 1726. (2017). *Geotechnical Site Investigations.* Standards Australia.

AS 2159. (2009). *Piling - Design and Installation.* Standards Australia.

AS 2870. (2011). *Residential Slabs and Footings.* Standards Australia.

## 9. Limitations

Douglas Partners (DP) has prepared this report for this project at Part of Lot 9002 Grandstand Road, Ascot WA in accordance with DP's proposal dated 8 May 2023 and acceptance received from Mr James Oldring in a signed services order dated 8 August 2023. The work was carried out under DP's Engagement Terms. This report is provided for the exclusive use of Perth Racing for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

The results provided in the report are indicative of the sub-surface conditions on the site only at the specific sampling and/or testing locations, and then only to the depths investigated and at the time the work was carried out. Sub-surface conditions can change abruptly due to variable geological processes and also as a result of human influences. Such changes may occur after DP's field testing has been completed.

DP's advice is based upon the conditions encountered during this investigation. The accuracy of the advice provided by DP in this report may be affected by undetected variations in ground conditions across the site between and beyond the sampling and/or testing locations. The advice may also be limited by budget constraints imposed by others or by site accessibility.

Attachment 12.1.2 Local Water Management Strategy



The assessment of atypical safety hazards arising from this advice is restricted to the geotechnical components set out in this report and based on known project conditions and stated design advice and assumptions. While some recommendations for safe controls may be provided, detailed 'safety in design' assessment is outside the current scope of this report and requires additional project data and assessment.

This report must be read in conjunction with all of the attached and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by DP. This is because this report has been written as advice and opinion rather than instructions for construction.

The scope of work for this investigation/report did not include the assessment of surface or sub-surface materials or groundwater for contaminants, within or adjacent to the site. Should evidence of fill of unknown origin be noted in the report, and in particular the presence of building demolition materials, it should be recognised that there may be some risk that such fill may contain contaminants and hazardous building materials.

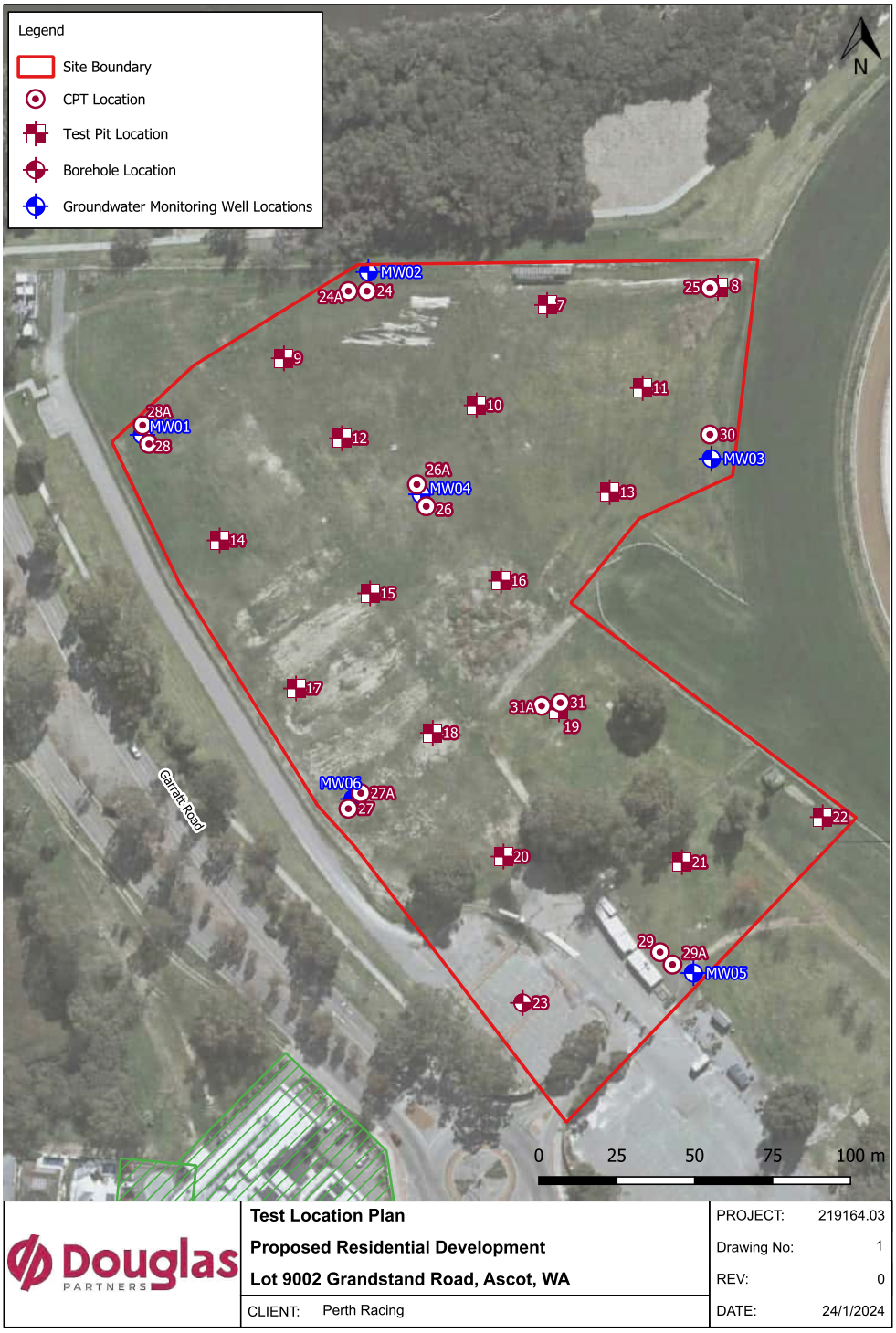
**Appendix B**

Test Location Plan

Test Pit and Borehole Logs

CPT Results

Attachment 12.1.2 Local Water Management Strategy



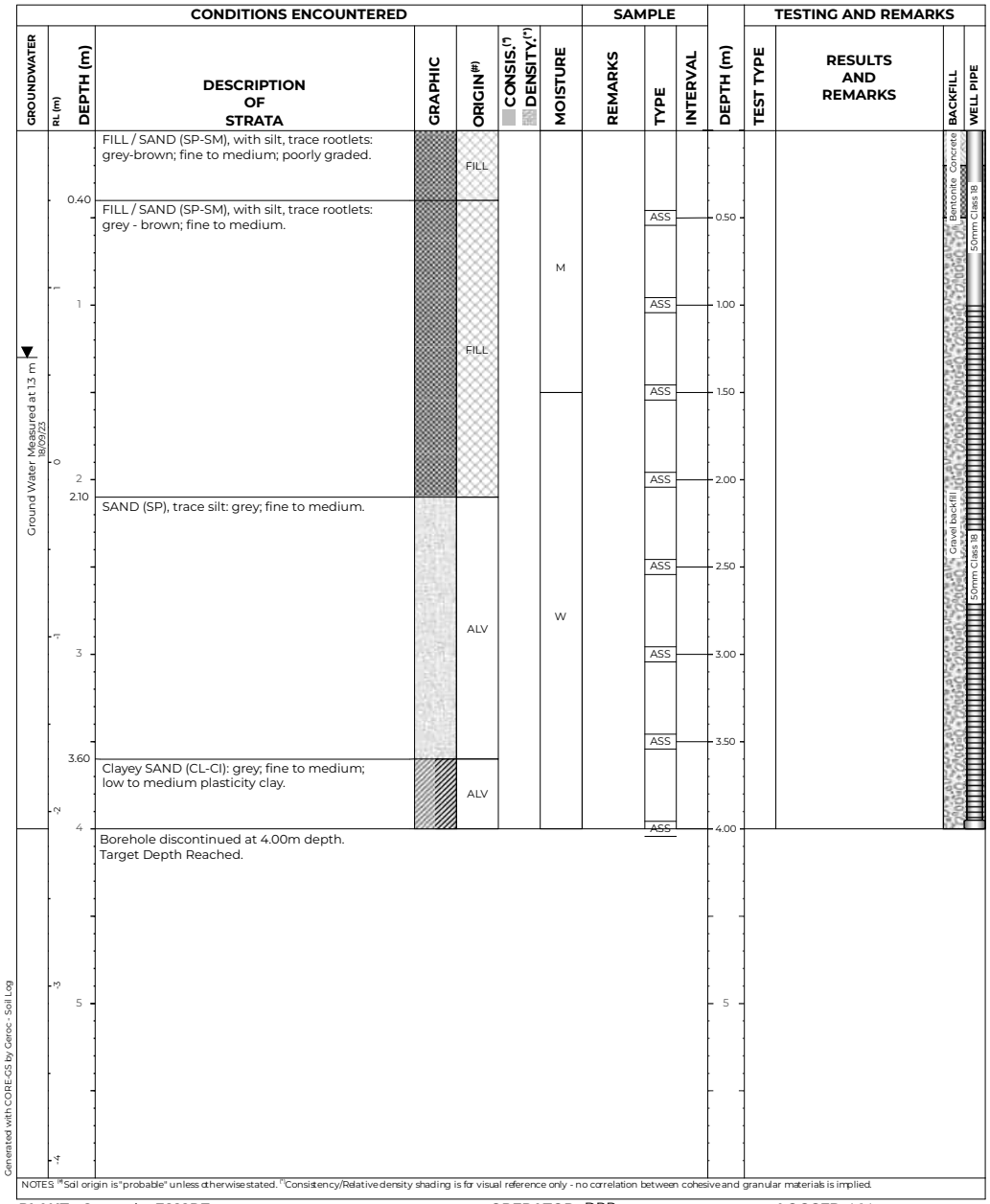
Attachment 12.1.2 Local Water Management Strategy

# BOREHOLE LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 1.9 AHD
**COORDINATE:** E:397722.0, N:6466365.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** MW 01
**PROJECT No:** 219164.01
**DATE:** 11/09/23
**SHEET:** 1 of 1




**PLANT:** Geoprobe 7822DT
**METHOD:** Direct Push Probing
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.

**OPERATOR:** DPP

**LOGGED:** VV
**CASING:** Nil

Refer to explanatory notes for symbol and abbreviation definitions

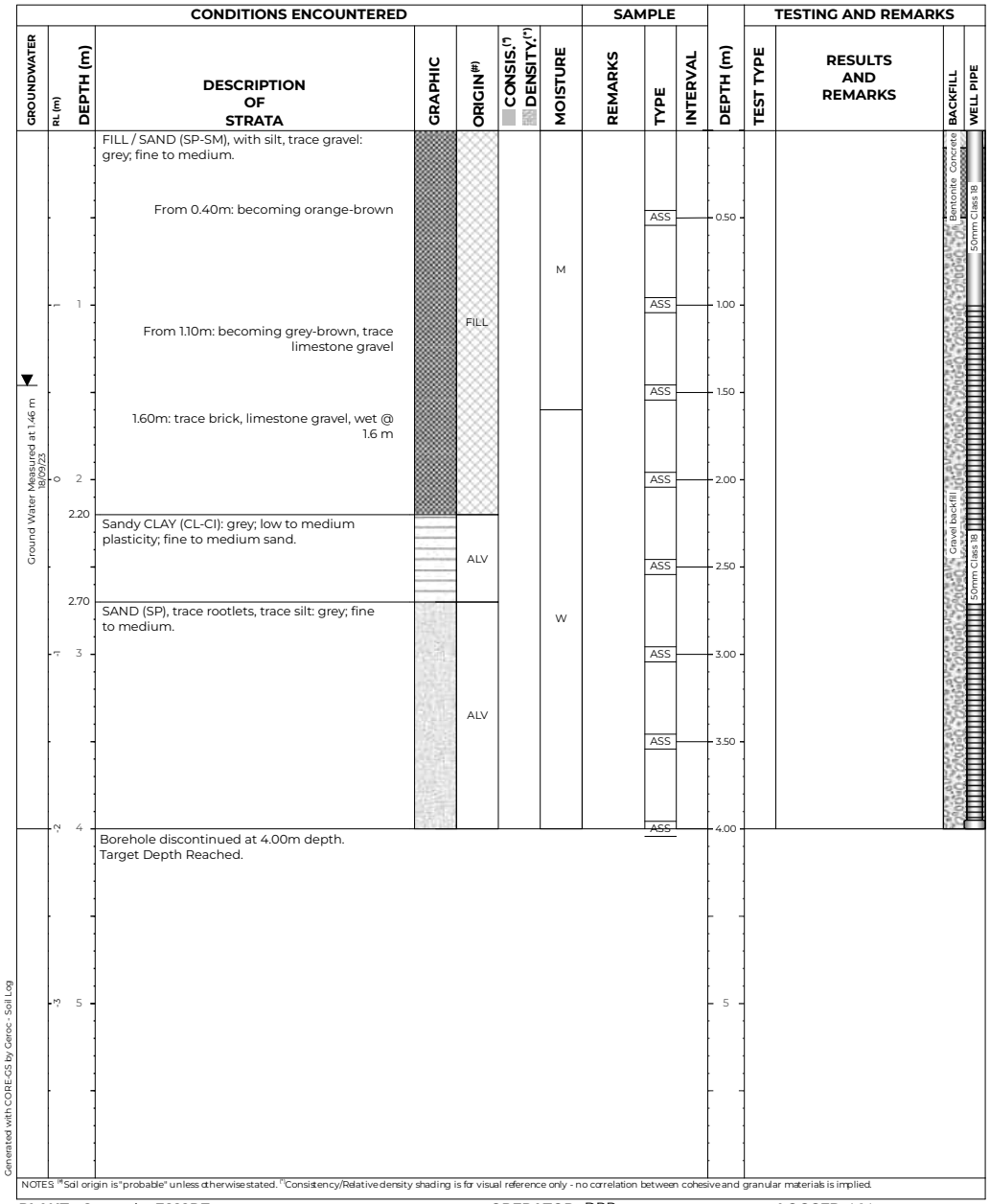
Attachment 12.1.2 Local Water Management Strategy

# BOREHOLE LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.0 AHD
**COORDINATE:** E:397795.0, N:6466418.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** MW 02
**PROJECT No:** 219164.01
**DATE:** 11/09/23
**SHEET:** 1 of 1




**PLANT:** Geoprobe 7822DT
**METHOD:** Direct Push Probing
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.

**OPERATOR:** DPP

**LOGGED:** VV
**CASING:** Nil

Refer to explanatory notes for symbol and abbreviation definitions

Attachment 12.1.2 Local Water Management Strategy

# BOREHOLE LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 3.2 AHD
**COORDINATE:** E:397905.0, N:6466358.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** MW 03
**PROJECT No:** 219164.01
**DATE:** 11/09/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | | TESTING AND REMARKS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) / DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[*] / DENSITY.[*] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS | BACKFILL | WELL PIPE |
| | 3 / 0.00 | FILL / SAND (SP), trace silt: orange; fine to medium. | | FILL | | | | | | | | | Bentonite Concrete | |
| | | From 0.30m: becoming grey, trace clay, limestone gravel | | | | | | | | | | | 50mm Class 18 | |
| | 1 / 2 | | | | | | | | | 1 | | | | |
| | 1.60 | FILL / Clayey SAND (SC), trace gravel: grey; fine to medium; low to medium plasticity clay. | | FILL | | | | | | | | | | |
| | 2 / 1 | | | | | | | | | 2 | | | Gravel backfill | |
| ▼ | 2.20 | FILL / SAND (SP), trace silt: orange - grey; fine to medium. | | FILL | | | | | | | | | 50mm Class 18 | |
| Ground Water Measured at 2.37 m 18/09/23 | | 2.80m: trace brick | | | | | | | | | | | | |
| | 3.00 / 0 | FILL / Clayey SAND (SC): grey; fine to medium; low to medium plasticity clay. | | FILL | | | | | | 3 | | | | |
| | | 3.30m-3.50m: with bitumen layer | | | | | | | | | | | | |
| | 3.60 | FILL / CLAY (CL-CI), trace sand: grey - green; low to medium plasticity. | | FILL | | | | | | | | | | |
| | 4 / -1 | Borehole discontinued at 4.00m depth. Target Depth Reached. | | | | | | | | 4 | | | | |
| | 5 / -2 | | | | | | | | | 5 | | | | |

NOTES [#]Soil origin is "probable" unless otherwise stated. [*]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

Generated with CORE-GS by Geroc - Soil Log

**PLANT:** Geoprobe 7822DT
**METHOD:** Direct Push Probing
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.

**OPERATOR:** DPP

**LOGGED:** VV
**CASING:** Nil

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

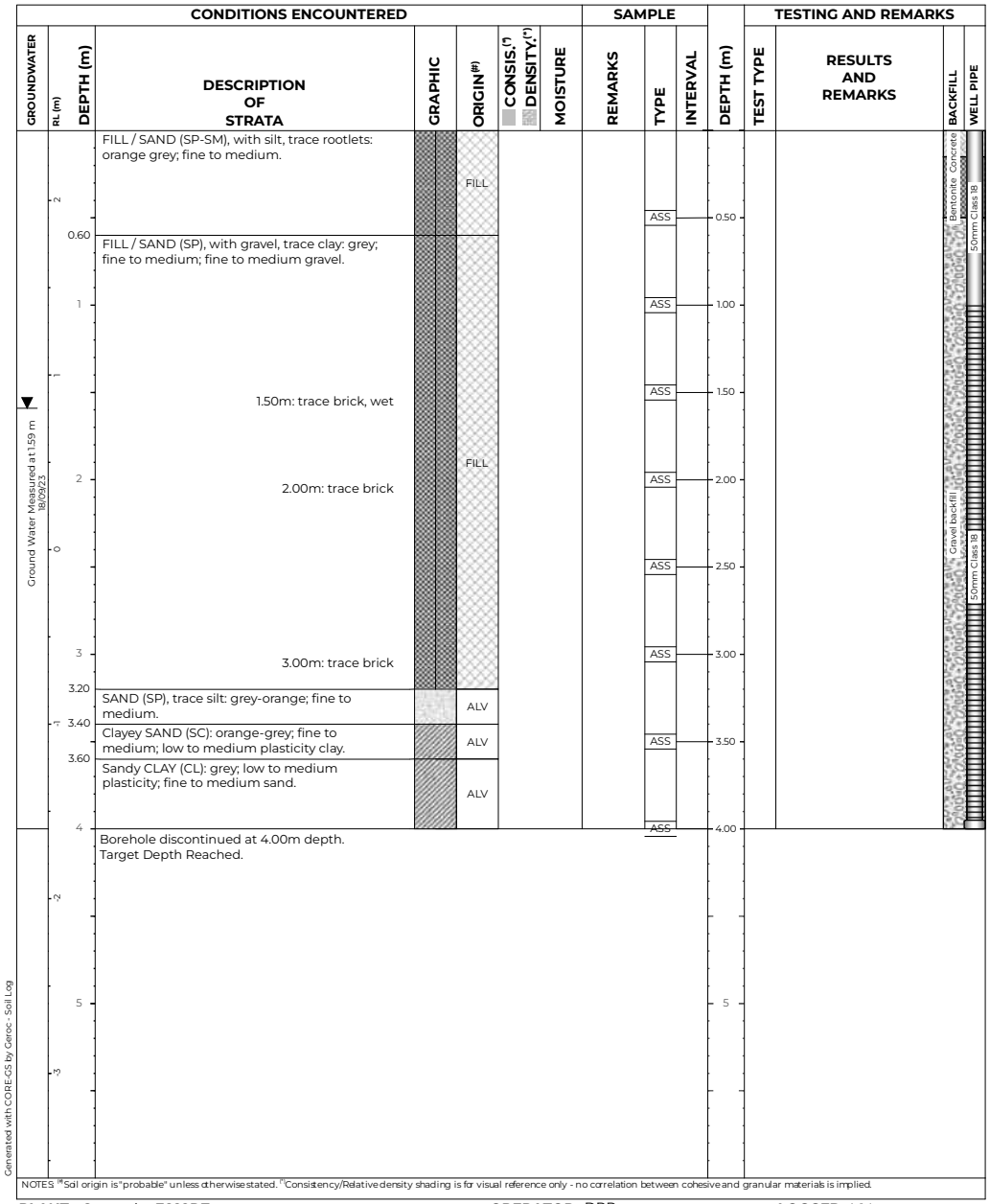
Attachment 12.1.2 Local Water Management Strategy

# BOREHOLE LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.4 AHD
**COORDINATE:** E:397812.0, N:6466346.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** MW 04
**PROJECT No:** 219164.01
**DATE:** 11/09/23
**SHEET:** 1 of 1




NOTES (#)Soil origin is "probable" unless otherwise stated. (*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** Geoprobe 7822DT
**OPERATOR:** DPP
**LOGGED:** VV
**METHOD:** Direct Push Probing
**CASING:** Nil
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

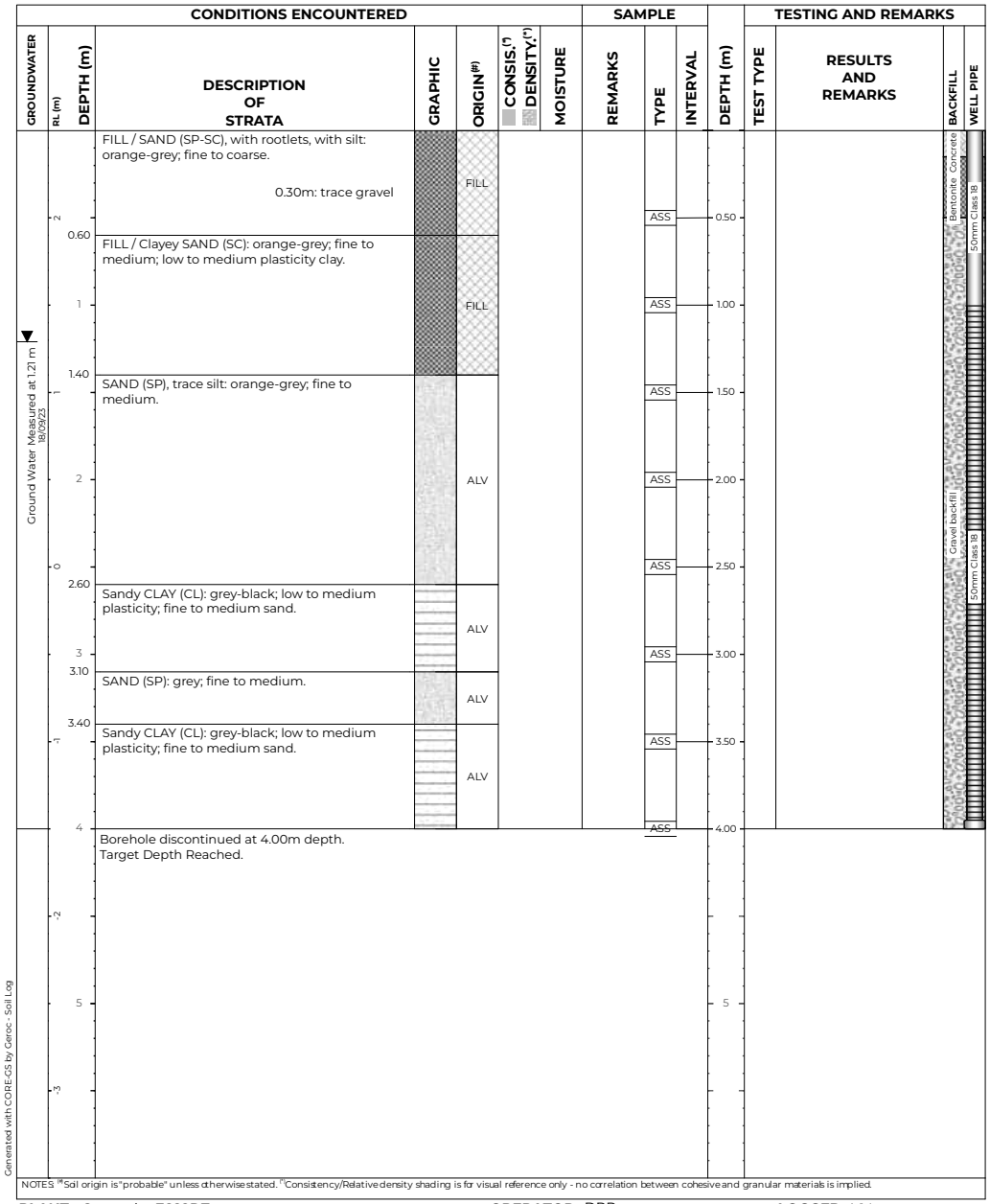
Attachment 12.1.2 Local Water Management Strategy

# BOREHOLE LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.5 AHD
**COORDINATE:** E:397900.0, N:6466193.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** MW 05
**PROJECT No:** 219164.01
**DATE:** 11/09/23
**SHEET:** 1 of 1




NOTES: (#)Soil origin is "probable" unless otherwise stated. (*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** Geoprobe 7822DT
**OPERATOR:** DPP
**LOGGED:** VV
**METHOD:** Direct Push Probing
**CASING:** Nil
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

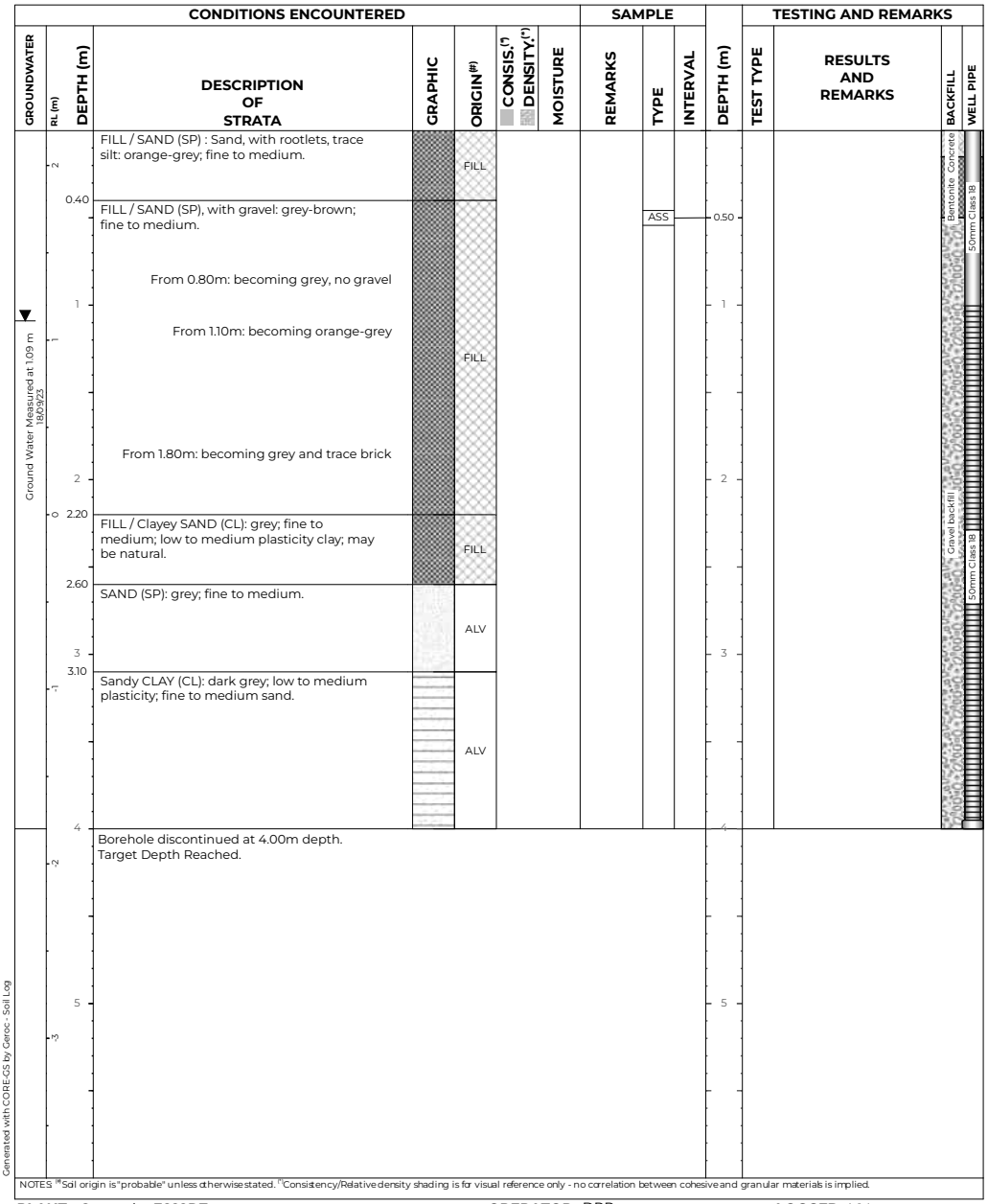
Attachment 12.1.2 Local Water Management Strategy

# BOREHOLE LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.2 AHD
**COORDINATE:** E:397790.0, N:6466249.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** MW 06
**PROJECT No:** 219164.01
**DATE:** 11/09/23
**SHEET:** 1 of 1




**PLANT:** Geoprobe 7822DT
**OPERATOR:** DPP
**LOGGED:** VV
**METHOD:** Direct Push Probing
**CASING:** Nil
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.

Refer to explanatory notes for symbol and abbreviation definitions

Attachment 12.1.2 Local Water Management Strategy

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.9 AHD
**COORDINATE:** E:397852.9, N:6466410.7
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP07
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | SAMPLE | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | DEPTH (m) / RL (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[*] / DENSITY.[*] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE / RESULTS AND REMARKS |
| | 0 | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium. From 0.17m: becoming orange | | FILL | MD to VD | D to M | | ES | | 0.10 | PID <1ppm |
| | | 0.54m: trace geo-fabric | | | | | | ES | | 0.40 / 0.50 | PID <1ppm |
| | 0.60 | FILL / Sandy GRAVEL (GP-GM), with silt: grey; medium to coarse, angular to sub-angular; fine to medium sand. 0.84m: trace geo-fabric | | FILL | | | | | | | |
| | 0.90 | FILL / GRAVEL (GP-GM) : Gravel, with mulch, with sand: dark brown and dark grey-brown; with silt. | | FILL | | | | ES | | 1.00 / 1.10 | PID <1ppm |
| | 1.40 | FILL / SAND (SP-SM), with silt: dark grey; fine to medium. 1.50m: trace PACM fragment From 1.60m-2.60m: with fragments of bricks, concrete and metal roofing sheetings | | FILL | ND | M | ASB9, ASB10 AF/FA | D ES | | 1.50 / 1.60 | PID <1ppm |
| 09/11/23 | | | | | | | | ES | | 2.00 / 2.10 | PID <1ppm |
| | | | | | | W | | ES | | 2.50 / 2.60 | PID <1ppm |
| | | Test Pit discontinued at 2.60m depth. (Collapsing conditions). | | | | | | | | | |





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NOTES [#]Soil origin is "probable" unless otherwise stated. [*]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 2.3 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Attachment 12.1.2 Local Water Management Strategy

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 3.6 AHD
**COORDINATE:** E:397905.7, N:6466414.7
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP08
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) | DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[*] DENSITY.[*] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | | | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium. | | FILL | VD | M | | ES | | 0.10 | PID | <1 ppm |
| | | | From 0.43m: becoming pale grey, trace gravel | | | | | | ES | | 0.50<br>0.60 | PID | <1 ppm |
| | | 1 | From 1.20m: becoming grey | | | | | | ES | | 1.00<br>1.10 | PID | <1 ppm |
| | | 1.40 | FILL / organic SAND (SP-SM), with silt, with gravel: dark grey-brown; fine to medium; trace fragments of brick and concrete. | | FILL | ND | | AF/FA<br>ASB 8 | D<br>ES<br>MAT | | 1.50<br>1.60 | PID | <1 ppm |
| | | | 1.55m-2.00m: with fragments of brick, concrete and PVC | | | | | | | | | | |
| | | 1.80 | FILL / SAND (SP), trace gravel, fragments of brick and concrete, trace silt: dark grey; fine to medium. | | FILL | | | | D<br>ES | | 2.00<br>2.10 | PID | <1 ppm |
| | | | 2.20m: trace metal sheet, PVC | | | | | | | | | | |
| | | | 2.40m: trace rubber pipe, metal bar | | | | | | ES | | 2.50<br>2.60 | PID | <1 ppm |
| | | | Test Pit discontinued at 2.70m depth.<br>(Test Pit terminated due to slow digging). | | | | | | | | | | |

PSP/ISO — 5 10 15 — Refusal 20





NOTES [#]Soil origin is "probable" unless otherwise stated. [*]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
No free groundwater observed.

Refer to explanatory notes for symbol and abbreviation definitions

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Attachment 12.1.2 Local Water Management Strategy

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.1 AHD
**COORDINATE:** E:397768.9, N:6466392.5
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP09
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) | DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[*] DENSITY.[*] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 2 | | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium. | | FILL | D to VD | D to M | | ES | 0.10 | 0.10 | PID | <1ppm |
| | | 0.45 | FILL / Clayey SAND (SC): orange-brown; fine to medium; low to medium plasticity clay. | | FILL | | | | D<br>ES | 0.50<br>0.60 | 0.50 | PID<br>PID | <1ppm<br>REFUSAL 25 25 |
| | | 0.95<br>0.98 | FILL / ASPHALTIC CONCRETE: black, 7 mm sized nominal aggregate. | | | | | | | | 1.00 | | |
| | 1 | | FILL / Silty SAND (SM): brown; fine to medium. From 1.15m: becoming grey-brown<br>From 1.20m: with fragments of brick, concrete slab of 0.4 m in thickness, geo-fabric, metal bar and terracotta pipe<br>1.40m: trace metal sheet | | FILL | ND | M | | ES | 1.10 | 1.10 | PID | <1ppm |
| 09/11/23 | 0 | 2 | 1.90m-2.10m: trace pockets of Clayey SAND SC | | | | | | ES | 1.60 | 1.50 | PID | <1ppm |
| | | | | | | | W | | ES | 2.10 | 2.00 | PID | <1ppm |
| | | | Test Pit discontinued at 2.30m depth. (Collapsing conditions). | | | | | | | | | | |





NOTES [#]Soil origin is "probable" unless otherwise stated. [*]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 2.1 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

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Attachment 12.1.2 Local Water Management Strategy

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.4 AHD
**COORDINATE:** E:397829.1, N:6466375.7
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP10
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) / DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[*] / DENSITY.[*] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 2 | FILL / SAND (SP-SM), with silt, trace rootlets: bands of grey, orange-brown and pale grey; fine to medium. | | FILL | MD to D | | DUP 2 | ES | | 0.10 | PID | <1ppm |
| | | 0.70m: trace geo-fabric | | | | | | ES | | 0.50 | PID | <1ppm |
| | 0.80 | FILL / Sandy GRAVEL (GP-GM), with silt: grey; medium to coarse, angular to sub-angular; fine to medium sand. | | FILL | | | | | | 0.60 | | |
| | 1 | | | | | | | ES | | 1.00 | PID | <1ppm |
| | 1.20 | FILL / SAND (SP), trace rootlets, trace silt: grey -brown; fine to medium. | | FILL | ND | | | | | 1.10 | | |
| | 1 | From 1.40m-1.80m: with fragments of brick and concrete | | | | | | ES | | 1.50 | PID | <1ppm |
| | | From 1.80m: becoming dark grey, trace fragments of brick and concrete | | | | | | | | 1.60 | | |
| | 2 | | | | | | | ES | | 2.00 | PID | <1ppm |
| | 0 | Test Pit discontinued at 2.15m depth. (Test Pit terminated due to slow digging). | | | | | | | | 2.10 | | |

PSP/m





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NOTES [#] Soil origin is "probable" unless otherwise stated. [*] Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
No free groundwater observed.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

Attachment 12.1.2 Local Water Management Strategy

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 3.1 AHD
**COORDINATE:** E:397881.2, N:6466387.1
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP11
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) | DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[*] DENSITY.[*] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 3 | | FILL / SAND (SP-SM), with silt: grey and orange-brown; fine to medium. | | | VD | D to M | | ES | | 0.10 | PSP/150 | 5 10 15 REFUSAL 25 25 |
| | | | From 0.35m: becoming grey | | | | | | ES | | 0.50<br>0.60 | | |
| | | 1 | | | | | | DUP 3 | D<br>ES | | 1.00<br>1.10 | | |
| | 2 | | | | FILL | ND | M | | | | | | |
| | | | From 1.60m: becoming dark grey, trace fragments of brick | | | | | | D<br>ES | | 1.60<br>1.70 | | |
| | | | From 1.70m-2.40m: with fragments of brick and concrete | | | | | | | | | | |
| | | 2 | 1.80m: piece of concrete boulder (1 m x 0.5 m) observed | | | | | | ES | | 2.00<br>2.10 | | |
| | | | 2.10m: trace plastic bottle, glass bottle, concrete rubble | | | | | | | | | | |
| | | | 2.30m: trace fragments of wooden plank and timer | | | | | | D | | 2.30 | | |
| | | | Test Pit discontinued at 2.40m depth.<br>(Test Pit terminated due to slow digging). | | | | | | | | | | |





NOTES [#]Soil origin is "probable" unless otherwise stated. [*]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
No free groundwater observed.

Refer to explanatory notes for symbol and abbreviation definitions

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Attachment 12.1.2 Local Water Management Strategy

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.1 AHD
**COORDINATE:** E:397785.4, N:6466366.6
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP12
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | SAMPLE | | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) / DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[*] / DENSITY:[*] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 2 | FILL / SAND (SP-SM), with silt, trace gravel and rootlets: grey; fine to medium. | | | | | | ES | | 0.10 | PID | <1ppm |
| | | From 0.20m: becoming yellow-brown | | FILL | D to VD | D to M | | ES | | 0.50 | PID | <1ppm |
| | 0.85 / 0.90 | FILL / Sandy GRAVEL (GP-GM), with silt: grey; medium to coarse, angular to sub-angular; fine to medium sand. | | FILL | | | | | | 0.60 | | |
| | 1 | FILL / SAND (SP), trace fragments of brick, scrap metal, timber and rubber cable, trace silt: dark grey-brown; fine to medium. | | | | | | D | | 1.00 | PID | <1ppm |
| | | 1.30m-1.80m: with fragments of plastic waste, insulation material, terracotta pipes and concrete, trace PACM fragments | | | | | AF/FA, ASB 6, ASB 7 | ES | | 1.10 | | |
| | | | | FILL | ND | M | | ES | | 1.50 / 1.60 | PID | <1ppm |
| | 2 | From 1.90m: becoming green-grey, trace pockets of CLAY CL-CI | | | | | | B | | 2.00 | PID | <1ppm |
| 09/11/23 | 0 | | | | | | | ES | | 2.10 | | |
| | | | | | | W | | | | | | |
| | | Test Pit discontinued at 2.30m depth. (Collapsing conditions). | | | | | | | | | | |

PSP/2





NOTES [#]Soil origin is "probable" unless otherwise stated. [*]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 2.1 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

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Attachment 12.1.2 Local Water Management Strategy

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.8 AHD
**COORDINATE:** E:397872.7, N:6466350.7
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP13
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) | DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[*] DENSITY.[*] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | | | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium; 10% non-plastic fines. From 0.15m: becoming orange | | FILL | D to VD | D to M | | ES | 0.10 | | PID <1ppm |
| | | 0.75 | 0.70m: trace geo-fabric | | | | | | D | 0.50 | | PSP/ISO 5 10 15 |
| | 2 | | FILL / Sandy GRAVEL (GP-GM), with silt: grey; medium to coarse, angular to sub-angular; fine to medium sand. | | FILL | | | | ES | 0.60 | | PID <1ppm |
| | 1 | | 1.20m: trace geo-fabric | | | | | | ES | 1.00 | | 25 |
| | | 1.30 | FILL / SAND (SP), trace gravel, fragments of brick and concrete, trace silt: dark grey; fine to medium. | | | | | | | 1.10 | | PID <1ppm |
| | | | 1.50m-2.40m: with fragments of bricks and concrete slab | | | ND | M | | D | 1.50 | | PID <1ppm |
| | 1 | | | | FILL | | | | ES | 1.60 | | |
| | | 2 | | | | | | | ES | 2.00 | | PID <1ppm |
| 09/11/23 | | | | | | | | | | 2.10 | | |
| | | | | | | | W | | ES | 2.50 | | PID <1ppm |
| | 0 | | Test Pit discontinued at 2.70m depth. (Collapsing conditions). | | | | | | | 2.60 | | |





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NOTES [#]Soil origin is "probable" unless otherwise stated. [*]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 2.5 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

Attachment 12.1.2 Local Water Management Strategy

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.2 AHD
**COORDINATE:** E:397745.6, N:6466334.5
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP14
**PROJECT No:** 219164.01
**DATE:** 08/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) / DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[*] / DENSITY.[*] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 2 / 0.25 | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium. | | FILL | D to VD | D to M | | ES | | 0.10 | PID | <1ppm |
| | | FILL / Silty SAND (SM): brown and grey-brown; weakly to moderately cemented. | | | | | | | | | DCP9/150 | 29 / 30 |
| | | 0.65m: trace fragments of brick and glass | | | | | | D | | 0.50 | PID | <1ppm |
| | | 0.72m-2.00m: with framgnes of brick, metal sheet and insulation material | | | | | | ES | | 0.60 | | |
| | 1 | 0.92m: trace fragments of plastic waste, glass and limestone boulders | | | | | | ES | | 1.00 | PID | <1ppm |
| | 1 | | | FILL | ND | M | | | | 1.10 | | |
| | | | | | | | | ES | | 1.50 | PID | <1ppm |
| | | | | | | | | | | 1.60 | | |
| | 2 / 0 | 2.00m: becoming gren-grey, trace fragments of timber, brick and concrete blocks, with pockets of Clayey SAND SC | | | | | | ES | | 2.00 | PID | <1ppm |
| | | From 2.20m: with fragments of brick and scrap metal | | | | | | | | 2.10 | | |
| | | | | | | | | D | | 2.40 | | |
| | | Test Pit discontinued at 2.50m depth. (Test Pit terminated due to slow digging). | | | | | | | | | | |





NOTES [#]Soil origin is "probable" unless otherwise stated. [*]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
No free groundwater observed.

Refer to explanatory notes for symbol and abbreviation definitions

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Attachment 12.1.2 Local Water Management Strategy

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.2 AHD
**COORDINATE:** E:397794.3, N:6466319.4
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP15
**PROJECT No:** 219164.01
**DATE:** 08/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) / DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[^] / DENSITY.[^] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 2 | FILL / SAND (SP-SM), with silt, trace gravel and rootlets: orange-brown; fine to medium. | | | | | | ES | | 0.10 | PID | <1ppm |
| | | From 0.24m: becoming grey | | FILL | VD | D to M | | | | | DCP9/150 | |
| | | From 0.42m: becoming pale grey | | | | | | D | | 0.50 | PID | <1ppm |
| | 0.75 | FILL / Sandy GRAVEL (GP-GM), with silt: dark brown and grey; medium to coarse, angular to sub-angular; fine to medium sand. | | FILL | ND | | | ES | | 0.60 | | 22 |
| | 0.95 | FILL / SAND (SP), with fragments of brick and concrete, trace silt: grey; fine to medium. | | | | | | D | | 1.00 | PID | <1ppm |
| | 1 | | | | | | | ES | | 1.10 | | |
| | | 1.20m: trace fragments of timber, terracotta pipe and scrap metal | | | | | | | | | | |
| | | 1.50m: trace redundant cable | | | | M | | ES | | 1.50 | PID | <1ppm |
| | | | | | | | | | | 1.60 | | |
| | | From 1.80m: becoming orange-brown | | FILL | ND | | | | | | | |
| | 2 | 2.00m: trace PACM pipe | | | | | AF/FA, ASB 5 | ES | | 2.00 | PID | <1ppm |
| | | 2.10m: trace fragments of timer | | | | | | | | 2.10 | | |
| ▼ 08/11/23 | 0 | From 2.40m: becoming dark grey | | | | W | | | | | | |
| | | | | | | | | ES | | 2.50 | | |
| | | | | | | | | | | 2.60 | | |
| | | Test Pit discontinued at 2.70m depth. (Test Pit flooded with water seepage). | | | | | | | | | | |





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NOTES [#] Soil origin is "probable" unless otherwise stated. [^] Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 2.4 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

Attachment 12.1.2 Local Water Management Strategy

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.4 AHD
**COORDINATE:** E:397837.5, N:6466321.2
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP16
**PROJECT No:** 219164.01
**DATE:** 08/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | DEPTH (m) / RL (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[^] / DENSITY.[^] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 0.34 | FILL / SAND (SP-SM), with silt, trace gravel and rootlets: grey; fine to medium. | | FILL | | | | ES | | 0.10 | PID | <1ppm |
| | | FILL / Sandy (GP-GM), with silt: grey; fine to medium sand. | | FILL | ND | D to M | | ES | | 0.50<br>0.60 | PID | <1ppm |
| | 0.84 | 0.80m: trace fragments of plastic waste | | | | | | | | | | |
| | 1 | FILL / SAND (SP), with fragments of brick and concrete, trace silt: grey; fine to medium. | | | MD to D | | | ES | | 1.00<br>1.10 | PID | <1ppm |
| | | 1.50m: trace fragments of plastic waste | | FILL | | M | | D<br>ES | | 1.50<br>1.60 | PID | <1ppm |
| | 2 | 2.00m: trace metal plate (0.5 m x 0.5 m)<br>2.10m: with limestone boulders | | | ND | | | ES | | 2.00<br>2.10 | PID | <1ppm |
| 08/11/23 | | | | | | W | | D<br>ES | | 2.50<br>2.60 | PID | <1ppm |
| | | Test Pit discontinued at 2.60m depth.<br>(Collapsing conditions). | | | | | | | | | | |

DCP9/150





NOTES [#]Soil origin is "probable" unless otherwise stated. [^]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 2.5 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE.GS by Geroc - Soil Log with Photo

Douglas PARTNERS

Attachment 12.1.2 Local Water Management Strategy

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.2 AHD
**COORDINATE:** E:397775.7, N:6466289.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP17
**PROJECT No:** 219164.01
**DATE:** 08/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | SAMPLE | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | DEPTH (m) / RL (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[*] / DENSITY:[*] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE / RESULTS AND REMARKS |
| | 0.15 | FILL / SAND (SP-SM), with silt, trace rootlets: orange - grey; fine to medium. | | FILL | L to VD | D to M | | ES | | 0.10 | PID <1ppm |
| | | FILL / Sandy GRAVEL (GP-GM), with fragments of concrete, with silt: grey; medium to coarse, angular to sub-angular; fine to medium sand. | | | | | | | | | DCP9/150 25 |
| | | | | FILL | | | | ES | | 0.50<br>0.60 | PID <1ppm |
| | 0.90 | FILL / SAND (SP), with fragments of brick and concrete, trace silt: grey; fine to medium. | | | | | | ES | | 1.00<br>1.10 | PID <1ppm |
| | | 1.10m: trace fragments of plastic waste | | | ND | M | ASB 3 | ES | | 1.50<br>1.60 | PID <1ppm |
| | | 1.60m: trace metal sheets | | FILL | | | | | | | |
| 08/11/23 | | 1.90m: piece of concrete block observed | | | | | ASB 4 | ES | | 2.00<br>2.10 | PID <1ppm |
| | | | | | | W | | | | | |
| | | Test Pit discontinued at 2.50m depth. (Collapsing conditions). | | | | | | | | | |





NOTES [#]Soil origin is "probable" unless otherwise stated. [*]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

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**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 2.1 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

Attachment 12.1.2 Local Water Management Strategy

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.2 AHD
**COORDINATE:** E:397816.0, N:6466272.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP18
**PROJECT No:** 219164.01
**DATE:** 08/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) / DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[*] / DENSITY.[*] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 2 | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium; weakly cemented. | | FILL | | D to M | | ES | | 0.10 | PID | <1ppm |
| | 0.26 | FILL / Sandy GRAVEL (GP-GM), with silt: grey; medium to coarse, angular to sub-angular; fine to medium sand. | | FILL | ND | | | | | | | |
| | 0.45 | FILL / SAND (SP), with fragments of brick and concrete, with clay: grey; fine to medium. | | | | | ASB 1 | ES | | 0.50<br>0.60 | PID | <1ppm |
| | | 0.50m-1.50m: with fragments of tile and brick, trace PACM fragments | | | | | | | | | | |
| | 1 | 0.75m: trace metal bar<br>1.00m: trace fragments of redundant cables, glass, geo-fabric and limestone blocks | | FILL | MD to VD | M | | D<br>ES | | 1.00<br>1.10 | PID | <1ppm |
| | | From 1.20m: with limestone boulders | | | ND | | | | | | | |
| | | | | | | | | ES | | 1.40<br>1.50 | PID | <1ppm |
| | 2 | Test Pit discontinued at 1.50m depth.<br>(Test Pit terminated due to slow digging). | | | | | | | | 2 | | |





NOTES [#]Soil origin is "probable" unless otherwise stated. [*]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
No free groundwater observed.

Refer to explanatory notes for symbol and abbreviation definitions

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Attachment 12.1.2 Local Water Management Strategy

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.2 AHD
**COORDINATE:** E:397856.8, N:6466280.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP19
**PROJECT No:** 219164.01
**DATE:** 08/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | SAMPLE | | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) / DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[*] / DENSITY:[*] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 0.20 | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium. | | FILL | | | DUP 1 | ES | | 0.10 | PID | <1ppm |
| | | FILL / Sandy GRAVEL (GP-GM), with silt: orange-brown; medium to coarse; fine to medium sand; Gravel is crushed limestone. | | FILL | ND | D | | D<br>ES | | 0.50<br>0.60 | PID | <1ppm |
| | 0.70 | FILL / SAND (SP-SM), with silt, trace gravel: grey-brown; fine to medium. | | FILL | MD | M | | ES | | 1.00<br>1.10 | PID | <1ppm |
| | | 0.75m: trace concrete slab, fragments of brick and terracotta pipes | | | | | | | | | | |
| | | From 0.90m: with fragments of brick | | | | | | | | | | |
| | | From 1.20m: becoming grey, trace fragments of timber | | | | | | | | | | |
| 09/11/23 | | From 1.60m: becoming grey-brown | | | | | | ES | | 1.50<br>1.60 | PID | <1ppm |
| | 1.90 | FILL / SAND (SP), trace roots, trace silt: dark grey; fine to medium. | | FILL | ND | W | | ES | | 2.00<br>2.10 | PID | <1ppm |
| | | 2.40m: trace fragments of sea shells | | | | | | D<br>ES | | 2.50<br>2.60 | PID | <1ppm |
| | | Test Pit discontinued at 2.60m depth. (Collapsing conditions). | | | | | | | | | | |

PSD50: 5, 10, 15





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NOTES [#]Soil origin is "probable" unless otherwise stated. [*]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 1.8 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

Attachment 12.1.2 Local Water Management Strategy

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.0 AHD
**COORDINATE:** E:397838.6, N:6466231.5
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP20
**PROJECT No:** 219164.01
**DATE:** 08/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) / DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[^] / DENSITY.[^] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 0.05 | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium. | | FILL | | | | ES | | 0.10 | PID | <1ppm |
| | | FILL / Sandy GRAVEL (GP-GM), with silt: yellow-brown; medium to coarse; fine to medium sand. | | FILL | | D to M | | | | | | |
| | 0.34 | FILL / SAND (SP-SM), with silt, trace gravel: grey and orange-brown; fine to medium. 0.50m: with fragments of brick and concrete | | | MD to VD | | | ES | | 0.50<br>0.60 | PID | <1ppm |
| | | 0.80m: trace fragments of rubber waste and scrap metal | | | | | | | | | PSP | |
| | 1 | | | FILL | | | | D<br>ES | | 1.00<br>1.10 | PID | <1ppm |
| | | From 1.20m: becoming dark grey, with fragments of brick<br>1.30m-2.10m: with hydrocarbon odour | | | | M | | | | | | |
| | | 1.50m: with pockets of Clayey SAND SC | | | | | | D<br>ES | | 1.50<br>1.60 | PID | 9.4ppm |
| | 1.80 | FILL / Clayey SAND (SC): dark grey; fine to medium; low to medium plasticity clay. | | | ND | | | | | | | |
| 08/11/23 | 0 2 | From 2.10m: becoming green-grey | | FILL | | W | | ES | | 2.00<br>2.10 | PID | 1.4ppm |
| | | | | | | | | ES | | 2.50<br>2.60 | PID | 1.1ppm |
| | | Test Pit discontinued at 2.60m depth. (Collapsing conditions). | | | | | | | | | | |





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NOTES [#]Soil origin is "probable" unless otherwise stated. [^]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 2.1 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

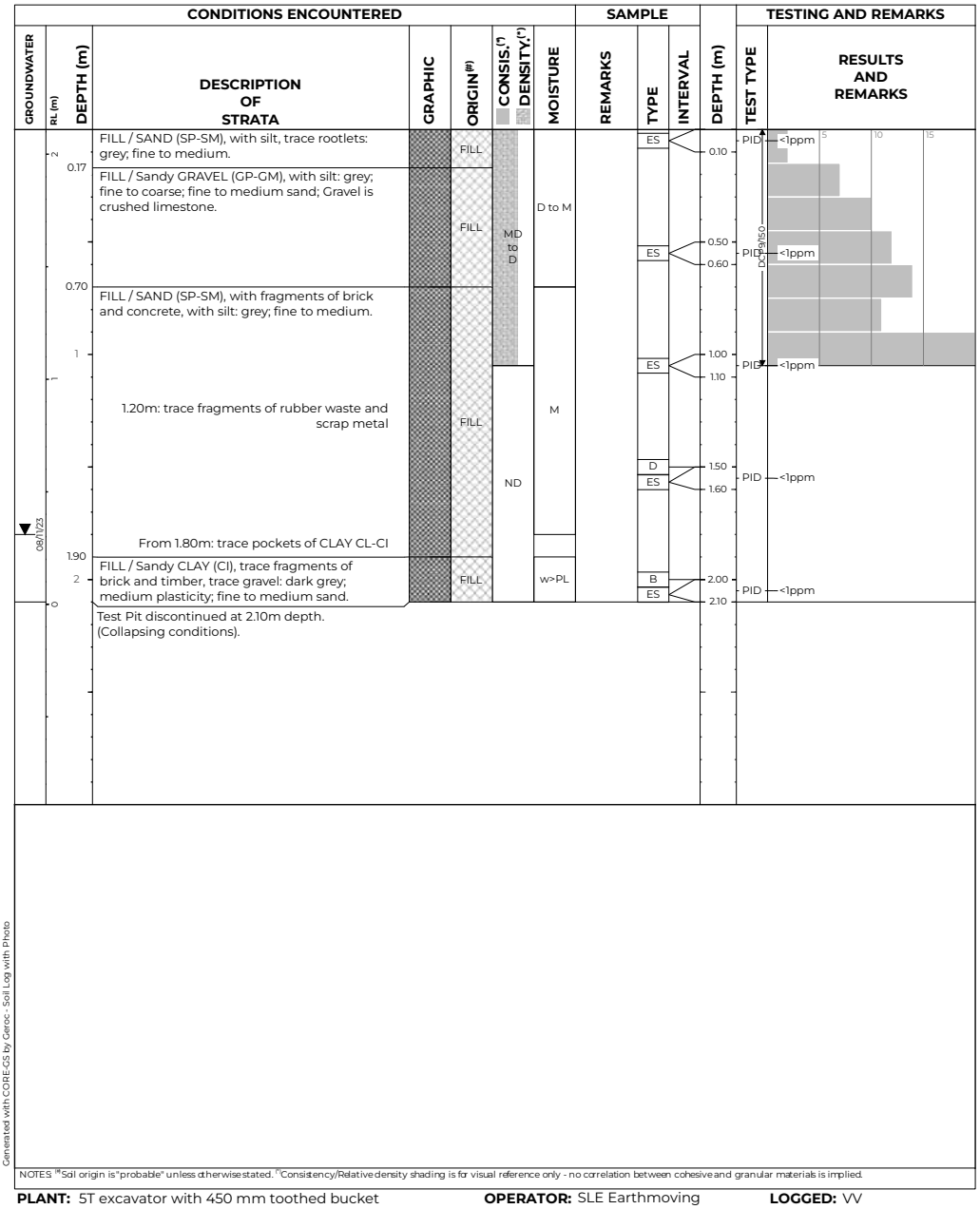
Attachment 12.1.2 Local Water Management Strategy

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.1 AHD
**COORDINATE:** E:397896.5, N:6466231.5
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP21
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1




**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 1.8 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

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Attachment 12.1.2 Local Water Management Strategy

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.3 AHD
**COORDINATE:** E:397941.6, N:6466244.9
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP22
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | SAMPLE | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | DEPTH (m) / RL (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[^] / DENSITY.[^] | MOISTURE | REMARKS | TYPE | INTERVAL DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 0 / 2 | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium. | | FILL | MD | D to M | | ES | 0.10 | PID | <1ppm |
| | | From 0.22m: becoming orange | | | | | | | | | |
| | | From 0.40m: becoming brown | | | | | | ES | 0.50<br>0.60 | PID | <1ppm |
| | | From 0.70m: becoming dark grey-brown | | | | M | | ES | 1.00<br>1.10 | PID | <1ppm |
| | 1.40 / 1 | SAND (SP-SM), with silt: pale yellow-brown; fine to medium. | | possibly ALV | ND | | | ES | 1.50<br>1.60 | PID | <1ppm |
| 09/11/23 | | From 1.70m: becoming orange-grey | | | | W | | B<br>ES | 2.00<br>2.10 | PID | <1ppm |
| | 2 / 0 | Test Pit discontinued at 2.20m depth. (Collapsing conditions). | | | | | | | | | |

PSP/PID





NOTES [#]Soil origin is "probable" unless otherwise stated. [^]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 1.8 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

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Attachment 12.1.2 Local Water Management Strategy

# BOREHOLE LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.4 AHD
**COORDINATE:** E:397844.9, N:6466181.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP23
**PROJECT No:** 219164.01
**DATE:** 08/11/23
**SHEET:** 1 of 1

| GROUNDWATER | RL (m) | DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[*] / DENSITY:[*] | MOISTURE | REMARKS | SAMPLE TYPE | SAMPLE INTERVAL | DEPTH (m) | TESTING AND REMARKS: TEST TYPE | RESULTS AND REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0.05 | ASPHALT: black, 7 mm sized nominal aggregate. | | FILL | | D | | | | | | |
| | | 0.15 | FILL / Sandy GRAVEL (GP-GM), with silt: grey; medium to coarse, angular to sub-angular; fine to medium sand; BASECOURSE, gravel is crushed rock. | | FILL | ND | | | | | | | |
| | | 0.30 | FILL / Sandy GRAVEL (GP-GM), with silt: red-brown; medium to coarse, angular to sub-angular; fine to medium sand; SUB-BASE, gravel is granitic and lateritic. | | FILL | | M | | ES | | 0.50<br>0.60 | PID | <1ppm |
| | | 0.65 | FILL / Silty SAND (SM), trace gravel: brown; fine to medium; with pockets of Clayey SAND SC. 0.90m: trace fragments of brick | | | MD to D | | | | | | DCP9/150 | |
| | | 1 | FILL / Clayey SAND (SC): orange-grey; fine to medium; low to medium plasticity clay. | | FILL | | M | | D<br>ES | | 1.00<br>1.10 | PID | <1ppm |
| | | 1.40 | FILL / SAND (SP), trace silt: grey; fine to medium; trace pockets of Clayey SAND SC. 1.80m: trace fragments of brick | | FILL | | | | ES | | 1.50<br>1.60 | PID | <1ppm |
| 08/11/23 | | 1.90 | FILL / Sandy CLAY (CI), trace gravel: dark grey; medium plasticity; fine to medium sand. | | FILL | ND | W | | D<br>ES | | 2.00<br>2.10 | PID | <1ppm |
| | | 2.20 | FILL / SAND (SP-SM), with silt: dark grey; fine to medium. | | FILL | | | | D<br>ES | | 2.50<br>2.60 | PID | <1ppm |
| | | | Borehole discontinued at 2.60m depth. (Collapsing conditions). | | | | | | | | | | |





NOTES [#]Soil origin is "probable" unless otherwise stated. [*]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**METHOD:**
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**CASING:** Nil

**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 1.7 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

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**Appendix C**

Geotechnical Laboratory Test Certificates

Attachment 12.1.2 Local Water Management Strategy

WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

**TEST REPORT - ASTM D2974-14 (Test Method C)**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18256-18262_1_ORG |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18256-18262 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | Various See Below | *Date Tested:* | 15/11/2023 |

## TEST RESULTS - Organic Content

**Sampling Method:** Sampled by Client, Tested as Received

**Testing Completed By:** WGLS-LC

**Furnace Temperature (°C):** 440

| Sample Number | Sample Identification | Ash Content (%) | Organic Content (%) |
|---|---|---|---|
| WG23.18256 | TP13/1.5 | 98.4 | 1.6 |
| WG23.18257 | TP8/1.5 m | 93.2 | 6.8 |
| WG23.18258 | TP19/2.5 | 98.5 | 1.5 |
| WG23.18262 | BH23/2.5 m | 98.8 | 1.2 |

*Comments:*

Approved Signatory:

Name: Cody O'Neill

Date: 16/November/2023

NATA Accreditation No. 20599
Accredited for compliance with ISO/IEC 17025 - Testing

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Attachment 12.1.2 Local Water Management Strategy

WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

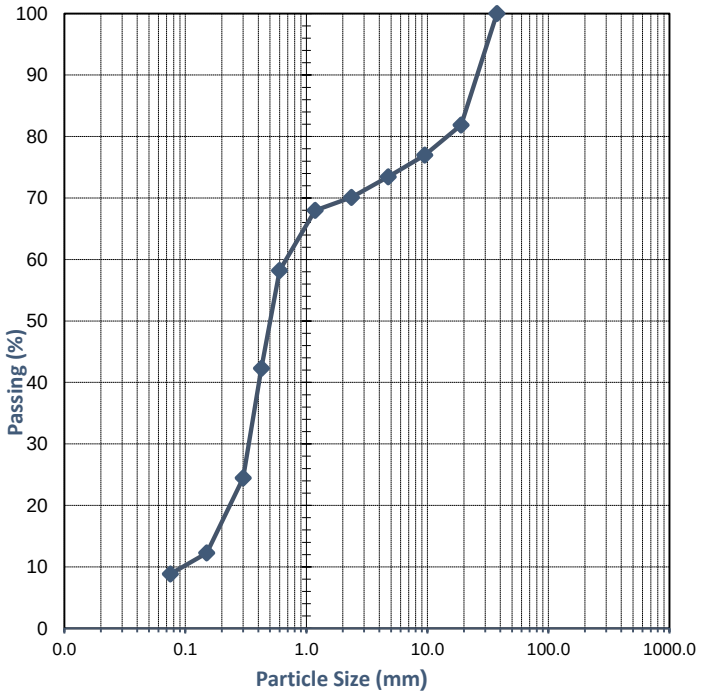
**TEST REPORT - AS 1289.3.6.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18257_1_PSD |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18257 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | TP8/1.5 m | *Date Tested:* | 16/11 - 17/11/2023 |

## TEST RESULTS - Particle Size Distribution of Soil

**Sampling Method:** Sampled by Client, Tested as Received

| Sieve Size (mm) | Percent Passing Sieve (%) |
|---|---|
| 150.0 | |
| 100.0 | |
| 75.0 | |
| 37.5 | 100 |
| 19.0 | 82 |
| 9.5 | 77 |
| 4.75 | 73 |
| 2.36 | 70 |
| 1.18 | 68 |
| 0.600 | 58 |
| 0.425 | 42 |
| 0.300 | 24 |
| 0.150 | 12 |
| 0.075 | 9 |




*Comments:*

Approved Signatory:

Name: Cody O'Neill

Date: 17/November/2023

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Attachment 12.1.2 Local Water Management Strategy

WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

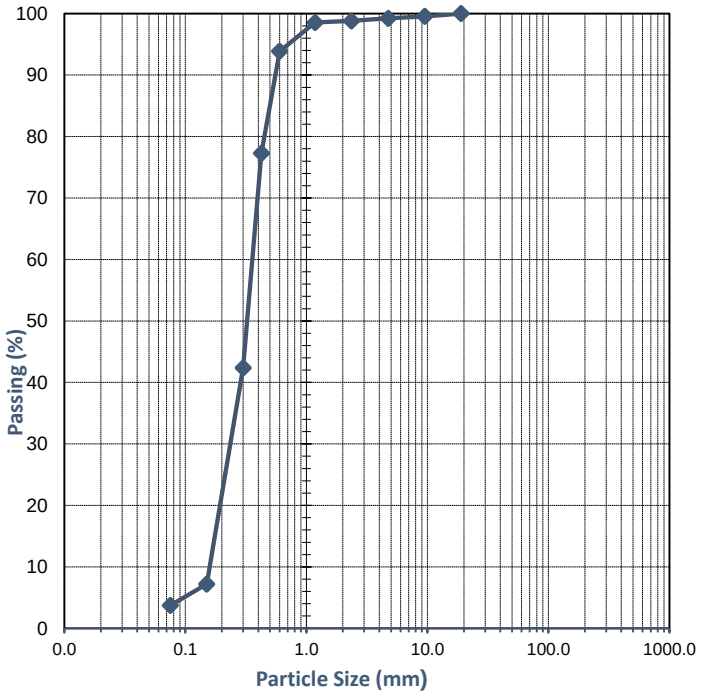
**TEST REPORT - AS 1289.3.6.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18256_1_PSD |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18256 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | TP13/1.5 | *Date Tested:* | 16/11 - 17/11/2023 |

## TEST RESULTS - Particle Size Distribution of Soil

**Sampling Method:** Sampled by Client, Tested as Received

| Sieve Size (mm) | Percent Passing Sieve (%) |
|---|---|
| 150.0 | |
| 100.0 | |
| 75.0 | |
| 37.5 | |
| 19.0 | 100 |
| 9.5 | 100 |
| 4.75 | 99 |
| 2.36 | 99 |
| 1.18 | 99 |
| 0.600 | 94 |
| 0.425 | 77 |
| 0.300 | 42 |
| 0.150 | 7 |
| 0.075 | 4 |




*Comments:*

Approved Signatory: Cody O'Neill

Name: Cody O'Neill

Date: 17/November/2023

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WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

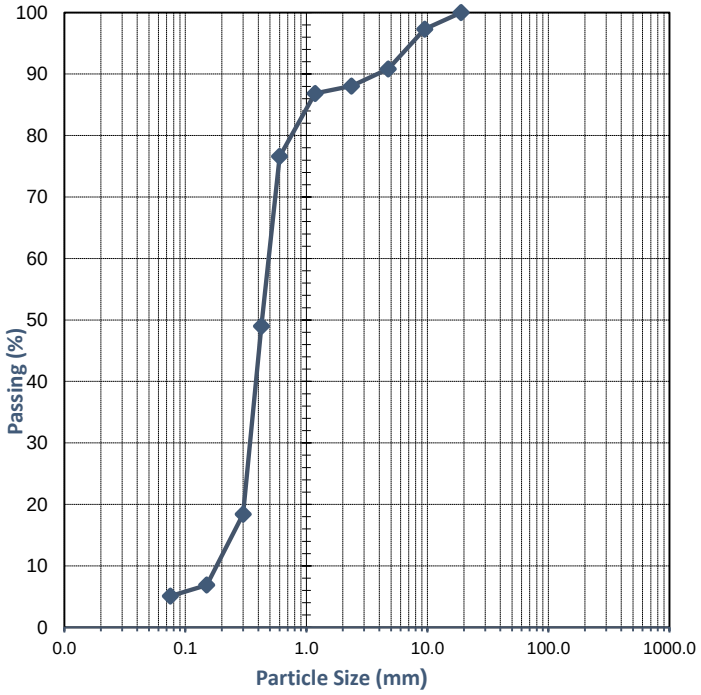
**TEST REPORT - AS 1289.3.6.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18258_1_PSD |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18258 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | TP19/2.5 | *Date Tested:* | 16/11 - 17/11/2023 |

## TEST RESULTS - Particle Size Distribution of Soil

**Sampling Method:** Sampled by Client, Tested as Received

| Sieve Size (mm) | Percent Passing Sieve (%) |
|---|---|
| 150.0 | |
| 100.0 | |
| 75.0 | |
| 37.5 | |
| 19.0 | 100 |
| 9.5 | 97 |
| 4.75 | 91 |
| 2.36 | 88 |
| 1.18 | 87 |
| 0.600 | 77 |
| 0.425 | 49 |
| 0.300 | 18 |
| 0.150 | 7 |
| 0.075 | 5 |




*Comments:*

Approved Signatory: Cody O'Neill

Name: Cody O'Neill

Date: 17/November/2023

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SOIL | AGGREGATE | CONCRETE | CRUSHING

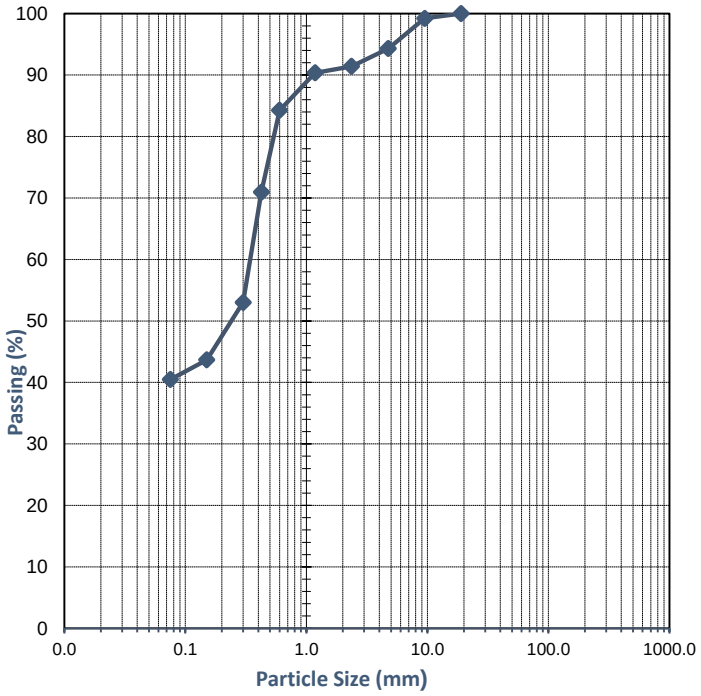
**TEST REPORT - AS 1289.3.6.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18259_1_PSD |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18259 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | TP21/2.0 m | *Date Tested:* | 16/11 - 17/11/2023 |

## TEST RESULTS - Particle Size Distribution of Soil

**Sampling Method:** Sampled by Client, Tested as Received

| Sieve Size (mm) | Percent Passing Sieve (%) |
|---|---|
| 150.0 | |
| 100.0 | |
| 75.0 | |
| 37.5 | |
| 19.0 | 100 |
| 9.5 | 99 |
| 4.75 | 94 |
| 2.36 | 91 |
| 1.18 | 90 |
| 0.600 | 84 |
| 0.425 | 71 |
| 0.300 | 53 |
| 0.150 | 44 |
| 0.075 | 40 |




*Comments:*

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SOIL | AGGREGATE | CONCRETE | CRUSHING

**TEST REPORT - AS 1289.3.1.1, 3.2.1, 3.3.1 & 3.4.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18259_1_PI |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18259 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | TP21/2.0 m | *Date Tested:* | 17/11/2023 |

## TEST RESULTS - Consistency Limits (Casagrande)

| | |
|---|---|
| **Sampling Method:** | **Sampled by Client, Tested as Received** |
| **History of Sample:** | **Oven Dried <50°C** |
| **Method of Preparation:** | **Dry Sieved** |

| | | |
|---|---|---|
| **AS 1289.3.1.1** | **Liquid Limit (%)** | **37** |
| **AS 1289.3.2.1** | **Plastic Limit (%)** | **24** |
| **AS 1289.3.3.1** | **Plasticity Index (%)** | **13** |
| **AS 1289.3.4.1** | **Linear Shrinkage (%)** | **8.5** |
| **AS 1289.3.4.1** | **Length of Mould (mm)** | **250** |
| **AS 1289.3.4.1** | **Condition of Dry Specimen:** | **Curled** |

***Comments:***

**Approved Signatory:**

**Name:** Madhav Basnet
**Date:** 20/November/2023

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SOIL | AGGREGATE | CONCRETE | CRUSHING

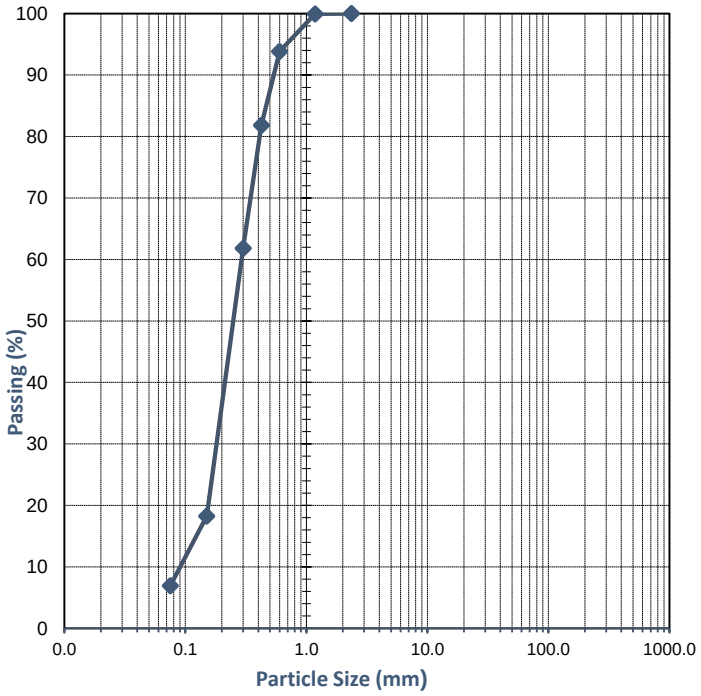
**TEST REPORT - AS 1289.3.6.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18260_1_PSD |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18260 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/2023 |
| *Sample Identification:* | TP22/2.0 | *Date Tested:* | 22/11 - 23/11/2023 |

## TEST RESULTS - Particle Size Distribution of Soil

**Sampling Method:** Sampled by Client, Tested as Received

| Sieve Size (mm) | Percent Passing Sieve (%) |
|---|---|
| 150.0 | |
| 100.0 | |
| 75.0 | |
| 37.5 | |
| 19.0 | |
| 9.5 | |
| 4.75 | |
| 2.36 | 100 |
| 1.18 | 100 |
| 0.600 | 94 |
| 0.425 | 82 |
| 0.300 | 62 |
| 0.150 | 18 |
| 0.075 | 7 |




*Comments:*

**Approved Signatory:**

**Name:** Natasha Bielawski

**Date:** 23/November/2023

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WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

**TEST REPORT - AS 1289.3.1.1, 3.2.1, 3.3.1 & 3.4.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18260_1_PI |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18260 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | TP22/2.0 | *Date Tested:* | 23/11/2023 |

## TEST RESULTS - Consistency Limits (Casagrande)

| | |
|---|---|
| **Sampling Method:** | **Sampled by Client, Tested as Received** |
| **History of Sample:** | **Oven Dried <50°C** |
| **Method of Preparation:** | **Dry Sieved** |

| | | |
|---|---|---|
| **AS 1289.3.1.1** | **Liquid Limit (%)** | **Not Obtainable** |
| **AS 1289.3.2.1** | **Plastic Limit (%)** | **Non-Plastic** |
| **AS 1289.3.3.1** | **Plasticity Index (%)** | **Non-Plastic** |
| **AS 1289.3.4.1** | **Linear Shrinkage (%)** | **0.0** |
| **AS 1289.3.4.1** | **Length of Mould (mm)** | **250** |
| **AS 1289.3.4.1** | **Condition of Dry Specimen:** | **-** |

*Comments:*

**Approved Signatory:**

**Name:** Matthew Lichon
**Date:** 24/November/2023

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SOIL | AGGREGATE | CONCRETE | CRUSHING

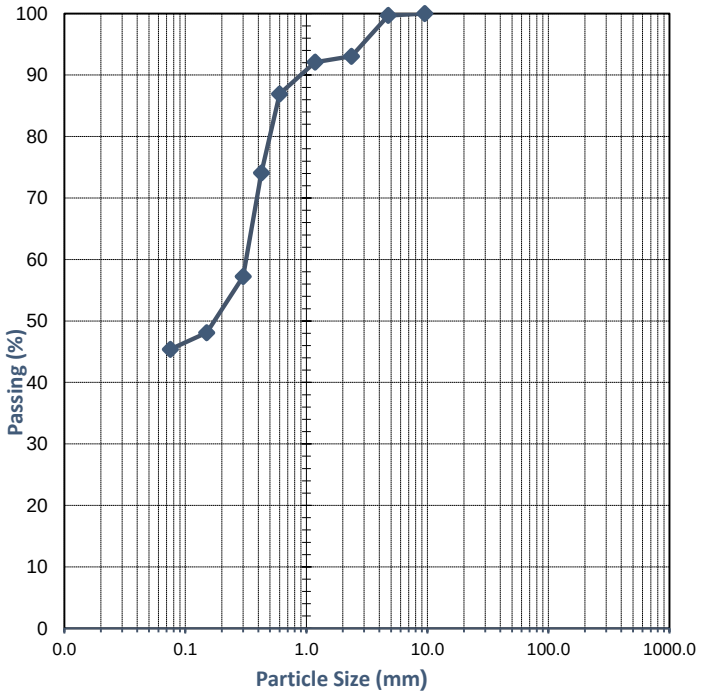
**TEST REPORT - AS 1289.3.6.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18261_1_PSD |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18261 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | BH23/2.0 m | *Date Tested:* | 16/11 - 17/11/2023 |

## TEST RESULTS - Particle Size Distribution of Soil

**Sampling Method:** Sampled by Client, Tested as Received

| Sieve Size (mm) | Percent Passing Sieve (%) |
|---|---|
| 150.0 | |
| 100.0 | |
| 75.0 | |
| 37.5 | |
| 19.0 | |
| 9.5 | 100 |
| 4.75 | 100 |
| 2.36 | 93 |
| 1.18 | 92 |
| 0.600 | 87 |
| 0.425 | 74 |
| 0.300 | 57 |
| 0.150 | 48 |
| 0.075 | 45 |




*Comments:*

Approved Signatory: Cody O'Neill

Name: Cody O'Neill

Date: 17/November/2023

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SOIL | AGGREGATE | CONCRETE | CRUSHING

**TEST REPORT - AS 1289.3.1.1, 3.2.1, 3.3.1 & 3.4.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18261_1_PI |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18261 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | BH23/2.0 m | *Date Tested:* | 17/11/2023 |

## TEST RESULTS - Consistency Limits (Casagrande)

| | |
|---|---|
| **Sampling Method:** | **Sampled by Client, Tested as Received** |
| **History of Sample:** | **Oven Dried <50°C** |
| **Method of Preparation:** | **Dry Sieved** |

| | | |
|---|---|---|
| **AS 1289.3.1.1** | **Liquid Limit (%)** | **44** |
| **AS 1289.3.2.1** | **Plastic Limit (%)** | **22** |
| **AS 1289.3.3.1** | **Plasticity Index (%)** | **22** |
| **AS 1289.3.4.1** | **Linear Shrinkage (%)** | **9.5** |
| **AS 1289.3.4.1** | **Length of Mould (mm)** | **250** |
| **AS 1289.3.4.1** | **Condition of Dry Specimen:** | **Curled** |

***Comments:***

**Approved Signatory:**

**Name:** Madhav Basnet
**Date:** 20/November/2023

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SOIL | AGGREGATE | CONCRETE | CRUSHING

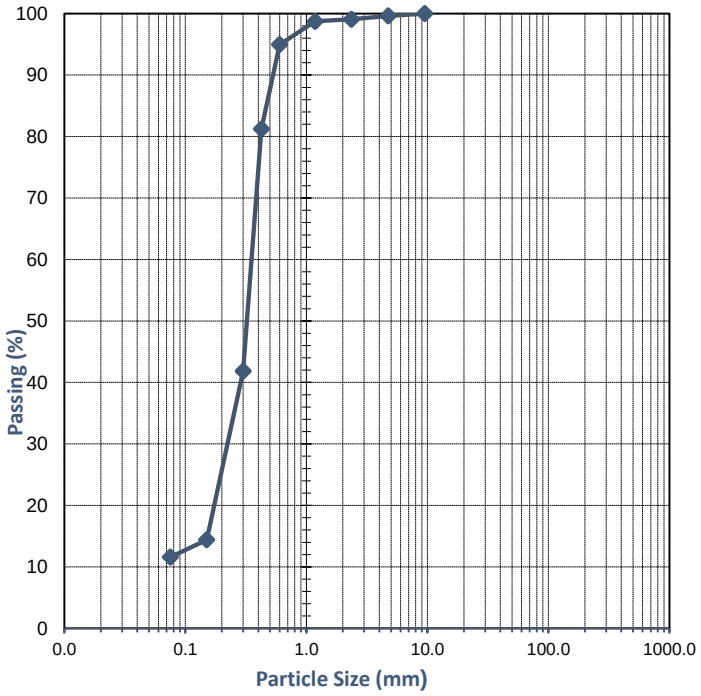
**TEST REPORT - AS 1289.3.6.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18262_1_PSD |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18262 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | BH23/2.5 m | *Date Tested:* | 16/11 - 17/11/2023 |

## TEST RESULTS - Particle Size Distribution of Soil

**Sampling Method:** Sampled by Client, Tested as Received

| Sieve Size (mm) | Percent Passing Sieve (%) |
|---|---|
| 150.0 | |
| 100.0 | |
| 75.0 | |
| 37.5 | |
| 19.0 | |
| 9.5 | 100 |
| 4.75 | 100 |
| 2.36 | 99 |
| 1.18 | 99 |
| 0.600 | 95 |
| 0.425 | 81 |
| 0.300 | 42 |
| 0.150 | 14 |
| 0.075 | 12 |




*Comments:*

Approved Signatory: Cody O'Neill

Name: Cody O'Neill

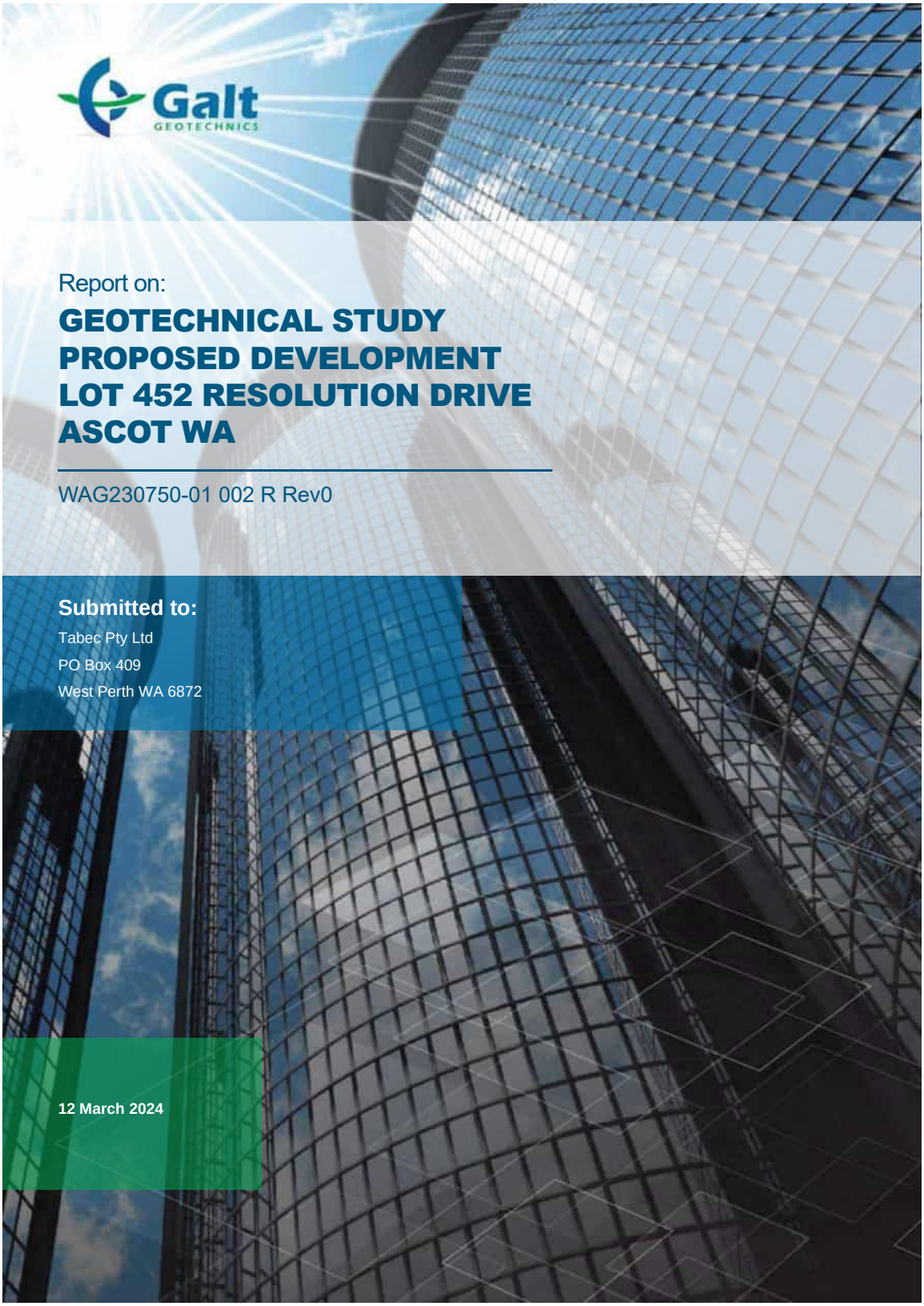
Date: 17/November/2023

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Attachment 12.1.2 Local Water Management Strategy



Attachment 12.1.2 Local Water Management Strategy



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Figure 1: Site and Location Plan

Appendix A: Site Photographs
Appendix B: Cone Penetration Test Results
Appendix C: Machine Borehole and Monitoring Well Logs
Appendix D: Laboratory Test Results

Standard Geotechnical Definitions, Recommendations, Requirements and Limitations

Attachment 12.1.2 Local Water Management Strategy



# 1. INTRODUCTION

This report presents the outcomes of Galt Geotechnics' (Galt's) geotechnical study for the proposed development at Lot 452 Resolution Drive, Ascot ("the site").

This report is to be read in conjunction with the appended "Geotechnical Definitions, Recommendations, Requirements and Limitations". 'Clause GDR1', etc. refer to this Appendix, found at the back of this report.

# 2. KEY FINDINGS

## Site Description

*Table 1: Summary of Site*

| Item | Comment |
|---|---|
| Site Extent | Refer Figure 1. |
| Site Area | About 1.14 Ha. |
| Current Site Surface Levels[1] | About RL 3 m AHD. |
| Vegetation | Mature trees, shrubs and lawn in landscaped areas covering a large portion of the site. |
| Existing Infrastructure | Single Storey building (used by Perth Racing Security Services) with surrounding accessways, car parking and landscaped areas. |
| Site History[2] | **Prior to 1953**: two residences in northern portion of site. Remainder of site relatively clear.<br>**1953 to 1985**: Relatively unchanged. Undeveloped portion of site used as laydown area, car park area, and to stockpile materials at different times.<br>**1989**: Existing Perth Racing Security Services development (as described above) is present<br>**1989 to Present**: Site relatively unchanged. |

***NOTES:*** ***1.*** *Site level based on correspondence with client.*

***2.*** *Site history based on aerial imagery (Landgate).*

# 3. PROPOSED DEVELOPMENT

*Table 2: Summary of Proposed Development*

| Item | Comment |
|---|---|
| Proposed Development | Unknown, assumed subdivision for commercial/residential purposes. |
| Proposed Finished Level | Assumed within about 1 m of current ground levels. |
| Cut/Fill | Assumed ± 1 m with up to 5 m excavation to connect development to existing sewer. |
| Assumed Foundation Type | Shallow Footings. |
| Assumed Retaining Walls | Gravity walls up to 1 m in height. |
| Assumed Stormwater Disposal | Off site into council network. |
| Assumed Sewage Disposal | Off site via reticulated sewer. |

***NOTES:*** ***1.*** *FFL – finished floor level*

***2.*** *Proposed development details based on supplied information.*

# 4. PROJECT OBJECTIVES

The objectives of the study were to:

- Assess the geotechnical suitability of the site for the proposed development;

- Geotechnical opportunities and constraints relevant to the proposed development;
- Areas of foundation risk including the presence of aggressive soils and strategies to address identified risks;
- Site preparation including possible reuse of existing soil as controlled fill;
- Excavation conditions;
- The likely site classification;
- Suitable foundation systems including preliminary design parameters;
- Preliminary design parameters for the design of retaining structures and batter slopes;
- Depth to groundwater at time of investigation; and
- Recommendations on additional geotechnical investigation at detailed design phase or to address specific ground conditions encountered.

# 5. FIELDWORK

Fieldwork was carried out in the presence of a representative from Galt between the 8 and 14 February 2024 and comprised:

*Table 3: Summary of Field Data*

| Type | Results Appendix | Summary | GDR Clause | Equipment Used | No. Tests | Depth Range (m) |
|---|---|---|---|---|---|---|
| Site Plan | Figure 1 | - | - | Hand held GPS[1] | - | - |
| Photographs | A | - | - | - | - | - |
| Cone Penetration Tests (CPTs) | B | Section 8 | GDR3.2 | 14-tonne truck | 5 | 1.6 to 10.1 |
| Machine Auger Boreholes (BH) | C | Section 8 | GDR3.3 | AMS Power Probe | 4 | 0.7 to 6.5 |
| Monitoring Well (MW) | C | Section 8 | GDR3.3 | AMS Power Probe | 1 | 6.0 |

***NOTES:*** ***1.*** *Hand held GPS is accurate to ±5 m.*

# 6. LABORATORY TESTING

Laboratory test certificates are presented in Appendix D, and summarised in Attached Tables 1 and 2.

# 7. SITE CONDITIONS

## 7.1. Geology

*Table 4: Summary of Geology Mapping*

| Map Sheet | Map Scale | Mapped Soils | Typical Site Findings |
|---|---|---|---|
| Perth | 50K | Guildford Formation, described as: "*SANDY SILT - strong brown to mid grey, mottled, blocky, disseminated fine sand, hard when dry, variable clay content of alluvial origin.*" | **Thin topsoil** (landscaped areas) **and pavement materials** (car parks / access ways) **over FILL: SAND / SAND** to about 0.4 m to 0.9 m depth, **over Sandy CLAY / CLAY**. |

## 7.2. Groundwater

*Table 5: Summary of Groundwater Levels*

| Item | Date | Depth Range (m) | Elevation Range (m AHD) | Comment |
|---|---|---|---|---|
| Perth Groundwater Atlas | 1997 | - | 3.0 | Historical maximum |
| Department of Water and Environmental Regulation (DWER) Flood Mapping | - | - | 2.7 to 2.9 (DWER mapped 1% AEP flood event level) | Portion of site along southern and south western site boundaries, and the northern side of Grandstand road are mapped as being part of flood fringe by DWER. **Advice on development within the defined flood event (DFE) floodplain is provided by DWER on a case by case basis. DWER recommends a minimum building floor level of 0.50 metres above this level** (**RL 3.4 m AHD**). |
| Site observations in MW01 | February 2024 | 3.03 | - | Based on highest recorded water levels in monitoring well. |
| Site observations in CPT test probes | February 2024 | 1.90 to 2.80 | - | CPT probes may not have had sufficient time to recharge to hydrostatic levels. |
| Recommended Design | - | - | 2.7 to 2.9 | Groundwater likely to perch on clay soils at site. Proposed development must be designed for DWER DFE flood event. |

***NOTES:*** ***1.*** *Depths for site observations based on the site surface level at the time of investigation.*

# 8. GROUND MODEL

The encountered subsurface conditions are summarised as comprising:

- **Surficial Topsoil (in landscaped areas)** up to 0.3 m thick **and Hardstand Fill Layers** (in carparks and access ways); **overlying**
- **FILL: SAND / SAND (SP)**, fine to medium grained, sub-rounded to sub-angular, yellow / brown / grey layers, includes trace gravel / Sandy GRAVEL layers, trace / with fines, some typically medium dense to dense, extending to depths of about 0.4 m to 0.9 m; overlying
- **In BH03 and BH04 only: Silty SAND / Clayey SAND (SM/SC)** fine to medium grained, sub-rounded to sub-angular, brown / grey, low to medium plasticity fines, some typically medium dense to dense, extending to depths of about 0.7 m to 1.2 m; overlying
- **Sandy CLAY / CLAY (CI)**, medium plasticity, brown / orange / grey, trace sand to sandy, trace gravel in some zones, desiccated, CPT traces indicate presence of occasional sand layers, typically very stiff to hard, extending to the maximum depth investigated of 10 m.

Geotechnical design parameters for the generalised subsurface units described above are presented in Table 6.

*Table 6: Geotechnical Model Units and Design Parameters*

| Unit Name | $\gamma_{bulk}$ (kN/m$^3$) | $\phi'$ (°) | c' (kPa) | $S_u$ (kPa) | $E_v$ (MPa) | $\nu$ | $k_0$ | Wall Friction=0 | | Wall Friction=0.5$\phi$ | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | $k_a$ | $k_p$ | $k_a$ | $k_p$ |
| Compacted Approved FILL | 18 | 36 | - | - | 50 | 0.25 | 0.41 | 0.26 | 3.85 | 0.22 | 6.54 |
| SAND / Silty SAND / Clayey SAND | 18 | 35 | - | - | 25 | 0.3 | 0.43 | 0.27 | 3.69 | 0.24 | 6.08 |
| Sandy CLAY / CLAY | 18 | 21 | 0 to 5 | 150 | 30 | 0.45 | Earth pressure coefficients can be calculated for undrained or drained conditions as outlined in GDR11.2.2 using Firm parameters (undrained) or Fines Content >35% & PI 40% (drained). | | | | |

***NOTES:***

1. *These units are a generalization of results from individual tests, which should be referred to for more information.*
2. *Conditions at CPT locations below depth of soil sample recovery are inferred (refer to clause GDR3.2)*
3. *Surficial topsoil and hardstand layers are not included as discrete units.*
4. *Compacted approved fill is as described in Table 7.*
5. *For all earth pressure coefficients (retaining wall design) refer to clause GDR11.2 for more detail and interpretation. Unit weights for retaining structure design should be as per GDR11.2 or 1 kN/m$^3$ greater than the values in the table above.*

*$\gamma_{bulk}$ – bulk unit weight*
*$\phi'$ – effective friction angle*
*$S_u$ – undrained shear strength*
*c'– effective cohesion*
*$E_v$ – vertical elastic modulus*
*$\nu$ – Poisson's Ratio*
*$k_a$ – coefficient of active earth pressure (Coulomb – AS4678-2002, Appendix E)*
*$k_p$ – coefficient of passive earth pressure (Coulomb – AS4678-2002, Appendix E)*
*$k_0$ – coefficient of at-rest earth pressure (Jaky)*

# 9. GEOTECHNICAL ASSESSMENT

## 9.1. Summary

*Table 7: Summary of Geotechnical Assessment*

| Type | Clause | Parameter | Comment |
|---|---|---|---|
| Site Suitability | - | - | We consider the site to be geotechnically suitable for the proposed subdivision development. Standard site preparation measures will apply. However, groundwater could impact construction if it occurs during winter. Flood levels will impact site levels (refer Table 5). |
| Construction Methodology and Suitability | - | - | Shallow footings in accordance with AS2870-2011 will be suitable for this site. Mass retaining will be suitable for retaining however, must be designed for potential flooding of the site. Stormwater disposal via infiltration is **not** suitable. |
| Site Classification (AS2870) | GDR5 | S | Where **no less than 0.7 m of sand** (including insitu silty sand and clayey sand layers encountered in BH03 and BH04) is present **over in situ CLAY / Sandy CLAY.** |
| Site Subsoil Class (AS1170.4) | - | Ce | Base of superficial formation mapped to be about 25 m below ground. |
| Site Preparation | GDR6 | - | **GDR6.2.1 Common Measures** followed by **GDR6.2.4 Clayey Sites** followed by **GDR6.2.5 Sand Topping Layer.** |
| Approved Fill | GDR8 | - | **Approved Fill** for this site is to comprise **Permeable Sand**.<br>Only relatively thin surficial layers of sand at the site (excluding topsoil) are suitable as approved fill. If additional fill is required, imported **Permeable Sand** will be needed.<br>Although not classed as 'approved fill', where clay is encountered in trench excavations, this material could possibly be reused to backfill the same portion of the trench (excluding any special fill materials required around buried elements). However, this material will be difficult to work and moisture condition to near optimum (particularly if removed from below the groundwater table). |
| Compaction Control | GDR7 | - | A PSP may be used for compaction control on **Permeable Sand.** Deemed to comply values for 'Tamala' sand in GDR7.4 are applicable.<br>Where filling with clay is done (in trenches, etc), compaction control must be done with the NDG as outlined in GDR7.3 Nuclear Density Gauge. |
| Shallow Footings | GDR9 | $q_{all}$ = 100 kPa to 250 kPa | Design tables for shallow footings are presented in Section 9.2. Estimated settlements are not considered excessive. 70% of the settlement is expected to occur during construction. |
| Earth Pressure Coefficients | GDR11 | Table 6 | Earth pressure coefficients are presented in Table 6. |
| Unsaturated Hydraulic Conductivity | GDR13 | - | On site disposal of stormwater unlikely to be suitable due to shallow depth to clay and potential for flooding adjacent the site. Off site disposal of stormwater likely to be required. |
| Pavement Subgrade CBR | GDR16 | CBR = 10% | Subgrade to comprise compacted **Approved Fill no less than 0.6 m thick.** |
| Soil Aggressivity | GDR17 | - | Refer Section 9.3 |
| Batters | GDR12 | **Temporary:**<br>Sand: 1V:2H<br>Clay: 1V:1H<br>**Permanent:**<br>1V:3H | Batter angles apply to soil units (refer Table 6) above the water table, as per GDR12.3. Dewatering and possibly retention (i.e. shoring) required below the groundwater table. |
| Excavations | GDR12.1 | 20 Ton Excavator | Potential for obstructions (buried concrete, Soakwells etc…), cemented soils and surficial pavement layers must be considered when selecting earthmoving plant. |

***NOTES:*** ***1.*** *$q_{all}$ – allowable bearing pressure (maximum for all footings, refer to footing tables for further details)*

## 9.2. Shallow Footings

*Table 8: Isolated Pad Footing Allowable Bearing Pressures and Estimated Settlements*

| $d_e$ (m) | b (m) | $q_{all}$ (kPa) | s (mm) |
|---|---|---|---|
| 0.5 | 0.5 | 120 | < 5 |
| 0.5 | 1.0 | 130 | < 5 |
| 1.0 | 1.0 | 240 | 5 - 10 |
| 1.0 | 2.0 | 250 | 10 - 15 |
| 1.0 | 3.0 | 250 | 20 - 25 |

***NOTES:***
1. *$d_e$ – minimum embedment depth (below finished ground level or floor slab)*
2. *b – Footing breadth (footings assumed approximately square)*
3. *$q_{all}$ – allowable bearing pressure (peak). Limited to keep estimated settlements less than 25 mm. Higher $q_{all}$ may be possible if higher settlements can be tolerated – refer queries to us.*
4. *s – estimated settlement (excludes shrink/swell from site class)*
5. *Refer to GDR9*
6. *Groundwater assumed to be at ground level.*

*Table 9: Isolated Strip Footing Allowable Bearing Pressures and Estimated Settlements*

| $d_e$ (m) | b (m) | $q_{all}$ (kPa) | s (mm) |
|---|---|---|---|
| 0.5 | 0.5 | 100 | < 5 |
| 0.5 | 1.0 | 130 | 5 - 10 |
| 1.0 | 1.0 | 190 | 10 - 15 |
| 1.0 | 2.0 | 250 | 20 - 25 |

***NOTES:***
1. *$d_e$ – minimum embedment depth (below finished ground level or floor slab)*
2. *b – Footing breadth (footings assumed long relative to breadth)*
3. *$q_{all}$ – allowable bearing pressure (peak). Limited to keep estimated settlements less than 25 mm. Higher $q_{all}$ may be possible if higher settlements can be tolerated – refer queries to us.*
4. *s – estimated settlement (excludes shrink/swell from site class)*
5. *Refer to GDR9*
6. *Groundwater assumed to be at ground level.*

## 9.3. Soil Aggressivity

Results of aggressivity testing on clay samples is summarised in Attached Table 2. The results indicate the clay is 'non aggressive' to concrete and steel (in accordance with AS2159-2009) with a AS3600-2009 classification of 'A1'.

Based on regional experience, we anticipate the sand will have the same aggressivity classifications as the underlying clay where above the groundwater. However, for concrete in sand below the water table, an AS2159-2009 'mild' classification, and AS3600-2009 'A2' classification is appropriate.

Groundwater was not tested.

## 10. CLOSURE

**GALT GEOTECHNICS PTY LTD**





Owen Woodland CPEng
*Geotechnical Engineer*

Tyrone Mardesic CPEng
*Geotechnical Engineer*

https://galtgeo.sharepoint.com/sites/wag230750/shared documents/01 tabec si/03 correspondence/wag230750-01 002 r rev0.docx

*Attached Table 1: Summary of Geotechnical Index Test Results*

| Test Name | Sample Depth (m) | Soil Class (AS1726 2017) | Fines (%) | Sand (%) | Gravel (%) | LL (%) | PI (%) | LS (%) |
|---|---|---|---|---|---|---|---|---|
| BH03 | 1.5 - 2.2 | CLAY (CI) | 89 | 11 | 0 | 46 | 28 | 12.5 |
| BH04 | 1.0 - 1.3 | Sandy CLAY (CI) | 54 | 43 | 3 | 34 | 20 | 8.5 |

***Notes***

1. *Particle size distribution (by mass)*
   *Gravel: 2.36 mm – 63 mm* *Sand: 0.075 mm – 2.36 mm* *Fines: <0.075 mm*
2. *Atterberg Limits*
   *LL: Liquid limit* *PI: Plasticity index* *LS: Linear shrinkage*
   *NO: Not obtainable* *NP: Non-plastic*

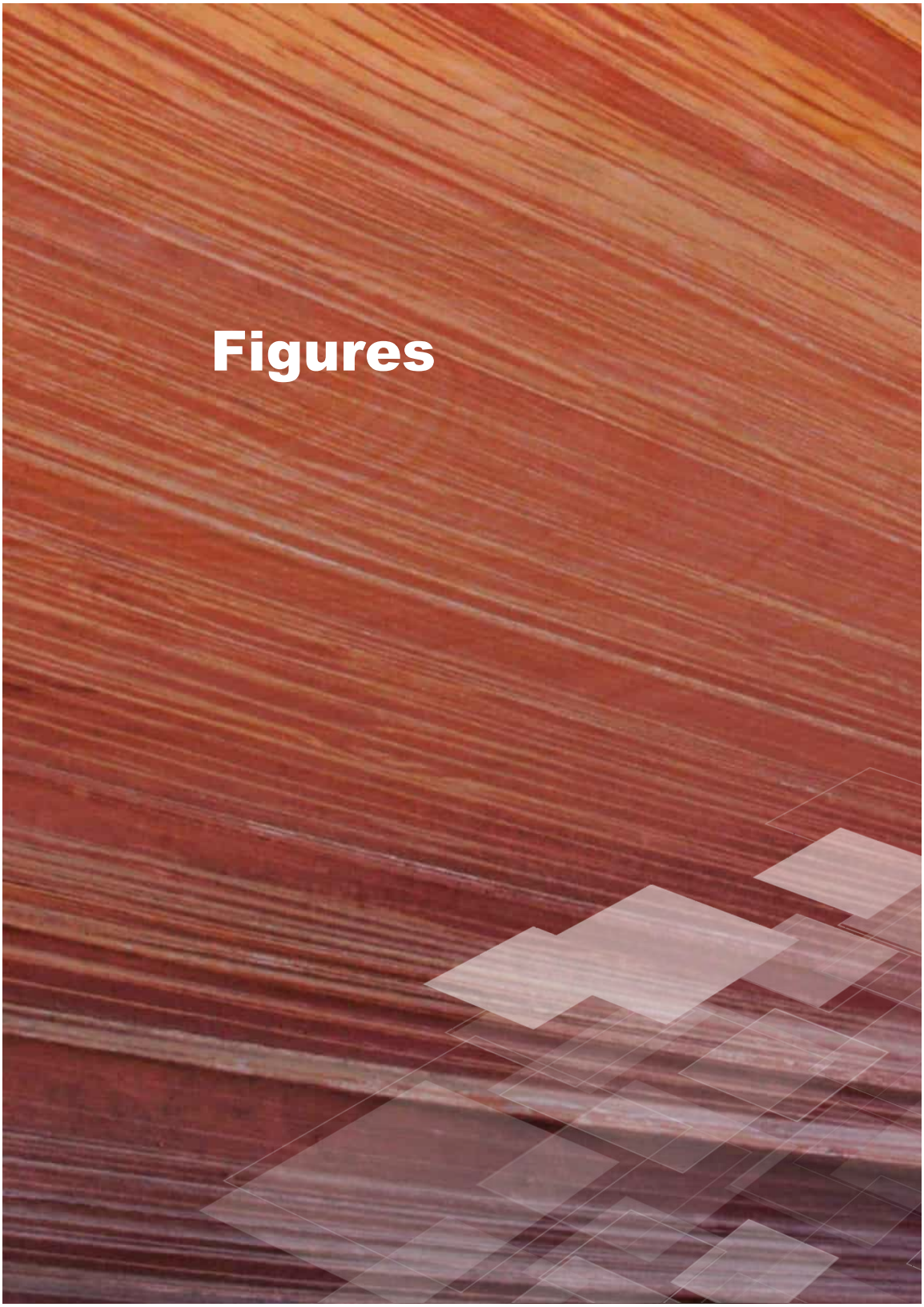
*Attached Table 2: Summary of Chemical Test Results and Exposure Classification*

| Location | Sample Depth (m) | Soil Description | Soil Condition | pH | $SO_4$ (ppm) | Cl (ppm) | AS2159 Steel EC | AS2159 Concrete EC | AS3600 Concrete EC |
|---|---|---|---|---|---|---|---|---|---|
| BH03 | 1.5 - 2.2 | CLAY (CI) | B | 8.8 | 100 | 210 | Non-Aggressive | Non-Aggressive | A1 |
| BH04 | 1.0 - 1.3 | Sandy CLAY (CI) | B | 7.5 | 170 | 94 | Non-Aggressive | Non-Aggressive | A1 |

***NOTES:***

1. *Soil condition*
   *A – high permeability soils (sands and gravels) which are below water table.* *B – Low permeability soils (silts and clays) and all soils above water table*
2. *Sulfate expressed as $SO_4$*
3. *Cl – Chloride*
4. *ER – Electrical Resistivity*
5. *EC – Exposure Classification*
5. *Exposure Classification for AS2159-2009 (for steel and concrete piles)*
   *[Exposure Classification for AS3600-2009 (for buried concrete structures)]*

| *Non-aggressive [A1]* | *Mild [A2]* | *Moderate [B1]* | *Severe [B2]* | *Very Severe [C2]* |
|---|---|---|---|---|

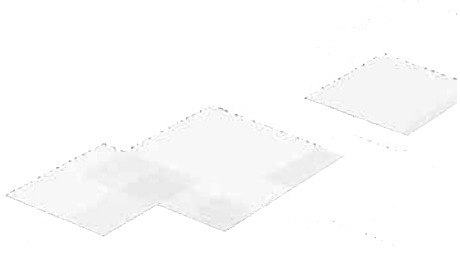

Figures

Attachment 12.1.2 Local Water Management Strategy




Appendices

# Appendix A: Site Photographs



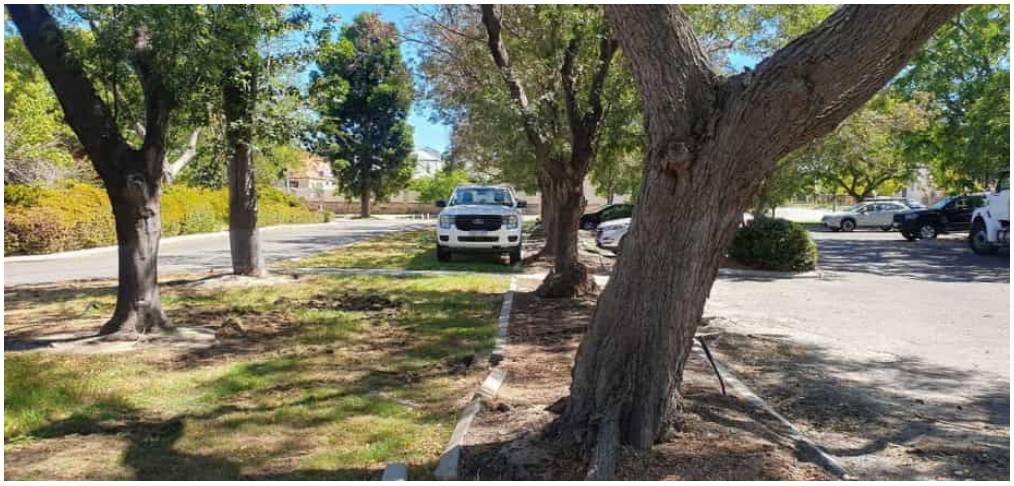
Attachment 12.1.2 Local Water Management Strategy



*Photograph 1: Near CPT02 facing south*



*Photograph 2: Near CPT02 facing south west*



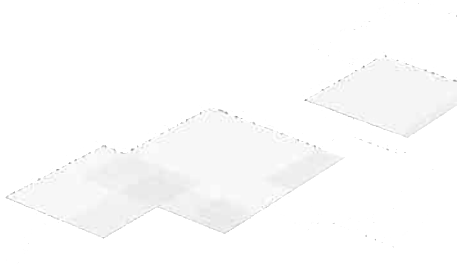
*Photograph 3: Site photo from near northern portion of site*



Attachment 12.1.2 Local Water Management Strategy



# Appendix C: Machine Borehole and Monitoring Well Logs



Attachment 12.1.2 Local Water Management Strategy

## EXPLANATORY NOTES TO BE READ WITH BOREHOLE AND TEST PIT REPORTS

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### METHOD OF DRILLING OR EXCAVATION

| | | | | | |
|---|---|---|---|---|---|
| AC | Air Core | E | Excavator | PQ3 | PQ3 Core Barrel |
| AD/T | Auger Drilling with TC-Bit | EH | Excavator with Hammer | PT | Push Tube |
| AD/V | Auger Drilling with V-Bit | HA | Hand Auger | R | Ripper |
| AT | Air Track | HE | Hand Excavation | RR | Rock Roller |
| B | Bulldozer Blade | HQ3 | HQ3 Core Barrel | SON | Sonic Rig |
| BH | Backhoe Bucket | N | Natural Exposure | SPT | Driven SPT |
| CT | Cable Tool | NMLC | NMLC Core Barrel | WB | Washbore |
| DT | Diatube | PP | Push Probe | X | Existing Excavation |

### SUPPORT

| | |
|---|---|
| T | Timbering |

### PENETRATION EFFORT (RELATIVE TO THE EQUIPMENT USED)

| | | | | | |
|---|---|---|---|---|---|
| VE | Very Easy | E | Easy | F | Firm |
| H | Hard | VH | Very Hard | | |

### WATER

| | | | |
|---|---|---|---|
| ► | Water Inflow | ▼ | Water Level |
| ◄ | Water Loss (complete) | | |
| ◁ | Water Loss (partial) | | |

### SAMPLING AND TESTING

| | | | |
|---|---|---|---|
| B | Bulk Disturbed Sample | P | Piston Sample |
| BLK | Block Sample | PBT | Plate Bearing Test |
| C | Core Sample | U | Undisturbed Push-in Sample |
| CBR | CBR Mould Sample | | U50: 50 mm diameter |
| D | Small Disturbed Sample | SPT | Standard Penetration Test |
| ES | Environmental Soil Sample | | Example: 3, 4, 5 N=9 |
| EW | Environmental Water Sample | | 3,4,5: Blows per 150 mm |
| G | Gas Sample | | N=9: Blows per 300 mm after |
| HP | Hand Penetrometer | | 150 mm seating interval |
| LB | Large Bulk Disturbed Sample | VS | Vane Shear; P = Peak |
| M | Mazier Type Sample | | R = Remoulded (kPa) |
| MC | Moisture Content Sample | W | Water Sample |

### ROCK CORE RECOVERY

TCR = Total Core Recovery (%) $= \frac{CRL}{TCL} \times 100$

RQD = Rock Quality Designation (%) $= \frac{ALC>100}{TCL} \times 100$

| | |
|---|---|
| TCL | Length of Core Run |
| CRL | Length of Core Recovered |
| ALC>100 | Total Length of Axial Lengths of Core Greater than 100 mm Long |

Attachment 12.1.2 Local Water Management Strategy

# METHOD OF SOIL DESCRIPTION
# BOREHOLE AND TEST PIT REPORTS

**GRAPHIC LOG & SOIL CLASSIFICATION SYMBOLS**

| Graphic | USCS | Soil Name |
|---|---|---|
| | | FILL (various types) |
| | | COBBLES / BOULDERS |
| | GP | GRAVEL (poorly graded) |
| | GW | GRAVEL (well graded) |
| | GC | Clayey GRAVEL |
| | GM | Silty GRAVEL |
| | SP | SAND (poorly graded) |
| | SW | SAND (well graded) |
| | SC | Clayey SAND |

| Graphic | USCS | Soil Name |
|---|---|---|
| | SM | Silty SAND |
| | ML | SILT (low liquid limit) |
| | MH | SILT (high liquid limit) |
| | CL | CLAY (low plasticity) |
| | CI | CLAY (medium plasticity) |
| | CH | CLAY (high plasticity) |
| | OL | Organic SILT (low liquid limit) |
| | OH | Organic SILT (high liquid limit) |
| | Pt | PEAT |

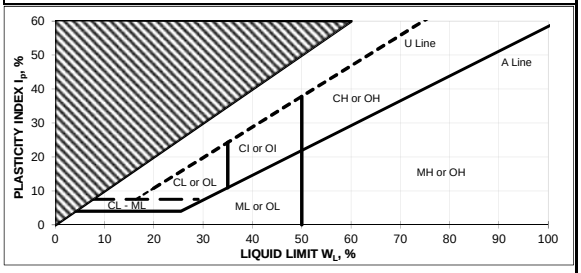
NOTE: Dual classification given for soils with a fines content between 5% and 12%.

**SOIL CLASSIFICATION AND INFERRED STRATIGRAPHY**

Soil descriptions are based on AS1726-2017. Material properties are assessed in the field by visual/tactile methods in combination with field and laboratory testing techniques (where used).
NOTE: AS 1726-2017 defines a fine grained soil where the total dry mass of fine fractions (<0.075 mm particle size) exceeds 35%.

| PARTICLE SIZE | | |
|---|---|---|
| **Soil Name** | | **Particle Size (mm)** |
| BOULDERS | | >200 |
| COBBLES | | 63 to 200 |
| GRAVEL | Coarse | 19 to 63 |
| | Medium | 6.7 to 19 |
| | Fine | 2.3 to 6.7 |
| SAND | Coarse | 0.6 to 2.36 |
| | Medium | 0.21 to 0.6 |
| | Fine | 0.075 to 0.21 |
| FINES | SILT | 0.002 to 0.075 |
| | CLAY | <0.002 |

**PLASTICITY - MODIFIED CASAGRANDE CHART - AS1726-2017**




| RESISTANCE TO EXCAVATION | | |
|---|---|---|
| **Symbol** | **Term** | **Description** |
| VE | Very easy | All resistances are relative to the selected method of excavation |
| E | Easy | |
| F | Firm | |
| H | Hard | |
| VH | Very hard | |

| MOISTURE CONDITION | |
|---|---|
| **Symbol** | **Term** |
| D | Dry |
| M | Moist |
| W | Wet |

| CEMENTATION | |
|---|---|
| **Cementation** | **Description** |
| Weakly cemented | Soil may be easily disaggregated by hand in air or water |
| Moderately cemented | Effort is required to disaggregate the soil by hand in air or water |

| CONSISTENCY | | |
|---|---|---|
| **Symbol** | **Term** | **Undrained Shear Strength (kPa)** |
| VS | Very Soft | 0 to 12 |
| S | Soft | 12 to 25 |
| F | Firm | 25 to 50 |
| St | Stiff | 50 to 100 |
| VSt | Very Stiff | 100 to 200 |
| H | Hard | >200 |

| ORGANIC SOILS | |
|---|---|
| **Material** | **Organic Content % of dry mass** |
| Inorganic soil | <2% |
| Organic soil | 2% to 25% |
| Peat | >25% |

| DENSITY | | |
|---|---|---|
| **Symbol** | **Term** | **Density Index (%)** |
| VL | Very Loose | <15 |
| L | Loose | 15 to 35 |
| MD | Medium Dense | 35 to 65 |
| D | Dense | 65 to 85 |
| VD | Very Dense | >85 |

O:\Administration\Standard Forms and Documents\PMP17 Method of Soil Description-Rev6

Galt Form PMP17
December 2017

Attachment 12.1.2 Local Water Management Strategy

Galt

**REPORT OF BOREHOLE: BH01/MW01**

| | | | | | |
|---|---|---|---|---|---|
| Job No | : WAG230750-01 | Easting | : 0.00 | Sheet | : 1 OF 1 |
| Client | : Tabec | Northing | : 0.00 | Logged | : MDS |
| Project | : Proposed Development | UTM | : | Logged Date | : 08/02/2024 |
| Location | : Lot 452 Resolution Drive, Ascot | Drill Rig | : AMS Super Rig | Checked | : TM |
| Contractor | : Galt Geotechnics | Inclination | : -90 deg | Checked Date | : 25/02/2024 |

**General comments: Monitoring Well Installed at this location**

| Drilling Method | Depth (m) | Water | Classification Code | Soil Origin | Graphic Log | Consistency/Density | Moisture | Material Description | Structural and Additional Observations | Well Diagram |
|---|---|---|---|---|---|---|---|---|---|---|
| 90mm Solid Auger | 0.3 | | SP | Natura | | | D | Natural SAND: dark brown and black, fine to coarse grained, with low plasticity clay, (trace organics present in upper 200mm). | (trace organics present in upper 200mm) | MW01 |
| | 0.45 | | SP | Natura | | MD-D | | Natural SAND: pale yellow, fine to coarse grained, trace low plasticity clay. | | |
| | 0.9 | | SP | Natura | | | | Natural SAND: dark brown and black, fine to coarse grained, trace low plasticity clay. | | |
| | 1 | | CI | Natura | | VSt-H | | Natural Sandy CLAY: medium plasticity, brown and pale orange, fine grained sand, inorganic, clay is highly desiccated. | Clay is highly desiccated | |
| | 2.3 | | SC | Natura | | | | Natural Clayey SAND: low plasticity clay, brown and dark brown, fine to coarse grained, trace fine to medium sized gravel. | | |
| | 2.5 | | CI | Natura | | VSt-H | | Natural CLAY: medium plasticity, brown and pale orange, trace fine to medium grained sand, inorganic, clay is desiccated at shallower depths. | Clay is desiccated at shallower depths | |
| | 3 | ▽ | | | | | | | | |
| | 6 | | | | | | | **BH01/MW01 Terminated at 6m (Target Depth GW @3.03m)** | | |

Backfill (Drill Spoil)
50mm PVC Solid
Bentonite (Sealed above Slotted PVC)
Filter Pack (Gravel Filter Medium Installed)
50mm PVC Slotted



Page 1 of 1

Attachment 12.1.2 Local Water Management Strategy

Galt

**REPORT OF BOREHOLE: BH02**

| | | | | | |
|---|---|---|---|---|---|
| Job No | : WAG230750-01 | Easting | : 0.00 | Sheet | : 1 OF 1 |
| Client | : Tabec | Northing | : 0.00 | Logged | : MDS |
| Project | : Proposed Development | UTM | : | Logged Date | : 08/02/2024 |
| Location | : Lot 452 Resolution Drive, Ascot | Drill Rig | : AMS Super Rig | Checked | : TM |
| Contractor | : Galt Geotechnics | Inclination | : -90 deg | Checked Date | : 25/02/2024 |

| Drilling Method | DCP graph | Water | Depth (m) | Soil Origin | Graphic Log | Classification Code | Material Description | Moisture | Consistency/Density | Remarks | Sample |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 80mm Solid Auger | | | | Natural | | SP | Natural SAND: dark grey and black, fine to coarse grained, trace low plasticity clay, (trace organics present in upper 200mm). | M-D | MD-D | | |
| | | | 1 | | | | **BH02 refusal at 0.7m (Refusal on Desiccated Clay Groundwater not encountered)** | | | | |
| | | | 2 | | | | | | | | |
| | | | 3 | | | | | | | | |
| | | | 4 | | | | | | | | |
| | | | 5 | | | | | | | | |
| | | | 6 | | | | | | | | |
| | | | 7 | | | | | | | | |
| | | | 8 | | | | | | | | |

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Attachment 12.1.2 Local Water Management Strategy

Galt

**REPORT OF BOREHOLE: BH03**

| | | | | | |
|---|---|---|---|---|---|
| Job No | : WAG230750-01 | Easting | : 0.00 | Sheet | : 1 OF 1 |
| Client | : Tabec | Northing | : 0.00 | Logged | : PA |
| Project | : Proposed Development | UTM | : | Logged Date | : 14/02/2024 |
| Location | : Lot 452 Resolution Drive, Ascot | Drill Rig | : AMS Super Rig | Checked | : TM |
| Contractor | : Galt Geotechnics | Inclination | : -90 deg | Checked Date | : 25/02/2024 |

| Drilling Method | DCP graph | Water | Depth (m) | Soil Origin | Graphic Log | Classification Code | Material Description | Moisture | Consistency/Density | Remarks | Sample |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 90mm Solid Auger | | | 0.1 | Topso | | SP | Topsoil SAND: dark grey, fine to medium grained, trace medium plasticity clay, with roots / organics. | D | MD-D | | |
| | | | 0.25 | Fill | | SP | Fill SAND: brown, medium dense to dense, fine to medium grained, trace low plasticity clay. | | | | |
| | | | 0.4 | Fill | | GP | Fill Sandy GRAVEL: grey, medium dense to dense, fine to medium sized, fine to medium grained sand, trace low to medium plasticity clay. | | | | |
| | | | | Natura | | SM | Natural Silty SAND: grey brown, fine to medium grained. | | | | |
| | | | 0.7 | Natura | | CI | Natural CLAY: medium plasticity, grey, with fine to medium grained sand, inorganic, trace organics, clay is desiccated at shallow depths. | | VSt-H | | |
| | | | 1 | | | | | | | | |
| | | | 1.5 | Natura | | CI | As above, brown, trace organics. | | | | |
| | | | 2 | | | | | | | | |
| | | | 3 | | | | | | | | |
| | | | 4 | Natura | | CI | As above. | M | | | |
| | | | 5 | | | | | | | | |
| | | | 6 | | | | **BH03 Terminated at 6m (Target depth. Groundwater not encountered)** | | | | |
| | | | 7 | | | | | | | | |
| | | | 8 | | | | | | | | |



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Attachment 12.1.2 Local Water Management Strategy

Galt

**REPORT OF BOREHOLE: BH04**

| | | | | | |
|---|---|---|---|---|---|
| Job No | : WAG230750-01 | Easting | : 0.00 | Sheet | : 1 OF 1 |
| Client | : Tabec | Northing | : 0.00 | Logged | : PA |
| Project | : Proposed Development | UTM | : | Logged Date | : 14/02/2024 |
| Location | : Lot 452 Resolution Drive, Ascot | Drill Rig | : AMS Super Rig | Checked | : TM |
| Contractor | : Galt Geotechnics | Inclination | : -90 deg | Checked Date | : 25/02/2024 |

| Drilling Method | DCP graph | Water | Depth (m) | Soil Origin | Graphic Log | Classification Code | Material Description | Moisture | Consistency/Density | Remarks | Sample |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 90mm Solid Auger | | | 0.25 | Topsoil | | SP | Topsoil SAND: grey, fine to medium grained, trace medium plasticity clay, trace / with organics. | D | | | |
| | | | 0.5 | Fill | | SP | Fill SAND: brown, fine to medium grained, trace low plasticity clay. | | | | |
| | | | 1 | Natural | | SC | Natural Clayey SAND: medium plasticity clay, brown, fine to medium grained. | | | | |
| | | | 1.2 | Natural | | Cl | Natural Sandy CLAY: medium plasticity, brown mottled red, fine to medium grained sand, trace fine to medium sized gravel, inorganic, clay is desiccated. | | VSt-H | | |
| | | | 1.5 | Natural | | Cl | Natural CLAY: medium plasticity, brown, with fine to medium grained sand, inorganic, clay is desiccated at shallow depths. | | | | |
| | | | 3 | Natural | | Cl | As above. | M | | | |
| | | | 4.5 | Natural | | Cl | As above. | W | | | |
| | | | 6.5 | | | | **BH04 Terminated at 6.5m (Target depth. Groundwater possibly at 4.5 m depth)** | | | | |



Page 1 of 1

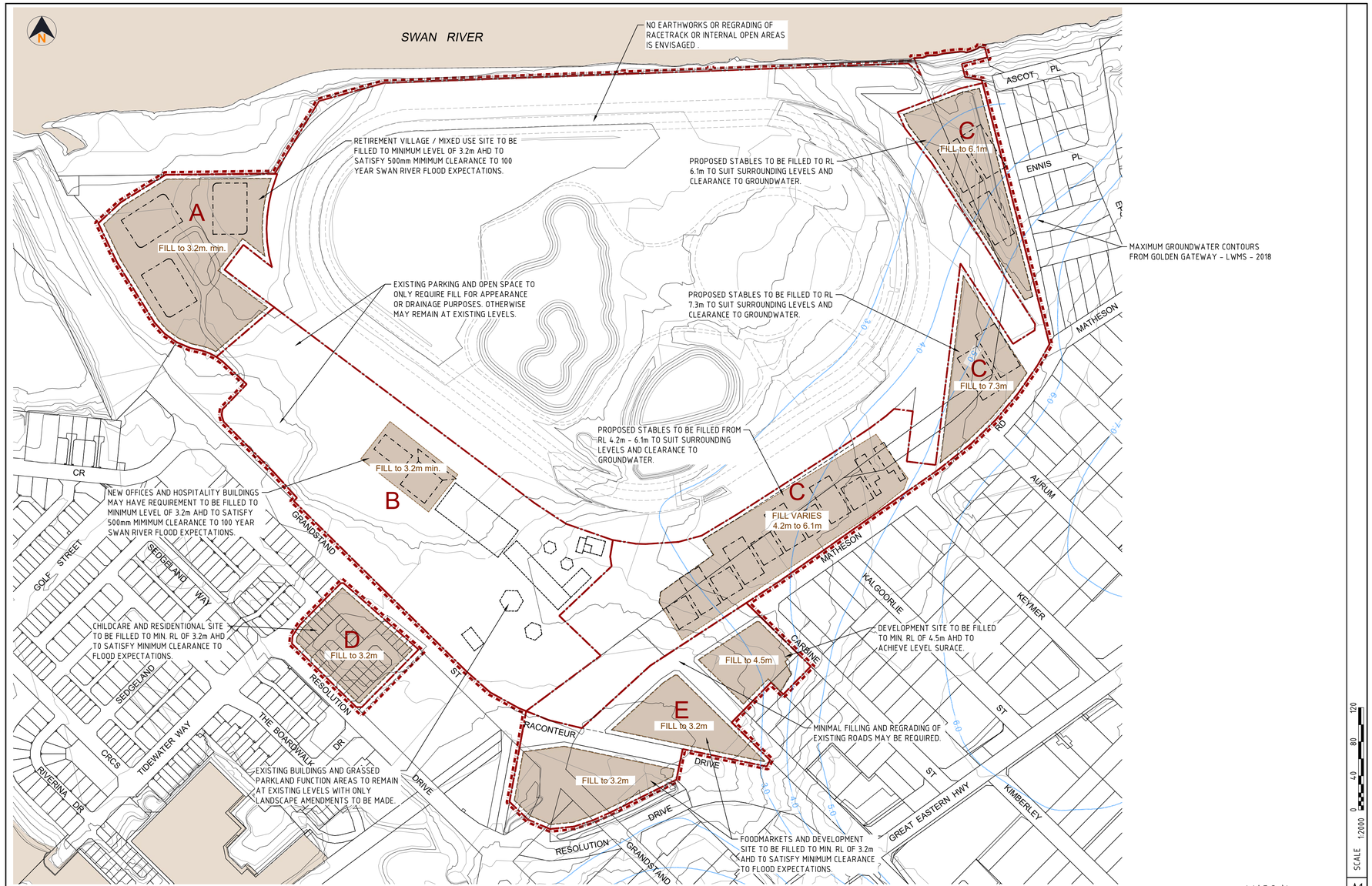
Attachment 12.1.2 Local Water Management Strategy

# Appendix C

Preliminary Civil Drawing

Tabec 2024

Attachment 12.1.2 Local Water Management Strategy




| No. | DATE | DRAWN | APPROVED | AMENDMENT |
|---|---|---|---|---|
| C | 21.06.24 | PK | JZ | MINIMUM FILL LEVELS AMENDED IN LINE WITH THE LWMS |
| B | 18.06.24 | PK | JZ | PRELIMINARY ISSUE FOR INFORMATION ONLY |
| A | 24.01.24 | PK | JZ | PRELIMINARY ISSUE FOR REVIEW |

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COLOUR
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CLIENT: PERTH RACING

| DESIGNED | CHECKED | APPROVED |
|---|---|---|
| PK | JZ | |
| DRAWN | CHECKED | DATE |
| PK | JZ | |

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PROJECT: ASCOT RACECOURSE - LOCAL STRUCTURE PLAN
TITLE: EARTHWORKS CONCEPT PLAN
DRAWING NUMBER: 2541-00-100
ISSUE: C

Plot Date: 21/06/24 - 14:17 Cad File: C:\2025\data\25-2541 - Ascot Racecourse LSP_2024\CAD\CAD\2541-EW-100.dwg Plotted By: jkeenan

Attachment 12.1.2 Local Water Management Strategy

# Appendix D

## Modelling Assumption Report

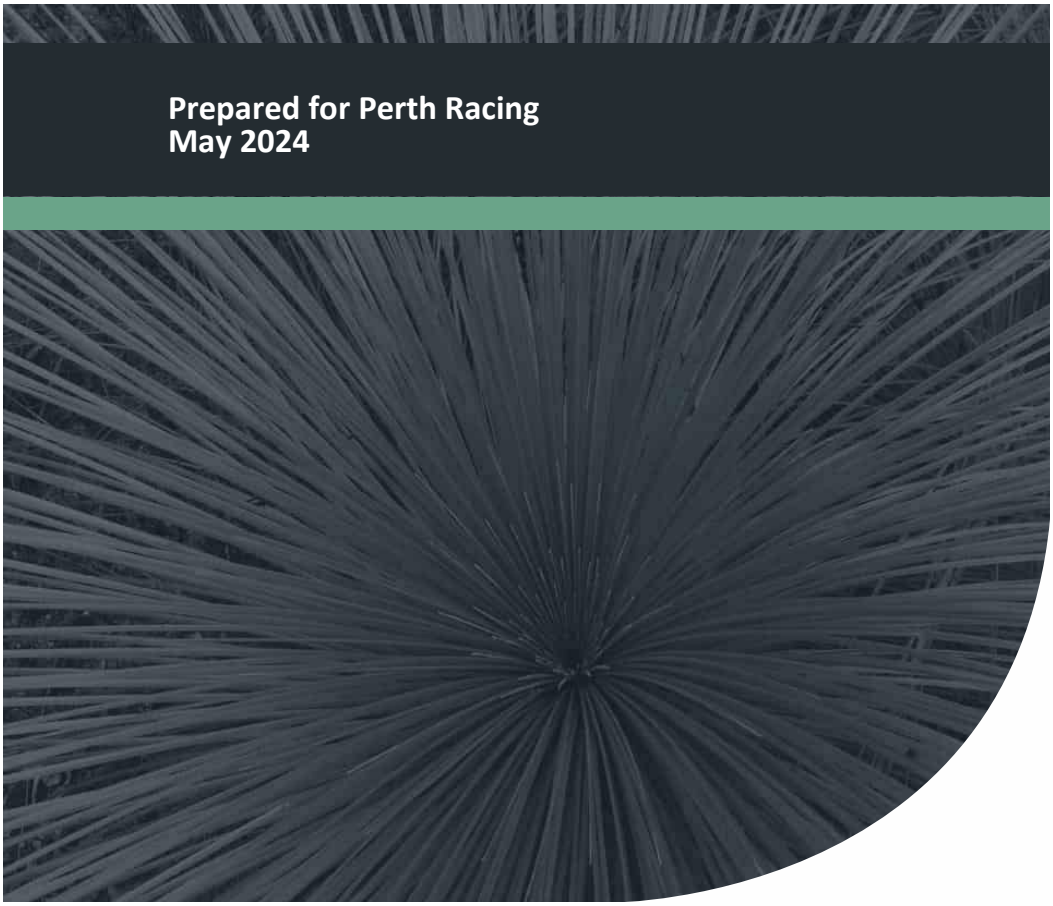
Emerge Associates 2024

Attachment 12.1.2 Local Water Management Strategy

# Modelling Assumptions Report

## Golden Gateway Local Structure Plan

Project No: EP23-109(03)



Attachment 12.1.2 Local Water Management Strategy



## Document Control

| Doc name: | Modelling Assumptions Report<br>Golden Gateway Local Structure Plan | | | | |
|---|---|---|---|---|---|
| Doc no.: | EP23-109(03)--008 JM | | | | |
| Version | Date | Author | | Reviewer | |
| 1 | May 2024 | Joyti Mabruk | JM | David Coremans | DPC |
| | Appendix to the LWMS | | | | |

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Attachment 12.1.2 Local Water Management Strategy



Modelling Assumptions Report
Golden Gateway Local Structure Plan

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Modelling Assumptions Report
Golden Gateway Local Structure Plan

# 1 Background

Perth Racing (the 'proponent') proposed to progress a local structure plan (LSP) over its landholdings in Ascot. The area is bounded by the Swan River to the North, Grandstand Road to the west and south, Matheson Road and Resolution Drive to the south and residential areas to the east, referred to herein as 'the site'. The structure plan area also includes the Ascot Racecourse area. The site is located approximately 8.5 km east of Perth central business district (CBD) and is approximately 62 ha in size, within City of Belmont (CoB). The LSP consists of six precincts: Precinct A, Precinct B, Precinct C, Precinct D, Precinct E, and the racecourse.

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# 2 Methodology

XPSWMM hydrologic and hydraulic modelling software (v21.3) was used to calculate the surface water runoff volumes within the road reserves and lots associated with the development of Ascot Racecourse.

The hydrologic component of the software uses the Laurenson non-linear runoff-routing method to simulate runoff from design storm events. Key assumptions regarding the hydrologic model include:

- Runoff is proportional to slope, area, infiltration and percentage of imperviousness of a catchment.
- Sub-catchment areas and slopes are determined from surveyed topographical data and earthworks plans.
- Infiltration rates and percentage imperviousness have been selected based on experience with model preparation for similar soil conditions.

Runoff from each sub-catchment is routed through the catchment using the hydraulic component of XPSWMM. Generally, assumptions associated with the hydraulic component of the model include:

- Virtual links (i.e. purely for model construction, not equivalent to flow path onsite) between nodes within a sub-catchment are given the length of 10 m and slope of 0.05 to minimise the lag time of conveying the water from a sub-catchment node to a 'storage' node, a 'dummy intermediate' node or a conduit/link.
- Links between sub-catchment storages act as conveyance channels (e.g. sheet flow within roads in a 1% annual exceedance probability (AEP)). These links are given lengths and slopes that are representative of the site conditions and actual pathway lengths between catchments.
- All channels are designed with a width of 5 m, roughness of 0.014 (Manning's n) and are trapezoidal in shape. This allows for easy conveyance and represents concrete pipes and road surfaces within the model.
- Where relevant median swales, bio-retention areas (BRAs), and flood storage areas (FSAs) are modelled as nodal-reservoirs with infiltration depth-rating curves to account for differential infiltration rates with changing depth.

## 2.1 Rainfall

The ensemble temporal patterns obtained from the Australian Rainfall and Runoff (AR&R) Data Hub (AR&R 2019) were used for the rainfall analysis.

Durations ranging between 15 min and 72 hours were tested, with the peak flood elevation being assessed as the determining result.

Following the process suggested by AR&R (Ball J et al. 2019), the highest mean duration was selected as the critical duration. AR&R also recommends that when it is not practical to run the entire ensemble array, the ensemble that produces the result closest to the mean (for the critical duration) should be adopted and provided in **Table 1**.

Attachment 12.1.2 Local Water Management Strategy



*Table 1: Critical Duration Analysis*

| Catchment | Critical Duration (20% AEP) | Critical Duration (10% AEP) | Critical Duration (1% AEP) |
|---|---|---|---|
| Precinct A | 3 hour duration ensemble 4 | 3 hour duration ensemble 1 | 3 hour duration ensemble 1 |
| Precinct C | 30 min duration ensemble 6 | 30 min duration ensemble 7 | 30 min duration ensemble 8 |
| Precinct D | 1 hour duration ensemble 1 | 30 min duration ensemble 5 | 30 min duration ensemble 1 |
| Precinct E | 45 min duration ensemble 6 | 30 min duration ensemble 5 | 30 min duration ensemble 8 |

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# 3 Pre-development model

The catchment parameters determined for Precinct D within the LWMS for the initial loss – continuous loss model have been adopted to account for catchment losses. The pre-development loss parameters used are given in **Table 2**.

*Table 2: Pre-development loss parameters*

| Land type | Initial loss (mm) | Continual loss (mm) | Roughness |
|---|---|---|---|
| Existing residential/Carpark | 15 | 0.1 | 0.014 |

Catchment analysis for pre-development scenario was based on topographic contour data, site visit and aerial photography. Pre-development catchment area within Precinct D is 1.145 ha.

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# 4 Post-development model

An initial loss continuing loss model was adopted to account for post-development catchment losses. The post-development catchment area, land types and loss values were based on the structure plan design, typical infiltration rates for the soils which occur onsite and based on project team experience. Post-development catchment areas and land types within the site were informed by sub-division plan provided by LPD surveyors. **Table 3** summarises the loss parameters used within the post-development model.

*Table 3: Post-development loss parameters*

| Land type | Initial loss (mm) | Continual loss (mm) | Roughness |
|---|---|---|---|
| Road Surface | 1 | 0.1 | 0.02 |
| Road Verge | 9 | 1.5 | 0.05 |
| Fully Impervious | 1 | 0.1 | 0.02 |
| Roof | 1 | 0.1 | 0.02 |
| Lot IMP | 1 | 0.1 | 0.02 |
| Gardens | 25 | 2 | 0.05 |
| POS | 25 | 2 | 0.05 |
| Precinct E Lots | 15 | 0.1 | 0.014 |

A summary of post-development catchment information is provided in **Table 4** with the catchment plan and basin location shown in Figure 08 of the LWMS.

*Table 4: Post-development catchment areas (ha)*

| Road reserve | Lots | Road Reserve | POS | Fully Impermeable | Child Care |
|---|---|---|---|---|---|
| Precinct A | 0.714 | 0.606 | 1.360 | 0.330 | - |
| Precinct C | - | 5.903 | - | - | - |
| Precinct D | 0.526 | 0.421 | - | - | 0.199 |
| Precinct E | 3.622 | 0.365 | 0.219 | - | - |

The following assumptions were incorporated into the model:

- Precinct A
  - Lots will have 100% roof areas and road reserve contains 5% pervious verge and 95% impervious bitumen areas.
  - POS will be 100% pervious.
  - There is no current connection point for drainage to be exported from Precinct A.
  - 1 single basin/Flood storage area (FSA) for both treatment and flood mitigation.
  - Base of the FSA will need to be vegetated with reeds/rushes as per a biofilter.
  - FSA will have 1:6 side slopes and maximum depth 1.2m in a 1% AEP – to avoid the need for fencing or access control.

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- A hydraulic conductivity of 1m/day is assumed.

- Precinct C
  - The existing portion of Precinct C already connected to the centre of the track (existing buildings and stables) and no change has been assumed.
  - Rest of the Precinct C were modelled as two separate catchments i.e., carpark and stables which are 95% impervious and 5% pervious.
  - 1m deep sub-surface storage has been designed to accommodate 1% AEP event.
  - A hydraulic conductivity of 1m/day is assumed.
  - The storage configuration could be changed/modified to suit site layout/constraints.
  - The carpark in Precinct C that discharges to the southwest will discharge to Precinct E.

- Precinct D
  - Lots will have 50% roof areas, 45% paved areas and 5% pervious garden areas, the childcare has roof areas and Road reserve contains 20% pervious verge and 80% impervious bitumen areas.
  - 1m deep sub-surface storage has been designed to accommodate and detain upto 1% AEP events that will mimic pre-development flow of 0.4.
  - A hydraulic conductivity of 1m/day is assumed.
  - The storage configuration could be changed/modified to suit site layout/constraints.

- Precinct E
  - The carpark in Precinct C discharges to Precinct E.
  - Outflow of pre-development Water Corporation (WC) drain is 0.95 $m^3/s$ as per WC modelling.
  - All lots of Precinct E retain 15mm of rainfall.
  - Runoff above 15 mm rainfall up to the 1% AEP will be managed by a detention basin which will mimic pre-development 1% AEP peak flow of 0.463 $m^3/s$.
  - The basin will have 1:6 side slopes and maximum depth 1.2m in a 1% AEP – to avoid the need for fencing or access control.
  - A hydraulic conductivity of 1m/day is assumed.

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# 5 References

## 5.1 General references

The references listed below have been considered as part of preparing this document.

Ball J, Babister M, Nathan R, Weeks W, Weinmann E, Retallick M and Testoni I (Editors) 2019, *Australian Rainfall and Runoff: A Guide to Flood Estimation*, Commonwealth of Australia (Geoscience Australia).

## 5.2 Online references

Australian Rainfall and Runoff (AR&R) 2021, ARR Data Hub, viewed 1 December 2021, Available from: <https://data.arr-software.org/>.

Bureau of Meteorology (BoM) 2021a, Climate Data Online, viewed 1 December 2021, Available from, <http://www.bom.gov.au/water/designRainfalls/revised-ifd/>.

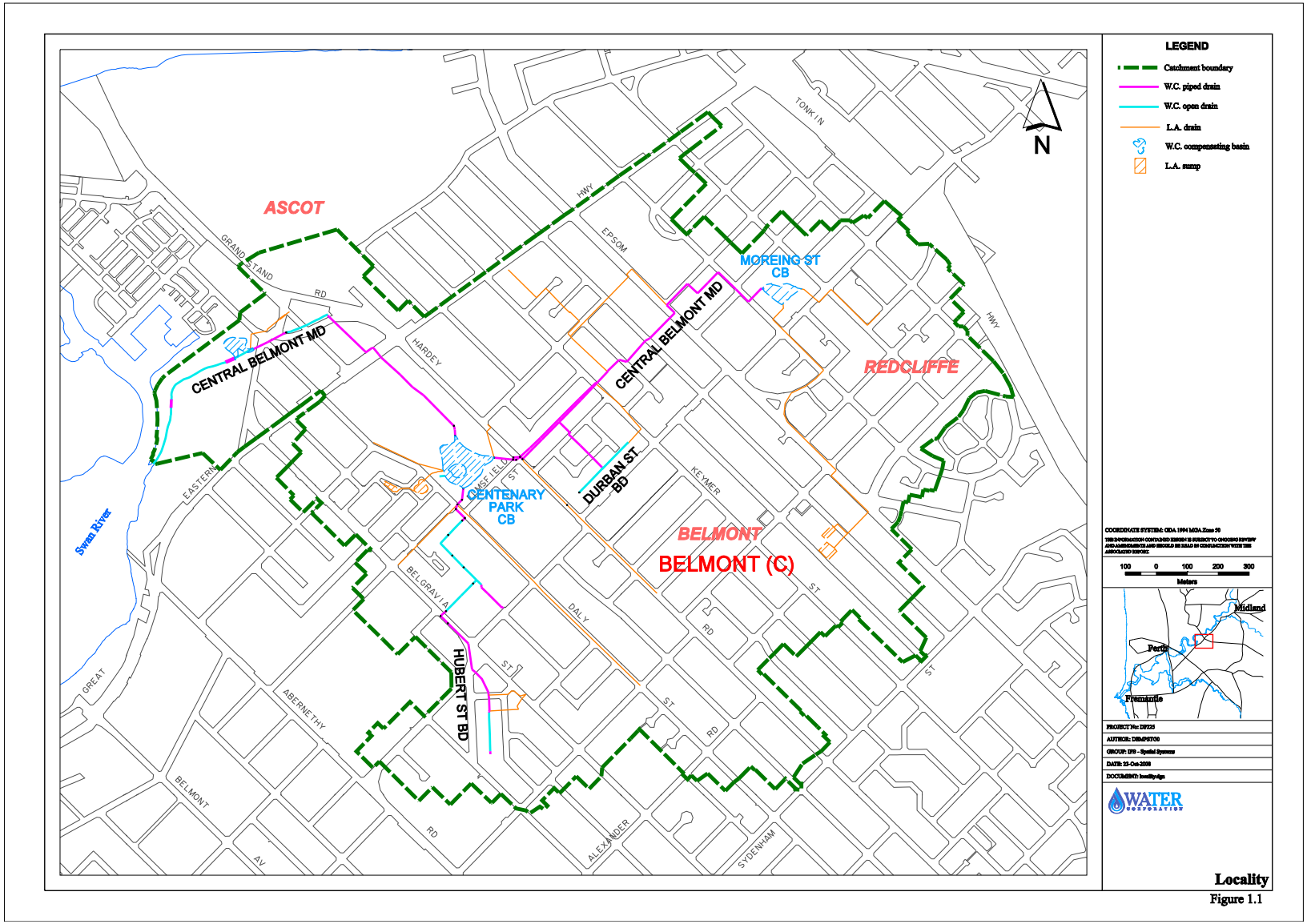
Bureau of Meteorology (BoM) 2021b, Design Rainfall Data System (2016), viewed 1 December 2021, Available from, <http://www.bom.gov.au/water/designRainfalls/revised-ifd/>.

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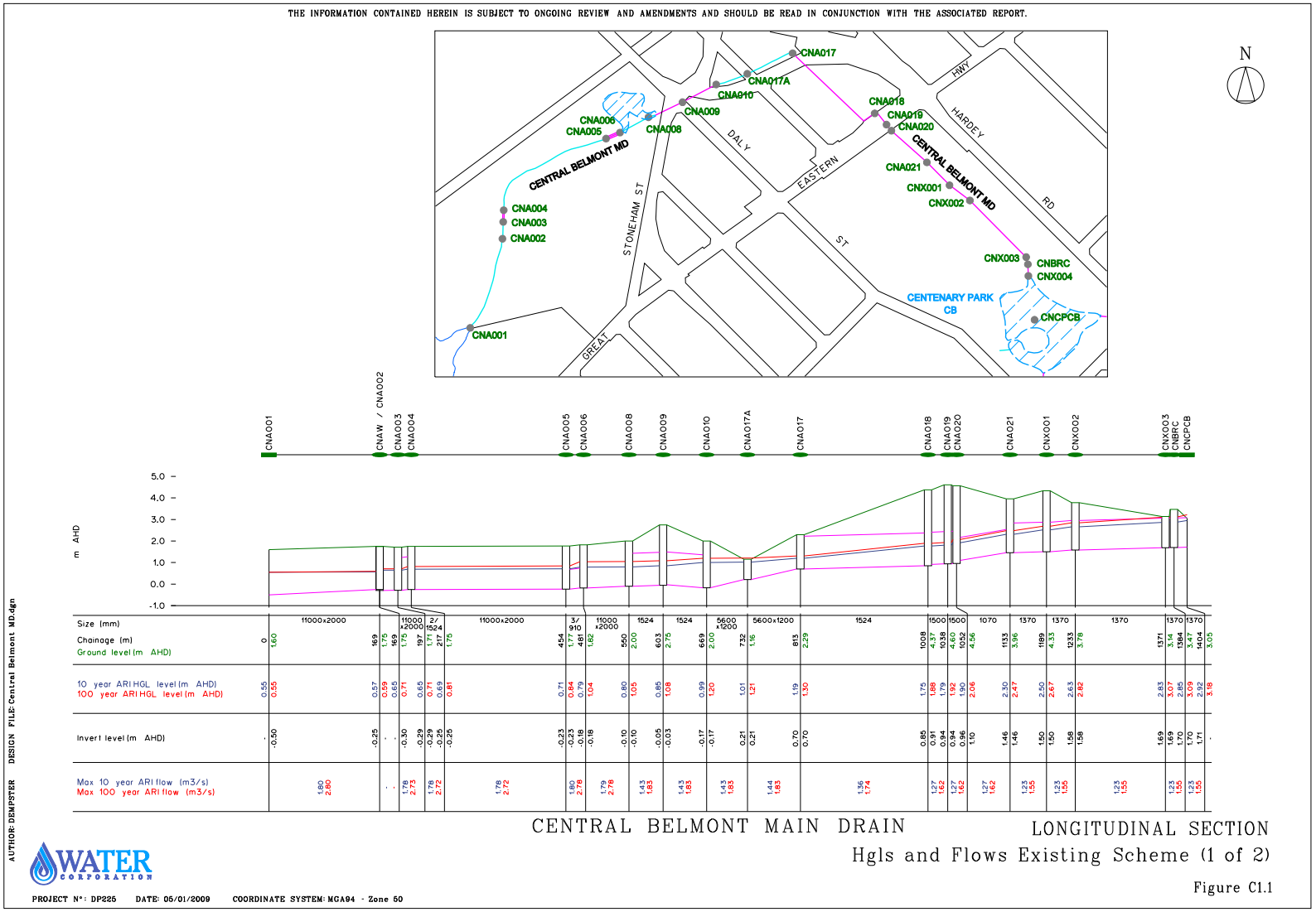
# Appendix E

Central Belmont Main Drain Water Corporation

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Attachment 12.1.2 Local Water Management Strategy

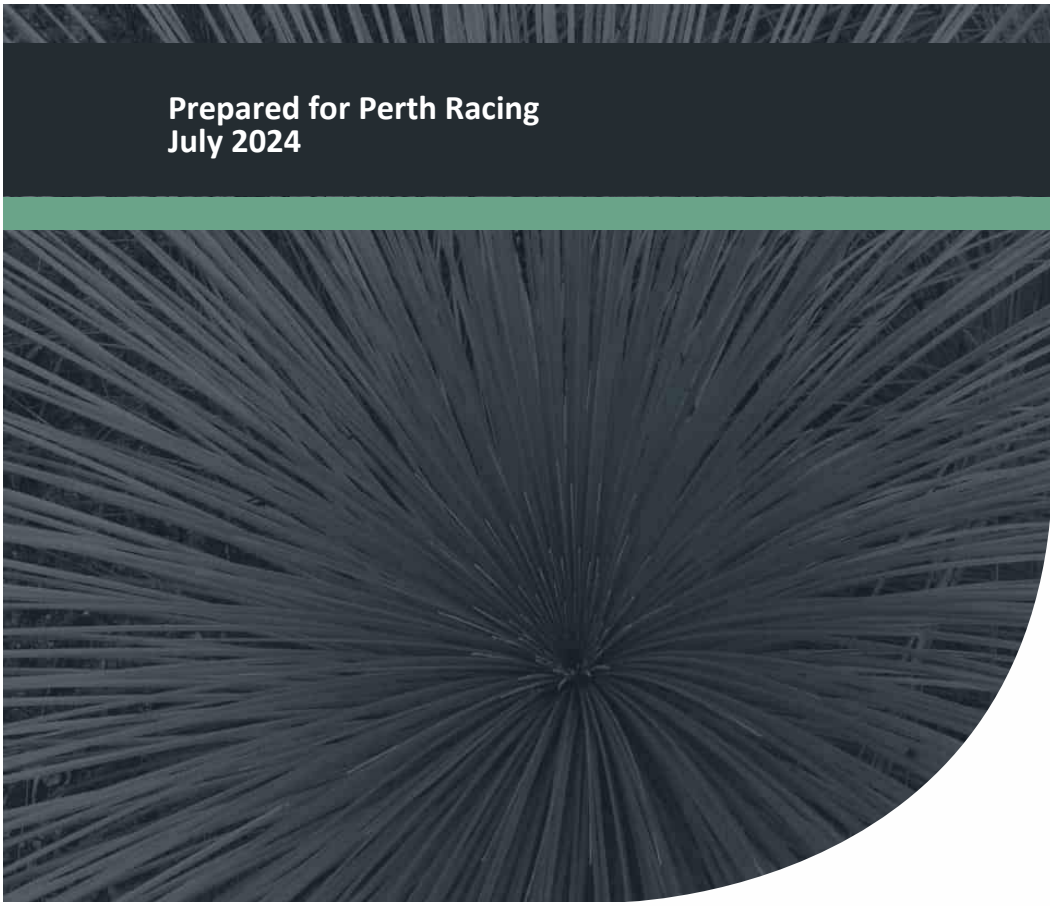


Attachment 12.1.3 Environmental Assessment Report

# Environmental Assessment Report

## Ascot Racecourse Structure Plan

Project No: EP23-109(05)



Attachment 12.1.3 Environmental Assessment Report



## Document Control

| Doc name: | Environmental Assessment Report<br>Ascot Racecourse Structure Plan | | | | |
|---|---|---|---|---|---|
| Doc no.: | EP23-109(05)—004 GAB | | | | |
| Version | Date | Author | | Reviewer | |
| 1 | May 2024 | Georgia Bayley | GAB | Jason Hick | JDH |
| | | Emma Bentley | EKB | | |
| | Submitted for client review. | | | | |
| A | July 2024 | Emma Bentley | EKB | Jason Hick | JDH |
| | Submitted for client review. | | | | |

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Attachment 12.1.3 Environmental Assessment Report



## Executive Summary

Perth Racing (the 'proponent') propose to progress a structure plan (SP) over an area of land in Ascot. The area is bounded by the Swan River to the north, Grandstand Road to the west and south, Matherson Road to the south and existing residential areas to the east, and is referred to herein as 'the site'. The site includes the Ascot Racecourse area. The site is located approximately 8.5km east of Perth central business district (CBD) and is approximately 62 ha in size, within the City of Belmont (CoB). The SP consists of six precincts: Precinct A, Precinct B, Precinct C, Precinct D, Precinct E, and the racecourse. The proponent additionally intends to progress a local planning scheme amendment for the site in parallel with the structure plan process.

The site is currently zoned 'Urban', 'Parks and Recreational', and 'Private Recreation' under the Metropolitan Regional Scheme (MRS). Under the Local Planning Scheme No. 15 (LPS 15), the site is currently zoned as 'Place of Public Assembly' and 'Mixed Use'. A small portion of the site is 'Parks and Recreation: water supply sewerage and drainage'.

This Environmental Assessment Report (EAR) supports the SP and is the principal supporting environmental document for the scheme amendment and SP process for the site. It includes a preliminary assessment of the proposed SP land uses, future management considerations and associated predicted environmental outcomes, against the applicable environmental factors as defined by the Environmental Protection Authority (EPA) policy framework.

The proponent has taken a range of measures to provide for the accommodation of environmental values within the Ascot SP. This is primarily achieved through the strategic location of public open space (POS) in the northern area of the site to retain intact native vegetation, as well as retention of existing wetland features located centrally within the site.

In this context, the SP has considered the identified environmental values within the site, including the proposed future retention of:

- Subtropical and temperate coastal saltmarsh TEC/PEC
- Native vegetation
- Fauna habitat.

As part of the future development process, considerations, approvals and management plans are likely to be necessary for individual proponents of development proposals within the Ascott SP, which would further minimise environmental impacts that have the potential to arise through development in accordance with the SP. The management framework and relevant considerations are summarised in **Table 1**.

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*Table 1: Summary of environmental management framework and relevant considerations*

| Environmental Factor | Management Framework and considerations | | |
|---|---|---|---|
| | Local Structure Plan | Subdivision and/or Development | Construction |
| Flora and Vegetation | Environmental Assessment Report including preliminary investigations (Emerge Associates 2024a) (**Appendix D**). | • Native Vegetation Clearing permit pursuant to Part V of the EP Act if clearing is required within the SP area and clearing is not exempt.<br>• Preparation of a Conservation and Environment Management Plan (CEMP), where required. | Clearing Permit and compliance with approval conditions and management plans, in accordance with the EP Act. |
| Terrestrial Fauna | Environmental Assessment Report including preliminary investigations (Emerge Associates 2024a) (**Appendix D**). | • Potential impacts to MNES (listed black cockatoo species) in relation to the EPBC Act and the need to consider referral in accordance with the *Matters of National Environmental Significance Significant Impact Guidelines* (DotE 2013).<br>• Preparation of a fauna management plan, where required, to minimise impacts to fauna through the clearing and construction works. | Compliance with approval conditions and management plans, in accordance with the EP Act and EPBC Act, where required. |
| Acid Sulfate Soils | Environmental Assessment Report including preliminary investigations. | • Detailed ASS Investigation and Management Plan for intrusive works in areas mapped as 'Class 1: High to moderate risk' will likely be required in accordance with the WAPC's *Acid Sulfate Soils Planning Guidelines* (2008). | Implementation of ASS Management Plan. |
| Inland Waters | The LWMS prepared for the SP by Emerge Associates (2024b) (**Appendix E**). | • Detailed UWMPs will be required (most relevant to Precinct D) to support individual subdivision applications. Other precincts may be developed under Development Approval and therefore water management will likely be documented through Stormwater Management Plans (SMs). Both UWMPs and SMPs will be prepared in accordance with the *Better Urban Water Management* Framework.<br>• Protection of the Swan River and associated Conservation Category Wetland (CCW) through consideration of hydrological processes and water quality management into design of future development areas to protect the adjacent Swan River and associated values.<br>• Development Control Area (DCA) permit application for works within or affecting the DCA to the DBCA in accordance with the *Swan and Canning Rivers Management Act 2006* and the *Swan and Canning River Management Regulations 2007*. | Compliance with UWMP/SMP and DCA permit if necessary. |

Attachment 12.1.3 Environmental Assessment Report



*Table 1: Summary of environmental management framework and relevant considerations (continued)*

| Environmental Factor | Management Framework and considerations | | |
|---|---|---|---|
| | Local Structure Plan | Subdivision | Construction |
| Social Surroundings | Preliminary investigations for Aboriginal Cultural Heritage.<br><br>Transport Noise Assessment for the proposed SP (Lloyd George Acoustics 2023) in accordance with SPP 5.4. | • Detailed Acoustic Assessment and Management Plan (where required) or 'Quiet House Package A' implemented to upper floors of noise sensitive dwellings within Precinct E. | Section 18 approval may be required pursuant to the *Aboriginal Heritage Act 1972* prior to ground disturbing works.<br><br>Compliance with noise management plan and appropriate house packages applied where appropriate. |

Overall, a range of environmental impact mitigation measures (primarily impact avoidance and minimisation) are proposed within the SP layout and through the future environmental management framework. In this context, it is anticipated that implementation of the proposed SP can be suitably managed through future stages of the land use planning processes (including development) such that the EPA objectives for the relevant environmental factors can be achieved.

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Ascot Racecourse Structure Plan (ROWE Group Design, 2024)

**Appendix B**

Ascot Racecourse Precinct Plan (ROWE Group Design, 2024)

**Appendix C**

Draft Master Plan Concept (ROWE Group Design, 2024)

**Appendix D**

Flora, Vegetation and Fauna Assessment (Emerge Associates 2024a)

**Appendix E**

Local Water Management Strategy (Emerge Associates 2024b)

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## Abbreviation Tables

*Table A1: Abbreviations – Organisations*

| Organisations | |
|---|---|
| CoB | City of Belmont |
| DEC | Department of Environment and Conservation (now DER) |
| DEP | Department of Environmental Protection (now DER) |
| DER | Department of Environment Regulation |
| DFES | Department of Fire and Emergency Services |
| DoE | Department of Environment (now DER) |
| DoW | Department of Water |
| DPLH | Department of Planning, Lands and Heritage |
| EPA | Environmental Protection Authority |
| WAPC | Western Australia Planning Commission |

*Table A2: Abbreviations – General terms*

| General terms | |
|---|---|
| AHEF | Aboriginal Heritage Enquiry Form |
| BPA | Bushfire prone area |
| CBD | Central Business District |
| CCW | Conservation category wetland |
| EAR | Environmental Assessment Report |
| ESA | Environmentally sensitive area |
| MUW | Multiple use wetland |
| PEC | Priority ecological community |
| P3 | Priority 3 |
| REW | Resource enhancement wetland |
| SP | Structure Plan |
| SPP | State Planning Policy |
| T | Threatened |
| TEC | Threatened ecological community |
| UFI | Unique feature identifier |

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*Table A3: Abbreviations –Legislation*

| Legislation | |
|---|---|
| AH Act | *Aboriginal Heritage Act 1972* |
| BAM Act | *Biosecurity and Agriculture Management Act 2007* |
| CS Act | *Contaminated Sites Act 2003* |
| EP Act | *Environmental Protection Act 1986* |
| EPBC | *Environment Protection and Biodiversity Conservation Act 1999* |

*Table A4: Abbreviations – units of measurement*

| Units of measurement | |
|---|---|
| ha | Hectare |
| m | Metre |
| m AHD | m in relation to the Australian height datum |
| mBNS | m below natural surface |

Attachment 12.1.3 Environmental Assessment Report



# 1 Introduction

## 1.1 Background

Perth Racing (the proponent) proposes to progress a structure plan (SP) over an area of land in Ascot to support and guide future development (the Ascot SP; referred to herein as 'the SP'). The SP area includes the existing Ascot Racecourse and is bounded by the Swan River to the north, Grandstand Road to the west and south, Matherson Road to the south and existing residential areas to the east (referred to herein as 'the site'; see **Figure 1**). The site is located approximately 8.5 km east of Perth central business district (CBD) and is approximately 62 ha in size, within the City of Belmont (CoB). The SP layout is shown in **Appendix A** and consists of six precincts: Precinct A, Precinct B, Precinct C, Precinct D, Precinct E, and the racecourse, as demonstrated below on **Plate 1**, **Figure 1**, and provided in **Appendix B**.

The proponent additionally intends to progress a local planning scheme amendment as well as the structure planning process in parallel for the site. The site is currently zoned 'Urban', 'Parks and Recreation', and 'Private recreation' under the Metropolitan Regional Scheme (MRS). Under the Local Planning Scheme No. 15 (LPS 15), the site is currently zoned as 'Place of Public Assembly' and 'Mixed Use'.

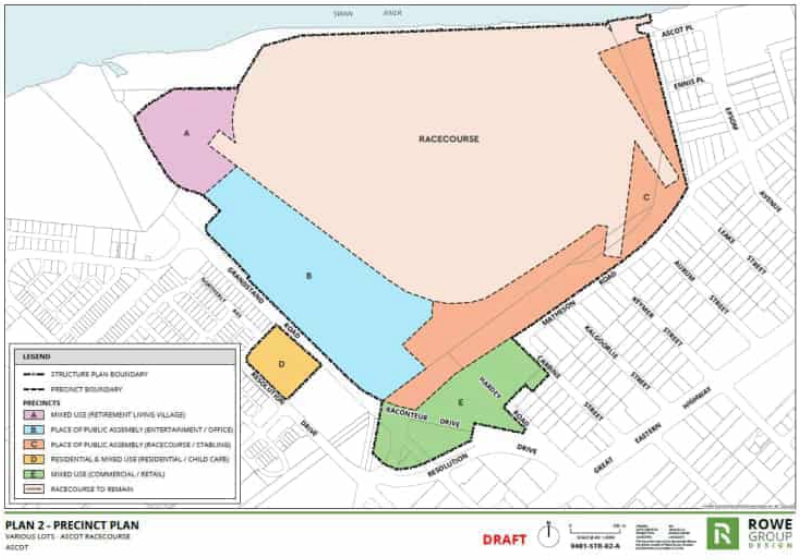



*Plate 1: Ascot Racecourse Precinct Plan with proposed uses (draft)*

Attachment 12.1.3 Environmental Assessment Report



## 1.2 Purpose of this report

The proponent engaged Emerge Associates (Emerge) to prepare an Environmental Assessment Report (EAR), with the intent to be the principal supporting environmental document for the local scheme amendment and SP process for the site. The EAR supports the structure planning process and provides a synthesis of information regarding the environmental values and attributes of the site. The EAR is consistent with the Western Australia Planning Commission's (WAPC) *Structure Plan Framework* (WAPC 2015) and:

- Identifies and assesses the existing environmental values and attributes of the site (**Section 2**).
- Discusses the land use planning context and the proposed SP, in the context of applicable statutory requirements under applicable legislation (**Section 3**).
- Provides an assessment of the proposed SP layout and land uses and predicted environmental outcomes against the applicable Environmental Protection Authority (EPA) environmental factors and objectives (**Section 4**).

## 1.3 Previous surveys and assessments

The following surveys, investigations and assessment reports were prepared to support preparation of the SP and are relevant to this EAR:

- Reconnaissance Flora, Vegetation, Fauna and Targeted Black Cockatoo Habitat Assessment (Emerge 2024a) (Appendix D)
- Ascot Racecourse Local Water Management Strategy (Emerge 2024b) (Appendix E)
- Transport Noise Assessment (Lloyd George Acoustics 2023).

An Environmental Report was prepared for the Draft Golden Gateway Local Structure Plan (LSP) in 2018 by Essential Environmental for the CoB (Essential Environmental 2018). The Draft Golden Gateway LSP is located immediately south of the site and is being progressed but has not been finalised. The Golden Gateway LSP no longer includes the site, and this SP is proposed to progress on Perth Racings landholdings exclusively. A review of the Golden Gateway LSP was undertaken as part of the preparation of this report to understand background information and context for the proposed SP.

The Draft Golden Gateway LSP provides contextual information for the proposed SP due to the proximity, and specifically through the following documents:

- Golden Gateway Bushfire Management Plan (Urbaqua 2018)
- Golden Gateway Local Structure Plan Environmental Report (Essential Environmental 2018)
- Golden Gateway Local Water Management Strategy (Essential Environmental 2018).

Attachment 12.1.3 Environmental Assessment Report



# 2 Existing Environment

The outcomes of desktop and site-specific investigations undertaken by Emerge and others have informed the identification and assessment of the existing environmental attributes and values within the site and are discussed in the below **Section 2.1** to **Section 2.8**.

The Environmental Protection Authority (EPA) identifies a number of environmental principles, factors and objectives within the *Statement of Environmental Principles, Factors and Objectives* (EPA 2018), which are used to guide the determination of significant environmental impacts and whether impacts can be appropriately mitigated or managed. Existing environmental values have been described according to the applicable EPA environmental factor (where applicable to the site), which include:

- Landforms
- Terrestrial environmental quality
- Flora and vegetation
- Terrestrial fauna
- Inland waters
- Social surroundings.

## 2.1 Landforms

### 2.1.1 Landform, soils and geology

The site occurs on the Swan Coastal Plain, the geomorphic unit that characterises much of the Perth metropolitan area. The site is within the Pinjarra System with a portion of the site within the Bassendean System. The Pinjarra System is described as *poorly drained coastal plain with variable alluvial and aeolian soils*, whilst the older Bassendean Dune system is characterised by lower relief, with variable depth to groundwater, consisting of lower sandy hills interspersed with permanent and seasonal wetlands (Churchward and McArthur 1980; Gozzard 2011).

*Geological Survey of Western Australia* (Gozzard 2007) indicates that the site lies within the Swan River Terraces system having Guildford formation of Alluvial and leached yellow sand. As shown on **Figure 2**, the site soil types include:

- **Ms2 –** Sandy Silt: Strong brown to mid grey, mottled, blocky, disseminated fine sand, hard when dry, variable clay content of alluvial origin.
- **Ms4 –** Sandy Silt: light yellow brown, blocky, mottled some some fine to medium sand, soft when moist, variable clay content.
- **S8 –** Sand: very light grey at surface, yellow at depth, fine to medium-grained, sub rounded quartz, moderately well sorted of eolian origin.

### 2.1.2 Topography

The site is generally flat with a slightly higher elevation in its eastern extent. The northern portion of the site, adjacent to the Swan River, lies at 0 m Australian Height Datum (mAHD). The remainder of the site is slightly elevated, ranging from 1 mAHD to the northwest to 7 mAHD to the east.

The topographic contours of the site are shown on **Figure 3**.

## 2.2 Terrestrial Environmental Quality

### 2.2.1 Acid sulfate soils

Acid sulfate soils (ASS) refers to naturally occurring soils and sediment containing iron sulphide (iron pyrite) materials. In their natural state, present in waterlogged and/or anoxic conditions, ASS generally do not present any risk to the environment. However, when oxidised, ASS can pose issues through sulphuric acid production, which can present a range of risks for the surrounding environment, infrastructure, and human health.

The Department of Water and Environmental Regulation (DWER) provides broad-scale mapping indicating areas of potential ASS risk (DWER 2023). A review of the DWER mapping indicates that the majority of the site is considered to have 'high to moderate' risk of ASS occurrence and a small portion in the south is considered to have 'moderate to low' risk of ASS occurring within the 3 m of the natural surface.

The DWER ASS risk mapping is shown on **Figure 4**.

### 2.2.2 Potential site contamination

A review of the publicly available DWER Contaminated Sites Database indicates that no areas within the site are registered as a 'contaminated site' pursuant to the *Contaminated Sites Act 2003*. A basic summary of records (BSR) of Lot 9002 on DP60342 was requested from DWER which shows that Lot 9002 (including the racecourse, Precinct A and Precinct B) is classified as "possibly contaminated – investigation required" and the extent of which is shown on **Figure 4**Figure 4. The contamination is associated with the sites historical land use for horse racing and runoff from animal storage on the site and agistment in the surrounding areas causing the potential for contamination, including nutrient runoff. Monitoring and investigation is required to be reviewed by DWER and potentially re-classified and the proponent has commenced investigations to address this. The BSR notes that if groundwater is to be abstracted, analytical testing should be undertaken to determine if groundwater is suitable for its intended use.

### 2.2.3 Historical context

Historical aerial images available from 1953 and onwards (Landgate 2023) were reviewed and show that Ascot Racecourse has existed since prior to 1953 (**Plate 2**) and the associated racecourse infrastructure, including grandstands and stables were established between 1953 and 1977. Residential development to the south east of the site steadily increased between 1953 to 1995 and majority of residential development to the south west occurred between 1995 and 2005 (see **Plate 2** to **Plate 4**).

Attachment 12.1.3 Environmental Assessment Report





*Plate 2: 1953 aerial (Landgate 2023)*



*Plate 3: 2005 aerial (Landgate 2023)*

Attachment 12.1.3 Environmental Assessment Report





*Plate 4: 2024 aerial (Landgate 2023)*

## 2.3 Flora and Vegetation

### 2.3.1 Regional Context

Native vegetation within the site can be classified based on regional vegetation mapping. Heddle *et al.* (1980) mapping shows the site as comprising the 'Guildford' complex , which is described as 'open forest to tall open forest and woodland'. The site is within 'Bassendean association 1009',typically comprising a combination of *Corymbia calophylla*, *Eucalyptus wandoo* and *Eucalyptus marginata (DPIRD 2021).* This association was determined to have 16.4% remaining of its original pre-European extent within the Swan Coastal Plain, of which 0.02% is protected for conservation purposes (Government of Western Australia 2019).

The EPA's *Environmental Guidance for Planning and Development Studies* (EPA 2008) states that the loss of biodiversity caused by habitat fragmentation is significantly greater once a habitat type falls below 30% of its original extent. The Guidance also references the biodiversity conservation national objective and target of retaining 30% of the original extent of each vegetation association, and the states' minimum target of 10% for constrained urban areas such as the Swan Coastal Plain. The percentage remaining of the Bassendean vegetation association (16.4%) is below the 30% retention objective but above the 10% minimum retention target for the Swan Coastal Plain.

Vegetation is typically considered to represent an intact occurrence of its overarching vegetation complex when it is in 'good' or better condition. As outlined in **Section 2.3.4**, vegetation in some portions of the site has been assessed to be in 'good' or 'very good' condition; therefore, this indicates that these areas of remnant native vegetation within the site, is consistent with vegetation associations of the 'Guildford' formation.

Attachment 12.1.3 Environmental Assessment Report



### 2.3.2 Site-specific investigations

Emerge completed a reconnaissance flora and vegetation survey for the site on 27 March 2023 in accordance with EPA's *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016; Emerge Associates 2024a). The survey boundary incorporated the entire site.

The survey included traversing the site on foot and recording composition and condition of vegetation. Photographs were taken during the survey to show particular site conditions. Prior to the field survey, information on the habitat preferences of threatened and priority flora species and communities were reviewed. Areas of potentially suitable habitat for threatened and priority flora species were opportunistically traversed along transects and searched for conservation significant species, as required.

The findings of the survey and the associated assessment report (Emerge Associates 2024a) is summarized below and is contained within **Appendix D.**

### 2.3.3 Vegetation units

Four vegetation units were identified within the site during the field survey and descriptions of each is provided below in **Table 2**. The associated vegetation mapping is shown in **Figure 5.**

*Table 2: Description and extent of vegetation type identified within the site*

| Vegetation Community | Description | Area (ha) |
|---|---|---|
| Er | Woodland *Corymbia calophylla* over closed grass/forbland of pasture weeds and scattered native species (or absent). | 1.12 |
| Cc | Woodland *Eucalyptus rudis* over closed grass/forbland of pasture weeds and scattered native species (or absent).. | 0.28 |
| ErJkSt | Open woodland Eucalyptus rudis and occasional Melaleuca raphiophylla over sedgeland Juncus kraussii and Schoenoplectus tabernaemontani over low shrubland Suaeda australis over forbland Apium prostratum subsp. prostratum var. prostratum and Heliotropium curassavicum over grassland *Avena sp., Cynodon dactylon and * Paspalum vaginatum (or absent). | 0.17 |
| To | Fringing rushland of *Typha orientalis*, with occasional planted native and non-native trees, shrubs and/or non-woody vegetation, over closed grass/forbland of pasture weeds. | 0.46 |
| Non-native | Heavily disturbed areas comprising bare ground and weeds with occasional native trees and forbs and/or sealed ground and buildings. | 56.62 |

### 2.3.4 Vegetation condition

The majority of the site was heavily disturbed with limited intact native vegetation present. The vegetation was therefore mostly determined to be in 'degraded – completely degraded' and 'completely degraded' condition with a small portion determined to be 'very good – good'. Vegetation condition is shown in **Figure 6** and detailed below in **Table 3**.

*Table 3: Vegetation condition categories within the site*

| Condition category (Keighery (1994)) | Size (ha) |
|---|---|
| Pristine | 0 |
| Excellent | 0 |
| Very good | 0 |
| Good – very good | 0.07 |
| Good | 0 |
| Degraded | 1.04 |
| Degraded – completely degraded | 0.98 |
| Completely degraded | 56.57 |

### 2.3.5 Threatened and Priority Ecological Communities

Threatened Ecological Communities (TECs) are recognised as ecological communities that are rare or under threat and therefore warrant special protection.

At a Commonwealth level, TECs are afforded statutory protection under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and at a State level, TECs are afforded statutory protection under the *Biodiversity Conservation Act 2016* (BC Act). Under both Acts, TECs are listed as either 'critically endangered', 'endangered' or 'vulnerable', noting listing status may be different between Commonwealth and State frameworks.

Ecological communities that are not listed as threatened, but are otherwise considered rare or under threat, may be added to the Department of Biodiversity, Conservation and Attractions (DBCA) priority list (DBCA 2022, 2023). PECs are classified as either 'priority 1' (P1), 'priority 2' (P2), 'priority 3' (P3) or 'priority 4' (P4). Whilst PECs are not afforded statutory protection under the BC Act, they are recognised and categorised by the DBCA and are considered through State environmental approval processes.

The 'subtropical and temperate coastal saltmarsh' ecological community is listed as a TEC ('vulnerable') under the EPBC Act and as a PEC (P3) under the BC Act. The TEC/PEC was identified within a portion of the ErJkSt vegetation unit, located in a small part of the site to the north (**Figure 7**). A total of 0.07 ha of this TEC/PEC was mapped within the site. Only part of the ErJkSt vegetation unit represents the TEC/PEC with the remaining ErJkSt vegetation unit representing canopy overhang into the site with limited to no understory vegetation, which is not characteristic of the TEC/PEC.

### 2.3.6 Conservation significant flora

Flora species that are considered to be rare or under threat warrant special protection under Commonwealth and/or State legislation. At a Commonwealth and State level, flora species may be listed as 'threatened' pursuant to the EPBC Act and BC Act. However, listing status may be different between Commonwealth and State levels. Flora species that are not listed as threatened, but are otherwise considered rare or under threat, may be added to the DBCA priority list (DBCA 2022, 2023). Priority flora are classified as either 'priority 1' (P1), 'priority 2' (P2), 'priority 3' (P3) or 'priority

4' (P4). Whilst priority flora are not afforded statutory protection under the BC Act, they are recognised and categorised by the DBCA and are considered through approval processes.

The desktop search results identified a total of 100 flora species including 25 threatened and 75 priority flora species as occurring or potentially occurring within a 9 km radius of the site. Of these, two priority flora species (*Angianthus micropodioides* (P3) and *Aponogeton hexatepalus* (P4)) were considered to have 'high' or 'moderate' likelihood of occurrence within the site (Emerge Associates 2024a).

No threatened or priority flora species were recorded during the survey and suitable habitat for threatened or priority species was not considered to be present (Emerge Associates 2024a). The two threatened and priority flora species identified in the desktop assessment were not considered likely to occur due to lack of suitable habitat.

### 2.3.7 Weeds

The term 'weed' can refer to any plant that requires some form of action to reduce its effect on the economy, the environment, human health and amenity. At a State level, a particularly invasive or detrimental weed species may be listed as a 'declared pest' pursuant to the *Biosecurity and Agriculture Management Act 2007* (BAM Act), indicating that it warrants special management to limit its spread. At a Commonwealth level, the Australian government has compiled a list of 32 Weeds of National Significance (WoNS) (DoEE 2019c).

A total of 58 weed species were recorded during the field survey. One weed species recorded, (**Tamarix aphylla* (athel pine)), is listed as a declared pest. Athel pine is listed in the exempt keeping category, meaning management is not obliged.

### 2.3.8 Environmentally Sensitive Areas

Environmentally sensitive areas (ESAs) are prescribed protection under the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* and have been identified to protect native vegetation values of areas surrounding significant, threatened or scheduled flora, vegetation communities or ecosystems.

Within an ESA, no exemptions under the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* apply and would indicate that the site is likely to support significant environmental values. However, exemptions under Schedule 6 of the *Environmental Protection Act 1986* (EP Act) apply, including any clearing in accordance with a subdivision approval under the *Planning and Development Act 2005* (a recognised exemption under the Schedule 6 of the *Environmental Protection Act 1986*).

The Swan River, located adjacent to the site, is also considered a "Conservation Category Wetland" and as such, a portion of the site (3.4 ha) is listed as an ESA (**Figure 8**).

A total of 1.10 ha of vegetation meeting the definition of 'native vegetation' pursuant to the EP Act occurs within the site, as shown in **Figure 7**. This is comprised of scattered flooded gum (*Eucalyptus rudis*) and marri (*Corymbia calophylla*) trees, and fringing vegetation (vegetation type ErJkSt).

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### 2.3.9 Bush Forever

The Government of Western Australia's *Bush Forever Policy* (Government of WA 2000) is a strategic plan for conserving regionally significant bushland within the Swan Coastal Plain portion of the Perth Metropolitan Region. The objective of Bush Forever is to protect comprehensive representations of all original vegetation complexes by targeting a minimum of 10% of each for protection. Bush Forever areas represent regional ecosystems and habitat and have a vital role in conserving Perth's biodiversity.

No Bush Forever Sites occur within the site. The closest Bush Forever Site is Bush Forever Site 313 – Swan River Saltmarshes, Bayswater/Maylands, located approximately 100 m to the northwest of the site, separated by Grandstand and Garrett Road (see **Figure 8**).

### 2.3.10 Ecological linkages

Ecological linkages are linear landscape elements that allow the movement of fauna, flora and genetic material between areas of remnant habitat. The Perth Biodiversity Project, supported by the Western Australian Local Government Association have identified and mapped regional ecological linkages within the Perth Metropolitan Region (WALGA and PBP 2004). While the linkages generally align with areas of vegetation and Bush Forever areas, in many locations these linkages are not contiguous with vegetation coverage.

Ecological linkage ID 35 (Swan River) partially overlaps the northern portion of the site. However, most of the northern portion of the site does not support native vegetation due to historical clearing, and only a small portion remains within the northeast of the site.

Broadscale identified ecological linkages are shown in **Figure 8**.

### 2.3.11 City of Belmont Collective Local Biodiversity Strategy

In partnership with Town of Bassendean and City of Bayswater, the CoB developed a collective Local Biodiversity Strategy (LBS) as a commitment to the protection and enhancement of a network of local natural areas (LNAs).

LNAs across the three councils were ranked by viability using the Natural Area Initial Assessment templates detailed in the Local Government Biodiversity Planning Guidelines for the Perth Metropolitan Region (WALGA, 2004). The viability assessment was used to determine the reserves of high biodiversity value that would benefit from increased protection status. The highest viability areas within the CoB were as follows:

- Goodwood Parade Estuarine Dampland
- Signall Hill
- Tomato Lakes Bushland.

No reserves deemed to have high biodiversity value, as outlined in the LBS, were identified as occurring within the site. As such, no LNAs need to be considered as part of future development within the site.

## 2.4 Terrestrial Fauna

### 2.4.1 Site-specific surveys and investigations

In conjunction with the flora and vegetation assessment, Emerge Associates undertook a basic fauna and targeted black cockatoo survey, and the assessment boundary encompassed the entire site. The targeted black cockatoo survey extended beyond the SP area, and three potential habitat trees located adjacent to the site were identified outside the SP area. These trees are located beyond the SP area however the location of the trees are shown in Figure 7 of **Appendix D**.

Transects were traversed across the site, during the day, and the characteristics of fauna habitat and presence of fauna species was recorded. Microhabitats such as logs, rocks and leaf litter were investigated and evidence of species presence such as tracks, scats, skeletal remains, foraging evidence or calls was also noted. An opportunistic fauna species list was compiled and fauna habitat values were described, with particular reference to conservation significant fauna species that have the potential to occur within the site.

The findings of the survey and the associated assessment report (Emerge Associates 2024a) is summarised below and contained within **Appendix D.**

### 2.4.2 Fauna habitat

Emerge (2024) identified four habitat types within the site with most of the site (52.64 ha) described as 'cleared' (see **Table 4**). Habitat values in the site are limited by historical disturbance and are primarily suited to widespread fauna species with non-specific habitat requirements.

The fringing woodland fauna habitat, associated with the **ErJkSt** vegetation unit, was noted to provide a cover of native trees and understory cover of riparian vegetation that offers habitat for ground dwelling fauna. The fringing woodland is associated with the Swan River and extends into the northeast of the site. The scattered trees and shrubs habitat type comprised of large native trees was associated with vegetation units **Cc** and **Er** would provide value to native birds and other arboreal fauna (see **Figure 5**).

*Table 4: Fauna habitats identified within the site*

| Fauna habitat | Description | Area (ha) |
|---|---|---|
| **Fringing woodland** | Native fringing vegetation consisting of a native tree overstorey and an understorey of sedges/rushes. | 0.07 |
| **Wetland** | Wetland waterbodies and associated riparian sedgeland/rushland. | 3.72 |
| **Scattered trees and shrubs** | Scattered native and non-native trees and shrubs, providing habitat mainly for avifauna. | 5.45 |
| **Cleared** | Predominantly grassy weeds, bare ground and built form. | 52.64 |

Twenty-four fauna species were recorded within the site including two conservation significant fauna species.

### 2.4.3 Conservation significant fauna

Fauna species that are considered to be rare or under threat warrant special protection under Commonwealth and/or State legislation. At a Commonwealth and State level, fauna species may be listed as 'threatened' pursuant to the EPBC Act and BC Act, respectively. However, listing status may be different between Commonwealth and State levels. Fauna species that are not listed as threatened, but are otherwise considered rare or under threat, may be added to the DBCA priority list (DBCA 2022, 2023). Priority fauna are classified as either 'priority 1' (P1), 'priority 2' (P2), 'priority 3' (P3) or 'priority 4' (P4). Whilst priority fauna are not afforded statutory protection under the BC Act, they are recognised and categorised by the DBCA and are considered through environmental approval processes.

A total of 77 conservation significant fauna species were identified as occurring or potentially occurring within a 10 km radius of the site (Emerge Associates 2024a). Of these, 11 species were considered to have a 'moderate' or 'high' likelihood of occurrence within the site, including six migratory and/or specifically protected bird species, two threatened bird species, one priority bird species and two priority mammal species **Table 5**.

The field survey confirmed the 11 species identified from the desktop assessment have the potential to occur within the site. Based on observations of fauna habitat for migratory species, it was noted that occurrences of migratory species within the site are likely to be a flyover or for marginal foraging habitat due to the site and surrounding area lacking suitable habitat.

Rakali may utilise the Swan River and are likely to occasionally occur in the northern most portion of the site associated with the fringing woodland habitat type. Quenda may occur in understorey vegetation or where grasses provide dense cover.

One threatened species, *Zanda banksii naso* (forest red-tailed black cockatoo (FRTBC)) and one P4 species (*Oxyura australis* (blue-billed duck)) were recorded at the time of survey (Emerge Associates 2024a). FRTBC were observed foraging in the southern portion of the site in cape lilac (*Melia azedarach*), which were overhanging from adjacent private properties.

*Table 5: Conservation significant fauna species with potential to occur within the site*

| Taxa | Common name | Conservation Status | |
|---|---|---|---|
| | | EP Act | EPBC Act |
| **Birds** | | | |
| *Zanda banksii naso*[1] | Forest red-tailed black cockatoo | VU | VU |
| *Zanda latirostris*[2] | Carnaby's black cockatoo | EN | EN |
| *Oxyura australis* | Blue-billed duck | P4 | - |
| *Pandion haliaetus* | Osprey | MI | MI |
| *Apus pacificus* | Pacific swift | MI | MI |

[1] Previously *Calyptorhynchus*
[2] Previously *Calyptorhynchus*

*Table 5: Conservation significant fauna species with potential to occur within the site (continued)*

| Taxa | Common name | Conservation Status | |
|---|---|---|---|
| | | EP Act | EPBC Act |
| *Calidris ruficollis* | Red-necked stint | MI | MI |
| *Plegadis falcinellus* | Glossy Ibis | MI | MI |
| *Thalasseus bergii* | Crested tern | MI | MI |
| *Falco peregrinus* | Peregrine falcon | OS | - |
| **Mammals** | | | |
| *Hydromys chrysogaster* | Rakali | P4 | - |
| *Isoodon fusciventer* | Quenda | P4 | - |

#### 2.4.3.1 Black Cockatoos

Three threatened species of black cockatoo occur in the south-west of WA:

- *Zanda*[3] *latirostris* (Carnaby's black cockatoo) (CBC) which is listed as 'endangered' under the EPBC Act and the BC Act.
- *Zanda*[4] *baudinii* (Baudin's black cockatoo) (BBC) which is listed as 'endangered' under the EPBC Act and the BC Act.
- *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo) (FRTBC) which is listed as 'vulnerable' under the EPBC Act and the BC Act.

The site is within the modelled distribution of CBC and FRTBC (DAWE 2022) and are therefore these species have been considered further in this section. Additionally, FRTBC were observed during the survey, in cape lilac (*Melia azedarach*) overhanging the site boundary (Emerge Associates 2024a). The site does not lie within the modelled distribution of BBC and therefore, the species is not likely to occur and have not been considered further.

Black cockatoo habitat consists of breeding, roosting and foraging categories. Foraging and breeding habitat for CBC and FRTBC was identified. No roosts or evidence of roosts were observed. However, tall trees within the site have the potential to be roosting trees. Foraging and breeding habitat for CBC and FRTBC was identified.

Foraging habitat was identified and classified as either 'primary' or 'secondary' based on black cockatoo foraging preferences. Primary food plants were defined as those with historical and contemporary records of regular consumption by a black cockatoo species. Secondary food plants were defined as plant species that black cockatoo species have been recorded consuming occasionally or that, based on their limited extent or agricultural origin, should not be considered a sustaining resource.

A total of 1.27 ha of foraging habitat for CBC was recorded, of which 0.35 ha comprised primary foraging habitat. Primary foraging habitat included 0.28 ha of primary native foraging habitat

[3] Previously *Calyptorhynchus*
[4] Previously *Calyptorhynchus*

associated with *Corymbia calophylla,* 0.07 ha of primary non-native foraging habitat associated with *Pinus pinaster*. A total of 0.92 ha of secondary foraging habitat was recorded, including 0.41 ha of secondary native foraging habitat associated with *Acacia saligna*, *Jacksonia furcellata* and X*anthorrhoea* spp. and 0.51 ha of secondary non-native habitat associated with *Eucalyptus gomphocephala* (**Figure 9**).

A total of 0.84 ha of foraging habitat for FRTBC was recorded in the site, which comprises 0.28 ha of primary native habitat associated with *Corymbia calophylla,* 0.07 ha of secondary native foraging habitat associated with *Jacksonia furcellata* and 0.49 ha of non-native secondary habitat associated with *Eucalyptus gomphocephala* and *Eucalyptus camaldulensis* (see **Figure 10**).

The extent of foraging habitat by value category is detailed in **Table 6**.

*Table 6: Foraging habitat recorded within the site*

| Foraging habitat | Black cockatoo species and area of foraging habitat (ha) | |
|---|---|---|
| | Carnaby's | Forest red-tailed |
| Primary native | 0.28 | 0.28 |
| Primary non-native | 0.07 | 0 |
| Secondary native | 0.41 | 0.07 |
| Secondary non-native | 0.51 | 0.49 |
| **Total** | **1.27** | **0.84** |

Breeding habitat was identified through 'habitat trees' which are typically defined as a native eucalypt that is known to support (or with the potential to support) black cockatoo breeding. Habitat trees include species such as marri, jarrah, blackbutt, tuart, wandoo, salmon gum or to a lesser extent flooded gum, with a diameter at breast height (DBH) of greater than 50 cm (or DBH greater than 30 cm for wandoo or salmon gum). A total of 66 habitat trees were recorded during the fauna survey. Of these, 5 trees contained hollows potentially suitable for black cockatoo breeding and the remaining 61 habitat trees did not contain hollows potentially suitable for black cockatoo breeding. Hollow potential for breeding habitat was based on inspection from ground level, which could be further verified through more detailed hollow inspections (Emerge Associates 2024a). The location of the habitat trees within the site are shown on **Figure 11**.

## 2.5 Inland Waters

### 2.5.1 Surface water

The surface hydrology within the site is dominated by the Swan River, which is located adjacent to the site. During summer, the influence of the river is limited to the riverine fringe, while in winter levels rise and can extend inland. The 1 in 100-year flood and fringe level area (see **Figure 12**) shows that the north east corner and the north west corner of the site is within the floodway and the flood fringe area extends into the site.

Within the centre of the racecourse there are three lakes including an irrigation lake, a lined lake for overflow from the irrigation lake and a wetland lake, which is the largest lake and allows excess

water to flow under the grass track to the Swan River (Emerge Associates 2024b). The irrigation lake is filled from an adjacent production bore and provides irrigation for the racetrack and surrounding landscaped areas. The lined lake is sealed with a natural clay liner and is used to provide irrigation for landscaped areas and water features.

### 2.5.2 Groundwater

#### 2.5.2.1 Regional groundwater

The *Water Register* (DWER 2023) indicates that groundwater beneath the site is a multi-layered system comprised of the following:

- City of Bayswater – Perth Superficial Swan unconfined aquifer
- Perth South – Perth Leederville confined aquifer
- Perth South – Perth Yarragadee confined aquifer.

The Perth Groundwater Map indicates (DWER 2023) that the groundwater level sits at 0.5 mAHD across the site. The groundwater clearance from southeast to northwest of the site ranges from 6.5 m to 0.5 m (**Figure 12**).

#### 2.5.2.2 Site-specific groundwater monitoring

Groundwater monitoring has been undertaken within the SP area. There are two groundwater level and quality monitoring bores and one production bore within the Racecourse, which are monitored by Perth Racing.

Groundwater depth monitoring undertaken by D.C. Blandford & Associates Pty Ltd in 2001 (D.C Blandford & Associates 2001) indicated groundwater depths ranging between 2.03 mAHD to 0.16 mAHD at the site. Additional results from bore monitoring of the Ascot Racecourse undertaken by JDA in 2022 indicated that groundwater levels ranged from 2.06 m below natural surface (mBNS) to 0.34 mBNS.

Groundwater depth monitoring was undertaken within Precinct A where six monitoring wells were installed for the geotechnical investigation by Douglas Partners (2024). The groundwater depth varied from 1.09 m below ground level (mBGL) to 2.37 mBGL during January 2024 (Douglas Partners 2024). Groundwater depth monitoring was undertaken within Precinct D by Galt Geotechnics during the geotechnical investigation. The highest groundwater level was reported as 3.03 mBGL during February 2024 (Galt 2024).

Groundwater quality monitoring was also undertaken by D.C. Blandford & Associates Pty Ltd in 2001. Concentrations of total nitrogen, nitrate, total phosphorus, as well as pH indicated minor fluctuations throughout the year, but trends were generally consistent with previous results. Results indicated metals concentrations below laboratory detection limits, with the exception of one elevated nickel concentration detected.

Groundwater quality monitoring undertaken by JDA Consulting Hydrologists in 2022 (JDA 2022) indicated similar conditions to the 2001 results. Groundwater salinity and pH levels were below the trigger value and within the guideline limits. Concentrations of total nitrogen and total phosphorous were in exceedance but were generally consistent with historical trends at the site.

### 2.5.3 Wetlands

Wetlands include "*areas of seasonally, intermittently or permanently waterlogged soils or inundated land, whether natural or otherwise, fresh and saline, e.g. waterlogged soils, ponds, billabongs, lakes, swamps, tidal flats, estuaries, rivers and their tributaries*" (Wetlands Advisory Committee 1977). Wetlands can further be recognised by the presence of vegetation associated with waterlogging or the presence of hydric soils such as peat, peaty sand or carbonate mud (Hill *et al.* 1996).

Wetlands of international significance (such as Ramsar wetlands) are afforded protection under the EPBC Act. No such wetlands occur within or in close proximity to the site.

At a regional level, DBCA maintains the Geomorphic Wetlands of the Swan Coastal Plain dataset (DBCA 2023), which categorises wetland features into management categories to guide land use and conservation, as outlined in **Table 7**. Wetland types are based on landform shape and water permanence, whilst management categories of wetlands are determined based on hydrological, biological and human use features.

*Table 7: Geomorphic wetland management categories*

| Management Category | Description of wetland | Management objectives |
|---|---|---|
| Conservation Category Wetland (CCW) | Support high levels of attributes | Preserve wetland attributes and functions through reservation in national parks, crown reserves and state owned land. Protection provided under environmental protection policies. |
| Resource Enhancement Wetland (REW) | Modified or degraded but still supporting substantial attributes and functions | Restore wetland through maintenance and enhancement of wetland functions and attributes. Protection via crown reserves, state or local government owned land, environmental protection policies and sustainable management on private properties. |
| Multiple Use Wetland (MUW) | Few remaining important wetland attributes and functions but still provide important hydrological functions | Use, development and management considered in the context of water, town and environmental planning through land care. |

The Geomorphic Wetlands of the Swan Coastal Plain dataset indicates three Multiple Use Category Wetland (MUW) areas (UFI 8424, UFI 8425 and UFI 8426) and one Resource Enhancement Wetland (REW) area (UFI 8423 are present within the site. After review of local surface water hydrology, the Geomorphic Wetlands of the Swan Coastal Plain dataset mapping and field observations (refer to **Figure 5** and **Figure 6** of Emerge Associates 2024b), it was determined that the area designated as an REW in the Geomorphic Wetlands of the Swan Coastal Plain dataset does not accurately reflect the conditions observed on ground.

The Swan River Estuary, situated outside the northern boundary of the site, is recognised as a "Conservation Category Wetland" (CCW) (UFI 1316 - Estuary waterbody) within the Geomorphic Wetlands of the Swan Coastal Plain dataset and has additional significant ecological, cultural and heritage values (DEC 2011). The riparian vegetation identified in Emerge Associates (2024a) is associated with the Swan River and extends into the northeast of the site. Riparian vegetation would provide habitat for waterbirds, including birds which nest in dense stands of sedges and rushes and those waterbirds which forage in mud flats along the river. In addition, the fringing vegetation would

provide habitat for both terrestrial and aquatic fauna species, including reptiles, small mammals, fish and invertebrates.

The location of the geomorphic wetlands is shown on **Figure 12.**

### 2.5.4 Public drinking water source areas

DWER proclaims Public Drinking Water Source Areas (PDWSAs) to protect identified drinking water sources, including surface water and groundwater sources (DoW 2009). They are proclaimed under the *Metropolitan Water Supply, Sewerage and Drainage Act 1909* or the *Country Areas Water Supply Act 1947* as Water Reserves, Catchment Areas or Underground Water Pollution Control Areas.

No PDWSAs exist within or surrounding the site.

## 2.6 Social Surroundings

### 2.6.1 Aboriginal cultural heritage

An enquiry was submitted to the Department of Planning, Lands and Heritage (DPLH) through the Aboriginal Heritage Enquiry Form (AHEF), which identified Site 3753 partially intersects with the western edge of the site and Site 3756 is located immediately adjacent to the site (**Figure 13**). Details on these sites are shown below:

- Site ID 3753 – Registered site, Name: Perth, Type: Historical, mythological, hunting place, named place, natural feature.
- Site ID 3536 – Registered site, Name: Swan River, Type: Creation / Dreaming Narrative.

It should be noted that the Site 3753 boundary is a broader area and the exact area is not defined (**Figure 13**). Therefore, it is possible that the exact location of Site 3753 is outside the site boundary.

### 2.6.2 Non-Indigenous heritage

A review of the State Heritage Office database (Heritage Council WA 2022) was undertaken to determine presence of sites or features of non-indigenous heritage significance within the site at a federal, state and local government level.

The Ascot Racecourse Complex (place number 06123) is listed at a local level with the CoB and occurs across the racecourse itself, which is excluded from any development areas within the SP. A portion of the Ascot Racecourse Complex is also mapped across the site (Precinct A, B and C) and comprises original buildings and newly established buildings.

The following places occur in the surrounding area and are state or local listed places:

- Bristile Kilns (fmr), Belmont (place number 00868) (state)
- Garratt Road Bridge (place number 11342) (state)
- Ascot Residential & Stables Precinct (place number 16779) (local).

### 2.6.3 Surrounding land uses

The surrounding area is mostly residential, with the exception of commercial land and some public open space to the south and the Swan River and public open space to the north (**Figure 13**). A Parks and Recreation Reserve (reserved under the MRS), associated with the Swan River foreshore, extends along the northern boundary of the site and intersects with a portion of the site. This area includes part of the racecourse itself and vegetation within the northeast of the site. Both of these areas are planned to be retained as part of the SP.

No surrounding land uses are likely to cause amenity impacts associated with dust, gaseous or odour emissions.

Great Eastern Highway is less than 300 m south of the southern boundary of the SP which will require consideration of transport noise and management/mitigation in line with the State Planning Policy (SPP) 5.4 *Road and Rail Noise*. Precinct E falls within the SPP 5.4 area and requires further consideration regarding potential noise impacts.

## 2.7 Other Considerations

### 2.7.1 Bushfire hazards

Review of the Department of Fire and Emergency Services (DFES) Bushfire Prone Area (BPA) mapping (DFES 2021) indicated no Bushfire Prone Areas (BPA) within the site. The nearest BPA is greater than 500 m to the west of the site and therefore no further consideration to bushfire hazards is required.

## 2.8 Summary of Existing Environmental Values

**Table 8** below summarises the existing environmental values occurring within the site, as identified and discussed previously in **Sections 2.1** to **2.7**.

*Table 8: Summary of existing environmental values within the site relevant to EPA factors*

| EPA factor | Summary of existing environmental values within the site |
|---|---|
| Landforms | • No restricted landforms or unique geological features have been identified within the site.<br>• The Swan River is located adjacent to the site. |
| Terrestrial environmental quality | • The majority of the site is considered to have high to moderate risk of ASS occurrence and a small portion in the south is considered to have moderate to low risk of ASS occurring within the 3 m of the natural surface.<br>• Lot 9002 (including Precinct A and Precinct B) is classified as "possibly contaminated – investigation required" pursuant to the *Contaminated Sites Act 2003.* |

*Table 8: Summary of existing environmental values within the site relevant to EPA factors (continued)*

| EPA factor | Summary of existing environmental values within the site |
|---|---|
| Flora and vegetation | • No threatened or priority flora species were recorded in the site. The threatened and priority flora species identified in the desktop assessment are not considered to occur in the site due to lack of suitable habitat.<br>• The majority of the site is heavily disturbed (degraded to completely degraded) and limited native intact native vegetation is present.<br>• One small patch of vegetation (vegetation community type ErJkSt) was identified in 'good – very good' condition.<br>• A total of 0.07 ha of the 'subtropical and temperate coastal saltmarsh' TEC/PEC (listed as Vu under the EPBC Act and listed as P3 under the EP Act) occurs within the northern portion of the site adjacent to the Swan River.<br>• A total of 1.1 ha of native vegetation as classified under the EP Act was mapped within the site. |
| Terrestrial fauna | • Eleven conservation significant fauna species were considered to have a 'moderate' or 'high' likelihood of occurrence within the site including six migratory and/or specifically protected bird species, two threatened bird species, one priority bird species and two priority mammal species.<br>• One priority listed species, blue-billed duck (P4) was recorded during the survey (Emerge Associates 2024a).<br>• As a result of historical disturbance, the site contains limited fauna habitat and is likely only utilised by fauna traversing through the wider area, especially birds. However, the small patch of 'Fringing Woodland' in the site's northeast may provide habitat value for smaller ground-dwelling fauna.<br>**Black cockatoos**<br>• CBC (EN) and FRTBC (VU) have the potential to occur within the site based on the desktop assessment undertaken.<br>• FRTBC was observed foraging in the southern portion of the site in cape lilac (*Melia azedarach*), which were overhanging from adjacent private properties (Emerge Associates 2024a).<br>• 66 potential black cockatoo habitat trees were recorded within the site.<br>• A total of 1.27 ha of foraging habitat for CBC was recorded, of which 0.35 ha comprised primary foraging habitat.<br>• A total of 0.84 ha of foraging habitat for FRTBC was recorded, of which 0.28 ha comprised primary foraging habitat. |
| Inland waters | • No CCWs have been identified within the site; however, the Swan River is a CCW and occurs immediately north of the site.<br>• Three MUWs (UFI 8424, UFI 8425, UFI 8426) are mapped across the site.<br>• One REW (UFI 8423) is mapped across the site, however, after review of local surface water hydrology, the Geomorphic Wetlands of the Swan Coastal Plain dataset mapping and field observations (refer to **Figure 5** and Figure 6 of Emerge Associates 2024b), it was determined that the area designated as an REW in the Geomorphic Wetlands of the Swan Coastal Plain dataset does not accurately reflect the conditions observed on ground. |
| Social surroundings | • Aboriginal Cultural Heritage Site 3753 partially overlaps with a portion of the west of the site and Site ID 3536 (Swan River) is located immediately north of the site. These places are associated with creation/dreaming narrative and is also associated with a mythological value.<br>• The Ascot Racecourse Complex, place number 06123, occurs across the racecourse itself and Precinct A, B and C.<br>• Noise and acoustic impact from Great Eastern Highway must be considered for Precinct E residential development. |
| Other considerations | • No Bushfire Prone Areas exist within the site. |

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# 3 Proposed Land Use and the Planning and Approval Framework

## 3.1 Ascot Racecourse Proposed Development

The proposed zoning for the SP is in line with existing zoning in adjacent areas and aims to provide a framework of what might be considered appropriate from a land use planning perspective, and provides a framework for the future land use, subdivision and development within the site. Additionally, a master plan has been prepared which provides a detailed conceptual layout for proposed residential and commercial areas, the road network, public open spaces and other facilities (**Appendix C**). The master plan (**Appendix C**) indicates the following future land use per precinct as:

- The racecourse is proposed to remain, within which there is expected to be minimal future additional development.
- Precinct A is proposed to include a retirement living village.
- Precinct B includes the existing car parking and racecourse grandstand and is proposed to include additional car parking spaces and provide new buildings for offices/hospitality.
- Precinct C includes proposed stables, horse float parking and car parking.
- Precinct D includes a proposed residential area and childcare centre.
- Precinct E includes proposed equine and jockey services, car parking and pad site and potential retail and bulky goods.

The SP has been developed through an iterative and collaborative design process involving a variety of stakeholders, including a multi-disciplinary design team providing expertise in the following fields:

- Town planning and urban design
- Environmental planning
- Aboriginal heritage
- Hydrology
- Civil and geotechnical engineering
- Traffic engineering
- Economic analysis.

### 3.1.1 Environmental considerations of the structure plan

Environmental values and considerations have been addressed as part of the SP design process, which has culminated in the proposed SP and master plan layout provided in **Appendix A** and **Appendix C**.

As outlined above, the primary structural basis of the SP layout has generally been informed by the location and extent of the various existing district-scale land uses. This has provided a level of restriction to the ability for the SP layout to strategically respond to environmental values within the site. Notwithstanding, the proponent has taken a range of measures to provide for the future retention of significant environmental values where possible (i.e. where there remains flexibility in the layout design process).

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#### 3.1.1.1 Public Open Space

The area reserved for Parks and Recreation in the northern extent of the SP, along the foreshore of the Swan River, has been retained as Parks and Recreation as part of the proposed land uses within the SP. Retention of this vegetation avoids direct impacts to the 0.07 ha of subtropical and temperate coastal saltmarsh TEC/PEC. In addition, this vegetation was identified as being in good to very good condition with potential to provide canopy cover and habitat for avian species as well as riparian vegetation for ground dwelling fauna.

#### 3.1.1.2 Hydrology

To address the proximity of the Swan River and support the SP design and process, a Local Water Management Strategy (LWMS) has been prepared by Emerge Associates (2024b) to consider water sensitive urban design principles, flood storage requirements and a water conservation strategy. The principal management objective for hydrology within the site is to ensure that post-development environmental flows and/or hydrological cycles are maintained or improved upon pre-development conditions, especially regarding the Swan River located adjacent to the site and lake features within the site. Specifically, the LWMS has aimed to:

- Protect water quality in the Swan River by providing appropriate water quality treatment at source.
- Mitigate potential flooding within the SP area and immediate surrounds.
- Take account of existing drainage infrastructure capacity and ensure that sufficient land is set aside to manage stormwater.
- Provide a broad level stormwater management framework to support future urban development.
- Incorporate appropriate best management practices into the drainage systems that address the environmental and stormwater management issues identified.
- Minimise transport of nutrients/pollutants to groundwater.
- Develop a non-potable water conservation strategy that will accommodate existing groundwater allocation constraints for the area.
- Gain support from DWER, DBCA, CoB and Water Corporation for the proposed method to manage stormwater within the site.

#### 3.1.1.3 Wetlands

A total of three MUW as per the Geomorphic Wetlands of the Swan Coastal Plain dataset exist within the site, specifically within the boundary of the Ascot Racecourse track. No considerations are required for MUWs however the planning and design of the SP does not intend to disturb the MUW.

One REW (UFI 8423) is mapped across the site, however, after review of local surface water hydrology, the Geomorphic Wetlands of the Swan Coastal Plain dataset mapping and field observations (refer to **Figure 5** and Figure 6 of Emerge Associates 2024b), it was determined that the area designated as a REW is unlikely represent a REW. Regardless, the planning and design of the SP has avoided the REW and no disturbance to the REW is anticipated.

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#### 3.1.1.4 Conservation significant fauna

The SP design retains the most suitable fauna habitat, the fringing woodland habitat type which is associated with the remnant vegetation along the foreshore reserve. This vegetation was noted to provide habitat for conservation significant fauna species, including rakali and will be retained in the current SP design.

The black cockatoo foraging habitat identified by the field survey is patchily distributed across the site and interspersed with plant species not used by CBC or FRTBC. No signs of use were identified during the targeted black cockatoo survey, such as chew marks, droppings or moulted feathers within any of the habitat trees with hollow(s) in the site.

The potential foraging habitat and habitat trees for CBC and FRTBC within the site is unlikely to represent critical foraging or breeding habitat, given its small extent within an urban setting with minimal potentially suitable hollows and no evidence of use by CBC or FRTBC. Potential black cockatoo habitat trees identified will be opportunistically retained. The potential foraging and breeding habitat in the SP occurs within the 'Place of public assembly,' where future development is permitted to occur. Black cockatoo habitat will need to be considered as part of future subdivision and development approvals.

#### 3.1.1.5 Aboriginal cultural heritage

Whilst not identified as occurring within the precinct areas, the Swan River (Site ID 3536) is a key Aboriginal cultural heritage site for consideration. The SP design retains the Parks and Recreation Reserve which excludes future development adjacent to the Swan River and protects this place of cultural heritage significance from potential development impacts.

No works associated with SP development are currently proposed to directly impact the Swan River, however, should any future proposed works impact the riverbank, foreshore or any other Aboriginal cultural heritage site, approval for the proposed works under Section 18 of the *Aboriginal Heritage Act 1972* would be required.

#### 3.1.1.6 Non-Indigenous heritage

The Ascot Racecourse Complex (place 06123) includes the racecourse itself and the surrounding proposed precincts, excluding Precinct D, as outlined in the SP. The SP design proposes to retain the racecourse itself and does not propose development within the racecourse. The remaining part of the Ascot Racecourse Complex (place 06123) is within Precinct A, B, C and E. The SP design for these precincts allows for the development of additional facilities and renovation of current facilities.

### 3.2 Future planning and environmental approvals process

A key component of implementing the future development of any area is the relevant environmental management framework. Subject to approval and endorsement of the structure plan by the WAPC, development of the site will be progressed through subdivision and/or development approval/s. Where required, the environmental management requirements can be implemented through

Attachment 12.1.3 Environmental Assessment Report



applicable subdivision and/or development approval conditions. The future planning and environmental approvals process is discussed in this section.

### 3.2.1 Metropolitan Region Scheme

The site is currently zoned a combination of 'Urban,' 'Private Recreation' and 'Parks and Recreation' under the Metropolitan Region Scheme (MRS). The majority of surrounding land is zoned as 'Urban,' and land abutting the Swan River reserved for 'Parks and Recreation'. The MRS zoning of Precinct A area is currently 'Private Recreation' and lodgment of an MRS amendment may be required with the Western Australian Planning Commission (WAPC) to rezone the Precinct A area from 'Private Recreation' to be consistent with finalised land uses.Correspondingly, LPS 15 could be amended either through a concurrent or subsequent local scheme amendment (see further details regarding LPS 15 in **Section 3.2.2**).

Any scheme amendment request received and initiated by the responsible authority (WAPC), would be formerly referred to the EPA under Section 48A of the EP Act (unless exempt under Section 48AAA of the EP Act). This is discussed further in **Section 3.2.4**.

### 3.2.2 Local Planning Scheme No. 15

The site is currently zoned 'Public place of assembly' and 'Mixed Use' under the CoB LPS 15. The existing Ascot Racecourse covers the majority of the site, which attributes the 'Place of public assembly' zoning and the south of the site within part of Precinct E is zoned 'Mixed Use'.

The current LPS 15 zonings are inconsistent with the proposed land uses within Precinct A and Precinct D. As such, a local scheme amendment will be required to rezone Precinct A from 'place of public assembly' to 'retirement living/mixed use' and to rezone Precinct D from 'Place of Public Assembly' to 'Mixed Use'.

The Swan River foreshore is also subject to the *City of Belmont Foreshore Precinct Plan* (CoB 2018) which guides the future use and management of the Belmont foreshore and the development interface with the Parks and Recreation reserve.

### 3.2.3 *Environmental Protection Act* 1986 - Section 38 proposals

Section 38 of the EP Act enables any person to refer a 'proposal' (as opposed to a planning scheme, as per Section 48) likely to have a significant impact on the environment to the EPA, who then decide whether or not to assess the proposal. The SP area, or part thereof, will need to be considered in relation to Section 38 of the EP Act.

A preliminary assessment of the anticipated environmental outcomes as a result of the anticipated future urban development (based on the SP layout) has been undertaken against relevant EPA factors and objectives, which is outlined in **Section 4**. Based on this assessment, it is not considered likely that any future development within the SP would require referral to the EPA pursuant to Section 38 of the EP Act.

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### 3.2.4 *Environmental Protection Act 1986* - Section 48 scheme amendment referral

An amendment to a planning scheme (regional or local) is required to be referred to the EPA (unless exempt under Section 48AAA of the EP Act) to determine whether environmental assessment is required, pursuant to Section 48 of the EP Act. All amendments to a planning scheme are required to be referred to the EPA by the responsible authority (in this case, the WAPC) unless the amendment is exempt under Section 48AAA of the EP Act. Exemptions under Section 48AAA relate to amendments that seek changes to the planning scheme that do not relate to the environment and will not impact the environment and therefore do not require EPA consideration. Exemptions include:

- Amendments seeking to correct an administrative or minor error, amend a definition or correct a title in the planning scheme if it will not impact the operation of the scheme.
- Amendments seeking to classify an area of land as a reserve for Parks and Recreation or Regional Open Space.
- Amendments seeking to zone an area of land as a reserve if the land has been subdivided and developed by an approved redevelopment scheme and the redevelopment scheme no longer applies and the amendment is required to reflect a zone or reserve created in accordance with the approved redevelopment scheme.
- Amendments seeking to create, alter or remove a road reserve of a regional road if a clearing permit under Part V of the EP Act has been granted or if the impacts associated with construction of the road has been assessed under Part IV of the EP Act and a decision has been made that the proposal can be implemented.

The required scheme amendment for the SP will not be exempt under Section 48AAA of the EP Act. Upon referral on an amendment to a planning scheme, the EPA will make a decision on whether the proposed scheme amendment requires formal assessment and often consider significance in their assessment. The EPA may also provide informal advice on the proposed scheme amendment without formally assessing the scheme or determine that the proposed amendment is not capable of being environmentally acceptable. Areas of the SP area not assessed under Section 48A will need to be considered and referred under Section 38 of the EP Act if impacts to the environment are considered significant. As stated above, a preliminary assessment of the anticipated environmental outcomes as a result of the anticipated future urban development (based on the SP layout) has been undertaken against relevant EPA factors and objectives and is outlined in **Section 4**.

Section 48A outlines that any proposal likely to have a significant impact on the environment, but which is within an area and for a land use that is subject to an assessed scheme (i.e. a scheme for which a determination has been made by the EPA under Section 48A), is not required to be referred to the EPA under Section 38 of the EP Act.

Section 48A will only apply to the SP area which has undergone a scheme amendment (regional or local) through the Section 48A process and where the potential environmental impacts were considered by the EPA. The EPA may choose to provide advice at this time and defer assessment of environmental factors to subsequent stages of the planning process, which would mean Section 48A would not apply and referral under Section 38 would be required. Based on the assessment undertaken and the nature/layout of the SP it is unlikely that any future development within the SP extent would quire referral to the EPA pursuant to Section 38 of the EP Act.

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### 3.2.5 Environmental Protection Act 1986 – Part V Clearing Permits

Where native vegetation is required to be cleared within the site, this will likely be undertaken in accordance with a subdivision approval and associated authorised subdivision works, which will provide an exemption from the requirements for a native vegetation clearing permit. Should bulk earthworks or any other works be commenced within the site that requires clearing of native vegetation before subdivision approvals are gained, a clearing permit pursuant to Part V of the EP Act will be required.

In addition, and as part of subdivision, the WAPC may include a standard condition (model subdivision condition EN2) which requires:

*Prior to the commencement of subdivisional works, measures being undertaken to identify any vegetation on the site worthy of retention, including any potential habitat or foraging trees for threatened fauna species, and protection measures implemented to ensure such vegetation is not impacted by subdivisional works (Local Government).*

This can be used to ensure that vegetation retention opportunities (likely to be limited to mature trees) are considered through the subdivisional works process.

### *3.2.6 Environment Protection and Biodiversity Conservation Act 1999*

The EPBC Act provides statutory protection for listed Matters of National Environmental Significance (MNES). The CBC is listed as endangered and FRTBC is listed as vulnerable under the EPBC Act. Any future development proposals within the SP should consider the requirements of the EPBC Act in relation to CBC and FRTBC and their habitat, which will primarily be in relation to the potential breeding habitat.

The subtropical and temperate coastal saltmarsh TEC is listed as vulnerable under the EPBC Act. TEC's listed in the vulnerable category are not considered matters of national environmental significance (MNES) for the purposes of Part 3 of the EPBC Act and therefore no further considerations to the TEC/PEC are required in relation to the EPBC Act.

Individual proponents of future development within the site will need to consider their obligations under the EPBC Act and the potential need to refer any proposed action that may have a significant impact on MNES. This would largely be limited to the consideration of potential impacts on listed black cockatoo species. While this would be considered on a proposal-by-proposal basis (and potentially progressed by different proponents), it is unlikely that the potential impacts on black cockatoo would be considered significant.

### 3.2.7 Swan and Canning River Development Control Area

The northern boundary of the site falls within the Swan Canning Development Control Area (DCA) (CoB 2018) and the Swan Canning River Park. Any proposed development on land adjacent to the river within the DCA and/or partly within DCA would be subject to assessment and approval by the DBCA through a permit application, under Part 5 of the *Swan and Canning Rivers Management Act 2006* and the *Swan and Canning River Management Regulations 2007*.

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# 4 Assessment of Predicted Environmental Outcomes

The predicted environmental outcomes that will need to be accommodated in the implementation of the proposed SP, through future development, have been assessed against the EPA objectives for each environmental factor relevant to the site (as listed in **Section 2**).

This is provided in **Table 9**, which considers the spatial layout responses of the SP and provision of POS intended to provide for the protection and conservation of existing environmental assets within the site. In addition, **Table 9** also outlines the future management of environmental values or considerations that will require further specific attention as part of the future development of the site.

A range of environmental impact mitigation measures (primarily impact avoidance and minimisation) are proposed within the SP layout and through the future environmental management framework. In this context, it is anticipated that implementation of any future development within the proposed SP can be suitably managed through future stages of the land use planning processes (including subdivision and development) such that the EPA objectives for the relevant environmental factors can be achieved.

*Table 9: Summary of EPA environmental factors and objectives relevant to the proposed future land use*

| Environmental factor | EPA objective | Ascot Local Structure Plan spatial response | Future management considerations | Predicted environmental outcome |
|---|---|---|---|---|
| Landforms | To maintain the variety and integrity of distinctive physical landforms so that environmental values are protected. | The Swan River is located immediately adjacent to the north of the site. No development is proposed within the Swan River foreshore Reserve. Additionally, retention of the riparian vegetation associated with the Swan River in the northern portion of the site allows for protection of biological diversity and ecological integrity along the Swan River foreshore. Further responses associated with the Swan River in regard to hydrology are discussed below. | Future management considerations for the Swan River in regard to inland waters are discussed below. | No significant impacts likely |
| Terrestrial environmental quality | To maintain the quality of land and soils so that environmental values are protected. | There are no SP spatial responses to terrestrial environmental quality considerations, which primarily relate to ASS risk.<br><br>To address Lot 9002 which is classified as "potentially contaminated – investigation required", investigations have been commenced by the proponent in preparation of anticipated subdivision or development approval conditions. | To facilitate development within the site, ASS investigations and management considerations for the site will likely be required (as a portion of the site is mapped as Class 1 'high to moderate' risk of ASS occurring within 3 m of the natural soil surface). Given the relatively shallow depths to groundwater within portions of the site, any dewatering that may be required for development works would likely trigger the need for a dewatering and ASS management plan.<br><br>If required, any future ASS considerations will be identified and suitably managed by each proponent as part of the future development process in accordance with the WAPC's *Acid Sulfate Soils Planning Guidelines* (2008).<br><br>Any future development within Lot 9002 will need to resolve the current CS Act classification, and this would involve the completion of investigations and any remediation that is identified as being required. | Any potential impacts associated with ASS can be suitably minimised at future development stages within the site. If determined to be required, an ASS management plan and dewatering management plans would be prepared and implemented as part of any works associated with subdivision or development works.<br><br>Site contamination will be adequately investigated and remediation completed (if required) to resolve any site contamination risk. |

*Table 9: Summary of EPA environmental factors and objectives relevant to the proposed future land use (continued)*

| Environmental factor | EPA objective | Ascot Structure Plan spatial response | Future management considerations | Predicted environmental outcome |
|---|---|---|---|---|
| Flora and vegetation | To protect flora and vegetation so that biological diversity and ecological integrity are maintained. | The SP layout has been designed to maintain the northern vegetated area within Parks and Recreation Reserve. This includes 0.07 ha of the subtropical and temperate coastal saltmarsh TEC/PEC. Retention of this vegetation in the northern portion of the site allows for protection of flora, vegetation, biological diversity and ecological integrity along the Swan River foreshore.<br><br>Remaining vegetation within the site was recorded in 'degraded' to 'completely degraded' condition with minimal environmental value. As such, no additional SP vegetation retention provisions are considered necessary. | Should any works within the site that require clearing of native vegetation prior to subdivision approvals, a clearing permit pursuant to Part V of the EP Act will be required, unless otherwise exempt from a clearing permit. Subdivision approval and associated authorised subdivision works will provide an exemption from the requirements for a clearing permit. Future subdivision and/or development applications and approval conditions would consider vegetation retention where possible.<br><br>Conditions associated with subdivision and/or development approvals often require the preparation of a Conservation and Environment Management Plan, which would further minimise potential impacts to retained flora and vegetation values during proposed construction in development stages. | Overall, the SP layout responds to flora and vegetation values where possible, primarily associated with retention of established vegetation along the Swan River foreshore. Protection of an area of subtropical and temperate coastal saltmarsh TEC/PEC is also a key outcome of this response. |

*Table 9: Summary of EPA environmental factors and objectives relevant to the proposed future land use (continued)*

| Environmental factor | EPA objective | Ascot Structure Plan spatial response | Future management considerations | Predicted environmental outcome |
|---|---|---|---|---|
| Terrestrial fauna | To protect terrestrial fauna so that biological diversity and ecological integrity are maintained. | The SP layout has been designed to maintain the northern vegetated area within POS. Retention of this vegetation in the northern portion of the site allows for protection of biological diversity and ecological integrity along the Swan River foreshore.<br><br>A total of 66 habitat trees potentially suitable for black cockatoo breeding were identified within the site, of which five contain potentially suitable hollows for black cockatoo breeding habitat. A total of 1.27 ha and 0.84 ha of foraging habitat (primary and secondary) for CBC and FRTBC, respectively, was recorded within the site. Of this, primary foraging habitat (native and non-native) comprised a total of 0.35 ha and 0.27 ha for CBC and FRTBC, respectively. The remaining area consisted of secondary foraging habitat.<br><br>The foraging habitat is patchily distributed and is interspersed with plant species not used for CBC or FRTBC for foraging. No signs of use were identified during the targeted black cockatoo survey, such as chew marks, droppings or moulted feathers within any of the habitat trees with potential hollow(s).<br>The potential foraging habitat and habitat trees for threatened black cockatoo species mapped within the site are unlikely to represent critical foraging or breeding habitat, given its small extent within an urban setting with minimal potentially suitable hollows and no evidence of use by CBC or FRTBC. | Where future development works within the site will result in potential impacts to MNES (including CBC and FRTBC), proponents will need to consider their EPBC Act obligations and need for referral, based on the specific impacts of their proposed action. Individual proposed actions can be addressed through preliminary self-assessment against the *Matters of National Environmental Significance Significant Impact Guidelines* (DotE 2013) in relation to any potential impacts on MNES.<br><br>As part of future subdivision, there may be requirements to prepare a fauna management plan prior to works commencing for development involving clearing of native vegetation or any fauna habitat in order to minimise impacts to fauna during clearing and construction works. Fauna management plans can be prepared as required as part of future subdivision works and are often associated with conditions of subdivision and/or development approval.<br><br>Conditions associated with subdivision and/or development approvals often require the preparation of a Conservation and Environment Management Plan, which would further minimise potential impacts to fauna during proposed construction in development stages. | Overall, the SP layout responds to terrestrial fauna values, primarily associated with retention of intact native vegetation along the northern border of the site, providing potential habitat for terrestrial fauna. Notwithstanding, impacts to MNES such as CBC and FRTBC are possible and EPBC Act obligations will need to be considered by proponents before development, depending on the nature and extent of the development and magnitude of likely impacts. In general, the extent of impact on black cockatoo is not likely to be considered significant. |

*Table 9: Summary of EPA environmental factors and objectives relevant to the proposed future land use (continued)*

| Environmental factor | EPA objective | Ascot Local Structure Plan spatial response | Future management considerations | Predicted environmental outcome |
|---|---|---|---|---|
| Inland waters | To maintain the hydrological regimes of groundwater and surface water so that environmental values are protected. | The *State Water Strategy for Western Australia* (Government of WA 2003) and *Better Urban Water Management* (WAPC 2008) endorses the promotion of integrated water cycle management and application of water sensitive urban design (WSUD) principles to provide improvements in the management of stormwater, and to increase the efficient use of other existing water supplies. Whilst not a spatial response, a Local Water Management Strategy (LWMS) has been prepared by Emerge Associates for the site in line with water sensitive urban design principles, flood storage requirements and a water conservation strategy. The principal management objective for hydrology within the site is to ensure that post-development environmental flows and/or hydrological cycles are maintained or improved upon pre-development conditions, especially regarding the Swan River adjacent to the site and lake features retained within the site. Specifically, the LWMS has aimed to:<br>• Protect water quality in the Swan River by providing appropriate water quality treatment at source.<br>• Mitigate potential flooding within the SP area and immediate surrounds.<br>• Take account of existing drainage infrastructure capacity and ensure that sufficient land is set aside to manage stormwater.<br>• Provide a broad level stormwater management framework to support future urban development.<br>• Incorporate appropriate best management practices (BMPs) into the drainage systems that address the environmental and stormwater management issues identified. | A LWMS has been prepared to support the SP process. Detailed Urban Water Management Plans (UWMP) will be required in support of individual subdivision applications in accordance with the *State Water Strategy for Western Australia* (Government of WA 2003) and *Better Urban Water Management* (WAPC 2008). UWMPs will be most relevant most relevant to Precinct D. Other precincts may be developed under a Development Approval and therefore water management will likely be documented within a Stormwater Management Plan (SMP) also in accordance with *Better Urban Water Management* (WAPC 2008).<br><br>Should any future developments propose to impact the Swan River CCW and as such impact the mapped ESA associated with the Swan River, wetland buffers and separation distances should be implemented in accordance with the draft *Guideline for the Determination of Wetland Buffer Requirements* (WAPC 2005) for protection of wetland values, habitat protection, edge effects and water quality management with relevant guidelines to protect wetland values, habitat and water quality.<br><br>Where proposed development is within or adjacent to the Swan and Canning River Development Control Area (DCA), proponents will be required to submit a DCA permit application to the DBCA in accordance with the *Swan and Canning Rivers Management Act 2006* and the *Swan and Canning River Management Regulations 2007.* | The SP does not specifically respond to the inland waters environmental factor. However, the LWMS defines the intended hydrological management approach, which will be implemented during future development. |

*Table 9: Summary of EPA environmental factors and objectives relevant to the proposed future land use (continued)*

| Environmental factor | EPA objective | Ascot Local Structure Plan spatial response | Future management considerations | Predicted environmental outcome |
|---|---|---|---|---|
| Inland waters (continued) | To maintain the hydrological regimes of groundwater and surface water so that environmental values are protected (continued). | • Minimise transport of nutrients/pollutants to groundwater.<br>• Develop a non-potable water conservation strategy that will accommodate existing groundwater allocation constraints for the area.<br><br>Three MUWs and one REW will be retained in the current SP design. Although an REW is mapped within the site, after review of local surface water hydrology, aerial imagery and field observations (refer to Figure 5 and Figure 6 of Emerge Associates 2024b), it was determined that the area designated as an REW in the Geomorphic Wetlands of the Swan Coastal Plain dataset does not accurately reflect the conditions observed on ground. However, the REW will be retained in the current SP design.<br><br>The Swan River is a CCW and is located immediately adjacent to the site. The SP design avoids the CCW and associated ESA by retaining the Parks and Recreation Reserve which encompasses the CCW buffer area and values associated with the Swan River. | | |

*Table 9: Summary of EPA environmental factors and objectives relevant to the proposed future land use (continued)*

| Environmental factor | EPA objective | Ascot Local Structure Plan spatial response | Future management considerations | Predicted environmental outcome |
|---|---|---|---|---|
| Social Surroundings | To protect social surroundings from significant harm. | Aboriginal Cultural Heritage (ACH) site 3536 (Swan River) is located immediately north of the site and ACH Site3753 has a minor overlap with the western boundary of the site. These sites are not considered to be potentially impacted by the proposed SP layout. However, should any future development propose to impact these sites, further consultation and AH Act requirements would be required.<br><br>The Ascot Racecourse Complex (place 06123) is a non-indigenous heritage place, located within the site. The SP design proposes to retain the racecourse itself and excludes the racecourse from proposed development. The remaining part of the Ascot Racecourse Complex (place 06123) is within Precinct A, B and C. The SP design of these precincts allows for the development of additional facilities and renovation of current facilities.<br><br>No responses are required in regard to noise and acoustics. | The Swan River is associated with Site 3536 and as such any future proposed works that may impact the riverbank and/or the foreshore will require approval under Section 18 of the *Aboriginal Heritage Act 1972*. Further requirements and consultation would be required to identify the extent of Site 3753 within the SP area and if future consideration is required in accordance with the *Aboriginal Heritage Act 1972*.<br><br>Future development would need to consider the Ascot Racecourse Complex heritage site and can be addressed as part of any Development Approval process.<br><br>A Transport Noise Assessment for the proposed SP was undertaken by Lloyd George Acoustics in November 2023 (Lloyd George Acoustics 2023) to understand the spatial responses that might be required to address potential noise and acoustic impacts in the SP from the adjacent Great Eastern Hwy. Based on the results, future proponents undertaking noise sensitive development in Precinct E could undertake further noise assessments to quantify actual noise levels from Great Eastern Highway, rather than using the screening assessment criteria. Alternatively, the screening assessment procedure could be adopted, resulting in requirements for a 'Quiet House Package A' to upper floors of noise sensitive dwellings within Precinct E.<br><br>Future development would need to consider noise impacts from the racecourse and can be addressed as part of any Development Approval process. | Any potential impacts to social surroundings can be suitably mitigated through a range of impact avoidance and minimisation measures such that it is unlikely any significant residual impacts will occur. |

Attachment 12.1.3 Environmental Assessment Report



# 5 Conclusions

The proponent has taken a range of measures to provide for the future retention of relevant environmental values within the Ascot SP. This is primarily achieved through the strategic location of the Parks and Recreation Reserve in the northern area of the site to preserve intact native vegetation.

In this context, the SP has been designed to respond to the identified environmental values within the site where possible, including the proposed retention of:

- Subtropical and temperate coastal saltmarsh TEC/PEC
- Fauna habitat
- Native vegetation.

A local scheme amendment will be required to rezone Precinct A from 'place of public assembly' to 'retirement living/mixed use' and to rezone Precinct D from 'Place of Public Assembly' to 'Mixed Use'.

Considerations, approvals and management plans may be necessary for each individual proponent for future development works, which would further minimise environmental impacts through development within the SP area. Environmental factors and the management framework considerations are summarised in **Table 10.**

Overall, a range of environmental impact mitigation measures (primarily impact avoidance and minimisation) are proposed within the SP layout and through the future environmental management framework. In this context, it is anticipated that implementation of the proposed SP can be suitably managed through future stages of the land use planning processes (including development) such that the EPA objectives for the relevant environmental factors can be achieved.

Attachment 12.1.3 Environmental Assessment Report



*Table 10: Summary of Environmental Management Framework Considerations*

| Environmental Factor | Management Framework and considerations | | |
|---|---|---|---|
| | Local Structure Plan | Subdivision and/or Development Approval | Construction |
| Flora and Vegetation | Environmental Assessment Report including preliminary investigations (Emerge Associates 2024a) (**Appendix D**). | • Native Vegetation Clearing permit pursuant to Part V of the EP Act if clearing is required within the SP area and clearing is not exempt.<br>• Preparation of a Conservation and Environment Management Plan (CEMP), where required. | Clearing Permit and compliance with approval conditions and management plans. |
| Terrestrial Fauna | Environmental Assessment Report including preliminary investigations (Emerge Associates 2024a) (**Appendix D**). | • Potential impacts to MNES in relation to the EPBC Act and need to consider the need for referral in accordance with the *Matters of National Environmental Significance Significant Impact Guidelines* (DotE 2013).<br>• Preparation of a fauna management plan for any development within the SP area prior to works commencing for development involving clearing of native vegetation or any fauna habitat. | Compliance with approval conditions and management plans, in accordance with EPBC Act, where required. |
| Acid Sulfate Soils | Environmental Assessment Report including preliminary investigations. | • Detailed ASS Investigation and Management Plan for areas mapped as 'Class 1: High to moderate risk' will likely be required in accordance with the WAPC's *Acid Sulfate Soils Planning Guidelines* (2008). | Implementation of ASS Management Plan. |
| Inland Waters | The LWMS prepared for the SP by Emerge Associates (2024b) (**Appendix E**). | • Detailed UWMPs will be required (mostly relevant to Precinct D) to support individual subdivision applications. Other precincts may be developed under Development Approval and therefore water management will likely be documented through SMPs. Both UWMPs and SMPs will be prepared in accordance with the *Better Urban Water Management* Framework.<br>• Protection of the Swan River CCW and ESA through consideration of hydrological processed and water quality management into design of future development areas to protect the adjacent Swan River and associated values.<br>• DCA permit application for works within or affecting the DCA to the DBCA in accordance with the Swan and Canning Rivers Management Act 2006 and the Swan and Canning River Management Regulations 2007. | Compliance with UWMP/SMP and approved DCA permit. |

Attachment 12.1.3 Environmental Assessment Report



*Table 10: Summary of Environmental Management Framework Considerations (continued)*

| Environmental Factor | Management Framework and considerations | | |
|---|---|---|---|
| | Local Structure Plan | Subdivision and/or Development Approval | Construction |
| Social Surroundings | Preliminary investigations for Aboriginal Cultural Heritage.<br><br>Transport Noise Assessment for the proposed SP (Lloyd George Acoustics 2023) in accordance with SPP 5.4. | • Detailed Acoustic Assessment and Management Plan (where required) or 'Quiet House Package A' implemented to upper floors of noise sensitive dwellings within Precinct E.<br>• Completion of any contamination investigations and identification of any remediation requirements within Lot 9002. | Approval pursuant to Section 18 of the *Aboriginal Heritage Act 1972* will be required prior to ground disturbing works if impacts to known sites are likely.<br><br>Compliance with noise management plan and appropriate house packages applied where appropriate.<br><br>Completion of remediation works (if required) for Lot 9002. |

Attachment 12.1.3 Environmental Assessment Report



# 6 References

## 6.1 General references

The references listed below have been considered as part of preparing this document.

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Attachment 12.1.3 Environmental Assessment Report

# Figures

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*Figure 2: Site Geology*

*Figure 3: Topographic Contours*

*Figure 4: Acid Sulfate Soils*

*Figure 5: Vegetation Types*

*Figure 6: Vegetation Condition*

*Figure 7: Threatened Ecological Community and Native Vegetation under the EP Act*

*Figure 8: Bush Forever, Ecological Linkages and Environmental Sensitive Areas*

*Figure 9: Carnaby's Black Cockatoo Foraging Habitat*

*Figure 10: Forest Red-tailed Black Cockatoo Foraging Habitat*

*Figure 11: Black Cockcatoo Habitat Trees*

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*Figure 13: Social Surroundings*

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**Figure 1: Site Location**

**Project:** Environmental Assessment Report
Ascot Racecourse Structure Plan
**Client:** Perth Racing

**Plan Number:** EP23-109(05)--F06
Drawn: WJC
Date: 03/04/2024
Checked: EKB
Approved: JDH
Date: 29/04/2024

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Scale: 1:8,000@A4
GDA2020 MGA Zone 50

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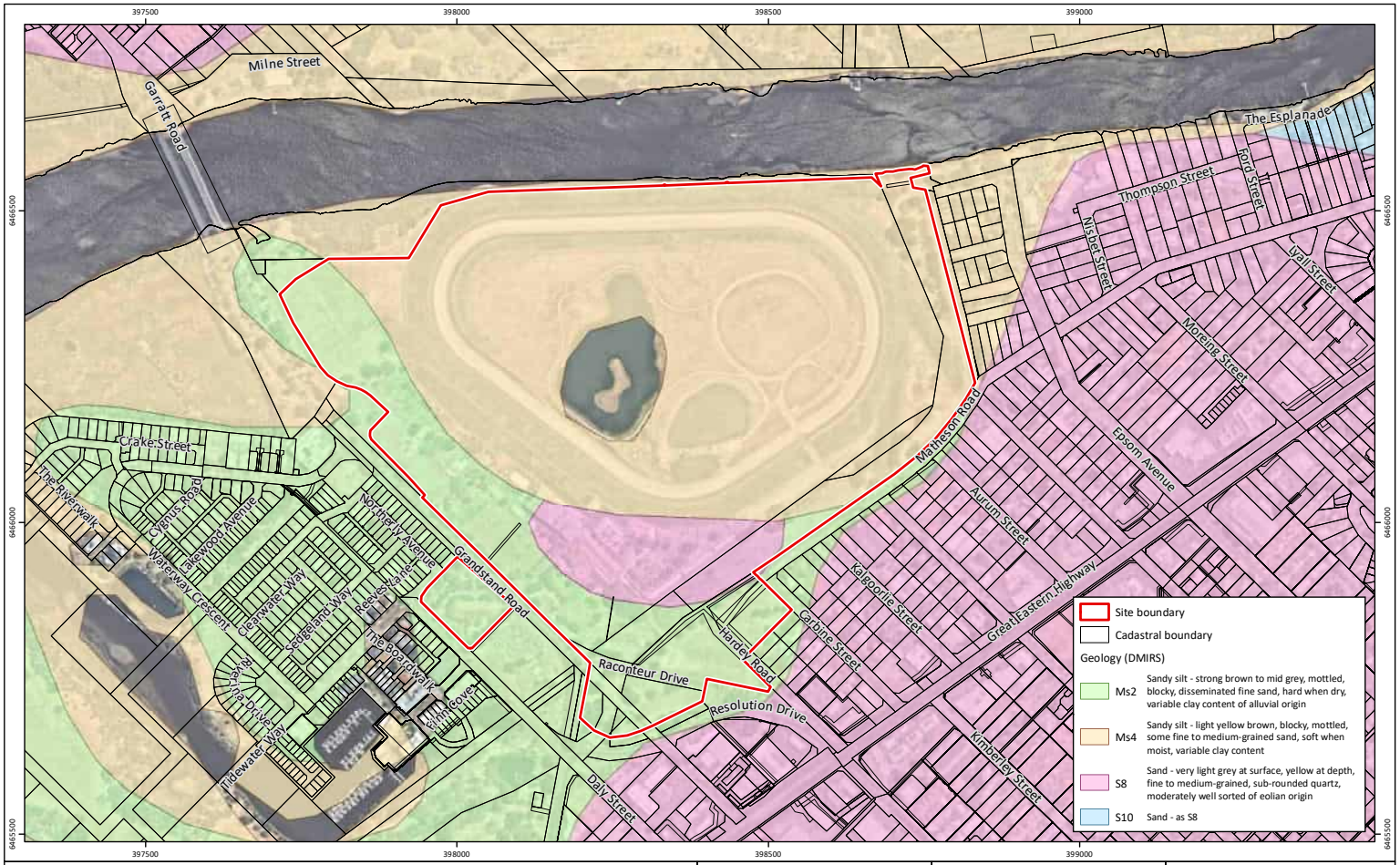



**Figure 2: Site Geology**

**Project:** Environmental Assessment Report
Ascot Racecourse Structure Plan
**Client:** Perth Racing

**Plan Number:** EP23-109(05)--F07
Drawn: WJC
Date: 03/04/2024
Checked: EKB
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**Figure 3: Topographic Contours**

**Project:** Environmental Assessment Report
Ascot Racecourse Structure Plan
**Client:** Perth Racing

**Plan Number:** EP23-109(05)--F08
Drawn: WJC
Date: 03/04/2024
Checked: EKB
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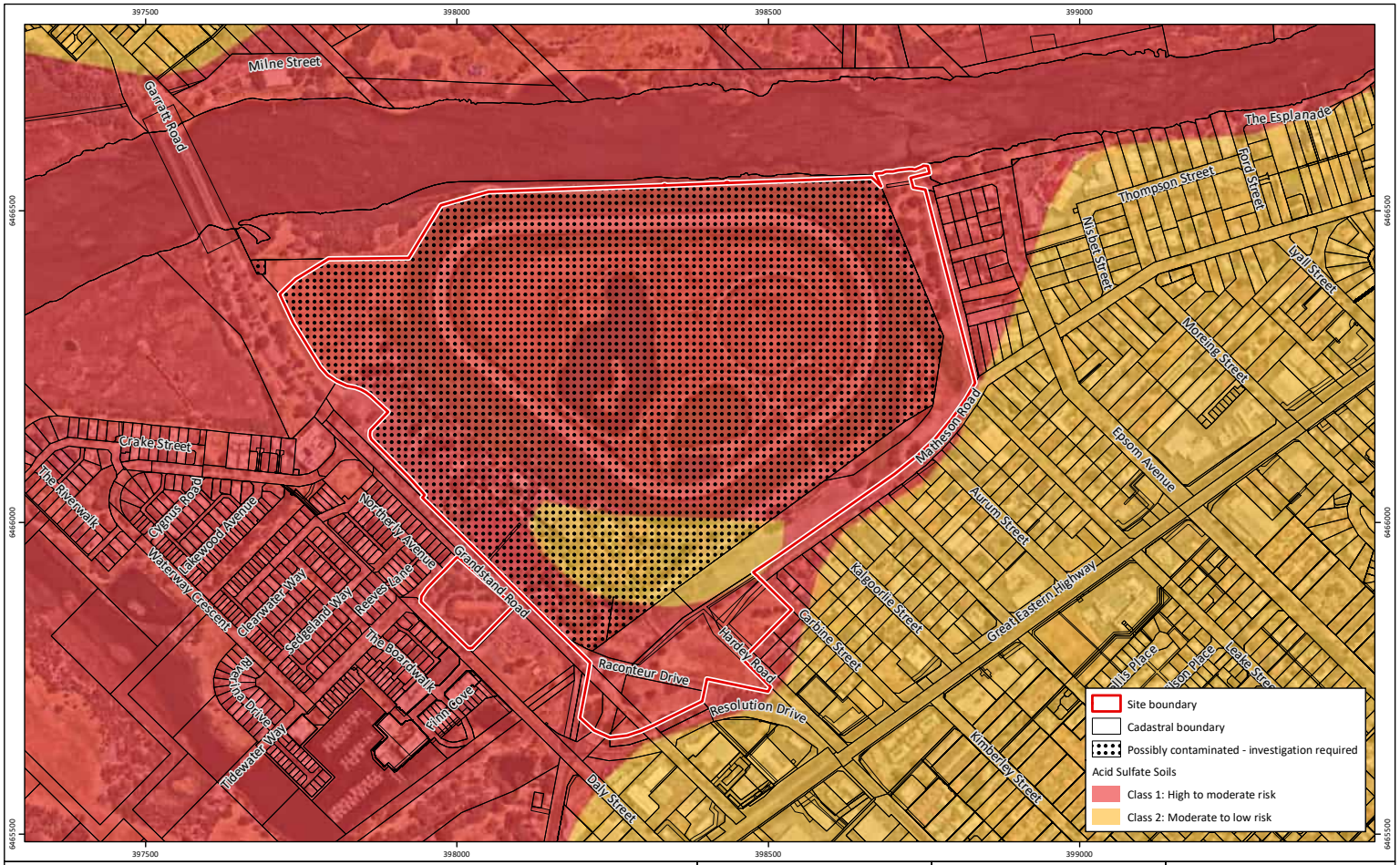



**Figure 4:** **Acid Sulfate Soils**

**Project:** Environmental Assessment Report
Ascot Racecourse Structure Plan

**Client:** Perth Racing

**Plan Number:**
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Drawn: WJC
Date: 22/07/2024
Checked: EKB
Approved: JDH
Date: 23/07/2024

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**Figure 5: Vegetation Types**

| | |
|---|---|
| **Project:** | Environmental Assessment Report<br>Ascot Racecourse Structure Plan |
| **Client:** | Perth Racing |

| | |
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| **Plan Number:** | **EP23-109(05)--F10** |
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|---|---|---|---|
| **Figure 6:** | **Vegetation Condition** | | |
| **Project:** | Environmental Assessment Report<br>Ascot Racecourse Structure Plan | | |
| **Client:** | Perth Racing | | |

**Plan Number:** EP23-109(05)--F11
Drawn: WJC
Date: 03/04/2024
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Approved: JDH
Date: 29/04/2024

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**Figure 7:** **Threatened and Priority Ecological Community and Native Vegetation under the EP Act**

**Project:** Environmental Assessment Report
Ascot Racecourse Structure Plan
**Client:** Perth Racing

**Plan Number:** EP23-109(05)--F12
Drawn: WJC
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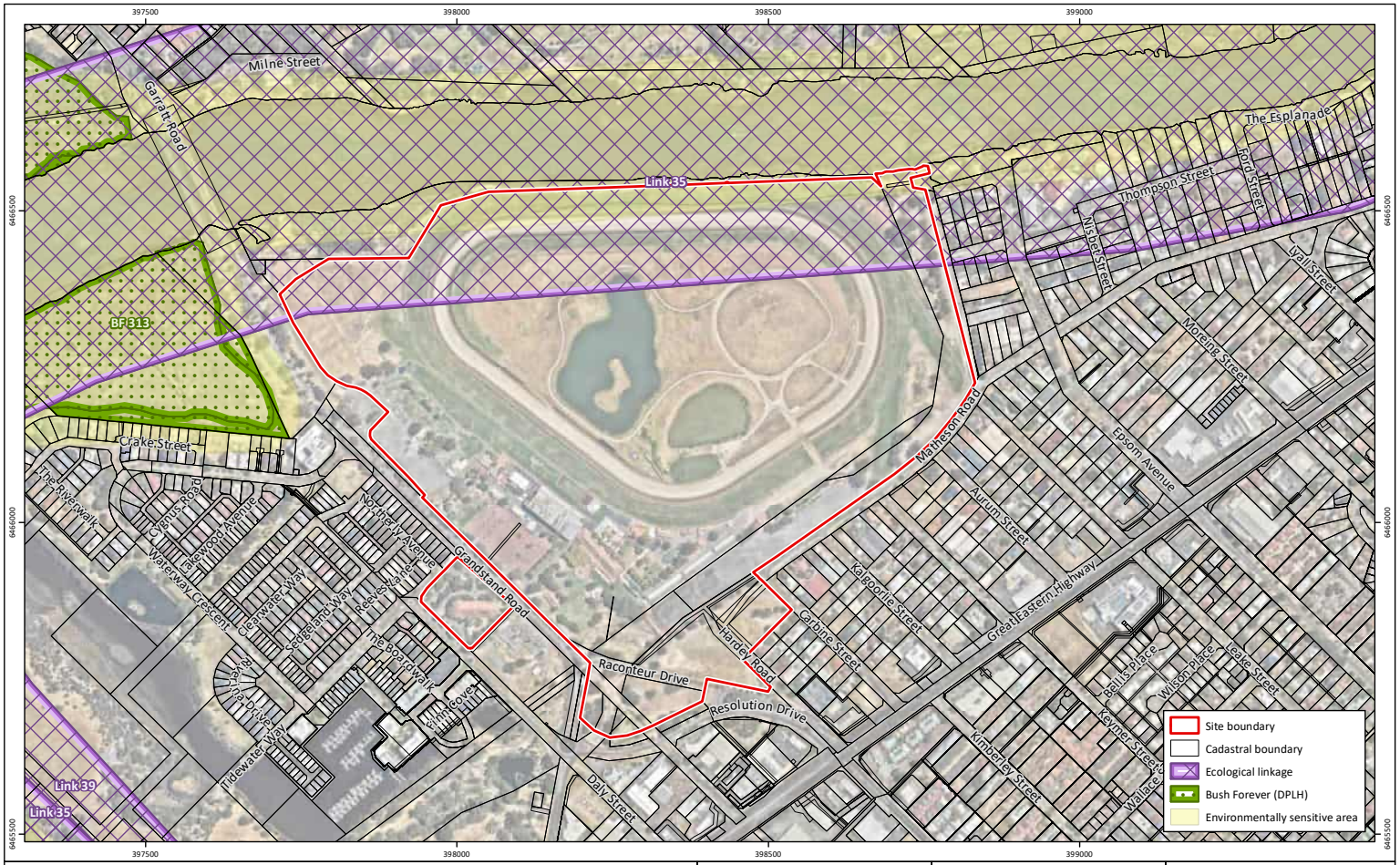



**Figure 8:** **Bush Forever, Ecological Linkages and Environmentally Sensitive Areas**

| | |
|---|---|
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| **Client:** | Perth Racing |

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| Date: | 29/04/2024 |

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**Figure 9:** **Carnaby's Black Cockatoo Foraging Habitat**

**Project:** Environmental Assessment Report
Ascot Racecourse Structure Plan

**Client:** Perth Racing

**Plan Number:** EP23-109(05)--F20
Drawn: WJC
Date: 08/04/2024
Checked: EKB
Approved: JDH
Date: 29/04/2024

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**Figure 10:** **Forest Red-tailed Black Cockatoo Foraging Habitat**

| | |
|---|---|
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| **Client:** | Perth Racing |

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| Approved: | JDH |
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**Figure 11: Black Cockatoo Habitat Trees**

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|---|---|
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| **Client:** | Perth Racing |

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| Approved: | RAW |
| Date: | 01/07/2024 |

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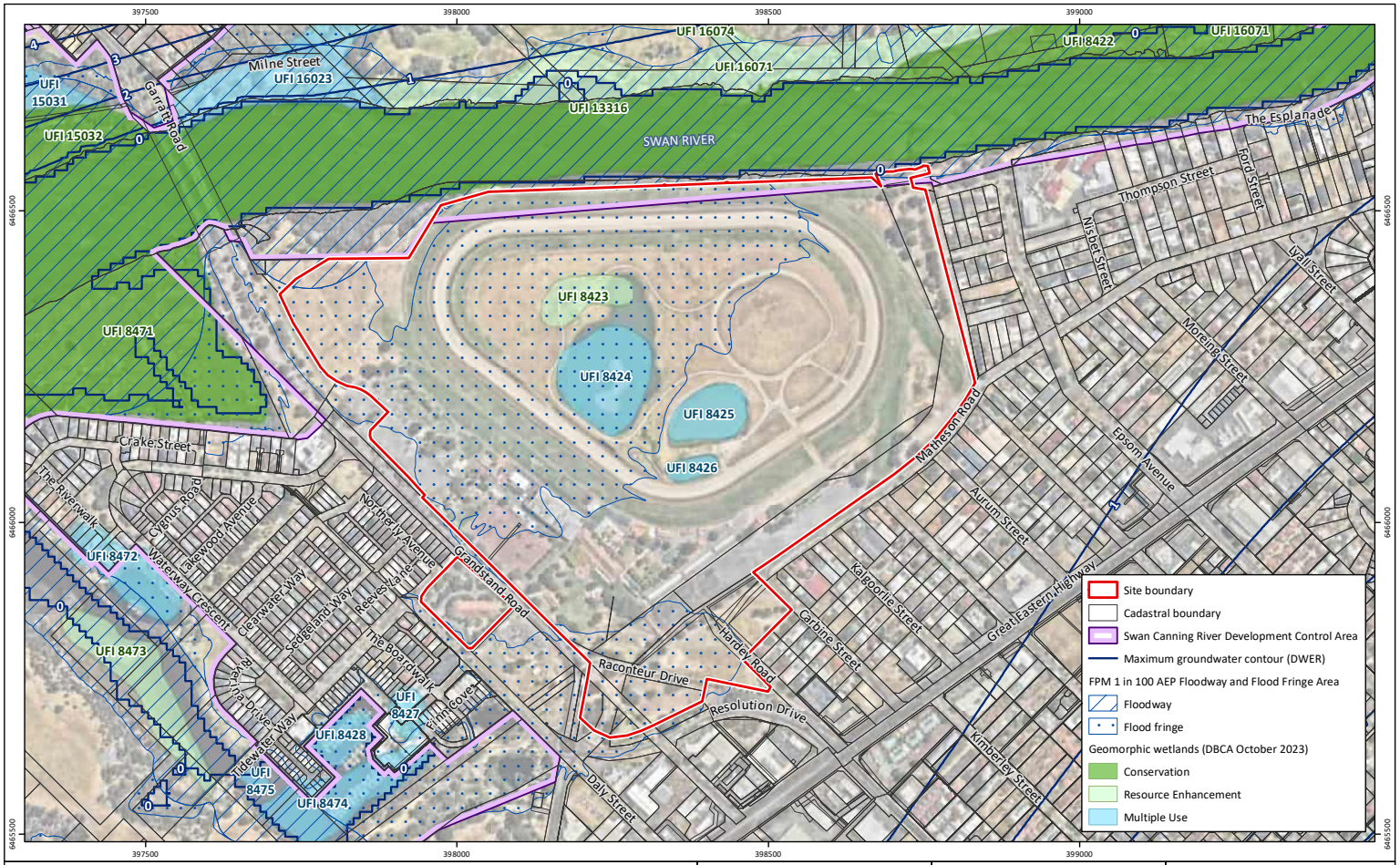



**Figure 12: Hydrological Features**

| | |
|---|---|
| **Project:** | Environmental Assessment Report<br>Ascot Racecourse Structure Plan |
| **Client:** | Perth Racing |

**Plan Number:** EP23-109(05)--F14

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| Approved: | JDH |
| Date: | 01/05/2024 |

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GDA2020 MGA Zone 50

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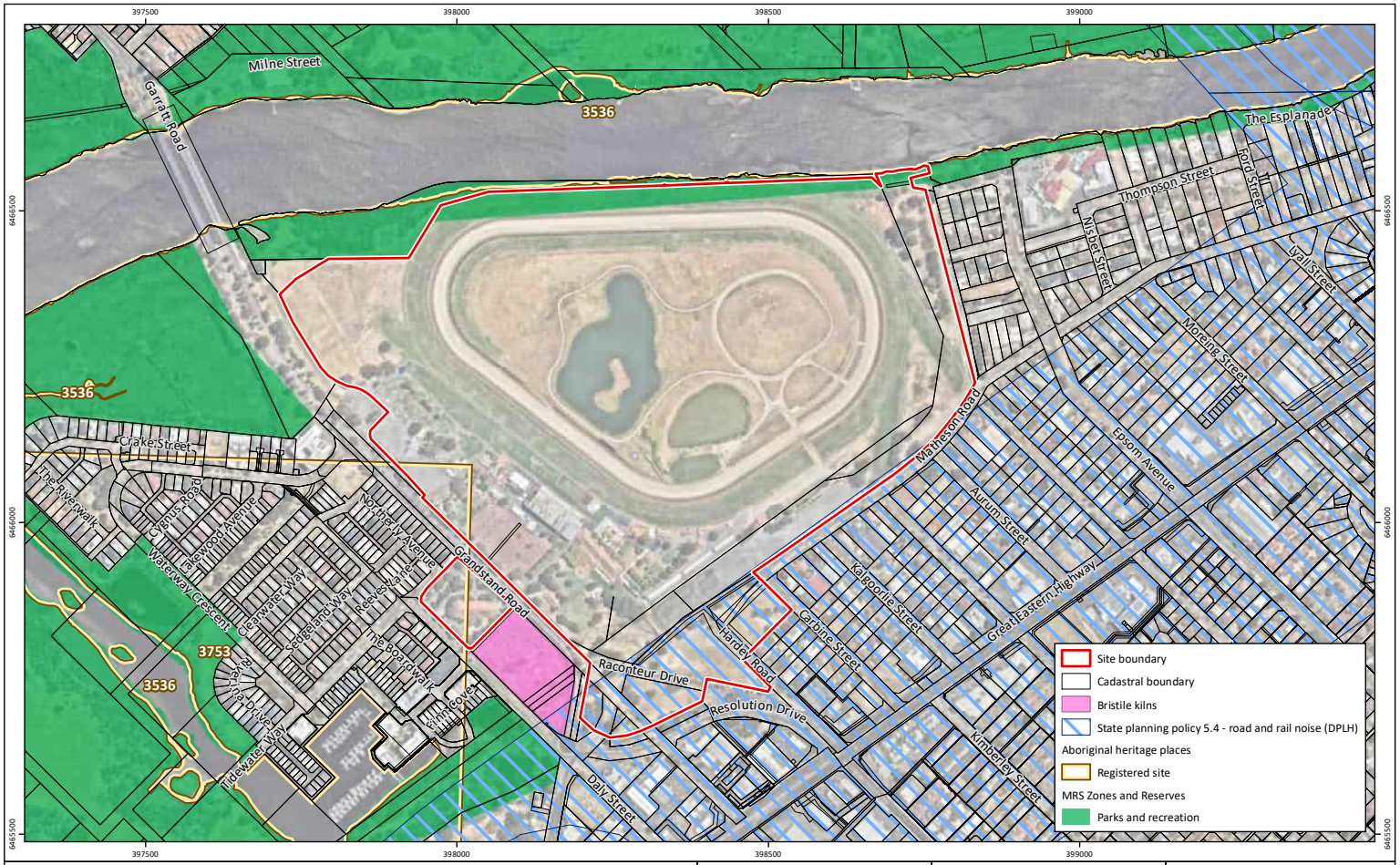



**Figure 13: Social Surroundings**

**Project:** Environmental Assessment Report
Ascot Racecourse Structure Plan
**Client:** Perth Racing

**Plan Number:** EP23-109(05)--F15a
Drawn: WJC
Date: 08/05/2024
Checked: EKB
Approved: JDH
Date: 09/05/2024

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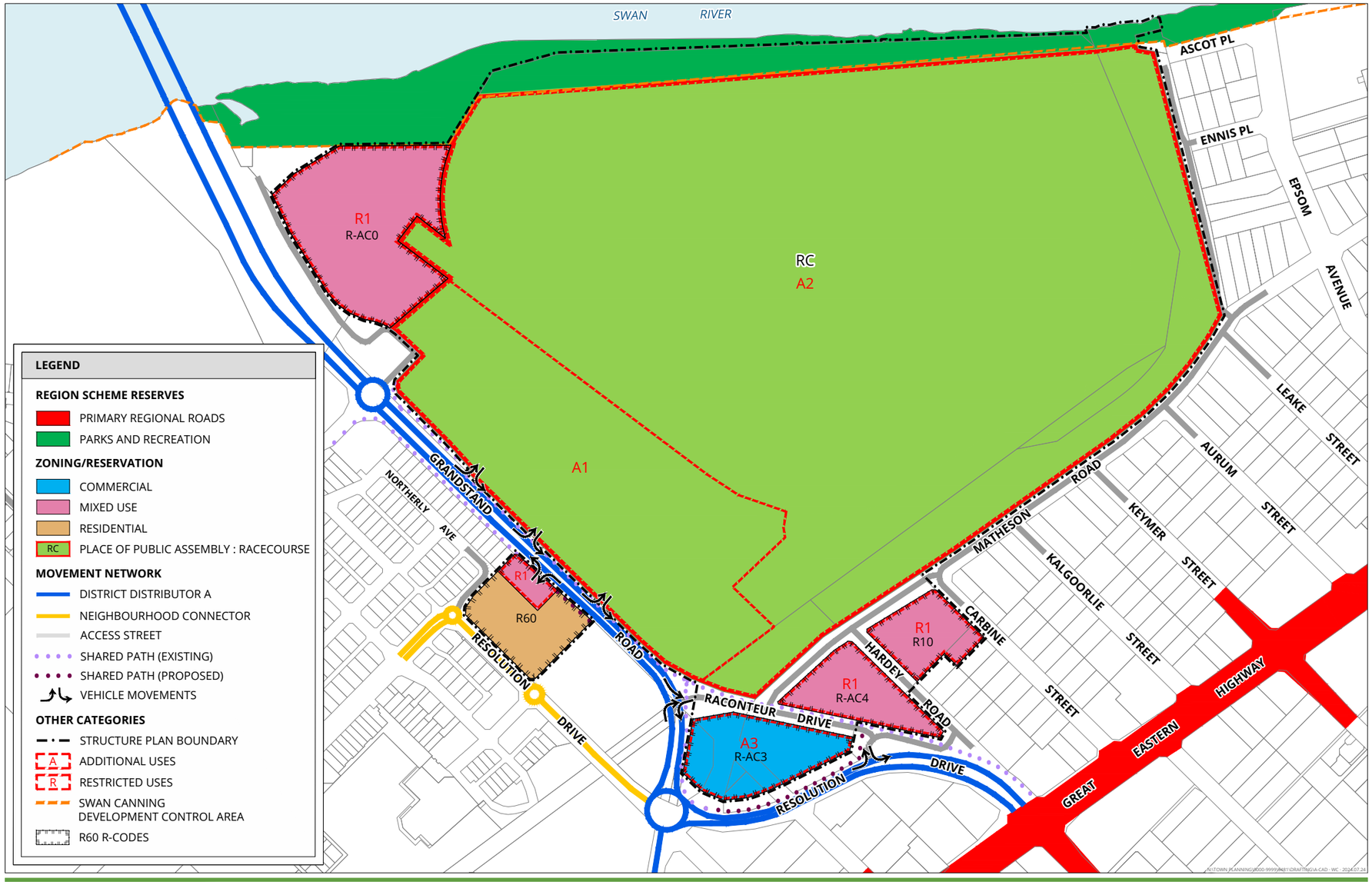
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# Appendix A

Ascot Racecourse Structure Plan (ROWE Group Design, 2024)

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**PLAN 1 - STRUCTURE PLAN**
VARIOUS LOTS - ASCOT RACECOURSE
ASCOT

N
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SCALE @ A3: 1:4000
**9481-STR-01-G**

DRAWN: WC
DATE CREATED: 2024.07.24
PROJECTION: MGA50 GDA94
CADASTRE: LANDGATE
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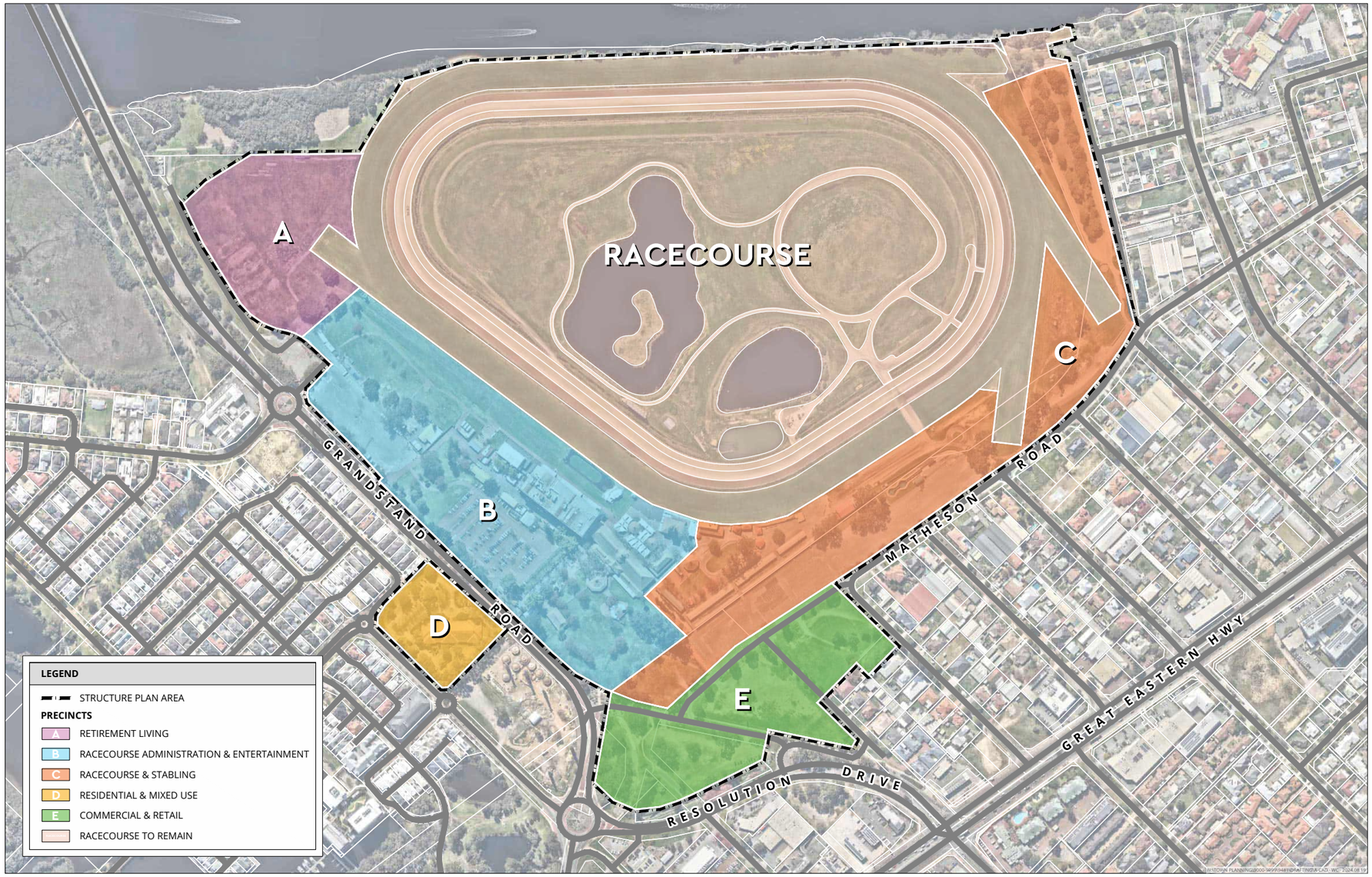
ROWE GROUP DESIGN

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# Appendix B

Ascot Racecourse Precinct Plan (ROWE Group Design, 2024)

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**STRUCTURE PLAN PRECINCTS**
VARIOUS LOTS - ASCOT RACECOURSE
ASCOT

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**9481-FIG-02-C**

DRAWN: WC
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CADASTRE: LANDGATE
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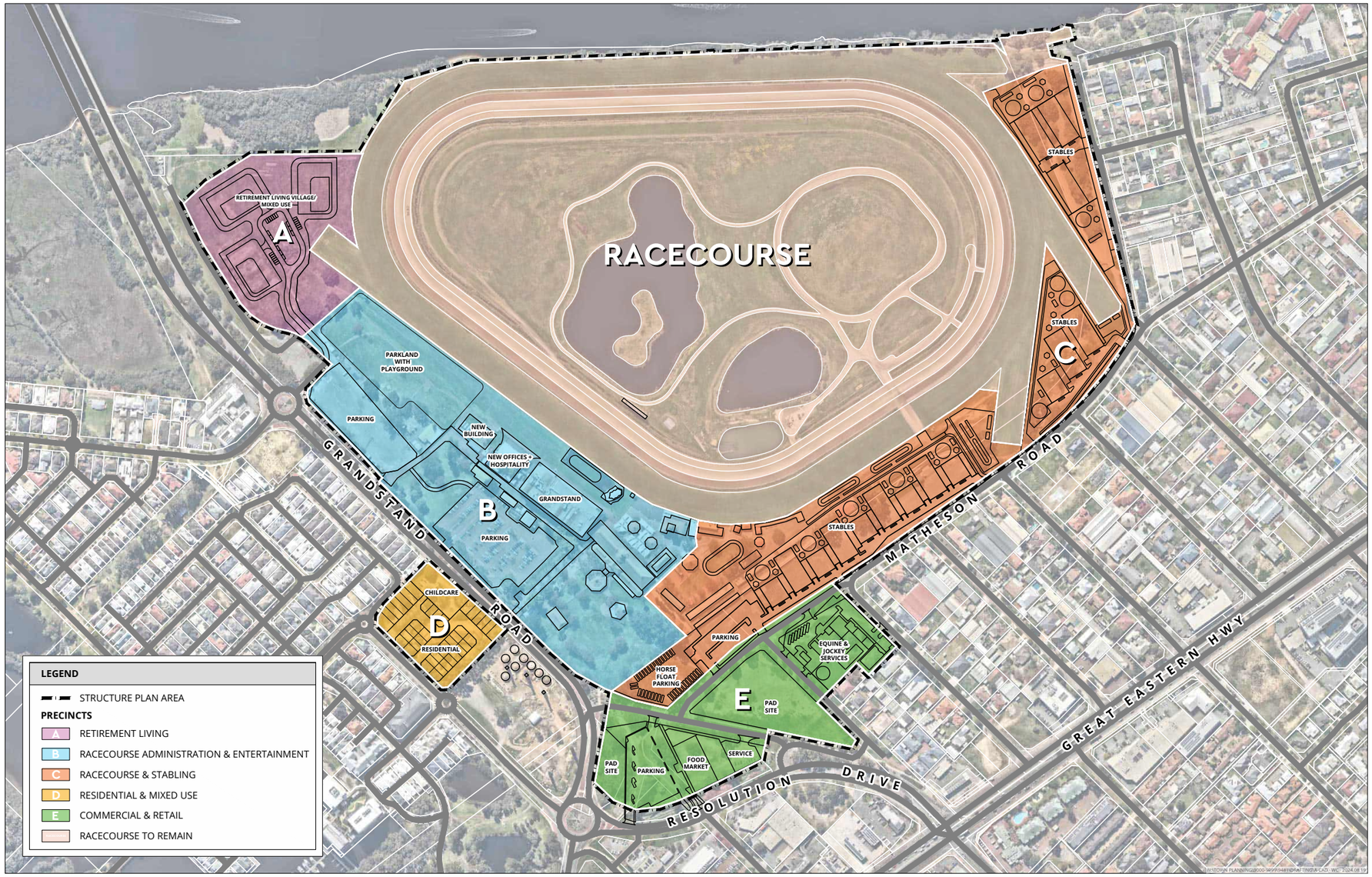
ROWE GROUP DESIGN

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# Appendix C

Draft Master Plan Concept (ROWE Group Design, 2024)

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**DRAFT MASTER PLAN CONCEPT**
VARIOUS LOTS - ASCOT RACECOURSE
ASCOT

N
0 100 m
SCALE @ A3: 1:4000
**9481-CON-01-D**

DRAWN: WC
DATE CREATED: 2024.08.19
PROJECTION: MGA50 GDA94
CADASTRE: LANDGATE
AERIAL: NEARMAP 20230831

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ROWE GROUP DESIGN

Attachment 12.1.3 Environmental Assessment Report

# Appendix D

Flora, Vegetation and Fauna Assessment (Emerge Associates 2024a)

Attachment 12.1.3 Environmental Assessment Report

# TECHNICAL MEMORANDUM

## Flora, Vegetation and Fauna Assessment
## Various lots, Grandstand Rd and Raconteur Dr, Ascot

| | | | |
|---|---|---|---|
| **PROJECT NUMBER** | EP23-109(06) | **DOC. NUMBER** | EP23-109(06)—003A TDP |
| **PROJECT NAME** | Ascot Local Structure Plan | **CLIENT** | Perth Racing |
| **AUTHOR** | TDP/AJU | **REVIEWER** | RAW |
| **VERSION** | A | **DATE** | 11/07/2024 |

### 1. INTRODUCTION

#### 1.1. Project background

Emerge Associates (Emerge) were engaged by Perth Racing to undertake a flora, vegetation and fauna assessment at Lots 1, 3, 13, 50, 452, 7705 and 9002 Grandstand Rd and Lots 51 and 100 Raconteur Dr, Ascot, in the City of Belmont (herein referred to as the 'site').

The site is located approximately 5.5 kilometres (km) east of the Perth Central Business District within the City of Belmont. The site extends over approximately 61.8 hectares (ha) and is bounded by Matheson Rd to the east, Grandstand Rd to the west, Resolution Dr to the south, and the Swan River to the north. The location of the site is shown in **Figure 1**.

#### 1.2. Purpose and scope of work

The flora, vegetation and fauna assessment was required to support the development of a Local Structure Plan (LSP) within the site. Specifically, the scope of work was to provide sufficient detail on the flora, vegetation and fauna values within the site to inform this process.

As part of the scope of work the following tasks were completed:

- Desktop review of relevant background information pertaining to the site and surrounds, including database searches for conservation significant flora, fauna and communities.
- A field survey to record flora, vegetation and fauna values.
- Identification of potential habitat for conservation significant flora and vegetation.
- Documentation of the desktop assessment, methodology, field surveys and results into a report.

### 2. Desktop assessment

A search was conducted for threatened, specially protected and priority flora and fauna that may occur or have been recorded within a 10 km radius of the site using NatureMap (DBCA 2023), *Protected Matters Search Tool* (DCCEEW 2023), *Atlas of Living Australia* (ALA 2023) and the Department of Biodiversity, Conservation and Attraction's (DBCA) conservation significant fauna and flora databases (reference no. FAUNA#8125/53-0323FL).

### 2.1. Likelihood of occurrence method

#### 2.1.1. Flora and vegetation

The distribution and habitat preferences of threatened flora species and ecological communities listed in **Section 2** were reviewed against site context information[1] and preliminary survey results. Likelihood of occurrence of threatened flora species and ecological communities within the site was classified as 'high', 'moderate', 'low' or 'negligible' as outlined below in **Table 1**.

*Table 1: Decision matrix for likelihood of occurrence of threatened and priority flora and ecological communities*

| | | Distribution[1] | |
|---|---|---|---|
| | | Reliable record within search area | No reliable record within search area (20 km) |
| Habitat | Suitable | High | Negligible |
| | Potentially suitable | Moderate | |
| | Unsuitable | Low | |

[1]Reliable record defined as validated, recent (within the last ~40 years) and spatially accurate (refer DBCA search meta data) in order to exclude unverified range or habitat projections.

#### 2.1.2. Fauna

The distribution and habitat preferences of the threatened and specially protected fauna species identified from **Section 2** was reviewed against site context[1] information and preliminary survey results. Likelihood of occurrence of threatened and specially protected fauna species within the site was classified as 'high', 'moderate', 'low', 'negligible' or 'nil' as outlined in **Table 2**. Noting some marine species were excluded due to lack of suitable habitat.

*Table 2: Decision matrix for likelihood of occurrence of threatened, specially protected and priority fauna*

| | | Reliable record[1] | | Unreliable record[2] |
|---|---|---|---|---|
| | | Access to site not impeded | Access to site impeded | |
| Habitat | Suitable | High | Low | Nil |
| | Potentially suitable | Moderate | | |
| | Unsuitable | Negligible | | |

[1]Reliable record defined as DBCA or validated ALA record from the last ~20 years, [2]Unreliable record defined as record >20 years old or PMST prediction.

### 2.2. Likelihood of occurrence results

#### 2.2.1. Threatened and priority flora

A total of 100 conservation significant flora species were identified from database searches as occurring or potentially occurring within 9km of the site. Based on background information available for the site and habitat preferences of the species, two priority flora species were considered to have a high or moderate likelihood of occurring within the site, as outlined in

[1] Including relevant Commonwealth documentation such as approved conservation advice, listing advice and other relevant literature.

Table 3. The complete likelihood of occurrence assessment is provided as **Appendix A**.

*Table 3: Threatened or priority flora species with a high or moderate likelihood occurrence in the site*

| Species | Status | | Life strategy | Flowering period |
|---|---|---|---|---|
| | WA | EPBC Act | | |
| *Angianthus micropodioides* | P | P3 | - | Nov-Dec or Jan-Feb |
| *Aponogeton hexatepalus* | P | P4 | - | Jul-Oct |

### 2.2.2. Vegetation

The database search results identified 13 TECs and 6 PECs as occurring or potentially occurring within a 10 km radius of the site. Information on these communities is provided in **Appendix C**.

Due to historical disturbance the likelihood of occurrence of any TEC or PEC was considered negligible.

### 2.2.3. Threatened, specially protected and priority fauna

A total of 77 conservation significant fauna species were identified from database searches as occurring or potentially occurring within 10 km of the site.

Two threatened, six specially protected and three priority species were classified as having a 'high' or 'moderate' likelihood of occurrence. The legislative or policy status and habitat preferences of these species are shown in **Table 4**.

The remainder of the conservation significant fauna species identified in the desktop assessment (66 species) were considered as having a 'low', 'negligible' or 'nil' likelihood of occurrence. Refer to **Table 4** and **Appendix D** for detail on individual species likelihood of occurrence.

*Table 4: Summary of conservation significant fauna species with potential to occur in the site*

| Species name | Common name | Status | | Habitat description |
|---|---|---|---|---|
| | | WA | EPBC Act | |
| **Birds** | | | | |
| *Apus pacificus* | Pacific swift | MI | MI | Aerial, migratory species that is most often seen over inland plains and sometimes above open areas, foothills or in coastal areas. Sometimes occurs over settled areas, including towns, urban areas and cities. |
| *Calidris ruficollis* | Red-necked stint | MI | MI | Tidal mudflats, saltmarshes, sandy or shelly beaches, saline and freshwater wetlands (coastal and inland), saltfields, sewage ponds. |
| *Calyptorhynchus banksii naso* | Forest red-tailed black cockatoo | VU | VU | Eucalypt and Corymbia forests, often in hilly interior. More recently also observed in more open agricultural and suburban areas including Perth metropolitan area. Attracted to seeding *Corymbia calophylla*, *Eucalyptus marginata*, introduced *Melia azedarach* and *Eucalyptus* spp. trees. |
| *Falco peregrinus* | Peregrine falcon | OS | - | Mainly found around cliffs along coasts, rivers, ranges and around wooded watercourses and lakes. |
| *Oxyura australis* | Blue-billed duck | P4 | - | Mainly deeper freshwater swamps and lakes; occasionally saltlakes and estuaries freshened by flood waters. |

| Species name | Common name | Status | | Habitat description |
|---|---|---|---|---|
| | | WA | EPBC Act | |
| *Pandion haliaetus* | Osprey | MI | MI | Coasts, estuaries, bays, inlets, islands, and surrounding waters; coral atolls, reefs, lagoons, rock cliffs, stacks. |
| *Plegadis falcinellus* | Glossy Ibis | MI | MI | Well-vegetated wetlands, wet pasture, ricefields, floodwaters, floodplains, brackish or occasionally saline wetlands, mangroves, mudflats and occasionally dry grassland. |
| *Thalasseus bergii* | Crested tern | MI | MI | Mainly blue-water seas (especially within 3 km of land), including southern estuaries in summer and autumn (when free of silt); also tidal creeks in north, but not penetrating far into larger estuaries. |
| *Zanda latirostris* | Carnaby's black cockatoo | EN | EN | Mainly proteaceous scrubs and heaths and adjacent eucalypt woodlands and forests; also plantations of *Pinus* spp. Attracted to seeding *Banksia* spp., *Hakea* spp., *Eucalyptus* spp., *Corymbia calophylla*, *Grevillea* spp., and *Allocasuarina* spp. |
| **Mammals** | | | | |
| *Hydromys chrysogaster* | Rakali | P4 | - | Areas with permanent water, fresh, brackish or marine. Likely to occur in all major rivers and most of the larger streams as well as bodies of permanent water in the lower south-west. Intact riparian vegetation and associated bank stability is critical to their survival. |
| *Isoodon fusciventer* | Quenda | P4 | - | Dense scrubby, often swampy, vegetation with dense cover up to one metre high. |

## 3. Methods

### 3.1.1. Vegetation

Vegetation units were identified from information collected during the field survey in January 2024. The vegetation was described according to the dominant species present using the structural formation descriptions of the *National Vegetation Inventory System* (NVIS) (NVIS Technical Working Group 2017). The identified vegetation units were mapped on aerial photography during the field survey and boundaries were interpreted from aerial photography and notes taken in the field. Vegetation condition was mapped on aerial photography based on notes recorded during the field survey to define areas with differing condition and using the Keighery (1994) scale **Table 5**.

*Table 5: Vegetation condition scale applied during the field assessment*

| Condition | Definition (Keighery 1994) |
|---|---|
| Pristine | Pristine or nearly so, no obvious signs of disturbance. |
| Excellent | Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. |
| Very good | Vegetation structure altered obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing |
| Good | Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation |

| Condition | Definition (Keighery 1994) |
|---|---|
| | structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and grazing. |
| Degraded | Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing. |
| Completely degraded | The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs. |

#### 3.1.2. Threatened and priority ecological community

Areas of native vegetation potentially representing a TEC were assessed against key diagnostic characteristics and, if available, size and/or vegetation condition thresholds.

#### 3.1.3. Native vegetation under the EP Act

Vegetation within the site that meets the definition of 'native vegetation' under the *Environmental Protection Act 1986* (EP Act) was mapped on aerial imagery.

#### 3.1.4. Fauna habitat

Transects were traversed across the site, during the day, and the characteristics of fauna habitat and presence of fauna species was recorded. Microhabitats such as logs, rocks and leaf litter were investigated and secondary evidence of species presence such as tracks, scats, skeletal remains, foraging evidence or calls was also noted.

#### 3.1.5. Black cockatoo habitat

Black cockatoo foraging, breeding and roosting habitat was assessed and mapped within the site.

Foraging habitat

Foraging habitat was identified by assessing vegetation in the site for plant species known to provide food for black cockatoos (Davies 1966; Saunders 1980; Johnstone and Storr 1998; Johnstone and Kirkby 1999; Groom 2011; Johnstone *et al.* 2011; DAWE 2022). Foraging habitat was classified as either 'native' or 'non-native' based on the predominant vegetation's naturalised status and in accordance with DAWE (2022).

It was also classified as either 'primary' or 'secondary' based on black cockatoo foraging preferences. Primary food plants were defined as those with historical and contemporary records of regular consumption by a black cockatoo species. Secondary food plants were defined as plants that black cockatoo species have been recorded consuming occasionally or that, based on their limited extent or agricultural origin, should not be considered a sustaining resource. A list of plant species classified as primary or secondary food plants is provided as **Appendix E**.

Each patch of foraging habitat was assigned a foraging value for each species of black cockatoo likely to occur within the site. As it is not always possible to separate out food plants from non-food plants,

mapped foraging habitat may also include vegetation comprising non-food plants. The proportion of non-food plants in mapped foraging habitat was minimised as far as practicable.

Evidence of black cockatoo foraging, such as chewed fruits, was searched for within the site and allocated to a black cockatoo species where possible.

Breeding habitat

Breeding habitat comprises 'habitat trees' which was defined as a native eucalypt that is typically known to support black cockatoo breeding such as marri, jarrah, blackbutt, tuart, wandoo, salmon gum or to a lesser extent flooded gum, with a DBH ≥50 cm or DBH ≥30 cm for wandoo or salmon gum.

All native eucalypts within the site that met the required DBH were recorded. Occasionally, native eucalypts were encountered that met DBH requirements but did not contain a trunk/branch of a sufficient size to support a hollow suitable for use by black cockatoos. For example, the tree may have been less than 3 m tall or had a trunk that forked between 1.3 m and 3 m in height and after the fork no limbs had a diameter of ≥50 cm or ≥30 cm for wandoo or salmon gum. These trees were not recorded as habitat trees as the likelihood they would form a suitable hollow was low.

Habitat trees were individually identified and the attributes outlined in **Table 6** were recorded for each tree.

*Table 6: Attributes recorded for each habitat tree in the site*

| Attribute | Description |
|---|---|
| GPS location | The location was recorded using a handheld GPS unit |
| Tree species | Species and common name were identified |
| Diameter at breast height (DBH) (cm) | DBH was measured at breast height (1.3 m) using a diameter tape |
| Hollows potentially suitable for breeding by a black cockatoo | Number of hollows potentially suitable for breeding by a black cockatoo recorded (assessed from ground level only) |

Each habitat tree was assigned to a category listed in **Table 7** based on current black cockatoo guidelines (DAWE 2022).

*Table 7: Habitat tree categories (DAWE 2022)*

| Category | Specifications |
|---|---|
| Known nesting tree | Trees (live or dead but still standing) which contains a hollow where black cockatoo breeding has been recorded or which demonstrates evidence of breeding (i.e. showing evidence of use through scratches, chew marks or feathers). |
| Suitable nesting tree | Trees with suitable nesting hollows present^, although no evidence of use. Note that any species of tree may develop suitable hollows for breeding. |
| Potential nesting tree | Trees that have a suitable DBH to develop a nest hollow, but do not currently have suitable nesting hollows. Trees suitable to develop a nest hollow in the future are 300-500 mm DBH. Note that many species of eucalypt may develop suitable hollows for breeding. |

^Hollow determined to be suitable for use as breeding habitat by black cockatoos.

Roosting habitat

If present, groups of tall native and non-native trees were assumed to provide roosting habitat. The presence of active or historical roosts in these trees was determined through evidence of roosting activity, such as branch clippings, droppings or moulted feathers.

## 4. Results

### 4.1. Flora

#### 4.1.1. Flora species inventory

A total of 58 weed species and 21 native species were recorded in the site during the field surveys. This comprises a total of 29 families and 60 genera. The dominant families containing native taxa were Myrtaceae (three native taxa) and Fabaceae (three native taxa). The family containing the most non-native taxa was Poaceae (thirteen non-native species).

A complete species list is provided in **Appendix B**.

#### 4.1.2. Threatened and priority flora

No threatened or priority flora were recorded and none are considered likely to occur in the site due to the lack of suitable habitat.

#### 4.1.3. Declared pests

One species listed as a declared pest (pursuant to s22(2) of the *Biosecurity and Agriculture Management Act 2007*), **Tamarix aphylla* (athel pine), was recorded within the site. Athel pine is listed in exempt keeping category meaning management is not obliged.

### 4.2. Vegetation

#### 4.2.1. Vegetation units

Four vegetation units were identified within the site: Cc, Er, ErJkSt, and non-native.

A description and the area of each vegetation unit is provided in **Table 8** and representative photographs of each are provided in **Plate 1** to **Plate 4**. The location of each vegetation unit is shown in **Figure 2**.

*Table 8: Vegetation unit present within the site*

| Vegetation Unit | Description | Area (ha) |
|---|---|---|
| **Er** | Woodland *Corymbia calophylla* over closed grass/forbland of pasture weeds and scattered native species (or absent) (**Plate 1**). | 1.12 |
| **Cc** | Woodland *Eucalyptus rudis* over closed grass/forbland of pasture weeds and scattered native species (or absent) (**Plate 2**). | 0.28 |
| **ErJkSt** | Open woodland *Eucalyptus rudis* and occasional *Melaleuca raphiophylla* over sedgeland *Juncus kraussii* and *Schoenoplectus tabernaemontani* over low shrubland *Suaeda australis* over forbland *Apium prostratum* subsp. *prostratum* var. *prostratum* and *Heliotropium curassavicum* over grassland **Avena* sp., *Cynodon dactylon* and **Paspalum vaginatum* (or absent) (**Plate 3**). | 0.17 |

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| Vegetation Unit | Description | Area (ha) |
|---|---|---|
| **To** | Fringing rushland of *Typha orientalis*, with occasional planted native and non-native trees, shrubs and/or non-woody vegetation, over closed grass/forbland of pasture weeds. | 0.46 |
| **Non-native** | Heavily disturbed areas comprising bare ground and weeds with occasional native trees and forbs and/or sealed ground and buildings (**Plate 4**). | 56.62 |



*Plate 1: Vegetation unit **Er** in 'degraded' condition*



*Plate 2: Vegetation unit **Cc** in 'degraded' condition*



*Plate 3: Vegetation unit **ErJkSt** in 'good – very good' condition*



*Plate 4: Vegetation unit **Non-native** in 'completely degraded' condition*

### 4.2.2. Vegetation condition

The vegetation in the site occurred in 'good – very good', 'degraded', 'degraded - completely degraded' and 'completely degraded condition. The extent of vegetation by condition category is detailed in **Table 9** and shown in **Figure 3**.

*Table 9: Vegetation condition categories within the site*

| Condition category (Keighery (1994)) | Size (ha) |
|---|---|
| Pristine | 0 |
| Excellent | 0 |
| Very good | 0 |
| Good – very good | 0.07 |
| Good | 0 |
| Degraded | 1.04 |
| Degraded – completely degraded | 0.98 |
| Completely degraded | 56.57 |

#### 4.2.3. Threatened and priority ecological communities

The 'subtropical and temperate coastal saltmarsh' TEC which is listed as vulnerable under the EPBC Act was identified within a patch of ErJkSt the northern portion of the site as shown in **Figure 5**. A total of 0.07 ha of this TEC/PEC was mapped. Not all of the ErJkSt represents the TEC as some patches represent canopy overhang into the site with limited to no understory vegetation.

The 0.07 ha of coastal saltmarsh TEC vegetation mapped in the site also represents the State listed Priority 3 (P3) PEC of the same name.

#### 4.2.4. Native vegetation under the EP Act

A total of 1.10 ha of vegetation meeting the definition of 'native vegetation' pursuant to the EP Act occurs within the site, as shown in **Figure 4**. This comprises of scattered flooded gum (*Eucalyptus rudis*) and marri (*Corymbia calophylla*) trees, and fringing vegetation **ErJkSt** (**Table 8**).

### 4.3. Fauna

#### 4.3.1. Fauna habitat

Habitat values in the site are limited by historical disturbance and are primarily suited to widespread fauna species with non-specific habitat requirements.

The ErJkSt vegetation provides a cover of native trees and understory cover of riparian vegetation that would offer cover for ground dwelling fauna.

Large native trees associated with plant communities Cc and Er would also provide value to native birds and other arboreal fauna. The extent of fauna habitat is detailed in **Table 10** and shown in **Figure 5.**

*Table 10: Fauna habitats identified within the site*

| Fauna habitat | Description | Area (ha) |
|---|---|---|
| **Fringing woodland** | Native fringing vegetation consisting of a native tree overstorey and an understorey of sedges/rushes. | 0.07 |
| **Wetland** | Wetland waterbodies and associated riparian sedgeland/rushland. | 3.72 |

| | | |
|---|---|---|
| **Scattered trees and shrubs** | Scattered native and non-native trees and shrubs, providing habitat mainly for avifauna. | 5.45 |
| **Cleared** | Predominantly grassy weeds, bare ground and built form. | 52.64 |

#### 4.3.2. Fauna species inventory

Twenty-four fauna species were recorded within the site:

- *Aix sponsa* (wood duck)
- *Anas gracilis* (grey teal)
- *Anas superciliosa* (Pacific black duck)
- *Anhinga novaehollandiae* (Australasian darter)
- *Cacatua sanguinea* (little corella)
- *Calyptorhynchus banksii* (forest red-tailed black cockatoo)
- *Columba livia* (feral pigeon)
- *Corvus coronoides* (Australian raven)
- *Cygnus atratus* (black swan)
- *Eolophus roseicapilla* (galah)
- *Equus ferus* (horse)
- *Fulica atra* (Eurasian coot)
- *Grallina cyanoleuca* (magpie-lark)
- *Gymnorhina tibicen* (Australian magpie)
- *Malacorhynchus membranaceus* (pink-eared duck)
- *Microcarbo melanoleucos* (little pied cormorant)
- *Oxyura australis* (blue-billed duck)
- *Pelecanus conspicillatus* (Australian pelican)
- *Phalacrocorax sulcirostris* (little black cormorant)
- *Porphyrio porphyria* (purple swamphen)
- *Rhipidura leucophrys* (willie wagtail)
- *Spilopelia chinensis* (spotted dove)
- *Tadorna tadornoides* (Australian shelduck)
- *Threskiornis moluccus* (Australian white ibis)
- *Trichoglossus moluccanus* (rainbow lorikeet)

#### 4.3.3. Conservation significant fauna

One threatened (forest red-tailed black cockatoo, (VU)) and one priority (blue-billed duck, (P4)) fauna species were recorded at the time of survey.

*Zanda latirostris* (Carnaby's black cockatoo (EN)) is considered to have a high likelihood of occurring in this site and is discussed further below in **Section 4.3.4**. Six additional conservation significant bird species not recorded during the survey have potential to occur within the site:

*Apus pacificus* (Pacific swift (MI)), and *Falco peregrinus* (peregrine falcon (OS)) are both highly mobile species that are sometimes recorded over urbanised areas. Any occurrence of these species is likely

to be a flyover or brief forage as the site and surrounding area lacks suitable habitat for breeding or persistence of any other kind. *Calidris ruficollis* (red-necked stint (MI)), and *Thalasseus bergii* (crested tern (MI)) are both shorebirds which may briefly utilise the site as marginal foraging habitat. *Plegadis falcinellus* (glossy ibis (MI)) are known to forage in wet grassland areas when nearby to water sources but this type of habitat is likely to provide a marginal foraging resource. *Pandion haliaetus* (osprey (MI)), have been recorded nesting nearby and are therefore likely to forage near or within the site.

Two priority 4 mammal species not recorded during the survey, *Hydromys chrysogaster* (rakali) and *Isoodon fusciventer* (quenda), could also occur in the site. Rakali may utilise the Swan River and so could occasionally occur in the northern most portion of the site associated with the ErJkSt vegetation. Quenda commonly occur in urban areas, particularly where understorey vegetation or grasses provide dense cover.

#### 4.3.4. Black cockatoos

Forest red-tailed black cockatoo was observed foraging in the site in cape lilac (*Melia azedarach*) overhanging the site. The site lies within the modelled distribution of Carnaby's black cockatoo and therefore they may also occur. The site does not lie within the modelled distribution of Baudin's black cockatoo and therefore they are not likely to occur and have not been considered further.

##### 4.3.4.1. Breeding habitat

A total of 66 black cockatoo habitat trees were recorded, of which five contained hollows potentially suitable for black cockatoo breeding based on inspection from ground level. Internal hollow inspection using a camera pole or drone would be required to confirm if hollows are suitable for breeding by black cockatoos. The remaining 61 habitat trees did not contain hollows suitable for black cockatoo breeding.

The habitat trees comprised four tuarts, eight marris and 54 *Eucalyptus rudis* (flooded gum) trees.

A summary of the habitat trees recorded within the site is provided in **Table 11** and the locations of habitat trees are shown in **Figure 7**.

*Table 11: Habitat trees*

| Category | No. trees |
|---|---|
| Known nesting trees | 0 |
| Suitable nesting trees | 5 |
| Potential nesting trees | 61 |
| Total nesting trees | 66 |

##### 4.3.4.2. Roosting habitat

No roosts or evidence of roosting was observed in the site. Tall trees within the site represent potential roosting trees.

##### 4.3.4.3. Foraging habitat

A total of 1.27 ha of foraging habitat for Carnaby's black cockatoo was recorded in the site, which comprised 0.28 ha of primary native foraging habitat associated with *Corymbia calophylla,* 0.07 ha of

primary non-native foraging habitat associated with *Pinus pinaster*, 0.41 ha of secondary native foraging habitat associated with *Acacia saligna*, *Jacksonia furcellata* and *Xanthorrhoea* spp. and 0.51 ha of secondary non-native habitat associated with *Eucalyptus gomphocephala*.

A total of 0.84 ha of foraging habitat for forest red-tailed black cockatoo was recorded in the site, which comprises 0.28 ha of primary native habitat associated with *Corymbia calophylla,* 0.07 ha of secondary native foraging habitat associated with *Jacksonia furcellata* and 0.49 ha of non-native secondary habitat associated with *Eucalyptus gomphocephala* and **Eucalyptus camaldulensis.*

The extent of foraging habitat by value category is detailed in **Table 12** and shown in **Figure 8** and **Figure 9**.

*Table 12: Foraging habitat recorded within the site*

| Foraging habitat | Black cockatoo species and area of foraging habitat (ha) | |
|---|---|---|
| | Carnaby's | Forest red-tailed |
| Primary native | 0.28 | 0.28 |
| Primary non-native | 0.07 | 0 |
| Secondary native | 0.41 | 0.07 |
| Secondary non-native | 0.51 | 0.49 |
| Total | 1.27 | 0.84 |

## 5. CONCLUSIONS

Outcomes of the assessment include the following:

- No threatened or priority flora species were recorded in the site. None of the threatened and priority flora species identified in the desktop assessment are considered to occur in the site due to lack of suitable habitat and/or because they were not recorded during the field survey.
- The majority of the site is heavily disturbed (degraded to completely degraded) and limited native intact native vegetation is present. One small patch of vegetation (ErJkSt) is identified in 'good – very good' condition.
- A total of 0.07 ha of the 'subtropical and temperate coastal saltmarsh' TEC/PEC occurs within the northern portion of the site adjacent to the Swan River.
- One threatened, forest red-tailed black cockatoo (EN), and one priority, blue-billed duck (P4), species were recorded in the site. A further nine conservation significant fauna species also have potential to occur in the site.
- As a result of historical disturbance, the site contains limited high-quality fauna habitat and is likely only utilised by fauna traversing through the wider area, especially birds. However, the small patch of 'fringing woodland' fauna habitat in the site's northeast (associated with vegetation type ErJkSt) may provide value for smaller ground-dwelling fauna.
- A total of 66 black cockatoo habitat trees were recorded of which five contained hollows potentially suitable for breeding. Internal hollow inspection would be required to confirm if these hollows are suitable for black cockatoo breeding.
- No evidence of roosting was recorded in the site. Tall trees in the site may represent potential roosting trees.
- A total of 1.27 ha of foraging habitat for Carnaby's black cockatoo and 0.84 ha of foraging habitat for forest red-tailed black cockatoo exists in the site.

## 6. REFERENCES

### 6.1. General references

Atlas of Living Australia (ALA) 2023, *Atlas of Living Australia - Spatial Portal*, <http://www.ala.org.au/>.

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Department of Climate Change, Energy, the Environment and Water (DCCEEW) 2023, *Protected Matters Search Tool*, <https://pmst.awe.gov.au/#/map>.

Keighery, B. 1994, *Bushland Plant Survey: A guide to plant community survey for the community*, Wildflower Society of WA (Inc), Nedlands.

NVIS Technical Working Group 2017, *Australian Vegetation Attribute Manual: National Vegetation Information System*, Department of the Environment and Energy, Canberra.

### 6.2. Online references

The online resources that have been utilised in the preparation of this report are referenced in **Section 6.1**, with access date information provided in **Table R 1**.

*Table R 1 Access dates for online references*

| Reference | Date accessed | Website or dataset name |
|---|---|---|
| DCCEEW (2023) | 24 January 2024 | Protected Matters Search Tool |
| DBCA (2023) | 28 March 2023 | NatureMap |
| ALA(2023) | 24 January 2024 | Spatial Portal - Atlas of Living Australia |

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# Figures

*Figure 1: Site Location*

*Figure 2: Vegetation Units*

*Figure 3: Vegetation Condition*

*Figure 4: Threatened Ecological Community*

*Figure 5: Native Vegetation Under the EP Act*

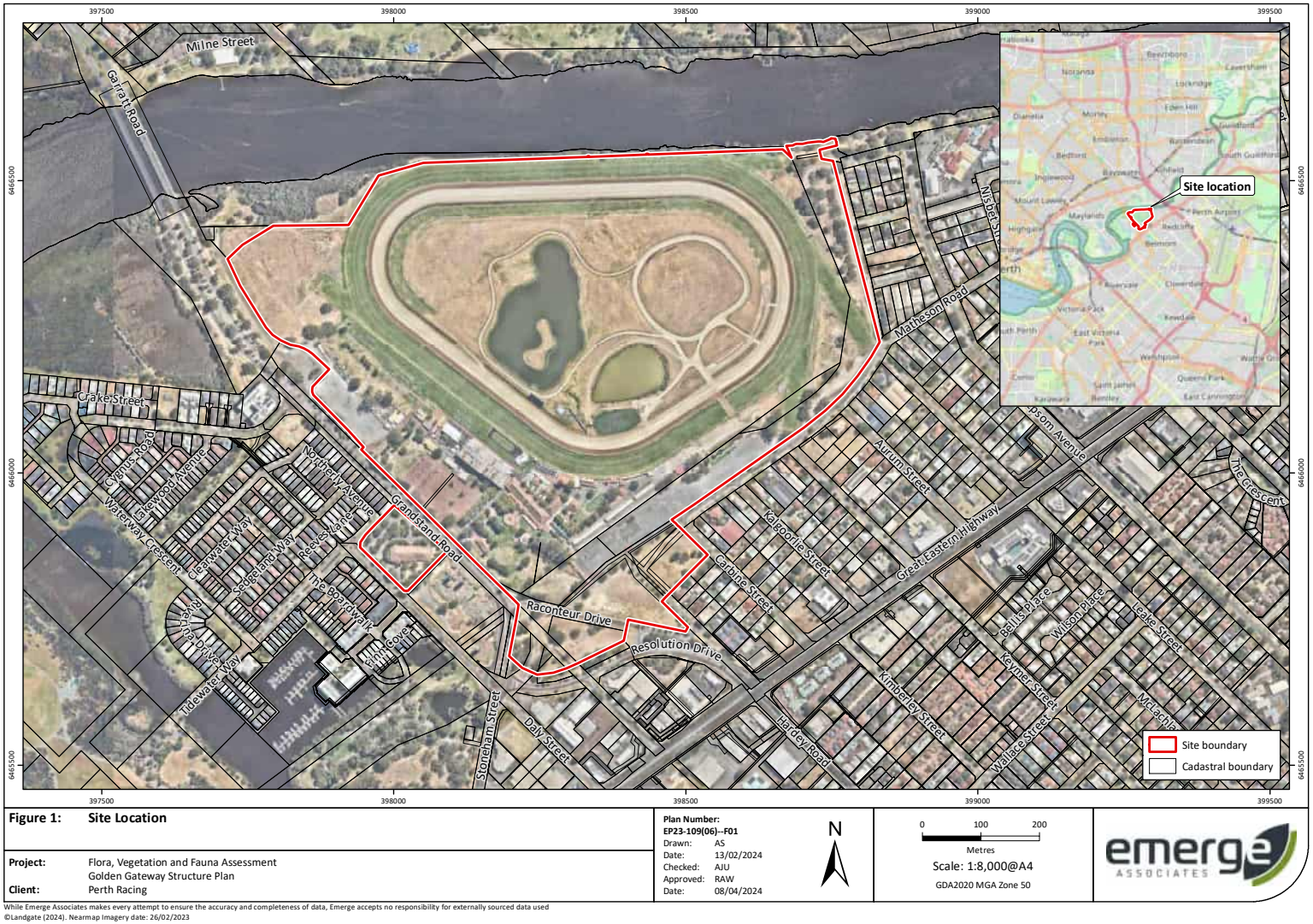
*Figure 6: Fauna Habitat*

*Figure 7: Black Cockatoo Habitat Trees*

*Figure 8: Carnaby's Black Cockatoo Foraging Habitat*

*Figure 9: Forest Red-tailed Black Cockatoo Foraging Habitat*

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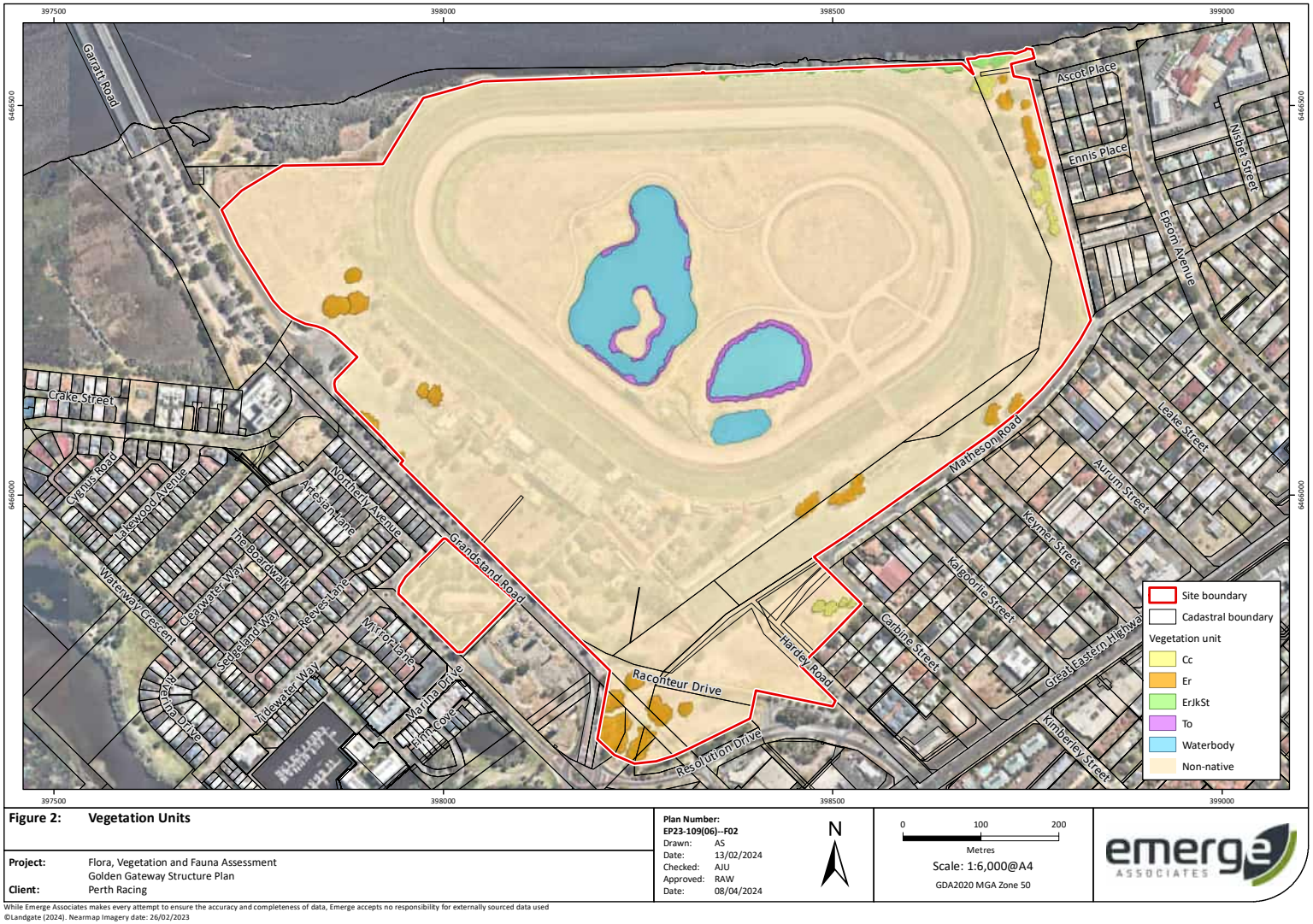



**Figure 2:** **Vegetation Units**

**Project:** Flora, Vegetation and Fauna Assessment
Golden Gateway Structure Plan
**Client:** Perth Racing

**Plan Number:** EP23-109(06)--F02
Drawn: AS
Date: 13/02/2024
Checked: AJU
Approved: RAW
Date: 08/04/2024

N

0 100 200
Metres
Scale: 1:6,000@A4
GDA2020 MGA Zone 50

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**Figure 3: Vegetation Condition**

| | |
|---|---|
| **Project:** | Flora, Vegetation and Fauna Assessment<br>Golden Gateway Structure Plan |
| **Client:** | Perth Racing |

| | |
|---|---|
| **Plan Number:** | **EP23-109(06)--F03** |
| Drawn: | AS |
| Date: | 13/02/2024 |
| Checked: | AJU |
| Approved: | RAW |
| Date: | 08/04/2024 |

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**Figure 4: Threatened and Priority Ecological Community**

**Project:** Flora, Vegetation and Fauna Assessment
Golden Gateway Structure Plan
**Client:** Perth Racing

**Plan Number:** EP23-109(06)--F04
Drawn: AS
Date: 13/02/2024
Checked: AJU
Approved: RAW
Date: 08/04/2024

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Metres
Scale: 1:6,000@A4
GDA2020 MGA Zone 50

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**Figure 5:** **Native Vegetation Under the EP Act**

| | |
|---|---|
| **Project:** | Flora, Vegetation and Fauna Assessment<br>Golden Gateway Structure Plan |
| **Client:** | Perth Racing |

| | |
|---|---|
| **Plan Number:** | **EP23-109(06)--F16** |
| Drawn: | WJC |
| Date: | 04/04/2024 |
| Checked: | AJU |
| Approved: | RAW |
| Date: | 08/04/2024 |

N

0 100 200
Metres
Scale: 1:6,000@A4
GDA2020 MGA Zone 50

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**Figure 6: Fauna Habitat**

| | |
|---|---|
| **Project:** | Flora, Vegetation and Fauna Assessment<br>Golden Gateway Structure Plan |
| **Client:** | Perth Racing |

| | |
|---|---|
| **Plan Number:** | **EP23-109(06)--F05** |
| Drawn: | AS |
| Date: | 13/02/2024 |
| Checked: | AJU |
| Approved: | RAW |
| Date: | 08/04/2024 |

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**Figure 7:** **Black Cockatoo Habitat Trees**

**Project:** Flora, Vegetation and Fauna Assessment
Golden Gateway Structure Plan

**Client:** Perth Racing

**Plan Number:** EP23-109(06)--F19a
Drawn: GAR
Date: 28/06/2024
Checked: TDP
Approved: RAW
Date: 01/07/2024

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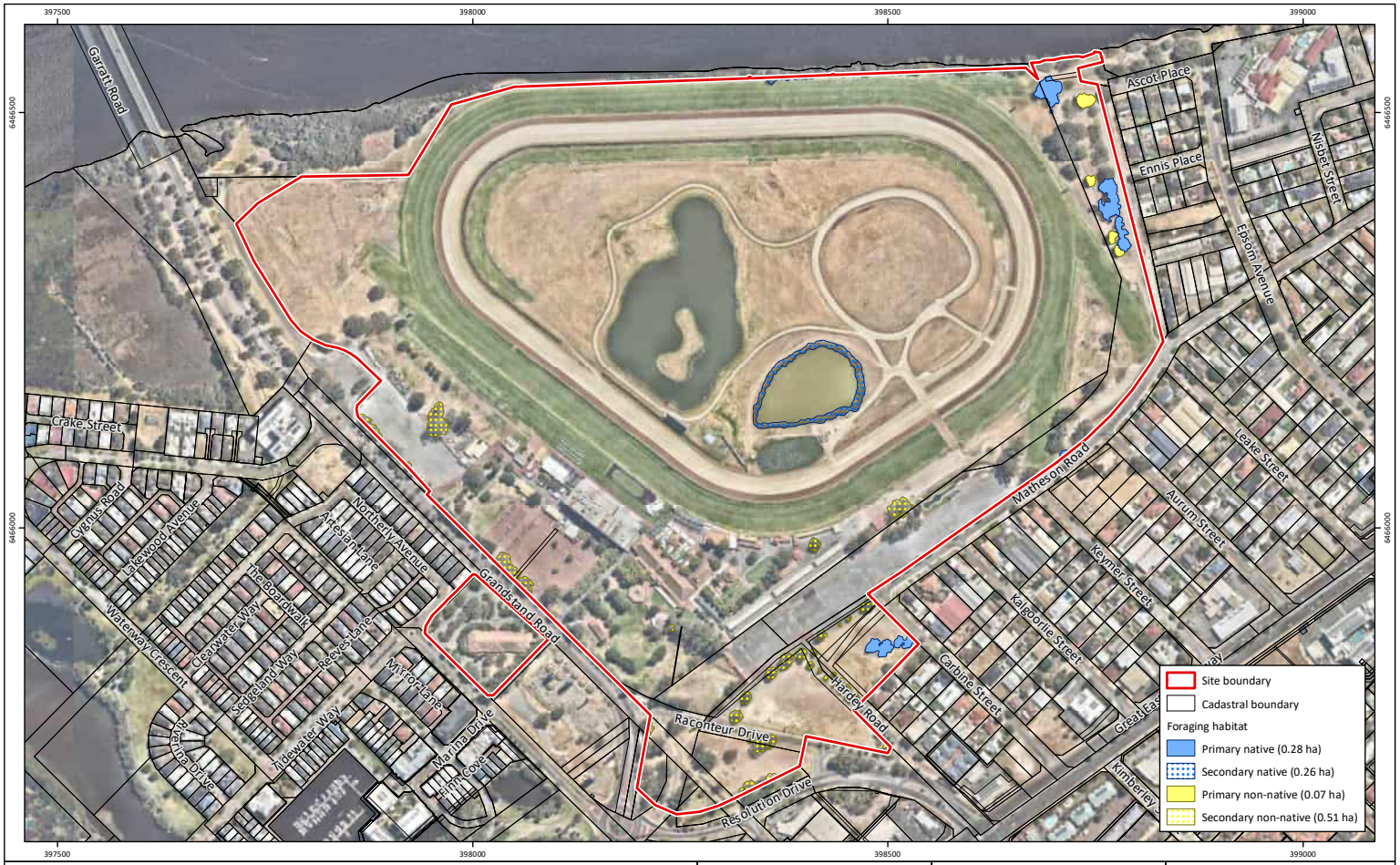



**Figure 8:** **Carnaby's Black Cockatoo Foraging Habitat**

| | |
|---|---|
| **Project:** | Flora, Vegetation and Fauna Assessment<br>Golden Gateway Structure Plan |
| **Client:** | Perth Racing |

| | |
|---|---|
| **Plan Number:** | **EP23-109(06)--F17** |
| Drawn: | WJC |
| Date: | 04/04/2024 |
| Checked: | AJU |
| Approved: | RAW |
| Date: | 08/04/2024 |

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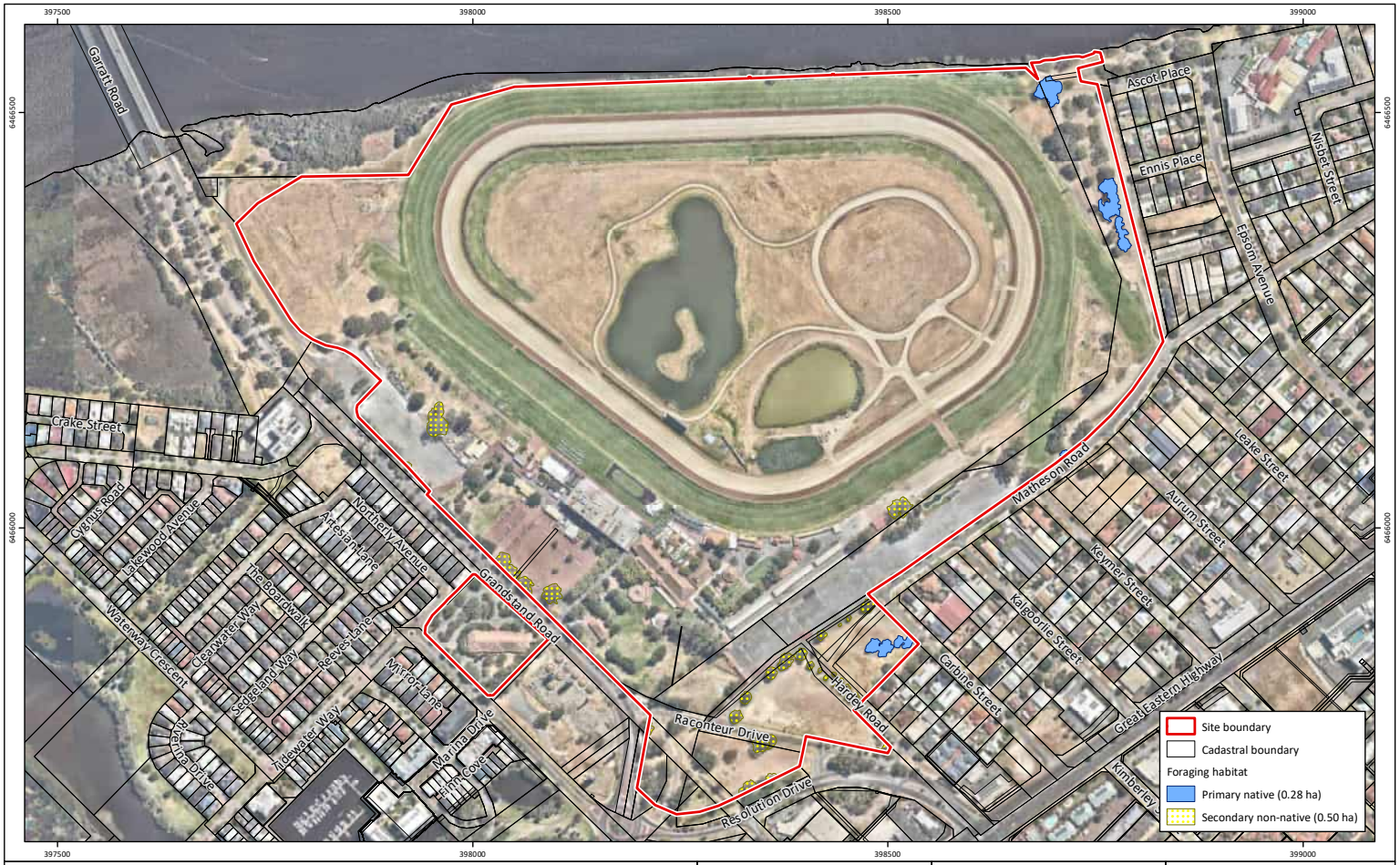



**Figure 9:** **Forest Red-tailed Black Cockatoo Foraging Habitat**

**Project:** Flora, Vegetation and Fauna Assessment
Golden Gateway Structure Plan
**Client:** Perth Racing

**Plan Number:** EP23-109(06)--F18
Drawn: WJC
Date: 04/04/2024
Checked: AJU
Approved: RAW
Date: 08/04/2024

N

0 100 200
Metres
Scale: 1:6,000@A4
GDA2020 MGA Zone 50

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# Appendix A

Conservation Significant Flora Likelihood of Occurrence

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| Species name | Level of | | Life strategy | Habitat | Flowering period | Likelihood of occurrence |
|---|---|---|---|---|---|---|
| | WA | EPBC Act | | | | |
| *Calectasia cyanea* | CR | CR | P | Heathland on white sand or laterite gravel over laterite. Known only from one population near Albany. | Jun-Oct | Low |
| *Grevillea thelemanniana* | CR | CR | P | Sand, sandy clay. Winter-wet low-lying flats. | May-Nov | Low |
| *Synaphea sp. Fairbridge Farm (D. Papenfus 696)* | CR | CR | P | Low woodland on grey, clayey sand with lateritic pebbles (Pinjarra Plain) near winter wet flats. | Sep-Nov | Low |
| *Caladenia huegelii* | CR | EN | PG | Well-drained, deep sandy soils in lush undergrowth in a variety of moisture levels. | Sep-early Nov | Low |
| *Calytrix breviseta subsp. breviseta* | CR | EN | P | Seasonally wet sandy-clay soil on swampy flats | Oct-Nov | Low |
| *Drakaea elastica* | CR | EN | PG | Bare patches of sand within otherwise dense vegetation in low-lying areas alongside winter-wet swamps. Typically in banksia woodland or thickets of Kunzea glabrescens. | late Sep-Oct/Nov, survey Jul-Aug | Low |
| *Eucalyptus x balanites* | CR | EN | P | Light coloured sandy soils over laterite. Habitat consists of gently sloping heathlands; open mallee woodland over shrubland (Population 2) or heathland with emergent mallees (population 1) | Oct - Feb | Low |
| *Trithuria occidentalis* | CR | EN | A | Partly submerged on the edge of shallow winter-wet clay pans in very open shrubland. | Oct-Nov | Low |
| *Diuris purdiei* | EN | EN | PG | Sand to sandy clay soils in areas subject to winter inundation. | late September to mid-October, but only after a summer or early autumn fire (Brown et al., 1998) | Low |
| *Grevillea curviloba subsp. incurva* | EN | EN | P | Sand, sandy loam. Winter-wet heath. | Aug-Sep | Low |
| *Macarthuria keigheryi* | EN | EN | P | Low-lying winter-wet damp grey/white sands in open patches. | Sep-Dec or Feb-Mar | Low |

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| | WA | EPBC Act | strategy | | period | occurrence |
|---|---|---|---|---|---|---|
| *Thelymitra stellata* | EN | EN | PG | Sandy loam, clay or gravel over laterite or gravel. | Sep-Nov | Low |
| *Andersonia gracilis* | VU | EN | P | Seasonally damp, black sandy clay flats near or on the margins of swamps. | Sep-Nov | Low |
| *Banksia mimica* | VU | EN | P | Flat to gentle slopes in grey and white sand in open woodlands. | Dec-Jan | Low |
| *Drakaea micrantha* | EN | VU | PG | Open sandy patches often adjacent to winter-wet swamps. | Sept- early Oct | Low |
| *Acacia denticulosa* | VU | VU | P | Sand, loam, clay. Granite outcrops, rarely on sandplains. | Sep-Oct | Low |
| *Anigozanthos viridis subsp. Terraspectans* | VU | VU | P | Grey sand, clay loam. Winter-wet depressions. | Aug-Sep | Low |
| *Conospermum undulatum* | VU | VU | P | Sand and sandy clay soils, on flat or gently sloping sites between the Swan and Canning Rivers | May-Oct | Low |
| *Diuris drummondii* | VU | VU | PG | In low-lying depressions in peaty and sandy clay swamps. | Nov-Jan | Low |
| *Diuris micrantha* | VU | VU | PG | Dark grey-black sandy clay-loam in winter wet depressions or swamps. Often in shallow standing water. | Aug/Sep- early Oct | Low |
| *Eleocharis keigheryi* | VU | VU | P | Clay or sandy loam in freshwater creeks and transient waterbodies such as seasonally wet clay pans. | Aug-Dec | Low |
| *Eucalyptus rhodantha var. rhodantha* | VU | VU | P | Grey/yellow/red sand over laterite. Undulating country, hillslopes. | Jul-Sep or Dec-Jan | Low |
| *Morelotia australiensis* | VU | VU | P | Sand over clay, winter wet depressions and drainage lines. | Nov-Dec | Low |
| *Eremophila glabra subsp. chlorella* | EN | - | P | Sandy clay. Winter-wet depressions. | Jul-Nov | Low |
| *Hypocalymma magnificum* | EN | - | P | Sandy loam, granite. | Aug-Nov (limited information) | Low |
| *Bolboschoenus fluviatilis* | P1 | - | P | Floodplain with grey/brown wet sand. | Nov | Moderate |
| *Calandrinia sp. Bayswater (C. Andrews s.n. 11/1902)* | P1 | - | Unknown | Unknown | Unknown | Low |

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| | WA | EPBC Act | strategy | | period | occurrence |
|---|---|---|---|---|---|---|
| *Drosera patens* | P1 | - | P | Sandy soils on margins of winter-wet depressions, swamps and lakes. | Aug-Dec | Low |
| *Drosera x sidjamesii* | P1 | - | P | Along lake margins, close to winter high-water line | Nov-Dec or Jan-Mar | Low |
| *Haloragis scoparia* | P1 | - | P | Clay in winter-wet areas. | May | Low |
| *Hydrocotyle striata* | P1 | - | A | Sand and clay in springs and creeklines. | Nov | Low |
| *Levenhookia preissii* | P1 | - | A | Grey or black, peaty sand. Swamps | Sep-Dec/Jan | Low |
| *Ptilotus sericostachyus subsp. roseus* | P1 | - | P | Unknown. Seem to be associated with wetlands/rivers. | Sep-Dec | Moderate |
| *Senecio gilbertii* | P1 | - | P | Peaty sand in swamps and on slopes. | Sep-Nov | Low |
| *Thelymitra magnifica* | P1 | - | PG | Gravelly soil on stony ridges. | Sep-Oct | Low |
| *Typhonium peltandroides* | P1 | - | P | Shallow sand amongst rough sandstone, red clay. Sides of gorges, vine thickets, rocky sites or along watercourses. | Dec or Jan-Feb | Low |
| *Acacia benthamii* | P2 | - | P | Sand, typically on limestone breakaways | Aug - Sept | Low |
| *Calothamnus macrocarpus* | P2 | - | P | Rocky quartzite soils, sand. Slopes. | Feb or Aug-Dec | Low |
| *Chamelaucium floriferum subsp. diffusum* | P2 | - | P | Sand, clay. Frequently with outcropping granite. | Jan-Dec | Low |
| *Eucalyptus educta* | P2 | - | P | Shallow soils. Granite rocks. | Apr | Low |
| *Grevillea manglesii subsp. ornithopoda* | P2 | - | P | Red-brown loam over clay | Sep-Nov | Low |
| *Hypocalymma inopinatum* | P2 | - | P | White sand on laterite. Shallow sandy loam Slopes and rises (limited information). | Nov? (limited information | Low |
| *Johnsonia pubescens subsp. cygnorum* | P2 | - | P | Grey white yellow sands on flats and seasonally wet areas. | Sep | Low |
| *Lepyrodia curvescens* | P2 | - | P | Sand, laterite. Seasonally inundated swampland. | Sep-Nov | Low |
| *Melaleuca viminalis* | P2 | - | P | Sand, clay in creeklines and wetlands. | Oct-Dec | Moderate |
| *Phyllangium palustre* | P2 | - | A | Winter-wet claypans, low-lying seasonal wetlands on clay | Oct-Nov | Low |
| *Poranthera moorokatta* | P2 | - | A | Sandy or clay soils. Dampland or low sandy dunes. | Oct or Feb | Low |
| *Thelymitra variegata* | P2 | - | P | Sandy clay, sand, laterite. | Jun-Sep | Low |

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| | WA | EPBC Act | strategy | | period | occurrence |
|---|---|---|---|---|---|---|
| *Thysanotus brachiatus* | P2 | - | P | Grey sand | Nov-Dec | Low |
| *Adenanthos cygnorum subsp. chamaephyton* | P3 | - | P | Grey sand, lateritic gravel. | Jul or Sep to Dec or Jan | Low |
| *Alyogyne sp. Great Victoria Desert (D.J. Edinger 6212)* | P3 | - | P | Unknown | Unknown | Low |
| *Angianthus micropodioides* | P3 | - | A | Saline sandy soils on edge of rivers, depressions and clay pans. | Nov-Dec or Jan-Feb | Moderate |
| *Babingtonia urbana* | P3 | - | P | Grey sand, lateritic gravel. | Jan-Mar | Low |
| *Banksia pteridifolia subsp. vernalis* | P3 | - | P | White/grey sand over laterite. | Sep-Oct | Low |
| *Beaufortia purpurea* | P3 | - | P | Lateritic or granitic soils on rocky slopes. | Oct-Feb | Low |
| *Byblis gigantea* | P3 | - | P | Sandy-peat swamps. Seasonally wet areas. | Sep-Jan | Low |
| *Carex tereticaulis* | P3 | - | P | Black peaty sand. | Sep-Oct | Low |
| *Conostylis bracteata* | P3 | - | P | Sand, limestone. Consolidated sand dunes | Aug-Sep | Low |
| *Cyathochaeta teretifolia* | P3 | - | P | Grey sand, sandy clay in swamps and creek edges. | Oct-Jan | Low |
| *Dampiera triloba* | P3 | - | P | Damp peat/loam soil. | Aug-Dec | Low |
| *Dicrastylis micrantha* | P3 | - | P | Red sand. Sandplains. | Sep-Dec | Low |
| *Eryngium sp. Subdecumbens (G.J. Keighery 5390)* | P3 | - | A | Clay in seasonal wetlands. | Sep-Nov | Low |
| *Haemodorum loratum* | P3 | - | P | Grey or yellow sand, gravel. | Nov | Low |
| *Halgania corymbosa* | P3 | - | P | Gravelly soils, soils over granite. | Aug-Nov | Low |
| *Hibbertia leptotheca* | P3 | - | P | Brown to white sand with limestone. | Aug-Sep | Low |
| *Hypocalymma quadrangulare* | P3 | - | P | Sandy loam in depressions (limited infroamtion) | Jul-Sep (limited information) | Low |
| *Isopogon autumnalis* | P3 | - | P | Yellow-grey sand. | Feb,Mar,Apr, May or June | Low |
| *Jacksonia gracillima* | P3 | - | P | Sand, often adjacent to winter wet areas | Sep-Dec | Low |
| *Lasiopetalum glutinosum subsp. glutinosum* | P3 | - | P | Brown clay loam on slopes | Sep-Dec | Low |
| *Lasiopetalum membranaceum* | P3 | - | P | Sand over limestone | Sep-Dec | Low |

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| | WA | EPBC Act | strategy | | period | occurrence |
|---|---|---|---|---|---|---|
| *Meionectes tenuifolia* | P3 | - | P | Clay loam in seasonally wet areas. | Oct-Dec | Low |
| *Myriophyllum echinatum* | P3 | - | A | Clay in winter-wet flats. | Nov | Low |
| *Platysace ramosissima* | P3 | - | P | Sandy soils. | Oct-Nov | Low |
| *Schoenus benthamii* | P3 | - | P | White, grey ands, sandy clay in winter wet flats and swamps | Oct-Nov | Low |
| *Schoenus pennisetis* | P3 | - | A | Grey or peaty sand in swamps and winter-wet depressions. | Aug-Sep | Low |
| *Stylidium aceratum* | P3 | - | A | Sandy soils in swamp heathland. | Oct-Nov | Low |
| *Stylidium asteroideum* | P3 | - | P | Sand, clay, loam in winter wet areas. | Sep-Nov | Low |
| *Stylidium paludicola* | P3 | - | P | Peaty sand over clay. Winter wet habitats. Marri and Melaleuca woodland, Melaleuca shrubland | Oct-Dec | Low |
| *Styphelia filifolia* | P3 | - | P | Brown over pale yellow sand. | Feb-Apr | Low |
| *Thysanotus anceps* | P3 | - | P | White or grey sand, lateritic gravel, laterite. | Oct-Dec | Low |
| *Verticordia venusta* | P3 | - | P | Yellow sand, sandy gravel. Sandplains. | Sep-Dec or Jan | Low |
| *Aponogeton hexatepalus* | P4 | - | P | Mud. Freshwater: ponds, rivers, claypans. | Jul-Oct | Moderate |
| *Calothamnus accedens* | P4 | - | P | Sandy soils over laterite. | Sep-Jan | Low |
| *Calothamnus graniticus subsp. leptophyllus* | P4 | - | P | Clay over granite, lateritic soils. Hillsides. | Jun-Aug | Low |
| *Cyanothamnus tenuis* | P4 | - | P | Laterite, stony soils, granite. | Aug-Nov | Low |
| *Dodonaea hackettiana* | P4 | - | P | Sand, outcropping limestone. | Jul-Oct | Low |
| *Drosera occidentalis* | P4 | - | P | Flat, brown/white/yellow moist sand/clay/peat, often near swamps. | Oct-Dec/Jan | Low |
| *Eucalyptus caesia subsp. caesia* | P4 | - | P | Loam. Granite outcrops. | May-Sep | Low |
| *Eucalyptus caesia subsp. magna* | P4 | - | P | Loam. Granite outcrops. | May-Sep | Low |
| *Eucalyptus kruseana* | P4 | - | P | Sandy loam. Granite outcrops & hills. | Jun-Sep | Low |
| *Grevillea pimeleoides* | P4 | - | P | Gravelly soils over granite. Rocky hillsides. | May-Nov | Low |
| *Hydrocotyle lemnoides* | P4 | - | A | Floating in swamps. | Aug-Oct | Low |

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| | WA | EPBC Act | strategy | | period | occurrence |
|---|---|---|---|---|---|---|
| *Jacksonia sericea* | P4 | - | P | Calcareous and sandy soils on Swan Coastal Plain | Dec-Feb | Low |
| *Lasiopetalum bracteatum* | P4 | - | P | Sandy clay, clay, lateritic gravel along drainage lines, creeks, gullies, granite outcrops. | Aug-Nov | Low |
| *Ornduffia submersa* | P4 | - | A | Sandy clay in inundated wetland/creek. | Aug-Nov | Low |
| *Schoenus griffinianus* | P4 | - | P | White sand | Sep-Oct | Low |
| *Schoenus natans* | P4 | - | A | Aquatic, in winter-wet depressions. | Oct | Low |
| *Stylidium longitubum* | P4 | - | A | Sandy clay, clay. Seasonal wetlands. | Oct-Dec | Low |
| *Stylidium striatum* | P4 | - | P | Brown clay over laterite on hill slopes. | Oct-Nov | Low |
| *Verticordia lindleyi subsp. Lindleyi* | P4 | - | P | Sand and sandy clay in winter wet areas. | May or Nov-Jan | Low |

Note: CR=critically endangered, EN=endangered, VU=vulnerable, P1=Priority 1, P2=Priority 2, P3=Priority 3, P4=Priority 4, P=perennial, PG=perennial geophyte, A=annual.

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# Appendix B

Flora Species Inventory

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| Family | Status | Species |
|---|---|---|
| Amaranthaceae | | |
| | * | *Amaranthus viridis* |
| | * | *Atriplex prostrata* |
| | | *Suaeda australis* |
| Anacardiaceae | | |
| | * | *Schinus terebinthifolia* |
| Apiaceae | | |
| | | *Apium prostratum subsp. prostratum var. prostratum* |
| Araliaceae | | |
| | * | *Schefflera arboricola* |
| Araucariaceae | | |
| | * | *Araucaria heterophylla* |
| Arecaceae | | |
| | * | *Arecaceae sp.* |
| | * | *Phoenix canariensis* |
| | * | *Syagrus romanzoffiana* |
| | * | *Washingtonia filifera* |
| Asphodelaceae | | |
| | Pl | *Xanthhorrea sp.* |
| Asteraceae | | |
| | * | *Erigeron sp.* |
| | * | *Hypochaeris glabra* |
| | * | *Lactuca serriola* |
| | * | *Ursinia anthemoides* |
| Bignoniaceae | | |
| | * | *Jacaranda mimosifolia* |
| Boraginaceae | | |
| | | *Heliotropium curassavicum* |
| Casuarinaceae | | |
| | | *Casuarina ?cunninghamiana* |
| | | *Casuarina obesa* |
| | Pl | *Casuarina sp.* |
| Cyperaceae | | |
| | | *Bolboschoenus caldwellii* |
| | * | *Cyperus ?tenuiflorus* |
| | * | *Cyperus congestus* |
| | * | *Cyperus polystachyos* |
| | | *Lepidosperma longitudinale* |
| | | *Schoenoplectus tabernaemontani* |
| Fabaceae | | |
| | | *Acacia saligna* |
| | * | *Acacia iteaphylla* |
| | | *Kennendia prostrata* |
| | * | *Tipuana tipu* |
| | * | *Trifolium michelianum* |
| | | *Viminaria juncea* |
| Fabaeae | | |
| | * | *Erythrina indica* |

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| | | |
|---|---|---|
| Juncaceae | | |
| | | *Juncus kraussii* |
| Malvaceae | | |
| | * | *Brachychiton populneus* |
| | * | *Malva sp.* |
| Moraceae | | |
| | * | *Ficus macrophylla* |
| Myrtaceae | | |
| | Pl | *Agonis flexuosa* |
| | Pl | *Callistemon sp.* |
| | | *Corymbia calophylla* |
| | * | *Corymbia citriodora* |
| | * | *Corymbia cladocalyx* |
| | * | *Eucalyptus ?leptopoda* |
| | * | *Eucalyptus botryoides* |
| | * | *Eucalyptus camaldulensis* |
| | * | *Eucalyptus cladocalyx* |
| | Pl | *Eucalyptus gomphocephala* |
| | * | *Eucalyptus grandis* |
| | * | *Eucalyptus leucoxylon* |
| | * | *Eucalyptus maculata* |
| | | *Eucalyptus rudis* |
| | * | *Eucalyptus sideroxylon* |
| | * | *Eucalyptus sp.* |
| | | *Melaleuca rhaphiophylla* |
| | * | Myrtaceae sp. |
| Onagraceae | | |
| | * | *Oenothera drummondii* |
| Pinaceae | | |
| | * | *Pinus sp.* |
| Plantaginaceae | | |
| | * | *Plantago lanceolata* |
| Plantanaceae | | |
| | * | *Platanus ×hispanica* |
| Poaceae | | |
| | * | *Avena barbata* |
| | * | *Bambusa sp.* |
| | * | *Briza maxima* |
| | * | *Cenchrus ciliaris* |
| | * | *Cortaderia selloana* |
| | * | *Cynodon dactylon* |
| | * | *Ehrharta calycina* |
| | * | *Ehrharta longiflora* |
| | * | *Ergagrostis curvula* |
| | * | *Melinis repens* |
| | * | *Paspalum dilatatum* |
| | * | *Paspalum vaginatum* |
| | * | *Setaria verticillata* |
| Polygonaceae | | |

Attachment 12.1.3 Environmental Assessment Report



| | | |
|---|---|---|
| | * | *Persicaria ?decipiens* |
| | * | *Polygonum aviculare* |
| Rosaceae | | |
| | * | *Rosa sp.* |
| Solanaceae | | |
| | * | *Solanum nigrum* |
| Tamaricaceae | | |
| | * | *Tamarix aphylla* |
| Typhaceae | | |
| | | *Typha sp.* |

*=non-native, Pl=planted

Attachment 12.1.3 Environmental Assessment Report

# Appendix C

Conservation Significant Communities Likelihood of Occurrence

Attachment 12.1.3 Environmental Assessment Report



| Code | Community name | TEC/ PEC | Level of significance | | Likelihood of occurrence |
|---|---|---|---|---|---|
| | | | State | EPBC Act | |
| SCP10a | Shrublands on dry clay flats (floristic community type 10a as originally described in Gibson et al. (1994)) | TEC | EN | CR | Low |
| SCP07 | Herb rich saline shrublands in clay pans (floristic community type 7 as originally described in Gibson et al. (1994)) | TEC | VU | CR | Low |
| Tuart woodlands | Tuart (Eucalyptus gomphocephala) woodlands and forests of the Swan Coastal Plain | TEC/ PEC | P3 | CR | Low |
| SCP3a | Corymbia calophylla - Kingia australis woodlands on heavy soils, Swan Coastal Plain (floristic community type 3a as originally described in | TEC | CR | EN | Moderate |
| SCP3c | Corymbia calophylla - Xanthorrhoea preissii woodlands and shrublands, Swan Coastal Plain (floristic community type 3c as originally described in in Gibson et al. (1994)) | TEC | CR | EN | Moderate |
| SCP20c | Shrublands and woodlands of the eastern side of the Swan Coastal Plain (floristic community type 20c as originally described in in Gibson et al. (1994)) | TEC | CR | EN | Low |
| SCP20b | Banksia attenuata and/or Eucalyptus marginata woodlands of the eastern side of the Swan Coastal Plain (floristic community type 20b as originally described in Gibson et al. (1994)) | TEC | EN | EN | Low |
| SCP20a | Banksia attenuata woodlands over species rich dense shrublands (floristic community type 20a as originally described in Gibson et al. (1994)) | TEC | EN | EN | Low |
| Muchea Limestone | Shrublands and woodlands on Muchea Limestone of the Swan Coastal Plain | TEC | EN | EN | Low |
| Banksia WL SCP | Banksia Woodlands of the Swan Coastal Plain ecological community | TEC/ PEC | P3 | EN | Low |
| Coastal Saltmarsh | Subtropical and Temperate Coastal Saltmarsh | TEC/ PEC | P3 | VU | High |
| SCP02 | Southern wet shrublands, Swan Coastal Plain (floristic community type 2 as originally described in Gibson et al. (1994) | TEC | EN | - | Low |
| SCP3b | Corymbia calophylla - Eucalyptus marginata woodlands on sandy clay soils of the southern Swan Coastal Plain (floristic community type 3b as originally described in Gibson et al. (1994)) | TEC | VU | - | Moderate |
| SCP22 | Banksia ilicifolia woodlands | PEC | P3 | - | Low |
| SCP21c | Low lying Banksia attenuata woodlands or shrublands | PEC | P3 | - | Low |
| SCP23b | Swan Coastal Plain Banksia attenuata - Banksia menziesii woodlands | PEC | P3 | - | Low |

Note: TEC=threatened ecological community, PEC=priority ecological community, CR=critically endangered, EN=endangered, VU=vulnerable, P3=priority 3

Attachment 12.1.3 Environmental Assessment Report

# Appendix D

Conservation Significant Fauna

| Species name | Common name | Level of | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|
| | | WA | EPBC Act | | |
| **Birds** | | | | | |
| *Actitis hypoleucos* | Common sandpiper | MI | MI | Edge of sheltered waters salt or fresh, e.g. estuaries, mangrove creeks, rocky coasts, near-coastal saltlakes (including saltwork ponds), river pools, lagoons, claypans, drying swamps, flood waters, dams and sewage ponds. Preferring situations where low perches are available (Johnstone & Storr 1998). | Nil |
| *Anous tenuirostris melanops* | Australian lesser noddy | EN | VU | Very common in blue-water seas around the Abrolhos (endemic to this area, accidental occurrences on lower west coast of Australia) (Johnstone and Storr 1998). | Nil |
| *Apus pacificus* | Pacific swift | MI | MI | Aerial, migratory species that is most often seen over inland plains and sometimes above open areas, foothills or in coastal areas. Sometimes occurs over settled areas, including towns, urban areas and cities (Pizzey & Knight 2012). | Moderate |
| *Botaurus poiciloptilus* | Australasian bittern | EN | EN | In or over water, in tall reedbeds, sedges, rushes, cumbungi, lignum. Also occurs in ricefields, drains in tussocky paddocks and occasionally in saltmarshes and brackish wetlands (TSSC 2019). | Negligible |
| *Cacatua pastinator pastinator* | Muir's corella | CD | - | Wheat and sheep farming country with remnant native forest. Species is restricted to the south-west corner of WA, near Lake Muir (DPaW 2015). | Nil |

| Species name | Common name | Level of | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|
| | | WA | EPBC Act | | |
| *Calidris acuminata* | Sharp-tailed sandpiper | VU (MI) | VU (MI) | Occurs in tidal mudflats, saltmarshes and mangroves, as well as, shallow fresh, brackish or saline inland wetlands. It is also known from floodwaters, irrigated pastures and crops, sewage ponds, saltfields (Pizzey & Knight 2012). | Nil |
| *Calidris alba* | Sanderling | MI | MI | Mainly steeply shelving sandy beaches exposed to ocean swell. Also sandy inlets, estuarine sandbanks and near-coastal saltlakes (including saltwork ponds) (Johnstone & Storr 1998). | Nil |
| *Calidris canutus* | Red knot | EN | EN (MI) | Mud and sand flats in estuaries and on sheltered coasts. Also near-coastal saltlakes, including saltwork ponds (Pizzey & Knight 2012). | Nil |
| *Calidris ferruginea* | Curlew sandpiper | CR | CR (MI) | Mainly shallows of estuaries and near-coastal saltlakes (including saltwork ponds) and drying near-coastal freshwater lakes and swamps. Also beaches and near-coastal sewage ponds (Johnstone & Storr 1988). | Negligible |
| *Calidris melanotos* | Pectoral sandpiper | MI | MI | Mainly fresh waters (swamps, lagoons, river pools, irrigation channels and sewage ponds); also samphire flats around estuaries and saltlakes (Johnstone & Storr 1998). | Nil |
| *Calidris ruficollis* | Red-necked stint | MI | MI | Tidal mudflats, saltmarshes, sandy or shelly beaches, saline and freshwater wetlands (coastal and inland), saltfields, sewage ponds (Pizzey and Knight 2012). | Moderate |

| Species name | Common name | Level of | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|
| | | WA | EPBC Act | | |
| *Calidris subminuta* | Long-toed stint | MI | MI | Mainly freshwater swamps (especially when drying and where vegetation is short), river pools, lagoons and claypans; also brackish pools, sewage ponds and samphire flats around estuaries and saltlakes (Johnstone & Storr 1988). | Nil |
| *Calidris tenuirostris* | Great knot | CR | CR (MI) | Mud or sand flats in estuaries and on sheltered coasts. Also near-coastal saltlakes, including saltwork ponds (Johnstone & Storr 1988). | Negligible |
| *Calyptorhynchus banksii naso* | Forest red-tailed black cockatoo | VU | VU | Eucalypt and Corymbia forests, often in hilly interior. More recently also observed in more open agricultural and suburban areas including Perth metropolitan area. Attracted to seeding Corymbia calophylla, Eucalyptus marginata, introduced Melia azedarach and Eucalyptus spp. trees (Johnstone et al. 2013). | High |
| *Charadrius leschenaultii* | Great sand plover | VU | VU (MI) | Wide sandy or shelly beaches, sandpits, tidal mudflats, reefs, sand cays, mangroves, saltmarsh, dune wilderness, bare paddocks, seldom far inland (Pizzey & Knight 2012). | Negligible |
| *Dasyornis longirostris* | Western bristlebird | EN | EN | Dense, low, closed coastal heaths. Open heaths with dense clumps of shrubs, eucalypt thickets and tall swampy heaths. Much reduced by fire, draining for agriculture, but may need fire for optimal status over 50-10+ years. Current range in WA confined to south coast from Albany to Hopetoun (Pizzey and Knight 2012). | Nil |

| Species name | Common name | Level of | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|
| | | WA | EPBC Act | | |
| *Diomedea amsterdamensis* | Amsterdam Island albatross | CR | EN (MI) | The Amsterdam albatross is a marine, pelagic seabird. It nests in open patchy vegetation (among tussocks, ferns or shrubs) near exposed ridges or hillocks (Weimerskirch et al. 1985). It sleeps and rests on ocean waters when not breeding (Marchant and Higgins 1990) | Nil |
| *Diomedea epomophora* | Southern royal albatross | VU | VU (MI) | Rare visitor to Western Australian seas; it breeds on subantarctic islands south of New Zealand (Johnstone and Storr 1998). | Nil |
| *Diomedea exulans* | Wandering albatross | VU | VU (MI) | Marine, pelagic and aerial species. It breeds on Macquarie Island and feeds in Australian portions of the Southern Ocean (DoE 2018). | Nil |
| *Elanus scriptus* | Letter-winged kite | P4 | - | Open to sparsely wooded country and grassland near tree-lined streams or watercourses (Johnstone and Storr 1998). | Nil |
| *Falco hypoleucos* | Grey falcon | VU | - | Species occurs in arid and semi-arid Australia, where it inhabits timbered lowland plains. In particular Acacia shrublands and that are crossed by tree-lined water courses. Species has also been observed hunting in treeless areas and frequenting tussock grassland and open woodlands (TSSC 2020). | Nil |
| *Falco peregrinus* | Peregrine falcon | OS | - | Mainly found around cliffs along coasts, rivers, ranges and around wooded watercourses and lakes (Johnstone and Storr 1998). | Moderate |

| Species name | Common name | Level of | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|
| | | WA | EPBC Act | | |
| *Hydroprogne caspia* | Caspian tern | MI | MI | Mainly sheltered areas, estuaries (when not laden with silt) and tidal creeks; occasionally near-coastal saltlakes (including saltwork ponds) and brackish pools in lower courses of rivers; rarely fresh waters (DCCEEW 2023). | Negligible |
| *Ixobrychus dubius* | Australian little bittern | P4 | - | Dense vegetation surrounding/within freshwater pools, swamps and lagoons, well screened with trees. Shelters in dense beds of Typha spp., Baumea spp. and tall rushes in freshwater swamps around lakes and along rivers (Johnstone and Storr 1998). | Negligible |
| *Ixobrychus flavicollis australis* | Black bittern | P2 | - | Freshwater pools, swamps and lagoons, well-screened with trees. Occasionally feeding by day but mainly sheltering in dense waterside vegetation (Melaleuca spp., Eucalyptus camaldulensis, Pandanus spp. and long grass) (Johnstone and Storr 1998). | Nil |
| *Leipoa ocellata* | Malleefowl | VU | VU | Scrubs and thickets of Eucalyptus spp., Melaleuca lanceolata and Acacia linophylla; also other dense litter-forming shrublands. Attracted to fallen wheat in stubbles and along roads (Johnstone and Storr 1998). | Nil |
| *Limosa lapponica* | Bar-tailed godwit | MI | MI | Estuarine sand and mudflats and sandy beaches with loads of seaweed; also reef flats and near-coastal saltlakes (including saltwork and sewage ponds) (Johnstone and Storr 1998). | Nil |

| Species name | Common name | Level of | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|
| | | WA | EPBC Act | | |
| *Limosa limosa* | Black-tailed godwit | EN<br>MI | EN (MI) | Tidal mudflats, estuaries, sewage ponds, shallow river margins, brackish or saline inland lakes, flooded pastures, airfields (Pizzey & Knight 2012). | Nil |
| *Macronectes giganteus* | Southern giant-petrel | MI | EN (MI) | Breeds on southern subantarctic and antarctic islands. May visit Western Australian waters from February to December (mostly June to September) (Johnstone and Storr 1998). | Nil |
| *Macronectes halli* | Northern giant petrel | MI | VU (MI) | Breeds on subantarctic islands. May visit Western Australian water from February to September (Johnstone and Storr 1998). | Nil |
| *Numenius madagascariensis* | Eastern curlew | CR | CR (MI) | Mainly tidal mudflats; also reef flats, sandy beaches and rarely near-coastal lakes (including saltwork ponds) (Johnstone and Storr 1998). | Nil |
| *Oxyura australis* | Blue-billed duck | P4 | - | Mainly deeper freshwater swamps and lakes; occasionally saltlakes and estuaries freshened by flood waters (Johnstone and Storr 1998). | High |
| *Pachyptila turtur subantarctica* | Fairy prion | - | VU | Breeds on subantarctic islands and is presumed to frequent subtropical waters during non-breeding period (TSSC 2015). | Nil |
| *Pandion haliaetus* | Osprey | MI | MI | Coasts, estuaries, bays, inlets, islands, and surrounding waters; coral atolls, reefs, lagoons, rock cliffs, stacks (Pizzey & Knight 2012). | High |

| Species name | Common name | Level of | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|
| | | WA | EPBC Act | | |
| *Phoebetria fusca* | Sooty albatross | EN | VU (MI) | Marine, pelagic species that tolerates a wide range of sea surface temperatures and salinities. breeds on subtropical and subantarctic islands in the Indian and Atlantic Oceans, on vegetated cliffs and steep slopes that are sheltered from prevailing winds, often amongst tussock grass (Pizzey & Knight 2012). | Nil |
| *Platycercus icterotis xanthogenys* | Western rosella (inland) | P4 | - | Open eucalypt woodlands with heath understorey (Pizzey & Knight 2012). | Negligible |
| *Plegadis falcinellus* | Glossy Ibis | MI | MI | Well-vegetated wetlands, wet pasture, ricefields, floodwaters, floodplains, brackish or occasionally saline wetlands, mangroves, mudflats and occasionally dry grassland (Pizzey & Knight 2012). | Moderate |
| *Pluvialis fulva* | Pacific golden plover | MI | MI | Estuaries, mudflats, saltmarshes, mangroves; rocky reefs and stranded seaweed on ocean shores; margins of shallow open inland swamps; sewage ponds, short-grass paddocks, sportsgrounds, airfields, ploughed land (Pizzey & Knight 2012). | Nil |
| *Pluvialis squatarola* | Grey Plover | VU (MI) | VU (MI) | Mudflats, saltmarsh, tidal reefs and estuaries, rarely inland (Pizzey and Knight 2012). | Negligible |
| *Rostratula australis* | Australian painted snipe | EN | EN | Mainly shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans (Marchant and Higgins 1993). | Negligible |
| *Sternula nereis nereis* | Australian fairy tern | VU | VU | Sheltered blue-water seas close to land, estuaries (when free of silt) and near-coastal lakes (Johnstone and Storr 1998). | Negligible |

| Species name | Common name | Level of | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|
| | | WA | EPBC Act | | |
| *Thalassarche cauta* | Shy albatross | VU | VU (MI) | Scarce visitor (late May to mid-October) to southwestern and western seas. Breeds on islands off Tasmania and south New Zealand (Johnstone and Storr 1998). | Nil |
| *Thalassarche impavida* | Campbell albatross | VU | VU (MI) | Scarce visitor to south-western and western Australian seas. Breeds on Campbell Island (Pizzey & Knight 2012). | Nil |
| *Thalassarche melanophris* | Black-browed albatross | EN | VU (MI) | Seas of south and west coasts. Visitor to Western Australian mainland from January to early November (mostly May to September). Breeds on southern subantarctic and Antarctic islands (Johnstone and Storr 1998). | Nil |
| *Thalassarche steadi* | White-capped albatross | VU | VU (MI) | Scarce visitor (late May to mid-October) to southwestern and western seas. Breeds on islands off Tasmania and south New Zealand (Johnstone and Storr 1998). | Nil |
| *Thalasseus bergii* | Crested tern | MI | MI | Mainly blue-water seas (especially within 3 km of land), including southern estuaries in summer and autumn (when free of silt); also tidal creeks in north, but not penetrating far into larger estuaries (DCCEEW 2023). | Moderate |
| *Tringa glareola* | Wood sandpiper | MI | MI | Mainly shallow fresh waters (lagoons, swamps, claypans, river pools, dams, bore overflows and sewage ponds); occasionally brackish swamps, rarely saltlakes and estuaries (Pizzey & Knight 2012). | Nil |

| Species name | Common name | Level of | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|
| | | WA | EPBC Act | | |
| *Tringa nebularia* | Common greenshank | EN (MI) | EN (MI) | Mudflats, estuaries, saltmarshes, margins of lakes, wetlands, claypans (fresh and saline), commercial saltfields, sewage ponds (Pizzey & Knight 2012). | Nil |
| *Tyto novaehollandiae novaehollandiae* | Australian masked owl | P3 | - | Forests, open woodlands, farmlands with large trees. E.g. river red gums, adjacent cleared country, timbered watercourses, paperbark woodlands and caves (Pizzey & Knight 2012). | Nil |
| *Zanda baudinii* | Baudin's black cockatoo | EN | EN | Mainly eucalypt forests. Attracted to seeding Corymbia calophylla, Banksia spp., Hakea spp., and to fruiting apples and pears (Johnstone and Storr 1998). | Negligible |
| *Zanda latirostris* | Carnaby's black cockatoo | EN | EN | Mainly proteaceous scrubs and heaths and adjacent eucalypt woodlands and forests; also plantations of Pinus spp. Attracted to seeding Banksia spp., Hakea spp., Eucalyptus spp., Corymbia calophylla, Grevillea spp., and Allocasuarina spp. (Johnstone and Storr 1998). | High |
| **Invertebrates** | | | | | |
| *Euoplos inornatus* | Inornate trapdoor spider | P3 | - | Has previously been recorded in jarrah forest, including near clay banks and granite outcrop. Most records are from the Darling scarp/Jarrah Forest Region, with limited records from the Swan Coastal Plain (DBCA 2020). | Nil |
| *Hylaeus globuliferus* | Woollybush bee | P3 | - | Males are territorial and may be found perched on the growing tips of Adenanthos sp., Banksia sp. or Jacksonia sp. Has also been recorded visiting the flowers of Grevillea sp. (PaDIL 2022). | Nil |

| Species name | Common name | Level of | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|
| | | WA | EPBC Act | | |
| *Idiosoma sigillatum* | Swan Coastal Plain shield-backed trapdoor spider | P3 | - | Widely distributed in sandy areas on the Swan Coastal Plain and on Rottnest Island (Prince 2003). Species predominantly recorded from remnant banksia woodland vegetation and heath on sandy soils (Rix et. al 2018). | Negligible |
| *Leioproctus contrarius* | a short-tongued bee | P3 | - | Life history and habits are poorly documented/ unknown. It has been recorded only on flowers of Goodeniaceae and possibly Lechenaultia stenosepala (Bamford 2003). | Nil |
| *Leioproctus douglasiellus* | a short-tongued bee | EN | CR | Life history and habits are poorly documented/ unknown. It has been recorded only on the flowers of Goodenia filiformis and Anthotium junciforme (Houston 2000). | Negligible |
| *Neopasiphae simplicior* | a short-tongued bee | EN | CR | This species of native bee has been collected on flowers of Goodenia filiformis, Lobelia tenuior, Angianthus preissianus and Velleia sp. (Houston 2000). | Nil |
| *Synemon gratiosa* | Graceful sun-moth | P4 | - | Coastal heathland on Quindalup dunes where it is restricted to secondary sand dunes due to the abundance of the preferred host plant Lomandra maritima. Banksia woodland on Spearwood and Bassendean dunes, where the second known host plant L. hermaphrodita is widespread (DEC 2011). | Negligible |

| Species name | Common name | Level of | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|
| | | WA | EPBC Act | | |
| *Westralunio carteri* | Carter's freshwater mussel | VU | VU | Occurs in greatest abundance in slower flowing streams with stable sediments that are soft enough for burrowing amongst woody debris and exposed tree roots. Also occupies lentic systems including large water supply dams and even on-stream farm dams. Salinity tolerance quite low (Morgan et al. 2011). | Nil |
| **Mammals** | | | | | |
| *Bettongia penicillata ogilbyi* | Woylie | CR | EN | Woodlands and adjacent heaths with a dense understorey of shrubs, particularly Gastrolobium spp. (TSSC 2018). | Nil |
| *Dasyurus geoffroii* | Chuditch | VU | VU | Wide range of habitats from woodlands, dry sclerophyll forests, riparian vegetation, beaches and deserts. Appears to utilise native vegetation along roadsides in the wheatbelt (DEC 2012). | Low |
| *Dasyurus hallucatus* | Northern quoll | EN | EN | Most abundant in rocky eucalypt woodland but occurs in range of vegetation types, mostly within 200 km of the coast (Menkhorst & Knight 2011). | Nil |
| *Falsistrellus mackenziei* | Western false pipistrelle | P4 | - | High rainfall forests dominated by jarrah, karri, marri, and tuart. Occupies hollow logs for breeding and resting (Van Dyck and Strahan 2008). Also known to utilise Banksia woodland on the Swan Coastal Plain (Hosken and O'Shea 1995). | Nil |

| Species name | Common name | Level of | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|
| | | WA | EPBC Act | | |
| *Hydromys chrysogaster* | Rakali | P4 | - | Areas with permanent water, fresh, brackish or marine. Likely to occur in all major rivers and most of the larger streams as well as bodies of permanent water in the lower south-west (Christensen et al. 1984). Intact riparian vegetation and associated bank stability is critical to their survival (DWER 2023). | Moderate |
| *Isoodon fusciventer* | Quenda | P4 | - | Dense scrubby, often swampy, vegetation with dense cover up to one metre high (DEC 2012) | Moderate |
| *Macrotis lagotis* | Bilby | VU | VU | Open tussock grassland on uplands and hills, mulga woodland/shrubland growing on ridges and rises and hummock grassland (spinifex) growing on sandplains and dunes, drainage systems, salt lake systems and other alluvial areas (DBCA 2017). | Nil |
| *Myrmecobius fasciatus* | Numbat | EN | EN | Generally dominated by Eucalyptus spp. that provide hollow logs and branches for shelter and termites for food (van Dyck & Strahan 2008). | Nil |
| *Notamacropus irma* | Western brush wallaby | P4 | - | Dry sclerophyll forest, Banksia spp. woodlands and shrublands, typically favouring dense low vegetation that provides dense cover (Christensen and Strahan 1983). | Negligible |
| *Phascogale tapoatafa wambenger* | South-western brush-tailed phascogale | CD | - | Dry sclerophyll forests and open woodlands that contain hollow-bearing trees but a sparse ground cover (Triggs 2003). | Negligible |

| Species name | Common name | Level of | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|
| | | WA | EPBC Act | | |
| *Pseudocheirus occidentalis* | Western ringtail possum | CR | CR | On the Swan Coastal Plain in Agonis flexuosa woodlands and Agonis flexuosa/ Eucalyptus gomphocephala forests. Also Eucalyptus marginata forests (DBCA 2017). | Nil |
| **Reptiles** | | | | | |
| *Ctenotus delli* | Dell's skink | P4 | - | Jarrah and marri woodland with a shrub dominated understorey, sheltering in dense vegetation, inside grass trees and beneath rocks, sometimes in burrows (Nevill 2005). | Nil |
| *Ctenotus gemmula* | - | P3 | - | Pale soils supporting heathlands and usually in association with Banksia spp. (Bush et al. 2010) | Nil |
| *Ctenotus ora* | Coastal plains skink | P3 | - | Sandy substrates with low vegetation (including heath) in open Eucalyptus spp. and Corymbia calophylla woodland over Banksia spp. (Kay and Keogh 2012). | Nil |
| *Lerista lineata* | Perth slider | P3 | - | Sandy coastal heath and low scrubland. Banksia spp. woodland, Eucalyptus gomphocephala open woodland over deep sands, and coastal dunes immediately adjacent to the beach (Wilson and Swan 2021). | Nil |
| *Neelaps calonotos* | Black-striped snake | P3 | - | Coastal and near-coastal dunes, sandplains supporting heathlands and Banksia spp. woodlands (Bush et al. 2010). | Negligible |
| *Pseudemydura umbrina* | Western swamp tortoise | CR | CR | Clay based ephemeral swamps (Bush et al. 2010). | Negligible |

| Species name | Common name | Level of | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|
| | | WA | EPBC Act | | |
| *Pseudonaja affinis exilis* | Rottnest Island dugite | P4 | - | Subspecies found on Rottnest Island. Found in a wide range of habitats including coastal dunes, heathlands, scrublands, and woodlands, but tend to prefer sandy areas. More urban spaces that have been degraded also make an attractive habitat for these shy reptiles, with golf courses, industrial parks and agricultural country among areas listed as potential home environments (Wilson and Swan 2021). | Nil |
| *Note: CR=critically endangered, EN=endangered, VU=vulnerable, CD=conservation dependent, MI=migratory, OS=other specially protected, P1=Priority 1, P2=Priority 2, P3=Priority 3, P4=Priority 4. Species with a high or moderate likelihood to occur within the site are shaded green.* | | | | | |

**Conservation Significant Fauna Likelihood of Occurrence**
**Perth Racing Golden Gateway Structure Plan**

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Attachment 12.1.3 Environmental Assessment Report

# Appendix E

Black Cockatoo Foraging Plant Species List

| | | Foraging category as assigned by Emerge | | | |
|---|---|---|---|---|---|
| **Species name** | **Common name** | **CBC** | **BBC** | **FRTBC** | **Literature references** |
| *Acacia baileyana* | Cootamundra wattle | Secondary | - | - | Groom 2011 |
| *Acacia pentadenia* | Karri wattle | Secondary | - | - | Groom 2011 |
| *Acacia saligna* | Orange wattle | Secondary | - | - | Groom 2011 |
| *Agonis flexuosa* | Peppermint tree | Secondary | - | - | Groom 2011 |
| *Allocasuarina fraseriana* | Sheoak | Secondary | Secondary | Secondary | Johnstone & Storr 1998; Johnstone *et al.* 2010; Johnstone 2017; DoEE 2017 |
| *Allocasuarina spp.* | | Secondary | - | Secondary | Johnstone *et al.* 2010; Groom 2011; DSEWPaC 2012; DoEE 2017 |
| *Anigozanthos flavidus* | Tall kangaroo paw | - | Secondary | - | Johnstone *et al.* 2010; DSEWPaC 2012; DoEE 2017 |
| *Araucaria heterophylla* | Norfolk island pine | Secondary | - | - | Groom 2011; DoEE 2017 |
| *Banksia ashbyi* | Ashby's banksia | Primary | Secondary | - | Saunders 1980; Groom 2011; DoEE 2017 |
| *Banksia attenuata* | Slender banksia | Primary | Secondary | - | Saunders 1980; Johnstone *et al.* 2010; Groom 2011; DoEE 2017 |
| *Banksia baxteri* | Baxter's banksia | Primary | Secondary | - | Johnstone *et al.* 2010; Groom 2011; DoEE 2017 |
| *Banksia carlinoides* | Pink dryandra | Primary | Secondary | - | Johnstone *et al.* 2010; Groom 2011; DoEE 2017 |
| *Banksia coccinea* | Scarlet banksia | Primary | Secondary | - | Johnstone *et al.* 2010; Groom 2011; DoEE 2017 |
| *Banksia dallanneyi* | Couch honeypot dryandra | Primary | Secondary | - | Groom 2011; DoEE 2017 |
| *Banksia ericifolia* | Heath-leaved banksia | Primary | Secondary | - | Johnstone *et al.* 2010; Groom 2011; DoEE 2017 |
| *Banksia fraseri* | | Primary | Secondary | - | Johnstone *et al.* 2010; Groom 2011; DoEE 2017 |
| *Banksia gardneri* | Prostrate banksia | Primary | Secondary | - | Groom 2011; DoEE 2017 |
| *Banksia grandis* | Bull banksia | Primary | Secondary | - | Saunders 1980; Johnstone & Storr 1998; Johnstone *et al.* 2010; Groom 2011; DoEE 2017 |
| *Banksia hookeriana* | Hooker's banksia | Primary | Secondary | - | Johnstone *et al.* 2010; Groom 2011; DoEE 2017 |
| *Banksia ilicifolia* | Holly banksia | Primary | Secondary | - | Johnstone *et al.* 2010; Groom 2011; Johnstone & Storr 1998; DoEE 2017 |
| *Banksia kippistiana* | | Primary | Secondary | - | Groom 2011; DoEE 2017 |
| *Banksia leptophylla* | | Primary | Secondary | - | Groom 2011; DoEE 2017 |
| *Banksia lindleyana* | Porcupine banksia | Primary | Secondary | - | Johnstone *et al.* 2010; DoEE 2017 |

| | | Foraging category as assigned by Emerge | | | |
|---|---|---|---|---|---|
| **Species name** | **Common name** | **CBC** | **BBC** | **FRTBC** | **Literature references** |
| *Banksia littoralis* | Swamp banksia | Primary | Secondary | - | Saunders 1980; Groom 2011Johnstone & Storr 1998; Johnstone *et al.* 2010; DoEE 2017 |
| *Banksia menziesii* | Firewood banksia | Primary | Secondary | - | Saunders 1980; Johnstone *et al.* 2010; Groom 2011; DoEE 2017 |
| *Banksia mucronulata* | Swordfish dryandra | Primary | Secondary | - | Groom 2011; DoEE 2017 |
| *Banksia nivea* | Honeypot dryandra | Primary | Secondary | - | Saunders 1980; Groom 2011; DoEE 2017 |
| *Banksia nobilis* | Golden dryandra | Primary | Secondary | - | Saunders 1980; Groom 2011; DoEE 2017 |
| *Banksia praemorsa* | Cut-leaf banksia | Primary | Secondary | - | Saunders 1980; Johnstone *et al.* 2010; Groom 2011; DoEE 2017 |
| *Banksia prionotes* | Acorn banksia | Primary | Secondary | - | Johnstone *et al.* 2010; Groom 2011; DoEE 2017 |
| *Banksia prolata* | | Primary | Secondary | - | Johnstone *et al.* 2010; DoEE 2017 |
| *Banksia quercifolia* | Oak-leaved banksia | Primary | Secondary | - | Johnstone & Storr 1998; Johnstone *et al.* 2010; Groom 2011; DoEE 2017 |
| *Banksia sessilis* | Parrot bush | Primary | Secondary | - | Saunders 1980; Johnstone & Storr 1998; Johnstone *et al.* 2010; Groom 2011; DoEE 2017 |
| *Banksia speciosa* | Showy banksia | Primary | Secondary | - | Johnstone *et al.* 2010; Groom 2011; DoEE 2017 |
| *Banksia spp.* | | Primary | Secondary | - | Saunders 1979; DSEWPaC 2012; DoEE 2017 |
| *Banksia squarrosa* | Pingle | Primary | Secondary | - | Johnstone *et al.* 2010; Groom 2011; DoEE 2017 |
| *Banksia tricuspis* | Pine banksia | Primary | Secondary | - | Groom 2011; DoEE 2017 |
| *Banksia undata* | Urchin dryandra | Primary | Secondary | - | Groom 2011; DoEE 2017 |
| *Banksia verticillata* | Granite banksia | Primary | Secondary | - | Saunders 1980; Groom 2011; DoEE 2017 |
| *Brassica campestris* | Canola | Secondary | - | - | Groom 2011; DoEE 2017 |
| *Callistemon spp.* | | Secondary | Secondary | - | Johnstone *et al.* 2010; DoEE 2017 |
| *Callistemon viminalis* | Captain cook bottlebrush | Secondary | - | - | Groom 2011 |
| *Callitris sp.* | | Secondary | - | - | Johnstone *et al.* 2010; Groom 2011 |
| *Carya illnoinensis* | Pecan | Primary | Secondary | - | Johnstone *et al.* 2010; Groom 2011; Groom 2014; DoEE 2017 |
| *Casuarina cunninghamiana* | River sheoak | Secondary | - | - | Groom 2011 |
| *Citrullus lanatus* | Pie or afghan melon | Secondary | - | - | Johnstone *et al.* 2010; Groom 2011 |

| | | Foraging category as assigned by Emerge | | | |
|---|---|---|---|---|---|
| **Species name** | **Common name** | **CBC** | **BBC** | **FRTBC** | **Literature references** |
| *Corymbia calophylla* | Marri | Primary | Primary | Primary | Johnstone & Storr 1998; Johnstone & Kirkby 1999; Johnstone *et al.* 2010; DSEWPaC 2012; DoEE 2017; Johnstone 2017; Saunders 1979; Johnstone & Kirkby 2008 |
| *Corymbia citriodora* | Lemon scented gum | Secondary | Secondary | Secondary | Johnstone *et al.* 2010; DSEWPaC 2012; Groom 2011; Johnstone 2017 |
| *Corymbia ficifolia* | Red flowering gum | Secondary | - | - | Groom 2011 |
| *Corymbia haematoxylon* | Mountain marri | Secondary | - | Secondary | Groom 2011; DoEE 2012; DoEE 2017 |
| *Corymbia maculata* | Spotted gum | - | - | - | - |
| *Darwinia citriodora* | Lemon-scented darwinia | Secondary | Secondary | - | Groom 2011; Johnstone *et al.* 2010 |
| *Diospryros sp.* | Sweet persimmon | Secondary | Secondary | - | Johnstone *et al.* 2010; Groom 2011; DSEWPaC 2012; DoEE 2017 |
| *Eremophila glabra* | Tarbush | Secondary | - | - | Groom 2011 |
| *Erodium aureum* | | Secondary | - | - | Groom 2011 |
| *Erodium botrys* | Long storksbill | Secondary | Secondary | - | Groom 2011; Johnstone & Storr 1998; Johnstone *et al.* 2010 |
| *Erodium spp.* | | Secondary | Secondary | - | Johnstone *et al.* 2010; DoEE 2017 |
| *Eucalyptus caesia* | Silver princess | Secondary | - | Secondary | Johnstone *et al.* 2010; Groom 2011; DSEWPaC 2012; DoEE 2017; Johnstone 2017 |
| *Eucalyptus camaldulensis* | River red gum | - | - | Secondary | DoEE 2012; DoEE 2017 |
| *Eucalyptus decipiens* | Red heart/moit | - | - | Secondary | Johnstone 2017 |
| *Eucalyptus diversicolor* | Karri | - | - | Primary | Johnstone *et al.* 2010; DSEWPaC 2012; DoEE 2017; Johnstone & Storr 1998 |
| *Eucalyptus erythrocorys* | Illyarrie | Secondary | - | Secondary | DSEWPaC 2012; DoEE 2017; Johnstone 2017, Johnstone *et al.* 2010 |
| *Eucalyptus gomphocephala* | Tuart | Secondary | - | Secondary | Johnstone *et al.* 2010; Groom 2011; DSEWPaC 2012; DoEE 2017 |
| *Eucalyptus grandis* | Flooded gum, rose gum | - | - | Secondary | DoEE 2012; DoEE 2017 |
| *Eucalyptus lehmannii* | Bushy yate | - | - | Secondary | Johnstone 2017 |
| *Eucalyptus leucoxylon* | Yellow gum | Secondary | - | - | Groom 2014 |

| | | Foraging category as assigned by Emerge | | | |
|---|---|---|---|---|---|
| **Species name** | **Common name** | **CBC** | **BBC** | **FRTBC** | **Literature references** |
| *Eucalyptus loxophleba* | York gum | Secondary | - | - | Johnstone *et al.* 2010; Groom 2011; DSEWPaC 2012; DoEE 2017 |
| *Eucalyptus marginata* | Jarrah | Primary | Secondary | Primary | Saunders 1980; Johnstone *et al.* 2010; Groom 2011; DSEWPaC 2012; DoEE 2017; Johnstone & Storr 1998; Johnstone & Kirkby 1999; Johnstone 2017 |
| *Eucalyptus patens* | Blackbutt | Primary | - | Primary | Johnstone & Storr 1998; Johnstone & Kirkby 1999; Johnstone *et al.* 2010; DSEWPaC 2012; DoEE 2017; Johnstone 2017; Groom 2011 |
| *Eucalyptus pleurocarpa* | Tallerack | Secondary | - | - | Groom 2011 |
| *Eucalyptus preissiana* | Bell-fruited mallee | Secondary | - | - | Groom 2011 |
| *Eucalyptus robusta* | Swamp mahogany | Secondary | - | - | Johnstone *et al.* 2010; Groom 2011 |
| *Eucalyptus salmonophloia* | Salmon gum | Primary | - | - | Johnstone *et al.* 2010; Groom 2011; DSEWPaC 2012; DSEWPaC 2012; DoEE 2017 |
| *Eucalyptus staeri* | Albany blackbutt | - | - | Secondary | Johnstone & Storr 1998 |
| *Eucalyptus todtiana* | Coastal blackbutt | Secondary | - | - | Saunders 1980; Johnstone *et al.* 2010; Groom 2011; Johnstone & Kirkby 2008 |
| *Eucalyptus wandoo* | Wandoo | Primary | Secondary | Primary | Saunders 1980; Johnstone *et al* . 2010; Groom 2011; DSEWPaC 2012; DoEE 2017 |
| *Ficus sp.* | Fig | Secondary | - | - | Groom 2011 |
| *Grevillea armigera* | Prickly toothbrushes | Primary | - | - | Groom 2011 |
| *Grevillea bipinnatifida* | Fuschia grevillea | Primary | - | - | Groom 2011 |
| *Grevillea hookeriana* | Red toothbrushes | Primary | - | - | Groom 2011 |
| *Grevillea hookeriana subsp. api* | Black toothbrushes | Primary | - | - | Groom 2011 |
| *Grevillea paniculata* | Kerosene bush | Primary | - | - | Groom 2011 |
| *Grevillea paradoxa* | Bottlebrush grevillea | Primary | - | - | Groom 2011 |
| *Grevillea petrophiloides* | Pink poker | Primary | - | - | Groom 2011 |
| *Grevillea robusta* | Silky oak | Primary | - | - | Johnstone *et al.* 2010; Groom 2011 |

| Species name | Common name | Foraging category as assigned by Emerge | | | Literature references |
|---|---|---|---|---|---|
| | | CBC | BBC | FRTBC | |
| *Grevillea spp.* | | Primary | - | - | Saunders 1979; Johnstone *et al.* 2010; DSEWPaC 2012; DoEE 2017 |
| *Grevillea wilsonii* | Native fuchsia | - | Secondary | - | Johnstone *et al.* 2010 |
| *Hakea auriculata* | | Primary | - | - | Saunders 1980; Groom 2011 |
| *Hakea candolleana* | | Primary | - | - | Groom 2011 |
| *Hakea circumalata* | Coastal hakea | Primary | - | - | Groom 2011 |
| *Hakea commutata* | | Primary | - | - | Groom 2011 |
| *Hakea conchifolia* | Shell-leaved hakea | Primary | - | - | Groom 2011 |
| *Hakea costata* | Ribbed hakea | Primary | - | - | Groom 2011 |
| *Hakea cristata* | Snail hakea | Primary | Secondary | - | Groom 2011; Johnstone *et al.* 2010 |
| *Hakea cucullata* | Snail hakea | Primary | - | - | Groom 2011 |
| *Hakea cyclocarpa* | Ramshorn | Primary | - | - | Saunders 1980; Groom 2011 |
| *Hakea eneabba* | | Primary | - | - | Groom 2011 |
| *Hakea erinacea* | Hedgehog hakea | Primary | Secondary | - | Johnstone *et al.* 2010; Groom 2011 |
| *Hakea falcata* | Sickle hakea | Primary | - | - | Groom 2011 |
| *Hakea flabellifolia* | Fan-leaved hakea | Primary | - | - | Groom 2011 |
| *Hakea gilbertii* | | Primary | - | - | Saunders 1980; Groom 2011 |
| *Hakea incrassata* | Golfball or marble hakea | Primary | - | - | Johnstone *et al.* 2010; Groom 2011 |
| *Hakea lasiantha* | Woolly flowered hakea | Primary | - | - | Johnstone *et al* . 2010; Groom 2011 |
| *Hakea lasianthoides* | | Primary | Secondary | - | Johnstone *et al.* 2010; Groom 2011 |
| *Hakea laurina* | Pin-cushion hakea | Primary | - | - | Johnstone *et al.* 2010; Groom 2011 |
| *Hakea lissocarpha* | Honeybush | Primary | Secondary | - | Saunders 1980; Johnstone *et al.* 2010; Groom 2011 |
| *Hakea marginata* | | - | Secondary | - | Johnstone *et al.* 2010 |
| *Hakea megalosperma* | Lesueur hakea | Primary | - | - | Groom 2011 |
| *Hakea multilineata* | Grass leaf hakea | Primary | - | - | Groom 2011 |
| *Hakea neospathulata* | | Primary | - | - | Groom 2011 |
| *Hakea obliqua* | Needles and corks | Primary | - | - | Saunders 1980; Groom 2011 |
| *Hakea oleifolia* | Dungyn | Primary | - | - | Groom 2011 |

| Species name | Common name | Foraging category as assigned by Emerge | | | Literature references |
|---|---|---|---|---|---|
| | | CBC | BBC | FRTBC | |
| *Hakea pandanicarpa subsp. crassifolia* | Thick-leaved hakea | Primary | - | - | Groom 2011 |
| *Hakea petiolaris* | Sea urchin hakea | Primary | - | - | Groom 2011 |
| *Hakea polyanthema* | | Primary | - | - | Groom 2011 |
| *Hakea preissii* | Needle tree | Primary | - | - | Groom 2011 |
| *Hakea prostrata* | Harsh hakea | Primary | Secondary | - | Saunders 1980; Johnstone *et al.* 2010; Groom 2011 |
| *Hakea psilorrhyncha* | | Primary | - | - | Groom 2011 |
| *Hakea ruscifolia* | Candle hakea | Primary | Secondary | - | Saunders 1980; Groom 2011; Johnstone *et al.* 2010 |
| *Hakea scoparia* | Kangaroo bush | Primary | - | - | Groom 2011 |
| *Hakea smilacifolia* | | Primary | - | - | Groom 2011 |
| *Hakea spp.* | | Primary | Secondary | - | Saunders 1979; DSEWPaC 2012; DoEE 2017 |
| *Hakea stenocarpa* | Narrow-fruited hakea | Primary | Secondary | - | Johnstone et al. 2010; Groom 2011 |
| *Hakea sulcata* | Furrowed hakea | Primary | - | - | Groom 2011 |
| *Hakea trifurcata* | Two-leaved hakea | Primary | Secondary | - | Saunders 1980; Johnstone *et al.* 2010; Groom 2011 |
| *Hakea undulata* | Wavy-leaved hakea | Primary | Secondary | - | Saunders 1980; Johnstone *et al.* 2010; Groom 2011 |
| *Hakea varia* | Variable-leaved hakea | Primary | Secondary | - | Saunders 1980; Groom 2011 |
| *Harpephyllum caffrum* | Kaffir plum | - | - | Secondary | Johnstone 2017 |
| *Helianthus annuus* | Sunflower | Secondary | - | - | Johnstone *et al.* 2010; Groom 2011 |
| *Hibiscus sp.* | Hibiscus | Secondary | - | - | Groom 2011 |
| *Isopogon scabriusculus* | | Secondary | - | - | Groom 2011 |
| *Jacaranda mimosifolia* | Jacaranda | Secondary | Secondary | - | Johnstone *et al.* 2010; Groom 2011 |
| *Jacksonia furcellata* | Grey stinkwood | Secondary | - | - | Groom 2011 |
| *Kingia australis* | Kingia | - | Secondary | - | Johnstone *et al.* 2010 |
| *Lambertia inermis* | Chittick | Secondary | - | - | Johnstone & Storr 1998; Groom 2011 |
| *Lambertia multiflora* | Many-flowered honeysuckle | Secondary | - | - | Saunders 1980; Groom 2011 |

| | | Foraging category as assigned by Emerge | | | |
|---|---|---|---|---|---|
| **Species name** | **Common name** | **CBC** | **BBC** | **FRTBC** | **Literature references** |
| *Liquidamber styraciflua* | Liquid amber | Primary | - | Secondary | Johnstone *et al.* 2010; Groom 2011; Groom 2014; Personal observation |
| *Lupinus sp.* | Lupin | Secondary | - | - | Saunders 1980; Groom 2011 |
| *Macadamia integrifolia* | Macadamia | Primary | Secondary | - | Johnstone *et al.* 2010; Grooms 2011; Groom 2014 |
| *Malus domestica* | Apple | Secondary | Secondary | - | Johnstone *et al* . 2010; Johnstone & Storr 1998; DSEWPaC 2012; DoEE 2017; Groom 2011 |
| *Melaleuca leuropoma* | | Secondary | - | - | Saunders 1980; Groom 2011 |
| *Melia azedarach* | Cape lilac or white cedar | Secondary | - | Primary | Johnstone *et al.* 2010; Groom 2011 |
| *Mesomeleana spp.* | | Secondary | - | - | Johnstone *et al.* 2010; Groom 2011 |
| *Olea europea* | Olive | - | - | Secondary | Johnstone 2017 |
| *Persoonia longifolia* | Snottygobble | - | - | Secondary | Johnstone & Storr 1998; Johnstone & Kirkby 1999; Johnstone *et al.* 2010; DSEWPaC 2012; DoEE 2017 |
| *Pinus canariensis* | Canary island pine | Primary | - | - | Johnstone *et al.* 2010; Groom 2011 |
| *Pinus caribea* | Caribbean pine | Primary | - | - | Johnstone *et al.* 2010; Groom 2011 |
| *Pinus pinaster* | Pinaster or maritime pine | Primary | - | - | Groom 2011 |
| *Pinus radiata* | Radiata pine | Primary | Secondary | - | Johnstone *et al.* 2010; Groom 2011 |
| *Pinus spp.* | | Primary | Secondary | - | Johnstone & Storr 1998; Saunders 1979; Johnstone *et al.* 2010; DSEWPaC 2012; DoEE 2017 |
| *Protea 'Pink Ice'* | | Secondary | - | - | Groom 2011 |
| *Protea repens* | | Secondary | - | - | Groom 2011 |
| *Protea spp.* | | Secondary | - | - | Johnstone *et al.* 2010 |
| *Prunus amygdalus* | Almond tree | Secondary | - | - | Johnstone & Storr 1998; Johnstone *et al.* 2010; Groom 2011; DoEE 2017 |
| *Pyrus communis* | European pear | - | Secondary | - | Johnstone & Storr 1998; Johnstone *et al.* 2010; DSEWPaC 2012; DoEE 2017 |
| *Quercus spp.* | Oak | - | Secondary | - | Johnstone *et al.* 2010 |

| | | Foraging category as assigned by Emerge | | | |
|---|---|---|---|---|---|
| **Species name** | **Common name** | **CBC** | **BBC** | **FRTBC** | **Literature references** |
| *Raphanus raphanistrum* | Wild radish | Secondary | - | - | Groom 2011; DoEE 2017 |
| *Reedia spathacea* | | - | Secondary | - | Johnstone *et al.* 2010 |
| *Rumex hypogaeus* | Doublegee | Secondary | - | - | Saunders 1980 |
| *Stenocarpus sinuatus* | | Secondary | - | - | Johnstone *et al.* 2010 |
| *Syzygium smithii* | Lilly pilly | Secondary | - | - | Groom 2014 |
| *Tipuana tipu* | Tipu or rosewood tree | Primary | - | - | Groom 2011, Groom 2014 |
| *Xanthorrhoea preissii* | Grass tree | Secondary | Secondary | - | Groom 2011; Johnstone *et al.* 2010 |
| *Xylomelum occidentale* | Woody pear | Secondary | - | - | Groom 2014 |

CBC=Carnaby's black cockatoo, BBC=Baudin's black cockatoo and FRTBC=Forest red-tailed black cockatoo

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# Appendix E

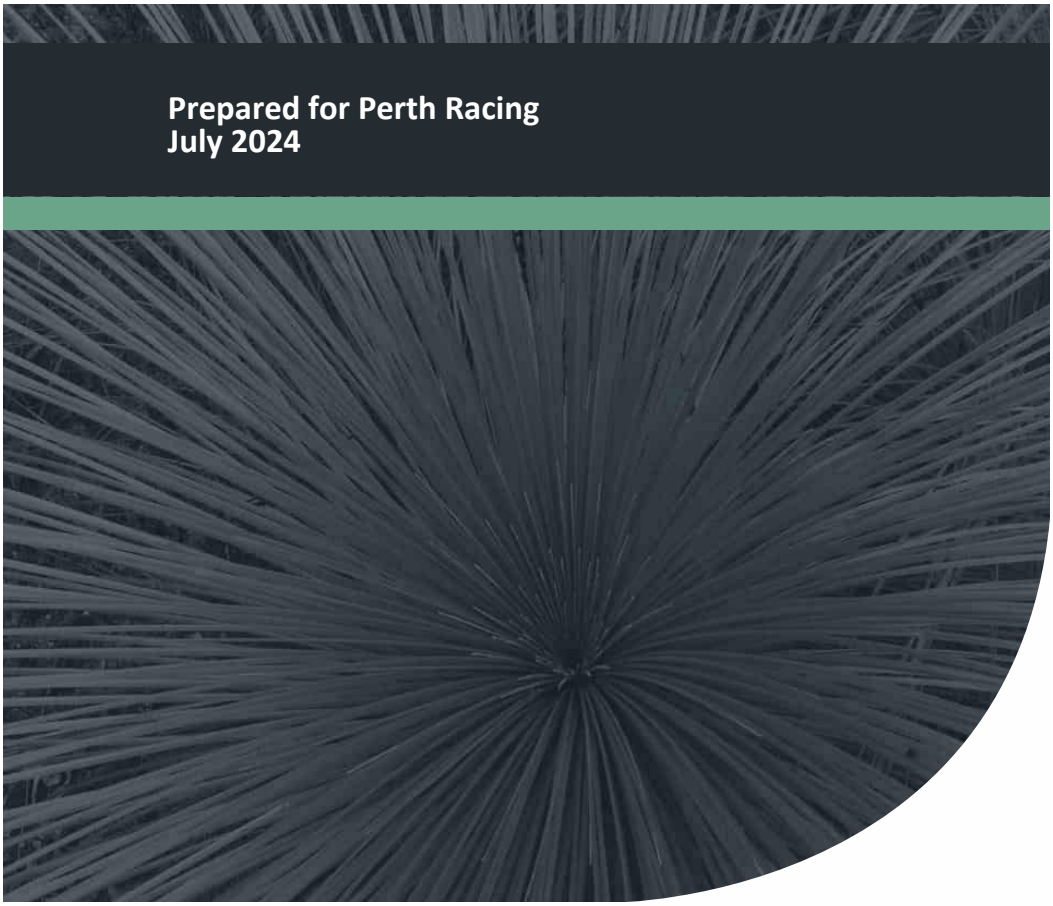
Local Water Management Strategy (Emerge Associates 2024b)

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# Local Water Management Strategy

## Ascot Racecourse Local Structure Plan

Project No: EP23-109(03)



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## Document Control

| Doc name: | Local Water Management Strategy<br>Ascot Racecourse Local Structure Plan | | | | |
|---|---|---|---|---|---|
| Doc no.: | EP23-109(03)--001B JM | | | | |
| Version | Date | Author | | Reviewer | |
| 1 | May 2024 | Joyti Mabruk | JM | David Coremans | DPC |
| | For project team review | | | | |
| A | May 2024 | Joyti Mabruk | JM | David Coremans | DPC |
| | For submission to Agencies | | | | |
| B | July 2024 | Joyti Mabruk | JM | David Coremans | DPC |
| | For submission to Agencies | | | | |

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## Executive Summary

Perth Racing (the 'proponent') proposes to progress a local structure plan (LSP) over its landholdings in Ascot. The area is bounded by the Swan River to the North, Grandstand Road to the west and south, Matheson Road and Resolution Drive to the south and residential areas to the east, referred to herein as 'the site'. The structure plan area also includes the existing Ascot Racecourse. The site is located approximately 8.5 km east of Perth central business district (CBD) and is approximately 62 ha in size, within City of Belmont (CoB). The LSP consists of six precincts: Precinct A, Precinct B (largely unchanged form existing), Precinct C, Precinct D, Precinct E, and the racecourse. The layout of LSP and precinct plan is shown on **Figure 1** and provided in **Appendix A**. The site is currently zoned "Urban", "Parks and Recreation", and "Private Recreation" under the Metropolitan Regional Scheme (MRS) (WAPC 2023b). Under the Local Planning Scheme (LPS) No. 15 (WAPC 2023a), the site is zoned as "RC – Place of Public Assembly: Racecourse", Mixed Use", "Parks and Recreation" and "Parks and Recreation: Water Supply Sewerage and Drainage".

This Local Water Management Strategy (LWMS) outlines the water management approach as required for the site by *Better Urban Water Management* (WAPC 2008b) and supports the Ascot Racecourse Structure Plan. It is intended to satisfy the expectations of the Department of Water and Environmental Regulation (DWER) and City of Belmont (CoB). The LWMS also aids in achieving the goals and objectives outlined in the *Kep Katitjin – Gabi Kaadadjan – Waterwise Perth Action Plan 2* (DWER 2023d).

The first step in applying integrated water cycle management in urban catchments is to establish agreed environmental values for receiving environments. In summary, the environmental investigations conducted to date indicate that:

- The site is being used for horse racing, mixed uses (i.e. car park, stables and entertainment/hospitality venues, and commercial). Some portions of the site are only used infrequently (e.g. for parking or events).
- The site is located in an area of moderate to high rainfall, receiving 756.3 mm on average annually with the majority of rainfall received between June and August.
- The majority of the site has a relatively flat topography of 1 mAHD at the northwest (along the Swan River) and 2 mAHD to the south and rising to 7 mAHD to the east of the site.
- The site is within the Swan River Terraces system and displays Guildford formation soils of alluvial and leached yellow sand described as:
  - **Ms2 –** Sandy Silt: Strong brown to mid grey, mottled, blocky, fine sand, hard when dry, variable clay content of alluvial origin
  - **Ms4 –** Sandy Silt: light yellow brown, blocky, mottled some fine to medium sand, soft when moist, variable clay content
  - **S8 –** Sand: very light grey at surface, yellow at depth, fine to medium-grained, sub rounded quartz, moderately well sorted of eolian origin
- The groundwater depth below the surface of Precinct A varies from 1.09 m mBGL to 2.37 mBGL (Douglas Partners 2024).
- The highest groundwater level beneath the site is reported 3.03 mBGL during February 2024 (Galt 2024), located beneath Precinct D.

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- Most of the site is considered to have a high to moderate risk of ASS occurring, however some portions of Precinct B, Precinct C and the Racecourse are considered to have a moderate to low risk of ASS occurring within the 3 m of the natural surface.
- The northern portion of the site along the Swan River is identified as an ESA.
- The entirety of the site is classified as a SSA and classified as:
  - a) Estuary catchments on the Swan and Scott Coastal Plains.
  - f) The area is <1 km up-groundwater-gradient and 250 m down-gradient of a significant wetland; or where the groundwater gradient is unknown within 1 km of the significant wetland.
- The following wetlands are located within the site and these are classified as:
  - Multiple Use category wetland (MUW) area (UFI 8424, UFI 8425, UFI 8426).
  - Resource Enhancement wetland (REW) area (UFI 8423).
- The dominant hydrological feature of the site is the Swan River estuary. The northern boundary of the site falls within the Swan Canning Development Control Area (DCA) (CoB 2018) and Swan Canning River Park.
- The floodway of the Swan River is immediately adjacent to but not within the site. The 1% AEP flood elevation of the Swan River adjacent to the site is 2.8 mAHD.
- There are two existing major drainage network systems within or adjacent to the site include:
  - The Central Belmont Main Drain (CBMD), managed by the Water Corporation. This currently receives runoff from Precinct C (via the CoB drainage network) and Precinct E.
  - The CoB local piped drainage network, which exists along Matheson Road, Grandstand Road and the northern portion of Resolution Drive.
- There are three lakes (Irrigation Lake, Lined Lake and Wetland Lake) located within the centre of the racecourse. These are understood to receive runoff from the Grandstand buildings in Precinct B and stables/buildings in Precinct C.
- The groundwater beneath the site is a multi-layered system consisting of the Superficial, Kings Park Formation, Leederville and Yarragadee aquifers.
- Regional groundwater mapping indicates that the groundwater levels across the site are at approximately 0.5 m AHD.
- Local groundwater level monitoring indicates that annual maximum groundwater levels (recorded in August 2022) were measured at 1.26 m AHD and 1.70 m AHD at Bore 1 and Bore 2 respectively. Groundwater levels in adjacent areas included Precinct A levels at 1.09 mBGL to 2.37 mBGL and Precinct D levels of approximately 3.03 mBGL.
- Water quality monitoring indicates that EC, TDS and pH values do not exceed guideline trigger values. However, TN and TP concentrations continually exceed the ANZECC guideline trigger value of 1.2 mg/L and 0.065 mg/L respectively.

The design criteria and the manner in which they are proposed to be achieved are presented in **Table E1**.

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*Table E1: Water management criteria and compliance summary*

| Management Aspect | Criteria Number | Criteria Description | Manner in which compliance will be achieved | Responsibility for implementation | Timing of implementation |
|---|---|---|---|---|---|
| Water Conservation | WC1 | For residential dwellings consumption target of 60 kL/person/year scheme water. | Provide advice to Precinct A and Precinct D residents on water conservation measures | Proponent | Point of sale |
| | | | RWTs can be utilised for non-potable uses | Lot owner | Post-house construction |
| | | | Promotion and use of WWG in lots within Precinct D and other open spaces across all precincts | Proponent/Lot owner | Point of sale/Post-house construction |
| | | | Promotion and use of water efficient appliances within Precinct A and Precinct D | Proponent/Lot owner | Point of sale/Post-house construction |
| | | | Mandate water efficient fittings within Precinct A and Precinct D | CoB | Building approval |
| | WC2 | Ensure the efficient use of all water resources. | Use of waterwise landscaping principles in all open spaces and verges | Proponent | Landscape design |
| | | | Open spaces designed to use no more than allocated groundwater | | |
| | | | Minimise water requirements for open spaces and verge maintenance | | |
| | | | Use of water efficient appliances within Precinct A and Precinct D | Lot owner | Post-house construction |
| | | | Use of WWG principles within Precinct A and Precinct D | | |
| | WC3 | Non-potable irrigation water to be sourced from existing groundwater licences held over the area. | The proponent holds a groundwater Licence with an allocation of 347,000 kL per annum which will meet the irrigation requirements of the racecourse. | Proponent | Landscape design |

*Table E1: Water management criteria and compliance summary (Continued)*

| Management Aspect | Criteria Number | Criteria Description | Manner in which compliance will be achieved | Responsibility for implementation | Timing of implementation |
|---|---|---|---|---|---|
| Stormwater Management | SW1 | Retain and treat the first 15 mm of rainfall as close to source as possible | Lots within Precinct D and Precinct E to retain the first 15 mm of rainfall on lot in soakwells/soakage. Lot storage will be the responsibility of the lot owners. | Lot owner/developer | Construction |
| | SW2 | Retain up to 1% AEP rainfall event on-site. | Runoff up to the 1% AEP to be detained within the FSA in Precinct A. Precinct A and a portion of Precinct C will ultimately discharge to the centre of the track. | Proponent | Construction |
| | | | Runoff up to 1% AEP to be managed with the sub-surface storage in Precinct D. | Proponent | Construction |
| | SW3 | Post-development critical 1% AEP peak flows leaving the site to mimic pre-development peak flows. | Runoff up to 1% AEP event to be detained in the detention basin and subsurface storage which will maintain the pre-development peak flow of 0.95 $m^3/s$ from Precinct E and 0.463 $m^3/s$ from Precinct D respectively. | Proponent | Construction |
| | SW4 | Finished floor levels must have a minimum of 300 mm clearance above the 1% AEP TWL in the FSA. | It is anticipated that the FSA and detention basin invert will be set so that the Finished floor levels must have a minimum of 300 mm clearance above the 1% AEP TWL in the basins. | Proponent | Detailed drainage design |
| | SW5 | All lots must have a minimum of 500 mm clearance above the 1% AEP flood level in the Swan River. | The 1% AEP flood level in the Swan River is 2.8 mAHD. The preliminary bulk earthworks concept provided in shows that finished floor level will be at 4.0 mAHD. | Proponent | Detailed drainage design |
| | SW6 | Nutrient concentrations within surface water discharging from the site to the Swan River are to meet regional water quality targets. | BRA will be designed so that after treatment the nutrient concentrations within surface water meet the regional water quality target. | Proponent | Detailed drainage design |
| | SW7 | Reduce nutrient loads by applying appropriate non-structural measures | • Minimise use of fertilisers within POS and road verges.<br>• Street sweeping at regular intervals.<br>• Use of drought tolerant turf species.<br>• Education of residents regarding fertiliser use | Landscape/Maintenance Contactor/Proponent | Landscape Implementation/ Point of Sale |
| | SW8 | Design infiltration areas to avoid creating mosquito habitat | Stormwater infrastructure will be designed to ensure all runoff is infiltrated within 96 hours. | Proponent | Detailed drainage design |

*Table E1: Water management criteria and compliance summary (Continued)*

| Management Aspect | Criteria Number | Criteria Description | Manner in which compliance will be achieved | Responsibility for implementation | Timing of implementation |
|---|---|---|---|---|---|
| Groundwater Management | GW1 | Surface based infiltration should have 300 mm clearance above MGL. | Basin inverts will be set at 300 mm above the MGL, and subsoil drainage will be provided in the POS. | Proponent | Detailed drainage design |
| | GW2 | Finished floor levels should have a clearance to the MGL of at least 1.2 m. | Lots will be set at least 1.2 m above the MGL. | Proponent | Detailed drainage design |

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# Appendices

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Concept plan

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Modelling Assumption Report

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Central Belmont Main Drain Water Corporation

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# Local Water Management Strategy

**Ascot Racecourse Local Structure Plan**

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# Abbreviation Tables

*Table A1: Abbreviations – Organisations*

| Organisations | |
|---|---|
| ANZECC | Australian and New Zealand Environment and Conservation Council |
| BoM | Bureau of Meteorology |
| DBCA | Department of Biodiversity, Conservation and Attractions |
| DWER | Department of Water and Environmental Regulation |
| EPA | Environmental Protection Authority |
| CoB | City of Belmont |
| WC | Water Corporation of Western Australia (Water Corp) |

*Table A2: Abbreviations – General terms*

| General terms | |
|---|---|
| AEP | Annual exceedance probability |
| ASS | Acid sulfate soils |
| CCW | Conservation category wetland |
| CEMP | Construction Environmental Management Plan |
| DCA | Development Control Area |
| DMP | Drainage management plan |
| EC | Electrical conductivity |
| FMP | Foreshore management plan |
| LWMS | Local Water Management Strategy |
| MGL | Maximum groundwater level |
| MRS | Metropolitan Region Scheme |
| NWQMS | National Water Quality Management Strategy |
| POS | Public open space |
| SCWQIP | Swan and Canning Water Quality Improvement Plan |
| SRA | Swan River Alluvium |
| TDS | Total dissolved solids |
| TEC | Threatened ecological community |
| TKN | Total Kjeldahl nitrogen |
| TN | Total nitrogen |
| TP | Total phosphorus |
| TSS | Total suspended solids |

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| General terms | |
|---|---|
| TWL | Top water level |
| UFI | Unique feature identifier |
| UWMP | Urban Water Management Plan |
| WSUD | Water sensitive urban design |
| WWG | Water wise gardening |

*Table A3: Abbreviations – units of measurement*

| Units of measurement | |
|---|---|
| cm | centimetre |
| ha | hectare |
| m | metre |
| $m^2$ | square metre |
| $m^3$ | cubic metre |
| $m^3$ / s | cubic metres per second |
| mAHD | metres in relation to the Australian height datum |
| mBGL | metres below ground level |
| mm | millimetre |
| mS / cm | millisiemens per centimetre |
| µg/L | micrograms per litre |
| mg / L | milligrams per litre |

*Table A4: Terminology – design rainfall*

| Rainfall event | Annual exceedance probability (AEP) | Approximate equivalent average recurrence interval (ARI) |
|---|---|---|
| Small | 1 exceedance year (EY) event (frequent) | 1 in 1 year ARI event |
| Minor (residential purposes) | 20% AEP event | 1 in 5 year ARI event |
| Minor (commercial purposes) | 10% AEP event | 1 in 10 year ARI event |
| Major | 1% AEP event | 1 in 100 year ARI event |

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# 1 Introduction

## 1.1 Background

Perth Racing (the 'proponent') proposes to progress a local structure plan (LSP) over its landholdings in Ascot. The area is bounded by the Swan River to the North, Grandstand Road to the west and south, Matheson Road and Resolution Drive to the south and residential areas to the east, referred to herein as 'the site'. The structure plan area also includes the existing Ascot Racecourse and Perth Racing Administration lot/building on Grandstand Road. The site is located approximately 8.5 km east of Perth central business district (CBD) and is approximately 62 ha in size, within City of Belmont (CoB). The LSP consists of six precincts: Precinct A, Precinct B, Precinct C, Precinct D, Precinct E, and the racecourse. The layout of LSP and precinct plan is shown on **Figure 1** and provided in **Appendix A**.

## 1.2 Town planning context

The site is currently zoned "Urban", "Parks and Recreation", and "Private Recreation" under the Metropolitan Regional Scheme (MRS) (WAPC 2023b). Under the Local Planning Scheme (LPS) No. 15 (WAPC 2023a), the site is zoned as "RC – Place of Public Assembly: Racecourse", Mixed Use", "Parks and Recreation" and "Parks and Recreation: Water Supply Sewerage and Drainage".

## 1.3 Purpose of this report

This Local Water Management Strategy (LWMS) outlines the water management approach as required for the site by *Better Urban Water Management* (WAPC 2008b) and supports the Ascot Racecourse Structure Plan. It is intended to satisfy the expectations of the Department of Water and Environmental Regulation (DWER) and CoB. The LWMS also aids in achieving the goals and objectives outlined in the *Kep Katitjin – Gabi Kaadadjan – Waterwise Perth Action Plan 2* (DWER 2023d).

## 1.4 Policy Framework

There are a number of State Government legislation and policies of relevance to the site. These policies include:

- *Kep Katitjin – Gabi Kaadadjan – Waterwise Perth Action Plan 2* (DWER 2023d)
- *Swan and Canning Rivers Management Act 2006* (Government of WA 2006)
- *Policy 49 – Planning for stormwater management affecting the Swan Canning Development Control Area* (DPaW 2016)
- *Local Planning Scheme No. 15 (City of Belmont)* (WAPC 2023a)
- *State Water Plan* (Government of WA 2007)
- *Draft State Planning Policy 2.9: Planning for Water Guidelines* (DPLH 2021)
- *State Planning Policy 2.10 Swan Canning River System* (WAPC 2006b)
- *Guidance Statement No. 33: Environmental Guidance for Planning and Development* (EPA 2008)
- *Liveable Neighbourhoods* (WAPC 2009a)
- *Planning Bulletin No. 64: Acid Sulfate Soils* (WAPC 2009b)

In addition to the above policies, there are a number of published guidelines and standards available that provide direction regarding the water management characteristics that urban developments should aim to achieve. These are key inputs that relate either directly or indirectly to the site and include:

- *Better Urban Water Management* (WAPC 2008b)
- *Urban Water Management Plans: Guidelines for Preparing Plans and for Complying with Subdivision Conditions* (DoW 2008)
- *National Water Quality Management Strategy (NWQMS)* (ANZECC 2000)
- *Australian Runoff Quality* (Wong et al. 2006)
- *National Water Quality Management Strategy* (ANZECC 2000)
- *Stormwater Management Manual for Western Australia* (DoW 2007)
- *Decision Process for Stormwater Management in Western Australia* (DWER 2017)
- *Australian Rainfall and Runoff* (Ball J et al. 2019)
- *Swan and Canning Water Quality Improvement Plan* (SCWQIP) (SWT 2009)
- *Swan and Canning Rivers Foreshore Assessment and Management Strategy* (SRT 2008)
- *Golden Gateway Structure Plan* (CoB 2019).

## 1.5 Previous Studies

### 1.5.1 Golden Gateway Local Water Management Strategy

The draft Golden Gateway LWMS (Essential Environmental 2018b) was prepared to support the Golden Gateway Structure Plan (CoB 2019) by Essential Environmental. The LWMS was prepared in consideration of *Better Urban Water Management* (WAPC 2008b) and *State Planning Policy 2.9: Water Resources* (WAPC 2006a). The key objectives and design criteria of the draft LWMS (Essential Environmental 2018b) included:

**Water Conservation:**

- Ensure the efficient use of all water resources in the redeveloped urban form and aim to achieve highest value use of fit-for-purpose water.
- Maintain opportunities for future generations by using water more efficiently.

**Stormwater management:**

- The first 15 mm of rainfall is to be retained within all lots through a combination of raingardens, water tanks and soakwell systems.
- Raingardens and tree-pits are to be installed in all new or upgraded streets to provide infiltration of the first 15 mm of rainfall.
- Minor event runoff from events larger than 15mm total depth are to be managed in accordance with serviceability requirements of the City of Belmont.
- Roads and public open spaces are to be designed to cater for the surface overflow for more severe storm events with habitable floors at least 0.3 m above the 1% AEP flood or storage level at any location.
- Habitable floors are to be constructed at least 0.5m above the 1% AEP flood level in the Swan River adjacent to the development area.

- Water quality treatment systems and stormwater management structures should be designed in accordance with the *Stormwater Management Manual for Western Australia* (DoW 2007) and *Australian Runoff Quality: A guide to water sensitive urban design* (Wong et al. 2006).

**Groundwater management:**

- Groundwater management systems are to be designed as free discharging under normal operating conditions.
- Flows from groundwater management systems are to be treated prior to discharge.

## 1.6 LWMS objectives

Whilst the criteria proposed in the Golden Gateway LWMS are relevant to some parts of the Ascot Racecourse structure plan area, it is not representative of all areas and site characteristics and therefore only partially applicable. This LWMS supports the Ascot Racecourse Structure Plan, which proposes an alternate layout (to the Golden Gateway Structure Plan) to some of the land uses surrounding the Ascot Racecourse. The design criteria and objectives proposed in this LWMS are generally based on those proposed in the Golden Gateway LWMS, though with additional consideration for site and Precinct- specific characteristics. This LWMS adopts the following major objectives:

- Protect water quality in the Swan River by providing appropriate water quality treatment at source.
- Mitigate potential flooding within the Structure Plan area and immediate surrounds.
- Take account of existing drainage infrastructure capacity and ensure that sufficient land is set aside to manage stormwater.
- Provide a broad level stormwater management framework to support future urban development.
- Incorporate appropriate best management practices (BMPs) into the drainage systems that address the environmental and stormwater management issues identified.
- Minimise development construction costs, which will result in reduced land costs for future home owners.
- Minimise transport of nutrients/pollutants to groundwater.
- Develop a non-potable water conservation strategy that will accommodate existing groundwater allocation constraints for the area.
- Gain support from DWER, DBCA, CoB and Water Corporation for the proposed method to manage stormwater within the site.

Detailed objectives for water management within the site are further discussed in **Section 4**.

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# 2 Proposed Development

A total of approximately 62.0 ha is proposed to be developed as shown on **Figure 1**. The Ascot Racecourse Structure Plan proposes six precincts with different objectives and character, and these include:

- **Precinct A –** Approximately 3.0 ha for retirement living/village and mixed use purposes
- **Precinct B –** Approximately 9.3 ha for the use of public assembly (i.e. entertainment/office purposes)
- **Precinct C –** Approximately 8.0 ha for the use of public assembly (i.e. racecourse/stabling purposes)
- **Precinct D –** Approximately 1.5 ha for residential/childcare purposes
- **Precinct E –** Approximately 4.2 ha for mixed use (i.e. commercial/retail purposes)
- **The Racecourse –** Approximately 36.0 ha of retained 'Place of Public Assembly: Racecourse' uses.

The proposed land uses surrounding Ascot Racecourse will be integrated into the Racecourse Precinct. Management of surface and groundwater will take a water sensitive urban design (WSUD) approach that will integrate the management of water within the Precincts with the Racecourse and immediately surrounding infrastructure.

The WSUD measures that will be adopted within the Structure Plan area will include:

- Bio-retention areas (BRAs) to meet water quality treatment requirements
- Subsurface infiltration cells that will facilitate at-source infiltration
- Flood storage integrated into existing surface water bodies located centrally within the Racecourse
- Flood storage areas (FSAs) to provide flood detention, retention and infiltration as close to source as possible.

The WSUD approaches are further discussed in **Section 6**.The detailed concept plan and preliminary civil drawings are provided in **Appendix A** and **Appendix C**.

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# 3 Pre-development Environment

## 3.1 Sources of information

The following sources of information were used to provide a broad regional environmental context for the site:

- *Geological Survey of Western Australia* (Gozzard 2007)
- *Map Viewer Plus* (Landgate 2023)
- *Water Register* (DWER 2024c)
- *Perth Groundwater Map* (DWER 2024a)
- *Weather and Climate Statistics Data* (BoM 2024)
- *Acid Sulfate Soil Mapping* (DWER 2023a)
- *Water Information Reporting* (DWER 2024b).

In addition to the above information, site-specific investigations have been conducted. These have aimed at providing more detail to the existing regional information. These site-specific investigations and information have been available from the following sources:

- *Draft Golden Gateway Structure Plan* (CoB 2019)
- *Draft Golden Gateway LWMS* (Essential Environmental 2018b)
- *Draft Golden Gateway Environmental Report* (Essential Environmental 2018a)
- *Draft Infrastructure Assessment Report : Golden Gateway Precinct* (Cardno 2017)
- *Swan and Canning Water Quality Improvement Plan* (SCWQIP) (SWT 2009)
- *Swan and Canning Rivers Foreshore Assessment and Management Strategy* (SRT 2008).

## 3.2 Land use context

The site has been used as the Ascot Racecourse since 1892 (Landgate 2023). The northeast portion of the site is being used for horse racing and training purposes and the surrounding area is being used for stabling, training and entertainment venues which support the above purposes. Some portions of the site are predominantly cleared (e.g. Precinct A, Precinct E) and are occasionally used for parking or other temporary uses. The Precinct D area is used for commercial purposes, being the current Perth Racing administration building.

## 3.3 Climate

The site experiences a dry Mediterranean climate of hot dry summers and cool wet winters and is located in an area of moderate to high rainfall, receiving 756.3 mm on average annually with the majority of rainfall received between June and August (BoM 2024). The region experiences rainfall for 84.8 days annually (on average).

## 3.4 Topography

The site is mostly flat with a slight downward slope from east to north and northwest, with a few low points. The variance in topography of the Precincts is described further as:

- The Racecourse slopes from Precinct C towards the Swan River with topography approximately 7 m Australian Height Datum (mAHD) to 1m AHD and from 7 mAHD (east) to 3 mAHD (west). There are a few local depressions (i.e., lakes and swale) observed within the centre of the racecourse.
- Precinct A has a generally flat topography of 2 mAHD with a high point of 3 mAHD to the west adjacent to Grandstand Road.
- Precinct B slopes from south to north (4 mAHD to 2 mAHD) and from west to east (3 mAHD to 2 mAHD). Precinct D and E are generally flat with a topography of 3 mAHD and 2 mAHD respectively.
- Parts of Precinct C (existing stables and buildings) drain towards the Racecourse, however most of Precinct C is currently carpark that drains towards Precinct E and the Southern Main Drain.
- Precinct D is generally flat with a topographic level 3 mAHD.
- Precinct E has a gentle slope from east to west. The topography of the precinct ranges from 4 mAHD to the east to 2 mAHD to the west.

The topographic contours of the site are shown on **Figure 2**.

## 3.5 Geotechnical conditions

### 3.5.1 Geology and soils

*The Perth Metropolitan Region 1:50,000 Environmental Geology Series* (Gozzard 1986) *and Sea to scarp - geology, landscape, and land use planning in the southern Swan Coastal Plain* (Gozzard 2011) describes that the site lies in the Swan River Terraces system, being underlain by the Guildford formation of alluvial and leached yellow sand. The regional geological mapping indicates that the site soils include:

- **Ms2 –** Sandy Silt: Strong brown to mid grey, mottled, blocky, fine sand, hard when dry, variable clay content of alluvial origin
- **Ms4 –** Sandy Silt: light yellow brown, blocky, mottled some fine to medium sand, soft when moist, variable clay content
- **S8 –** Sand: very light grey at surface, yellow at depth, fine to medium-grained, sub rounded quartz, moderately well sorted of eolian origin

The regional geological mapping is shown on **Figure 3**.

### 3.5.2 Precinct A geotechnical investigation

A detailed geological investigation has been carried out in January 2024 (Douglas Partners 2024) for Precinct A (see **Appendix B**). This investigation generally confirms the regional geological mapping, and the ground conditions of Precinct A are described as:

- Uncontrolled Fill
  - Granular FILL - SAND, Organic SAND, Gravelly SAND, Silty SAND and Sandy GRAVEL
  - Cohesive FILL - Clayey SAND, Sandy CLAY, CLAY
- Overlying natural soils includes
  - Clayey soils including Clayey SAND and CLAY
  - Sandy soils including SAND and Silty SAND

Douglas Partners (2024) concluded that if unmodified, Precinct A is considered unsuitable for on-site stormwater disposal due to the low permeability soils and shallow groundwater depth. To meet geotechnical requirements, stormwater should be managed by connecting to a suitable outflow (Douglas Partners 2024).

### 3.5.3 Precinct D geotechnical investigation

Galt has undertaken a geotechnical study in March 2024 (Galt 2024) for Precinct D (provided in **Appendix B**) and has described the Precinct D ground conditions as:

- **Surficial Topsoil** (in landscaped areas) up to 0.3 m thick and **Hardstand Fill Layers** (in carparks and access ways); overlying
- **FILL: SAND / SAND (SP)**, fine to medium grained, sub-rounded to sub-angular, yellow / brown / grey layers, includes trace gravel / Sandy GRAVEL layers, trace / with fines, some typically medium dense to dense, extending to depths of about 0.4 m to 0.9 m; overlying
- **In BH03 and BH04 only: Silty SAND / Clayey SAND (SM/SC)** fine to medium grained, sub-rounded to sub-angular, brown / grey, low to medium plasticity fines, some typically medium dense to dense, extending to depths of about 0.7 m to 1.2 m; overlying
- **Sandy CLAY / CLAY (CI)**, medium plasticity, brown / orange / grey, trace sand to sandy, trace gravel in some zones, desiccated, CPT traces indicate presence of occasional sand layers, typically very stiff to hard, extending to the maximum depth investigated of 10 m.

Whilst detailed geotechnical investigations have not been undertaken in each Precinct, it is expected that the soils encountered will be generally consistent with regional geological mapping and the investigations undertaken for Precincts A and D and will consist of generally shallow layers of sand overlying sandy clay of the Guildford formation. Such soils are unlikely to be suitable for onsite infiltration of all stormwater and onsite detention unless modified and stormwater management will need to be supplied with an outlet so that flood storage areas have a way to drain between storm events.

### 3.5.4 Acid sulfate soils

The acid sulfate soil (ASS) risk mapping (DWER 2023b) indicates that most of the site is considered to have a high to moderate risk of ASS occurring within the 3 m of the natural surface. Some portions of Precinct B, Precinct C and the Racecourse are mapped to have a moderate to low risk of ASS occurring within the 3 m of the natural surface.

The ASS risk mapping is shown on **Figure 4**.

## 3.6 Environmental assets

### 3.6.1 Environmentally sensitive area

The northern portion of the site (along the Swan River) is identified as an environmentally sensitive area (ESA). ESAs are shown on **Figure 5**.

### 3.6.2 Sewerage sensitive area

The entirety of the site is classified as a sewage sensitive area (SSA) by the *Government Sewerage Policy* (DPLH 2019). The two classifications of relevance to the site define a SSA as:

- a) Estuary catchments on the Swan and Scott Coastal Plains.
- f) The area is <1 km up-groundwater-gradient and 250 m down-gradient of a significant wetland; or where the groundwater gradient is unknown within 1 km of the significant wetland.

### 3.6.3 Geomorphic wetlands

The *Geomorphic Wetlands of the Swan Coastal Plain* dataset indicates the following wetlands within the site:

- Multiple Use Category Wetland (MUW) area (UFI 8424, UFI 8425, UFI 8426).
- Resource Enhancement Wetland (REW) area (UFI 8423)

The Swan River, situated immediately adjacent to the northern boundary of the site, is recognised as a "Conservation Category Wetland" (CCW) (UFI 1316 - Estuary waterbody) within the *Geomorphic Wetlands of the Swan Coastal Plain* dataset and has additional significant ecological, cultural and heritage values (DEC 2011).

The location of the geomorphic wetlands is shown on **Figure 5.**

## 3.7 Hydrology

### 3.7.1 Surface water

#### 3.7.1.1 Water Resources

The dominant hydrological feature of the site is the Swan River estuary. The estuary is subject to marked seasonality, which controls the salinity of the site, and particularly the foreshore area. This seasonality is a result of the short winter rainfall patterns, a small tidal range and the landform of the estuary (Hodgkin and John 1986).

The northern boundary of the site falls within the Swan Canning Development Control Area (DCA) (CoB 2018) and Swan Canning River Park (shown on **Figure 6**). Any proposed development on land adjacent river within the DCA and/or partly within DCA are subject to assessed and approved by the Department of Biodiversity, Conservation and Attraction (DBCA) under Part 5 of the *Swan and Canning Rivers Management Act 2006* and the *Swan and Canning River Management Regulations 2007* (CoB 2018).

Water management strategies will be needed to ensure protection (i.e. water quality improvement) of the Swan River. The catchments of the Swan Canning River system are the subject of the Swan Canning Water Quality Improvement Plan (SRT 2009) which contains catchment management measures and control actions.

The major event flood levels in the Swan River have been documented in recent studies undertaken on behalf of DWER (DWER 2023c).These flood levels, along with the extent of floodway/floodplain

are shown in the DWER online floodplain mapping tool. This tool indicates that the anticipated 1% AEP flood level adjacent to the site is 2.8 mAHD – noting that this level includes consideration for future climate change. The extent of floodway/floodplain from the Swan River adjacent to the site is shown on **Figure 6**.

#### 3.7.1.2 Lakes

There are three lakes within the racecourse including:

- **Irrigation lake** – located adjacent to the Production Bore 1 (PB01) and has a volume of 6,000 $m^3$ to 7,000 $m^3$. Water is pumped out from PB01 into the lake, and irrigation water is drawn from the Irrigation Lake. During winter the Irrigation Lake overflows into the adjacent Lined Lake. The current irrigation demand for the Racecourse is approximately 3,000 $m^3$/day, there is no shortage of irrigation water supply as the lake has sufficient storage capacity. The top water level (TWL) of the Irrigation Lake is approximately 3.1 mAHD.
- **Lined Lake** – this Lake is sealed with a natural clay liner and fed via a 225 mm overflow pipe from the Irrigation Lake. The Lined Lake overflows into the Wetland Lake. The elevation of the Lined Lake is approximately 2.1 mAHD.
- **Wetland lake** – is the largest of the three lakes and has approximately 2.6 ha of surface area. The Wetland Lake has a TWL of approximately 0.4 mAHD. Two overflow pipes at the northern end of the Wetland Lake allow excess water within the Lake to flow to the Swan River.

Peak water levels within the Lined Lake and Wetland Lake were predicted for a 10% AEP storm event (Evangelisti & Associates 1997). The peak water level for was 2.68 mAHD in the Lined Lake which then discharged to the Wetland Lake. The Wetland Lake discharged to the Swan River after reaching the peak water level of 0.53 mAHD. The lakes are connected by 450 mm RCP pipes. The outfall into the Swan River is directed via two pipes (450 mm RCP and 375 mm RCP). The pipes are fitted with headwall and tidal control gate to mitigate inundation from the Swan River (Evangelisti & Associates 1997).

The location of the lakes and overflow pipes are shown on **Figure 6**.

#### 3.7.1.3 Drainage network systems

The Central Belmont Main Drain (CBMD) is managed by the Water Corporation and is the regional drainage system and has a catchment area of 189 ha and which discharges into the Swan River. Catchment plans for the CBMD indicate that inflow from the site occurs in the southwestern corner of Precinct E, where an open drain connects to the CBMD at node CAN008 as shown in **Appendix E** and **Figure 6**.

The CoB has a local drainage piped network located beneath Hardey Road adjacent to Precinct C and which discharges to the CBMD within Precinct E. A larger local CoB network extends along Matheson Road to the East. This is currently connected to the 900 mm pipe that discharges northwards to the lined lake within the centre of the racecourse.

CoB local drainage pipes also exist beneath Grandstand Road adjacent to Precinct A however there is no current connection between Precinct A and the local drainage network. The same network also extends past/adjacent to Precinct D along the northern end of Resolution Drive, however there is no

current connection from Precinct D to the local pipe network. The pipe network along Resolution Drive includes a 450 mm and 525 mm pipe which are understood to discharges into the CBMD. Whilst the CoB catchment has not been modelled to determine peak flows under differing storm durations, an estimate can be made based on the capacity of the pipes which discharge to the CBMD. The combined capacity of the two existing pipes is estimated to be 0.62 $m^3/s$, and therefore the allowable discharge from Precinct C and Precinct E is estimated to be 0.33 $m^3/s$.

Within the Racecourse an existing swale is being used around the racecourse to convey water from the track into the central Wetland Lake.

The location of the swales within the Racetrack Precinct and outlet to Swan River from the Wetland Lake is shown on **Figure 6**.

### 3.7.2 Groundwater

#### 3.7.2.1 Groundwater Resource

The groundwater beneath the site is a multi-layered system comprised of the following:

**City of Bayswater – Perth Superficial Swan unconfined aquifer**. The Superficial Aquifer is approximately 20 m thick under the Ascot Racecourse, with the base of the aquifer under the racecourse at approximately - 20 mAHD (Davidson, 1995). The aquifer is recharged directly by rainfall and from the Swan River.

**King Park Aquifer**. The Kings Park Aquifer is 155 m thick starting from - 20 mAHD and is recharged laterally from the adjacent northern Mirrabooka Aquifer and Superficial Aquifer. The Kings Park Aquifer comprises 2 members: the Mullaloo Sandstone and Como Sandstone. Only the Mullaloo Sandstone member is present at the Ascot site (Davidson, 1995). The Mullaloo Sandstone member is underlain by the Kardinya Shale confining bed of the Osborne Formation.

The groundwater salinity in the aquifer in 1995 was mapped as 500 mg/L to 1,000 mg/L TDS (Davidson, 1995). However, data in recent years indicates the aquifer salinity levels are increasing due to saltwater intrusion.

**Perth South – Perth Leederville** confined aquifer is below -160 mAHD and is approximately 370 m thick. In the Ascot area the Leederville Aquifer is confined but further to the south and north of Perth it is hydraulically connected to the Superficial Aquifer. The Leederville Aquifer comprises of four formations under the Ascot Racecourse, namely Henley Sandstone, Pinjar Member, Wanneroo Member and the Mariginiup Member.

Groundwater flow is generally westwards through the Leederville Aquifer. Lateral discharge can occur to the Kings Park Aquifer but depends on levels of abstraction in the Leederville Aquifer adjacent to the discharge area.

Generally, groundwater salinity in the Leederville Aquifer can be divided into an upper and a lower zone. The upper zone is generally fresh with salinity ranging from 250 to 1,000 mg/L. Salinity in the lower zone (below -400 mAHD) ranges from 1,000 mg/L to greater than 3,000 mg/L.

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Groundwater is abstracted from an artesian production bore (PB1) assigned to the Leederville Aquifer to meet the irrigation demand of the Racecourse and surrounds. The bore is located adjacent the Irrigation Lake at the south corner of the Ascot Racecourse track. The bore is screen in the upper Leederville Formation which extends between -160 mAHD and -400 mAHD.

The allocation status of aquifers is further discussed in **Section 5.1.2**.

#### 3.7.2.2 Groundwater levels

Perth Groundwater Map indicates (DWER 2023e) that the regional groundwater level sits at 0.5 m AHD across the site. Therefore, the groundwater clearance from southeast to northwest of the site ranges from 6.5 m to 0.5 m.

There are two groundwater level and quality monitoring bores (Bore1 and Bore2) and one production bore (PB1) within the Racecourse (see **Figure 2**) which are monitored by Perth Racing. Groundwater levels in these are monitored monthly.

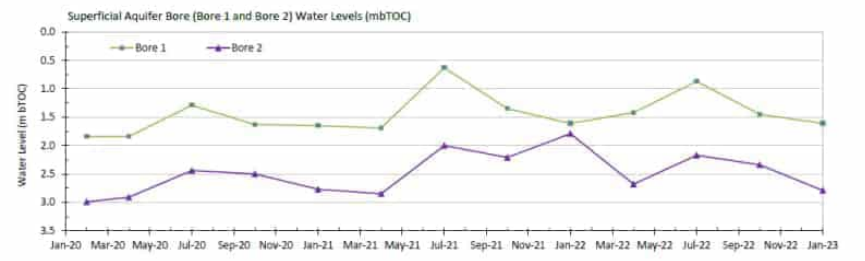



*Plate 1: Groundwater levels within the Superficial Aquifer at Bore1 and Bore2 (JDA 2023)*

**Plate 1** depicts the groundwater levels observed within the Racecourse which clearly indicates the rise and fall of groundwater levels seasonally. The peak groundwater level at Bore 1 and Bore 2 were recorded 1.26 m AHD and 1.70 m AHD respectively, during August 2022.

Monitoring has recently been undertaken within Precinct A. Six monitoring wells were installed for the Precinct A geotechnical investigation. The groundwater depth below the surface of the Precinct A (during January 2024) varied from 1.09 m below ground level (mBGL) to 2.37 mBGL (Douglas Partners 2024).

Monitoring has also recently been undertaken within Precinct D by Galt Geotechnics during the geotechnical investigation. The highest groundwater level beneath Precinct D is reported as 3.03 mBGL during February 2024 (Galt 2024).The various monitoring data/sources have been collated to prepare estimated maximum groundwater contours beneath the site. These have also considered the surface elevation of swales adjacent to the racetrack and the reported TWL of the Wetland Lake. The regional groundwater levels are shown in **Figure 2,** with spot heights recorded at the various locations also provided. It is noted that these do not necessarily represent the annual maximum groundwater levels at all parts of the site given the various timing of measurement of groundwater. Notwithstanding the variability of timing, it is likely that the management of stormwater (and in

particular infiltration) will more likely be influenced by localised soil conditions than seasonal peak groundwater levels in the superficial aquifer.

#### 3.7.2.3 Groundwater quality

Water quality monitoring was conducted monthly at PB1 and quarterly at Bore1 (JDA 2023). Water quality parameters those were analysed during the monitoring period include:

**Monitoring Bore (Bore1)**

- EC
- pH
- TDS
- Total phosphorus (TP)
- Filterable Reactive Phosphorus or Phosphorus in Orthophosphate ($PO_4$-P)
- Total Nitrogen (TN)
- Nitrogen in Total Oxidised Nitrogen ($NO_x$-N)
- Nitrogen in Ammonia ($NH_3$-N)
- Total Kjeldahl Nitrogen (TKN)

**Production Bore (PB1)**

- Electrical conductivity (EC)
- pH
- Total Dissolved Solids (TDS)

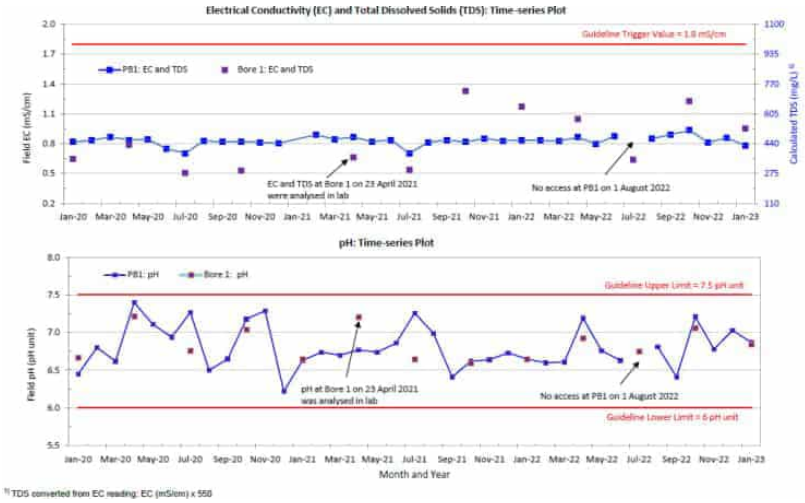



*Plate 2: Water Quality (EC, TDS and pH) Monitoring results* (JDA 2023)

**Plate 2** and **Plate 3** illustrate the water quality of the groundwater within the site is generally consistent over the monitoring periods with typically low variance in parameters tested. EC, TDS and

pH values did not display any exceedances of the trigger values. However, TN and TP regularly exceeded the ANZECC guideline trigger value of 1.2 mg/L and 0.065 mg/L (respectively). It is also noted a large exceedance in TN occurred in August 2022 however this does not appear to be representative of long-term values.




*Plate 3: Water Quality (TN and TP) Monitoring results (JDS 2023)*

## 3.8 Summary of existing environment

In summary, the environmental investigations conducted to date indicate that:

- The site is being used for horse racing, mixed uses (i.e. car park, stables and entertainment/hospitality venues, and commercial). Some portions of the site are only used infrequently (e.g. for parking or events).
- The site is located in an area of moderate to high rainfall, receiving 756.3 mm on average annually with the majority of rainfall received between June and August.
- The majority of the site has a relatively flat topography of 1 mAHD at the northwest (along the Swan River) and 2 mAHD to the south and rising to 7 mAHD to the east of the site.
- The site is within the Swan River Terraces system and displays Guildford formation soils of alluvial and leached yellow sand described as:
  - **Ms2 –** Sandy Silt: Strong brown to mid grey, mottled, blocky, fine sand, hard when dry, variable clay content of alluvial origin
  - **Ms4 –** Sandy Silt: light yellow brown, blocky, mottled some fine to medium sand, soft when moist, variable clay content
  - **S8 –** Sand: very light grey at surface, yellow at depth, fine to medium-grained, sub rounded quartz, moderately well sorted of eolian origin
- The groundwater depth below the surface of Precinct A varies from 1.09 m mBGL to 2.37 mBGL (Douglas Partners 2024).

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- The highest groundwater level beneath Precinct D is reported 3.03 mBGL during February 2024 (Galt 2024).
- Most of the site is considered to have a high to moderate risk of ASS occurring, however some portions of Precinct B, Precinct C and the Racecourse are considered to have a moderate to low risk of ASS occurring within the 3 m of the natural surface.
- The northern portion of the site along the Swan River is identified as an ESA.
- The entirety of the site is classified as a SSA and classified as:
  - a) Estuary catchments on the Swan and Scott Coastal Plains.
  - f) The area is <1 km up-groundwater-gradient and 250 m down-gradient of a significant wetland; or where the groundwater gradient is unknown within 1 km of the significant wetland.
- The following wetlands are located within the site and these are classified as:
  - Multiple Use category wetland (MUW) area (UFI 8424, UFI 8425, UFI 8426).
  - Resource Enhancement wetland (REW) area (UFI 8423).
- The dominant hydrological feature of the site is the Swan River estuary. The northern boundary of the site falls within the Swan Canning Development Control Area (DCA) (CoB 2018) and Swan Canning River Park.
- The floodway of the Swan River is immediately adjacent to but not within the site. The 1% AEP flood elevation of the Swan River adjacent to the site is 2.8 mAHD.
- There are two existing major drainage network systems within or adjacent to the site include:
  - The CBMD, managed by the Water Corporation. This currently receives runoff from Precinct C (via the CoB drainage network) and Precinct E.
  - The CoB local piped drainage network, which exists along Mathieson Road, Grandstand Road and the northern portion of Resolution Drive.
- There are three lakes (Irrigation Lake, Lined Lake and Wetland Lake) located within the centre of the Racecourse. These are understood to receive runoff from the grandstand buildings in Precinct B and stables/buildings in Precinct C.
- Allowable discharge to the CBMD from the local drainage network is 0.95 $m^3/s$ based on Water Corporation modelling.
- The groundwater beneath the site is a multi-layered system consisting of the Superficial, Kings Park Formation, Leederville and Yarragadee aquifers.
- Regional groundwater mapping indicates that the groundwater levels across the site are at approximately 0.5 m AHD.
- Local groundwater level monitoring indicates that annual maximum groundwater levels (recorded in August 2022) were measured at 1.26 m AHD and 1.70 m AHD at Bore 1 and Bore 2 respectively. Groundwater levels in adjacent areas included Precinct A levels at 1.09 mBGL to 2.37 mBGL and Precinct D levels of approximately 3.03 mBGL.
- Water quality monitoring indicates that EC, TDS and pH values do not exceed guideline trigger values. However, TN and TP concentrations continually exceed the ANZECC guideline trigger value of 1.2 mg/L and 0.065 mg/L respectively.

Attachment 12.1.3 Environmental Assessment Report



# 4 Design Criteria and Objectives

This section outlines the objectives and design criteria that this LWMS and future management plans must achieve. The water management strategy includes water conservation, groundwater management and stormwater management.

## 4.1 Integrated water cycle management

*Better Urban Water Management* (WAPC 2008a) endorses the promotion of integrated water cycle management and application of WSUD principles to provide improvements in the management of stormwater, and to increase the efficient use of other existing water supplies.

The key principles of integrated water cycle management include:

- Considering all water sources, including wastewater, stormwater and groundwater
- Integrating water and land use planning
- Allocating and using water sustainably and equitably
- Integrating water use with natural water processes
- Adopting a whole catchment integration of natural resource use and management.

Integrated water cycle management addresses not only physical and environmental aspects of water resource use and planning, but also integrates other social and economic concerns. Water management design objectives should therefore seek to deliver better outcomes in terms of:

- Potable water consumption
- Stormwater quality management
- Groundwater management.

The first step in applying integrated water cycle management in urban catchments is to establish agreed environmental values for receiving environments. The existing environmental context of the site has been discussed in **Section 3** of this document. Guidance regarding environmental values and criteria is provided by a number of national and state policies/guidelines and site-specific studies undertaken in and around the site. These were detailed in **Section 1.4** and **Section 1.5** respectively.

## 4.2 Water conservation

This LWMS proposes the following water conservation criteria:

**Criteria WC1** For residential dwellings, consumption target of 60 kL/person/year.

**Criteria WC2** Ensure the efficient use of all water resources

**Criteria WC3** Non-potable irrigation water to be sourced from existing groundwater licences held over the area.

The manner in which this objective will be achieved is further detailed in **Section 5**.

## 4.3 Stormwater management

The principle behind stormwater management at the site is to mimic the pre-development hydrological conditions and utilise existing infrastructure where sensible to do so, as described in **Section 3.7**. This principle and the guidance documents discussed in **Section 1.4** and **Section 1.5** and have guided the stormwater management criteria.

**Criteria SW1** Retain and treat the first 15 mm of rainfall as close to source as possible and within site.

**Criteria SW2** Detain up to 1% AEP rainfall event on-site.

**Criteria SW3** Post-development critical 1% AEP peak flows leaving the site to mimic pre-development peak flows.

**Criteria SW4** Finished floor levels must have a minimum of 300 mm clearance above the 1 % AEP TWL in the FSA.

**Criteria SW5** All lots must have a minimum of 500 mm clearance above the 1 % AEP flood level in the Swan River.

**Criteria SW6** Nutrient concentrations within surface water discharging from the site to the Swan River are to meet regional water quality targets.

**Criteria SW7** Reduce nutrient loads by applying appropriate non-structural measures.

**Criteria SW8** Design infiltration areas to avoid creating mosquito habitat.

The manner in which these objectives will be achieved is further detailed in **Section 6**.

## 4.4 Groundwater management

The principle behind the groundwater management strategy is to maintain the existing groundwater hydrology. The groundwater management criteria for the site include:

**Criteria GW1** Surface based infiltration structures should have 300 mm clearance above the MGL.

**Criteria GW2** Habitable floor levels should have a clearance to the MGL of at least 1.2 m.

The manner in which the groundwater management objectives will be achieved is further detailed in **Section 7**.

Attachment 12.1.3 Environmental Assessment Report



# 5 Water Conservation Strategy

## 5.1 Fit for purpose water use

Conservation of water through fit-for-purpose use and best management practices is encouraged so that scheme water is not wasted. Fit-for-purpose describes the use of water that is of a quality suitable for the required use of the water. Fit-for-purpose principles have been utilised in the water conservation strategy for the site and will achieve **Criteria WC1**.

### 5.1.1 Scheme water supply

Scheme water will be supplied by the Water Corporation Integrated Water Supply System. Scheme water is proposed to be used for all potable uses. Scheme water will also service some external uses, where fit-for-purpose alternatives are not available.

### 5.1.2 Groundwater

As discussed in **Section 3.7.2.1**, the site is located beneath a multi-layered system comprising of the Superficial Swan, Kings Park Formation, Leederville and Yarragadee aquifers.

The proponent holds a groundwater allocation from the Perth South Leederville confined aquifer for the following:

- GWL 178519 - 347,000 kL

This licence will be used to meet the irrigation requirements for the Racecourse Precinct, Precinct A, Precinct B and part of Precincts C and E.

The above-mentioned measure will achieve **Criteria WC3**.

### 5.1.3 Rainwater tanks

Rainwater tanks (RWTs) can be used within private lots to harvest roof runoff. This water is considered non-potable but can be used to supplement non-potable water uses.

## 5.2 Lot scale water conservation measures

This LWMS proposes that the water conservation measures to be adopted would include RWTs, waterwise principles for lot scale gardens and within estate landscaping (WWG) and water efficient fixtures and appliances (WEFA) to ensure that the residential portion of the development minimises the use of water. These are summarised in the following sections.

### 5.2.1 Rainwater tanks

The use of RWTs will not be mandated, and the stormwater quantity management strategy does not rely on their use. They are therefore only considered to be a water conservation measure. Given that rainwater tanks will not be mandated or supplied by the proponent, it has been assumed that these would be implemented by 7.5% of households within Precinct D. Whilst they may be considered for

Precinct A they are not proposed to be taken up in other Precincts. The assumed uptake rate has been based on data obtained from the Australian Bureau of Statistics (ABS 2013). It is assumed (for the purposes of the water balance analysis) that all rainwater tanks have a capacity of 3 kL.

#### 5.2.2 Water efficient fixtures and appliances

Water conservation strategy for the site proposes the use of WEFA. Water efficient fittings will be mandated through the building licence, while uptake of water efficient appliances can be encouraged by State and Local Government rebates in addition to education from the proponent at point of sale. WEFA are relevant to Precinct A and Precinct D. It is assumed that water efficient appliances will be implemented by 40% of households within Precinct A and Precinct D, which has been based on data obtained from the Australian Bureau of Statistics (ABS 2013, 2014).

#### 5.2.3 Waterwise gardens

Landscape packages will not be provided as a part of the land sale contract. Lot scale waterwise gardening principles (WWG) are only relevant for Precinct D. These will be achieved by promoting Waterwise gardening principles (WWG) (WC 2003) at the time of sale of land within Precinct D. It is assumed that 75% of households in Precinct D will implement WWG principles within lot gardens (ABS 2013). WWG principles include:

- Soil to be improved with soil conditioner certified to Australian Standard (AS) 4454 to a minimum depth of 150 mm where turf is to be planted and a minimum depth of 300 mm for garden beds.
- The irrigation system shall be designed and installed according to best water efficient practices:
  - The controller must be 'hydrozoned'.
  - Emitters must disperse coarse droplets or be subterranean.
- Garden beds to be mulched to 75mm with a product certified to AS4454.
- Increasing community awareness of water conservation by promoting Waterwise practices, fixtures and fittings at the point of sale.

WWG principles will also be considered for Precinct A and Precinct E, however it is anticipated that these areas will have minimal irrigated landscaping to which this would apply. The current approach to irrigation within the Racecourse Precinct, Precinct B and Precinct C adopts a range of water conservation measures (including non-irrigated area and retention of existing trees/vegetation) to ensure that Perth Racing operates within the available groundwater allocation. This approach is not proposed to be significantly modified.

The above measures will assist in achieving **Criteria WC1** and **WC2**.

### 5.3 Water use analysis

#### 5.3.1 Lot scale water use analysis

A water use analysis has been undertaken for Precinct D to estimate the expected individual residential lot water use to demonstrate the effectiveness of the water conservation strategy. The water use analysis has been based on the rates and calculation methodology presented in the Water

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Corporation (2011) spreadsheet *AltWaterSupply_Water_Use_Model.xls*. This spreadsheet has been adapted to model the effects of using the water conservation measures proposed, and key assumptions include:

- Lot area has been based on a conceptual lot layout (see **Appendix A**).
- Average residency of 2.6 people per single lot dwelling. This value has been calculated from data provided by ABS for new housing developments in Perth (ABS 2022).
- Assumed up-take rates include:
  - 100% uptake of water efficient fittings
  - 40% uptake of water efficient appliances
  - 7.5% uptake of RWTs
  - 55% uptake of WWG principles.

The results of the water balance indicate that if households in Precinct A and Precinct D adopt the proposed water conservation measures (e.g. efficient fittings, RWT, WWG principals) at typical uptake rates they will use an average of 33.0 kL/year/person. This achieves the water target of no more than 60 kL/year/person of scheme water and satisfies **Criteria WC1**.

## 5.4 Wastewater management

The wastewater generated from the site will be managed by connecting the development to the Water Corporation deep sewer network.

## 5.5 Water conservation management criteria compliance

A summary of the proposed water conservation management criteria and how these are addressed is provided within **Table 1.**

*Table 1: Water conservation management criteria compliance*

| Criteria number | Criteria description | Manner in which compliance will be achieved |
|---|---|---|
| WC1 | Residential consumption target of 60 kL/person/year scheme water. | Provide advice to residents in Precinct A and Precinct D on water conservation measures |
| | | RWTs can be utilised for non-potable uses within Precinct D |
| | | Promotion and use of WWG in lots within Precinct D |
| | | Promotion and use of water efficient appliances to Precinct A and Precinct D |
| | | Mandate water efficient fittings within Precinct A and Precinct D |
| WC2 | Ensure the efficient use of all water resources. | Use of waterwise landscaping principles in open spaces |
| | | Open spaces designed to use no more than allocated groundwater |
| | | Minimise water requirements for open space and verge maintenance |
| | | Use of water efficient appliances within Precinct A and Precinct D |
| | | Use of WWG principles in lots in Precinct D |

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*Table 2: Water conservation management criteria compliance (Continued)*

| Criteria number | Criteria description | Manner in which compliance will be achieved |
|---|---|---|
| WC3 | Non-potable irrigation water to be sourced from existing groundwater licences held over the area. | The proponent holds a groundwater Licence with an allocation of 347,000 kL per annum which will meet the irrigation requirements of the Racecourse and surrounding Precincts. |

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# 6 Stormwater Management

The principle behind the stormwater management strategy for the site is to maintain the existing hydrology by detaining, retaining and treating runoff from the small rainfall event (i.e. first 15 mm) as close to source as possible and detaining/retaining the major event (1% AEP) on site prior to discharge to either the centre of the Racecourse (i.e. self-retained) or to the CBMD the pre-development outflow rates. Due to the existing soil conditions (See **Section 3.5**), the site is not well suited for structural controls utilising infiltration of stormwater unless modified. However, given that fill will be utilised to ensure that habitable floor levels are above the 1% AEP flood elevation of the Swan River, final elevations will be approximately 4 mAHD. Where fill is used to achieve this there will be sufficient clearance to MGL and permeability of soils to adopt WSUD measures which utilise infiltration.

WSUD measures proposed will vary across the Precincts and will include:

- BRAs to achieve water quality treatment (Precincts A, C, D and E)
- FSAs to detain runoff prior to discharge to the adjacent road network system
- Subsurface infiltration cells that will facilitate at-source infiltration (Precinct D)
- Flood storage integrated into existing surface water bodies located centrally within the Racecourse (for Precinct A and C)
- FSAs to provide flood detention and infiltration as close to source as possible (Precinct E).

The overall approach to precinct drainage is shown on **Figure 7**.

The WSUD measures that will be implemented as a part of the development are described in the following sections. Precinct B has been assumed to be self-retained and a portion of Precinct C (already connected to the Lakes in the centre of the track) has been assumed to be the same as it is now. Surface runoff modelling undertaken using XPSWMM has been used to inform the design of stormwater infrastructure as detailed in the following sections. Assumptions used to represent the post-development environment are provided in the modelling assumptions report in **Appendix D**.

## 6.1 Lot scale drainage measures

Lots within Precinct D and Precinct E will retain the first 15 mm rainfall event runoff within soakwells/soakage which will need a capacity of 150 $m^3$/ha. Lot storage is the responsibility of the lot owner and will be assessed as part of the building approval process prior to construction.

The use of soakwells/soakage areas will assist in achieving **Criteria SW1**.

## 6.2 Development drainage measures

### 6.2.1 Bio-retention areas

Runoff from the first 15 mm of rainfall will be captured and retained within a vegetated BRA located in open spaces. The BRA is assumed to have a depth of 500 mm with 1:3 side slopes. Treatment of

runoff will be provided through interaction with vegetation and adsorption to sand particles through infiltration prior to reaching groundwater.

The BRA will be underlain by material with an appropriate PRI (nominally a PRI of 20 at 150 mm or equivalent). It is acceptable for this to be achieved with a thicker layer of lower PRI soil (e.g. 300 mm of PRI 10). This will be finalised prior to detailed design. The location of the BRA will either be in a drainage reserve, an open space or they may be within the centre of the Racecourse as a separate treatment area (separate from the existing Lakes). The sizing and spatial requirements of BRAs will be confirmed in the detailed designs.

The use of BRA will assist in achieving **Criteria SW1, SW6,** and **SW8**.

### 6.2.2 Flood detention/storage

An FSA will be utilised to detain runoff above the first 15 mm and up to the 1% AEP rainfall event. To achieve this, the invert of the FSA will have sufficient clearance above groundwater 300 mm. FSAs are assumed to be 1.2 m depth with 1:6 side slope and will be integrated into POS or drainage reserve, and will overflow to the Water Corporation drainage network. The sizes and spatial requirements for the FSA will be confirmed in the detailed designs and development stages.

The use of an FSA will assist in achieving **Criteria SW1, SW2, SW4,** and **SW6.**

### 6.2.3 Subsurface storage

Surface runoff generated by lots, stables and hardstand/carpark areas will be directed into sub-surface storage. Precinct D will have an independent drainage pipe network within individual precincts which convey flows to downstream sub-surface retention structures.

These structures have been sized to accommodate up to the 1% AEP rainfall event and have been designed as a 1 m deep structure. The detailed configurations could be modified to suit site constraints. These will either be location beneath road reserve/verge or beneath an open space and will require an overflow connection to the local (CoB) drainage network to ensure that they can dry out. The sizes and spatial requirements for the subsurface storages are provided in **Table 2** and illustrated in **Figure 7A**: Precinct A Stormwater Management Plan

*Figure 7B: Precinct C Stormwater Management Plan*

Figure .

The use of the sub-surface storage will assist in achieving **Criteria SW1, SW2,** and **SW6.**

### 6.2.4 Lake storage

Precinct A and Precinct C (stables) will first direct runoff to a bio-retention areas, however overflow from these will be catered for in the Wetland Lake. In a 1% AEP storm event an additional 78 mm of depth will occur within the Wetland Lake from both Precincts.

As indicated in **Section 3.7.1.2**, the Wetland Lake is connected/discharges to the Swan River via a 375 mm and 450 mm culvert. These are not proposed to be modified. The combined nominal flow capacity of the 375 mm and 450 mm pipes is approximately 0.4 $m^3/s$. The inlet, length, grade, etc of

these pipes is not proposed to be modified and therefore the current overflow regime from the site to the Swan River will remain unchanged.

The use of the Wetland Lake storage will assist in achieving **Criteria SW1, SW2, SW3,** and **SW6.**

## 6.3 Precinct based drainage approach

### 6.3.1 Precinct A

There is no current connection point for drainage to be exported from site to the local CoB network. Runoff will therefore need to be managed within Precinct A and the Racecourse. Precinct A will require a single BRA that will address treatment of water quality; this will be located within Precinct A as close to source as possible. The BRA should have the following characteristics:

- Base will be vegetated with reeds/rushes as per a biofilter
- 1:3 side slopes
- Depth of 300 – 500 mm pending final design
- Volume of the BRA will need to achieve 194 $m^3$
- Nominal surface area of 450 $m^2$.

In addition to the volume achieved by the BRA, in a major (1% AEP) storm event a further 1,345$m^3$ of flood retention storage will be required. The proposed earthwork level of Precinct A (4.0 mAHD) means that it is possible to direct runoff exceeding BRA capacity to the Wetland Lake in the centre of the Racecourse. This approach will add approximately 52 mm to the central 2.6 ha Wetland Lake.

The volumes of storage required and locations of storage across the Precincts is summarised in **Table 2**. The approach to water management in Precinct A is shown in **Figure 7A**.

### 6.3.2 Precinct B and Racecourse

As indicate previously, there are no substantial changes proposed to Precinct B. Precinct B currently manages surface runoff within the precinct and adjacent Racecourse, largely via at source infiltration, swales around the perimeter of the track surface and the existing lake system Precinct B and the Racecourse are proposed to be retained largely as is.

As indicated in **Section 3**, the Wetland Lake currently has a piped overflow connection to the Swan River. This overflow pipe(s) reportedly rarely overflow and can be controlled via a structure at the outlet (which also prevents tidal influence on the Wetland Lake). The Wetland Lake has a 2.6 ha surface area, and therefore can provide significant volume of stormwater retention in the event of a major storm event. There are no new connections proposed to the Swan River and there are no changes proposed to the management approach currently taken for the Wetland Lake and the current piped outlets.

### 6.3.3 Precinct C

Precinct C is the existing stables area, adjacent carparks and future stables areas along the south and east of the Structure Plan area. The existing buildings currently either infiltrate runoff at source or

discharge to the Lined Lake in the centre of the Racecourse. This approach is proposed to be retained.

Surface runoff generated by hardstand/carpark areas of Precinct C will be directed and discharged towards Precinct E via the existing connections to the CoB drainage network along Matheson Road or via the existing pipe connection in the southwest of the Structure Planning area to the existing connection to the CBMD (Water Corporation drainage system) within Precinct E.

The drainage requirements for the southern (carpark) portion of Precinct C are therefore detailed with those proposed for Precinct E.

For the two currently undeveloped portions of Precinct C (future stables along the south and east of the Structure Plan area), the post-development drainage system will collect the runoff from these areas and direct them to the centre of the Racecourse. Initial treatment will be provided by a BRA which accommodates 418 $m^3$, with a nominal surface area of 924 $m^2$.

Runoff exceeding the capacity of the BRA (which will be 684 $m^3$) will be directed to the Wetland Lake. The direction of major event stormwater runoff to the Wetland Lake will add 26 mm to the top water level of the Wetland Lake.

The volumes required to be treated and for flood mitigation for Precinct C are summarised in **Table 2**. The approach to water management in Precinct A is shown in **Figure 7B**.

### 6.3.4 Precinct D

As indicated in **Section 6.1**, private lots and the childcare building within Precinct D are assumed to retain the first 15 mm within the lot boundary, most likely within soakwells, which should be appropriate given that some measure of imported fill will be required to meet clearance above regional flood levels. Based on the density of lots proposed in Precinct and lack of open space, this precinct will need 42 $m^3$ of subsurface storage to accommodate and detain the 1% AEP storm event to ensure that the post development peak flow rates will mimic the pre -development conditions. This is assumed to be located adjacent to Resolution Drive as shown in **Figure 7C**. The outflow from this Precinct will likely be predominantly overland flow once the first 15 mm of storage has reached capacity, however a low flow to ensure that these can adequately drain between storm events is recommended.

The volumes required to be treated and for flood mitigation for Precinct D are summarised in **Table 2**.

### 6.3.5 Precinct E

Surface runoff from across Precinct E (inclusive of Precinct C hardstand/carpark) will be conveyed via the drainage network firstly to a BRA for water quality treatment and then this will overflow to an FSA (detention drainage structure) at the south western corner of Precinct E for detention of the 1% AEP storm event. Overflow from Precinct E basin will discharge into the CBMD (Water Corporation drainage system) at existing flow rates. The Water Corporation surface runoff modelling of the CBMD indicates that the local drainage network contributes 0.95 $m^3/s$ at node CNA008. This is understood to be contributed to by existing 450 mm and 525 mm pipes beneath Resolution Drive and therefore it is assumed that 0.62 $m^3/s$ is taken up by the existing pipe network, and approximately 0.33 $m^3/s$ of

capacity is available to convey runoff from Precinct C, Precinct E and upstream contributing catchments.

The volumes required to be treated and for flood mitigation for Precinct E are summarised in **Table 2**. The approach to water management in Precinct E is shown in **Figure 7D**.

### 6.3.6 Precinct drainage summary

The requirements for water quality treatment within the Precincts is summarised in **Table 2**.

*Table 2: Precinct drainage summary*

| Precinct | First 15 mm requirement ($m^3$) | Location of first 15 mm | 1% AEP flood mitigation requirement ($m^3$) | Location of 1% AEP flood mitigation requirement | 1% AEP outflow from site |
|---|---|---|---|---|---|
| Precinct A | 194 | BRA located within Precinct A | 1,345 | Wetland Lake, centre of Racecourse | 0 |
| Precinct B | No change to existing | Precinct B | No change to existing | Precinct B | Self-retained |
| Precinct C (Stables) | 418 | BRA located in the centre of the Racecourse | 684 | Wetland Lake in centre of Racecourse | 0 |
| Precinct C (carpark) | Combined with Precinct E volumes | BRA in Precinct E | Combined with Precinct E volumes | FSA in Precinct E | |
| Precinct D | 28 | Subsurface storage cells beneath road reserve/drainage reserve | 42 | Subsurface storage cells beneath road reserve/drainage reserve | 0.402 $m^3/s$ to local drainage network/road pavement |
| Precinct E | 365 | Southwest corner of Precinct E, adjacent to FSA | 930 | South west corner of Precinct E | 0.32 $m^3/s$ to CBMD |

There will be no new connections to the Swan River or to the CBMD, and the existing flow regimes at these outlet points will be maintained. Specifically with regard to overflow from the Wetland Lake which occurs via gravity, the peak flow rates that the existing 375 mm and 450 mm pipes are capable of achieving (approximately 0.4 $m^3/s$) will not change given that the inlet, length, grade and outlet of these pipes is not proposed to be modified.

Precinct D will require a connection to the local drainage network, however the outflow rate will be nominal, and has not been accounted for when sizing the subsurface storage cells within Precinct D. The direction of runoff from Precinct A and a portion of Precinct C to the centre of the Racecourse will require a BRA with a surface area of 1,105 $m^2$ (for Precinct C) and will add a total of 78 mm depth to the top water levels within the Wetland Lake.

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The precinct areas and a summary of the approach to surface water management are shown on **Figure 7**.

### 6.3.7 Non-structural measures

A number of non-structural measures will be implemented to help reduce nutrient loads within stormwater runoff. These measures include:

- Minimising fertiliser use to establish and maintain vegetation within POS and road verges.
- Street sweeping at regular intervals.
- Ongoing management of nutrient application to Precinct B and the Racecourse.
- Precinct A to adopt a similar nutrient application management regime as that currently applied to Precinct B.
- Minimising the use of turf within open spaces.
- Active management of equine waste within Precinct C and the Racecourse. This includes manual collection and remove of manure from site.
- Education of residents regarding fertiliser use and nutrient absorbing vegetation species within lots.

The above measures will assist in achieving **Criteria SW7**.

### 6.3.8 Earthwork levels

Finished floor levels of the entire development will be set at minimum of 4.0 mAHD (See **Appendix C**) which will assist in achieving **Criteria SW5**.

## 6.4 Stormwater criteria compliance

A summary of the proposed stormwater design criteria and how these are addressed is provided in **Table 3**.

*Table 3: Stormwater management criteria compliance*

| Criteria number | Criteria description | Manner in which compliance will be achieved |
|---|---|---|
| SW1 | Retain and treat the first 15 mm of rainfall as close to source as possible | Lots within Precinct D and Precinct E to retain the first 15 mm of rainfall on lot in soakwells/soakage. Lot storage will be the responsibility of the lot owners. |
| SW2 | Retain up to 1% AEP rainfall event on-site. | Runoff up to the 1% AEP to be detained within the FSA in Precinct A. Precinct A and a portion of Precinct C will ultimately discharge to the centre of the track. |
| | | Runoff up to 1% AEP to be managed with the sub-surface storage in Precinct D. |
| SW3 | Post-development critical 1% AEP peak flows leaving the site to mimic pre-development peak flows. | Runoff up to 1% AEP event to be detained in the detention basin and subsurface storage which will maintain the pre-development peak flow of 0.32 $m^3/s$ from Precinct E and 0.463 $m^3/s$ from Precinct D respectively. |
| SW4 | Finished floor levels must have a minimum of 300 mm clearance above the 1% AEP TWL in the FSA. | It is anticipated that the FSA and detention basin invert will be set so that the habitable floor levels must have a |

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| | | |
|---|---|---|
| | | minimum of 300 mm clearance above the 1% AEP TWL in the basins. |
| SW5 | All lots must have a minimum of 500 mm clearance above the 1% AEP flood level in the Swan River. | The 1% AEP flood level in the Swan River is 2.8 mAHD. The preliminary bulk earthworks concept provided in shows that finished floor level will be at 4.0 mAHD. |
| SW6 | Nutrient concentrations within surface water discharging from the site to the Swan River are to meet regional water quality targets. | BRA will be designed so that after treatment the long term nutrient concentrations within surface water meet the regional water quality targets. |

*Table 4: Stormwater management criteria compliance (Continued)*

| Criteria number | Criteria description | Manner in which compliance will be achieved |
|---|---|---|
| SW7 | Reduce nutrient loads by applying appropriate non-structural measures | • Minimise use of fertilisers within open space and road verges.<br>• Street sweeping at regular intervals.<br>• Use of drought tolerant turf species.<br>• Education of residents regarding fertiliser use |
| SW8 | Design infiltration areas to avoid creating mosquito habitat | Stormwater infrastructure will be designed to ensure all runoff is infiltrated within 96 hours. |

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# 7 Groundwater Management

## 7.1 Groundwater management approach

The principle behind groundwater management is to maintain the existing hydrology across the site, provide appropriate protection from groundwater inundation, and maintain or improve existing groundwater quality.

## 7.2 Groundwater level management

The regional groundwater map (DWER 2023e), localised measurement of groundwater and the surface contours of the site (see **Section 3.4** and **Figure 2**) indicate that there is sufficient clearance to groundwater beneath the site to facilitate infiltration of stormwater runoff, on the basis that fill is being imported to raise finished levels to 4.0 mAHD.

Whilst the underlying parent soils have demonstrated generally low permeability, the earthworks approach will require import of fill to 4.0 mAHD to achieve clearance above the 1% AEP flood level in the Swan River for Precinct A, Precinct D and Precinct E. Therefore, stormwater will be encouraged to infiltrate at source wherever possible to minimise stormwater runoff and to adopt an at-source approach to management of runoff where possible. This will occur within soakwells, permeable portions of lots and BRAs which will have at least 300 mm of clearance above the MGL. The above-mentioned measure will assist in achieving **Criteria GW1**.

For Precinct C (stables) runoff will be directed to the centre of the racetrack. The stables facilities do not require a specific separation from groundwater, and in order to accommodate equine uses the land between buildings/facilities should be as flat as possible. The most appropriate response is therefore to accommodate stormwater quality treatment and flood retention within the centre of the racetrack. Given the low permeability of soils in the centre of the racetrack, the BRA is unlikely to achieve separation from groundwater or the low permeability soil layer. This is however considered acceptable as it is consistent with the presence of the three Lakes currently within the centre of the racetrack.

The control of groundwater by subsoil drainage is not proposed due to requirements to provide adequate clearance above the 1% AEP flood levels and the proximity of the Swan River. Rather, groundwater separation requirements will be achieved by the use of imported fill as described above. The earthworks strategy provided in **Appendix C** shows that all habitable floor levels will be greater than 1.2 m above the MGL. The above-mentioned measure will assist in achieving **Criteria GW2**.

As previously discussed, there are no changes proposed to the form of development within Precinct B or to the Racecourse. These areas are currently managed by the swales aligned with the existing racetrack which control soil moisture conditions in these areas, and which discharge to the Wetland Lake. This approach will be retained in the post-development environment.

## 7.3 Groundwater quality management

Whilst not specified in a design criterion, the main objective for groundwater quality management is to maintain or improve the existing groundwater quality. This can be achieved by reducing the total nutrient load into the groundwater that originates from the site. Groundwater that originates from the site is surface runoff that has infiltrated into the soil profile. Therefore, improving groundwater quality can be achieved by treatment of the surface runoff prior to infiltrating to groundwater.

The reduction of nutrient load to the groundwater will be achieved by:

- Retention of existing trees within open spaces wherever possible.
- Directing stormwater to a vegetated (with native wetland species) BRA.
- The BRA will be underlain by material with an appropriate PRI (nominally a PRI of 20 at 150 mm or equivalent). It is acceptable for this to be achieved with a thicker layer of lower PRI soil (e.g. 300 mm of PRI 10).
- Minimise fertiliser use to establish and maintain vegetation within open space areas and road verges.
- Ongoing management of nutrient application to Precinct B and the Racecourse.
- Precinct A to adopt a similar nutrient application management regime as that currently applied to Precinct B.
- The use of turf will be minimised, however where adopted a drought tolerant turf species that require minimal water, and nutrients will be used.
- Roll-on turf will be used within the open space areas and road verges, to prevent the high nutrient input requirement during establishment of the turf.
- Garden beds should not be immediately adjacent to BRAs to reduce nutrient transportation into these infiltration areas.
- Active management of equine waste within Precinct C and the Racecourse. This includes manual collection and remove of manure from site.

The above measures will improve the quality of water prior to it infiltrating into the underlying groundwater.

## 7.4 Groundwater criteria compliance summary

A summary of the proposed groundwater quantity design criteria and how these are addressed within the site is provided in **Table 4**.

*Table 4: Groundwater criteria compliance summary*

| Criteria number | Criteria description | Manner in which compliances will be achieved |
|---|---|---|
| GW1 | Surface based infiltration should have 300 mm clearance above MGL. | Basin inverts will be set at 300 mm above the MGL, the exception being the BRA in the centre of the racetrack. |
| GW2 | Finished floor levels should have a clearance to the MGL of at least 1.2 m. | Lots will be set at least 1.2 m above the MGL. |

# 8 Subdivision and Urban Water Management Plans

The requirements to undertake preparation of more detailed water management plans to support subdivision is generally imposed as a condition of subdivision. This will be most relevant to Precinct D. Other precincts may be developed under a Development Approval and therefore water management will likely be documented within a Stormwater Management Plan (SMP). The development of future UWMP/SMPs should follow *Urban Water Management Plans: Guidelines for preparing plans and for Complying with Subdivision Conditions* (DoW 2008).

While strategies have been provided within this LWMS that address planning for water management within the site, it is a logical progression that future subdivision designs and the supportive UWMP/SMP will clarify details not provided within the LWMS. The main areas that will require further clarification within future UWMP/SMPs may include (pending which precinct is being addressed):

- Extent of land uses within Precincts
- Connection to local and Main Drainage networks
- Surface runoff modelling
- Implementation of water conservation strategies
- Non-structural water quality improvement measures
- Management and maintenance requirements
- Construction period management strategy.

These are further detailed in the following sections. As stated above, ongoing (post-development) monitoring of groundwater will be detailed in the UWMP/SPM, however in this LWMS is outlined broadly in **Section 9**.

## 8.1 Extent of land uses within Precincts

It is expected that the layout and extent of land uses within Precincts may evolve over time. Future water planning documents will need to be updated to align with the most up to date spatial plans for each Precinct. Changes to the spatial plans will likely have an implication on the size of stormwater infrastructure and possibly their location, and should be revised and clarified in future UWMP/SMPs.

## 8.2 Connection to local and Main Drainage networks

This LWMS has made assumptions regarding connectivity to the CoB local drainage network and to the Water Corporation's CBMD. These are assumptions are made based on the information available at the time of preparing this LWMS and may need to be revised pending feedback from these agencies. This could result in updates to surface runoff modelling (see **Section 8.3**).

## 8.3 Surface runoff modelling

It is acknowledged that the water management strategies documented in this LWMS are based upon broad-scale assumptions and to some extent regional data. These assumptions are considered

adequate for development of this LWMS and are of an appropriate level of detail. However, verification of proposed subdivision drainage designs will be undertaken once the specific basin designs and extent of inclusion of finer scale WSUD elements are confirmed.

It is expected that future UWMP/SMPs will update surface runoff modelling as appropriate, and this may result in evolution of the spatial layout of the structure plan/future subdivisions or detailed civil design approach.

## 8.4 Implementation of water conservation strategies

The non-potable water needs from the Precincts are to be accommodated from the existing groundwater allocation and therefore, track water usage is a significant consideration. Notwithstanding licensed volumes available, there is minimal new open space areas proposed within the Precincts that would demand significant additional groundwater allocation, and it is therefore anticipated that non-potable water needs can be met by the existing licence held by Perth Racing.

A number of potential measures to conserve water have been presented within this LWMS. These water conservation strategies will be incorporated into design and the on-going maintenance of the Precinct A, B and C open spaces and where relevant. Landscape concept design measures that will be incorporated into the water conservation strategy will be further detailed within the future UWMP/SMPs produced for the development.

The manner in which the developer intends to promote water conservation measures discussed in this LWMS to future lot owners will also be discussed within the future UWMP/SMPs.

## 8.5 Non-structural water quality improvement measures

Guidance for the development and implementation of non-structural water quality improvement measures is provided within the *Stormwater Management Manual for Western Australia* (DWER 2022). Some measures will be more appropriately implemented by CoB for local roads, such as street sweeping, however many can be implemented relatively easily within the design and maintenance of the subdivision and the open space areas. It is expected that any privately managed development areas (e.g. Precinct A, Precinct B and Precinct C) will be managed by Perth Racing or another appropriate management body, and that the management of areas exposed to equine uses (Precinct C and the Racecourse) will continue to adopt contemporary best practice nutrient management.

Future UWMP/SMPs will provide an implementation plan/timing/responsibility for measures such as street sweeping, public education (through measures such as signage that may be implemented to raise awareness), etc.

## 8.6 Management and maintenance requirements

The management measures to be implemented to address surface water quality (such as the use of vegetation within WSUD assets) will require ongoing maintenance. It is therefore expected that the future UWMP/SMPs will detail management and maintenance procedures that will set out required maintenance actions (e.g. gross pollutant removal), timing (e.g. how often it will occur), locations (e.g. exactly where it will occur) and responsibilities (e.g. who will be responsible for carrying out the

actions). Given that approval from the CoB will be sought for the proposed measures, it is anticipated that consultation will be undertaken and referral to guiding policies and documents will be made.

## 8.7 Construction period management strategy

It is anticipated that the construction stage will require some management of various aspects (e.g. soil erosion, sedimentation of downstream water bodies, dust, surface runoff, noise, traffic etc.). The management measures undertaken for construction management will be addressed either in the future UWMP/SMPs or a separate Construction Management Plan (CMP).

# 9 Monitoring

## 9.1 Post-development monitoring

The post-development monitoring of water quality should be undertaken within groundwater immediately upstream and downstream of BRAs within Precinct A, Precinct C and Precinct E. It should also be undertaken at the outlet to or adjacent to the subsurface detention system in Precinct D. This should be undertaken via shallow groundwater bores installed immediately upstream and immediately downstream based on local groundwater flow direction, based on information available at the time (or in the case of Precinct D it could be at the outlet from the subsurface storage cells).

The monitoring should also consider and be generally consistent in the approach with the monitoring undertaken to comply with conditions of Groundwater Licence GWL 178519.

The WSUD measures (BRAs) should also be monitored to ensure their continued effectiveness. This should occur at the outlets from BRAs prior to their discharge to the Wetland Lake. It is noted that this may be difficult to achieve as it will require a rainfall event > 15 mm and to be timed to occur when overflow is occurring or alternatively auto samplers could be employed.

Monitoring of the outlet to the Swan River from the Wetland Lake is not proposed to be undertaken given the infrequent nature of overflow from the Lake to the River. Further, the Lake intersects shallow groundwater and any discharge from the pipes to the River is likely to be influenced by local groundwater quality.

### 9.1.1 Trigger values

The water quality targets from the *National Water Quality Management Strategy* (ANZECC and ARMCANZ 2000) and the trigger criteria are acknowledged as long term targets for the site, being 1.2 mg/L for TN and 0.065 mg/L for TP. However, it is also recognised that recent site monitoring undertaken (and reported in **Section 3**) shows repeated exceedances of the NWQMS default trigger criteria. Therefore, short term trigger values are proposed based on the approximate average nutrient concentrations measured in groundwater, and these are shown in **Table 5**.

*Table 5: Post-development trigger values*

| Analyte | pH | EC (uS/cm) | TN (mg/L) | TP (mg/L) |
|---|---|---|---|---|
| Value | 6-7.5 | 1800 | 3.0 | 0.15 |

Monitoring should be undertaken on a quarterly basis and should include:

- pH
- Conductivity
- Dissolved oxygen
- Temperature
- Nutrients (TN, TP)
- Nutrient Species (Ammonium, $NH_4$, Oxides of nitrogen, $NO_x$ ortho-phosphorous (ORP))

### 9.1.2 Condition monitoring

It is proposed that the overall condition of the Precincts will be monitored on a bi-annual basis. This monitoring will be implemented after the completion of the civil and landscaping works and will continue for a period of two years.

A visual assessment will be undertaken to monitor the overall condition of the Precincts, with the aim to ascertain that the maintenance activities are achieving the overall management objectives for the development. The parameters that will be monitored include:

- Gross pollutants
- Terrestrial weeds
- Irrigation
- Vegetation density
- Paths, benches, walkways and other infrastructure.

The management and maintenance objectives will be detailed within future UWMPs along with details of the corresponding monitoring program.

### 9.1.3 Contingency Action Plan

If the results from the initial monitoring occasion indicate that nutrient concentrations exceed the nominated (short term) trigger values, a number of contingency measures may be employed.

The first action that should be undertaken if groundwater trigger criteria are exceeded is to repeat the monitoring to remove the potential for sampling error. If the repeat monitoring still shows results which breach the trigger value, the next action will be to compare the upstream (incoming) nutrient concentrations with the outgoing (downstream) nutrient concentrations. If the downstream nutrient concentrations are >50% higher than the upstream nutrient concentrations, the following actions should be undertaken:

- Review open space nutrient application practices to identify source if possible.
- Conduct surveillance of Precincts and drainage infrastructure to determine any other potential and obvious nutrient inputs.
- Remove source if possible (i.e. fertiliser input, etc.).
- Remove sediment–bound nutrients by removing basin sediments.
- Manual removal of plant material from BRAs to facilitate further nutrient uptake.

If the downstream nutrient concentrations are found to be generally consistent with the upstream concentrations the next action will be to conduct a site – specific comparison of long-term background data presented in this LWMS. There is some amount of variability (temporally) in nutrient concentrations experienced across the site, and this is the reason for the proposed short and long term trigger values. The comparison of measured values to trigger values and historical monitoring data should then be used as a management tool to determine if the trigger values should be revised.

Following the implementation of the above contingency measures the groundwater quality will be re – sampled. If the results of the analysis still show water quality characteristics which breach the trigger values an additional set of upstream/downstream monitoring bores may be installed. The

additional bores would be sampled as per the ongoing sampling regime already being undertaken for the first two bores. If the additional locations demonstrate results consistent with the initial monitoring, an assessment will be undertaken as to whether the results are representative of a broader site management concern, and whether any additional contingency actions need to be implemented onsite.

## 9.2 Reporting

A post-development monitoring report will be prepared on conclusion of the two-year monitoring period and will be provided to CoB on request. This will be undertaken per Precinct once development within the Precinct has occurred. Interim results (spreadsheet) can be provided to either CoB, DWER or DBCA on request during the monitoring program.

Attachment 12.1.3 Environmental Assessment Report



# 10 Implementation

## 10.1 Roles and responsibility

The LWMS provides a framework that the proponent can utilise to assist in establishing stormwater management methods that have been based upon site-specific investigations, are consistent with relevant State and Local Government policies and have been endorsed by DWER, DBCA and CoB. The responsibility for working within the framework established within the LWMS rests initially with the proponent, although it is anticipated that a future UWMP/SMP will be developed in consideration of other relevant policies and documents. A summary of roles and responsibilities relevant to the current and future planning stages and ongoing management of the site is summarised in **Table 6**.

*Table 6: Roles and responsibilities for various planning stages*

| Stakeholder | Perth Racing | City of Belmont | Water Corporation | DWER | DBCA | WAPC |
|---|---|---|---|---|---|---|
| LWMS preparation | √ | | | | | |
| LWMS review and advice | | √ | √ | √ | √ | |
| LWMS approval | | | | √ | | √ |
| UWMP/SMP & civil design preparation | √ | | | | | |
| UWMP/SMP review and approval | | √ | | | | |
| Precinct implementation | √ | | | | | |
| Post development Precinct management | √ | | | | | |
| Public roads/open space ongoing management | √ | √ | | | | |

## 10.2 Funding

The proponent will fund all subdivision, civil and landscape works within the public realm (roads and open spaces) and within Precincts that are being privately managed (Precinct A, Precinct B and Precinct C). Development of individual lots will be the responsibility of the lot owner at the lot-scale development application stage.

## 10.3 Review

It is not anticipated that this LWMS will be reviewed unless the Ascot Racecourse Structure plan undergoes significant change post-lodgement of the LWMS. If the proposed layout of the

development is substantially modified, the surface runoff modelling undertaken for this LWMS may need to be reviewed and the criteria revised to ensure that all are still appropriate.

The next stage of water management for most of the Precincts is UWMP preparation to support subdivision (relevant to Precinct D) or SMP preparation to support Development Approval (relevant to all other precincts). The UWMP/SMP is largely an extension of the LWMS, as it should provide detail to the designs proposed within this LWMS and will demonstrate compliance with the criteria proposed in **Section 4**. Regardless of whether a UWMP or SMP is prepared, these should be prepared as per *Better Urban Water Management*.

The next stage of development following the UWMP is single lot development. It is recognised that certain elements of the LWMS and the UWMP will not be implemented until this late stage, and that there is little or no statutory control that can be applied to ensure the implementation of any remaining measures. While the remaining measures are unlikely to be enforced at this stage their implementation could be encouraged by the CoB through policy (or modification of these where necessary), building licence or awareness programs (such as the Water Corporation Waterwise program).

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## 11.1 General references

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## 11.2 Online references

The online resources that have been utilised in the preparation of this report are referenced in **Section 11.1**, with access date information provided in **Table R1**.

*Table R1 Access dates for online references*

| Reference | Date accessed | Website or dataset name |
|---|---|---|
| (ABS 2013) | 19/4/2024 | ABS: Water Use and Conservation Data |
| (ABS 2014) | 19/4/2024 | ABS: Energy Use and Conservation Data |
| (DWER 2023a) | 12/04/2024 | Acid Sulfate Soil Risk Map |
| (BoM 2024) | 12/04/2024 | Climate Data |
| (Landgate 2023) | 31/01/2024 | Landgate Map Viewer Plus |
| (WAPC 2023a) | 11/12/2023 | Local Planning Scheme No. 15 Map |
| (DWER 2024a) | 12/04/2024 | Perth Groundwater Map |
| (DWER 2024b) | 12/04/2024 | Water Information Reporting |
| (DWER 2024c) | 12/04/2024 | Water Register |
| (DWER 2023c) | 26/04/2024 | FPM Floodplain Area (DWER-020) |

Attachment 12.1.3 Environmental Assessment Report

# Figures

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*Figure 5: Environmental Assets*

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*Figure 7: Ascot LSP Precinct Plan surface water management*

*Figure 7A: Precinct A Stormwater Management Plan*

*Figure 7B: Precinct C Stormwater Management Plan*

*Figure 7C: Precinct D Stormwater Management Plan*

*Figure 7D: Precinct E Stormwater Management Plan*

Attachment 12.1.3 Environmental Assessment Report




**Figure 1: Site Location**

| | |
|---|---|
| **Project:** | Local Water Management Plan<br>Golden Gateway Local Structure Plan |
| **Client:** | Perth Racing |

| | |
|---|---|
| **Plan Number:** | **EP23-109(03)--F23** |
| Drawn: | WJC |
| Date: | 26/04/2024 |
| Checked: | JM |
| Approved: | DPC |
| Date: | 17/05/2024 |

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**Figure 2:** **Topographic and Groundwater Contours**

**Project:** Local Water Management Plan
Golden Gateway Local Structure Plan

**Client:** Perth Racing

**Plan Number:**
**EP23-109(03)--F24**
Drawn: WJC
Date: 26/04/2024
Checked: JM
Approved: DPC
Date: 17/05/2024

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Metres
Scale: 1:8,000@A4
GDA2020 MGA Zone 50

emerge ASSOCIATES

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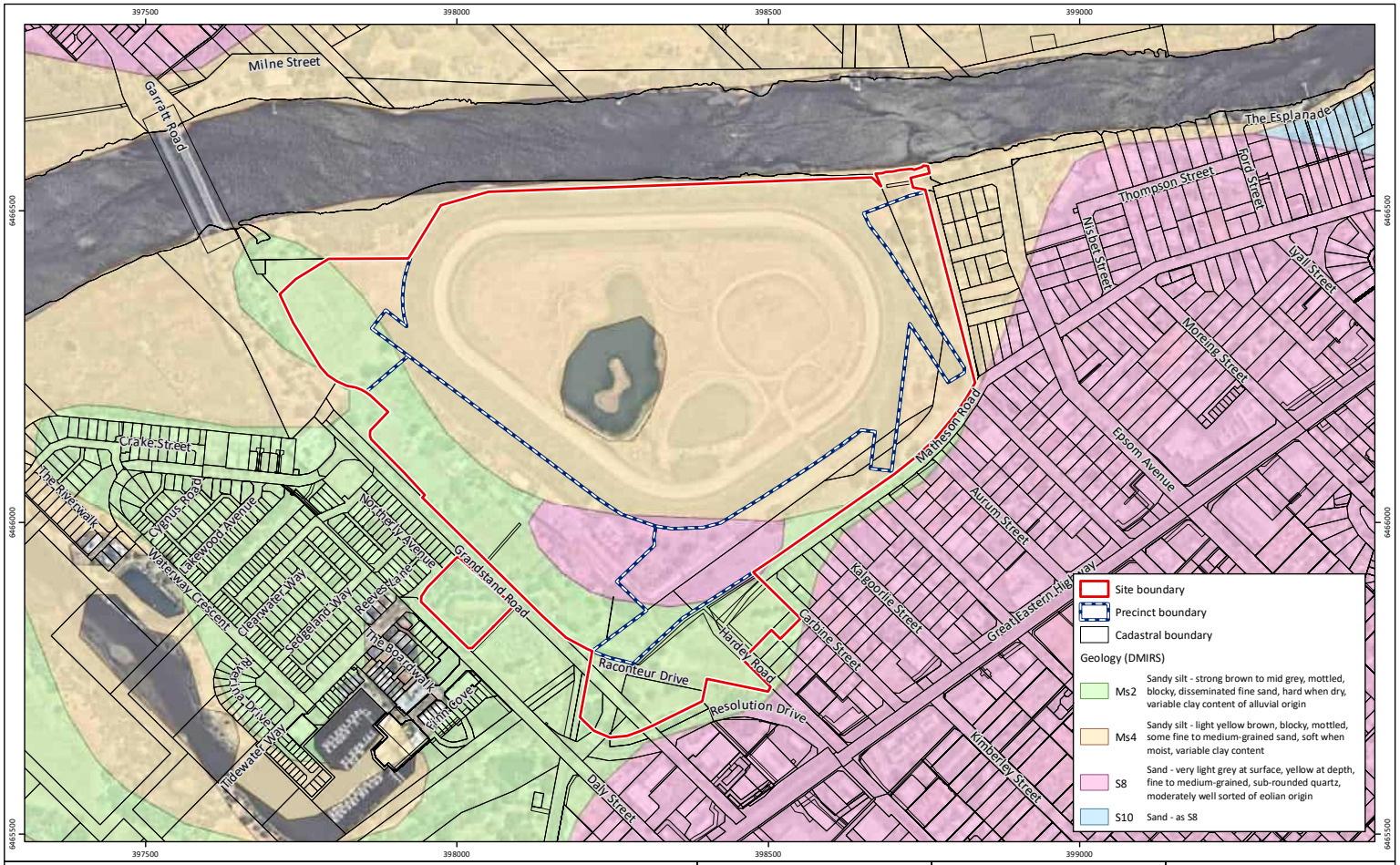



**Figure 3: Geological Mapping**

**Project:** Local Water Management Plan
Golden Gateway Local Structure Plan

**Client:** Perth Racing

**Plan Number:** EP23-109(03)--F25
Drawn: WJC
Date: 26/04/2024
Checked: JM
Approved: DPC
Date: 17/05/2024

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Scale: 1:8,000@A4
GDA2020 MGA Zone 50

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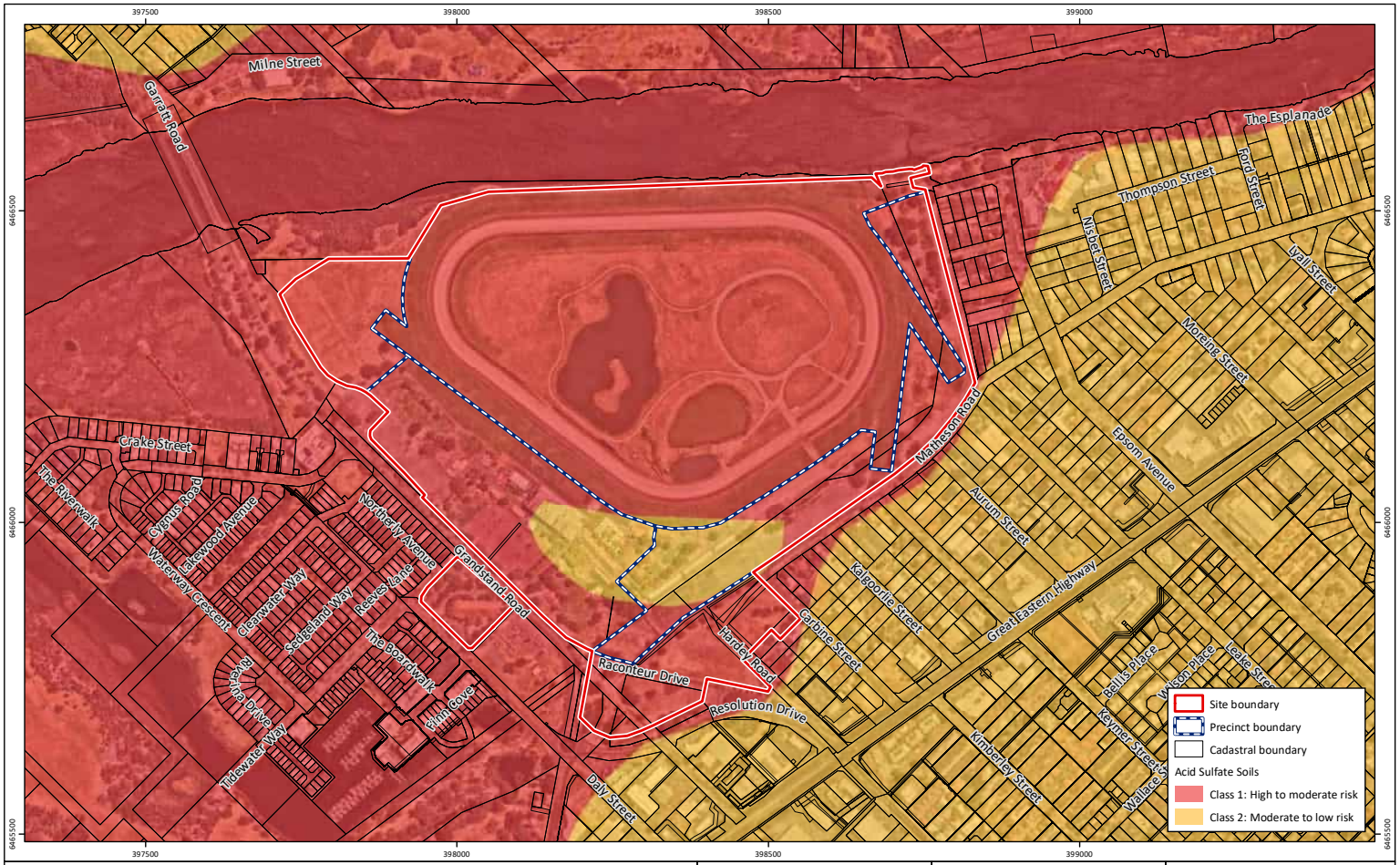



**Figure 4: Acid Sulfate Soil Mapping**

**Project:** Local Water Management Plan
Golden Gateway Local Structure Plan

**Client:** Perth Racing

**Plan Number:** EP23-109(03)--F26
Drawn: WJC
Date: 26/04/2024
Checked: JM
Approved: DPC
Date: 17/05/2024

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Scale: 1:8,000@A4
GDA2020 MGA Zone 50

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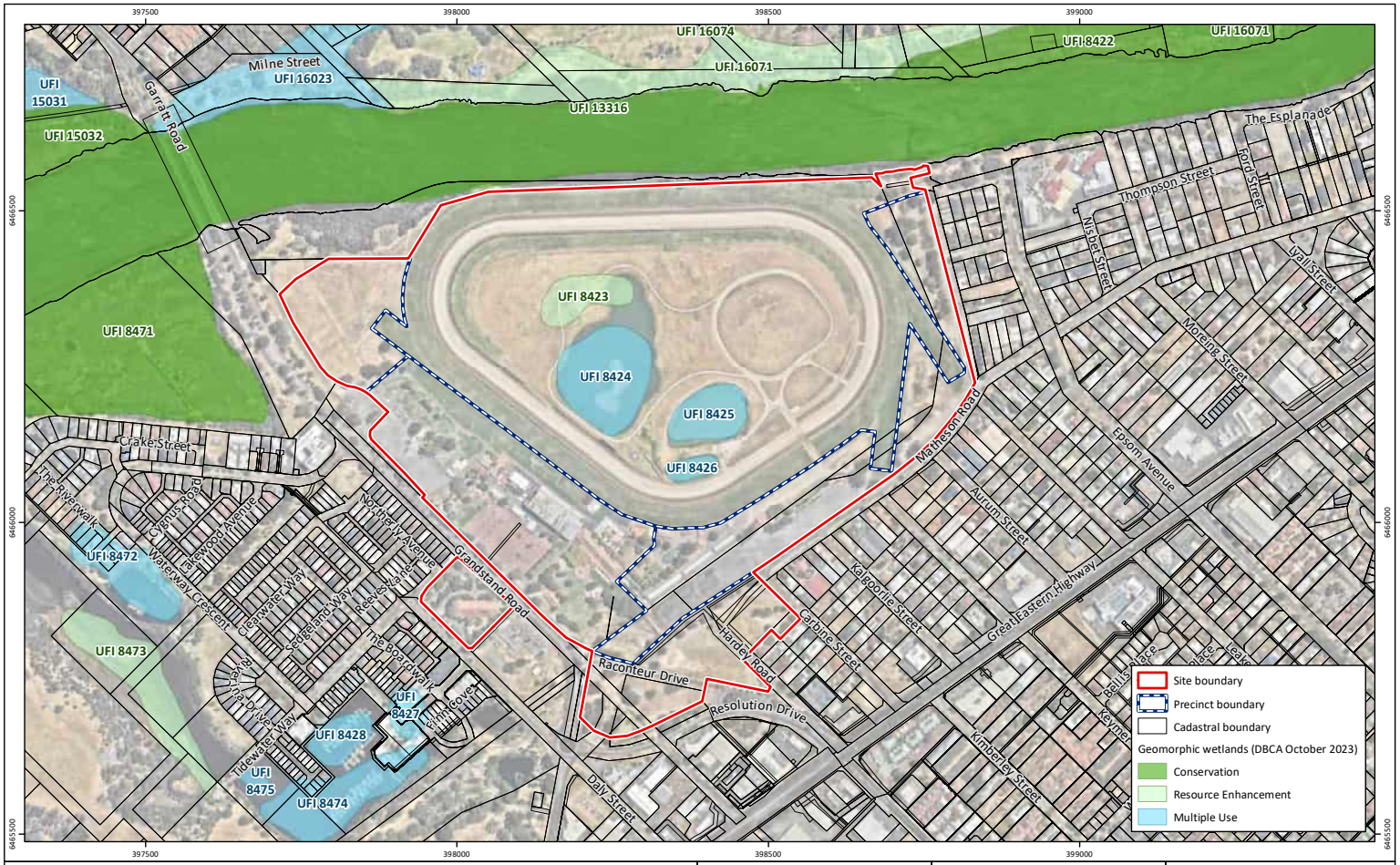



**Figure 5: Environmental Assets**

| | |
|---|---|
| **Project:** | Local Water Management Plan<br>Golden Gateway Local Structure Plan |
| **Client:** | Perth Racing |

**Plan Number:** EP23-109(03)--F27

| | |
|---|---|
| Drawn: | WJC |
| Date: | 26/04/2024 |
| Checked: | JM |
| Approved: | DPC |
| Date: | 17/05/2024 |

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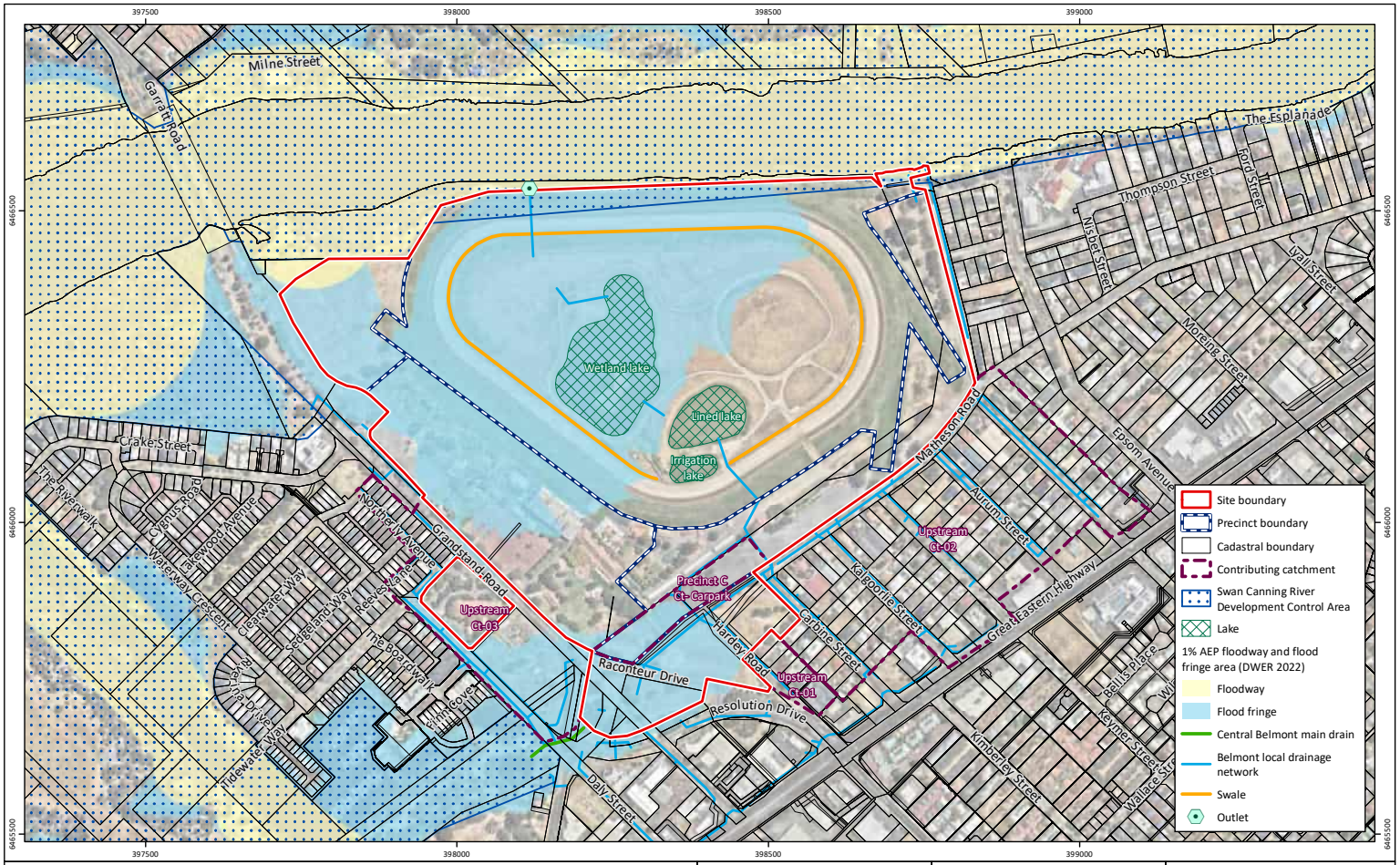



**Figure 6: Hydrological Features**

**Project:** Local Water Management Plan
Golden Gateway Local Structure Plan

**Client:** Perth Racing

**Plan Number:** EP23-109(03)--F28
Drawn: WJC
Date: 26/04/2024
Checked: JM
Approved: DPC
Date: 17/05/2024

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Metres
Scale: 1:8,000@A4
GDA2020 MGA Zone 50

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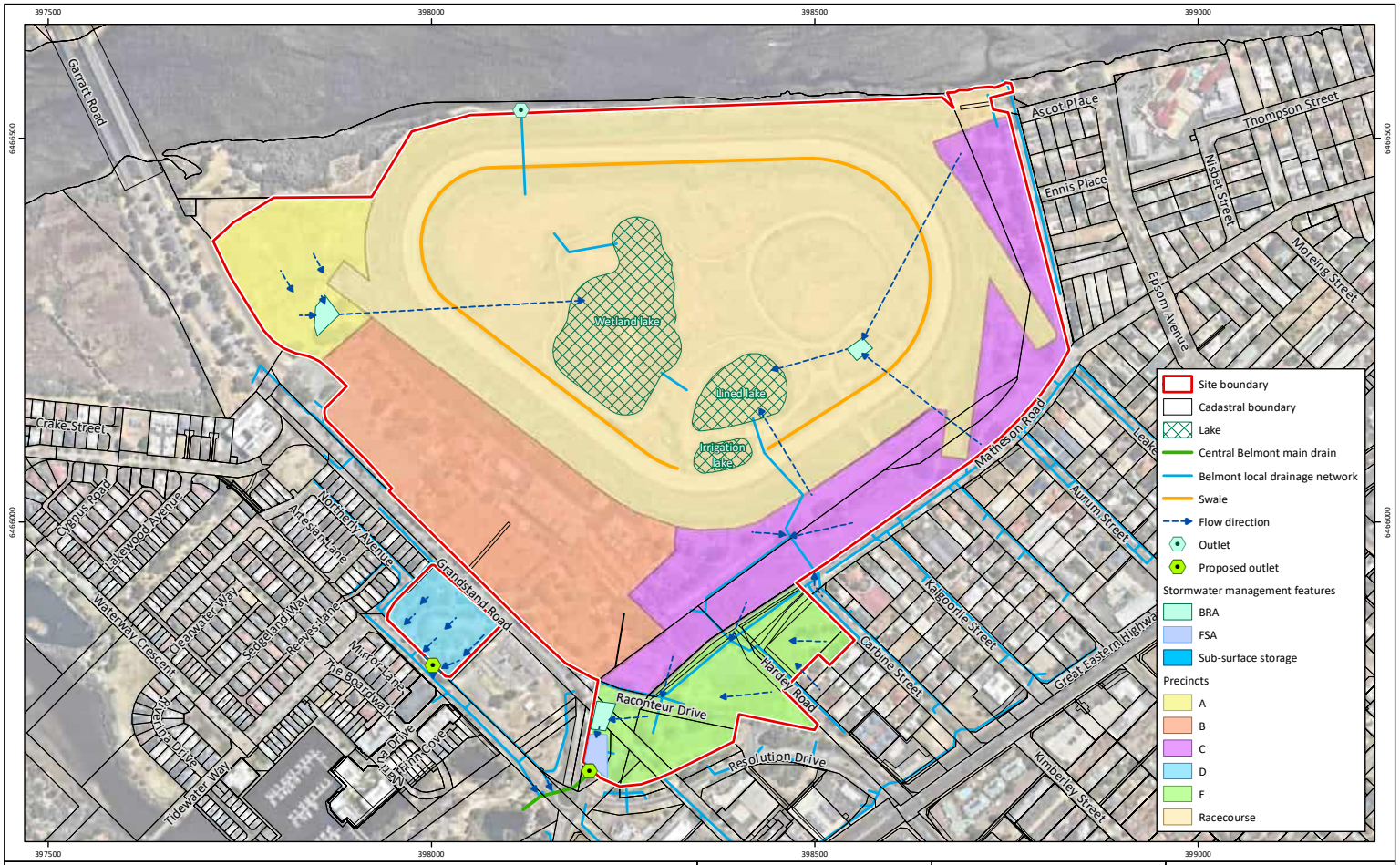



**Figure 7: Ascot LSP Precinct Plan**

| | |
|---|---|
| **Project:** | Local Water Management Plan<br>Golden Gateway Local Structure Plan |
| **Client:** | Perth Racing |

| | |
|---|---|
| **Plan Number:** | **EP23-109(03)--F29** |
| Drawn: | WJC |
| Date: | 01/05/2024 |
| Checked: | JM |
| Approved: | DPC |
| Date: | 17/05/2024 |

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Metres
Scale: 1:6,500@A4
GDA2020 MGA Zone 50

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**Figure 7A: Precinct A Stormwater Management Plan**

**Project:** Local Water Management Plan
Golden Gateway Local Structure Plan

**Client:** Perth Racing

**Plan Number:** EP23-109(03)--F32
Drawn: WJC
Date: 01/05/2024
Checked: JM
Approved: DPC
Date: 17/05/2024

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GDA2020 MGA Zone 50

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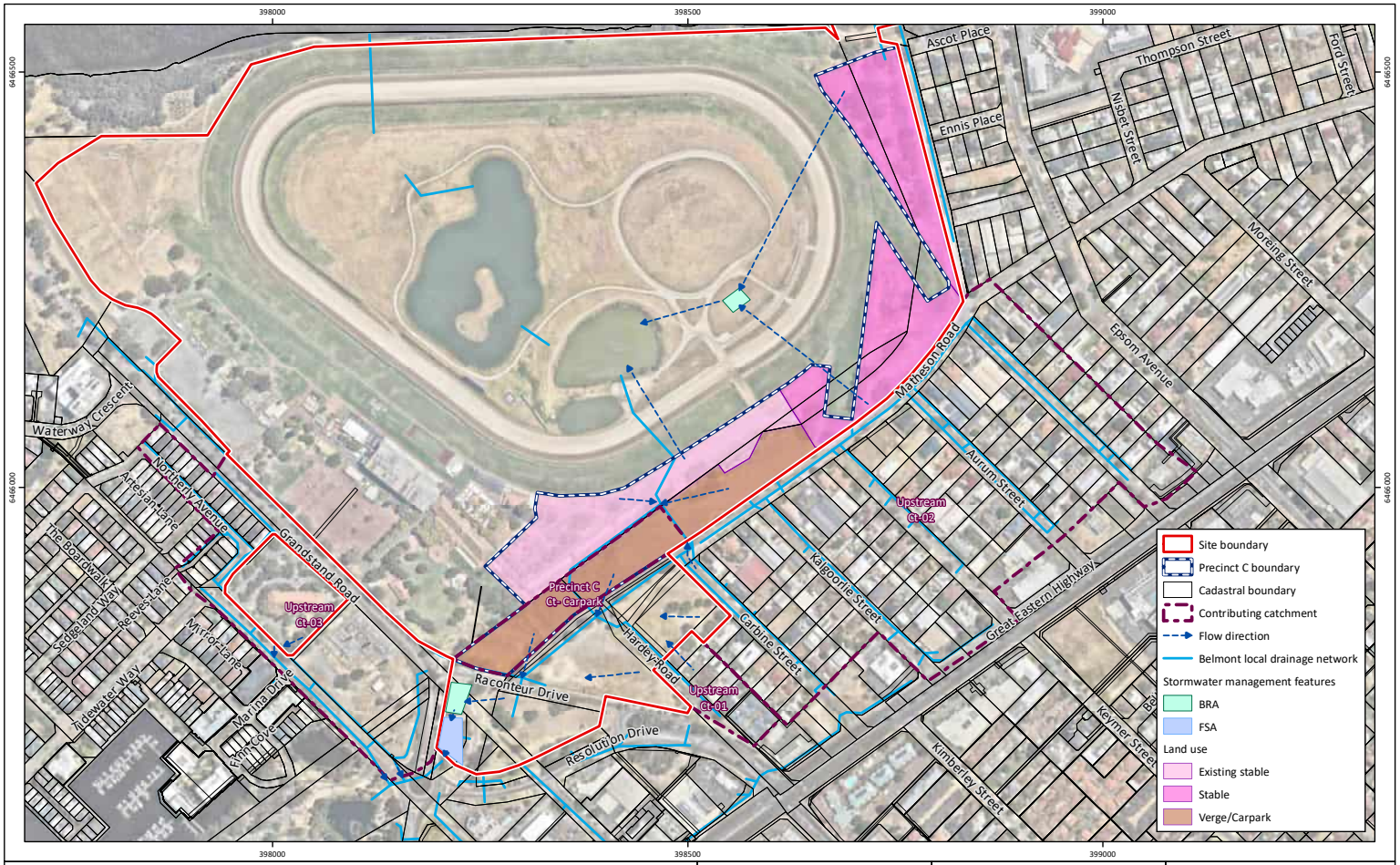



**Figure 7B: Precinct C Stormwater Management Plan**

**Project:** Local Water Management Plan
Golden Gateway Local Structure Plan

**Client:** Perth Racing

**Plan Number:** EP23-109(03)--F33
Drawn: WJC
Date: 01/05/2024
Checked: JM
Approved: DPC
Date: 17/05/2024

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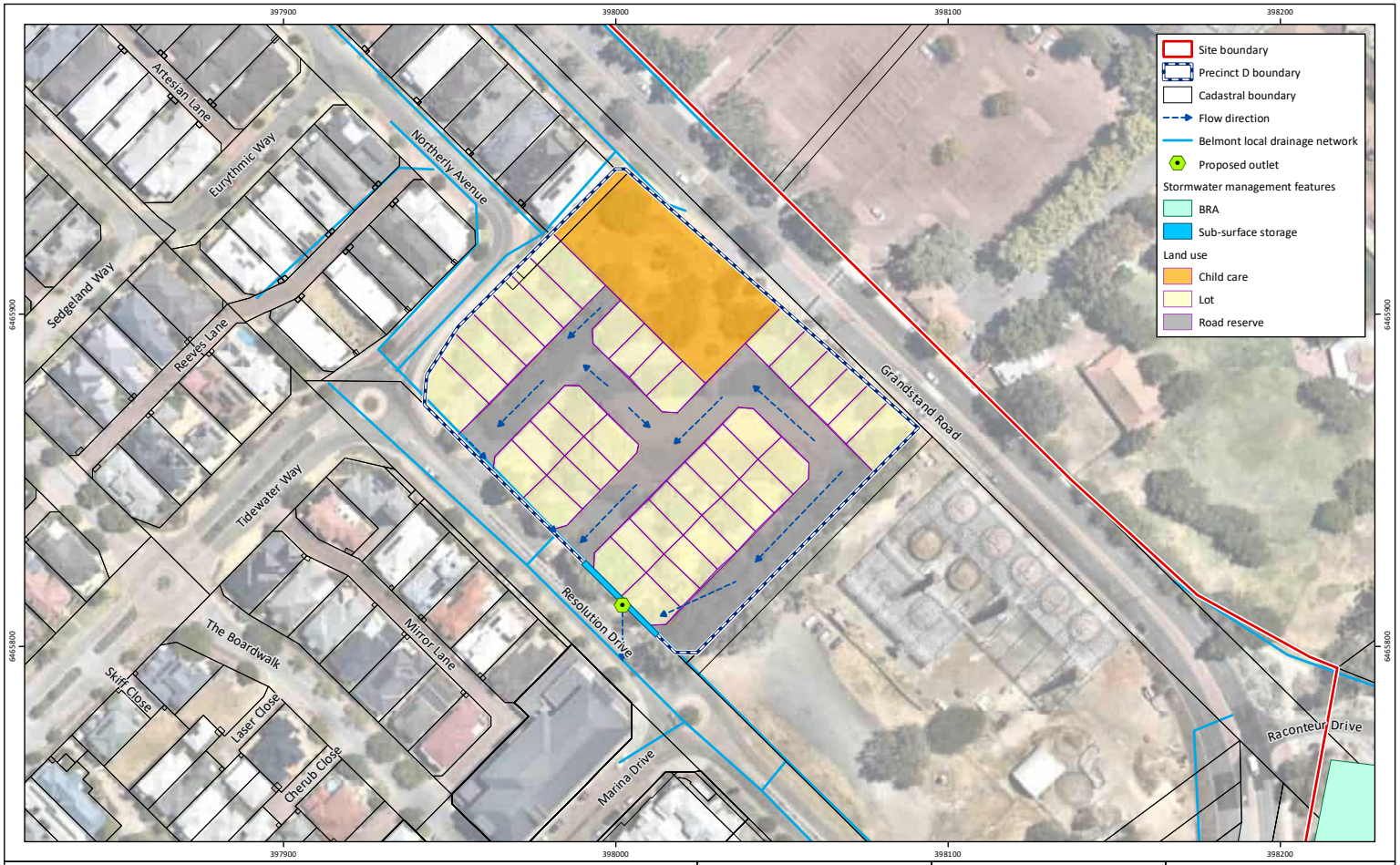



**Figure 7C: Precinct D Stormwater Management Plan**

**Project:** Local Water Management Plan
Golden Gateway Local Structure Plan

**Client:** Perth Racing

**Plan Number:** EP23-109(03)--F34
Drawn: WJC
Date: 01/05/2024
Checked: JM
Approved: DPC
Date: 17/05/2024

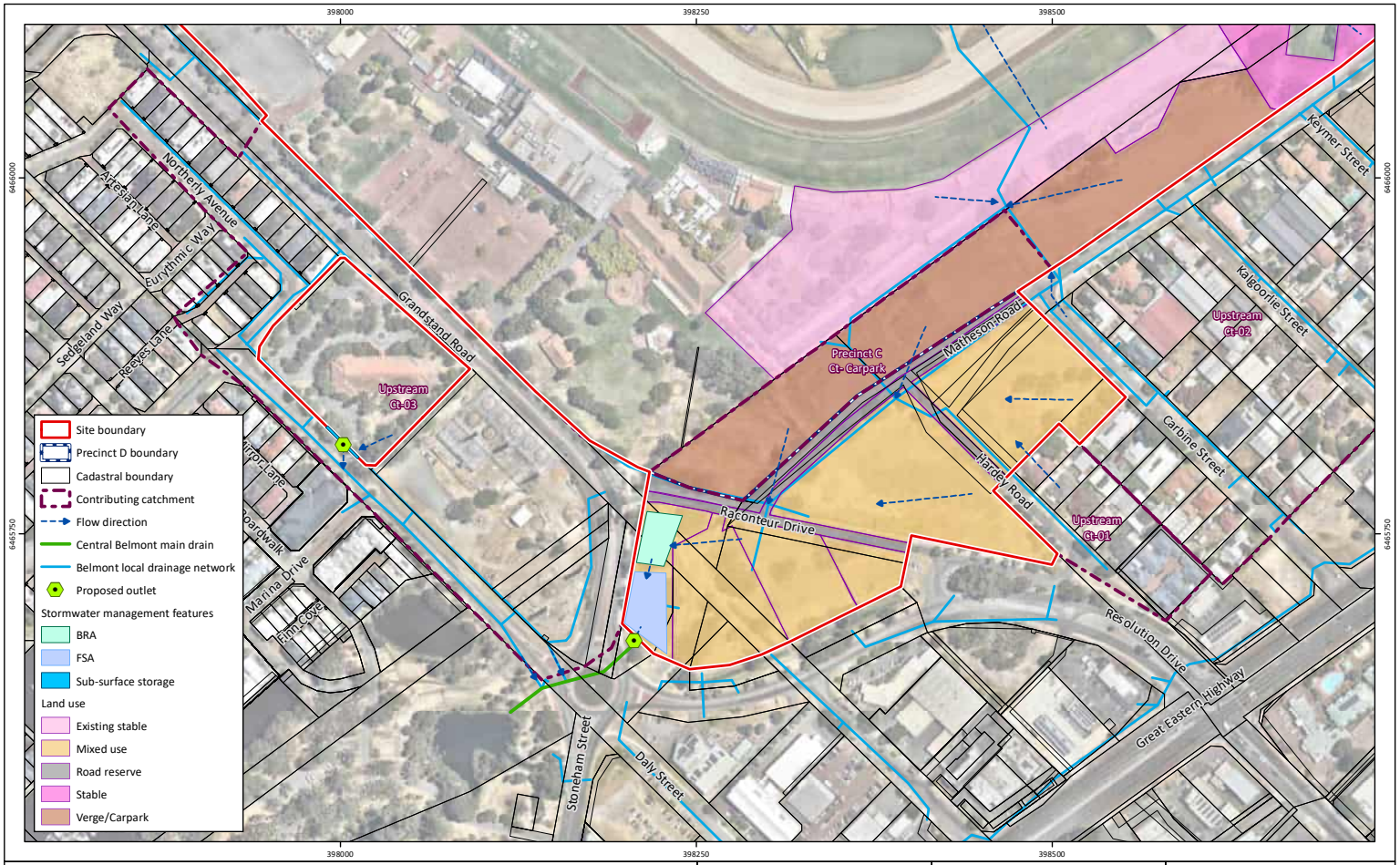
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0 25 50
Metres
Scale: 1:1,500@A4
GDA2020 MGA Zone 50

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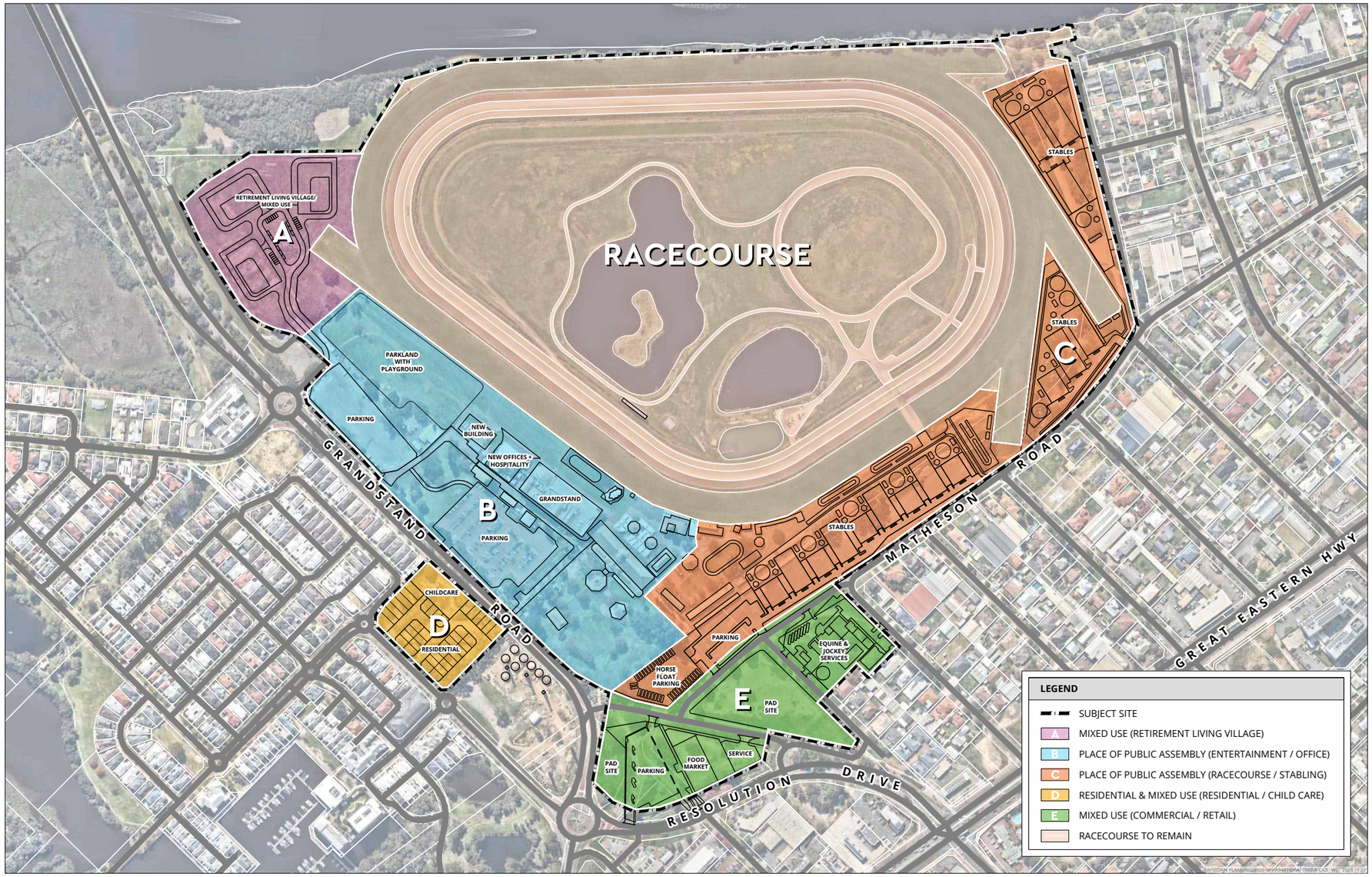
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# Appendix A

Concept plan

*ROWE Group Design (2023)*

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**DRAFT MASTER PLAN CONCEPT**
VARIOUS LOTS - ASCOT RACECOURSE
ASCOT

DRAFT

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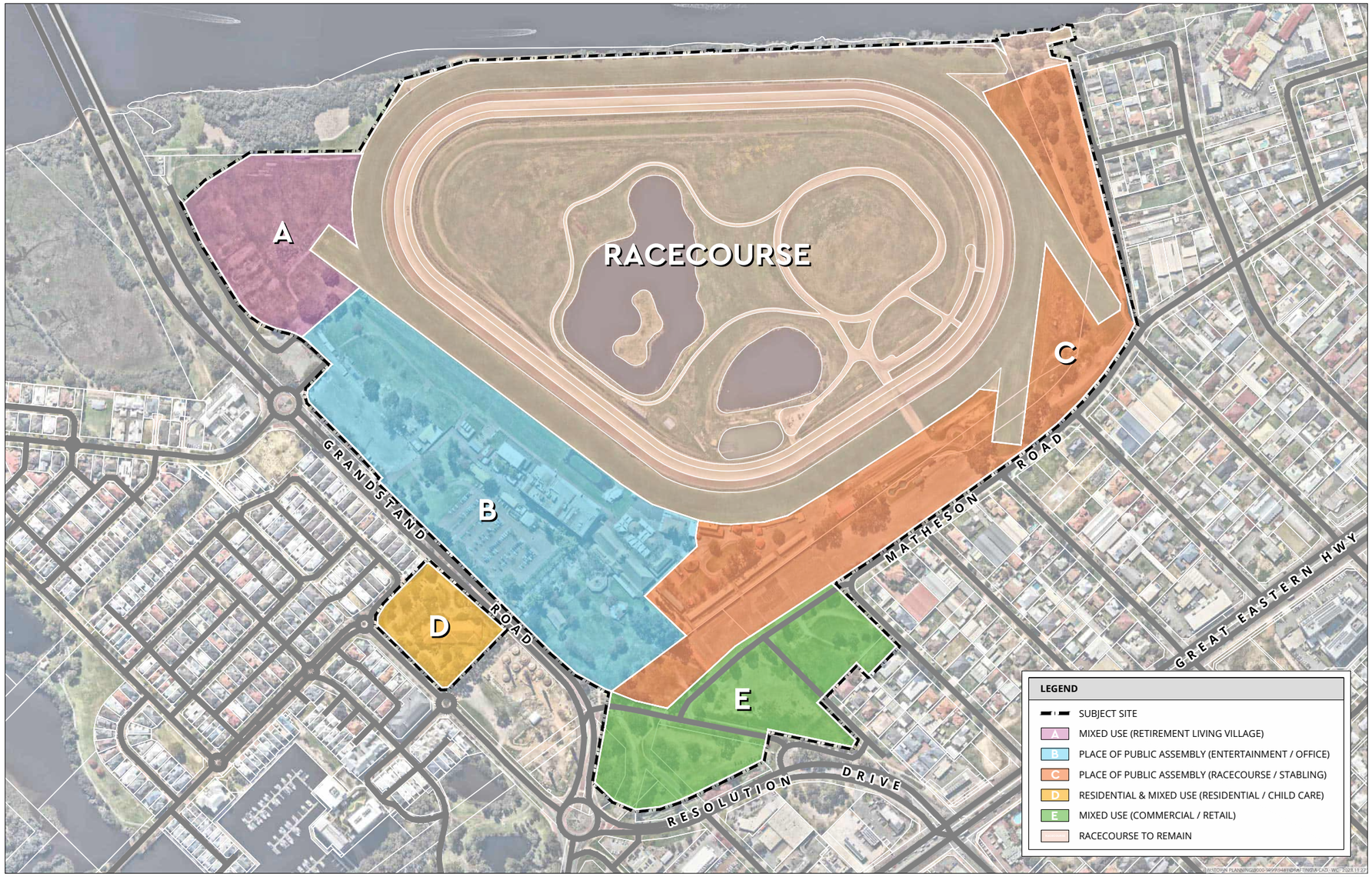
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DATE CREATED: 2023.11.27
PROJECTION: MGA50 GDA94
CADASTRE: LANDGATE
AERIAL: NEARMAP 20230831

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ROWE GROUP DESIGN

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**STRUCTURE PLAN PRECINCTS**
VARIOUS LOTS - ASCOT RACECOURSE
ASCOT

**DRAFT**

N

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SCALE @ A3: 1:4000
**9481-FIG-02-B**

DRAWN: WC
DATE CREATED: 2023.11.27
PROJECTION: MGA50 GDA94
CADASTRE: LANDGATE
AERIAL: NEARMAP 20230831

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ROWE GROUP DESIGN

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# Appendix B

Geotechnical Reports

*Precinct A – Douglas Partners 2024*

*Precinct D – Galt 2024*

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Douglas PARTNERS

GROUNDED EXPERTISE

# Report on Preliminary Geotechnical Investigation

**Proposed Residential Development**

**Part of Lot 9002 Grandstand Road, Ascot WA**

**Prepared for Perth Racing**

**Project 219164.03**

**25 January 2024**

Attachment 12.1.3 Environmental Assessment Report

Douglas Partners Pty Ltd
ABN 75 053 980 117
douglaspartners.com.au
**36 O'Malley Street, Osborne Park,** WA 6017
**(08) 9204 3511**

## Document History
## Details

| | |
|---|---|
| **Project No.** | 219164.03 |
| **Document Title** | Report on Preliminary Geotechnical Investigation |
| **Site Address** | Part of Lot 9002 Grandstand Road, Ascot WA |
| **Report Prepared For** | Perth Racing |
| **Filename** | 219164.03.R.001.Rev0 |

## Status and Review

| Status | Prepared by | Reviewed by | Date issued |
|---|---|---|---|
| Revision 0 | Venkat Vallurapalli/Brendan Divilly | Frederic Verheyde | 25 January 2024 |

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The undersigned, on behalf of Douglas Partners Pty Ltd, confirm that this document and all attached drawings, logs and test results have been checked and reviewed for errors, omissions and inaccuracies.

| Signature | Date |
|---|---|
| **Author** | 25 January 2024 |
| **Reviewer** | 25 January 2024 |

FS604853

Douglas Partners acknowledges Australia's First Peoples as the Traditional Owners of the Land and Sea on which we operate. We pay our respects to Elders past and present and to all Aboriginal and Torres Strait Islander peoples across the many communities in which we live, visit and work. We recognise and respect their ongoing cultural and spiritual connection to Country.

Attachment 12.1.3 Environmental Assessment Report

Douglas PARTNERS | GROUNDED EXPERTISE

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Test Pit and Borehole Logs

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**Appendix C:** Geotechnical Laboratory Test Certificates

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Attachment 12.1.3 Environmental Assessment Report



# Report on Preliminary Geotechnical Investigation
# Proposed Residential Development
# Part of Lot 9002 Grandstand Road, Ascot WA

## 1. Introduction

This report presents the results of a preliminary geotechnical investigation undertaken for a proposed residential development across Part of Lot 9002 Grandstand Road, Ascot WA. The investigation was commissioned by Mr. James Oldring of Perth Racing in a signed order to proceed dated 8 August 2023 and was undertaken in accordance with Douglas' proposal dated 8 May 2023.

It is understood that Perth Racing is evaluating the feasibility of developing the northwest portion of Lot 9002 for possible residential use (the 'site').

The objective of the investigation is to assess the subsurface soil and groundwater conditions at across the site to provide preliminary comments on:

- The geotechnical suitability of the site for the proposed development.
- Geotechnical opportunities and constraints relevant to the proposed development.
- Areas of foundation risk including the presence of aggressive soils and strategies to address identified risks.
- Site preparation, including the possible reuse of existing soil as controlled fill.
- Excavation conditions.
- The likely site classification in accordance with the requirements of AS 2870-2011.
- Appropriate earthquake design factor for the site, in accordance with AS 1170.4-2007.
- Suitable foundation systems, including preliminary design parameters.
- Preliminary design parameters for the design of retaining structures and batter slopes.
- Depth to groundwater at the time of the investigation.
- Recommendations on additional geotechnical investigation at detailed design phase or to address specific ground conditions encountered.

The investigation included eight cone penetration tests, 16 test pits and one borehole excavated and drilled as a part of detailed site investigation (for contamination), and laboratory testing of selected samples. The details of the field work are presented in this report, together with comments and recommendations on the items listed above.

The investigation was conducted concurrently with a detailed site investigation (for contamination), which has been reported under separate cover (219164.01.R.001.Rev0). The detailed site investigation (for contamination) report should be read in conjunction with this report.

## 2. Site Description

The site comprises an irregular shaped area, approximately 36.2 ha in size, that covers a part of Lot 9002 Grandstand Road, within the Ascot Racecourse.

At the time of the field work, the majority of the site was vacant and vegetated with short grass. A few mature trees, about 5 m to 10 m in height, occupied the southern part of the site. A parking lot and small loading area were located at the south-western corner of the site. Some fly-tipped rubbish, including fences and posts, were observed at several locations across the site.

According to publicly available LiDAR data (DEM derived to 5 m), the topography across Lot 9002 is relatively flat with existing surface levels ranging from approximately RL 2 m relative to the Australian Height Datum (AHD) in the western part of the site to RL 3.5 in the north-eastern corner of the site.

The Perth 1: 50 000 Environmental Geology sheet indicates that shallow sub surface conditions beneath the western two thirds of the site comprise sandy silt of the Guildford Formation, and beneath the north-eastern corner and eastern corner of the site comprise alluvium.

The Perth Groundwater Atlas (2004) indicates that in May 2003, the groundwater level beneath the site was less than RL 1 m, or between approximately 1.0 m and 2.5 m below the existing surface level. The Atlas also indicates that the groundwater flow direction beneath the site in May 2003 was approximately northwest towards the Swan River.

The published acid sulfate soil risk mapping indicates that the site is located within an area which is mapped as "*high to moderate risk of acid sulfate soils occurring within 3 m of natural soil surface*".

## 3. Field Work Methods

Field work for the investigation was carried out between 11 October and 9 November 2023 and comprised:

- The excavation of 16 test pits.
- The drilling of one borehole.
- Perth sand penetrometer (PSP) or Dynamic cone penetrometer (DCP) testing adjacent to each test pit or borehole location.
- The performance of cone penetration tests at 8 locations (CPT24 to CPT31A). A total of 14 CPTs were undertaken after repeating CPTs at some locations in attempt to achieve greater testing depth following shallow refusal in uncontrolled fill.

The test pits (locations 7 to 22) were excavated using a 5-tonne excavator, equipped with 450 mm toothed bucket, and the borehole (location 23) was drilled using a 250 mm diameter power auger attached to the same excavator. The ground conditions at each test pit and borehole were logged in accordance with Australian Standard (AS 1726, 2017) by a geo-environmental engineer from Douglas. Soil samples were recovered from selected locations for subsequent laboratory testing.

Dynamic cone penetrometer (DCP) and Perth sand penetrometer (PSP) tests were undertaken adjacent to the test pit and borehole locations in accordance with Australian Standards (AS 1289.6.3.3, 1997; AS 1289.6.3.2, 1997) to assess the in-situ density of the shallow soils.

The CPTs use a 36 mm diameter instrumented cone with a following 130 mm long friction sleeve attached to rods of the same diameter, pushed continuously at a rate of 20 mm/sec into the soil by hydraulic thrust from a truck rig. Strain gauges in the cone and sleeve measure resistance to penetration and friction along the sleeve during penetration. This data is recorded on a computer and analysed to assess the type, properties and condition of the materials penetrated. The CPT's were pushed to termination depths of up to 20.2 m. Upon withdrawing the CPT probe, each test hole was dipped in an attempt to measure groundwater levels. CPTs were repeated at several test locations to attempt achieving greater testing depth following shallow CPT refusal on inferred hard foreign inclusions in the uncontrolled fill.

Test locations were determined using a handheld GPS and site features and are marked on Drawing 1, Appendix B. Surface elevations were recorded using a differential GPS with a reported accuracy of 0.1 m.

## 4. Field Work Results

### 4.1 Ground Conditions

The logs of the ground conditions and results of the field testing are presented in Appendix B, together with notes defining descriptive terms and classification methods, in Appendix A.

- **Uncontrolled FILL**
    - **Granular FILL - SAND, Organic SAND, Gravelly SAND, Silty SAND and Sandy GRAVEL (SP, SP-SM, SM and GP-GM)** – generally sandy fill (or gravelly material associated with pavement layers at location 23), uncontrolled (apart from the pavement layers), from surface to depths of between 0.6 m and 3.6 m depth, encountered at all locations. A layer of organic sandy fill layer was observed between 1.4 m and 1.8 m depth at location TP8. The sandy fill was generally loose to medium.
    - **Cohesive FILL - Clayey SAND, Sandy CLAY, CLAY (SM, SC, CI and CL-CI)** – generally stiff to very stiff, either underlying the aforementioned sandy fill material or interbedded within layers of sandy fill, encountered at test pit locations 9, 20, 21, 23, and CPT locations 24, 24A, 29 and 29A.

  A considerable amount of foreign inclusions such as fragments of brick, glass, timber, geo-fabric, concrete, plastic, rubber, scrap metal, terracotta pipes, redundant cables and PACMs were observed at all test pit locations, except location 22. A layer of asphalt was encountered at 0.95 m depth at TP9. The fill materials across the site are uncontrolled.

  It is noted that the fill extended below groundwater level at many locations.

Overlying natural soils including:

- **Clayey soils including Clayey SAND and CLAY** – ranging between very soft to soft and stiff to very stiff, encountered under the fill materials at CPTs 25, 30 and 31A to depths between 4.2 m and 14.9 m.
- **Sandy soils including SAND and Silty SAND** – underlying and interbedded within the above clayey soils at CPTs 25, 30 and 31A. The sand was generally very loose and loose to medium dense to depths between 10.5 m and 14.9 m, becoming medium dense and dense below.

### 4.2 Groundwater

Groundwater level observations between 18 September and 9 November 2023 are summarised in Table 1 and are shown on the logs in Appendix B.

The test holes were immediately backfilled following sampling, which precluded longer-term monitoring of groundwater levels. Six monitoring wells (MW01 to MW06) were installed as part of the preliminary environmental investigation (reported separately) and groundwater observations available from these wells at the time of report writing have been included in Table 1.

**Table 1: Summary of Groundwater Levels**

| Location | Date of Measurement | Ground Surface Level [1] (m AHD) | Groundwater Depth (m) | Groundwater Level [2] (RL m AHD) |
|---|---|---|---|---|
| MW01 | 18 September 2023 | 1.9 | 1.30 | 0.6 |
| MW02 | | 2.0 | 1.46 | 0.5 |
| MW03 | | 3.2 | 2.37 | 0.8 |
| MW04 | | 2.4 | 1.59 | 0.8 |
| MW05 | | 2.5 | 1.21 | 1.3 |
| MW06 | | 2.2 | 1.09 | 1.1 |
| TP7 | 9 November 2023 | 2.9 | 2.30 | 0.6 |
| TP9 | | 2.1 | 2.10 | 0.0 |
| TP12 | | 2.1 | 2.10 | 0.0 |
| TP13 | | 2.8 | 2.50 | 0.3 |
| TP15 | | 2.2 | 2.40 | -0.2 |
| TP16 | | 2.6 | 2.50 | -0.1 |
| TP17 | | 2.2 | 2.10 | 0.1 |
| TP19 | | 2.2 | 1.80 | 0..4 |
| TP20 | | 2.0 | 2.10 | -0.1 |
| TP21 | | 2.1 | 1.80 | 0.3 |
| TP22 | | 2.3 | 1.80 | 0.5 |
| BH23 | | 2.4 | 1.70 | 0.7 |
| CPT25 | 11 October 2023 | 3.4 | 3.00 | 0.4 |
| CPT28 | | 1.9 | 1.30 | 0.6 |
| CPT29A | | 2.3 | 2.20 | 0.1 |
| CPT30 | | 3.2 | 2.80 | 0.4 |
| CPT31A | | 2.1 | 2.00 | 0.1 |

Notes for Table 1: [1]: Surface level measured using a differential GPS.
[2]: Groundwater Level = Surface Level – Groundwater Depth.

It should be noted that groundwater levels are affected by climatic conditions and land usage and will therefore vary with time. In addition, owing to the proximity of the Swan River, the groundwater levels are expected to be impacted by the tidal river conditions and river flood levels.

## 5. Laboratory Testing

A geotechnical laboratory testing programme was carried out by a NATA accredited laboratory and comprised:

- the particle size distributions on seven samples;
- the Atterberg Limits and linear shrinkage on three samples; and
- the organic content on four samples.

Results of the laboratory testing are summarised in Tables 2. The test certificates are presented in Appendix C.

**Table 2: Results of Laboratory Testing for Soil Identification**

| Location | Depth (m) | Fines (%) | Sand (%) | Gravel (%) | LL (%) | PL (%) | PI (%) | LS (%) | OC (%) | Material |
|---|---|---|---|---|---|---|---|---|---|---|
| TP8 | 1.5 | 9 | 61 | 30 | - | - | - | - | 6.8 | FILL / Organic SAND SP-SM, with gravel and silt |
| TP13 | 1.5 | 4 | 95 | 1 | - | - | - | - | 1.6 | FILL / SAND SP, trace gravel and silt |
| TP19 | 2.5 | 5 | 83 | 12 | - | - | - | - | 1.5 | FILL / SAND SP, trace gravel and silt |
| TP21 | 2.0 | 40 | 51 | 9 | 37 | 24 | 13 | 8.5 | - | Sandy CLAY CI, medium plasticity, trace gravel |
| TP22 | 2.0 | 7 | 93 | 0 | NO | NP | NP | - | - | SAND SP-SM, with silt |
| TP23 | 2.0 | 45 | 48 | 7 | 44 | 22 | 22 | 9.5 | - | FILL / Sandy CLAY CI, medium plasticity, trace gravel |
| TP23 | 2.5 | 12 | 87 | 1 | - | - | - | - | 1.2 | FILL / SAND SP-SM, with silt, trace gravel |

Notes: Fines = Finer than 75 µm.
Sand = Between 2.36 mm and 75 µm.
Gravel = Larger than 2.36 mm.
LL – liquid limit PL – plastic limit PI – plasticity index LS – linear shrinkage
OC – organic content NO – not obtainable NP – non plastic

## 6. Proposed Development

At the time of preparing this report, the details for the proposed development were not yet available. Notwithstanding, it is understood that the proposed development is likely to be residential and, given the location, is presumed would likely be multistorey and possibly include a basement level.

## 7. Comments

### 7.1 Site Suitability

The investigation indicates that the site is generally underlain by uncontrolled fill overlying very soft to stiff clayey materials and very loose sandy soils becoming medium dense and dense with depth as described in Section 4.1 above.

From a geotechnical standpoint, there are several significant geotechnical constraints that will adversely impact on any development of the site including;

- Deep uncontrolled fill, unsuitable to support shallow foundations, and will impact on construction activities associated with deep piled foundations.
- Deep very soft and very loose natural soils under the uncontrolled fill, unsuitable to support shallow foundations.
- Shallow groundwater which will make earthworks across the site any possible remediation works of the above difficult. It should be noted that the abovementioned uncontrolled fill and soft soils both extend below groundwater.

Owing to the significant geotechnical constraints, any possible development will likely require a piled foundation solution into the medium dense and dense sandy soils, encountered below depths of approximately 10 m to 15 m. Additional geotechnical investigation will be required to confirm the foundation design and suitable pile design parameters. Also, noting that any proposed additional loading of the ground (for instance from the placement of fill to raise site levels, if proposed) would generate further consolidation of the soft soils underlying the site and cold result in some possible significant ground settlement. Therefore, surcharging areas (by placing temporary fill prior to construction of any structure) outside the proposed building envelopes might also be required during the site preparation to manage the risk of differential settlements between proposed buildings and adjacent ground, following their construction.

### 7.2 Site Classification

The shallow ground conditions beneath the site comprise uncontrolled fill materials and deep loose and soft soil deposits. Based on the results of the investigation and in accordance with Australian Standard (AS 2870, 2011), a site classification of 'Class P' applies to the site, owing to the presence of the uncontrolled fill and deep loose and soft soil.

### 7.3 Site Seismic Classification

Owing to the uncontrolled fill and deep very loose and very soft soil deposits across the site, an earthquake design soil sub-class of Ee is considered appropriate for this site in accordance with Australian Standard (AS 1170.4, 2007). The Hazard Factor (Z) for the site is 0.09, according to Australian Standard (AS 1170.4, 2007). Due to the deep loose soil below the water table, the site also has a significant potential for liquefaction. An assessment on the liquefaction potential of the site should be considered during any detailed investigation, when more details can be collected on the extent of deep loose soils.

### 7.4 Excavation Conditions

The encountered ground conditions generally comprise uncontrolled fill, with some large foreign inclusions within the fill, extending below groundwater. Conventional earthmoving equipment (such as large excavators, say at least 20 t) should be generally suitable for shallow excavations in the surficial uncontrolled fill. Shallow groundwater is likely to impact excavations across the site.

The majority of the uncontrolled fill encountered during this preliminary investigation is considered to be geotechnically unsuitable for re-use as structural fill in its current condition. Any further consideration to reuse the uncontrolled fill would require some specific geotechnical provisions, such as screening and disposing its unsuitable components. Separating the re-useable granular components (e.g. the sandy fill) from its cohesive components (e.g. clayey fill) might also prove to be practically difficult. Owing to the significant variability of uncontrolled fill materials across the site, any re-use potential from a geotechnical standpoint should be confirmed on-site by a geotechnical engineer. Some environmental considerations (i.e. contamination) are also anticipated to be required. Overall, at this stage of the study, the reuse of the encountered uncontrolled fill should be considered to be associated with some significant constraints that might preclude such reuse.

### 7.5 Slope Stability

During construction, it is recommended that temporary batter slopes across the site are maintained flatter than 2:1 (H:V) if not retained. This batter angle is valid provided no surcharge loads (including live loads such as vehicles and machinery) apply at the top of the slope. In uncontrolled fill materials, a safe batter angler not steeper than 3:1 (H:V) is recommended for design for slopes not greater than 3 m in height, however, owing to variability of the uncontrolled fill materials, this value should be adjusted during construction based on the encountered conditions.

The design of unpropped flexible or rigid walls should be undertaken using a triangular pressure distribution and the earth pressure parameters given in Table 4. In addition to the soil pressure, wall design should also allow for external loads such as buildings, live loads and hydrostatic pressure. Owing to the likely significant settlements associated with the uncontrolled fill and deep soft soils, the requirement to adopt a piles foundation system to support proposed retaining walls is anticipated.

**Table 4: Preliminary Soil Parameters for Earth Retaining Design**

| Soil Type and Density | Soil Unit Weight Above Water<br>$\gamma$<br>(kN/m$^3$) | Submerged Soil Unit Weight<br>$\gamma'$<br>(kN/m$^3$) | Drained Angle of Friction<br>$\Phi'$<br>(°) | Undrained Shear Strength<br>Cu<br>(kPa) | Coefficient of Earth Pressure – Active<br>$K_a$ | Coefficient of Earth Pressure – Passive<br>$K_p$ | Coefficient of Earth Pressure – at Rest<br>$K_0$ |
|---|---|---|---|---|---|---|---|
| Uncontrolled Fill Materials | 16 | 6 | 28 | - | 0.36 | 2.7 | 0.5 |

It should be noted that the passive earth pressure coefficient (second last column of Table 4) is an ultimate value and does not incorporate a factor of safety. Because the stress-strain relationship curve for lateral loading is not linear, relatively large strains are required to mobilise full passive pressure, but only relatively small strains are required to mobilise half the passive pressure, therefore it would be prudent to incorporate a factor of safety of at least 2 for uncontrolled fill materials, to derive design values from the ultimate values.

### 7.6 Foundation Options

Shallow footings are not considered suitable across this site, owing to the significant thickness of uncontrolled fill and deep loose and soft soils.

#### 7.6.1 Piles

It is anticipated that a piled foundation system, with deep bored piles that penetrate the deep loose and soft soils into the medium dense and dense sandy soils at depth, would likely be required for any foundations on-site.

Bored piles will require temporary or permanent casing throughout the uncontrolled fill materials, noting that possible obstructions within the uncontrolled might cause some difficulties when driving the casing or drilling the pile hole. This pile type will involve soil excavation to target founding level and hence would produce spoil that needs to be handled and disposed of in a suitable manner, which will need to also be considered from an environmental standpoint.

Installation through the uncontrolled fill materials could be affected by the possible presence of large, hard inclusions and the design of the pile installation methodology should take this possibility into consideration.

The settlement of the uncontrolled fill will exert negative skin friction on the piles, which the piles will need to be designed to accommodate or be constructed in sleeves.

Additional deep geotechnical boreholes will be required across the site to inform on the pile design.

#### 7.6.1 Controlled Modulus Columns

Controlled modulus columns could be installed as an alternative to conventional pile foundations, allowing shallow footings to be used whilst controlling settlements to acceptable limits.

Installation of controlled modulus columns involves displacing a column of material using a reverse flight auger, densifying the soil around the auger, and backfilling the resulting hole with cement ground under moderate pressure to create a 'hard' inclusion in the ground. The columns are typically 250 mm to 500 mm in diameter. Column spacings of columns typically 1.8 m to 2.5 m but would need input from a specialist ground improvement contractor. Columns can be installed to depths of up to 50 m, so could penetrate to the base of the uncontrolled fill and deep loose and soft soils. However, if large hard inclusions such as concrete slabs or beams, are encountered then the auger may experience refusal, as the CPTs did at several locations during the preliminary geotechnical investigation.

A load transfer platform, such as a granular, well compacted fill layer, possibly reinforced with geogrid or geotextile, would be needed to transfer loads from shallow foundations to the columns.

One main benefit of this ground improvement option (compared to piling) would be to minimise differential settlement across the site and notably between buildings and surrounding grounds. However, it would likely be limited to low level development (say 2 to 3 level buildings), and this option is anticipated to likely be prohibitively expensive, with likely significant mobilisation and installation costs. The advice of a specialist ground improvement contractor, such as Menard Oceania, is suggested to be sought to further assess the suitability of this ground improvement to the proposed development.

### 7.7 Pavement Construction

The uncontrolled fill across the site does not form a suitable subgrade material for pavement in its current condition. Depending on the expected loading of proposed pavement, the requirement for some over-excavation of uncontrolled fill is likely. Construction should involve the use of a geo-composite layer (such as Global Synthetics' Combigrid) across the base of the over-excavation, overlain by a 500 mm thick layer of compacted crushed limestone, placement of a layer of geogrid (such as Global Synthetics' Secugrid), and a further 500 mm of compacted sand fill. The base of the constructed floating pavement footprint should be at least 2 m wider on each side than the total pavement width (4 m wider in total) to account for a suitable batter and transfer of load. Standard flexible pavements could then be constructed on the 1 m thick raft of stiffened subgrade. Placement of the initial base layer of composite geogrid may be difficult across areas of exposed uncontrolled fill. As such, depending on the site conditions, a 300 mm thick capping layer of clean fill may be required.

Regardless of the above site preparation, some settlement of the pavement should be expected over its service life and should be considered in the selection of the pavement surfacing. The use of pavers should be considered as such surfacing treatment would deform without cracking. Alternatively, a bituminous seal should be preferred over say an asphalt, owing to greater flexibility and to decrease maintenance and repair requirements, noting however that seals are less resistant than asphalt to shearing forces from tyres of turning heavy vehicles. The use a specialised asphalt, such as a stone mastic asphalt, could also be considered, noting it would be less resistant to the risk of cracking than a seal. Some allowance for regular maintenance and repairs should be allowed during the serviceability of the pavement.

### 7.8 Stormwater Drainage

Owing to the occurrence of low permeability soils and groundwater at shallow depth, the site is considered unsuitable for on-site stormwater disposal. It is suggested that stormwater is controlled using positive drainage or a subsoil drainage network, connected to a suitable outflow.

### 7.9 Additional Geotechnical Investigation

Additional geotechnical investigation across the site, by way of deep geotechnical boreholes (as a minimum), further CPT and additional laboratory testing, should be undertaken to help refine the ground model, provide pile design parameters, confirm suitable bearing strata for piles, and assess the soil aggressivity and exposure classification for piles. It is recommended that the detailed investigation programme be developed once some details of the proposed development

are known, if possible, in order to target specific geotechnical issues associated with the development.

The investigation covered in this report should be considered preliminary and as noted in selected sections of the report, additional detailed geotechnical testing at a greater testing frequency is anticipated once the project design has progressed.

## 8. References

AS 1170.4. (2007). *Structural Design Actions, Part 4: Earthquake Actions in Australia.* Reconfirmed 2018. Incorporating Amendments 1 & 2: Standards Australia.

AS 1289.6.3.2. (1997). *Methods for testing soils for engineering purposes - Soil strength and consolidation tests - Determination of the penetration resistance of a soil - 9kg dynamic cone penetrometer test.* Reconfirmed 2013: Standards Australia.

AS 1289.6.3.3. (1997). *Methods for testing soils for engineering purposes - Soil strength and consolidation tests - Determination of the penetration resistance of a soil - Perth sand penetrometer test.* Reconfimed 2013: Standards Australia.

AS 1726. (2017). *Geotechnical Site Investigations.* Standards Australia.

AS 2159. (2009). *Piling - Design and Installation.* Standards Australia.

AS 2870. (2011). *Residential Slabs and Footings.* Standards Australia.

## 9. Limitations

Douglas Partners (DP) has prepared this report for this project at Part of Lot 9002 Grandstand Road, Ascot WA in accordance with DP's proposal dated 8 May 2023 and acceptance received from Mr James Oldring in a signed services order dated 8 August 2023. The work was carried out under DP's Engagement Terms. This report is provided for the exclusive use of Perth Racing for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

The results provided in the report are indicative of the sub-surface conditions on the site only at the specific sampling and/or testing locations, and then only to the depths investigated and at the time the work was carried out. Sub-surface conditions can change abruptly due to variable geological processes and also as a result of human influences. Such changes may occur after DP's field testing has been completed.

DP's advice is based upon the conditions encountered during this investigation. The accuracy of the advice provided by DP in this report may be affected by undetected variations in ground conditions across the site between and beyond the sampling and/or testing locations. The advice may also be limited by budget constraints imposed by others or by site accessibility.

Attachment 12.1.3 Environmental Assessment Report



The assessment of atypical safety hazards arising from this advice is restricted to the geotechnical components set out in this report and based on known project conditions and stated design advice and assumptions. While some recommendations for safe controls may be provided, detailed 'safety in design' assessment is outside the current scope of this report and requires additional project data and assessment.

This report must be read in conjunction with all of the attached and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by DP. This is because this report has been written as advice and opinion rather than instructions for construction.

The scope of work for this investigation/report did not include the assessment of surface or sub-surface materials or groundwater for contaminants, within or adjacent to the site. Should evidence of fill of unknown origin be noted in the report, and in particular the presence of building demolition materials, it should be recognised that there may be some risk that such fill may contain contaminants and hazardous building materials.

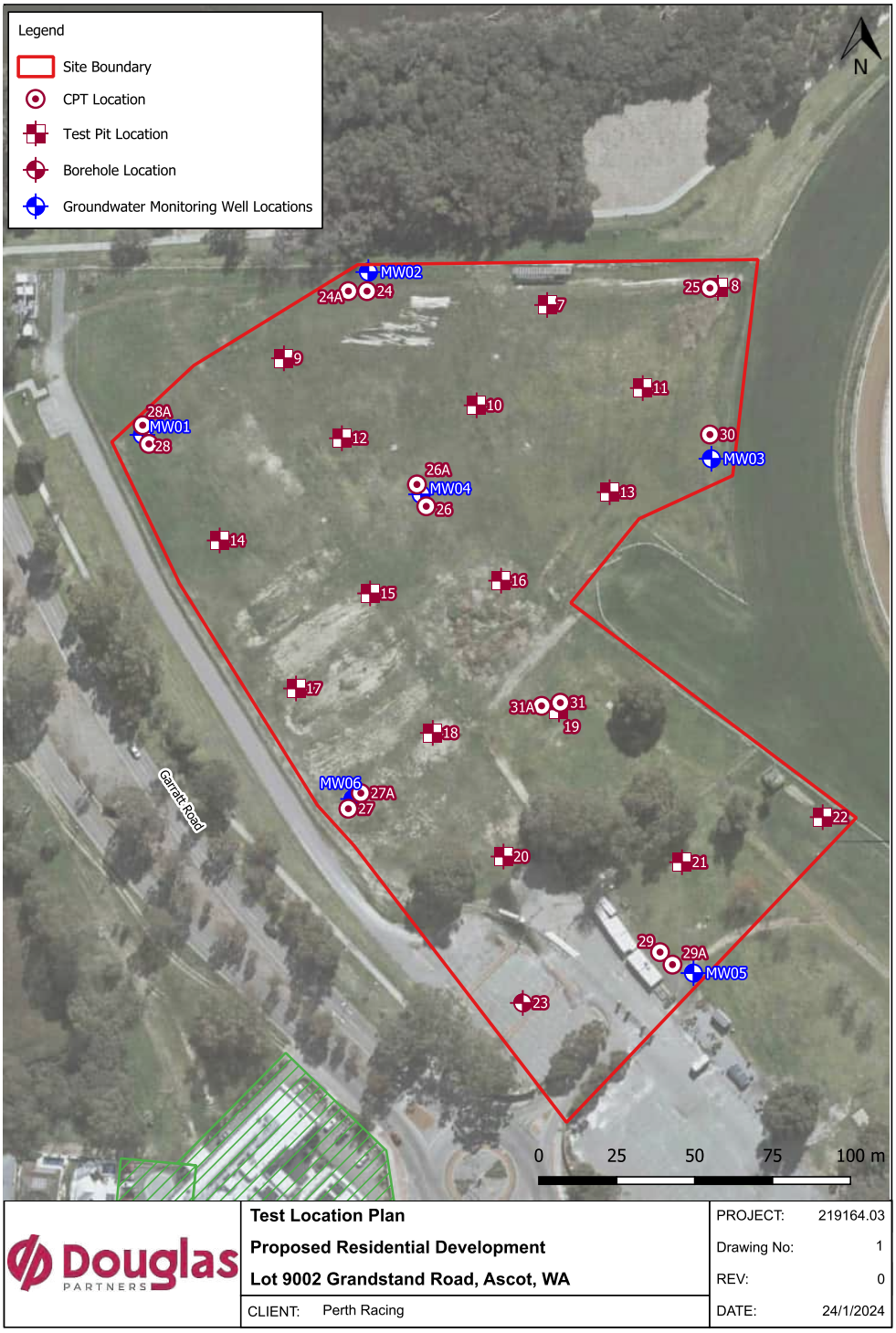
**Appendix B**

Test Location Plan

Test Pit and Borehole Logs

CPT Results

Attachment 12.1.3 Environmental Assessment Report



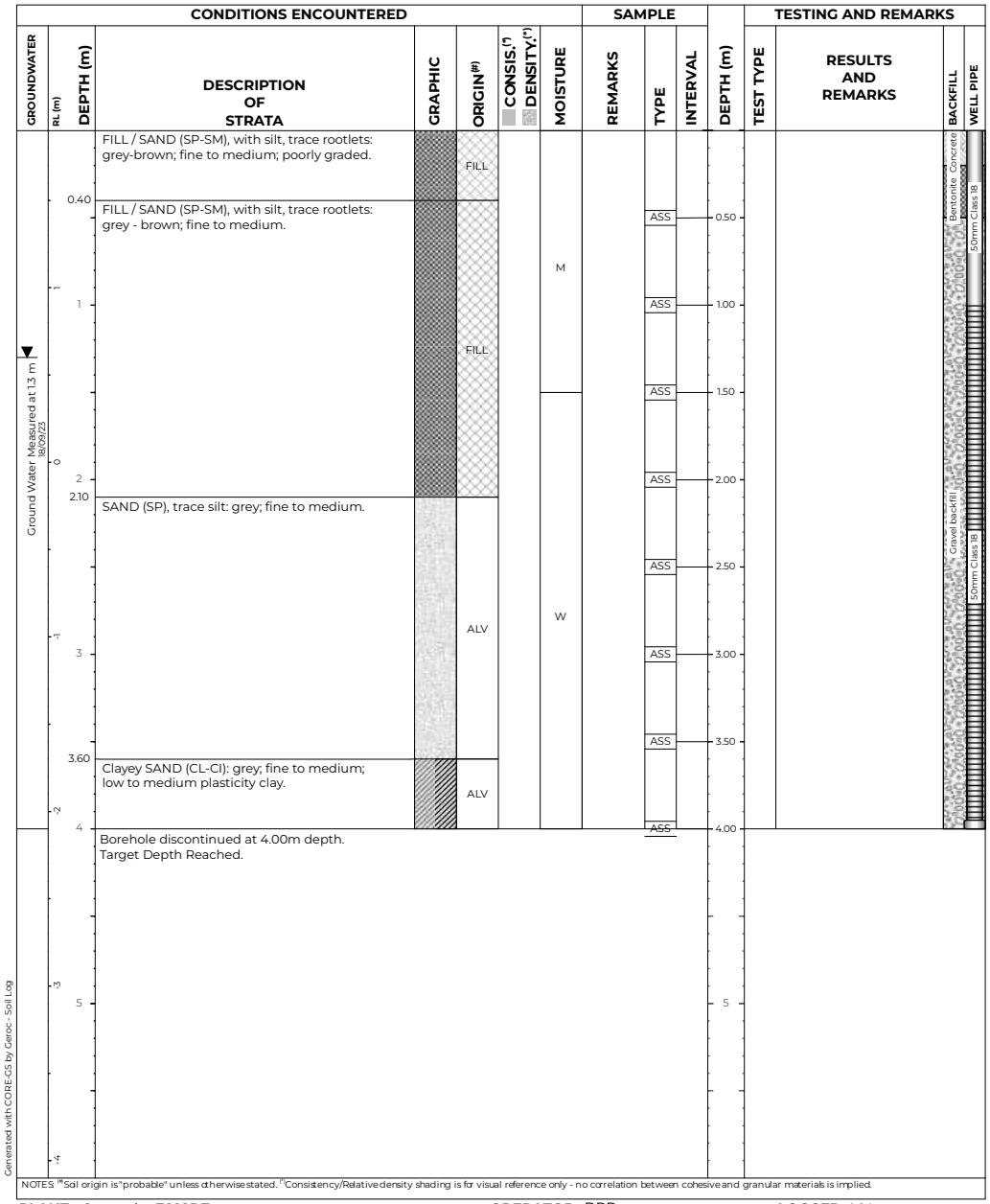
Attachment 12.1.3 Environmental Assessment Report

# BOREHOLE LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 1.9 AHD
**COORDINATE:** E:397722.0, N:6466365.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** MW 01
**PROJECT No:** 219164.01
**DATE:** 11/09/23
**SHEET:** 1 of 1




**PLANT:** Geoprobe 7822DT
**METHOD:** Direct Push Probing
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.

**OPERATOR:** DPP

**LOGGED:** VV
**CASING:** Nil

Refer to explanatory notes for symbol and abbreviation definitions

Attachment 12.1.3 Environmental Assessment Report

# BOREHOLE LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.0 AHD
**COORDINATE:** E:397795.0, N:6466418.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** MW 02
**PROJECT No:** 219164.01
**DATE:** 11/09/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | TESTING AND REMARKS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) | DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[*] DENSITY:[*] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS | BACKFILL / WELL PIPE |
| | | | FILL / SAND (SP-SM), with silt, trace gravel: grey; fine to medium. | | | | | | | | | | | Bentonite Concrete 50mm Class 18 |
| | | | From 0.40m: becoming orange-brown | | | | M | | ASS | | 0.50 | | | |
| | | 1 | From 1.10m: becoming grey-brown, trace limestone gravel | | FILL | | | | ASS | | 1.00 | | | |
| ▼ Ground Water Measured at 1.46 m 18/09/23 | | | 1.60m: trace brick, limestone gravel, wet @ 1.6 m | | | | | | ASS | | 1.50 | | | |
| | 0 | 2 | | | | | | | ASS | | 2.00 | | | Gravel backfill 50mm Class 18 |
| | | 2.20 | Sandy CLAY (CL-CI): grey; low to medium plasticity; fine to medium sand. | | ALV | | | | ASS | | 2.50 | | | |
| | | 2.70 | SAND (SP), trace rootlets, trace silt: grey; fine to medium. | | | | W | | ASS | | 3.00 | | | |
| | -1 | 3 | | | ALV | | | | ASS | | 3.50 | | | |
| | -2 | 4 | Borehole discontinued at 4.00m depth. Target Depth Reached. | | | | | | ASS | | 4.00 | | | |
| | -3 | 5 | | | | | | | | | 5 | | | |

NOTES [#]Soil origin is "probable" unless otherwise stated. [*]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

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**PLANT:** Geoprobe 7822DT
**METHOD:** Direct Push Probing
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.

**OPERATOR:** DPP

**LOGGED:** VV
**CASING:** Nil

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

Attachment 12.1.3 Environmental Assessment Report

# BOREHOLE LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 3.2 AHD
**COORDINATE:** E:397905.0, N:6466358.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** MW 03
**PROJECT No:** 219164.01
**DATE:** 11/09/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | | TESTING AND REMARKS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) | DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[*] DENSITY.[*] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS | BACKFILL | WELL PIPE |
| | 3 | 0 | FILL / SAND (SP), trace silt: orange; fine to medium. From 0.30m: becoming grey, trace clay, limestone gravel | | FILL | | | | | | 0 | | | Bentonite Concrete | |
| | 2 | 1 | | | | | | | | | 1 | | | Gravel backfill | 50mm Class 18 |
| | 1 | 1.60 | FILL / Clayey SAND (SC), trace gravel: grey; fine to medium; low to medium plasticity clay. | | FILL | | | | | | 2 | | | | |
| | 0 | 2.20 | FILL / SAND (SP), trace silt: orange - grey; fine to medium. 2.80m: trace brick | | FILL | | | | | | 3 | | | | |
| Ground Water Measured at 2.37 m 18/09/23 | -1 | 3.00 | FILL / Clayey SAND (SC): grey; fine to medium; low to medium plasticity clay. 3.30m-3.50m: with bitumen layer | | FILL | | | | | | 4 | | | | |
| | -2 | 3.60 | FILL / CLAY (CL-CI), trace sand: grey - green; low to medium plasticity. | | FILL | | | | | | 5 | | | | |
| | -3 | 4 | Borehole discontinued at 4.00m depth. Target Depth Reached. | | | | | | | | | | | | |
| | -4 | 5 | | | | | | | | | | | | | |

NOTES [#]Soil origin is "probable" unless otherwise stated. [*]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

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**PLANT:** Geoprobe 7822DT
**METHOD:** Direct Push Probing
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.

**OPERATOR:** DPP

**LOGGED:** VV
**CASING:** Nil

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

Attachment 12.1.3 Environmental Assessment Report

# BOREHOLE LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.4 AHD
**COORDINATE:** E:397812.0, N:6466346.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** MW 04
**PROJECT No:** 219164.01
**DATE:** 11/09/23
**SHEET:** 1 of 1

| GROUNDWATER | RL (m) | DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[*] / DENSITY.[*] | MOISTURE | REMARKS | SAMPLE TYPE | SAMPLE INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS | BACKFILL | WELL PIPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 | 0.60 | FILL / SAND (SP-SM), with silt, trace rootlets: orange grey; fine to medium. | | FILL | | | | ASS | | 0.50 | | | Bentonite Concrete | |
| | | | FILL / SAND (SP), with gravel, trace clay: grey; fine to medium; fine to medium gravel. | | | | | | ASS | | 1.00 | | | 50mm Class 18 | |
| Ground Water Measured at 1.59 m 18/09/23 | 1 | | 1.50m: trace brick, wet | | | | | | ASS | | 1.50 | | | Gravel backfill | |
| | 0 | 2 | 2.00m: trace brick | | FILL | | | | ASS | | 2.00 | | | 50mm Class 18 | |
| | | | | | | | | | ASS | | 2.50 | | | | |
| | -1 | 3 | 3.00m: trace brick | | | | | | ASS | | 3.00 | | | | |
| | | 3.20 | SAND (SP), trace silt: grey-orange; fine to medium. | | ALV | | | | | | | | | | |
| | | 3.40 | Clayey SAND (SC): orange-grey; fine to medium; low to medium plasticity clay. | | ALV | | | | ASS | | 3.50 | | | | |
| | | 3.60 | Sandy CLAY (CL): grey; low to medium plasticity; fine to medium sand. | | ALV | | | | | | | | | | |
| | -2 | 4 | Borehole discontinued at 4.00m depth. Target Depth Reached. | | | | | | ASS | | 4.00 | | | | |
| | -3 | 5 | | | | | | | | | 5 | | | | |

NOTES [#]Soil origin is "probable" unless otherwise stated. [*]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** Geoprobe 7822DT
**METHOD:** Direct Push Probing
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.

**OPERATOR:** DPP

**LOGGED:** VV
**CASING:** Nil

Refer to explanatory notes for symbol and abbreviation definitions

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Attachment 12.1.3 Environmental Assessment Report

# BOREHOLE LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.5 AHD
**COORDINATE:** E:397900.0, N:6466193.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** MW 05
**PROJECT No:** 219164.01
**DATE:** 11/09/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | | TESTING AND REMARKS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) | DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[*] DENSITY.[*] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS | BACKFILL | WELL PIPE |
| Ground Water Measured at 1.21 m 18/09/23 | 2 | 0 | FILL / SAND (SP-SC), with rootlets, with silt: orange-grey; fine to coarse. 0.30m: trace gravel | | FILL | | | | ASS | | 0.50 | | | Bentonite Concrete | 50mm Class 18 |
| | 1 | 0.60 | FILL / Clayey SAND (SC): orange-grey; fine to medium; low to medium plasticity clay. | | FILL | | | | ASS | | 1.00 | | | Gravel backfill | |
| | 0 | 1.40 | SAND (SP), trace silt: orange-grey; fine to medium. | | ALV | | | | ASS | | 1.50 | | | | |
| | -1 | 2 | | | | | | | ASS | | 2.00 | | | | |
| | | 2.60 | Sandy CLAY (CL): grey-black; low to medium plasticity; fine to medium sand. | | ALV | | | | ASS | | 2.50 | | | | 50mm Class 18 |
| | | 3 | | | | | | | ASS | | 3.00 | | | | |
| | | 3.10 | SAND (SP): grey; fine to medium. | | ALV | | | | | | | | | | |
| | | 3.40 | Sandy CLAY (CL): grey-black; low to medium plasticity; fine to medium sand. | | ALV | | | | ASS | | 3.50 | | | | |
| | -2 | 4 | Borehole discontinued at 4.00m depth. Target Depth Reached. | | | | | | ASS | | 4.00 | | | | |
| | -3 | 5 | | | | | | | | | 5 | | | | |

NOTES: [#]Soil origin is "probable" unless otherwise stated. [*]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** Geoprobe 7822DT
**METHOD:** Direct Push Probing
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.

**OPERATOR:** DPP

**LOGGED:** VV
**CASING:** Nil

Refer to explanatory notes for symbol and abbreviation definitions

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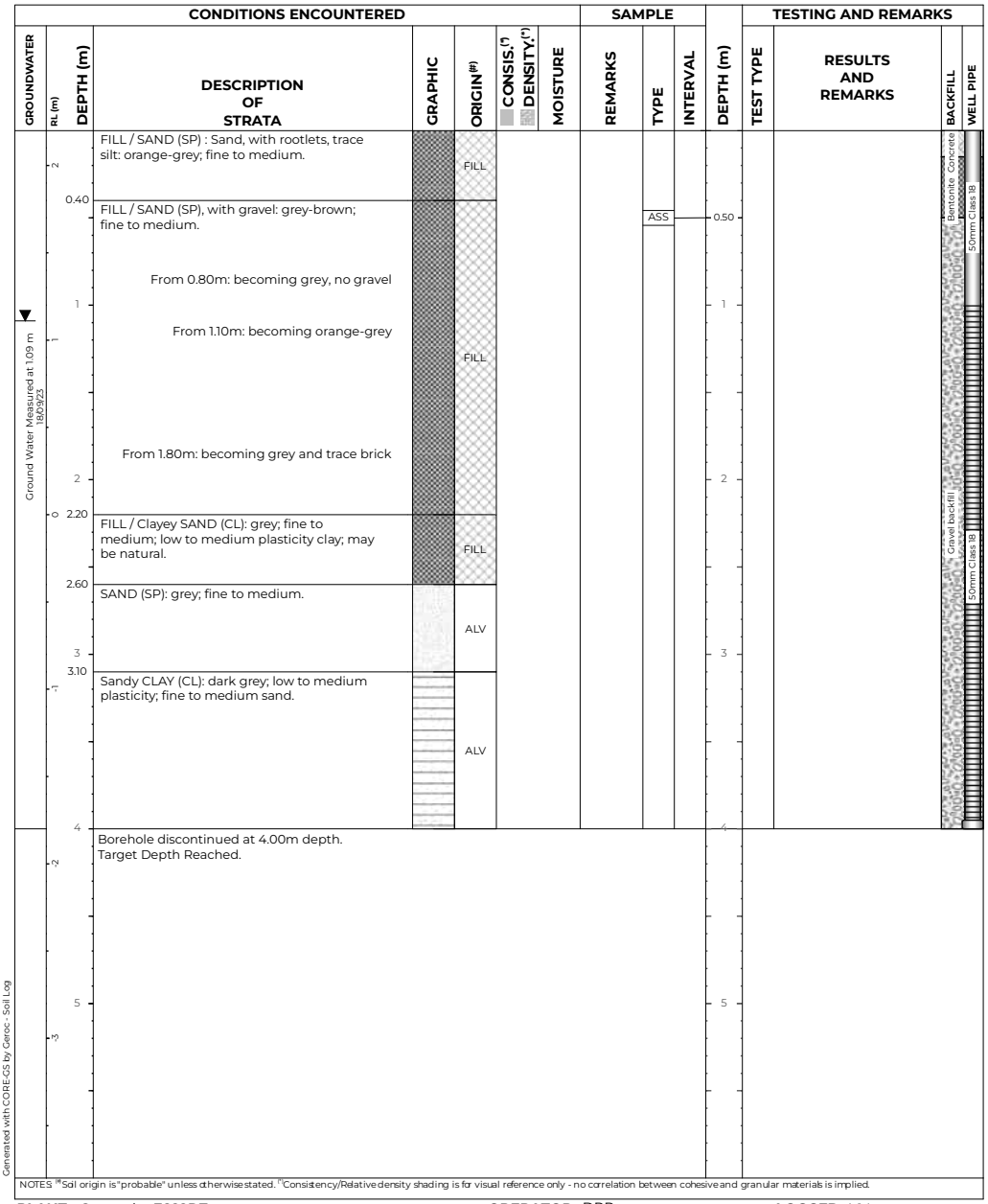
Attachment 12.1.3 Environmental Assessment Report

# BOREHOLE LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.2 AHD
**COORDINATE:** E:397790.0, N:6466249.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** MW 06
**PROJECT No:** 219164.01
**DATE:** 11/09/23
**SHEET:** 1 of 1




NOTES (#)Soil origin is "probable" unless otherwise stated. (*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** Geoprobe 7822DT
**OPERATOR:** DPP
**LOGGED:** VV
**METHOD:** Direct Push Probing
**CASING:** Nil
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.

Refer to explanatory notes for symbol and abbreviation definitions

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Attachment 12.1.3 Environmental Assessment Report

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.9 AHD
**COORDINATE:** E:397852.9, N:6466410.7
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP07
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | SAMPLE | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | DEPTH (m) / RL (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[*] / DENSITY.[*] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE / RESULTS AND REMARKS |
| | 0 | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium. | | FILL | MD to VD | D to M | | ES | | 0.10 | PID <1ppm |
| | | From 0.17m: becoming orange | | | | | | | | | DCP9/150 |
| | | 0.54m: trace geo-fabric | | | | | | ES | | 0.40 / 0.50 | PID <1ppm |
| | 0.60 | FILL / Sandy GRAVEL (GP-GM), with silt: grey; medium to coarse, angular to sub-angular; fine to medium sand. | | FILL | | | | | | | |
| | 0.90 | 0.84m: trace geo-fabric | | | | | | | | | |
| | 1 | FILL / GRAVEL (GP-GM) : Gravel, with mulch, with sand: dark brown and dark grey-brown; with silt. | | FILL | | | | ES | | 1.00 / 1.10 | PID <1ppm |
| | 1.40 | FILL / SAND (SP-SM), with silt: dark grey; fine to medium. | | FILL | ND | M | ASB9, ASB10, AF/FA | D, ES | | 1.50 / 1.60 | PID <1ppm |
| | | 1.50m: trace PACM fragment | | | | | | | | | |
| | | From 1.60m-2.60m: with fragments of bricks, concrete and metal roofing sheetings | | | | | | | | | |
| 09/11/23 | 2 | | | FILL | | | | ES | | 2.00 / 2.10 | PID <1ppm |
| | | | | | | W | | | | | |
| | | | | | | | | ES | | 2.50 / 2.60 | PID <1ppm |
| | 0 | Test Pit discontinued at 2.60m depth. (Collapsing conditions). | | | | | | | | | |





NOTES [#]Soil origin is "probable" unless otherwise stated. [*]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 2.3 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

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Attachment 12.1.3 Environmental Assessment Report

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 3.6 AHD
**COORDINATE:** E:397905.7, N:6466414.7
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP08
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) | DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[*] DENSITY.[*] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | | | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium. | | FILL | VD | M | | ES | | 0.10 | PID | <1 ppm |
| | | | From 0.43m: becoming pale grey, trace gravel | | | | | | ES | | 0.50<br>0.60 | PID | <1 ppm |
| | | 1 | From 1.20m: becoming grey | | | | | | ES | | 1.00<br>1.10 | PID | <1 ppm |
| | | 1.40 | FILL / organic SAND (SP-SM), with silt, with gravel: dark grey-brown; fine to medium; trace fragments of brick and concrete. | | FILL | ND | | AF/FA<br>ASB 8 | D<br>ES<br>MAT | | 1.50<br>1.60 | PID | <1 ppm |
| | | | 1.55m-2.00m: with fragments of brick, concrete and PVC | | | | | | | | | | |
| | | 1.80 | FILL / SAND (SP), trace gravel, fragments of brick and concrete, trace silt: dark grey; fine to medium. | | FILL | | | | D<br>ES | | 2.00<br>2.10 | PID | <1 ppm |
| | | | 2.20m: trace metal sheet, PVC | | | | | | | | | | |
| | | | 2.40m: trace rubber pipe, metal bar | | | | | | ES | | 2.50<br>2.60 | PID | <1 ppm |
| | | | Test Pit discontinued at 2.70m depth.<br>(Test Pit terminated due to slow digging). | | | | | | | | | | |

PSP/ISO — 5 10 15 — Refusal 20





NOTES [#]Soil origin is "probable" unless otherwise stated. [*]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
No free groundwater observed.

Refer to explanatory notes for symbol and abbreviation definitions

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Attachment 12.1.3 Environmental Assessment Report

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.1 AHD
**COORDINATE:** E:397768.9, N:6466392.5
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP09
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) | DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[*] DENSITY.[*] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 2 | | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium. | | FILL | D to VD | D to M | | ES | 0.10 | | PID | <1ppm |
| | | 0.45 | FILL / Clayey SAND (SC): orange-brown; fine to medium; low to medium plasticity clay. | | FILL | | | | D<br>ES | 0.50<br>0.60 | | PID<br>PDPT50 | <1ppm<br>5 10 15<br>REFUSAL 25 25 |
| | | 0.95<br>0.98 | FILL / ASPHALTIC CONCRETE: black, 7 mm sized nominal aggregate. | | | | | | | | | | |
| | 1 | | FILL / Silty SAND (SM): brown; fine to medium. From 1.15m: becoming grey-brown<br>From 1.20m: with fragments of brick, concrete slab of 0.4 m in thickness, geo-fabric, metal bar and terracotta pipe<br>1.40m: trace metal sheet | | FILL | ND | M | | ES | 1.00<br>1.10 | | PID | <1ppm |
| | | | | | | | | | ES | 1.50<br>1.60 | | PID | <1ppm |
| 09/11/23 | 0 | 2 | 1.90m-2.10m: trace pockets of Clayey SAND SC | | | | | | ES | 2.00<br>2.10 | | PID | <1ppm |
| | | | | | | | W | | | | | | |
| | | | Test Pit discontinued at 2.30m depth. (Collapsing conditions). | | | | | | | | | | |





NOTES [#]Soil origin is "probable" unless otherwise stated. [*]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 2.1 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

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Attachment 12.1.3 Environmental Assessment Report

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.4 AHD
**COORDINATE:** E:397829.1, N:6466375.7
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP10
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | DEPTH (m) / RL (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[*] / DENSITY.[*] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 0 / 2 | FILL / SAND (SP-SM), with silt, trace rootlets: bands of grey, orange-brown and pale grey; fine to medium. | | FILL | MD to D | | DUP 2 | ES | | 0.10 | PID | <1ppm |
| | | 0.70m: trace geo-fabric | | | | | | ES | | 0.50 | PID | <1ppm |
| | 0.80 / 1 | FILL / Sandy GRAVEL (GP-GM), with silt: grey; medium to coarse, angular to sub-angular; fine to medium sand. | | FILL | | | | | | 0.60 | | |
| | | | | | | | | ES | | 1.00 | PID | <1ppm |
| | 1.20 / 1 | FILL / SAND (SP), trace rootlets, trace silt: grey -brown; fine to medium. | | FILL | ND | | | | | 1.10 | | |
| | | From 1.40m-1.80m: with fragments of brick and concrete | | | | | | ES | | 1.50 | PID | <1ppm |
| | | From 1.80m: becoming dark grey, trace fragments of brick and concrete | | | | | | | | 1.60 | | |
| | 2 / 0 | | | | | | | ES | | 2.00 | PID | <1ppm |
| | | Test Pit discontinued at 2.15m depth. (Test Pit terminated due to slow digging). | | | | | | | | 2.10 | | |

PSP/m: 5, 10, 15





NOTES [#] Soil origin is "probable" unless otherwise stated. [*] Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

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**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
No free groundwater observed.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

Attachment 12.1.3 Environmental Assessment Report

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 3.1 AHD
**COORDINATE:** E:397881.2, N:6466387.1
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP11
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) | DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[*] DENSITY.[*] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 3 | | FILL / SAND (SP-SM), with silt: grey and orange-brown; fine to medium. | | | VD | D to M | | ES | | 0.10 | PSP/150 | 5 10 15 REFUSAL 25 25 |
| | | | From 0.35m: becoming grey | | | | | | ES | | 0.50<br>0.60 | | |
| | | 1 | | | | | | DUP 3 | D<br>ES | | 1.00<br>1.10 | | |
| | 2 | | | | FILL | ND | M | | | | | | |
| | | | From 1.60m: becoming dark grey, trace fragments of brick | | | | | | D<br>ES | | 1.60<br>1.70 | | |
| | | | From 1.70m-2.40m: with fragments of brick and concrete | | | | | | | | | | |
| | | 2 | 1.80m: piece of concrete boulder (1 m x 0.5 m) observed | | | | | | ES | | 2.00<br>2.10 | | |
| | | | 2.10m: trace plastic bottle, glass bottle, concrete rubble | | | | | | | | | | |
| | | | 2.30m: trace fragments of wooden plank and timer | | | | | | D | | 2.30 | | |
| | | | Test Pit discontinued at 2.40m depth.<br>(Test Pit terminated due to slow digging). | | | | | | | | | | |





NOTES [#]Soil origin is "probable" unless otherwise stated. [*]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
No free groundwater observed.

Refer to explanatory notes for symbol and abbreviation definitions

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Attachment 12.1.3 Environmental Assessment Report

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.1 AHD
**COORDINATE:** E:397785.4, N:6466366.6
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP12
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | SAMPLE | | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) / DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[*] / DENSITY.[*] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 2 | FILL / SAND (SP-SM), with silt, trace gravel and rootlets: grey; fine to medium. | | | | | | ES | | 0.10 | PID | <1ppm |
| | | From 0.20m: becoming yellow-brown | | FILL | D to VD | D to M | | ES | | 0.50 | PID | <1ppm |
| | 0.85 / 0.90 | FILL / Sandy GRAVEL (GP-GM), with silt: grey; medium to coarse, angular to sub-angular; fine to medium sand. | | FILL | | | | | | 0.60 | | |
| | 1 | FILL / SAND (SP), trace fragments of brick, scrap metal, timber and rubber cable, trace silt: dark grey-brown; fine to medium. | | | | | | D | | 1.00 | PID | <1ppm |
| | | 1.30m-1.80m: with fragments of plastic waste, insulation material, terracotta pipes and concrete, trace PACM fragments | | | | | AF/FA, ASB 6, ASB 7 | ES | | 1.10 | | |
| | | | | FILL | ND | M | | ES | | 1.50 / 1.60 | PID | <1ppm |
| 09/11/23 | 2 | From 1.90m: becoming green-grey, trace pockets of CLAY CL-CI | | | | | | B | | 2.00 | PID | <1ppm |
| | | | | | | W | | ES | | 2.10 | | |
| | | Test Pit discontinued at 2.30m depth. (Collapsing conditions). | | | | | | | | | | |

PSP (%) 5 10 15 25





NOTES [#]Soil origin is "probable" unless otherwise stated. [*]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

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**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 2.1 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

Attachment 12.1.3 Environmental Assessment Report

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.8 AHD
**COORDINATE:** E:397872.7, N:6466350.7
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP13
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) | DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[*] DENSITY.[*] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | | | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium; 10% non-plastic fines. From 0.15m: becoming orange | | FILL | D to VD | D to M | | ES | 0.10 | | PID <1ppm |
| | | | 0.70m: trace geo-fabric | | | | | | D | 0.50 | | PSP/ISO 5 10 15 25 |
| | | 0.75 | | | | | | | ES | 0.60 | | PID <1ppm |
| | 2 | | FILL / Sandy GRAVEL (GP-GM), with silt: grey; medium to coarse, angular to sub-angular; fine to medium sand. | | FILL | | | | ES | 1.00 1.10 | | PID <1ppm |
| | 1 | | 1.20m: trace geo-fabric | | | | | | | | | |
| | | 1.30 | FILL / SAND (SP), trace gravel, fragments of brick and concrete, trace silt: dark grey; fine to medium. 1.50m-2.40m: with fragments of bricks and concrete slab | | | ND | M | | D ES | 1.50 1.60 | | PID <1ppm |
| | 1 | | | | FILL | | | | ES | 2.00 2.10 | | PID <1ppm |
| ▼ 09/11/23 | | 2 | | | | | | | ES | 2.50 2.60 | | PID <1ppm |
| | 0 | | Test Pit discontinued at 2.70m depth. (Collapsing conditions). | | | | W | | | | | |





NOTES [#]Soil origin is "probable" unless otherwise stated. [*]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

Generated with CORE-GS by Geroc - Soil Log with Photo

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 2.5 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

Attachment 12.1.3 Environmental Assessment Report

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.2 AHD
**COORDINATE:** E:397745.6, N:6466334.5
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP14
**PROJECT No:** 219164.01
**DATE:** 08/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | TESTING AND REMARKS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) | DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[*] DENSITY.[*] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 2 | 0.25 | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium. | | FILL | D to VD | D to M | | ES | | 0.10 | PID | <1ppm |
| | | | FILL / Silty SAND (SM): brown and grey-brown; weakly to moderately cemented. | | | | | | | | | DCP9/150 | 5 10 15 29 30 |
| | | | 0.65m: trace fragments of brick and glass | | | | | | D | | 0.50 | | |
| | | | 0.72m-2.00m: with framgnes of brick, metal sheet and insulation material | | | | | | ES | | 0.60 | PID | <1ppm |
| | | 1 | 0.92m: trace fragments of plastic waste, glass and limestone boulders | | | | | | ES | | 1.00 | PID | <1ppm |
| | 1 | | | | FILL | ND | M | | | | 1.10 | | |
| | | | | | | | | | ES | | 1.50 | PID | <1ppm |
| | | | | | | | | | | | 1.60 | | |
| | 0 | 2 | 2.00m: becoming gren-grey, trace fragments of timber, brick and concrete blocks, with pockets of Clayey SAND SC | | | | | | ES | | 2.00 | PID | <1ppm |
| | | | | | | | | | | | 2.10 | | |
| | | | From 2.20m: with fragments of brick and scrap metal | | | | | | D | | 2.40 | | |
| | | | Test Pit discontinued at 2.50m depth. (Test Pit terminated due to slow digging). | | | | | | | | | | |





NOTES [#]Soil origin is "probable" unless otherwise stated. [*]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

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**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
No free groundwater observed.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

Attachment 12.1.3 Environmental Assessment Report

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.2 AHD
**COORDINATE:** E:397794.3, N:6466319.4
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP15
**PROJECT No:** 219164.01
**DATE:** 08/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) / DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[^] / DENSITY.[^] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 2 | FILL / SAND (SP-SM), with silt, trace gravel and rootlets: orange-brown; fine to medium. | | | | | | ES | | 0.10 | PID | <1ppm |
| | | From 0.24m: becoming grey | | FILL | VD | D to M | | | | | DCP9/150 | |
| | | From 0.42m: becoming pale grey | | | | | | D | | 0.50 | PID | <1ppm |
| | | | | | | | | ES | | 0.60 | | 22 |
| | 0.75 | FILL / Sandy GRAVEL (GP-GM), with silt: dark brown and grey; medium to coarse, angular to sub-angular; fine to medium sand. | | FILL | ND | | | | | | | |
| | 0.95 | FILL / SAND (SP), with fragments of brick and concrete, trace silt: grey; fine to medium. | | | | | | D | | 1.00 | PID | <1ppm |
| | 1 | | | | | | | ES | | 1.10 | | |
| | | 1.20m: trace fragments of timber, terracotta pipe and scrap metal | | | | | | | | | | |
| | | 1.50m: trace redundant cable | | | | M | | ES | | 1.50 | PID | <1ppm |
| | | | | | | | | | | 1.60 | | |
| | | From 1.80m: becoming orange-brown | | FILL | ND | | | | | | | |
| | 2 | 2.00m: trace PACM pipe | | | | | AF/FA, ASB 5 | ES | | 2.00 | PID | <1ppm |
| | | 2.10m: trace fragments of timer | | | | | | | | 2.10 | | |
| ▼ 08/11/23 | 0 | From 2.40m: becoming dark grey | | | | W | | ES | | 2.50 | | |
| | | | | | | | | | | 2.60 | | |
| | | Test Pit discontinued at 2.70m depth. (Test Pit flodded with water seepage). | | | | | | | | | | |





NOTES [#]Soil origin is "probable" unless otherwise stated. [^]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 2.4 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

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Douglas PARTNERS

Attachment 12.1.3 Environmental Assessment Report

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.4 AHD
**COORDINATE:** E:397837.5, N:6466321.2
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP16
**PROJECT No:** 219164.01
**DATE:** 08/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | SAMPLE | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | DEPTH (m) / RL (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.(*) DENSITY.(*) | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE / RESULTS AND REMARKS |
| | 0 | FILL / SAND (SP-SM), with silt, trace gravel and rootlets: grey; fine to medium. | | FILL | | | | ES | | 0.10 | PID <1ppm |
| | 0.34 / 2 | FILL / Sandy (GP-GM), with silt: grey; fine to medium sand. | | FILL | ND | D to M | | ES | | 0.50<br>0.60 | PID <1ppm |
| | 0.84 | 0.80m: trace fragments of plastic waste | | | | | | | | | |
| | 1 | FILL / SAND (SP), with fragments of brick and concrete, trace silt: grey; fine to medium. | | FILL | MD to D | M | | ES | | 1.00<br>1.10 | PID <1ppm |
| | | 1.50m: trace fragments of plastic waste | | | | | | D<br>ES | | 1.50<br>1.60 | PID <1ppm |
| | 2 | 2.00m: trace metal plate (0.5 m x 0.5 m)<br>2.10m: with limestone boulders | | | ND | | | ES | | 2.00<br>2.10 | PID <1ppm |
| ▼ 09/11/23 | | | | | | W | | D<br>ES | | 2.50<br>2.60 | PID <1ppm |
| | | Test Pit discontinued at 2.60m depth. (Collapsing conditions). | | | | | | | | | |

DCP9/150: 5 10 15





NOTES [#]Soil origin is "probable" unless otherwise stated. [*]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 2.5 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

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Attachment 12.1.3 Environmental Assessment Report

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.2 AHD
**COORDINATE:** E:397775.7, N:6466289.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP17
**PROJECT No:** 219164.01
**DATE:** 08/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) / DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[*] / DENSITY.[*] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 0.15 | FILL / SAND (SP-SM), with silt, trace rootlets: orange - grey; fine to medium. | | FILL | L to VD | D to M | | ES | | 0.10 | PID | <1ppm |
| | | FILL / Sandy GRAVEL (GP-GM), with fragments of concrete, with silt: grey; medium to coarse, angular to sub-angular; fine to medium sand. | | | | | | | | | DCP9/150 | 25 |
| | | | | FILL | | | | ES | | 0.50<br>0.60 | PID | <1ppm |
| | 0.90 | FILL / SAND (SP), with fragments of brick and concrete, trace silt: grey; fine to medium. | | | | | | ES | | 1.00<br>1.10 | PID | <1ppm |
| | | 1.10m: trace fragments of plastic waste | | | ND | M | ASB 3 | ES | | 1.50<br>1.60 | PID | <1ppm |
| | | 1.60m: trace metal sheets | | FILL | | | | | | | | |
| 08/11/23 | | 1.90m: piece of concrete block observed | | | | | ASB 4 | ES | | 2.00<br>2.10 | PID | <1ppm |
| | | | | | | W | | | | | | |
| | | Test Pit discontinued at 2.50m depth. (Collapsing conditions). | | | | | | | | | | |





NOTES [#]Soil origin is "probable" unless otherwise stated. [*]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 2.1 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

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Attachment 12.1.3 Environmental Assessment Report

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.2 AHD
**COORDINATE:** E:397816.0, N:6466272.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP18
**PROJECT No:** 219164.01
**DATE:** 08/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) / DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[*] / DENSITY.[*] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 2 | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium; weakly cemented. | | FILL | | D to M | | ES | | 0.10 | PID | <1ppm |
| | 0.26 | FILL / Sandy GRAVEL (GP-GM), with silt: grey; medium to coarse, angular to sub-angular; fine to medium sand. | | FILL | ND | | | | | | | |
| | 0.45 | FILL / SAND (SP), with fragments of brick and concrete, with clay: grey; fine to medium. | | | | | ASB 1 | ES | | 0.50<br>0.60 | PID | <1ppm |
| | | 0.50m-1.50m: with fragments of tile and brick, trace PACM fragments<br>0.75m: trace metal bar | | FILL | MD to VD | M | | | | | PID | <1ppm |
| | 1 | 1.00m: trace fragments of redundant cables, glass, geo-fabric and limestone blocks<br>From 1.20m: with limestone boulders | | | ND | | | D<br>ES | | 1.00<br>1.10 | | |
| | | | | | | | | ES | | 1.40<br>1.50 | PID | <1ppm |
| | | Test Pit discontinued at 1.50m depth.<br>(Test Pit terminated due to slow digging). | | | | | | | | | | |
| | 2 | | | | | | | | | 2 | | |

DCP (blows/150mm): 5, 10, 15





NOTES [#]Soil origin is "probable" unless otherwise stated. [*]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
No free groundwater observed.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

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Attachment 12.1.3 Environmental Assessment Report

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.2 AHD
**COORDINATE:** E:397856.8, N:6466280.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP19
**PROJECT No:** 219164.01
**DATE:** 08/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | SAMPLE | | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) / DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[^] / DENSITY.[^] | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 0.20 | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium. | | FILL | | | DUP 1 | ES | | 0.10 | PID | <1ppm |
| | | FILL / Sandy GRAVEL (GP-GM), with silt: orange-brown; medium to coarse; fine to medium sand; Gravel is crushed limestone. | | FILL | ND | D | | D<br>ES | | 0.50<br>0.60 | PID | <1ppm |
| | 0.70 | FILL / SAND (SP-SM), with silt, trace gravel: grey-brown; fine to medium. | | FILL | MD | M | | ES | | 1.00<br>1.10 | PID | <1ppm |
| | | 0.75m: trace concrete slab, fragments of brick and terracotta pipes | | | | | | | | | | |
| | | From 0.90m: with fragments of brick | | | | | | | | | | |
| | | From 1.20m: becoming grey, trace fragments of timber | | | | | | | | | | |
| ▼ 09/11/23 | | From 1.60m: becoming grey-brown | | | | | | ES | | 1.50<br>1.60 | PID | <1ppm |
| | 1.90 | FILL / SAND (SP), trace roots, trace silt: dark grey; fine to medium. | | FILL | ND | W | | ES | | 2.00<br>2.10 | PID | <1ppm |
| | | 2.40m: trace fragments of sea shells | | | | | | D<br>ES | | 2.50<br>2.60 | PID | <1ppm |
| | | Test Pit discontinued at 2.60m depth. (Collapsing conditions). | | | | | | | | | | |

PSD50: 5, 10, 15





NOTES [#]Soil origin is "probable" unless otherwise stated. [^]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 1.8 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

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Attachment 12.1.3 Environmental Assessment Report

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.0 AHD
**COORDINATE:** E:397838.6, N:6466231.5
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP20
**PROJECT No:** 219164.01
**DATE:** 08/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | SAMPLE | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | DEPTH (m) / RL (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.(*) DENSITY:(*) | MOISTURE | REMARKS | TYPE | INTERVAL | DEPTH (m) | TEST TYPE / RESULTS AND REMARKS |
| | 0.05 | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium. | | FILL | | | | ES | | 0.10 | PID <1ppm |
| | | FILL / Sandy GRAVEL (GP-GM), with silt: yellow-brown; medium to coarse; fine to medium sand. | | FILL | | D to M | | | | | |
| | 0.34 | FILL / SAND (SP-SM), with silt, trace gravel: grey and orange-brown; fine to medium. | | | MD to VD | | | | | | |
| | | 0.50m: with fragments of brick and concrete | | | | | | ES | | 0.50 / 0.60 | PID <1ppm |
| | | 0.80m: trace fragments of rubber waste and scrap metal | | | | | | | | | |
| | 1 | | | FILL | | | | D | | 1.00 | PID <1ppm |
| | | | | | | | | ES | | 1.10 | |
| | | From 1.20m: becoming dark grey, with fragments of brick | | | | M | | | | | |
| | | 1.30m-2.10m: with hydrocarbon odour | | | | | | | | | |
| | | 1.50m: with pockets of Clayey SAND SC | | | | | | D | | 1.50 | PID 9.4ppm |
| | | | | | | | | ES | | 1.60 | |
| | 1.80 | FILL / Clayey SAND (SC): dark grey; fine to medium; low to medium plasticity clay. | | | ND | | | | | | |
| 08/11/23 | 2 | | | | | | | ES | | 2.00 / 2.10 | PID 1.4ppm |
| | | From 2.10m: becoming green-grey | | FILL | | W | | | | | |
| | | | | | | | | ES | | 2.50 / 2.60 | PID 1.1ppm |
| | | Test Pit discontinued at 2.60m depth. (Collapsing conditions). | | | | | | | | | |

PSP/m 5 10 15





NOTES [#]Soil origin is "probable" unless otherwise stated. [*]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 2.1 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

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Attachment 12.1.3 Environmental Assessment Report

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.1 AHD
**COORDINATE:** E:397896.5, N:6466231.5
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP21
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | SAMPLE | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | DEPTH (m) / RL (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[*] / DENSITY.[*] | MOISTURE | REMARKS | TYPE | INTERVAL | TEST TYPE | RESULTS AND REMARKS |
| | 0.17 | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium. | | FILL | | | | ES | 0.10 | PID | <1ppm |
| | | FILL / Sandy GRAVEL (GP-GM), with silt: grey; fine to coarse; fine to medium sand; Gravel is crushed limestone. | | FILL | MD to D | D to M | | ES | 0.50<br>0.60 | PID | <1ppm |
| | 0.70 | FILL / SAND (SP-SM), with fragments of brick and concrete, with silt: grey; fine to medium. | | | | | | ES | 1.00<br>1.10 | PID | <1ppm |
| | | 1.20m: trace fragments of rubber waste and scrap metal | | FILL | ND | M | | D<br>ES | 1.50<br>1.60 | PID | <1ppm |
| 08/11/23 | | From 1.80m: trace pockets of CLAY CL-CI | | | | | | | | | |
| | 1.90 | FILL / Sandy CLAY (CI), trace fragments of brick and timber, trace gravel: dark grey; medium plasticity; fine to medium sand. | | FILL | | w>PL | | B<br>ES | 2.00<br>2.10 | PID | <1ppm |
| | | Test Pit discontinued at 2.10m depth. (Collapsing conditions). | | | | | | | | | |

NOTES [#]Soil origin is "probable" unless otherwise stated. [*]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 1.8 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE.GS by Geroc - Soil Log with Photo

Attachment 12.1.3 Environmental Assessment Report

# TEST PIT LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.3 AHD
**COORDINATE:** E:397941.6, N:6466244.9
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP22
**PROJECT No:** 219164.01
**DATE:** 09/11/23
**SHEET:** 1 of 1

| CONDITIONS ENCOUNTERED | | | | | | | | SAMPLE | | | TESTING AND REMARKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUNDWATER | RL (m) / DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[^] / DENSITY.[^] | MOISTURE | REMARKS | TYPE | INTERVAL DEPTH (m) | TEST TYPE | RESULTS AND REMARKS |
| | 2 | FILL / SAND (SP-SM), with silt, trace rootlets: grey; fine to medium. | | FILL | MD | D to M | | ES | 0.10 | PID | <1ppm |
| | | From 0.22m: becoming orange | | | | | | | | | |
| | | From 0.40m: becoming brown | | | | | | ES | 0.50<br>0.60 | PID | <1ppm |
| | | From 0.70m: becoming dark grey-brown | | | | | | | | | |
| | 1 | | | | | M | | ES | 1.00<br>1.10 | PID | <1ppm |
| | 1.40 | SAND (SP-SM), with silt: pale yellow-brown; fine to medium. | | possibly ALV | ND | | | ES | 1.50<br>1.60 | PID | <1ppm |
| 09/11/23 | | From 1.70m: becoming orange-grey | | | | | | | | | |
| | 2 | | | | | W | | B<br>ES | 2.00<br>2.10 | PID | <1ppm |
| | 0 | Test Pit discontinued at 2.20m depth. (Collapsing conditions). | | | | | | | | | |

PSP/PID





NOTES [#]Soil origin is "probable" unless otherwise stated. [^]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**METHOD:**
**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 1.8 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE.GS by Geroc - Soil Log with Photo

Douglas PARTNERS

Attachment 12.1.3 Environmental Assessment Report

# BOREHOLE LOG

**CLIENT:** Perth Racing
**PROJECT:** Proposed Residential Development
**LOCATION:** 71 Grandstand Road, Ascot, WA 6104

**SURFACE LEVEL:** 2.4 AHD
**COORDINATE:** E:397844.9, N:6466181.0
**DATUM/GRID:** MGA2020 Zone 50
**DIP/AZIMUTH:** 90°/---°

**LOCATION ID:** TP23
**PROJECT No:** 219164.01
**DATE:** 08/11/23
**SHEET:** 1 of 1

| GROUNDWATER | RL (m) | DEPTH (m) | DESCRIPTION OF STRATA | GRAPHIC | ORIGIN[#] | CONSIS.[*] DENSITY.[*] | MOISTURE | REMARKS | SAMPLE TYPE | SAMPLE INTERVAL | DEPTH (m) | TESTING AND REMARKS: TEST TYPE | RESULTS AND REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0.05 | ASPHALT: black, 7 mm sized nominal aggregate. | | FILL | | | | | | | | |
| | | 0.15 | FILL / Sandy GRAVEL (GP-GM), with silt: grey; medium to coarse, angular to sub-angular; fine to medium sand; BASECOURSE, gravel is crushed rock. | | FILL | ND | D | | | | | | |
| | | 0.30 | FILL / Sandy GRAVEL (GP-GM), with silt: red-brown; medium to coarse, angular to sub-angular; fine to medium sand; SUB-BASE, gravel is granitic and lateritic. | | FILL | | M | | ES | | 0.50<br>0.60 | PID | <1ppm |
| | | 0.65 | FILL / Silty SAND (SM), trace gravel: brown; fine to medium; with pockets of Clayey SAND SC. 0.90m: trace fragments of brick | | | MD to D | | | | | | | |
| | | 1 | FILL / Clayey SAND (SC): orange-grey; fine to medium; low to medium plasticity clay. | | FILL | | M | | D<br>ES | | 1.00<br>1.10 | PID | <1ppm |
| ▼ 08/11/23 | | 1.40 | FILL / SAND (SP), trace silt: grey; fine to medium; trace pockets of Clayey SAND SC. 1.80m: trace fragments of brick | | FILL | ND | W | | ES | | 1.50<br>1.60 | PID | <1ppm |
| | | 1.90 | FILL / Sandy CLAY (CI), trace gravel: dark grey; medium plasticity; fine to medium sand. | | FILL | | | | D<br>ES | | 2.00<br>2.10 | PID | <1ppm |
| | | 2.20 | FILL / SAND (SP-SM), with silt: dark grey; fine to medium. | | FILL | | | | D<br>ES | | 2.50<br>2.60 | PID | <1ppm |
| | | | Borehole discontinued at 2.60m depth. (Collapsing conditions). | | | | | | | | | | |

DCP9/150





NOTES [#]Soil origin is "probable" unless otherwise stated. [*]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

**PLANT:** 5T excavator with 450 mm toothed bucket
**METHOD:**
**OPERATOR:** SLE Earthmoving
**LOGGED:** VV
**CASING:** Nil

**REMARKS:** Surface lvel surveyed using a differential GPS with a reported accuracy of +/- 0.1 m.
Groundwater encountered at 1.7 m depth.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

Generated with CORE-GS by Geroc - Soil Log with Photo

**Appendix C**

Geotechnical Laboratory Test Certificates

Attachment 12.1.3 Environmental Assessment Report

WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

**TEST REPORT - ASTM D2974-14 (Test Method C)**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18256-18262_1_ORG |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18256-18262 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | Various See Below | *Date Tested:* | 15/11/2023 |

## TEST RESULTS - Organic Content

**Sampling Method:** Sampled by Client, Tested as Received

**Testing Completed By:** WGLS-LC

**Furnace Temperature (°C):** 440

| Sample Number | Sample Identification | Ash Content (%) | Organic Content (%) |
|---|---|---|---|
| WG23.18256 | TP13/1.5 | 98.4 | 1.6 |
| WG23.18257 | TP8/1.5 m | 93.2 | 6.8 |
| WG23.18258 | TP19/2.5 | 98.5 | 1.5 |
| WG23.18262 | BH23/2.5 m | 98.8 | 1.2 |

*Comments:*

Approved Signatory:

Name: Cody O'Neill

Date: 16/November/2023

NATA Accreditation No. 20599
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WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

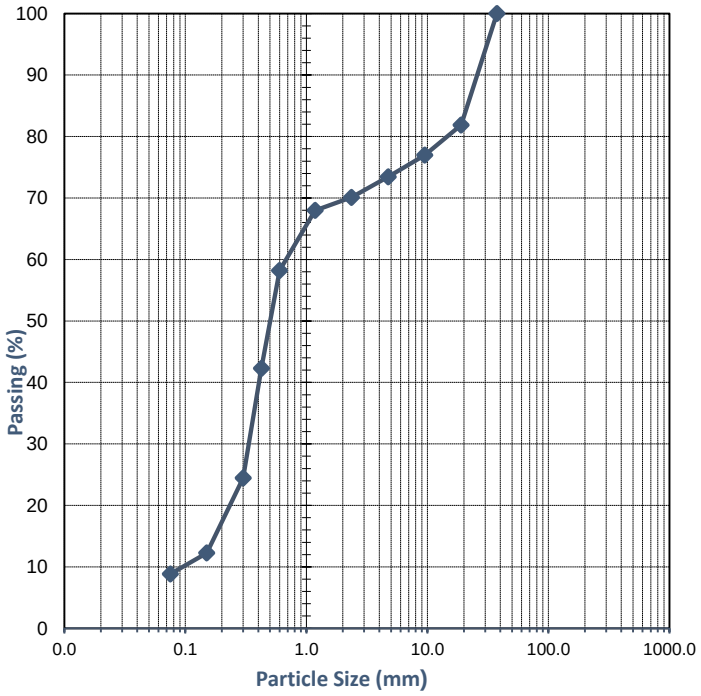
**TEST REPORT - AS 1289.3.6.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18257_1_PSD |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18257 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | TP8/1.5 m | *Date Tested:* | 16/11 - 17/11/2023 |

## TEST RESULTS - Particle Size Distribution of Soil

**Sampling Method:** Sampled by Client, Tested as Received

| Sieve Size (mm) | Percent Passing Sieve (%) |
|---|---|
| 150.0 | |
| 100.0 | |
| 75.0 | |
| 37.5 | 100 |
| 19.0 | 82 |
| 9.5 | 77 |
| 4.75 | 73 |
| 2.36 | 70 |
| 1.18 | 68 |
| 0.600 | 58 |
| 0.425 | 42 |
| 0.300 | 24 |
| 0.150 | 12 |
| 0.075 | 9 |




*Comments:*

Approved Signatory: Cody O'Neill

Name: Cody O'Neill

Date: 17/November/2023

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SOIL | AGGREGATE | CONCRETE | CRUSHING

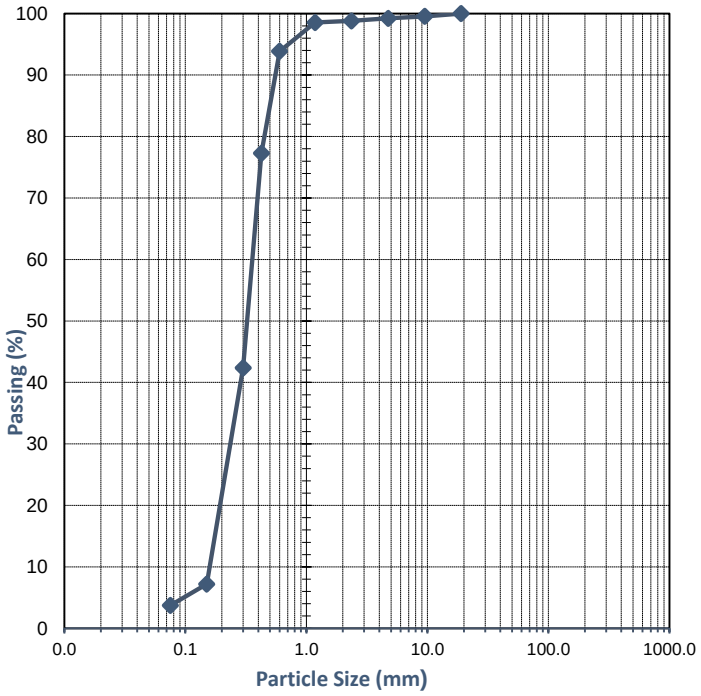
**TEST REPORT - AS 1289.3.6.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18256_1_PSD |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18256 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | TP13/1.5 | *Date Tested:* | 16/11 - 17/11/2023 |

## TEST RESULTS - Particle Size Distribution of Soil

**Sampling Method:** Sampled by Client, Tested as Received

| Sieve Size (mm) | Percent Passing Sieve (%) |
|---|---|
| 150.0 | |
| 100.0 | |
| 75.0 | |
| 37.5 | |
| 19.0 | 100 |
| 9.5 | 100 |
| 4.75 | 99 |
| 2.36 | 99 |
| 1.18 | 99 |
| 0.600 | 94 |
| 0.425 | 77 |
| 0.300 | 42 |
| 0.150 | 7 |
| 0.075 | 4 |




*Comments:*

Approved Signatory:

Name: Cody O'Neill

Date: 17/November/2023

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SOIL | AGGREGATE | CONCRETE | CRUSHING

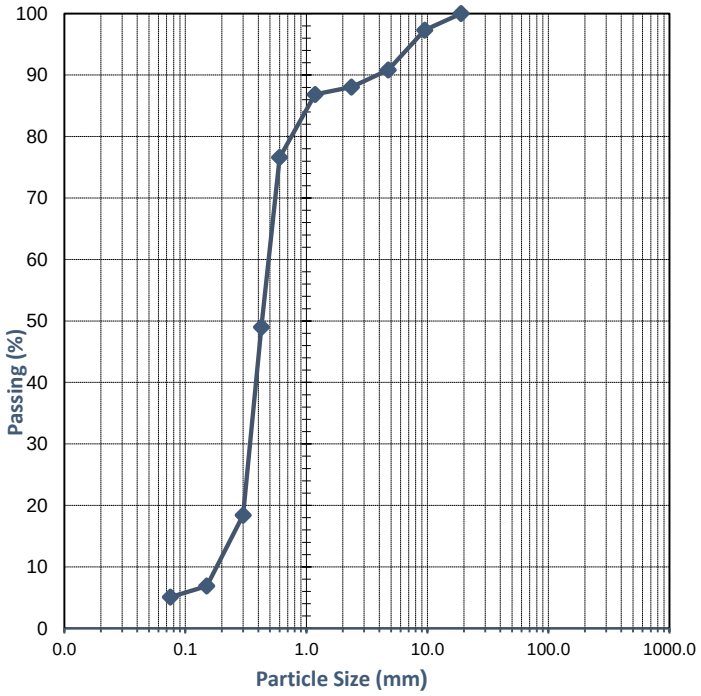
**TEST REPORT - AS 1289.3.6.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18258_1_PSD |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18258 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | TP19/2.5 | *Date Tested:* | 16/11 - 17/11/2023 |

## TEST RESULTS - Particle Size Distribution of Soil

**Sampling Method:** Sampled by Client, Tested as Received

| Sieve Size (mm) | Percent Passing Sieve (%) |
|---|---|
| 150.0 | |
| 100.0 | |
| 75.0 | |
| 37.5 | |
| 19.0 | 100 |
| 9.5 | 97 |
| 4.75 | 91 |
| 2.36 | 88 |
| 1.18 | 87 |
| 0.600 | 77 |
| 0.425 | 49 |
| 0.300 | 18 |
| 0.150 | 7 |
| 0.075 | 5 |




*Comments:*

Approved Signatory: Cody O'Neill

Name: Cody O'Neill

Date: 17/November/2023

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SOIL | AGGREGATE | CONCRETE | CRUSHING

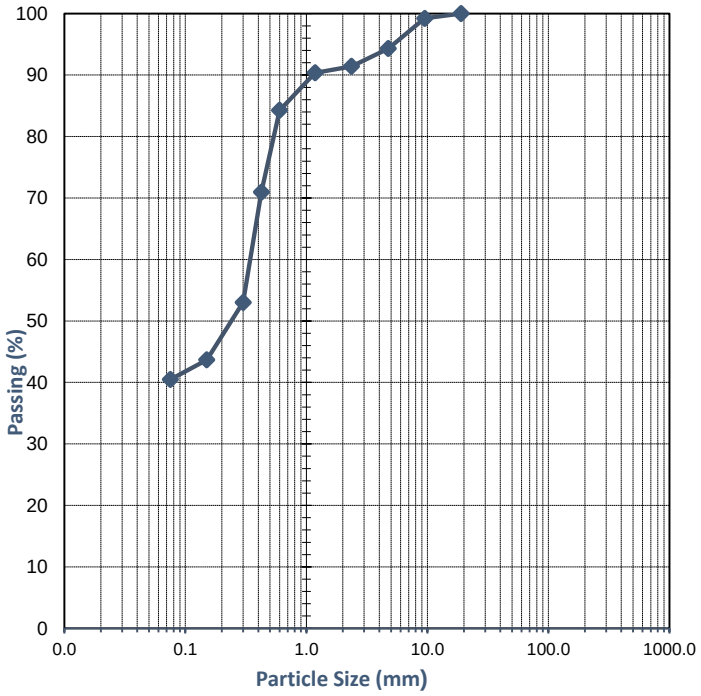
**TEST REPORT - AS 1289.3.6.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18259_1_PSD |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18259 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | TP21/2.0 m | *Date Tested:* | 16/11 - 17/11/2023 |

## TEST RESULTS - Particle Size Distribution of Soil

**Sampling Method:** Sampled by Client, Tested as Received

| Sieve Size (mm) | Percent Passing Sieve (%) |
|---|---|
| 150.0 | |
| 100.0 | |
| 75.0 | |
| 37.5 | |
| 19.0 | 100 |
| 9.5 | 99 |
| 4.75 | 94 |
| 2.36 | 91 |
| 1.18 | 90 |
| 0.600 | 84 |
| 0.425 | 71 |
| 0.300 | 53 |
| 0.150 | 44 |
| 0.075 | 40 |




*Comments:*

Approved Signatory: Cody O'Neill

Name: Cody O'Neill

Date: 17/November/2023

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WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

**TEST REPORT - AS 1289.3.1.1, 3.2.1, 3.3.1 & 3.4.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18259_1_PI |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18259 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | TP21/2.0 m | *Date Tested:* | 17/11/2023 |

## TEST RESULTS - Consistency Limits (Casagrande)

| | |
|---|---|
| **Sampling Method:** | **Sampled by Client, Tested as Received** |
| **History of Sample:** | **Oven Dried <50°C** |
| **Method of Preparation:** | **Dry Sieved** |

| | | |
|---|---|---|
| **AS 1289.3.1.1** | **Liquid Limit (%)** | **37** |
| **AS 1289.3.2.1** | **Plastic Limit (%)** | **24** |
| **AS 1289.3.3.1** | **Plasticity Index (%)** | **13** |
| **AS 1289.3.4.1** | **Linear Shrinkage (%)** | **8.5** |
| **AS 1289.3.4.1** | **Length of Mould (mm)** | **250** |
| **AS 1289.3.4.1** | **Condition of Dry Specimen:** | **Curled** |

***Comments:***

**Approved Signatory:**

**Name:** Madhav Basnet
**Date:** 20/November/2023

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SOIL | AGGREGATE | CONCRETE | CRUSHING

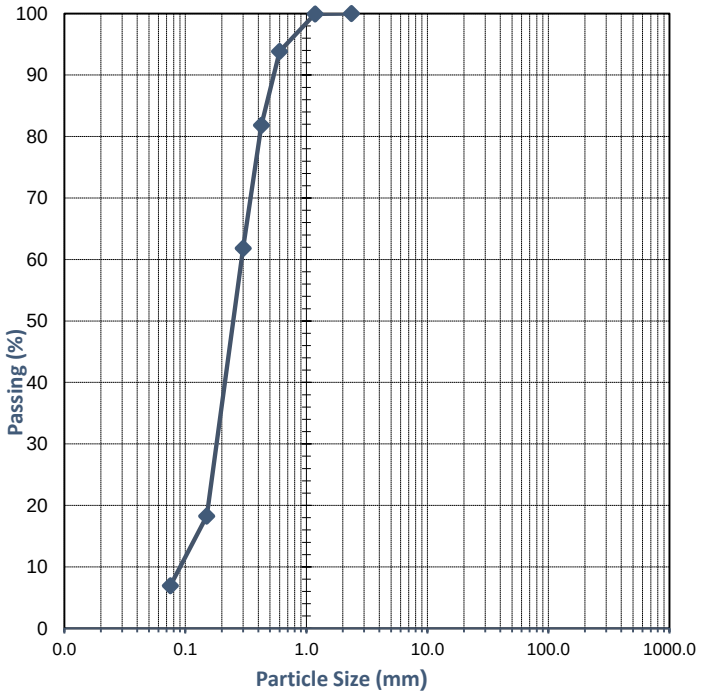
**TEST REPORT - AS 1289.3.6.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18260_1_PSD |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18260 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/2023 |
| *Sample Identification:* | TP22/2.0 | *Date Tested:* | 22/11 - 23/11/2023 |

## TEST RESULTS - Particle Size Distribution of Soil

**Sampling Method:** Sampled by Client, Tested as Received

| Sieve Size (mm) | Percent Passing Sieve (%) |
|---|---|
| 150.0 | |
| 100.0 | |
| 75.0 | |
| 37.5 | |
| 19.0 | |
| 9.5 | |
| 4.75 | |
| 2.36 | 100 |
| 1.18 | 100 |
| 0.600 | 94 |
| 0.425 | 82 |
| 0.300 | 62 |
| 0.150 | 18 |
| 0.075 | 7 |




*Comments:*

Approved Signatory:

Name: Natasha Bielawski

Date: 23/November/2023

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WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

**TEST REPORT - AS 1289.3.1.1, 3.2.1, 3.3.1 & 3.4.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18260_1_PI |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18260 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | TP22/2.0 | *Date Tested:* | 23/11/2023 |

## TEST RESULTS - Consistency Limits (Casagrande)

| | |
|---|---|
| **Sampling Method:** | **Sampled by Client, Tested as Received** |
| **History of Sample:** | **Oven Dried <50°C** |
| **Method of Preparation:** | **Dry Sieved** |

| | | |
|---|---|---|
| **AS 1289.3.1.1** | **Liquid Limit (%)** | **Not Obtainable** |
| **AS 1289.3.2.1** | **Plastic Limit (%)** | **Non-Plastic** |
| **AS 1289.3.3.1** | **Plasticity Index (%)** | **Non-Plastic** |
| **AS 1289.3.4.1** | **Linear Shrinkage (%)** | **0.0** |
| **AS 1289.3.4.1** | **Length of Mould (mm)** | **250** |
| **AS 1289.3.4.1** | **Condition of Dry Specimen:** | **-** |

*Comments:*

**Approved Signatory:**

**Name:** Matthew Lichon
**Date:** 24/November/2023

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WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

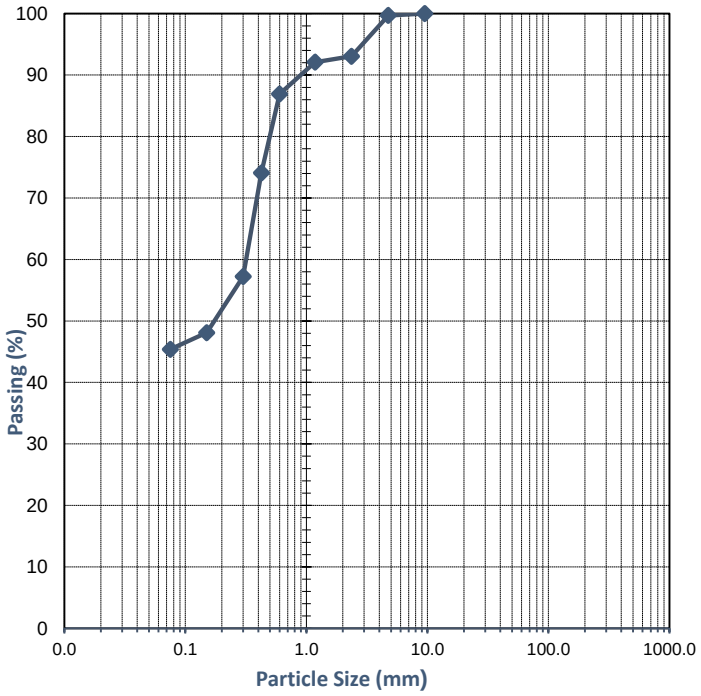
**TEST REPORT - AS 1289.3.6.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18261_1_PSD |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18261 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | BH23/2.0 m | *Date Tested:* | 16/11 - 17/11/2023 |

## TEST RESULTS - Particle Size Distribution of Soil

**Sampling Method:** Sampled by Client, Tested as Received

| Sieve Size (mm) | Percent Passing Sieve (%) |
|---|---|
| 150.0 | |
| 100.0 | |
| 75.0 | |
| 37.5 | |
| 19.0 | |
| 9.5 | 100 |
| 4.75 | 100 |
| 2.36 | 93 |
| 1.18 | 92 |
| 0.600 | 87 |
| 0.425 | 74 |
| 0.300 | 57 |
| 0.150 | 48 |
| 0.075 | 45 |




*Comments:*

Approved Signatory: Cody O'Neill

Name: Cody O'Neill

Date: 17/November/2023

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WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

**TEST REPORT - AS 1289.3.1.1, 3.2.1, 3.3.1 & 3.4.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18261_1_PI |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18261 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | BH23/2.0 m | *Date Tested:* | 17/11/2023 |

## TEST RESULTS - Consistency Limits (Casagrande)

| | |
|---|---|
| **Sampling Method:** | **Sampled by Client, Tested as Received** |
| **History of Sample:** | **Oven Dried <50°C** |
| **Method of Preparation:** | **Dry Sieved** |

| | | |
|---|---|---|
| **AS 1289.3.1.1** | **Liquid Limit (%)** | **44** |
| **AS 1289.3.2.1** | **Plastic Limit (%)** | **22** |
| **AS 1289.3.3.1** | **Plasticity Index (%)** | **22** |
| **AS 1289.3.4.1** | **Linear Shrinkage (%)** | **9.5** |
| **AS 1289.3.4.1** | **Length of Mould (mm)** | **250** |
| **AS 1289.3.4.1** | **Condition of Dry Specimen:** | **Curled** |

***Comments:***

**Approved Signatory:**

**Name:** Madhav Basnet
**Date:** 20/November/2023

NATA **Accreditation No. 20599**
**Accredited for compliance with ISO/IEC 17025 - Testing**

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Attachment 12.1.3 Environmental Assessment Report

WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

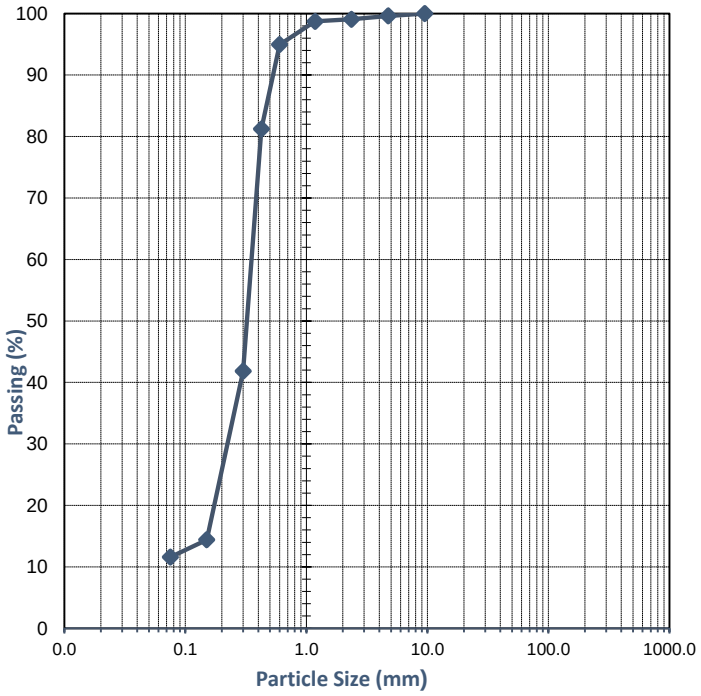
**TEST REPORT - AS 1289.3.6.1**

| | | | |
|---|---|---|---|
| *Client:* | Perth Racing | *Ticket No.* | S11610 |
| *Client Address:* | - | *Report No.* | WG23.18262_1_PSD |
| *Project:* | Proposed Residential Development | *Sample No.* | WG23.18262 |
| *Location:* | Lot 9002 Grandstand Rd, Ascot | *Date Sampled:* | 08/11 - 09/11/23 |
| *Sample Identification:* | BH23/2.5 m | *Date Tested:* | 16/11 - 17/11/2023 |

## TEST RESULTS - Particle Size Distribution of Soil

**Sampling Method:** Sampled by Client, Tested as Received

| Sieve Size (mm) | Percent Passing Sieve (%) |
|---|---|
| 150.0 | |
| 100.0 | |
| 75.0 | |
| 37.5 | |
| 19.0 | |
| 9.5 | 100 |
| 4.75 | 100 |
| 2.36 | 99 |
| 1.18 | 99 |
| 0.600 | 95 |
| 0.425 | 81 |
| 0.300 | 42 |
| 0.150 | 14 |
| 0.075 | 12 |




*Comments:*

Approved Signatory: Cody O'Neill

Name: Cody O'Neill

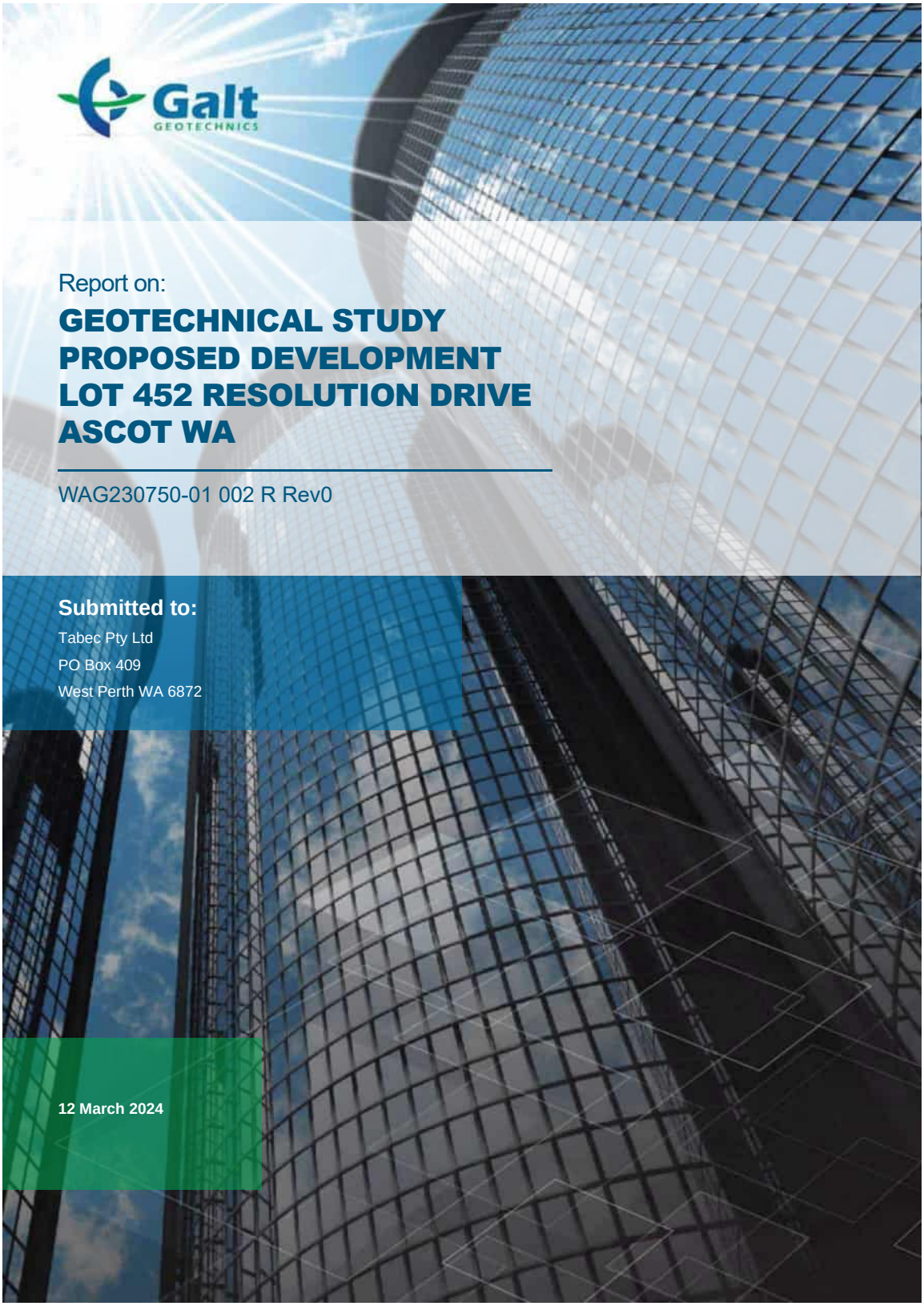
Date: 17/November/2023

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Attachment 12.1.3 Environmental Assessment Report



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Standard Geotechnical Definitions, Recommendations, Requirements and Limitations

Attachment 12.1.3 Environmental Assessment Report



# 1. INTRODUCTION

This report presents the outcomes of Galt Geotechnics' (Galt's) geotechnical study for the proposed development at Lot 452 Resolution Drive, Ascot ("the site").

This report is to be read in conjunction with the appended "Geotechnical Definitions, Recommendations, Requirements and Limitations". 'Clause GDR1', etc. refer to this Appendix, found at the back of this report.

# 2. KEY FINDINGS

## Site Description

*Table 1: Summary of Site*

| Item | Comment |
|---|---|
| Site Extent | Refer Figure 1. |
| Site Area | About 1.14 Ha. |
| Current Site Surface Levels[1] | About RL 3 m AHD. |
| Vegetation | Mature trees, shrubs and lawn in landscaped areas covering a large portion of the site. |
| Existing Infrastructure | Single Storey building (used by Perth Racing Security Services) with surrounding accessways, car parking and landscaped areas. |
| Site History[2] | **Prior to 1953**: two residences in northern portion of site. Remainder of site relatively clear.<br>**1953 to 1985**: Relatively unchanged. Undeveloped portion of site used as laydown area, car park area, and to stockpile materials at different times.<br>**1989**: Existing Perth Racing Security Services development (as described above) is present<br>**1989 to Present**: Site relatively unchanged. |

***NOTES:*** *1. Site level based on correspondence with client.*

*2. Site history based on aerial imagery (Landgate).*

# 3. PROPOSED DEVELOPMENT

*Table 2: Summary of Proposed Development*

| Item | Comment |
|---|---|
| Proposed Development | Unknown, assumed subdivision for commercial/residential purposes. |
| Proposed Finished Level | Assumed within about 1 m of current ground levels. |
| Cut/Fill | Assumed ± 1 m with up to 5 m excavation to connect development to existing sewer. |
| Assumed Foundation Type | Shallow Footings. |
| Assumed Retaining Walls | Gravity walls up to 1 m in height. |
| Assumed Stormwater Disposal | Off site into council network. |
| Assumed Sewage Disposal | Off site via reticulated sewer. |

***NOTES:*** *1. FFL – finished floor level*

*2. Proposed development details based on supplied information.*

# 4. PROJECT OBJECTIVES

The objectives of the study were to:

- Assess the geotechnical suitability of the site for the proposed development;

- Geotechnical opportunities and constraints relevant to the proposed development;
- Areas of foundation risk including the presence of aggressive soils and strategies to address identified risks;
- Site preparation including possible reuse of existing soil as controlled fill;
- Excavation conditions;
- The likely site classification;
- Suitable foundation systems including preliminary design parameters;
- Preliminary design parameters for the design of retaining structures and batter slopes;
- Depth to groundwater at time of investigation; and
- Recommendations on additional geotechnical investigation at detailed design phase or to address specific ground conditions encountered.

# 5. FIELDWORK

Fieldwork was carried out in the presence of a representative from Galt between the 8 and 14 February 2024 and comprised:

*Table 3: Summary of Field Data*

| Type | Results Appendix | Summary | GDR Clause | Equipment Used | No. Tests | Depth Range (m) |
|---|---|---|---|---|---|---|
| Site Plan | Figure 1 | - | - | Hand held GPS[1] | - | - |
| Photographs | A | - | - | - | - | - |
| Cone Penetration Tests (CPTs) | B | Section 8 | GDR3.2 | 14-tonne truck | 5 | 1.6 to 10.1 |
| Machine Auger Boreholes (BH) | C | Section 8 | GDR3.3 | AMS Power Probe | 4 | 0.7 to 6.5 |
| Monitoring Well (MW) | C | Section 8 | GDR3.3 | AMS Power Probe | 1 | 6.0 |

***NOTES:*** ***1.*** *Hand held GPS is accurate to ±5 m.*

# 6. LABORATORY TESTING

Laboratory test certificates are presented in Appendix D, and summarised in Attached Tables 1 and 2.

# 7. SITE CONDITIONS

## 7.1. Geology

*Table 4: Summary of Geology Mapping*

| Map Sheet | Map Scale | Mapped Soils | Typical Site Findings |
|---|---|---|---|
| Perth | 50K | Guildford Formation, described as: "*SANDY SILT - strong brown to mid grey, mottled, blocky, disseminated fine sand, hard when dry, variable clay content of alluvial origin.*" | **Thin topsoil** (landscaped areas) **and pavement materials** (car parks / access ways) **over FILL: SAND / SAND** to about 0.4 m to 0.9 m depth, **over Sandy CLAY / CLAY**. |

## 7.2. Groundwater

*Table 5: Summary of Groundwater Levels*

| Item | Date | Depth Range (m) | Elevation Range (m AHD) | Comment |
|---|---|---|---|---|
| Perth Groundwater Atlas | 1997 | - | 3.0 | Historical maximum |
| Department of Water and Environmental Regulation (DWER) Flood Mapping | - | - | 2.7 to 2.9 (DWER mapped 1% AEP flood event level) | Portion of site along southern and south western site boundaries, and the northern side of Grandstand road are mapped as being part of flood fringe by DWER. **Advice on development within the defined flood event (DFE) floodplain is provided by DWER on a case by case basis. DWER recommends a minimum building floor level of 0.50 metres above this level** (**RL 3.4 m AHD**). |
| Site observations in MW01 | February 2024 | 3.03 | - | Based on highest recorded water levels in monitoring well. |
| Site observations in CPT test probes | February 2024 | 1.90 to 2.80 | - | CPT probes may not have had sufficient time to recharge to hydrostatic levels. |
| Recommended Design | - | - | 2.7 to 2.9 | Groundwater likely to perch on clay soils at site. Proposed development must be designed for DWER DFE flood event. |

***NOTES:*** ***1.*** *Depths for site observations based on the site surface level at the time of investigation.*

# 8. GROUND MODEL

The encountered subsurface conditions are summarised as comprising:

- **Surficial Topsoil (in landscaped areas)** up to 0.3 m thick **and Hardstand Fill Layers** (in carparks and access ways); **overlying**
- **FILL: SAND / SAND (SP)**, fine to medium grained, sub-rounded to sub-angular, yellow / brown / grey layers, includes trace gravel / Sandy GRAVEL layers, trace / with fines, some typically medium dense to dense, extending to depths of about 0.4 m to 0.9 m; overlying
- **In BH03 and BH04 only: Silty SAND / Clayey SAND (SM/SC)** fine to medium grained, sub-rounded to sub-angular, brown / grey, low to medium plasticity fines, some typically medium dense to dense, extending to depths of about 0.7 m to 1.2 m; overlying
- **Sandy CLAY / CLAY (CI)**, medium plasticity, brown / orange / grey, trace sand to sandy, trace gravel in some zones, desiccated, CPT traces indicate presence of occasional sand layers, typically very stiff to hard, extending to the maximum depth investigated of 10 m.

Geotechnical design parameters for the generalised subsurface units described above are presented in Table 6.

*Table 6: Geotechnical Model Units and Design Parameters*

| Unit Name | $\gamma_{bulk}$ (kN/m$^3$) | $\phi'$ (°) | c' (kPa) | $S_u$ (kPa) | $E_v$ (MPa) | $\nu$ | $k_0$ | Wall Friction=0 | | Wall Friction=0.5$\phi$ | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | $k_a$ | $k_p$ | $k_a$ | $k_p$ |
| Compacted Approved FILL | 18 | 36 | - | - | 50 | 0.25 | 0.41 | 0.26 | 3.85 | 0.22 | 6.54 |
| SAND / Silty SAND / Clayey SAND | 18 | 35 | - | - | 25 | 0.3 | 0.43 | 0.27 | 3.69 | 0.24 | 6.08 |
| Sandy CLAY / CLAY | 18 | 21 | 0 to 5 | 150 | 30 | 0.45 | Earth pressure coefficients can be calculated for undrained or drained conditions as outlined in GDR11.2.2 using Firm parameters (undrained) or Fines Content >35% & PI 40% (drained). | | | | |

***NOTES:***

1. *These units are a generalization of results from individual tests, which should be referred to for more information.*
2. *Conditions at CPT locations below depth of soil sample recovery are inferred (refer to clause GDR3.2)*
3. *Surficial topsoil and hardstand layers are not included as discrete units.*
4. *Compacted approved fill is as described in Table 7.*
5. *For all earth pressure coefficients (retaining wall design) refer to clause GDR11.2 for more detail and interpretation. Unit weights for retaining structure design should be as per GDR11.2 or 1 kN/m$^3$ greater than the values in the table above.*

*$\gamma_{bulk}$ – bulk unit weight*
*$\phi'$ – effective friction angle*
*$S_u$ – undrained shear strength*
*c'– effective cohesion*
*$E_v$ – vertical elastic modulus*
*$\nu$ – Poisson's Ratio*
*$k_a$ – coefficient of active earth pressure (Coulomb – AS4678-2002, Appendix E)*
*$k_p$ – coefficient of passive earth pressure (Coulomb – AS4678-2002, Appendix E)*
*$k_0$ – coefficient of at-rest earth pressure (Jaky)*

# 9. GEOTECHNICAL ASSESSMENT

## 9.1. Summary

*Table 7: Summary of Geotechnical Assessment*

| Type | Clause | Parameter | Comment |
|---|---|---|---|
| Site Suitability | - | - | We consider the site to be geotechnically suitable for the proposed subdivision development. Standard site preparation measures will apply. However, groundwater could impact construction if it occurs during winter. Flood levels will impact site levels (refer Table 5). |
| Construction Methodology and Suitability | - | - | Shallow footings in accordance with AS2870-2011 will be suitable for this site. Mass retaining will be suitable for retaining however, must be designed for potential flooding of the site. Stormwater disposal via infiltration is **not** suitable. |
| Site Classification (AS2870) | GDR5 | S | Where **no less than 0.7 m of sand** (including insitu silty sand and clayey sand layers encountered in BH03 and BH04) is present **over in situ CLAY / Sandy CLAY.** |
| Site Subsoil Class (AS1170.4) | - | Ce | Base of superficial formation mapped to be about 25 m below ground. |
| Site Preparation | GDR6 | - | **GDR6.2.1 Common Measures** followed by **GDR6.2.4 Clayey Sites** followed by **GDR6.2.5 Sand Topping Layer.** |
| Approved Fill | GDR8 | - | **Approved Fill** for this site is to comprise **Permeable Sand**.<br>Only relatively thin surficial layers of sand at the site (excluding topsoil) are suitable as approved fill. If additional fill is required, imported **Permeable Sand** will be needed.<br>Although not classed as 'approved fill', where clay is encountered in trench excavations, this material could possibly be reused to backfill the same portion of the trench (excluding any special fill materials required around buried elements). However, this material will be difficult to work and moisture condition to near optimum (particularly if removed from below the groundwater table). |
| Compaction Control | GDR7 | - | A PSP may be used for compaction control on **Permeable Sand.** Deemed to comply values for 'Tamala' sand in GDR7.4 are applicable.<br>Where filling with clay is done (in trenches, etc), compaction control must be done with the NDG as outlined in GDR7.3 Nuclear Density Gauge. |
| Shallow Footings | GDR9 | $q_{all}$ = 100 kPa to 250 kPa | Design tables for shallow footings are presented in Section 9.2. Estimated settlements are not considered excessive. 70% of the settlement is expected to occur during construction. |
| Earth Pressure Coefficients | GDR11 | Table 6 | Earth pressure coefficients are presented in Table 6. |
| Unsaturated Hydraulic Conductivity | GDR13 | - | On site disposal of stormwater unlikely to be suitable due to shallow depth to clay and potential for flooding adjacent the site. Off site disposal of stormwater likely to be required. |
| Pavement Subgrade CBR | GDR16 | CBR = 10% | Subgrade to comprise compacted **Approved Fill no less than 0.6 m thick.** |
| Soil Aggressivity | GDR17 | - | Refer Section 9.3 |
| Batters | GDR12 | **Temporary:**<br>Sand: 1V:2H<br>Clay: 1V:1H<br>**Permanent:**<br>1V:3H | Batter angles apply to soil units (refer Table 6) above the water table, as per GDR12.3. Dewatering and possibly retention (i.e. shoring) required below the groundwater table. |
| Excavations | GDR12.1 | 20 Ton Excavator | Potential for obstructions (buried concrete, Soakwells etc…), cemented soils and surficial pavement layers must be considered when selecting earthmoving plant. |

**NOTES:**
1. $q_{all}$ – allowable bearing pressure (maximum for all footings, refer to footing tables for further details)

## 9.2. Shallow Footings

*Table 8: Isolated Pad Footing Allowable Bearing Pressures and Estimated Settlements*

| $d_e$ (m) | b (m) | $q_{all}$ (kPa) | s (mm) |
|---|---|---|---|
| 0.5 | 0.5 | 120 | < 5 |
| 0.5 | 1.0 | 130 | < 5 |
| 1.0 | 1.0 | 240 | 5 - 10 |
| 1.0 | 2.0 | 250 | 10 - 15 |
| 1.0 | 3.0 | 250 | 20 - 25 |

**NOTES:**
1. $d_e$ – minimum embedment depth (below finished ground level or floor slab)
2. b – Footing breadth (footings assumed approximately square)
3. $q_{all}$ – allowable bearing pressure (peak). Limited to keep estimated settlements less than 25 mm. Higher $q_{all}$ may be possible if higher settlements can be tolerated – refer queries to us.
4. s – estimated settlement (excludes shrink/swell from site class)
5. Refer to GDR9
6. Groundwater assumed to be at ground level.

*Table 9: Isolated Strip Footing Allowable Bearing Pressures and Estimated Settlements*

| $d_e$ (m) | b (m) | $q_{all}$ (kPa) | s (mm) |
|---|---|---|---|
| 0.5 | 0.5 | 100 | < 5 |
| 0.5 | 1.0 | 130 | 5 - 10 |
| 1.0 | 1.0 | 190 | 10 - 15 |
| 1.0 | 2.0 | 250 | 20 - 25 |

**NOTES:**
1. $d_e$ – minimum embedment depth (below finished ground level or floor slab)
2. b – Footing breadth (footings assumed long relative to breadth)
3. $q_{all}$ – allowable bearing pressure (peak). Limited to keep estimated settlements less than 25 mm. Higher $q_{all}$ may be possible if higher settlements can be tolerated – refer queries to us.
4. s – estimated settlement (excludes shrink/swell from site class)
5. Refer to GDR9
6. Groundwater assumed to be at ground level.

## 9.3. Soil Aggressivity

Results of aggressivity testing on clay samples is summarised in Attached Table 2. The results indicate the clay is 'non aggressive' to concrete and steel (in accordance with AS2159-2009) with a AS3600-2009 classification of 'A1'.

Based on regional experience, we anticipate the sand will have the same aggressivity classifications as the underlying clay where above the groundwater. However, for concrete in sand below the water table, an AS2159-2009 'mild' classification, and AS3600-2009 'A2' classification is appropriate.

Groundwater was not tested.

Attachment 12.1.3 Environmental Assessment Report



## 10. CLOSURE

**GALT GEOTECHNICS PTY LTD**





Owen Woodland CPEng
*Geotechnical Engineer*

Tyrone Mardesic CPEng
*Geotechnical Engineer*

https://galtgeo.sharepoint.com/sites/wag230750/shared documents/01 tabec si/03 correspondence/wag230750-01 002 r rev0.docx

*Attached Table 1: Summary of Geotechnical Index Test Results*

| Test Name | Sample Depth (m) | Soil Class (AS1726 2017) | Fines (%) | Sand (%) | Gravel (%) | LL (%) | PI (%) | LS (%) |
|---|---|---|---|---|---|---|---|---|
| BH03 | 1.5 - 2.2 | CLAY (CI) | 89 | 11 | 0 | 46 | 28 | 12.5 |
| BH04 | 1.0 - 1.3 | Sandy CLAY (CI) | 54 | 43 | 3 | 34 | 20 | 8.5 |

***Notes***

1. *Particle size distribution (by mass)*
   *Gravel: 2.36 mm – 63 mm* *Sand: 0.075 mm – 2.36 mm* *Fines: <0.075 mm*
2. *Atterberg Limits*
   *LL: Liquid limit* *PI: Plasticity index* *LS: Linear shrinkage*
   *NO: Not obtainable* *NP: Non-plastic*

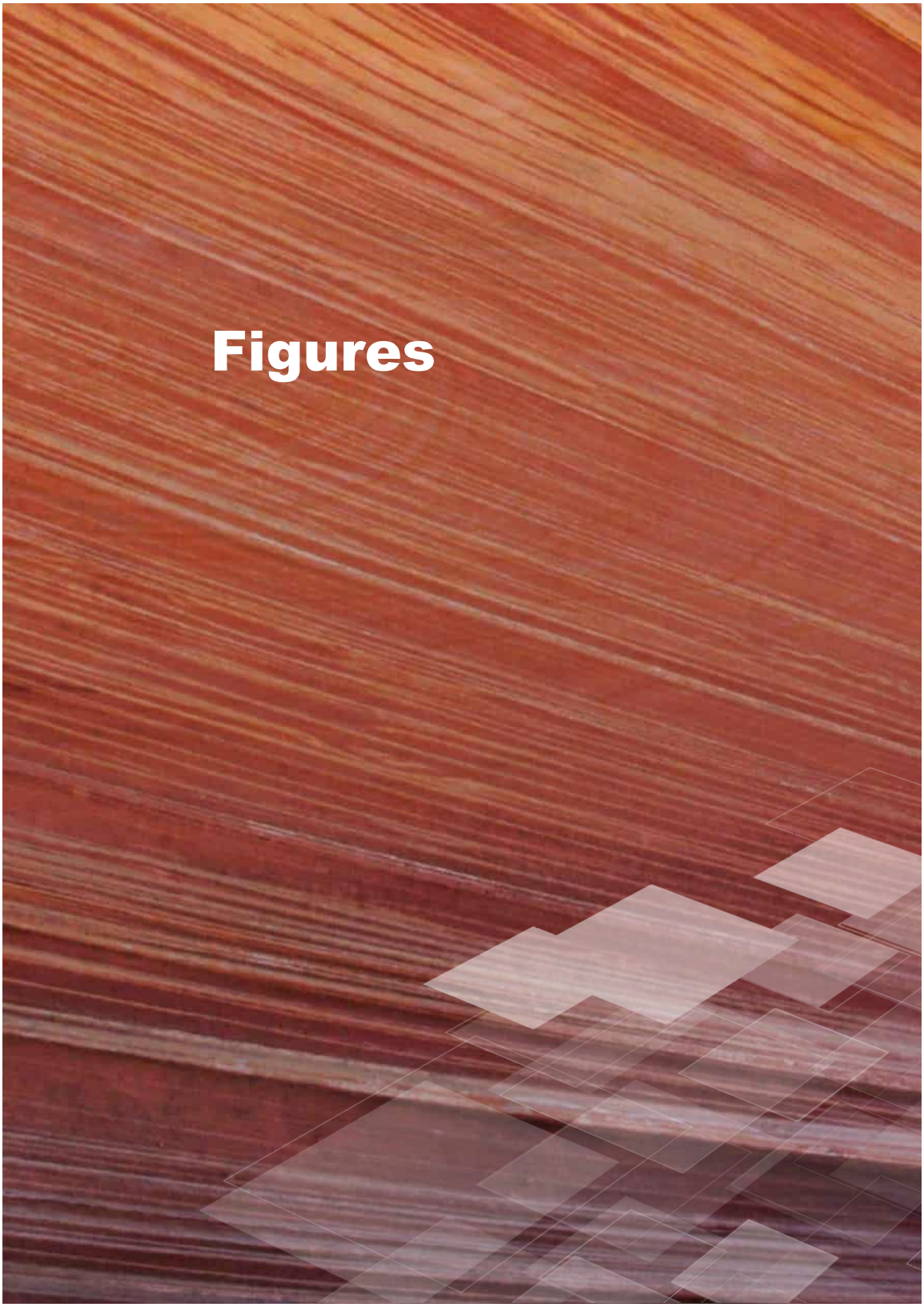
*Attached Table 2: Summary of Chemical Test Results and Exposure Classification*

| Location | Sample Depth (m) | Soil Description | Soil Condition | pH | $SO_4$ (ppm) | Cl (ppm) | AS2159 Steel EC | AS2159 Concrete EC | AS3600 Concrete EC |
|---|---|---|---|---|---|---|---|---|---|
| BH03 | 1.5 - 2.2 | CLAY (CI) | B | 8.8 | 100 | 210 | Non-Aggressive | Non-Aggressive | A1 |
| BH04 | 1.0 - 1.3 | Sandy CLAY (CI) | B | 7.5 | 170 | 94 | Non-Aggressive | Non-Aggressive | A1 |

***NOTES:***

1. *Soil condition*
   *A – high permeability soils (sands and gravels) which are below water table.* *B – Low permeability soils (silts and clays) and all soils above water table*
2. *Sulfate expressed as $SO_4$*
3. *Cl – Chloride*
4. *ER – Electrical Resistivity*
5. *EC – Exposure Classification*
5. *Exposure Classification for AS2159-2009 (for steel and concrete piles)*
   *[Exposure Classification for AS3600-2009 (for buried concrete structures)]*

| *Non-aggressive [A1]* | *Mild [A2]* | *Moderate [B1]* | *Severe [B2]* | *Very Severe [C2]* |
|---|---|---|---|---|


Figures

Attachment 12.1.3 Environmental Assessment Report



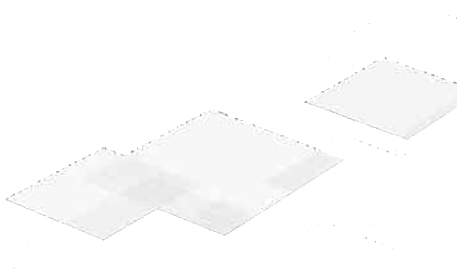
Attachment 12.1.3 Environmental Assessment Report



Attachment 12.1.3 Environmental Assessment Report



# Appendix A: Site Photographs



Attachment 12.1.3 Environmental Assessment Report



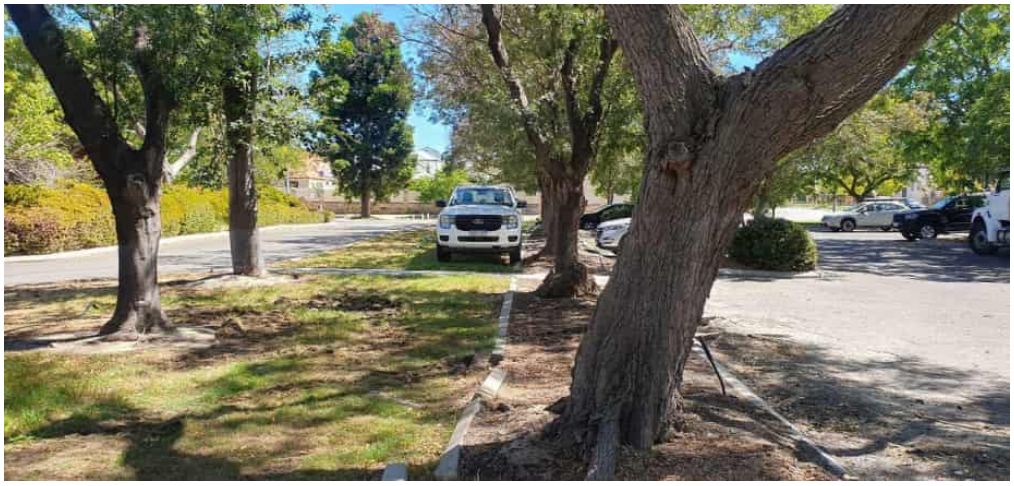
*Photograph 1: Near CPT02 facing south*



Attachment 12.1.3 Environmental Assessment Report



*Photograph 2: Near CPT02 facing south west*



Attachment 12.1.3 Environmental Assessment Report



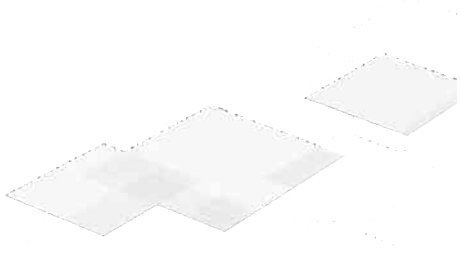
*Photograph 3: Site photo from near northern portion of site*



Attachment 12.1.3 Environmental Assessment Report



# Appendix C: Machine Borehole and Monitoring Well Logs



Attachment 12.1.3 Environmental Assessment Report

## EXPLANATORY NOTES TO BE READ WITH BOREHOLE AND TEST PIT REPORTS

**METHOD OF DRILLING OR EXCAVATION**

| | | | | | |
|---|---|---|---|---|---|
| AC | Air Core | E | Excavator | PQ3 | PQ3 Core Barrel |
| AD/T | Auger Drilling with TC-Bit | EH | Excavator with Hammer | PT | Push Tube |
| AD/V | Auger Drilling with V-Bit | HA | Hand Auger | R | Ripper |
| AT | Air Track | HE | Hand Excavation | RR | Rock Roller |
| B | Bulldozer Blade | HQ3 | HQ3 Core Barrel | SON | Sonic Rig |
| BH | Backhoe Bucket | N | Natural Exposure | SPT | Driven SPT |
| CT | Cable Tool | NMLC | NMLC Core Barrel | WB | Washbore |
| DT | Diatube | PP | Push Probe | X | Existing Excavation |

**SUPPORT**

| | |
|---|---|
| T | Timbering |

**PENETRATION EFFORT (RELATIVE TO THE EQUIPMENT USED)**

| | | | | | |
|---|---|---|---|---|---|
| VE | Very Easy | E | Easy | F | Firm |
| H | Hard | VH | Very Hard | | |

**WATER**

| | | | |
|---|---|---|---|
| ► | Water Inflow | ▼ | Water Level |
| ◄ | Water Loss (complete) | | |
| ◁ | Water Loss (partial) | | |

**SAMPLING AND TESTING**

| | | | |
|---|---|---|---|
| B | Bulk Disturbed Sample | P | Piston Sample |
| BLK | Block Sample | PBT | Plate Bearing Test |
| C | Core Sample | U | Undisturbed Push-in Sample |
| CBR | CBR Mould Sample | | U50: 50 mm diameter |
| D | Small Disturbed Sample | SPT | Standard Penetration Test |
| ES | Environmental Soil Sample | | Example: 3, 4, 5 N=9 |
| EW | Environmental Water Sample | | 3,4,5: Blows per 150 mm |
| G | Gas Sample | | N=9: Blows per 300 mm after |
| HP | Hand Penetrometer | | 150 mm seating interval |
| LB | Large Bulk Disturbed Sample | VS | Vane Shear; P = Peak |
| M | Mazier Type Sample | | R = Remoulded (kPa) |
| MC | Moisture Content Sample | W | Water Sample |

**ROCK CORE RECOVERY**

TCR = Total Core Recovery (%) $= \frac{CRL}{TCL} \times 100$

RQD = Rock Quality Designation (%) $= \frac{ALC>100}{TCL} \times 100$

| | |
|---|---|
| TCL | Length of Core Run |
| CRL | Length of Core Recovered |
| ALC>100 | Total Length of Axial Lengths of Core Greater than 100 mm Long |

Attachment 12.1.3 Environmental Assessment Report

# METHOD OF SOIL DESCRIPTION
# BOREHOLE AND TEST PIT REPORTS

Galt GEOTECHNICS

## GRAPHIC LOG & SOIL CLASSIFICATION SYMBOLS

| Graphic | USCS | Soil Name |
|---|---|---|
| | | FILL (various types) |
| | | COBBLES / BOULDERS |
| | GP | GRAVEL (poorly graded) |
| | GW | GRAVEL (well graded) |
| | GC | Clayey GRAVEL |
| | GM | Silty GRAVEL |
| | SP | SAND (poorly graded) |
| | SW | SAND (well graded) |
| | SC | Clayey SAND |

| Graphic | USCS | Soil Name |
|---|---|---|
| | SM | Silty SAND |
| | ML | SILT (low liquid limit) |
| | MH | SILT (high liquid limit) |
| | CL | CLAY (low plasticity) |
| | CI | CLAY (medium plasticity) |
| | CH | CLAY (high plasticity) |
| | OL | Organic SILT (low liquid limit) |
| | OH | Organic SILT (high liquid limit) |
| | Pt | PEAT |

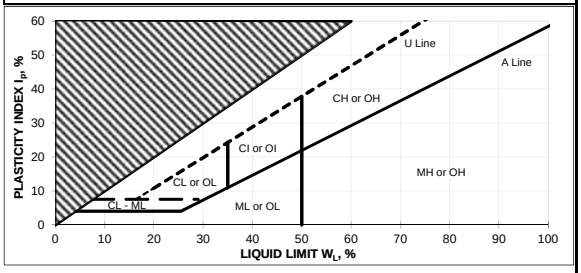
NOTE: Dual classification given for soils with a fines content between 5% and 12%.

## SOIL CLASSIFICATION AND INFERRED STRATIGRAPHY

Soil descriptions are based on AS1726-2017. Material properties are assessed in the field by visual/tactile methods in combination with field and laboratory testing techniques (where used).
NOTE: AS 1726-2017 defines a fine grained soil where the total dry mass of fine fractions (<0.075 mm particle size) exceeds 35%.

| PARTICLE SIZE | | |
|---|---|---|
| **Soil Name** | | **Particle Size (mm)** |
| BOULDERS | | >200 |
| COBBLES | | 63 to 200 |
| GRAVEL | Coarse | 19 to 63 |
| | Medium | 6.7 to 19 |
| | Fine | 2.3 to 6.7 |
| SAND | Coarse | 0.6 to 2.36 |
| | Medium | 0.21 to 0.6 |
| | Fine | 0.075 to 0.21 |
| FINES | SILT | 0.002 to 0.075 |
| | CLAY | <0.002 |

**PLASTICITY - MODIFIED CASAGRANDE CHART - AS1726-2017**




| RESISTANCE TO EXCAVATION | | |
|---|---|---|
| **Symbol** | **Term** | **Description** |
| VE | Very easy | All resistances are relative to the selected method of excavation |
| E | Easy | |
| F | Firm | |
| H | Hard | |
| VH | Very hard | |

| MOISTURE CONDITION | |
|---|---|
| **Symbol** | **Term** |
| D | Dry |
| M | Moist |
| W | Wet |

| CEMENTATION | |
|---|---|
| **Cementation** | **Description** |
| Weakly cemented | Soil may be easily disaggregated by hand in air or water |
| Moderately cemented | Effort is required to disaggregate the soil by hand in air or water |

| CONSISTENCY | | |
|---|---|---|
| **Symbol** | **Term** | **Undrained Shear Strength (kPa)** |
| VS | Very Soft | 0 to 12 |
| S | Soft | 12 to 25 |
| F | Firm | 25 to 50 |
| St | Stiff | 50 to 100 |
| VSt | Very Stiff | 100 to 200 |
| H | Hard | >200 |

| ORGANIC SOILS | |
|---|---|
| **Material** | **Organic Content % of dry mass** |
| Inorganic soil | <2% |
| Organic soil | 2% to 25% |
| Peat | >25% |

| DENSITY | | |
|---|---|---|
| **Symbol** | **Term** | **Density Index (%)** |
| VL | Very Loose | <15 |
| L | Loose | 15 to 35 |
| MD | Medium Dense | 35 to 65 |
| D | Dense | 65 to 85 |
| VD | Very Dense | >85 |

O:\Administration\Standard Forms and Documents\PMP17 Method of Soil Description-Rev6

Galt Form PMP17
December 2017

Attachment 12.1.3 Environmental Assessment Report

Galt

**REPORT OF BOREHOLE: BH01/MW01**

| | | | | | |
|---|---|---|---|---|---|
| Job No | : WAG230750-01 | Easting | : 0.00 | Sheet | : 1 OF 1 |
| Client | : Tabec | Northing | : 0.00 | Logged | : MDS |
| Project | : Proposed Development | UTM | : | Logged Date | : 08/02/2024 |
| Location | : Lot 452 Resolution Drive, Ascot | Drill Rig | : AMS Super Rig | Checked | : TM |
| Contractor | : Galt Geotechnics | Inclination | : -90 deg | Checked Date | : 25/02/2024 |

**General comments: Monitoring Well Installed at this location**

| Drilling Method | Depth (m) | Water | Classification Code | Soil Origin | Graphic Log | Consistency/Density | Moisture | Material Description | Structural and Additional Observations | Well Diagram |
|---|---|---|---|---|---|---|---|---|---|---|
| 90mm Solid Auger | 0.3 | | SP | Natura | | | D | Natural SAND: dark brown and black, fine to coarse grained, with low plasticity clay, (trace organics present in upper 200mm). | (trace organics present in upper 200mm) | MW01 |
| | 0.45 | | SP | Natura | | MD-D | | Natural SAND: pale yellow, fine to coarse grained, trace low plasticity clay. | | |
| | 0.9 | | SP | Natura | | | | Natural SAND: dark brown and black, fine to coarse grained, trace low plasticity clay. | | |
| | 1 | | CI | Natura | | VSt-H | | Natural Sandy CLAY: medium plasticity, brown and pale orange, fine grained sand, inorganic, clay is highly desiccated. | Clay is highly desiccated | |
| | 2.3 | | SC | Natura | | | | Natural Clayey SAND: low plasticity clay, brown and dark brown, fine to coarse grained, trace fine to medium sized gravel. | | |
| | 2.5 | | CI | Natura | | VSt-H | | Natural CLAY: medium plasticity, brown and pale orange, trace fine to medium grained sand, inorganic, clay is desiccated at shallower depths. | Clay is desiccated at shallower depths | |
| | 3 | ▽ | | | | | | | | |
| | 6 | | | | | | | **BH01/MW01 Terminated at 6m (Target Depth GW @3.03m)** | | |

Backfill (Drill Spoil)
50mm PVC Solid
Bentonite (Sealed above Slotted PVC)
Filter Pack (Gravel Filter Medium Installed)
50mm PVC Slotted



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Attachment 12.1.3 Environmental Assessment Report

Galt

**REPORT OF BOREHOLE: BH02**

| | | | | | |
|---|---|---|---|---|---|
| Job No | : WAG230750-01 | Easting | : 0.00 | Sheet | : 1 OF 1 |
| Client | : Tabec | Northing | : 0.00 | Logged | : MDS |
| Project | : Proposed Development | UTM | : | Logged Date | : 08/02/2024 |
| Location | : Lot 452 Resolution Drive, Ascot | Drill Rig | : AMS Super Rig | Checked | : TM |
| Contractor | : Galt Geotechnics | Inclination | : -90 deg | Checked Date | : 25/02/2024 |

| Drilling Method | DCP graph | Water | Depth (m) | Soil Origin | Graphic Log | Classification Code | Material Description | Moisture | Consistency/Density | Remarks | Sample |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 80mm Solid Auger | | | | Natural | | SP | Natural SAND: dark grey and black, fine to coarse grained, trace low plasticity clay, (trace organics present in upper 200mm). | M-D | MD-D | | |
| | | | 1 | | | | **BH02 refusal at 0.7m (Refusal on Desiccated Clay Groundwater not encountered)** | | | | |
| | | | 2 | | | | | | | | |
| | | | 3 | | | | | | | | |
| | | | 4 | | | | | | | | |
| | | | 5 | | | | | | | | |
| | | | 6 | | | | | | | | |
| | | | 7 | | | | | | | | |
| | | | 8 | | | | | | | | |

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Attachment 12.1.3 Environmental Assessment Report

Galt

**REPORT OF BOREHOLE: BH03**

| | | | | | |
|---|---|---|---|---|---|
| Job No | : WAG230750-01 | Easting | : 0.00 | Sheet | : 1 OF 1 |
| Client | : Tabec | Northing | : 0.00 | Logged | : PA |
| Project | : Proposed Development | UTM | : | Logged Date | : 14/02/2024 |
| Location | : Lot 452 Resolution Drive, Ascot | Drill Rig | : AMS Super Rig | Checked | : TM |
| Contractor | : Galt Geotechnics | Inclination | : -90 deg | Checked Date | : 25/02/2024 |

| Drilling Method | DCP graph | Water | Depth (m) | Soil Origin | Graphic Log | Classification Code | Material Description | Moisture | Consistency/Density | Remarks | Sample |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 90mm Solid Auger | | | 0.1 | Topso | | SP | Topsoil SAND: dark grey, fine to medium grained, trace medium plasticity clay, with roots / organics. | D | MD-D | | |
| | | | 0.25 | Fill | | SP | Fill SAND: brown, medium dense to dense, fine to medium grained, trace low plasticity clay. | | | | |
| | | | 0.4 | Fill | | GP | Fill Sandy GRAVEL: grey, medium dense to dense, fine to medium sized, fine to medium grained sand, trace low to medium plasticity clay. | | | | |
| | | | | Natura | | SM | Natural Silty SAND: grey brown, fine to medium grained. | | | | |
| | | | 0.7 | Natura | | CI | Natural CLAY: medium plasticity, grey, with fine to medium grained sand, inorganic, trace organics, clay is desiccated at shallow depths. | | VSt-H | | |
| | | | 1 | | | | | | | | |
| | | | 1.5 | Natura | | CI | As above, brown, trace organics. | | | | |
| | | | 2 | | | | | | | | |
| | | | 3 | | | | | | | | |
| | | | 4 | Natura | | CI | As above. | M | | | |
| | | | 5 | | | | | | | | |
| | | | 6 | | | | **BH03 Terminated at 6m (Target depth. Groundwater not encountered)** | | | | |
| | | | 7 | | | | | | | | |
| | | | 8 | | | | | | | | |



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Attachment 12.1.3 Environmental Assessment Report

Galt

**REPORT OF BOREHOLE: BH04**

| | | | | | |
|---|---|---|---|---|---|
| Job No | : WAG230750-01 | Easting | : 0.00 | Sheet | : 1 OF 1 |
| Client | : Tabec | Northing | : 0.00 | Logged | : PA |
| Project | : Proposed Development | UTM | : | Logged Date | : 14/02/2024 |
| Location | : Lot 452 Resolution Drive, Ascot | Drill Rig | : AMS Super Rig | Checked | : TM |
| Contractor | : Galt Geotechnics | Inclination | : -90 deg | Checked Date | : 25/02/2024 |

| Drilling Method | DCP graph | Water | Depth (m) | Soil Origin | Graphic Log | Classification Code | Material Description | Moisture | Consistency/Density | Remarks | Sample |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 90mm Solid Auger | | | 0.25 | Topsoil | | SP | Topsoil SAND: grey, fine to medium grained, trace medium plasticity clay, trace / with organics. | D | | | |
| | | | 0.5 | Fill | | SP | Fill SAND: brown, fine to medium grained, trace low plasticity clay. | | | | |
| | | | 1 | Natural | | SC | Natural Clayey SAND: medium plasticity clay, brown, fine to medium grained. | | | | |
| | | | 1.2 | Natural | | CI | Natural Sandy CLAY: medium plasticity, brown mottled red, fine to medium grained sand, trace fine to medium sized gravel, inorganic, clay is desiccated. | | VSt-H | | |
| | | | 1.5 | Natural | | CI | Natural CLAY: medium plasticity, brown, with fine to medium grained sand, inorganic, clay is desiccated at shallow depths. | | | | |
| | | | 3 | Natural | | CI | As above. | M | | | |
| | | | 4.5 | Natural | | CI | As above. | W | | | |
| | | | | | | | **BH04 Terminated at 6.5m (Target depth. Groundwater possibly at 4.5 m depth)** | | | | |



Page 1 of 1

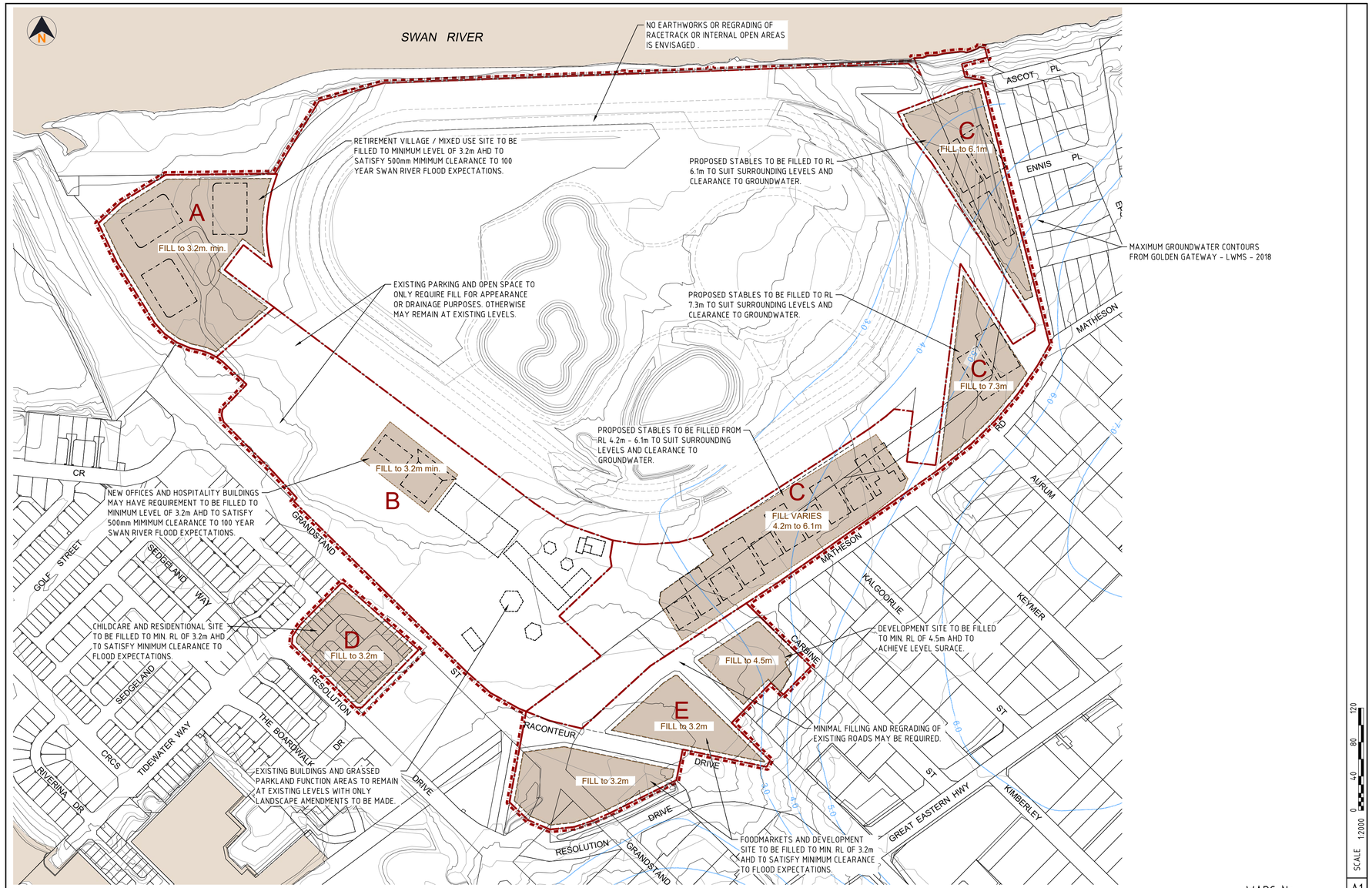
Attachment 12.1.3 Environmental Assessment Report

# Appendix C

Preliminary Civil Drawing

Tabec 2024

Attachment 12.1.3 Environmental Assessment Report




WAPC No.

A1

| No. | DATE | DRAWN | APPROVED | AMENDMENT |
|---|---|---|---|---|
| C | 21.06.24 | PK | JZ | MINIMUM FILL LEVELS AMENDED IN LINE WITH THE LWMS |
| B | 18.06.24 | PK | JZ | PRELIMINARY ISSUE FOR INFORMATION ONLY |
| A | 24.01.24 | PK | JZ | PRELIMINARY ISSUE FOR REVIEW |

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COLOUR
This drawing is required to be printed in full colour. Failure to do so may result in loss of information.

CLIENT: PERTH RACING

| DESIGNED | CHECKED | APPROVED |
|---|---|---|
| PK | JZ | |
| DRAWN | CHECKED | DATE |
| PK | JZ | |

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Civil Engineering Consultants
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T 08 9425 5900 e info@tabec.com.au
www.tabec.com.au

PROJECT: ASCOT RACECOURSE - LOCAL STRUCTURE PLAN

TITLE: EARTHWORKS CONCEPT PLAN

DRAWING NUMBER: 2541-00-100

ISSUE: C

Plot Date: 21/06/24 - 14:17 Cad File: C:\2025\data\25-2025\2541 - Ascot Racecourse LSP_25\CAD\CAD\2541-EW-100.dwg Plotted By: jkeenan

Attachment 12.1.3 Environmental Assessment Report

# Appendix D

Modelling Assumption Report

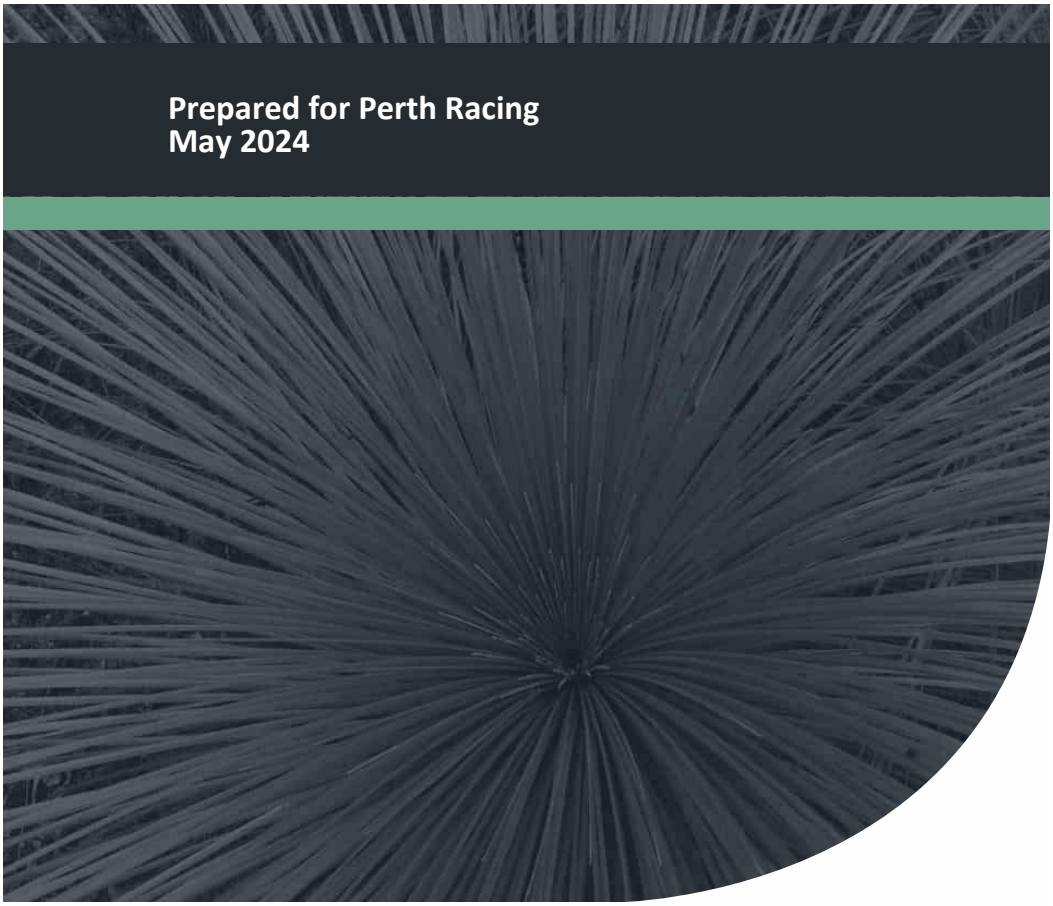
Emerge Associates 2024

Attachment 12.1.3 Environmental Assessment Report

# Modelling Assumptions Report

## Golden Gateway Local Structure Plan

Project No: EP23-109(03)



Attachment 12.1.3 Environmental Assessment Report



## Document Control

| Doc name: | Modelling Assumptions Report<br>Golden Gateway Local Structure Plan | | | | |
|---|---|---|---|---|---|
| Doc no.: | EP23-109(03)--008 JM | | | | |
| Version | Date | Author | | Reviewer | |
| 1 | May 2024 | Joyti Mabruk | JM | David Coremans | DPC |
| | Appendix to the LWMS | | | | |

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Attachment 12.1.3 Environmental Assessment Report



Modelling Assumptions Report
Golden Gateway Local Structure Plan

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**2 Methodology ..... 2**
2.1 Rainfall ..... 2
**3 Post-development model ..... 4**
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Table 2: Post-development catchment areas (ha) ..... 5

Attachment 12.1.3 Environmental Assessment Report



Modelling Assumptions Report
Golden Gateway Local Structure Plan

# 1 Background

Perth Racing (the 'proponent') proposed to progress a local structure plan (LSP) over its landholdings in Ascot. The area is bounded by the Swan River to the North, Grandstand Road to the west and south, Matheson Road and Resolution Drive to the south and residential areas to the east, referred to herein as 'the site'. The structure plan area also includes the Ascot Racecourse area. The site is located approximately 8.5 km east of Perth central business district (CBD) and is approximately 62 ha in size, within City of Belmont (CoB). The LSP consists of six precincts: Precinct A, Precinct B, Precinct C, Precinct D, Precinct E, and the racecourse.

Attachment 12.1.3 Environmental Assessment Report



# 2 Methodology

XPSWMM hydrologic and hydraulic modelling software (v21.3) was used to calculate the surface water runoff volumes within the road reserves and lots associated with the development of Ascot Racecourse.

The hydrologic component of the software uses the Laurenson non-linear runoff-routing method to simulate runoff from design storm events. Key assumptions regarding the hydrologic model include:

- Runoff is proportional to slope, area, infiltration and percentage of imperviousness of a catchment.
- Sub-catchment areas and slopes are determined from surveyed topographical data and earthworks plans.
- Infiltration rates and percentage imperviousness have been selected based on experience with model preparation for similar soil conditions.

Runoff from each sub-catchment is routed through the catchment using the hydraulic component of XPSWMM. Generally, assumptions associated with the hydraulic component of the model include:

- Virtual links (i.e. purely for model construction, not equivalent to flow path onsite) between nodes within a sub-catchment are given the length of 10 m and slope of 0.05 to minimise the lag time of conveying the water from a sub-catchment node to a 'storage' node, a 'dummy intermediate' node or a conduit/link.
- Links between sub-catchment storages act as conveyance channels (e.g. sheet flow within roads in a 1% annual exceedance probability (AEP)). These links are given lengths and slopes that are representative of the site conditions and actual pathway lengths between catchments.
- All channels are designed with a width of 5 m, roughness of 0.014 (Manning's n) and are trapezoidal in shape. This allows for easy conveyance and represents concrete pipes and road surfaces within the model.
- Where relevant median swales, bio-retention areas (BRAs), and flood storage areas (FSAs) are modelled as nodal-reservoirs with infiltration depth-rating curves to account for differential infiltration rates with changing depth.

## 2.1 Rainfall

The ensemble temporal patterns obtained from the Australian Rainfall and Runoff (AR&R) Data Hub (AR&R 2019) were used for the rainfall analysis.

Durations ranging between 15 min and 72 hours were tested, with the peak flood elevation being assessed as the determining result.

Following the process suggested by AR&R (Ball J et al. 2019), the highest mean duration was selected as the critical duration. AR&R also recommends that when it is not practical to run the entire ensemble array, the ensemble that produces the result closest to the mean (for the critical duration) should be adopted and provided in **Table 1**.

Attachment 12.1.3 Environmental Assessment Report



*Table 1: Critical Duration Analysis*

| Catchment | Critical Duration (20% AEP) | Critical Duration (10% AEP) | Critical Duration (1% AEP) |
|---|---|---|---|
| Precinct A | 3 hour duration ensemble 4 | 3 hour duration ensemble 1 | 3 hour duration ensemble 1 |
| Precinct C | 30 min duration ensemble 6 | 30 min duration ensemble 7 | 30 min duration ensemble 8 |
| Precinct D | 1 hour duration ensemble 1 | 30 min duration ensemble 5 | 30 min duration ensemble 1 |
| Precinct E | 45 min duration ensemble 6 | 30 min duration ensemble 5 | 30 min duration ensemble 8 |

Attachment 12.1.3 Environmental Assessment Report



# 3 Pre-development model

The catchment parameters determined for Precinct D within the LWMS for the initial loss – continuous loss model have been adopted to account for catchment losses. The pre-development loss parameters used are given in **Table 2**.

*Table 2: Pre-development loss parameters*

| Land type | Initial loss (mm) | Continual loss (mm) | Roughness |
|---|---|---|---|
| Existing residential/Carpark | 15 | 0.1 | 0.014 |

Catchment analysis for pre-development scenario was based on topographic contour data, site visit and aerial photography. Pre-development catchment area within Precinct D is 1.145 ha.

Attachment 12.1.3 Environmental Assessment Report



# 4 Post-development model

An initial loss continuing loss model was adopted to account for post-development catchment losses. The post-development catchment area, land types and loss values were based on the structure plan design, typical infiltration rates for the soils which occur onsite and based on project team experience. Post-development catchment areas and land types within the site were informed by sub-division plan provided by LPD surveyors. **Table 3** summarises the loss parameters used within the post-development model.

*Table 3: Post-development loss parameters*

| Land type | Initial loss (mm) | Continual loss (mm) | Roughness |
|---|---|---|---|
| Road Surface | 1 | 0.1 | 0.02 |
| Road Verge | 9 | 1.5 | 0.05 |
| Fully Impervious | 1 | 0.1 | 0.02 |
| Roof | 1 | 0.1 | 0.02 |
| Lot IMP | 1 | 0.1 | 0.02 |
| Gardens | 25 | 2 | 0.05 |
| POS | 25 | 2 | 0.05 |
| Precinct E Lots | 15 | 0.1 | 0.014 |

A summary of post-development catchment information is provided in **Table 4** with the catchment plan and basin location shown in Figure 08 of the LWMS.

*Table 4: Post-development catchment areas (ha)*

| Road reserve | Lots | Road Reserve | POS | Fully Impermeable | Child Care |
|---|---|---|---|---|---|
| Precinct A | 0.714 | 0.606 | 1.360 | 0.330 | - |
| Precinct C | - | 5.903 | - | - | - |
| Precinct D | 0.526 | 0.421 | - | - | 0.199 |
| Precinct E | 3.622 | 0.365 | 0.219 | - | - |

The following assumptions were incorporated into the model:

- Precinct A
  - Lots will have 100% roof areas and road reserve contains 5% pervious verge and 95% impervious bitumen areas.
  - POS will be 100% pervious.
  - There is no current connection point for drainage to be exported from Precinct A.
  - 1 single basin/Flood storage area (FSA) for both treatment and flood mitigation.
  - Base of the FSA will need to be vegetated with reeds/rushes as per a biofilter.
  - FSA will have 1:6 side slopes and maximum depth 1.2m in a 1% AEP – to avoid the need for fencing or access control.

Attachment 12.1.3 Environmental Assessment Report



- A hydraulic conductivity of 1m/day is assumed.

- Precinct C
  - The existing portion of Precinct C already connected to the centre of the track (existing buildings and stables) and no change has been assumed.
  - Rest of the Precinct C were modelled as two separate catchments i.e., carpark and stables which are 95% impervious and 5% pervious.
  - 1m deep sub-surface storage has been designed to accommodate 1% AEP event.
  - A hydraulic conductivity of 1m/day is assumed.
  - The storage configuration could be changed/modified to suit site layout/constraints.
  - The carpark in Precinct C that discharges to the southwest will discharge to Precinct E.

- Precinct D
  - Lots will have 50% roof areas, 45% paved areas and 5% pervious garden areas, the childcare has roof areas and Road reserve contains 20% pervious verge and 80% impervious bitumen areas.
  - 1m deep sub-surface storage has been designed to accommodate and detain upto 1% AEP events that will mimic pre-development flow of 0.4.
  - A hydraulic conductivity of 1m/day is assumed.
  - The storage configuration could be changed/modified to suit site layout/constraints.

- Precinct E
  - The carpark in Precinct C discharges to Precinct E.
  - Outflow of pre-development Water Corporation (WC) drain is 0.95 $m^3/s$ as per WC modelling.
  - All lots of Precinct E retain 15mm of rainfall.
  - Runoff above 15 mm rainfall up to the 1% AEP will be managed by a detention basin which will mimic pre-development 1% AEP peak flow of 0.463 $m^3/s$.
  - The basin will have 1:6 side slopes and maximum depth 1.2m in a 1% AEP – to avoid the need for fencing or access control.
  - A hydraulic conductivity of 1m/day is assumed.

Attachment 12.1.3 Environmental Assessment Report



# 5 References

## 5.1 General references

The references listed below have been considered as part of preparing this document.

Ball J, Babister M, Nathan R, Weeks W, Weinmann E, Retallick M and Testoni I (Editors) 2019, *Australian Rainfall and Runoff: A Guide to Flood Estimation*, Commonwealth of Australia (Geoscience Australia).

## 5.2 Online references

Australian Rainfall and Runoff (AR&R) 2021, ARR Data Hub, viewed 1 December 2021, Available from: <https://data.arr-software.org/>.

Bureau of Meteorology (BoM) 2021a, Climate Data Online, viewed 1 December 2021, Available from, <http://www.bom.gov.au/water/designRainfalls/revised-ifd/>.

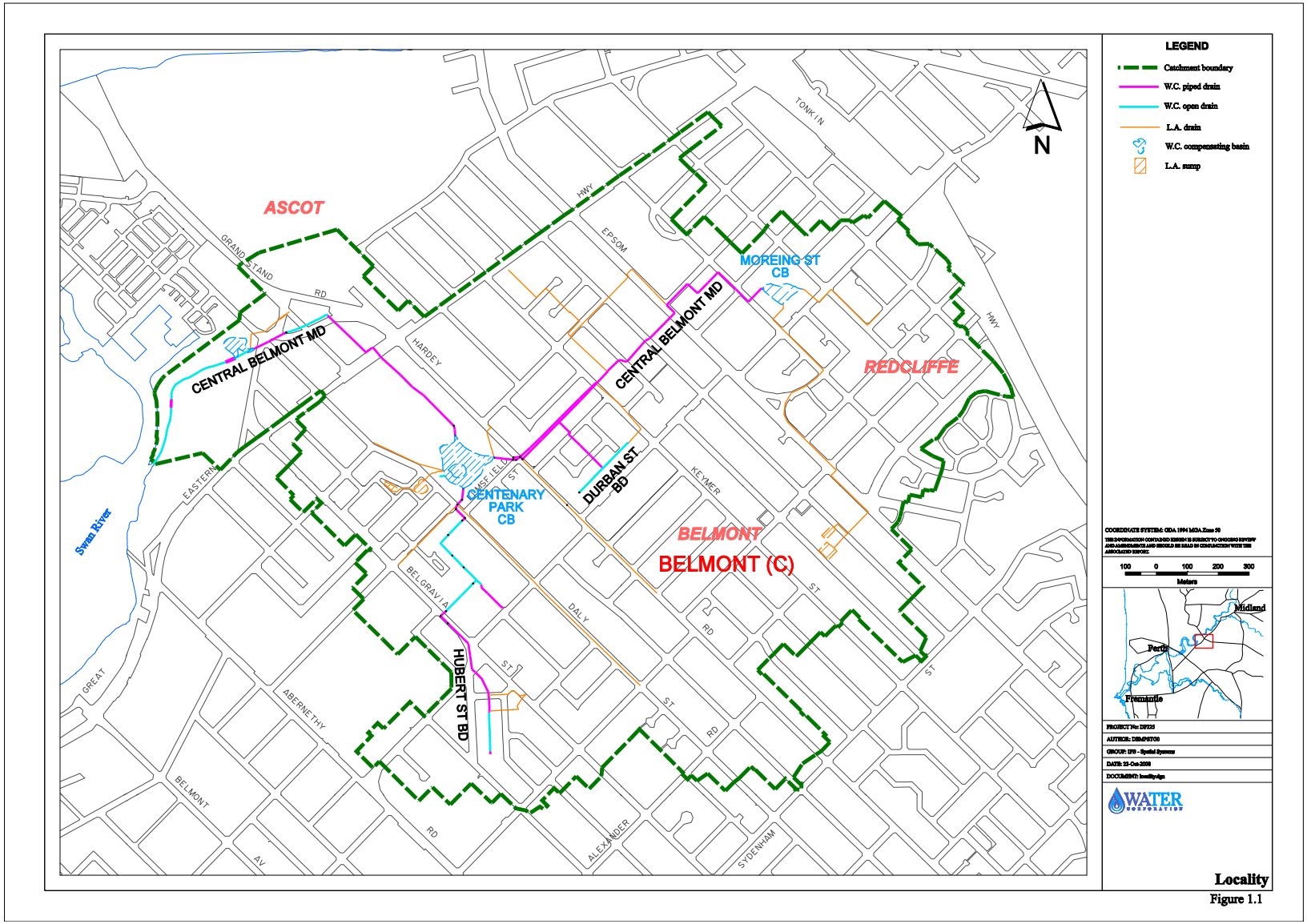
Bureau of Meteorology (BoM) 2021b, Design Rainfall Data System (2016), viewed 1 December 2021, Available from, <http://www.bom.gov.au/water/designRainfalls/revised-ifd/>.

Attachment 12.1.3 Environmental Assessment Report

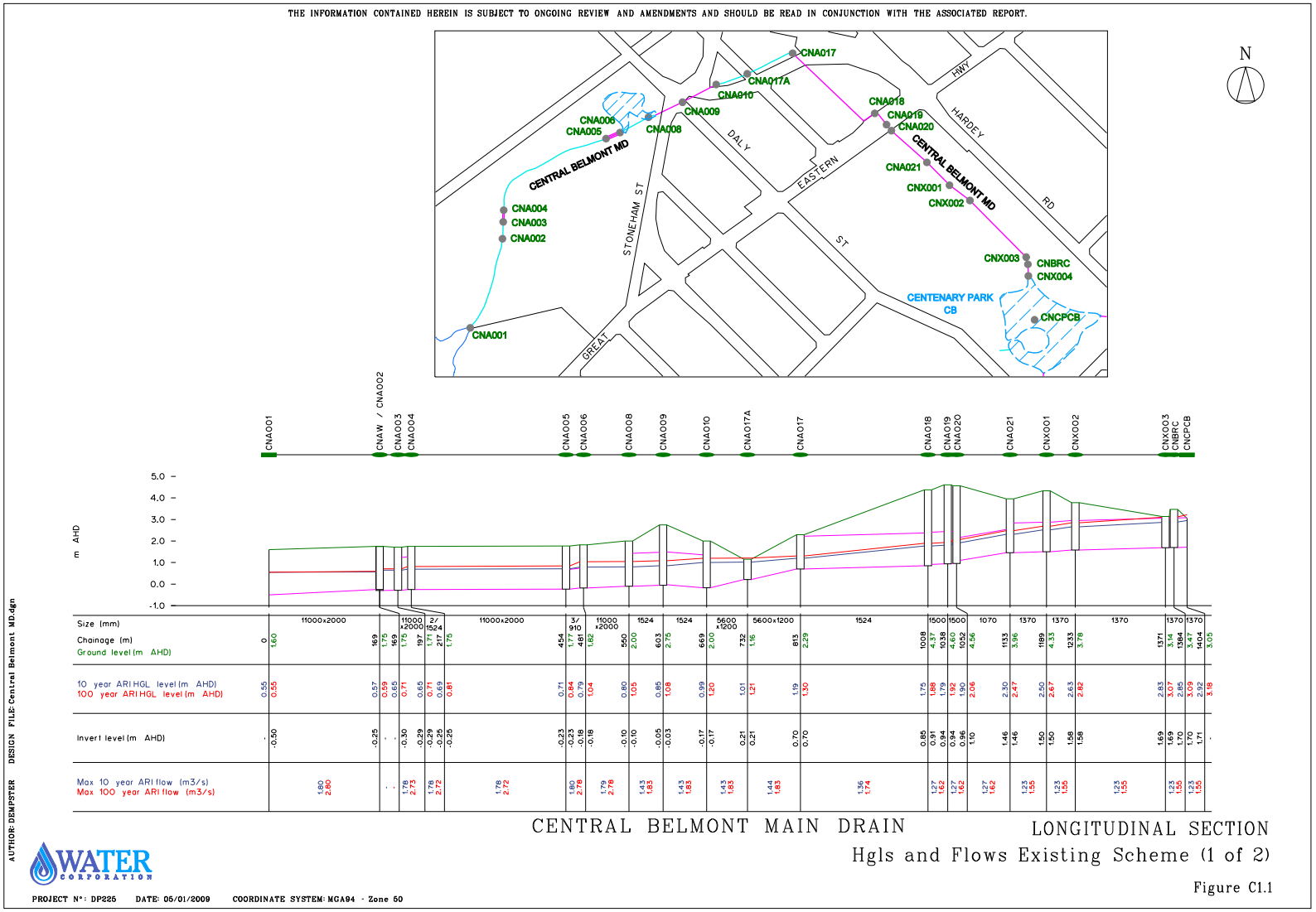
# Appendix E

Central Belmont Main Drain Water Corporation

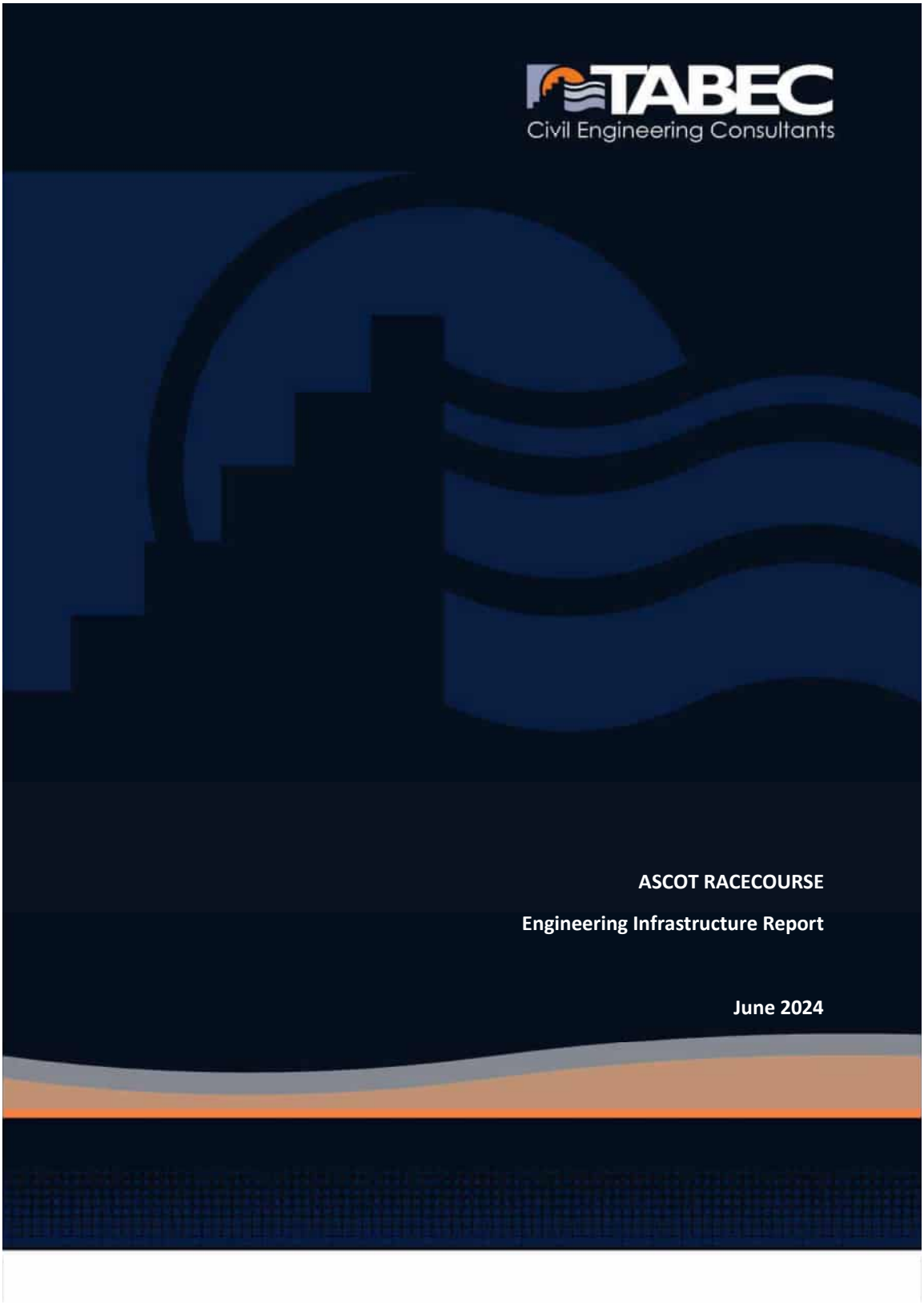
Attachment 12.1.3 Environmental Assessment Report



Attachment 12.1.3 Environmental Assessment Report



Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report

**CLIENT:** **PERTH RACING C/O DAVISON ADVISORY**

**PROJECT:** **ASCOT RACECOURSE – LOT 9002 GRANDSTAND ROAD, ASCOT**

**TITLE:** **ENGINEERING INFRASTRUCTURE REPORT**

| **DOCUMENT REVIEW** | | | | |
|---|---|---|---|---|
| Revision | Date Issued | Written By | Reviewed By | Approved By |
| REV A | 5/06/2024 | J. ZIELINSKI | B. SMITH | B. SMITH |
| REV 0 | 4/07/2024 | J. ZIELINSKI | B. SMITH | B. SMITH |
| | | | | |

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Attachment 12.1.4 Engineering Servicing Report



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Attachment 12.1.4 Engineering Servicing Report



## 1 INTRODUCTION

This report has been prepared by TABEC Pty Ltd to provide broad servicing and infrastructure advice for the Ascot Racecourse and surrounding sites located at Lot 9002 Grandstand Road, Ascot.

The report provides civil engineering advice on the capability and future requirements of the development plan area to support the proposed residential and commercial land uses and the civil engineering influences on the development form. This report has been based on the civil engineering aspects, including earthworks, roads, drainage, wastewater and utility services required to support the development.

The investigation and preparation of the report are based on preliminary advice from the various service Authorities, desktop reviews and site investigations where appropriate. The report is supported by additional consultants and their inputs which are listed in the references. The information is current as of June 2024 and is subject to change as development proceeds around the subject land.

Figure 1 illustrates the location of the site, identified on the aerial image.




Figure 1 – Site Location and Aerial Image (2024 MNG Access)

## 2 THE STUDY AREA

The Ascot Racecourse is situated within the City of Belmont and is located in the proximity of Grandstand Road, Resolution Drive, Matheson Road, Ennis Place and the Swan River. The existing racecourse and its surrounding facilities are currently operational.

The subject site has been split into five precincts to assist with differentiating the various proposed uses across the lots. TABEC's understanding of these five precincts has been included below:




Figure 2 - Preliminary Structure Plan (Rowe Group Design)

| | |
|---|---|
| Precinct A | • Retirement Living Village/Mixed Use – Apartments and a café (300m2)<br>• 3 buildings, which will cater for a total of 330-390 dwellings. |
| Precinct B | • Racecourse Administration Office and Entertainment (No change to current zoning)<br>• Office space – 680m2 NLA<br>• Upper floor will be hospitality venue – 1000m2 in size |
| Precinct C | • Racecourse and on-course stabling facility (No change to current zoning)<br>• Existing Racecourse to remain<br>• 3 new on-course stabling complexes providing ~400 stables |
| Precinct D | • Childcare and residential (R60)<br>• Childcare site – 2100m3 for 70-90 children.<br>• Residential development will yield ~41 lots |
| Precinct E | • Approx 3,400m² retail floorspace<br>• Approx 7000m² of non-retail commercial floorspace<br>• Equine welfare centre |

Whilst Precincts A, B and C are adjacent to the racecourse, Precinct D (Lot 452) and Precinct E are located outside of the racecourse lot 9002. Precinct D is surrounded by existing residential land use, and to the southeast, interfaces to the heritage-listed Ascot Kilns.

Precinct E is currently fragmented and consists of multiple lots and road reserve corridors. The Resolution Drive and Grandstand Rd road reserves within the subject site are not currently being utilised as public access streets, however, the existing reserve along the south boundary of the site and Lot 51 is a drainage reserve and is to remain, hence being excluded from the assembly development proposal.




Figure 3 - Precinct E Land Assembly (Rowe Group)

## 2.1 Landform / Topography

In reviewing the available Water Corporation contour information, the Ascot Racecourse Course (Lot 9002) has its lowest elevation of approximately 2mAHD at the northwest area of the site (Precinct A), which is adjacent to the Swan River and foreshore reserve. The Ascot Racecourse lot grades up to its highest elevation of approximately 7.5mAHD at the east corner of the site (Precinct C) adjacent to Matheson Road. The existing levels of Precinct C grade from this high point, down to approximately 3mAHD at the west interface near Raconteur Drive.

The existing internal surface levels of Precinct B within Lot 9002 range between 4mAHD at the south, to 2mAHD near Precinct A. Whilst no survey data is available for the adjacent road reserves, Precinct B is anticipated to be higher than the adjacent road levels at Grandstand Road, which then grades down to approximately 2mAHD towards to track.

The centre of the racetrack of Lot 9002 is generally lower than the surrounding racecourse site, with the levels and aerial imagery showing localized depressions with multiple lakes. Drawings from Evangelisti & Associates Engineering Drawings, dated 1997, show the depths of existing drainage Lake 1 (Wetland) and Lake 2 (Lined) being RL 1.0m and RL -0.75m respectively, with the top of lake water level ranging from RL 0.4m and 2.1m. The third existing lake does not serve a drainage purpose but serves as a source of irrigation water, with this overtopping into the drainage lakes at a top of water level of 3.1mAHD.

The Swan River Foreshore Reserve is located along the northern boundary of Lot 9002, and the levels steeply grade away from the track edge from approximately 3mAHD to 0mAHD at the northern boundary.

In reviewing contour information available from Water Corporation at Lot 452 Grandstand Road (Precinct D), the existing levels increase from 3.0mAHD to approximately 4.0mAHD closer to the centre of the lot at the existing building location, with the surrounding road reserve levels ranging between 2.5mAHD and 3mAHD. This site currently has existing mature trees and shrubs located across the Lot.

Fragmented areas of Precinct E have approximate levels grading from 4mAHD near the east at Raconteur Drive entry, down to approximately 2mAHD at the west. The site is generally flat with some trees and vegetation, however, there is an existing swale within the reserve south of the site along Resolution Drive with its swale base closer to 1.0mAHD. The perimeter of this swale is currently fenced onsite.

Contours of the site have been included below in Figure 4.

Attachment 12.1.4 Engineering Servicing Report



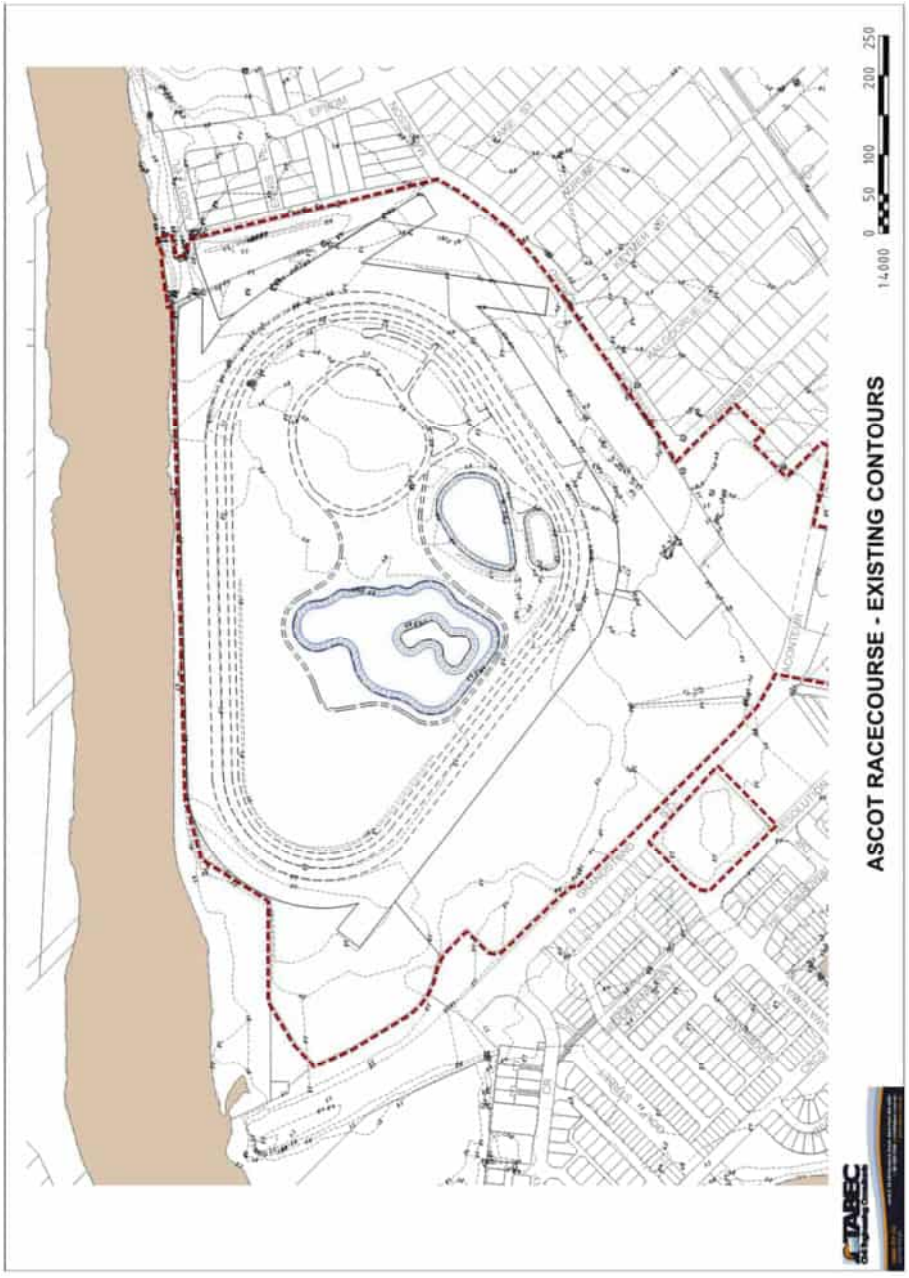



Figure 4 – Existing ground contours (TABEC 2024)

## 2.2 Ground Conditions and Ground Water

Geology mapping for the area has been identified as Pinjarra System, with poorly drained coastal plains and variable alluvial and aeolian soils.

Generally, the historical maximum groundwater contours are published by the Department of Water and Environment Regulation (DWER). The Golden Gateway Local Structure Plan Draft document (Essential Environmental 2018) shows maximum groundwater level (MGL) contours ranging from approximately 5mAHD located at the southeast area of the site, and generally fall to approximately 0.5mAHD along the Swan River and northwest of the site.

It is anticipated that there may be insufficient clearance above the published groundwater contours to development levels, and additional fill may be required to satisfy minimum groundwater clearance of 1.2m above MGL at Precinct A, Precinct D and Precinct E for residential and commercial purposes. This would be subject to further investigation on final development requirements and land uses.

Flood levels due to the Swan River have been previously investigated by DWER, with online floodplain mapping indicating flood levels in proximity to the Swan River at 2.8mAHD. All lots must have a minimum 500mm elevation above this Swan River flood level and a minimum of 300mm clearance above the 1% AEP top of water level of drainage basins.

Further geotechnical investigations have been undertaken across Precinct A, C and Precinct D to better understand the subsurface soil and groundwater conditions across the various sites, with this summarised below.

Precinct A

Douglas Partners carried out a site geotechnical investigation at Precinct A in January 2024 (Report reference 219164.03). From the field works, the subsurface conditions of this site were found to comprise uncontrolled fill, made up of sandy gravel material, loose sands, and clay, with the inclusion of foreign unsuitable materials such as brick, glass, scrap metals, concrete, rubber, pipes, and potential asbestos containing materials. In some locations, this uncontrolled fill extended below the groundwater level.

Natural materials found at the site underneath the uncontrolled fill, ranged from clayey sand, between depths of 4.2m to 14.9m, and sandy soils between 10.5m and 14.9m. Both materials ranged from very soft or loose, to dense and stiff.

Given the shallow ground conditions at Precinct A consisting of uncontrolled fill and deep loose and soft soils, the current site classification is Class P. Douglas Partners have therefore suggested shallow footings are not suitable and have anticipated a piled foundation system into deeper insitu soils would be necessary.

Groundwater levels at various locations within Precinct A have been measured over September, October and November 2023. From the assessment, the groundwater level ranged from -0.2m AHD (November) at the centre of the site, to 1.3m AHD (September) located at the site's southern boundary. The groundwater fluctuated inconsistently throughout the site, and these findings are not a clear representation of the maximum groundwater level.

Precinct B

Whilst no geotechnical investigation has been undertaken for Precinct B, the underlying material is anticipated to be consistent with those underlying ground conditions found at Precinct A and Precinct C. Based on adjacent geotechnical investigations at nearby Precincts, it could be anticipated that silty sand,

clay and clayey sands existing beneath surface level. Further geotechnical assessment will be required to ensure adequate treatment of ground conditions before further development within Precinct B, and to check conditions relating to uncontrolled fill, which is evident at Precinct A and Precinct C.

Precinct C

Douglas Partners carried out a site geotechnical assessment at Precinct C in December 2023 (Report reference 219164.02) for the proposed stables at Ascot Racecourse.

From the investigation, ground conditions differ depending on the test location within the site. Generally, uncontrolled fill was uncovered at most test locations with this depth ranging between 0.25m and 2.5m. Some test locations also observed unsuitable foreign materials such as plastic wrap, concrete and brick fragments. Sand and silty-sand can be uncovered below the uncontrolled fill to a depth of 2.5m, along with clayey sand and clay.

The uncontrolled material across Precinct C has led Douglas Partners to suggest piled foundations, with the site Classification currently Class P. Details of piled foundations can be found within the geotechnical report.

Notwithstanding, the site can be re-classified to Class S, provided that the site preparation is undertaken with the geotechnical recommendations. Areas of over-excavation to achieve Class S may uncover groundwater, and therefore dewatering may be required for earthworks and site preparation.

Groundwater levels at Precinct C have been measured onsite in September 2023, with the depth of groundwater fluctuating at each location. From the assessment, the groundwater level ranged considerably from 0.4m AHD (MW51) at the site near Aurum Street, to 5.6m AHD (BH39) located approximately 100m from the MW51 test pit, and therefore does not provide a clear and consistent overview of the groundwater throughout this area.

Precinct D

Galt Geotechnics carried out a site geotechnical assessment at Precinct D Lot 452 Resolution Drive, in March 2024 (REF WAG230750-01 002 R1) for the proposed residential and commercial development site.

The subsurface soil profile from the testing found sand fill to a depth of 0.4m to 0.9m depth, over sandy clay and clay material. At boreholes BH03, and BH04, layers of silty sand and clayey sand up to 0.7m thick extending to 1.2m depths were also found.

The site classification is considered Class S, where no less than 0.7m of sand and clayey sand layers are present over insitu clay and sandy clay.

Groundwater at the site in February 2024 was found to be approximately 1.9m to 3.03m depth below surface. Galt has suggested there is perched ground water between 2.7mAHD and 2.9mAHD. Whilst that the design level be 0.5m above DWER flood level events, which is a finished level of 3.4m AHD, adequate clearance would still need to be managed to groundwater.

Precinct E

No geotechnical investigation has been undertaken within Precinct E to confirm underlying soil conditions; however, it is anticipated ground conditions would be consistent with the natural material from the geotechnical investigations, and geological mapping.

## 2.3 Acid Sulfate Soils

The Ascot Racecourse and surrounding land are mapped as having a known high risk of encountering potential acid sulfate soils. As indicated in Figure 5, there is a reference to higher-risk areas in red within the site at depths within 3m of the surface. No acid sulfate soils were discovered during geotechnical testing at Precincts A, Precinct C, or Precinct D.



Figure 5 – MNG Access - Acid Sulfate Soils Risk Mapping (2024)

# 3 SITEWORKS

Siteworks for the development generally comprise the clearing of existing vegetation, stripping of topsoil and pavement, and the earth working of the existing ground surface to facilitate a required form of development.

The siteworks at Precinct A will be subject to the footing requirements due to the existing loose soils and uncontrolled fill beneath the surface. Due to groundwater conditions, remediation works may be difficult, therefore a pile foundation system has been suggested within the geotechnical report which may remove the requirement to remove underlaying uncontrolled fill. However, due to the settlement that may occur due to the soft and loose materials, it is anticipated that surcharging of the site may be necessary to reduce differential ground settlement, which could be carried out through temporary fill.

To achieve Class S at Precinct C, which will allow light-loaded structures to be constructed with shallow footings, site preparation will include 0.15m topsoil stripping and grubbing of existing vegetation, and over-excavation earthworks to achieve a minimum of 0.8m of sand separation above reactive clayey soils.

It is also important that there are no loose underlying soils to a depth not less than 1.5m below the foundation level to avoid settlement of the development.

### 3.1 Demolition and Remediation

Precinct A is free from structures and therefore demolition works are not anticipated to be required.

Depending on the final scope for Precinct B, Precinct C and Precinct E, demolition of existing car parking pavement and redundant asphalt roads within these areas may be required.

The demolition of the existing buildings, pavements and associated infrastructure within Precinct D will be required to enable the proposed residential and commercial development at this location. Whilst no asbestos was detected in any of the geotechnical samples at Precinct D, it should be noted that the adjacent northern road reserve, Northerly Ave, has been identified as remediated for restricted use, which may suggest potential asbestos-impacted fill below the surface.

## 4 EARTHWORKS

The preliminary earthwork pad levels have been reviewed by TABEC to demonstrate how the proposed development levels may be accommodated, given constraints due to groundwater, flooding and interface levels. Generally, earthworking of all proposed precincts will be required, whether this is in the form of remediation works due to subsurface soils or import fill to lift the development levels. Each precinct site will require site preparation, potential demolition, and stripping of existing pavements, vegetation and topsoil, after which the exposed ground will be proof compacted.

Due to existing groundwater hydrology and flood levels, which are discussed further in the LWMS prepared by Emerge (EP23-109, May 2024), the report recommends:

- Surface-based infiltration structures have a minimum 300mm clearance above the maximum groundwater level (MGL)
- Habitable floor levels should have a clearance to a maximum groundwater level (MGL) of at least 1.2m
- Finished floor levels must have a minimum 300mm clearance above the 1% AEP event, top of water level at storage basins.
- All lots to have a minimum of 500mm clearance above the 1% AEP flood level in the Swan River.

These drainage requirements and minimum flood elevation requirements will likely govern the finished floor-level requirements of the five Precincts. TABEC concept earthworks levels have been provided in Figure 6, with these levels to be refined during detailed design.

Precinct A

It is anticipated that the existing surface levels of Precinct A will be lifted to accommodate clearance to flooding, with the minimum finished levels at this location being approximately 3.2mAHD. With existing surface levels surrounding Precinct A being in the order of 2mAHD, the development will require further consideration on how the additional ~1-2m level difference may be accommodated and whether retaining walls are required, or if there is sufficient area to enable battering. Precinct A has a road reserve on the western boundary, and foreshore on the northern boundary, so any batter encroachment into these lots will require further discussion and approval with the relevant authorities.

Precinct B

As existing levels within Precinct B currently look to be conveying overland drainage towards the racecourse, any changes in levels are only anticipated to be those to lift new offices and hospitality levels. In Figure 6, TABEC has nominated the future building floor level at RL3.2 to satisfy flood levels.

Precinct C

Finished development levels at Precinct C will vary as it will be subject to tying into the existing road network at Raconteur Drive, Matheson Road, Ennis Place and the existing levels at the racecourse. Given the purposes of Precinct C, steep grades and level differences/retaining will likely need to be designed out to serve its purposes as on-course stabling and to facilitate horse movements.

It is anticipated that the future stable finish levels will be at approximately 4m AHD at the west and grade up to 6m AHD to the east in the proximity of Keymer Road, which is consistent with the grade of Matheson Road. These levels also tie in with the existing levels of the internal racecourse.

The private internal access road between the proposed stables and Matheson Road will be marginally lower than the stables floor levels by approximately 200mm, and grade consistently with the stable level steps.

The proposed stables to the east near Leake Street will need to be a minimum of 6.9m AHD, which will allow for internal sewer servicing of the site, and also provide clearance to groundwater levels. To tie in with the existing road reserve on Matheson Road, it is expected that these stables and the internal road will grade to approximately 7.4m AHD to the east.

The northeast development area of Precinct C adjacent to an existing reserve, will match in with existing interface levels. To satisfy sewer servicing and flood levels, it is anticipated that the level of this area of Precinct C will be approximately 6.1m AHD.

Precinct D

It is anticipated that additional sand fill will be required for Precinct D ensure sufficient separation for flood levels, and ground water levels. Precinct D will need to satisfy as a minimum habitable floor level of 3.2mAHD, however, the geotechnical investigation by GALT (February 2024) has identified perched ground water between 2.7mAHD and 2.9mAHD. Emerge Associates have recommended 1.2m clearance above maximum ground water level (MGL) to finish floor level which may increase the habitable floor level higher than the flooding requirements to approximately 4.0m AHD.

Further review of these finish levels will be required on further investigation of the maximum ground water, and drainage and subsoil drainage design which would ultimately determine the finish development levels.

Attachment 12.1.4 Engineering Servicing Report



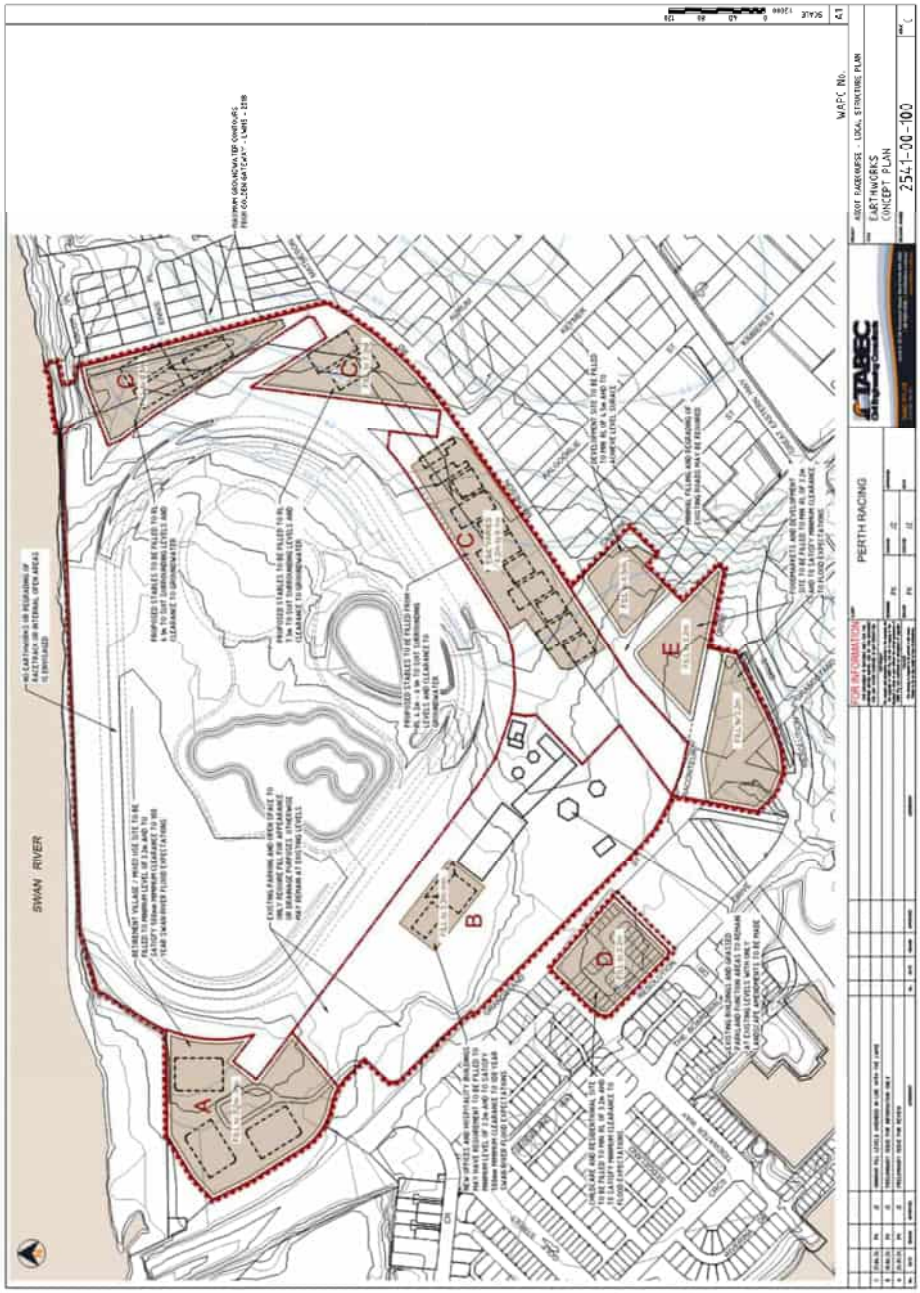



Figure 6 – TABEC Concept Earthwork levels for precincts (June 2024)

# 5 ROADS AND TRAFFIC

## 5.1 Existing Road Network

Surrounding Lot 9002 and Precincts A, B and C, are existing roads that are suitable to provide future access for these proposed developments. Lot 9002 is surrounded by Grandstand Road (Distributor A), Raconteur Drive (Access Road) and Matheson Road (Access Road). The Main Roads WA (MRWA) road database shown in Figure 7, indicates that Grandstand Road is operated and maintained by the MRWA with a speed limit of 60km/hr, with the other access roads being controlled by the City of Belmont. Whilst the east boundary of the site is located against a road reserve, no road currently exists with this being a sand/limestone track.

The existing roundabout at Grandstand Road and Waterway Cres currently provides access to Precincts A and B, and the existing car parks. There is also gated access from Grandstand Drive into Precinct B car parks at three other locations before reaching the Raconteur Drive intersection.

Matheson Road will remain as it currently is, and serve as the primary access for Precinct C, however, access to the northeast stables will be solely from Ennis Place as the only sealed road entry to this location.

Lot 100, located in Precinct E, currently has multiple private roads through this site. Raconteur Drive off Grandstand Road can provide vehicle access through to Resolution Drive, however this does have vehicle gates to restrict access at both boundaries. The intersection of Grandstand Road and Raconteur Drive is currently a left in, left out, however, does allow a right turn in from vehicles travelling north via a split in the median island. Two other existing roads within Lot 100 are fenced to reduce unauthorised access, with these being extensions of Matheson Road and Hardey Road.

Precinct D is located between Grandstand Road and Resolution Drive (Local Distributor), with access to the existing admin building being located at both Grandstand Road as a left in, left out, or via Resolution Drive. The existing median island on Grandstand Road restricts those vehicles travelling south from turning onto the car park.




Figure 7 – Main Roads WA GIS Road Hierarchy (MRWA 2024)

The land assembly at Precinct E as per Figure 3, will require further consideration for access to future commercial development. Resolution Drive has a raised centre median between the roundabout to Great Eastern Highway which currently restricts vehicle movements. This section of Resolution Drive is a Distributor A road and is controlled by Main Roads WA, with direct development access onto this road requiring MRWA approval.

## 6 STORMWATER DRAINAGE

Details of the stormwater and drainage strategy, flooding, and water treatments have been detailed within the LWMS prepared by Emerge Associates (EP23-109, 2024).

There are predominantly two significant drainage systems to convey stormwater within the LSP area to the Swan River. The first is the Central Belmont Main Drain which is managed by Water Corporation, and the second is the local drainage system located near Matheson Road, which conveys water from the surrounding road reserves into the lake system at the centre of the race course via a 900mm pipe.

The lakes system is interconnected, with flows discharging from this into the Swan River via a 450mm and 375mm concrete pipe at peak water level within the wetland lake of 0.53mAHD (Evangelisti & Associate 1997). The outlet is controlled to restrict tidal influence on the internal lake systems.

Whilst Grandstand Road has a pit and pipe network consisting of 450mm and 525mm concrete pipes, Precinct A does not currently have access to a stormwater connection, and as part of future development, it would be anticipated that drainage from this site would need to be treated and captured within Precinct A and the racecourse. Infiltration rates at Precinct A are low due to existing soils, however, with the increased level of the site and import fill to achieve flood level requirements, this may allow for some storage and bio-retention swale to infiltrate at source.

Precinct B currently captures and infiltrates water at source, with overland flow being graded towards the existing track. There was no evidence of Precinct B overflowing into the existing road reserve at Grandstand Road.

Consistent with the current drainage design onsite, the proposed stables and car park at Precinct C are anticipated to be a combination of infiltration at source where levels and soil conditions allow, and discharge to the lake system. The geotechnical assessment (Douglas Partners 2024) suggests this site is unsuitable for on-site stormwater disposal due to the shallow clay which may be impervious for drainage purposes. It could be expected that this clayey sub-surface will pond, and water will move laterally on this surface. Further investigation is required as part of the detailed design on the infiltration opportunities and discharge locations, and requirements for bio-retention swales to treat stormwater. The proposed car parks to the southwest of Precinct C are likely to flow towards the Water Corporation drainage system in Precinct E due to the low levels of the area being unable to convey stormwater to the lakes.

Precinct E, adjacent to Water Corporation's Belmont Main Drain, is anticipated to be treated via bio-retention swale before overflowing to a proposed detention basin storage for the 1% AEP event. Overflow from this basin will be into the Water Corporation's drainage system. (Emerge Associates 2024)

Whilst Precinct D has an existing 525mm and 300mm drainage pipe network along Resolution Drive, it is anticipated that there will be stormwater storage and infiltration at the site, with a 1% AEP event discharging into the local drainage network on Resolution Drive. Further investigation will be required during design to determine the final location for stormwater detention before entering Resolution Drive, as no POS has been identified for Precinct D.

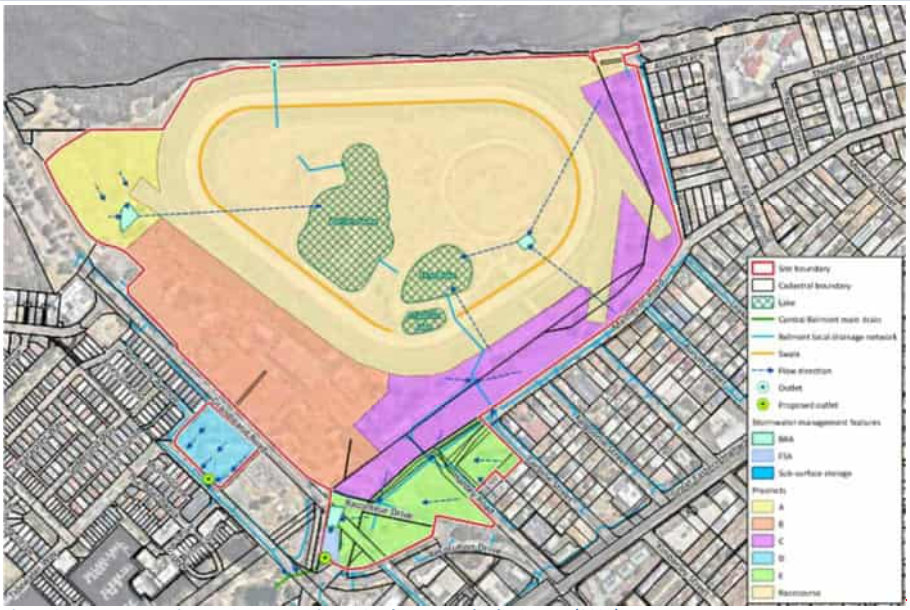


Figure 8 – Emerge Associates - Concept Drainage Catchments and Lake System (2024)

## 7 WASTEWATER

Water Corporation planning information was requested for the five precincts at Ascot Racecourse.

Precinct A

Precinct A is located off the existing Grandstand Service Road in proximity to the Waterway Cres roundabout. Whilst there is an existing sewer in proximity to Precinct A located at Waterway Cres, it is anticipated that this existing pipe network will not have sufficient cover below finish ground levels to extend from its current location, across Grandstand Road, and into the development. Therefore, alternative options have needed to be considered for wastewater servicing.

The first possible option would be to convey wastewater away from Precinct A and the future aged care site to the existing wastewater pump station to the east located on Ascot Place. This would require a private pump station within Precinct A, and approximately 950m of DN100 pressure main through the Ascot Racecourse lot adjacent to the Swan River and into a new gravity pipe system which would then discharge into the pump station. Given the pressure main would be crossing lot boundaries between Precinct A, and Ascot Racecourse, this would need to be reviewed further with Water Corporation to ensure the proposal is acceptable, and that the relevant easements/agreements are in place to protect these new sewer assets.

Alternatively, there is an opportunity to extend the 225mm sewer up Grandstand Road from the Marina Drive/Resolution Drive roundabout. This existing sewer is at RL-2.09m, and therefore should have sufficient depth to be extended and still service Precinct A if the development is earthworked higher closer to approximately 4m AHD. The connection to this wastewater catchment would trigger downstream upgrades due to capacity issues, with the existing 225mm sewer on Great Eastern Highway requiring an upgrade to a 300mm sewer as per Figure 10.

Attachment 12.1.4 Engineering Servicing Report






Figure 9 – Existing Gravity Wastewater Reticulation Services (Water Corporation)




Figure 10 – Existing Gravity Wastewater Reticulation Services (Water Corporation)

Precinct B

In reviewing existing internal sewer plumbing for Lot 9002 (Ascot Racecourse), there is an existing sewer connection located at Raconteur Drive, at Access Chamber T3030. The sewer connection at this location currently services Precinct B, and a portion of the proposed Precinct C area. Whilst these two precincts are currently connected to the sewer at Raconteur Drive, Water Corporation has advised that there is no record of this connection, and the wastewater flows from this precinct have not been included in their planning assumptions. If wastewater flows from Precincts B and C are substantially increasing, further discussions are likely required to identify the increased flow of wastewater anticipated from the new developments.

According to the sewer flimsy as-cons acquired from Building and Energy Western Australia, the private sewer pipework from Precinct B to the existing Water Corporation main is located partially through Precinct E, Lots 13, and Lot 100 as per Figure 12. At the time of this report, all three lots are owned by the same entity. If the Precinct E land assembly proceeds and/or ownership of any of these lots is transferred, it may be necessary to divert the internal plumbing out of Lot 100 or Lot 13. In this instance, the Water Corporation sewer main may need to be extended to provide a sewer service connection that does not traverse other private lots.

Precinct C

Precinct C for the proposed on-course stabling facilities, will cover the outer edge of the Ascot Racecourse, from Raconteur Drive through to Ascot Place near the existing waste water pump station site. Due to this distance, multiple sewer connections will be required to adequately service the site as shown on Figure 11, with the service boundaries being subject to detailed design and finish levels.

Subject to Water Corporation's acceptance of private sewer crossing lot boundaries with the same ownership and final levels, the west portion of Precinct C (C1) between Kalgoorlie Street and Raconteur Drive will likely be conveyed to the west to the existing internal sewer. This is due to the existing levels of the site and Matheson Road, which generally grade lower as the site gets closer to Raconteur Drive.

There is an existing sewer connection available from Kalgoorlie Street with a connection invert level of 3.48m AHD, which is anticipated to service C2 with sufficient cover to finish levels.

New sewer lot connections will be required for both C3 and C4 areas within Precinct C, with the sewer invert levels into the site anticipated to be in the order of 3.30m AHD and 2.3m AHD respectively. The existing levels within C3 grade from approximately 6.5m to 7.2m AHD at the eastern boundary of C3. The C4 area has an existing surface level of approximately 5.6m AHD, which will likely require sand structural fill to approximately 6.1mAHD to be serviced with sewer.

Attachment 12.1.4 Engineering Servicing Report






Figure 11 – Existing Gravity Wastewater Reticulation Services (Water Corporation)

Precinct D

There is an existing sewer main located on the southern corner of Precinct D, located near the intersection of Marina Drive and Resolution Drive. Water Corporation has advised that a sewer connection to this existing 225mm PVC main is possible for the proposed residential development. The levels of this existing main are at an invert level -2.09mAHD and has sufficient depth to service the site.

The existing sewer junction to Lot 452 is anticipated to service the existing building within the lot, and will likely require removal as part of the development of Precinct D.

Precinct E

There is an existing 225mm PVC sewer south of Precinct E, located along Resolution Drive which ranges from approximately -0.02m AHD to 0.49m AHD at access chamber T3030 located at Raconteur Drive Link. The existing sewer main continuing northeast from this access chamber is located within Lot 100 which is private land. Whilst no easement currently exists over this portion of the Water Corporation pipe, it could be anticipated that this would be required as part of future amalgamation or development in the future.

The depth of this existing sewer should be sufficient to service the future development at Precinct E subject to the final lot layout allowing access to this existing main. As seen from Figure 12, Lots 51 and Lot 100 can be serviced from the existing main, however, the existing drainage reserve R45069 will require consideration when extending the sewer to service Lot 51.

The wastewater servicing of Lot 1 will require further investigation, but the Water Corporation sewer main could likely need to be extended to this site, possibly from Lot 52 at Resolution Drive.




Figure 12 – Existing Gravity Wastewater Reticulation Services (Water Corporation)

Notwithstanding the advice outlined above, if the developer intends to upgrade or extend the sewer reticulation for any reason, they will be responsible for funding reticulation extensions to service the proposed lot with a gravity connection, which shall be designed and constructed to Water Corporation specifications. Standard Water Corporation infrastructure contributions will apply on a per-lot basis.

## 8 WATER SUPPLY

Advice was sought from Water Corporation regarding the established water reticulation system within the area and if service upgrades are required for the proposed development. Water Corporation has advised that the existing water reticulation in the area may be utilised to service the proposed Precincts depending on final water usage requirements, however, it should be noted that Precincts B and C are not currently included within the current Water Corporation planning assumptions.

Precinct A and Precinct B

Depending on the potable water capacity requirements for Precinct A, the existing 200dia water main located in the western verge of Waterway Cres and Grandstand roundabout should provide adequate supply to the proposed high-density developments. This 200mm water main would need to be extended to the development site from Grandstand Road to provide supply.

According to Water Corporation's database, Precinct B has an existing 100mm diameter water main feeding into the site with a 100mm meter and multiple existing 100mm fire services. The existing water main size along Grandstand Rd is 100mm PVC, therefore, if additional water is required and the supply needs to increase, an upgrade of this existing 100mm water main would be required which would require further investigation by Water Corporation.




Figure 13 - Existing Water Mains in proximity of Precincts

Precinct C and D

Precinct C has access to an existing 100mm water main located along the south verge of Matheson Road which has been constructed of varying materials (PVC, Asbestos Concrete, Cast Iron, Steel). Access to this main is readily available, however, if greater supply is required above what the 100mm diameter pipework supplied within the area, further investigation would be required with Water Corporation to increase the size of the water main to Precinct C.

Precinct D has an existing 150mm water main on the west verge of Resolution Drive, and a 100mm main on Grandstand Road, both of these providing adequate opportunity for connection and water supply.

Precinct E

There is an existing DN915mm steel water distribution main located along the eastern verge of Grandstand Road on the 2.1m alignment which also runs through the centre of Precinct E within the existing road reserve. A smaller existing DN100mm cast iron water main also conveys potable water through Precinct E within this road reserve corridor, with these mains being built in 1949 and 1987 respectively. Depending on the final use of Precinct E, it could be expected that as part of assembling the

lots in Precinct E, the Distribution Water Main and the DN100 CI main, may need to be relocated outside of the proposed lots, and reinstalled on their ultimate alignment within remaining road reserves. If these water main assets are to remain in their current location, Water Corporation would need to accept an easement over these assets with the DN915 and 100CI mains requiring 10 and 5m easements respectively.

It is anticipated that the existing DN100 cast iron water main will be suitable for water servicing. The existing DN915 steel distribution main located on the northern verge of Grandstand Road, and through Precinct E, would not be available for connection to the proposed development.

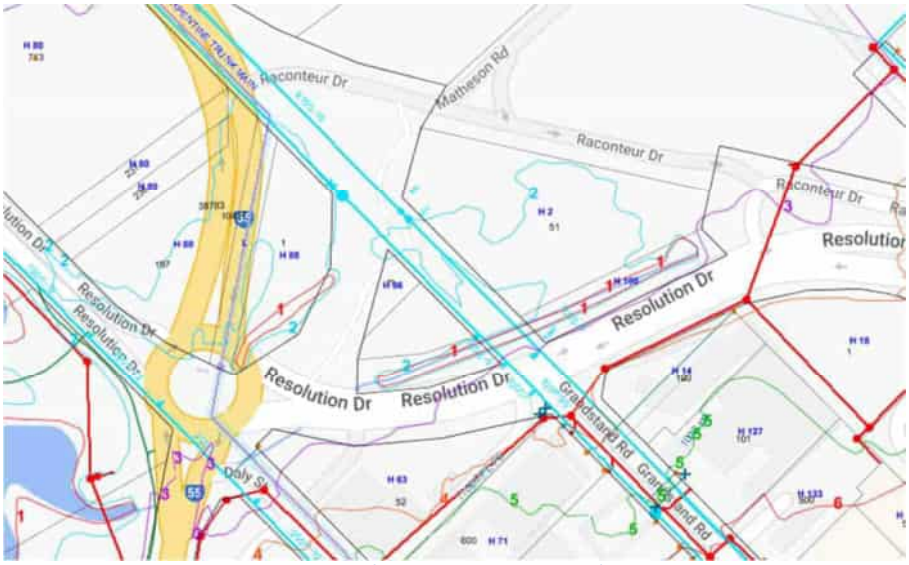



Figure 14 - Existing Water reticulation in Precinct E (Water Corporation Esinet 2024)

Whilst Water Corporation did not advise TABEC of any necessary upgrade of the old water pipe network, any modification to these existing pipes may result in the requirement to upgrade old cast iron water mains. Final upgrade requirements of the existing infrastructure will be clarified once water usage requirements are understood, and modelling has been undertaken by Water Corporation.

# 9 POWER SUPPLY

## 9.1 Power Requirements

The preliminary power requirements have been reviewed based on the proposed development at each of the precincts. It is estimated that the development equates to a total power requirement of 5.4MVA, with the new proposed developments within the precincts requiring the additional 4.2MVA. The existing developments within the precincts are estimated to be using 80% of the 1.5MVA currently available.

| Load Type | Anticipated HV infrastructure required |
|---|---|
| Precinct A | 1 x 1000kVA Transformer |
| Precinct B | **Existing** 1000kVA transformer and switchgear may be adequate<br>**Existing** 500kVA transformer located near the grassed parkland function area may be adequate |
| Precinct C | **Existing** may be adequate subject to further review. |
| Precinct D | 1 x 315kVA transformer |
| Precinct E | 2 x 1000kVA and 1 x 315kVA transformers |

The estimated load summary has been calculated as follows:

| Precinct | Development Type | Approx. sqm / No. of Units | Average kVA / sqm | Approx Total kVA | |
|---|---|---|---|---|---|
| Precinct A | Retirement Living | 390 | 3.1 | 1209 | |
| | Commercial | 300 | 140 | 42 | **1251** |
| Precinct B | Office | 680 | 140 | 95.2 | |
| | Hospitality | 1000 | 140 | 140 | **235.2** |
| Precinct C | Stables | 6400 | 10 | 64 | **64** |
| Precinct D | Childcare | 2100 | 75 | 157.5 | |
| | Residential | 41 | 4.7 | 192.7 | **350.2** |
| Precinct E | Site 1 Retail | 3400 | 140 | 476 | |
| | Site 1 Office | 2500 | 140 | 350 | |
| | Site 1 Parking | 5500 | 10 | 55 | **881** |
| | Site 2 retail | 7100 | 140 | 994 | |
| | Site 2 Parking | 3500 | 10 | 35 | **1029** |
| | Site 3 Equine | 5000 | 75 | 375 | **410** |
| **Total** | | | | **4185.4** | **kVA** |
| | | | | **5822.76** | **Amps** |

The anticipated additional power demand from the development is estimated to be in the order of 4.2MVA (4,200kVA).

## 9.2 Feeder Capacity

Western Power's (WP) Network Capacity Mapping tool indicates that the area is serviced by the Belmont Zone Substation and has more than 30MVA of power available on the network. Note that this information is unconfirmed by Western Power until such time as an application is being made to WP for connection.

To access the additional capacity in the network supplied at the Belmont Zone Substation, it is anticipated that 2 additional power feeders may need to be installed, 2.5km from the Belmont Substation Site to the development to adequately service the ultimate required supply.

Attachment 12.1.4 Engineering Servicing Report



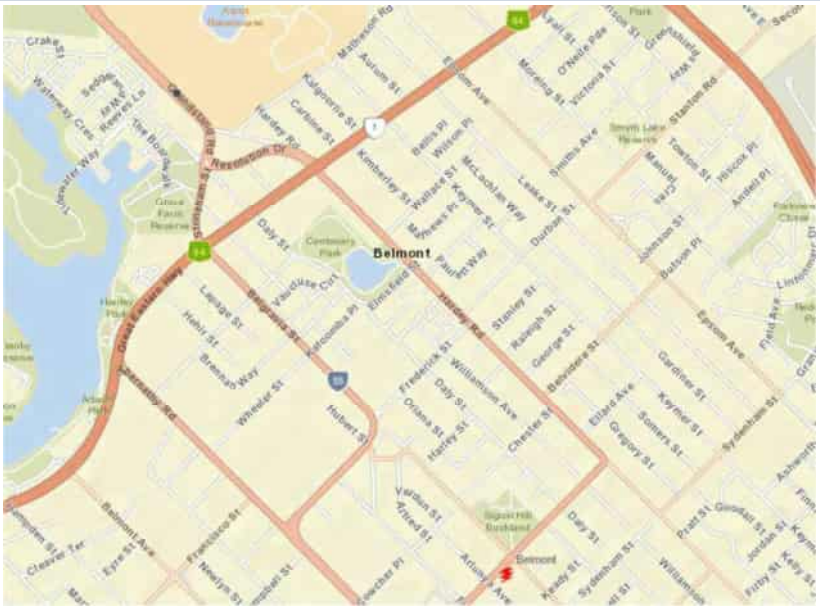



Figure 15 - WP Substation Site (Western Power Mapping 2024)

## 9.3 Existing Distribution Power Network

The Western Power Network Mapping tool (NCMT) and DBYD has indicated that there is high voltage (HV) servicing this development area. Existing 132kV overhead power is also located along Matheson Road, and along the east of Lot 9002.

There are also high voltage distribution cables surrounding the sites, with these being overhead power along Matheson Road, which transitions to underground at Resolution Drive, and north up Grandstand Road as seen within Figure 16.

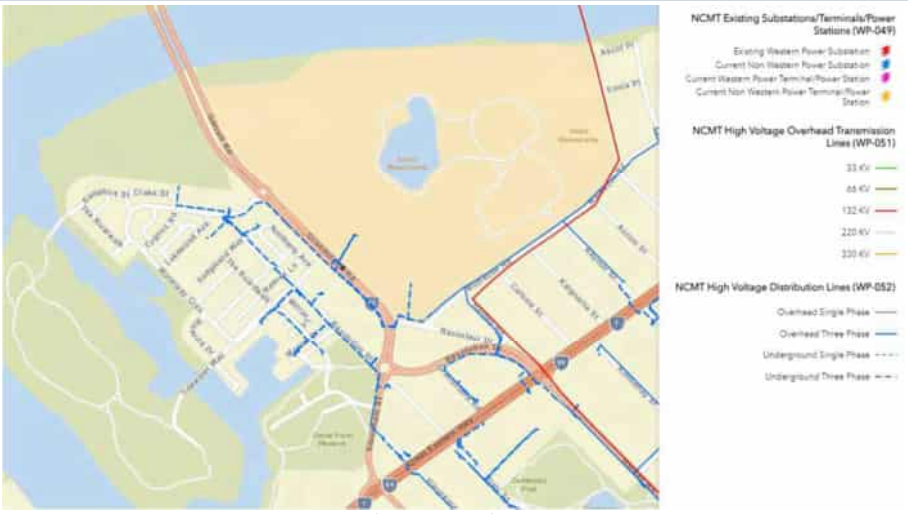



Figure 16 – NCMT Network Existing Power Services (Western Power)

## 10 COMMUNICATIONS

Ascot Racecourse is currently surrounded by NBN service in the area with FTTN Technology. It is expected with new developments or upgrades, that FTTP will be available.

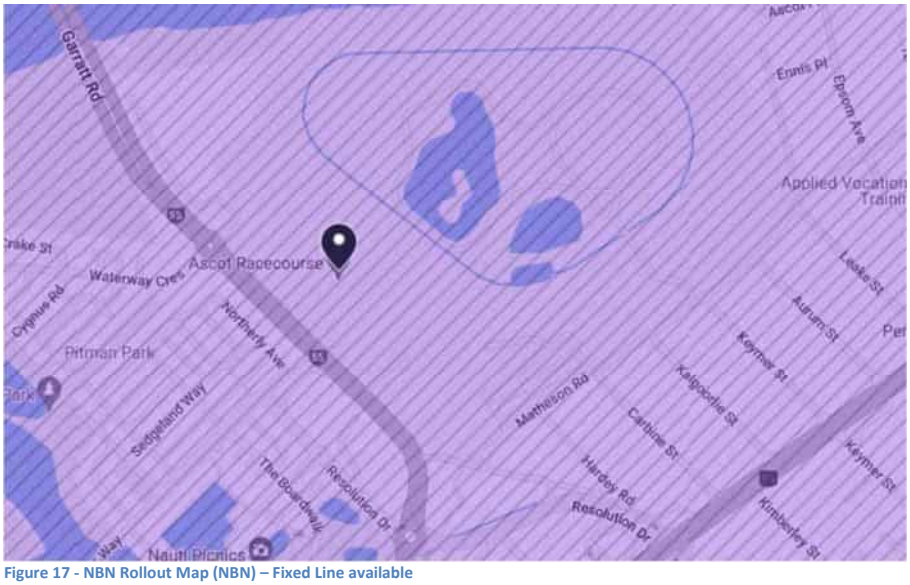



Figure 17 - NBN Rollout Map (NBN) – Fixed Line available

The Dial Before you Dig information shows Precinct D has existing Optus fibre optic assets within the site, which have been installed within the north west boundary of the lot. Precinct D also has Telstra and Vocus assets entering the lot from Grandstand Road and from Resolution Drive respectively.

Further discussion will required with the communication providers to determine whether these existing comms assets will impede the proposed development at this site, and whether relocation or removal of this asset is required.

## 11 GAS SUPPLY

There is existing medium pressure 155 PVC 1.5 ( MAOP 70kPa) gas mains located along Matheson Road and up Grandstand Road until Precinct D which are available for connection to Precinct C, Precinct D and Precinct E if required.

ATCO has completed high level modelling based on similar business connection types as those nominated developments within each precinct. The modelling was based on:

- Connection to MAOP 70kPa network
- MP Metro 25 – Severe Winter
- Full load at 350scmh (≈12000MJ/hr)
- Full connection by 2025
- Potential mains extension required for connections to Precinct A and B

Based on this modelling, the existing gas mains adjacent to Precinct D and Precinct E should be sufficient to service these residential and commercial developments.

Precinct A will require a gas mains extension to the retirement village if this development is to utilise gas, however, ATCO have not expressed any concerns with servicing capacity issues.

The supply of gas is not a WAPC subdivision condition and there is no obligation on the developer to install gas as part of the development.



Figure 18 – Existing ATCO Gas Network map (ATCO Gas)

In reviewing the Dial Before You Dig information, an existing 150 PVC gas main traverse through Precinct D, along the south east boundary. From the information available, this pipe does not look to be

operational, however, further discussions with ATCO Gas are required on whether this needs to be relocated, or removed.

## 12 CONCLUSION

Based on the infrastructure review, there does not appear to be engineering-related constraints preventing the development of the five precincts. Notwithstanding, there are a number of design issues and construction challenges to be resolved in further detail within the next phases of development.

The advice received from servicing authorities and investigations to date indicate each aspect can be resolved to support the development proposal.

## 13 RECOMMENDATIONS

Since this report is based on preliminary servicing advice and investigations, it is recommended that each Authority be kept informed as the planning progresses and concept engineering designs are refined. Communicating the proposed time frames for the precinct development is also important.

There are a number of project-related issues and challenges that require further consideration, with some of these to be assessed as part of the next phase, such as:

- further investigation and discussion on the preferred Precinct A sewer servicing methodology;
- the upgrade/relocation requirements of existing water mains if deemed necessary for Precinct E or to provide adequate servicing to Precinct B or C. If required, early engagement with Water Corporation is recommended to coordinate scope within Water Corporations capital works program;
- bio-retention locations within the centre racecourse for Precincts A, and C;
- drainage basin/storage location at Precinct D;
- existing communications assets removal or relocation within Precinct D;
- power servicing to each development sites with overlapping lots and boundaries
- understanding development timeframes for precincts, due to the limited power capacity within the existing network prior to additional HV feeders being required to the site.

The information contained within the report is preliminary in nature, has been completed based on a high-level desktop assessment, and has relied on preliminary planning advice from servicing authorities where appropriate. There are no site investigations, reports or other consultants' input unless stated within the report, which would ordinarily provide a more substantial servicing review for the purpose of supporting subdivision applications.

## 14 REFERENCES

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ATCO Gas, emails: ATCO Gas - future servicing at Ascot Race Course Developments. May 2024

Carno Engineering, Infrastructure Assessment Report: Golden Gateway Precinct, 2017

DBYD enquiry, June 2024

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Emerge Associates, Local Water Management Strategy, EP23-109(03), 2024

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Western Power, Network Capacity Mapping Tool. April 2024






## 15 APPENDIX A – DBYD INFORMATION

Attachment 12.1.4 Engineering Servicing Report

Job No 36962243

BEFORE YOU DIG www.byda.com.au

byda.com.au

## Contact Details

| Contact | Contact number | Company | Enquirer ID |
|---|---|---|---|
| Justin Zielinski | 0420 304 451 | - | 3140642 |

**Email**
jzielinski@tabec.com.au

**Address**
54 Havelock Street
West Perth WA 6005

## Job Site and Enquiry Details

**WARNING:** The map below only displays the location of the proposed job site and does not display any asset owners' pipe or cables. The area highlighted has been used only to identify the participating asset owners, who will send information to you directly.

| Enquiry date | Start date | End date | On behalf of | Job purpose | Locations | Onsite activities |
|---|---|---|---|---|---|---|
| 21/06/2024 | 24/06/2024 | 24/06/2024 | Private | Design | Both Road | Planning & Design |




Check that the location of the job site is correct. If not, you must submit a new enquiry.

If the scope of works change or plan validity dates expire, you must submit a new enquiry.

Do NOT dig without plans. Safe excavation is your responsibility. If you don't understand the plans or how to proceed safely, please contact the relevant asset owners.

**User Reference**
Precinct E

**Address**
2 Raconteur Drive
Ascot WA 6104

**Notes/description**
-

## Your Responsibility and Duty of Care

- **Lodging an enquiry does not authorise project commencement.** Before starting work, you must obtain all necessary information from all affected asset owners.
- If you don't receive plans within 2 business days, contact the asset owner & quote their sequence number.
- Always follow the 5Ps of Safe Excavation (page 2), and locate assets before commencing work.
- Ensure you comply with State legislative requirements for Duty of Care and safe digging.
- If you damage an underground asset, you MUST advise the asset owner immediately.
- By using the BYDA service, you agree to the Privacy Policy and Term of Use.
- For more information on safe digging practices, visit www.byda.com.au

## Asset Owner Details

Below is a list of asset owners with underground infrastructure in and around your job site. It is your responsibility to identify the presence of these assets. Plans issued by Members are indicative only unless specified otherwise. Note: not all asset owners are registered with BYDA. You must contact asset owners not listed here directly.

| Referral ID (Seq. no) | Authority Name | Phone | Status |
|---|---|---|---|
| 240900614 | ATCO Gas Australia | 1300 926 755 | NOTIFIED |
| 240900610 | NBN Co (WA) | 1800 687 626 | NOTIFIED |
| 240900607 | Optus (WA) | 1800 505 777 | NOTIFIED |
| 240900612 | Telstra (WA) | 1800 653 935 | NOTIFIED |
| 240900609 | TPG Telecom (WA) | 1800 786 306 | NOTIFIED |
| 240900608 | Vocus (WA) | 1800 262 663 | NOTIFIED |
| 240900613 | Water Corporation | 13 13 95 | NOTIFIED |
| 240900611 | Western Power | 13 10 87 | NOTIFIED |

END OF UTILITIES LIST

**Lodge your FREE enquiry online any time at byda.com.au**

Attachment 12.1.4 Engineering Servicing Report

# ATCO UNDERGROUND ASSET DETAILS ASSETS AFFECTED

GAS DIVISION

**ASSETS AFFECTED – see accompanying Plan**

**Job No:** **36962243**
**Sequence No:** **240900614**
Date of Issue: 21 June 2024
Phone: **1300 926 755**

**Justin Zielinski**
**ATCO Gas Australia**
54 Havelock Street
West Perth
WA 6005

**BYDA Utility Registration Name:** Private
**BYDA Location:** **2 Raconteur Drive Ascot WA 6104**

**ATTENTION:** This response to your enquiry has been interpreted from details in your requested DBYD picture location request only (not any street address you gave). It is your duty to ensure the accompanying plan/s match your geographical area of works.

**IF YOU SEE, HEAR, SMELL OR OTHERWISE DETECT GAS,**
**LEAVE THE IMMEDIATE AREA AND THEN CALL 13 13 52**

Our records indicate that ATCO gas infrastructure ***IS PRESENT*** in the vicinity of and/or surrounding area of the above enquiry. This response relates only to ATCO assets. Your Duty of Care requires that personnel **Must** at all times comply with, and have on site, this information sheet and the accompanying plan(s). All plans are subject to this information sheet. You should refer to the ATCO Self-service Portal (Link Here) or if unsure, contact ATCO on **1300 926 755** during business hours.

All information provided is to be used as a guide only (see Disclaimer item **5**). It does not absolve you or third parties from your Duty of Care obligations, including to take additional precautions where work has the potential to impact on gas assets, public safety or the environment, or from your duties at law (including Reg 3.21 of the Occupational Safety and Health Regulations 1996).

## WARNINGS

- No works of any type within 15 metres of any **CRITICAL GAS ASSET** infrastructure without prior approval from ATCO
- **NO HOT WORK** within 15 metres of any gas infrastructure except in compliance with applicable laws & *Australian Standard 1674.* **Do Not** let heat sources or hot works impact on any gas infrastructure and take into consideration that the ground or adjacent structures may also be capable of transmitting heat so as to circumvent protection afforded by a heat shield or barrier
- **DANGER** - Gas can cause asphyxiation and is flammable. Keep all ignition sources well away (e.g., flames, matches/ lighters, sparks, electrical devices, vehicles or engines, mobile phones, cameras)
- Gas pipes **Must Not** be unsupported or left without adequate cover or protection without prior approval from ATCO
- Damage to the pipe coating or pipe itself can be very dangerous if not given immediate attention. Report any damage to ATCO immediately on **13 13 52**. **Do Not** attempt to repair any damaged gas infrastructure
- No alteration or removal of live or abandoned gas infrastructure without prior written approval from ATCO
- Any abandoned or proposed gas infrastructure indicated on the gas plans **Must** be treated as live
- Never assume the location or depth of any gas infrastructure. Pipes may not follow straight lines or maintain a constant depth. Always check carefully (e.g., by careful hand digging of potholes)
- Unauthorised repairs or tampering with gas infrastructure may result in prosecution under the *Energy Operators (Powers) Act 1979*. ATCO Gas Australia reserves all rights to recover compensation for loss or damage to its gas infrastructure or other property including for indirect or consequential losses.

## Attachment 12.1.4 Engineering Servicing Report

**PLANS:**

Plans provided are current for **30 days only** from date of request. You must use current plans at all times.

Plans do not show all gas service lines (which connect gas mains to individual meter positions). See condition **3.c)** below.

If plan shows **additional detail** symbols ( * ) or ( ) in the area of proposed works it is **your duty** to obtain that further detail from the number below.

Plans (including the location of pipes, services, infrastructure and boundaries) are **approximate only**. You **Must** use safe and proper procedures – including **potholing** (see condition **4** below).

Plans are not a guide as to gas availability for connection purposes.

**To call ATCO:** **Weekdays from 7.30am to 3.30pm, call – 1300 926 755 After hours, weekends and emergencies, call – 13 13 52**

**CONDITIONS FOR WORKS IN THE VICINITY OF ATCO ASSETS**

**1. Compliance with Warnings**

You **Must** comply with the Warnings contained in this information sheet and the accompanying plan(s).

**2. Compliance with 'Working around Gas Infrastructure' Document (Link Here) applicable laws and duty of care**

All work (including but not limited to using Excavator's Augers, Directional, drilling machines, 'Ditch Witch' type trenching machine, Loader, Dozer, Skid Steer (Bob Cat)) **Must** comply with all applicable requirements in the 'Working around Gas Infrastructure' Document and with all applicable laws and Australian Standards. All due care must be exercised to locate any gas infrastructure in the vicinity and when conducting any works near them.

**3. All Gas Infrastructure**

All work that may have any impact upon any gas infrastructure (see **3.a)**, **b)** and **c)** below for examples) should be carefully planned with notification to ATCO well in advance of commencement. Contact ATCO on **1300 926 755** or visit Atco's online self-service portal (Link Here). Amongst other things, this includes excavation of or near gas pipelines, boring/drilling, crossings of pipelines (including by other underground infrastructure e.g. drains, power cables, etc.), road works and structural installations. In addition:

a) Critical Asset

No works of any type are permitted within 15 meters of these pipelines without prior approval from ATCO. For approvals contact ATCO on **1300 926 755** or visit the Atco online Self-service portal (Link Here)

You **Must** ascertain the location of any Critical Asset, in relation to your proposed work by:

- Locating a straight line between two marker danger signs, and
- Assessing the distance from this line to your proposed work area.

ATCO may require stand-by supervision during your works and will advise of attendance requirements.

b) Non Critical Assets

These pipelines are installed in most streets throughout the Perth metro area and several country centers. Main valves, regulator sets, and test points also exist at intervals along these pipelines. Where work may impact upon these pipelines or assets then ATCO **Must** be contacted as per item **3** above.

c) Gas Services and Meters

If a gas meter is installed on a property, an underground gas service pipe will run from the meter position to the gas main in the street. Plans do not show all gas service lines (with the exception of Critical Assets), but their presence must be anticipated. Most gas meter boxes installed since 1996 will include a sticker giving approximate guidelines for the gas service line location. All due care must be exercised to locate any gas services in the vicinity and when conducting any works near them.

**4. Compliance with Safe Work Practices**

It is your responsibility to have and comply with adequate safe work practices and procedures. Without limiting your obligations:

**PLAN** The complete & current Before you Dig Australia documentation and plans must always be on site & referred to for the duration of work. Refer to regulation 3.21 of the Occupational Safety and Health Regulations 1996 and the Utility Providers "Code of Practice" for further useful information.

**PREPARE** Prepare by reviewing the Before you Dig Australia Documentation and contacting ATCO if you need assistance. Look for onsite ATCO asset and infrastructure clues such as pit lids, marker posts and meters. No works of any type are permitted within 15 meters of a **CRITICAL ASSET** without prior approval from ATCO. For approvals contact ATCO on **1300 926 755** or visit the Atco website Self Service portal (Link Here) and allow suitable

processing time. Atco recommends engaging a BYDA Certified Locator which includes undertaking electronic location prior to potholing.

**POTHOLE** Using current Before you Dig Australia plans, all gas pipes should be located (including any deviation in the direction of a gas pipe) by exposing them by careful digging using a HAND SHOVEL. Where the proposed work is parallel to a gas pipeline, pothole every 10 meters along the entire route. Damage to the pipe coating or to the pipe itself can create a very dangerous situation if not given immediate attention. If damage does occur, it **Must** be reported to ATCO immediately on Ph. **13 13 52**.

**PROTECT** Supervise and monitor all excavations near gas infrastructure using a dedicated spotter. Where any gas infrastructure is required to be exposed, adequate protection of the gas infrastructure is required to prevent potential damage. Also implement appropriate controls when conducting 'hot work' (in accordance with AS 1674) in the vicinity of the ATCO infrastructure such as; isolation; separation distance; the placement of an effective non-combustible barrier of sufficient size and thermal resistance for the intensity, type and duration of heat exposure; gas monitoring; monitoring the environment surrounding the ATCO infrastructure to ensure it is not being impacted by the work, and other controls as necessary.

**PROCEED** You should **only proceed** with your excavation work after you have planned, prepared, potholed (unless prohibited) and have protective measures in place. All locations markers/pegs are to be removed on completion of works. If you are unsure, **DO NOT** Proceed. Call ATCO on **1300 926 755**

**5. Disclaimer and Further Terms**

a) Nothing in this document, any accompanying plan or the 'Additional Information for Working around Gas Infrastructure' (AGA-O&M-PR24) (together called "**Documents**") purports to exclude or modify any term, condition or warranty to the extent that by law it cannot lawfully be excluded or modified by agreement or notice, including but not limited to those contained in Schedule 2 of the *Competition and Consumer Act* 2010 (Cth) and corresponding provisions of any state legislation.

b) If any of ATCO, or their respective related entities, officers, employees, agents, contractors or advisers (together called "**Associates**") is liable for a breach of a term, condition or warranty described in paragraph **5.a)** above, its liability is, to the fullest extent permitted by law, limited to any one or more of the following as it determines in its absolute discretion:

i) in relation to goods supplied by them, replacing or repairing the goods, supplying an equivalent item, paying the cost of replacing or repairing the goods or paying the cost of acquiring or hiring an equivalent item; and

ii) in relation to services supplied by them, the re-supply of the services or the payment of the cost of having the services re-supplied.

c) Subject to paragraphs **5.a)** and **b)**, but otherwise despite any other provision in the Documents, no representation or warranty is made or given (whether expressly or by implication) by any of ATCO or their respective Associates in respect of any information contained or referred to in any of the Documents or in any other communication from ATCO concerning any of the Documents or the subject matter of any of the Documents ("Information"). In particular, but without limiting the generality of the foregoing limitation, none of ATCO or their respective Associates makes any warranty or representation as to the truth, accuracy, completeness, reliability, currency, timeliness, quality or fitness for any purpose of or the standard of care taken in the preparation of any Document or Information (including, but not limited to, the accuracy of the scale of, or the location of anything or symbol shown on, any plan or diagram).

d) Subject to paragraphs **5.a)** and **b)**, to the maximum extent permitted by law, none of ATCO or their respective Associates is liable to any person or other body ("**Recipient**") who receives or otherwise obtains access to all or any part or parts of the Documents or Information, in any way (including, but not limited to, liability for negligence, breach of statutory duty or lack of care) in respect of any cost, expense, damages, loss or liability, including, but not limited to:

i) any financial or economic loss, cost, expense or damage, including but not limited to loss of production, loss of profit, loss of revenue, loss of use, loss of contract, loss of goodwill or loss of business opportunity;

ii) any new or increased costs or expenses, including but not limited to financing or operating costs;

iii) any failure to achieve any actual or anticipated saving in respect of any cost or expense;

iv) any cost, expense, damage or loss resulting from any liability of the Recipient to any other person or body howsoever and whensoever arising, suffered or incurred by the Recipient in relation to, or in connection with, the disclosure to them of, or use of, or reliance on, all or any

part or parts of the Documents or Information.

e) By using any Document or Information, each Recipient is taken to represent and warrant to ATCO that the Recipient will comply with the conditions and other terms referred to in the Documents or Information, including but not limited to conditions that:

i) the Recipient **Must** comply with the conditions in numbered paragraphs **1** to **4** above and this paragraph **5**;

ii) as between ATCO and each Recipient, ATCO owns the Information and all rights and title in and to the Information are to remain vested in ATCO;

iii) no Recipient has any right, title or interest in the Information or, except as expressly provided for in the Documents, any license or right to copy, alter, modify, publish or otherwise use or deal with the Information without prior written approval from ATCO;

iv) ATCO makes no representation and gives no warranty as to its right to disclose any Information;

v) the Recipient relies on any Information entirely at its own risk and expense;

vi) the Recipient **Must** undertake its own independent due diligence and investigations in relation to the Information;

vii) none of ATCO or their respective Associates owes the Recipient any duty of care in respect of the Information; and

viii) none of ATCO or their respective Associates is under any obligation to correct, update or revise any Documents or Information.

**GAS MAIN AND SERVICE IDENTIFICATION**

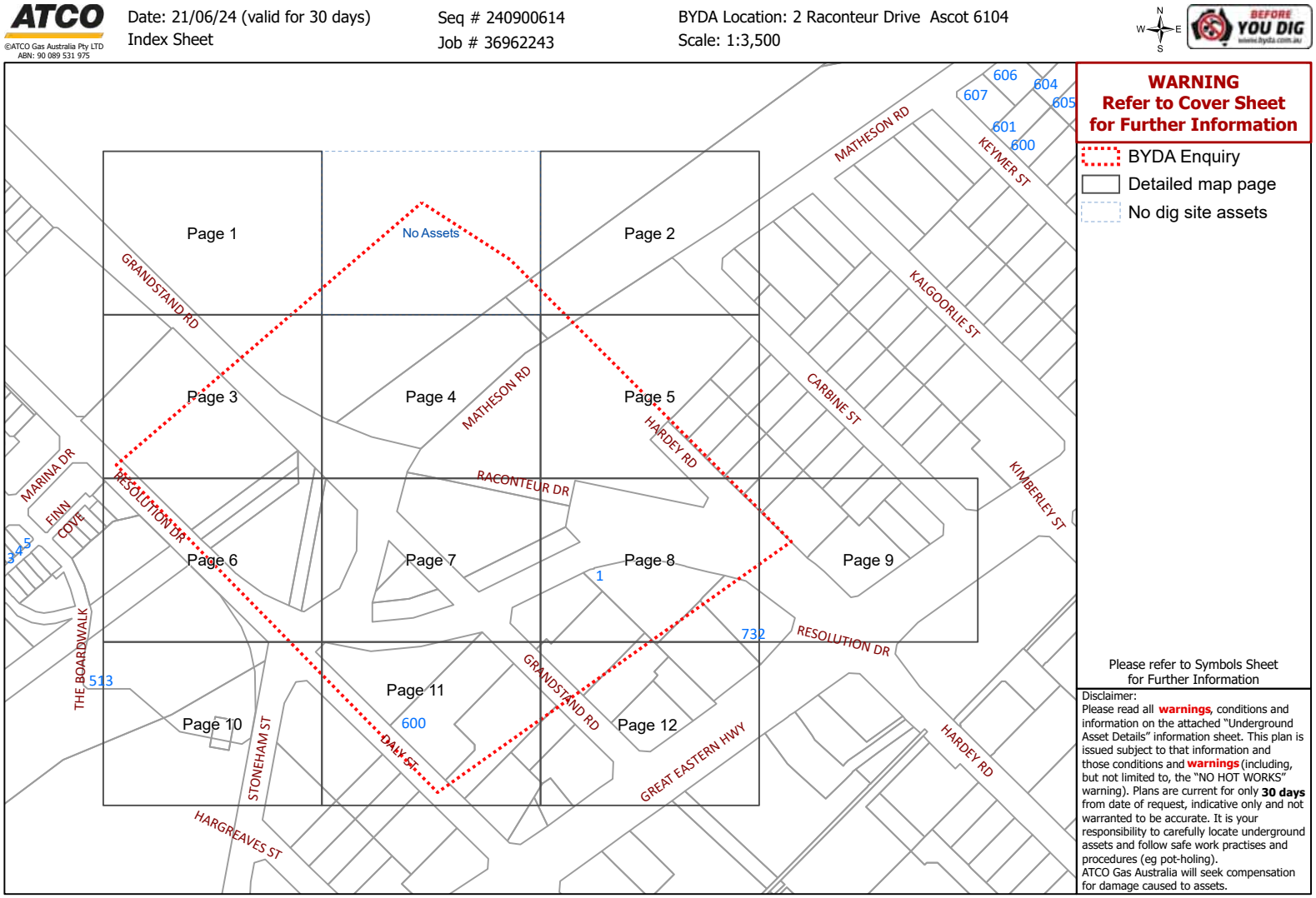
**LEGEND**

1. Critical Asset (See **WARNINGS** page 1)
2. Pipe Diameter (millimetres)
3. Pipe Material
   CI = Cast Iron PE = Polyethylene
   GI = Galvanised Iron PVC = PVC
   ST = Steel
4. Alignment (in metres from property line)
5. Pressure in main (MP 70 kPa = Medium Pressure and MAOP (Maximum Allowable Operating Pressure)
6. Off-line Service – service may not be straight line to meter. (**WARNING – OLS may not always be shown on plan**. See item **Error: Reference source not found** above)
7. Service Valve in the vicinity
   (**NOTE:** Service Valve may be **"BURIED"**)
8. Pre-laid Service laid in Common Trench
9. Main Status: (See **WARNINGS** page 1)
   9a. AB = Abandoned Mains
   9b. PROP = Proposed Mains
10. Customer Connection: Does not indicate actual location of Meter Position
    D2 (D = Domestic & 2 = Number of Meters)
    C1 (C = Commercial & 1 = Number of Meters)
11. **Additional detail available and Must be obtained if within area of proposed works – see page 2 above.**
12. Depth of Cover (DOC) in metres.



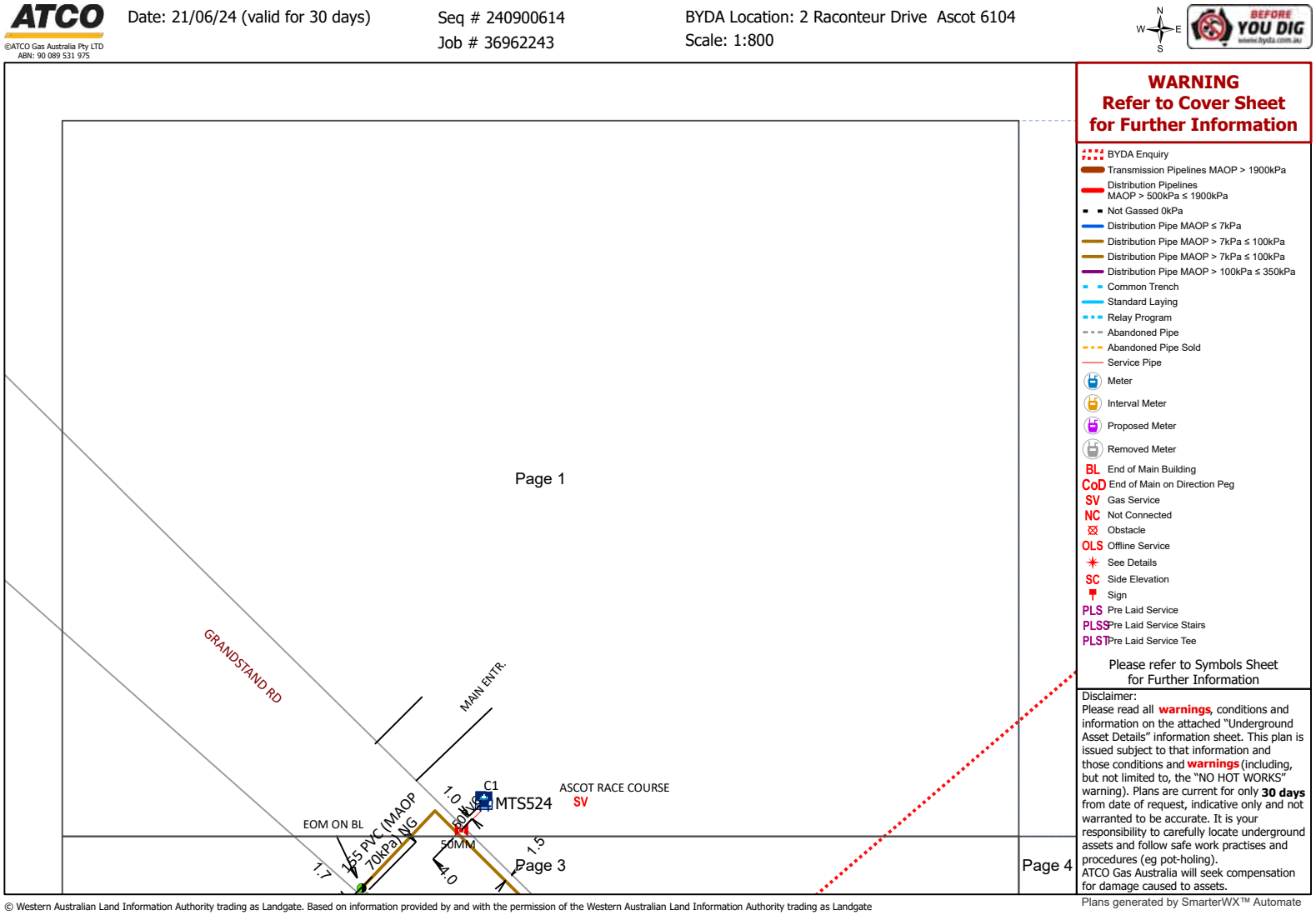

IF UNSURE, PLEASE CONTACT ATCO ON **1300 926 755**

Attachment 12.1.4 Engineering Servicing Report

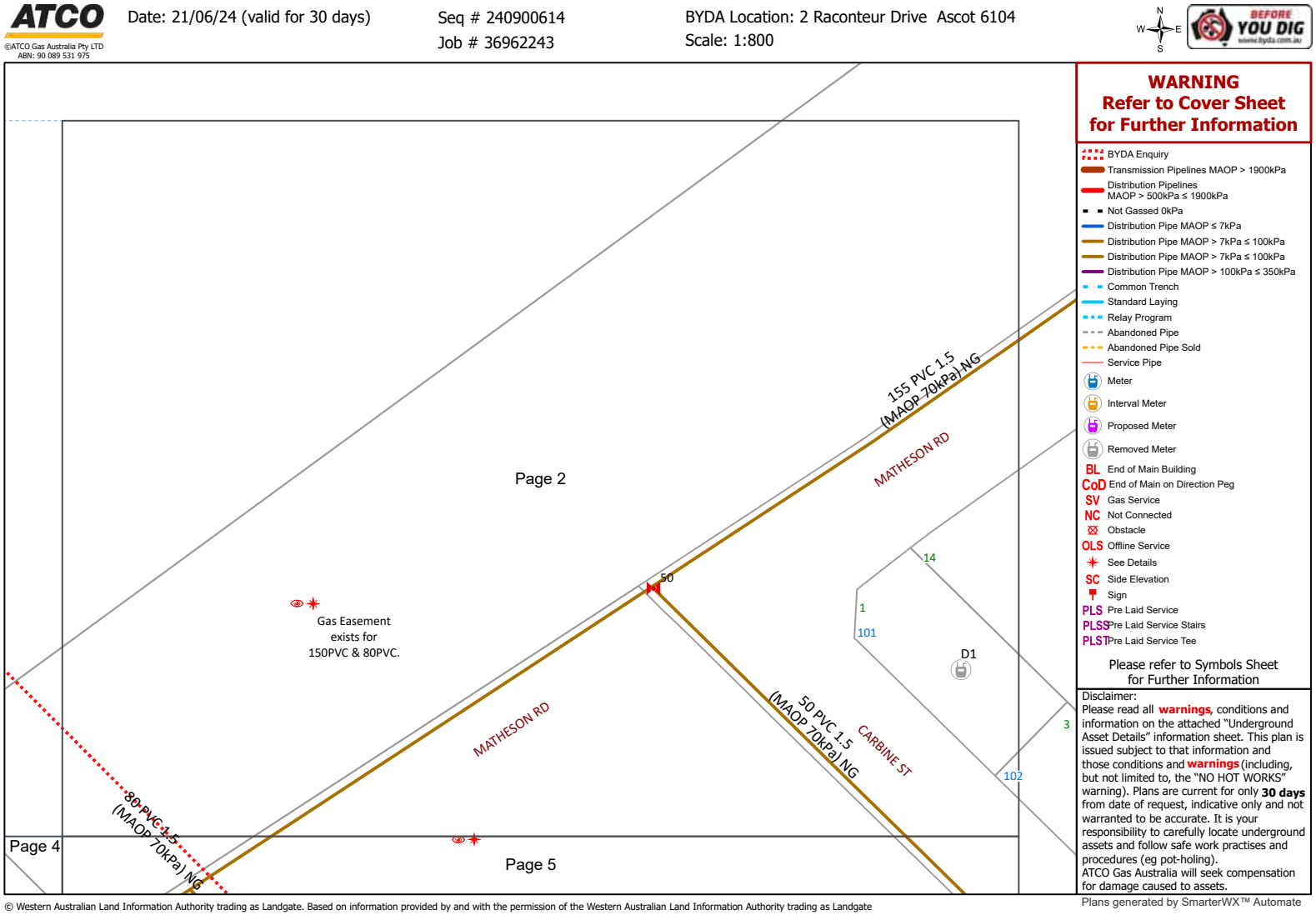



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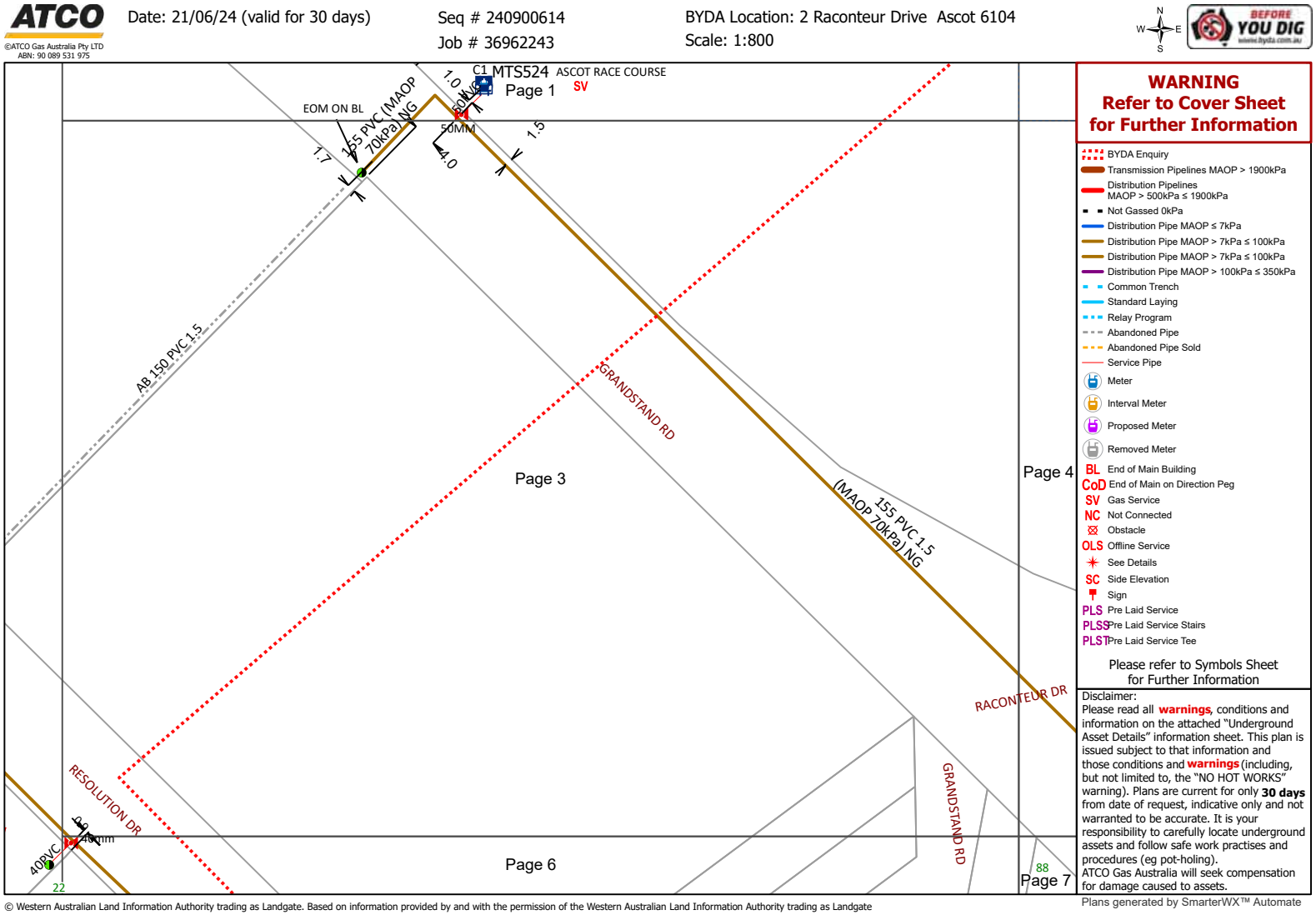
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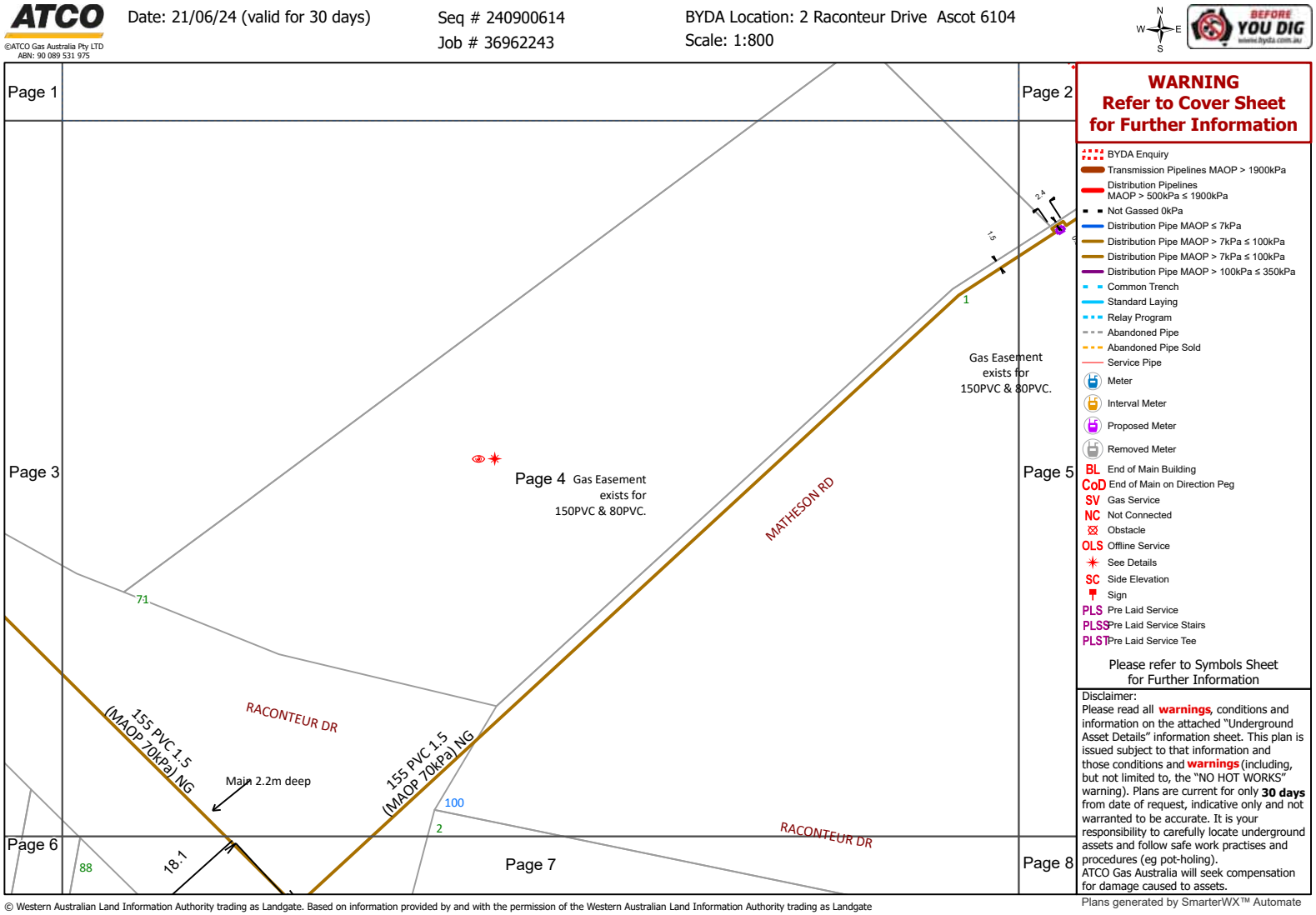
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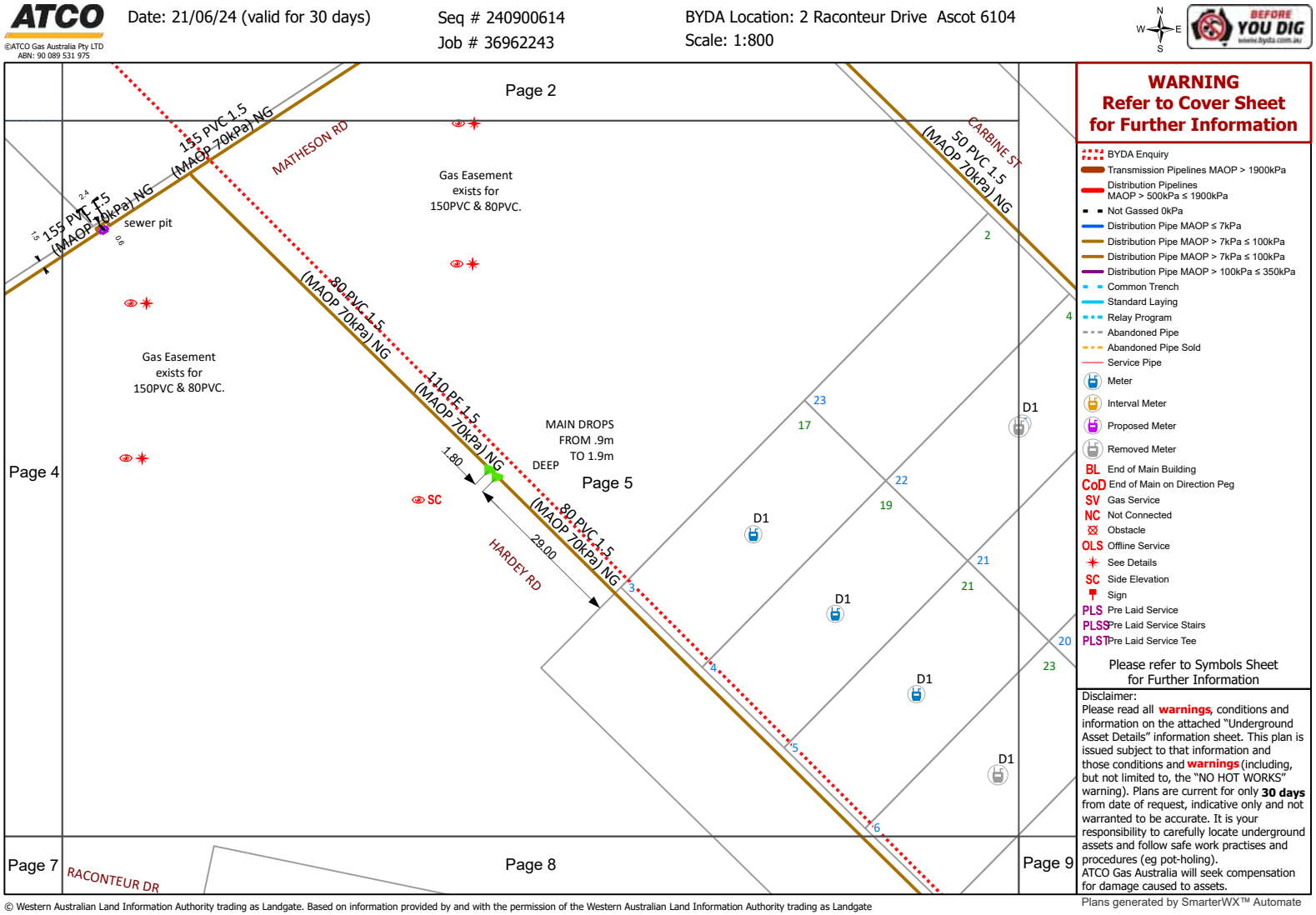
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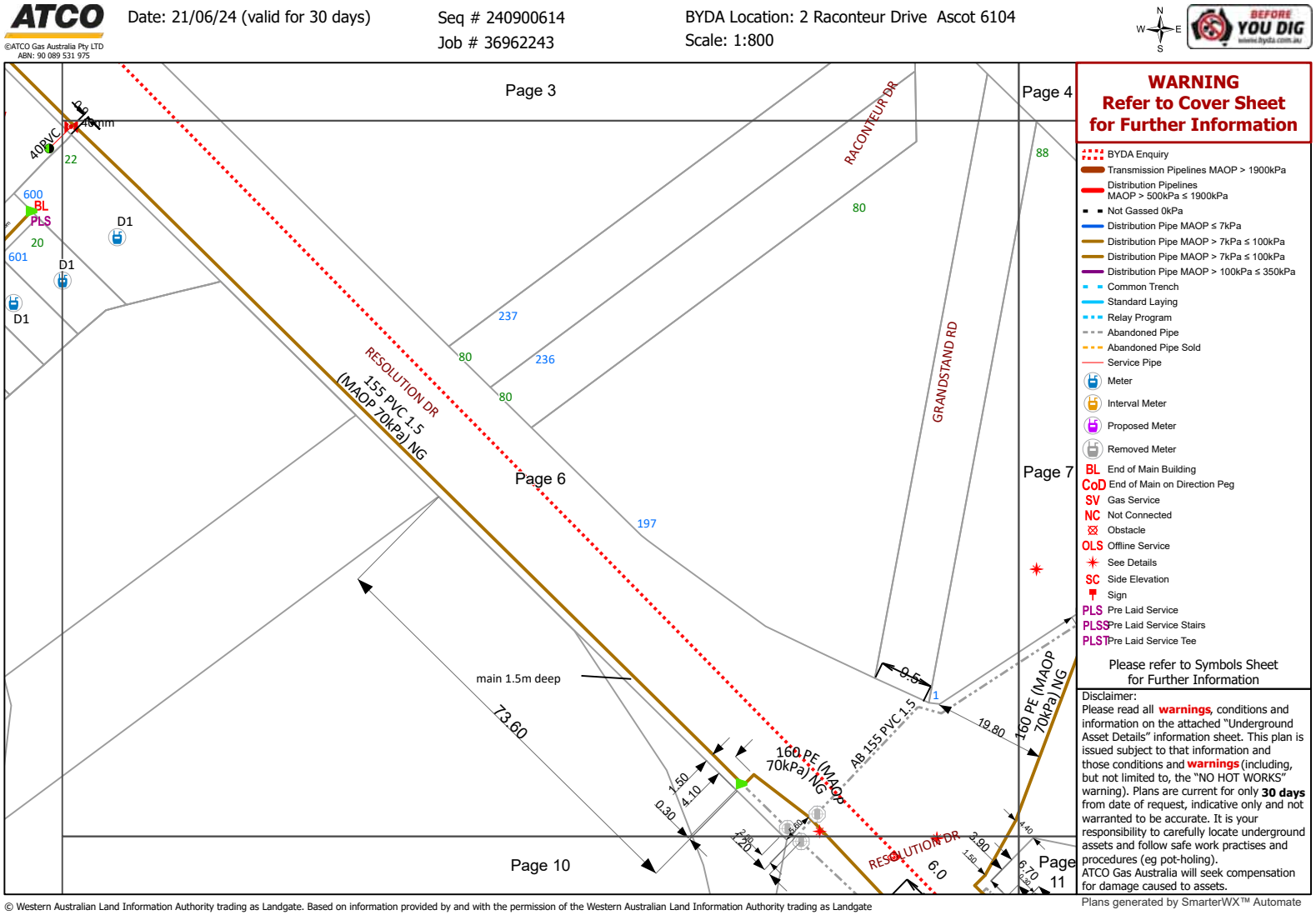
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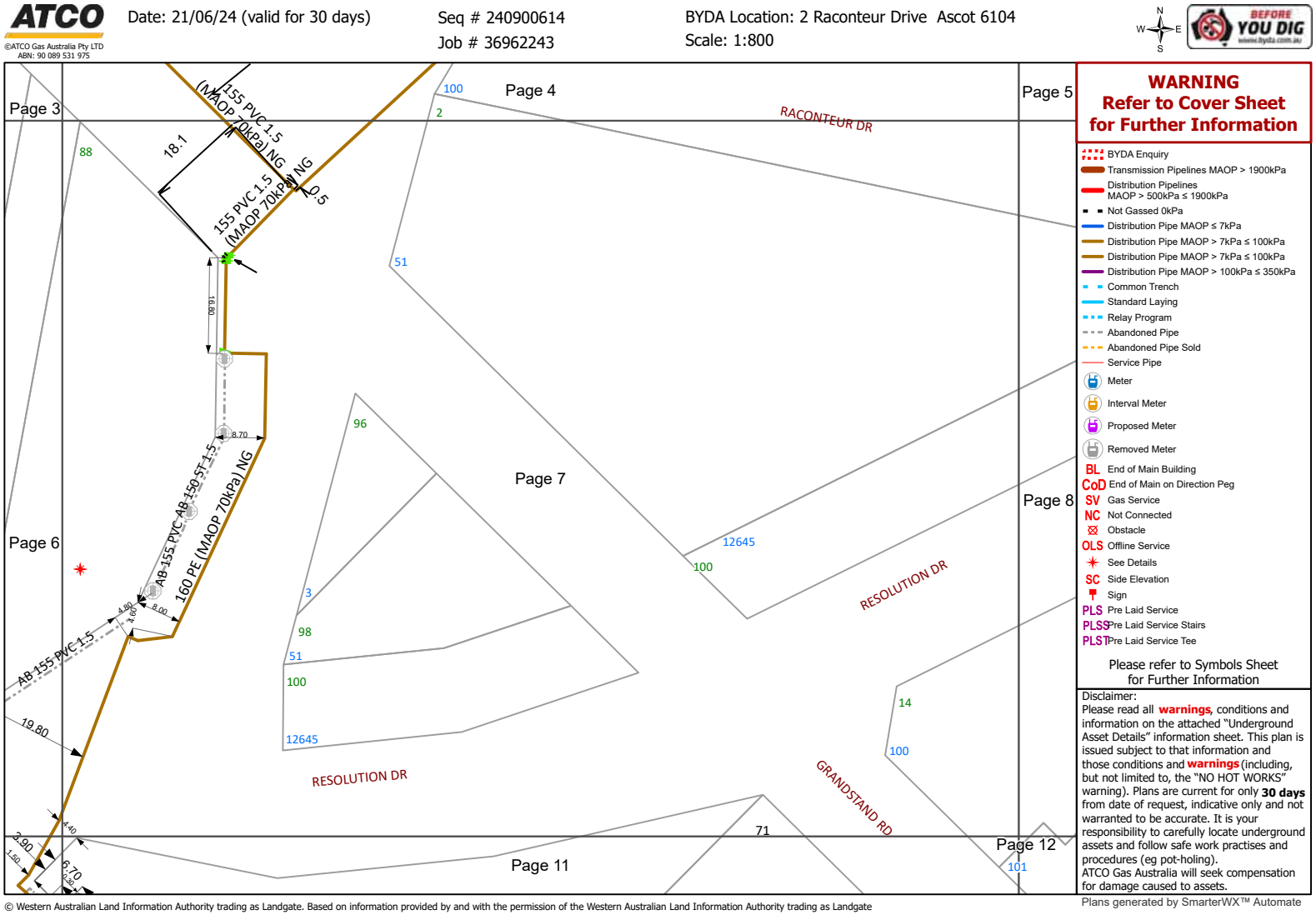
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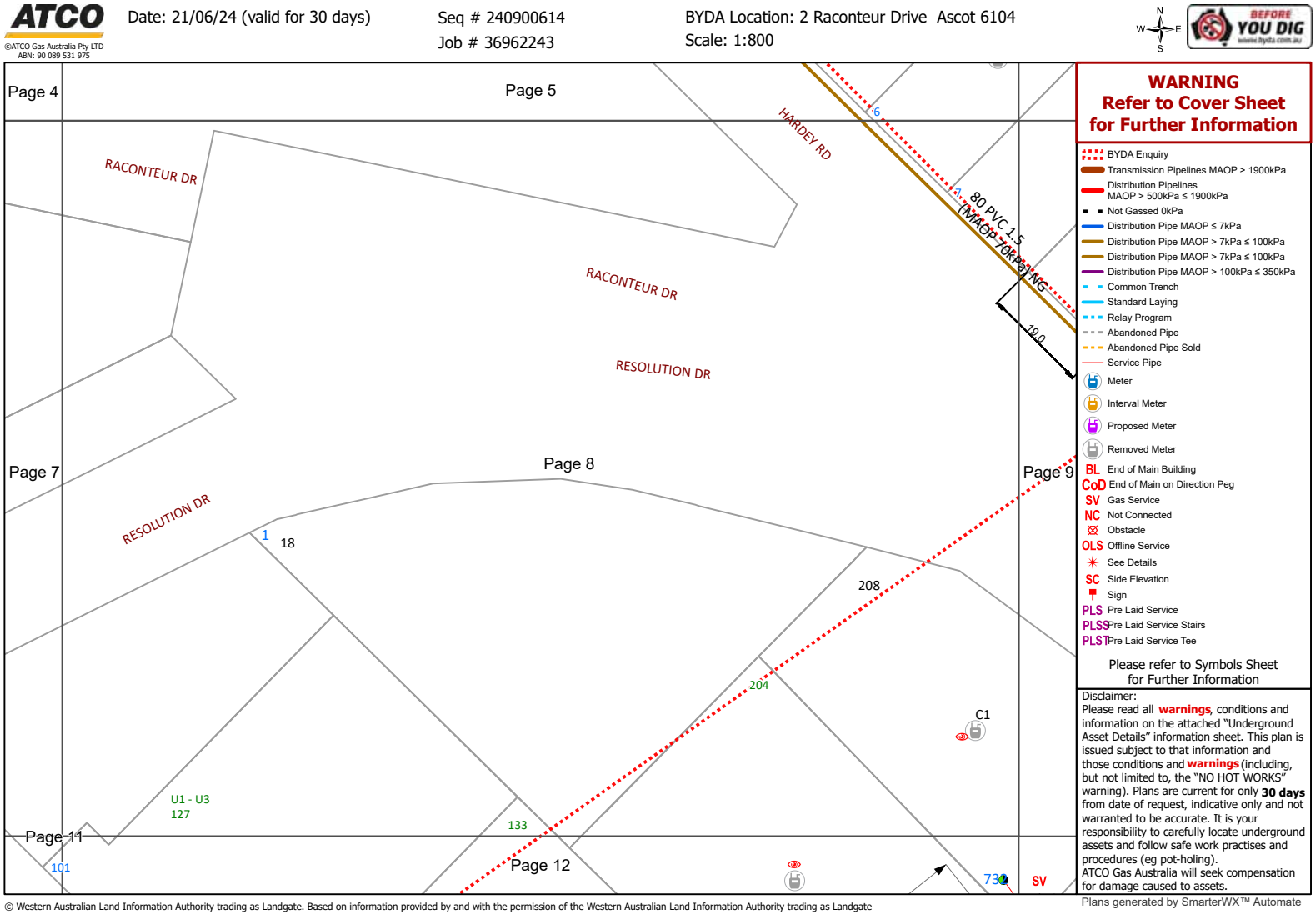
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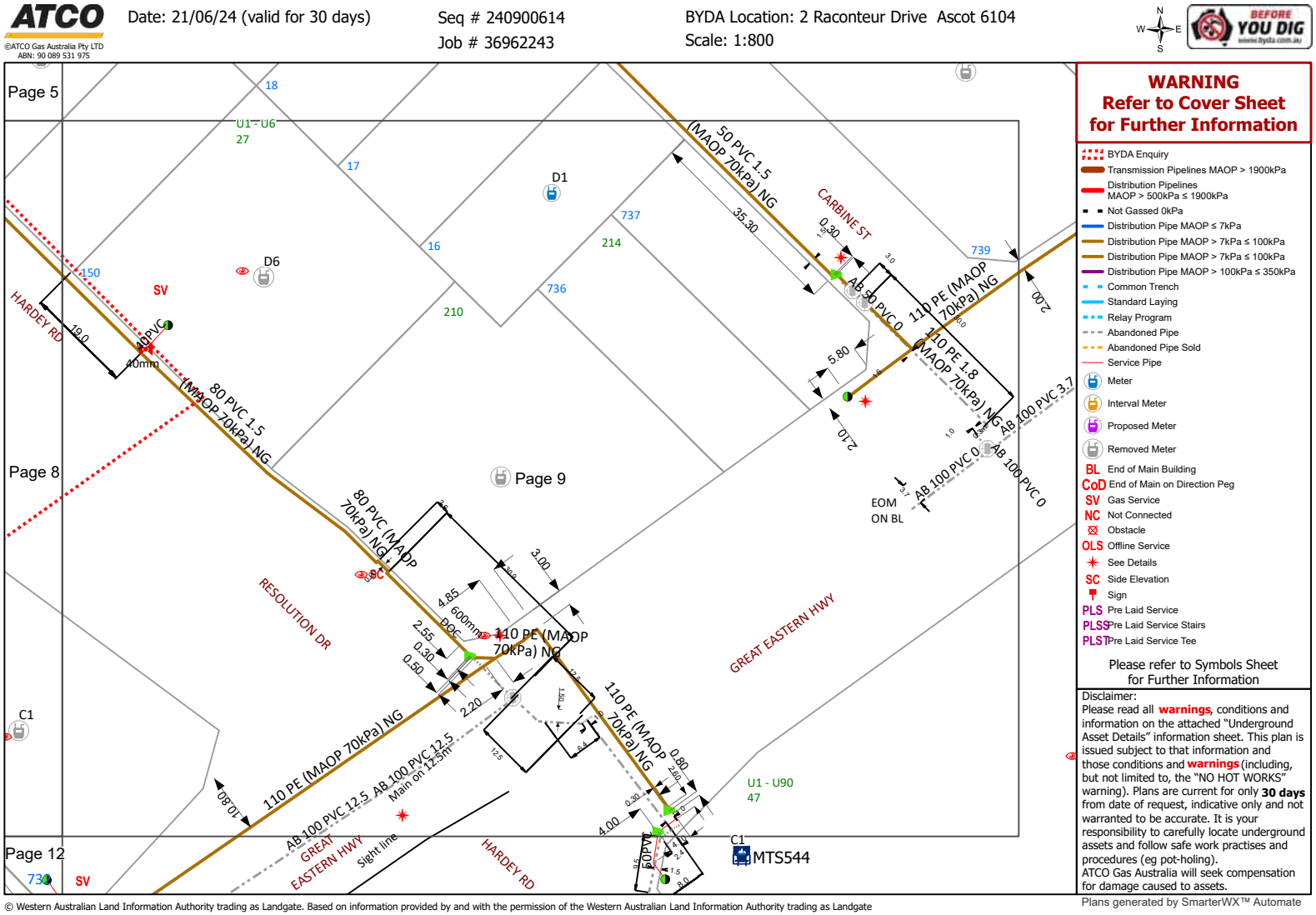
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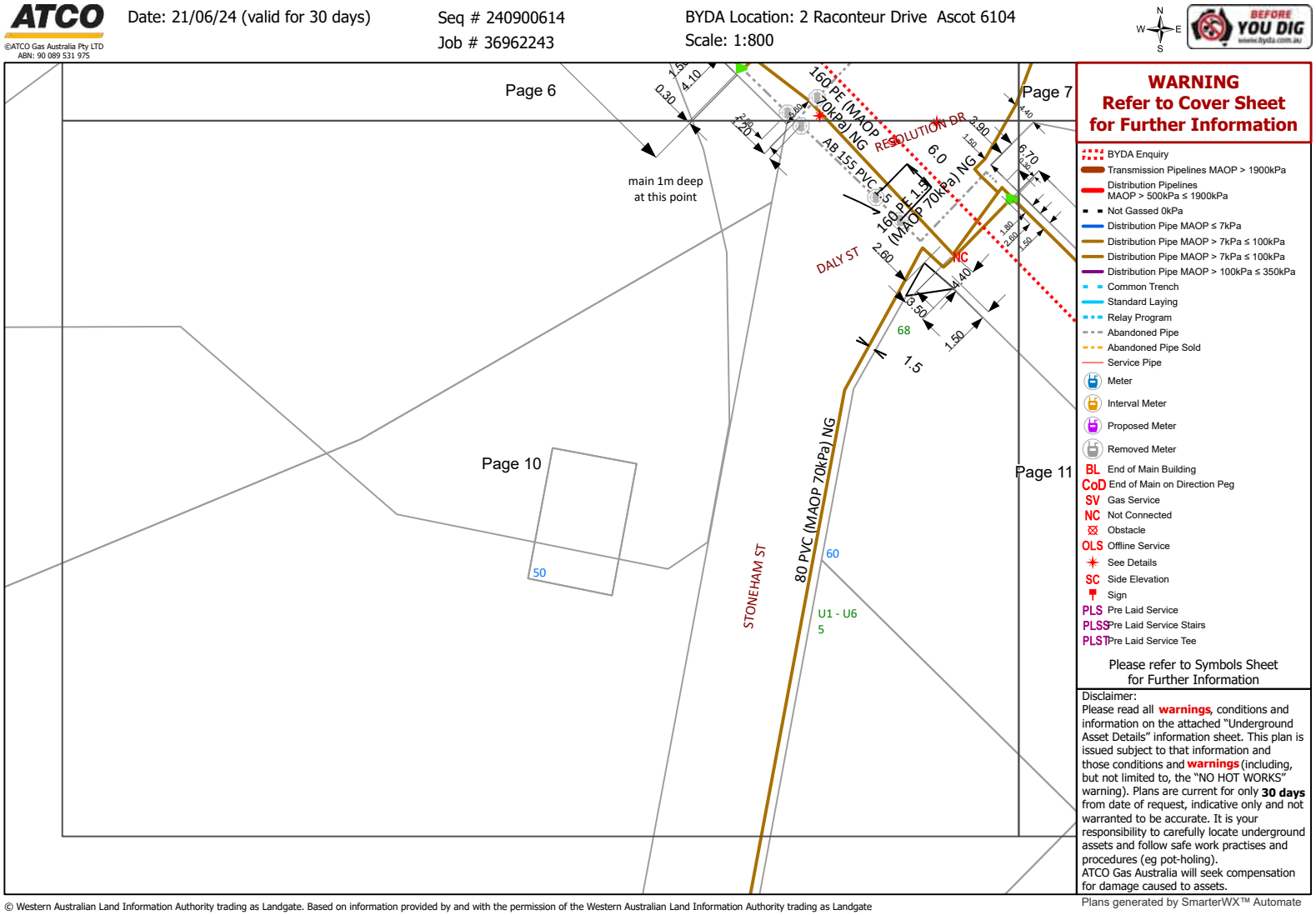
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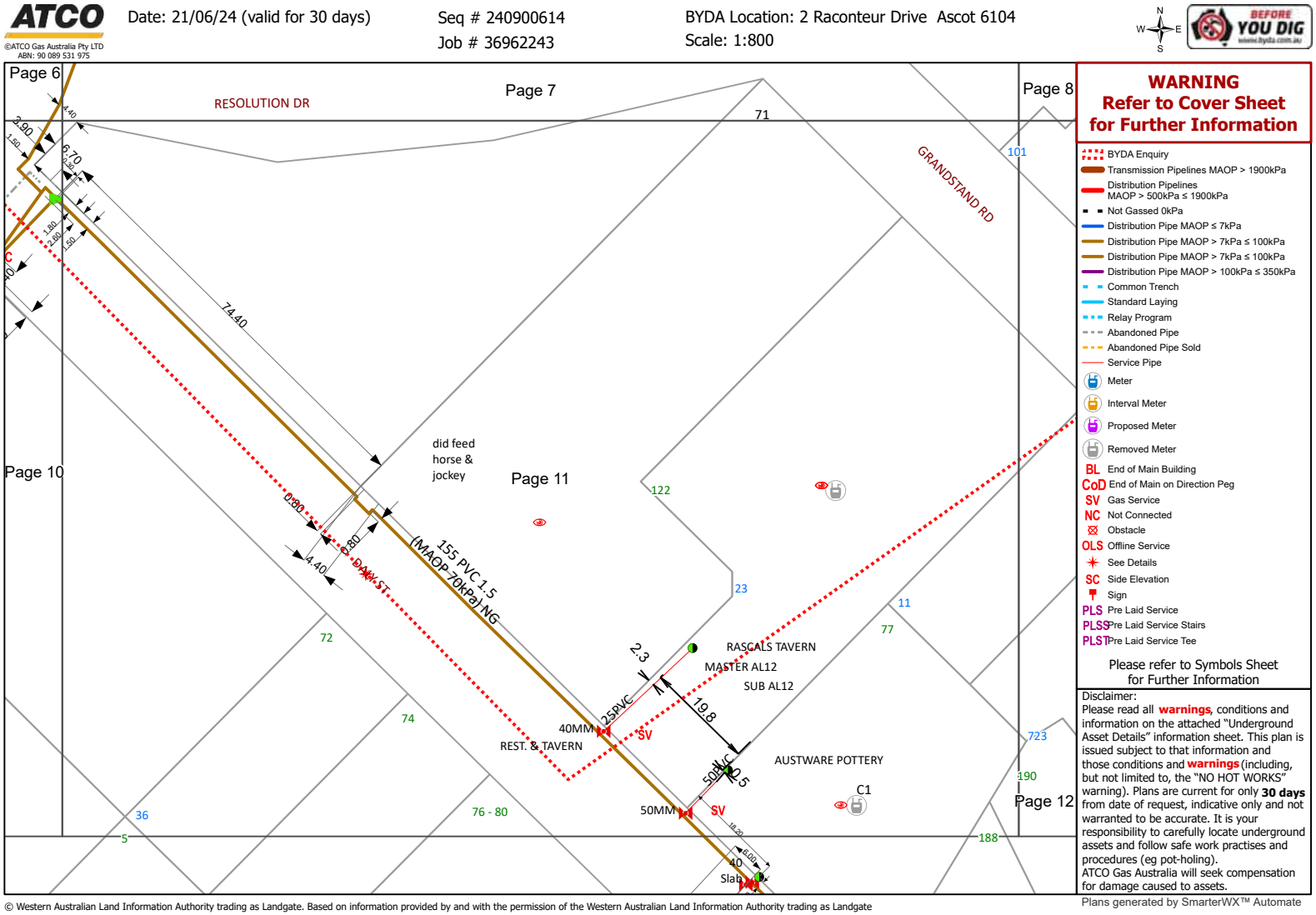
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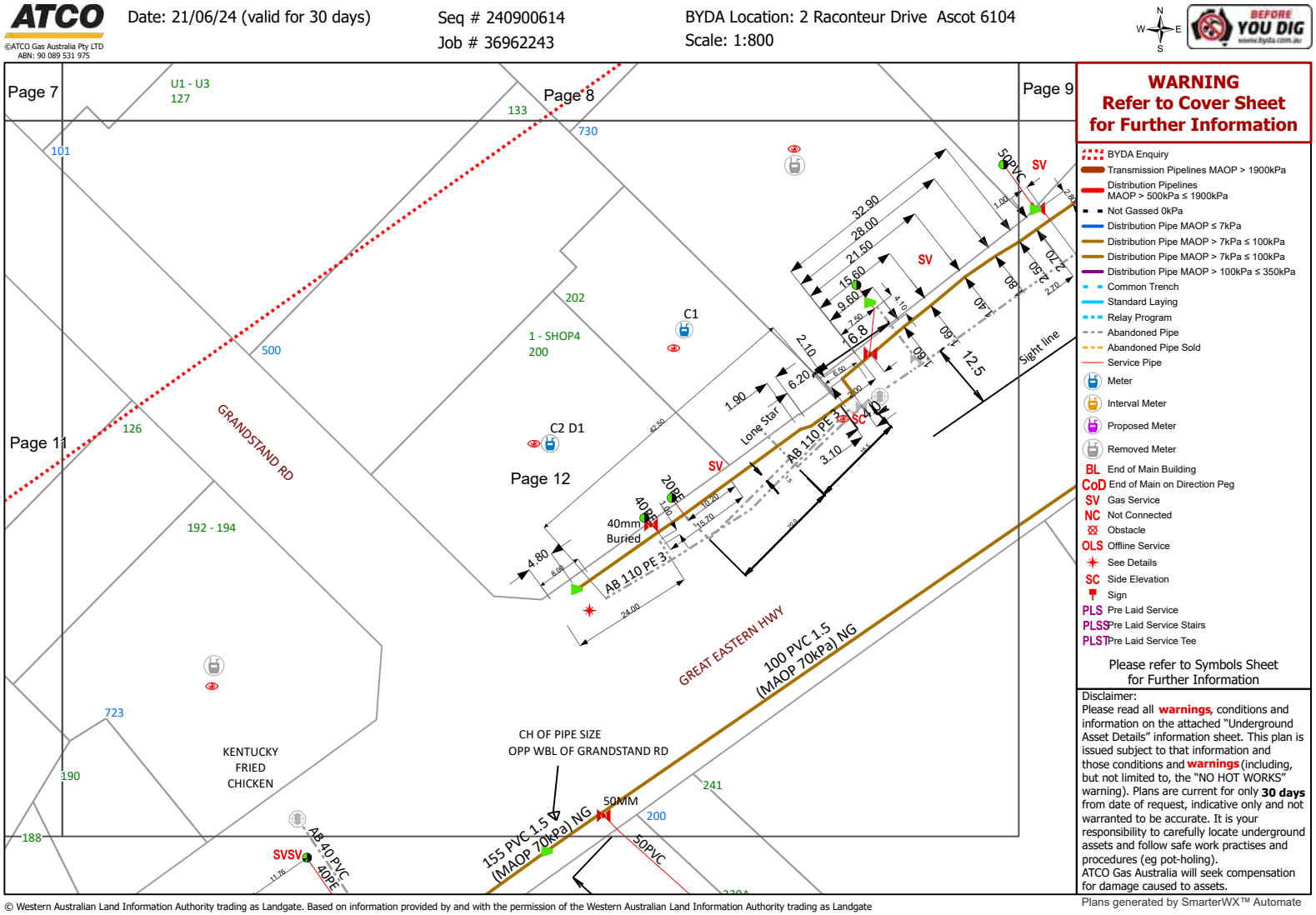
Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report



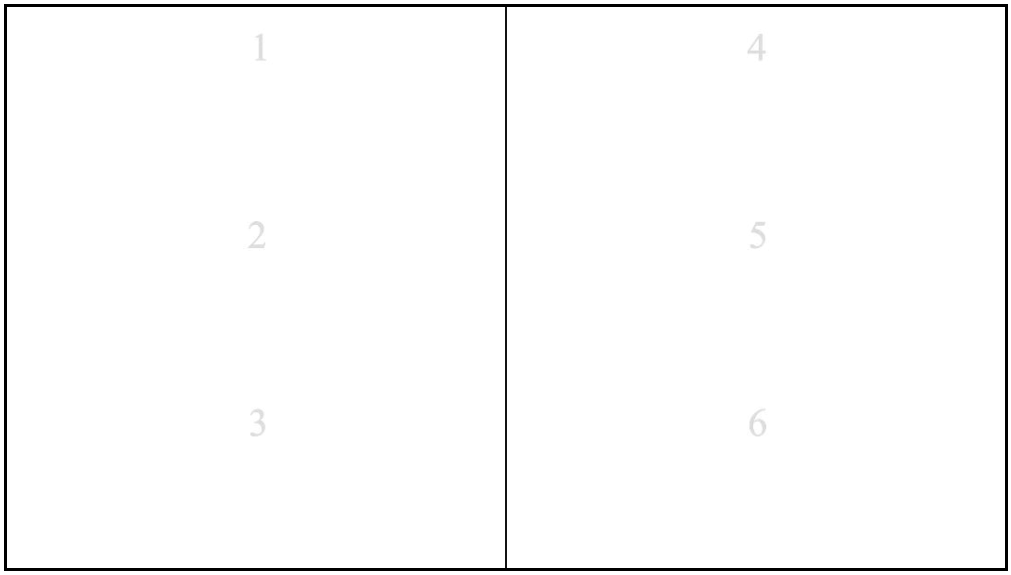
Attachment 12.1.4 Engineering Servicing Report

| | |
|---|---|
| **To:** | Justin Zielinski |
| **Phone:** | Not Supplied |
| **Fax:** | Not Supplied |
| **Email:** | jzielinski@tabec.com.au |

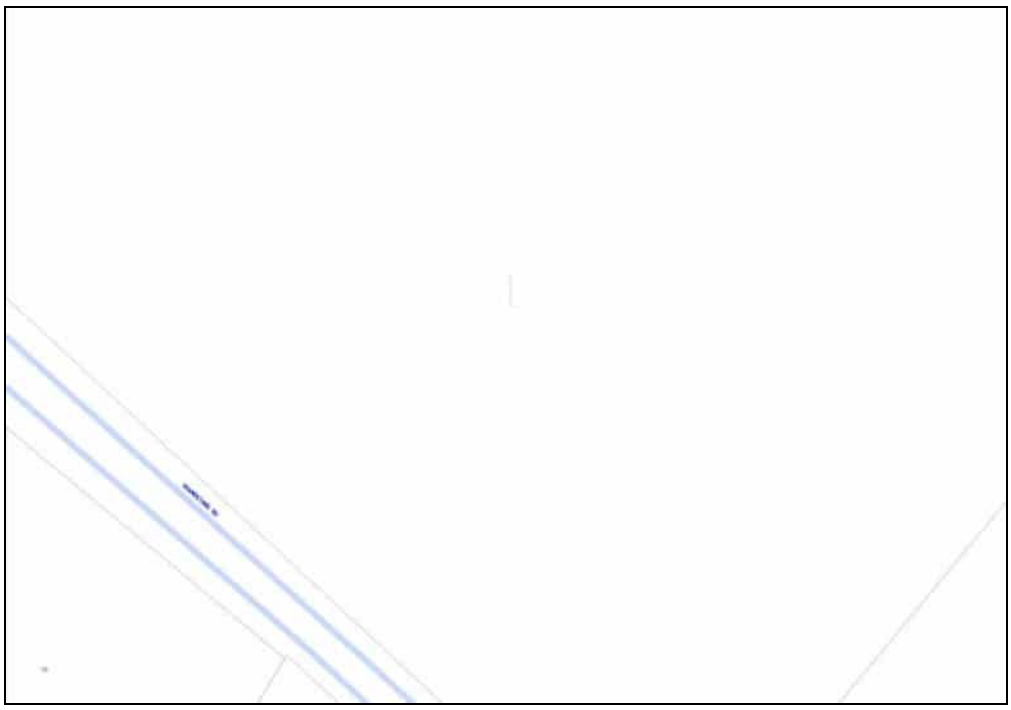
| | |
|---|---|
| **Dial before you dig Job #:** | 36962243 |
| **Sequence #** | 240900610 |
| **Issue Date:** | 21/06/2024 |
| **Location:** | 2 Raconteur Drive , Ascot , WA , 6104 |

BEFORE YOU DIG www.byda.com.au Zero Damage - Zero Harm

## Indicative Plans are tiled below to demonstrate how to layout and read nbn asset plans



Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report



## Emergency Contacts

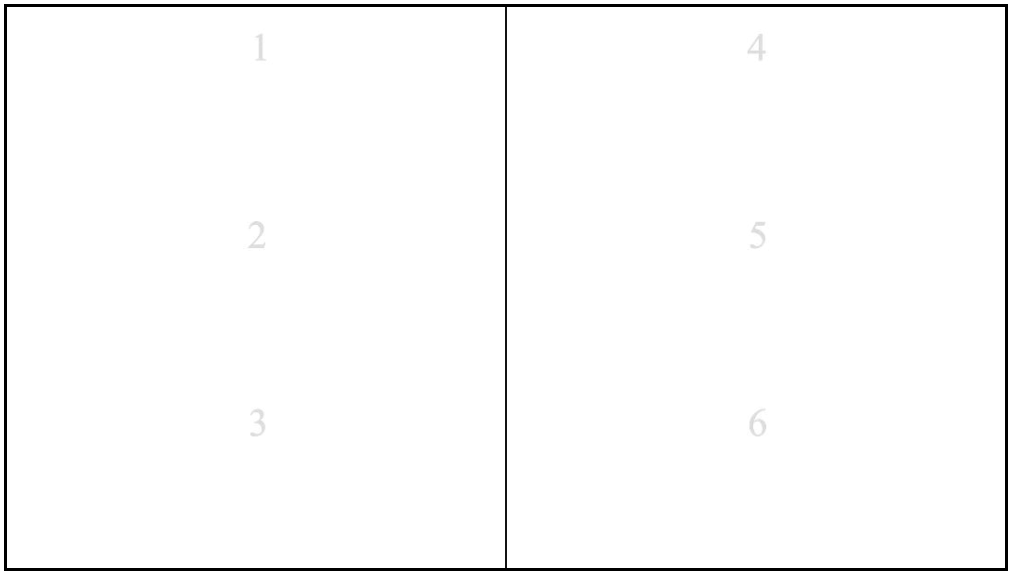
You must immediately report any damage to the **nbn™** network that you are/become aware of. Notification may be by telephone - 1800 626 329.

Attachment 12.1.4 Engineering Servicing Report

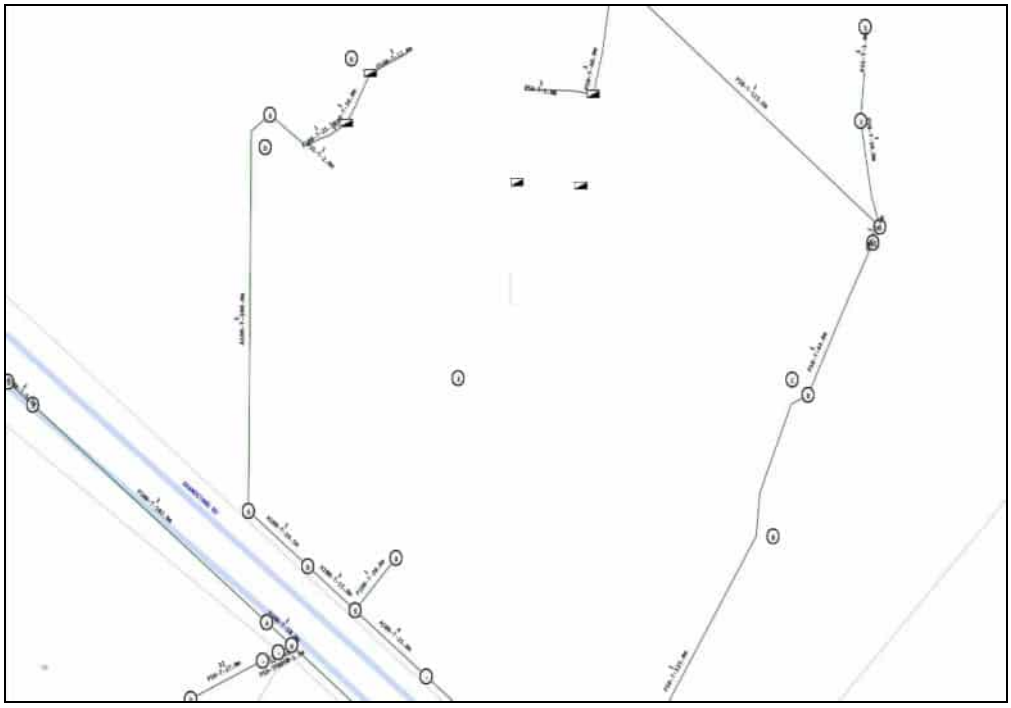
| | |
|---|---|
| **To:** | Justin Zielinski |
| **Phone:** | Not Supplied |
| **Fax:** | Not Supplied |
| **Email:** | jzielinski@tabec.com.au |

| | |
|---|---|
| **Dial before you dig Job #:** | 36962243 |
| **Sequence #** | 240900610 |
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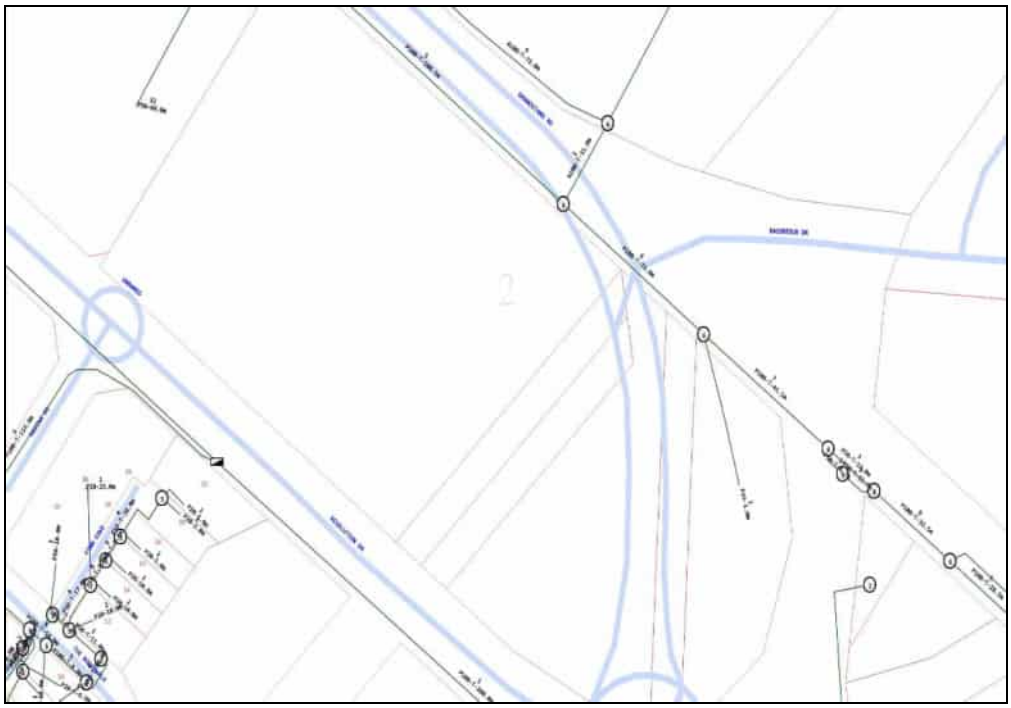
## Indicative Plans are tiled below to demonstrate how to layout and read nbn asset plans



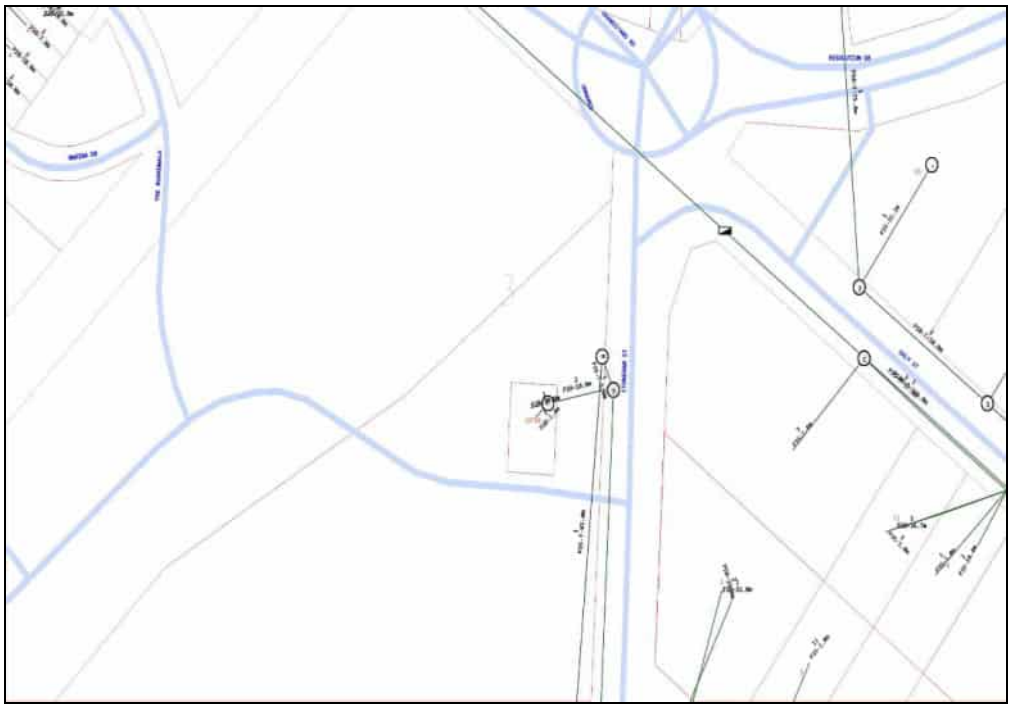
Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report



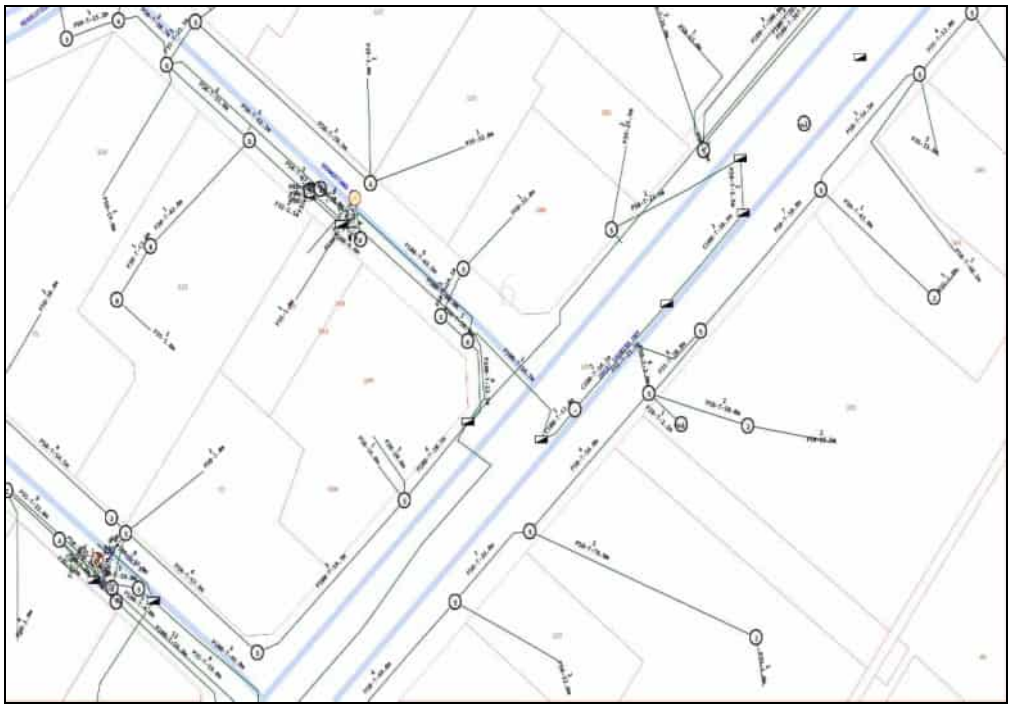
Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report



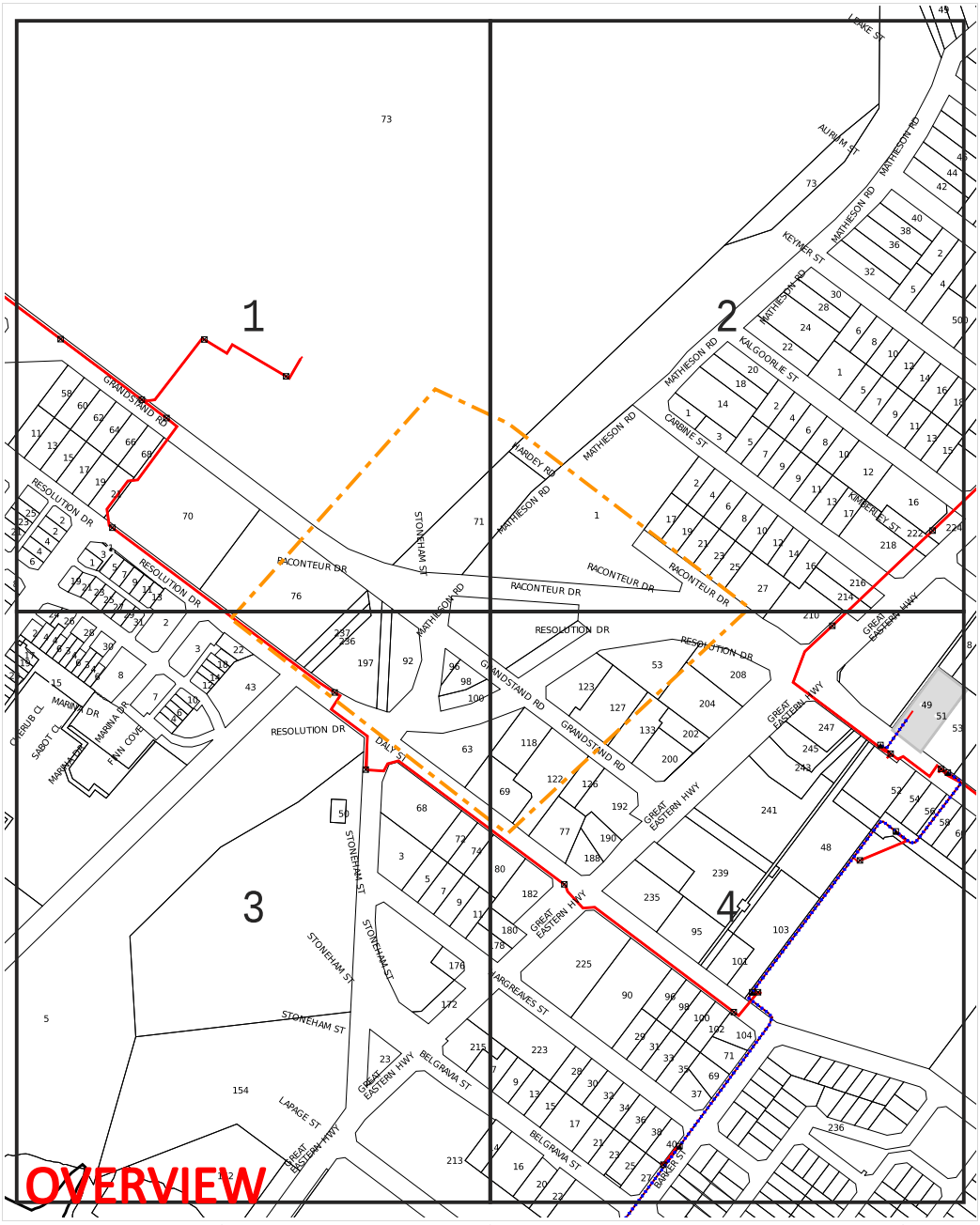
Attachment 12.1.4 Engineering Servicing Report



## Emergency Contacts

You must immediately report any damage to the **nbn™** network that you are/become aware of.
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Attachment 12.1.4 Engineering Servicing Report




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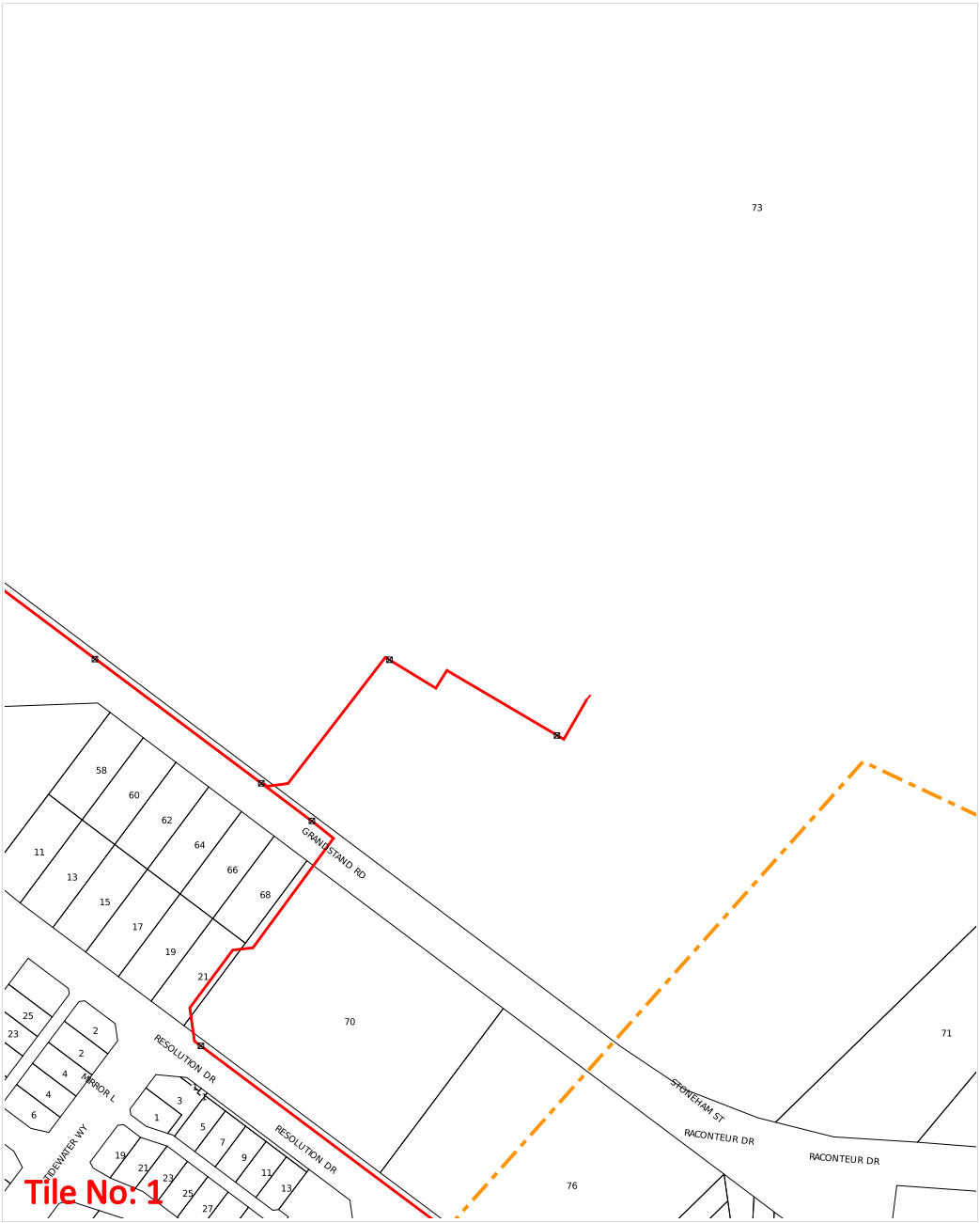
Sequence Number: 240900607

Date Generated: 21 Jun 2024

For all Optus DBYD plan enquiries –
Email: Fibre.Locations@optus.net.au
For urgent onsite assistance contact 1800 505 777
Optus Limited ACN 052 833 208

Plans generated 21 Jun 2024 by Pelicancorp TicketAccess Software | www.pelicancorp.com

Attachment 12.1.4 Engineering Servicing Report




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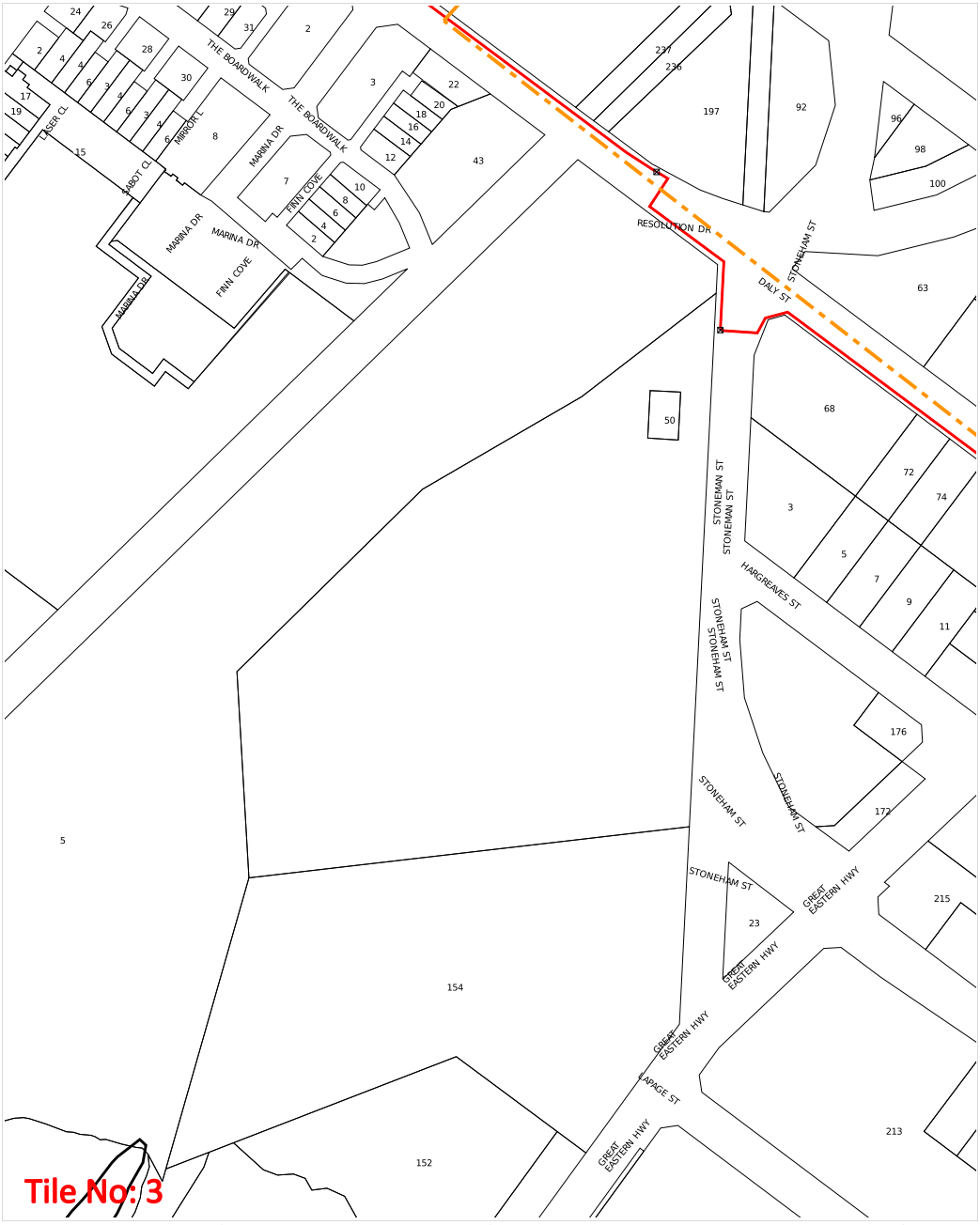

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Attachment 12.1.4 Engineering Servicing Report



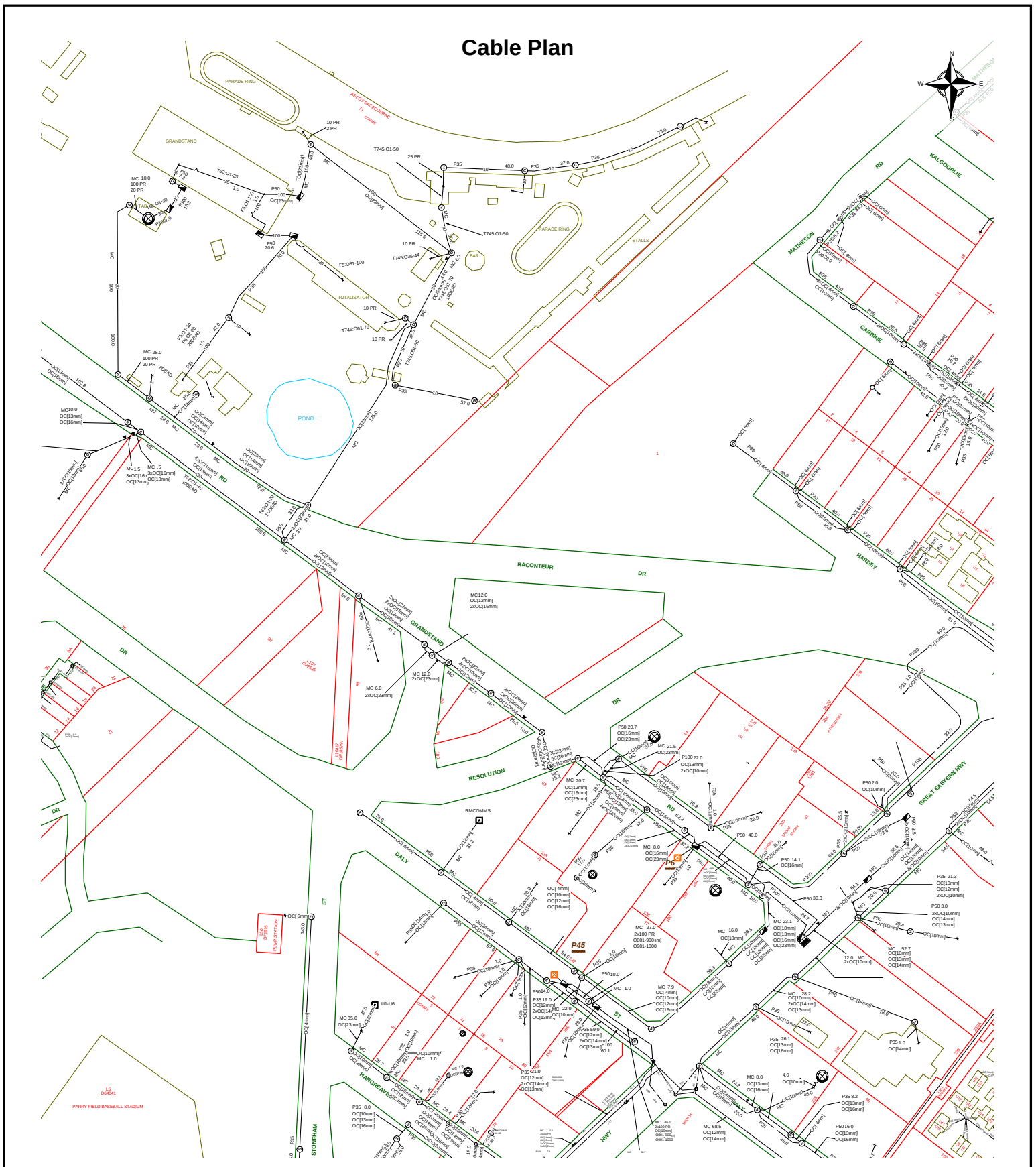

WARNING: This document is confidential and may also be privileged. Confidentiality nor privilege is not waived or destroyed by virtue of it being transmitted to an incorrect addressee. Unauthorised use of the contents is therefore strictly prohibited. Any information contained in this document that has been extracted from our records is believed to be accurate, but no responsibility is assumed for any error or omission. Optus Plans and information supplied are valid for 30 days from the date of issue. If this timeline has elapsed, please raise a new enquiry.

Sequence Number: 240900607 Date Generated: 21 Jun 2024

For all Optus DBYD plan enquiries –
Email: Fibre.Locations@optus.net.au
For urgent onsite assistance contact 1800 505 777
Optus Limited ACN 052 833 208

Plans generated 21 Jun 2024 by Pelicancorp TicketAccess Software | www.pelicancorp.com

Attachment 12.1.4 Engineering Servicing Report




| | |
|---|---|
| Report Damage: https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment<br>Ph - 13 22 03<br>Email - Telstra.Plans@team.telstra.com<br>Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries | Sequence Number: 240900612 |
| TELSTRA LIMITED A.C.N. 086 174 781 | CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance. |
| Generated On 21/06/2024 19:05:39 | |

The above plan must be viewed in conjunction with the Mains Cable Plan on the following page

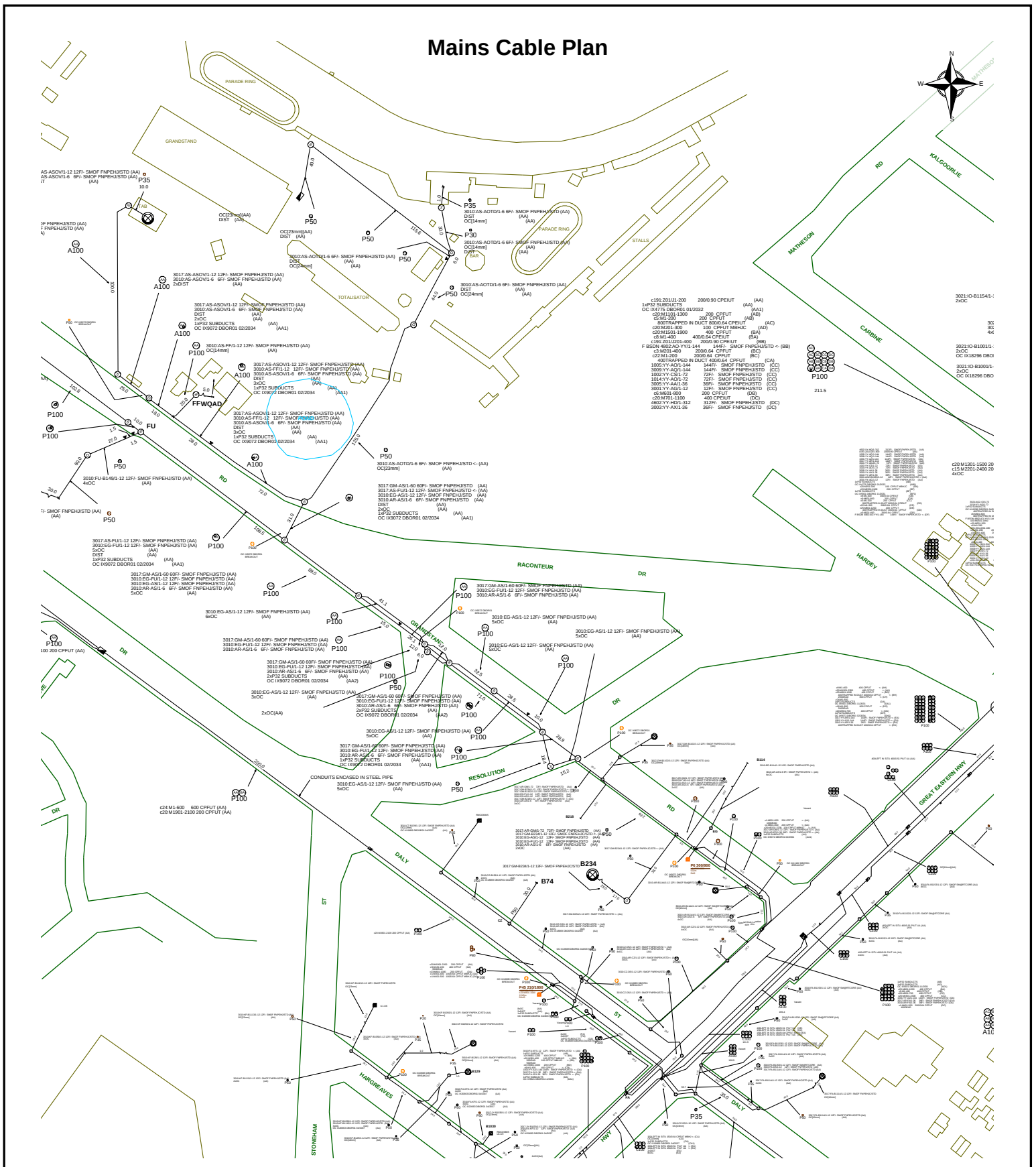
WARNING
Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information.
As such,Telstra supplied location information is indicative only.Spatial accuracy is not applicable to Quality Level D.
Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it.
Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy.
Further on site investigation is required to validate the exact location of Telstra plant prior to commencing construction work.
A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works.

See the Steps- Telstra Duty of Care that was provided in the email response.

Page 1 of 2

Attachment 12.1.4 Engineering Servicing Report

# Mains Cable Plan




| | |
|---|---|
| Report Damage: https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment<br>Ph - 13 22 03<br>Email - Telstra.Plans@team.telstra.com<br>Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries | Sequence Number: 240900612 |
| TELSTRA LIMITED A.C.N. 086 174 781 | CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance. |
| Generated On 21/06/2024 19:05:45 | |

WARNING
Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information.
As such,Telstra supplied location information is indicative only.Spatial accuracy is not applicable to Quality Level D.
Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it.
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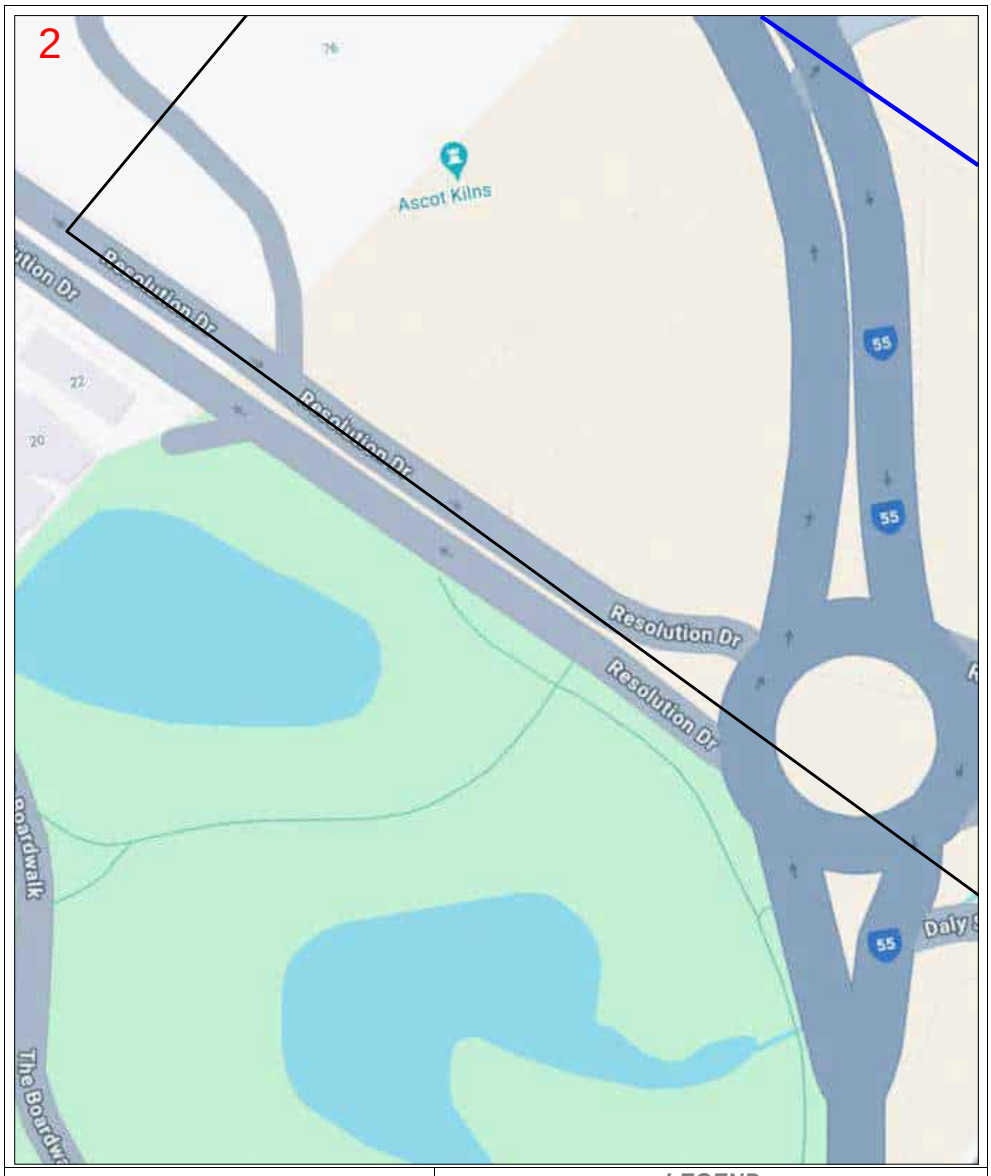
Page 2 of 2

Attachment 12.1.4 Engineering Servicing Report




Page 3

Attachment 12.1.4 Engineering Servicing Report




**Enquiry Number:** 240900609

**Map Sheet:** 2

**Scale:** 1: 750

0 0.008km

N

**LEGEND**

| | |
|---|---|
| BYDA Work Area | |
| AAPT/PowerTel Pit | TransACT Pit |
| AAPT/PowerTel Duct | TransACT Duct |
| DDA Pit | SOUL Pattinson Telecoms Pit |
| DDA Duct | SOUL Pattinson Telecoms Duct |
| Agile/Adam Pit | PIPE Networks Pit |
| Agile/Adam Duct | PIPE Networks Duct |

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Attachment 12.1.4 Engineering Servicing Report




**Enquiry Number:** 240900609

**Map Sheet:** 3

**Scale:** 1: 750

0 0.008km

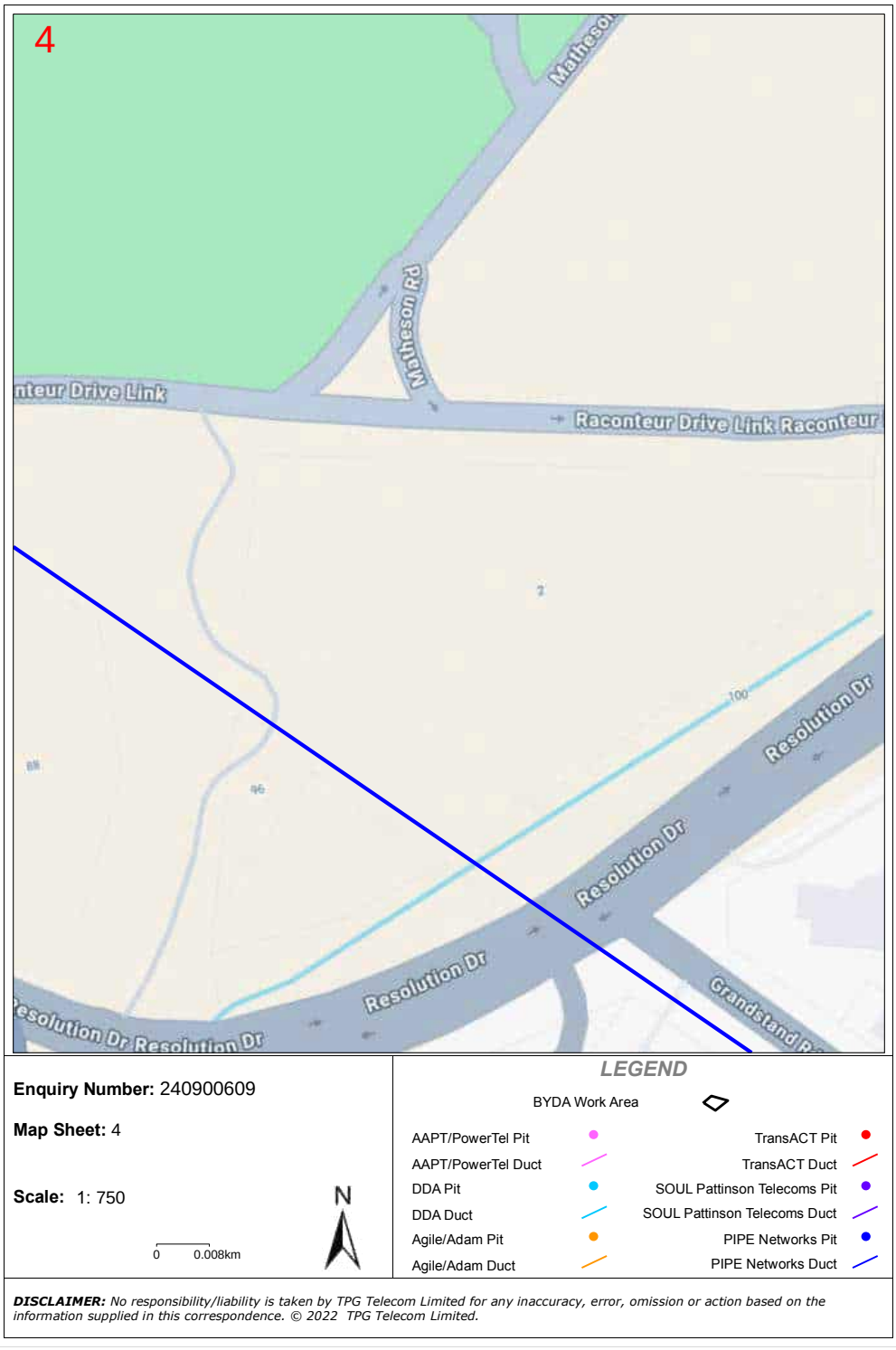
N

LEGEND

| | | | |
|---|---|---|---|
| BYDA Work Area | | | |
| AAPT/PowerTel Pit | | TransACT Pit | |
| AAPT/PowerTel Duct | | TransACT Duct | |
| DDA Pit | | SOUL Pattinson Telecoms Pit | |
| DDA Duct | | SOUL Pattinson Telecoms Duct | |
| Agile/Adam Pit | | PIPE Networks Pit | |
| Agile/Adam Duct | | PIPE Networks Duct | |

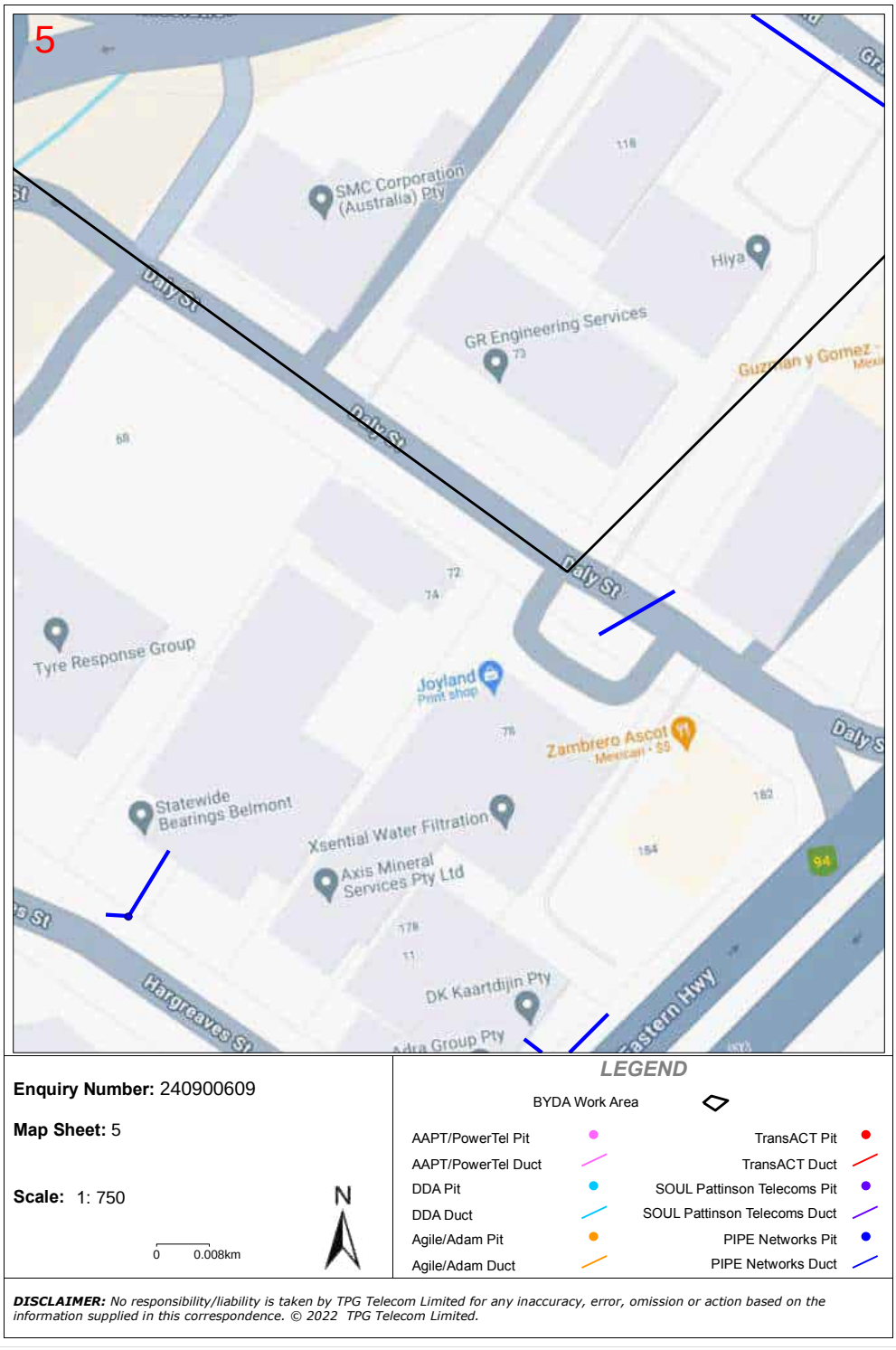
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Attachment 12.1.4 Engineering Servicing Report




Page 6

Attachment 12.1.4 Engineering Servicing Report



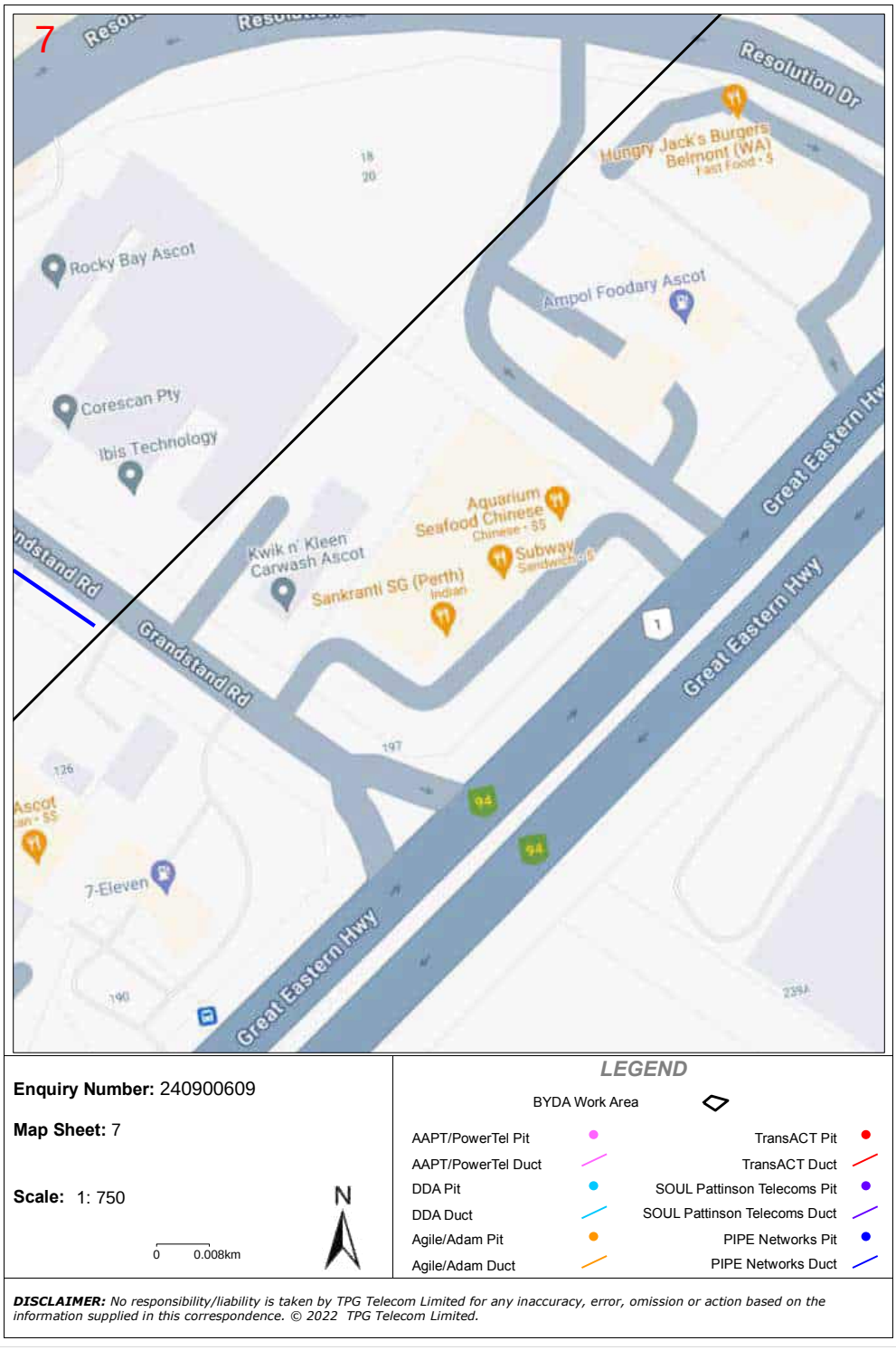

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Attachment 12.1.4 Engineering Servicing Report




Page 8

Attachment 12.1.4 Engineering Servicing Report




**Enquiry Number:** 240900609

**Map Sheet:** 7

**Scale:** 1: 750

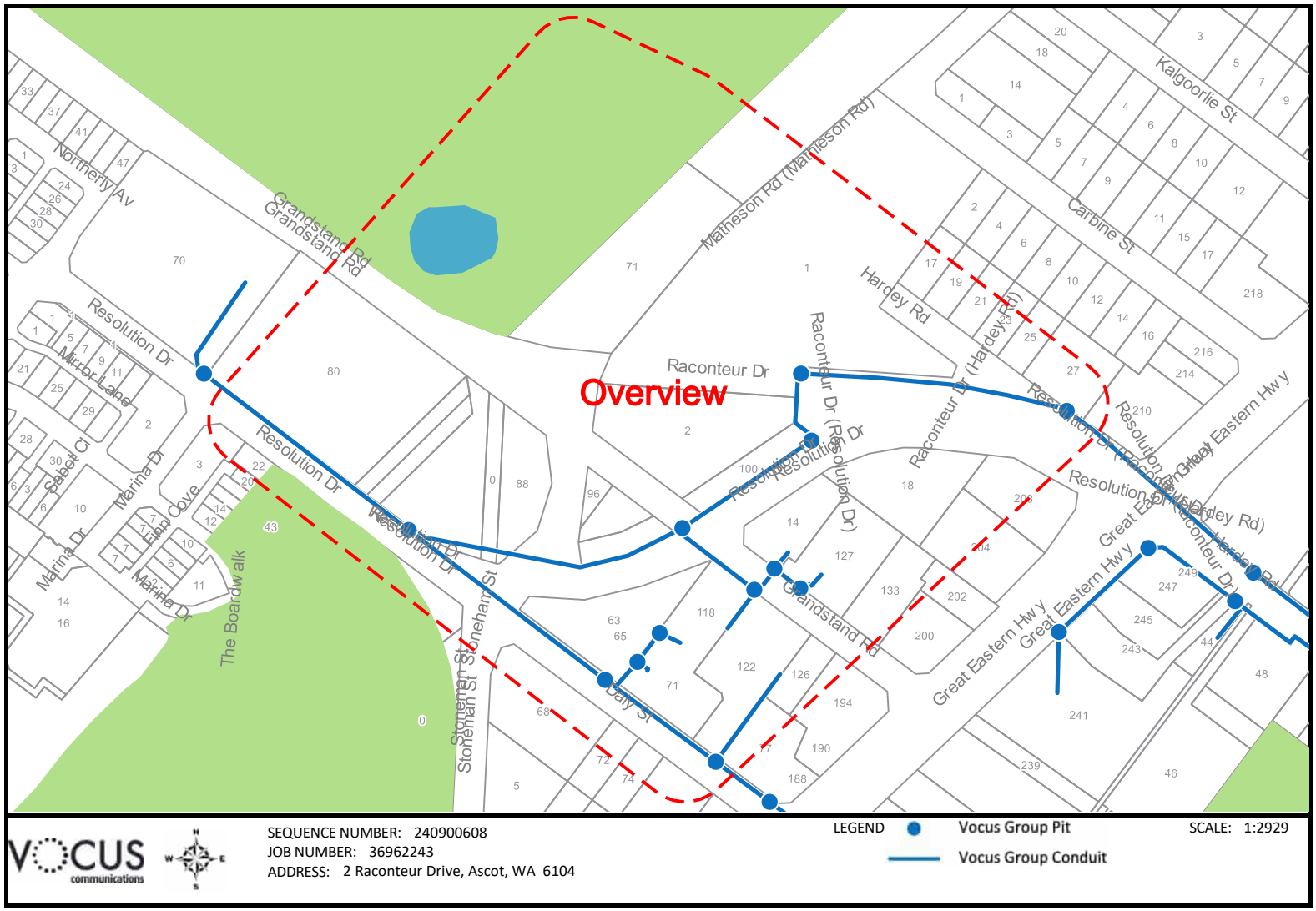
LEGEND

| | | | |
|---|---|---|---|
| BYDA Work Area | | | |
| AAPT/PowerTel Pit | | TransACT Pit | |
| AAPT/PowerTel Duct | | TransACT Duct | |
| DDA Pit | | SOUL Pattinson Telecoms Pit | |
| DDA Duct | | SOUL Pattinson Telecoms Duct | |
| Agile/Adam Pit | | PIPE Networks Pit | |
| Agile/Adam Duct | | PIPE Networks Duct | |

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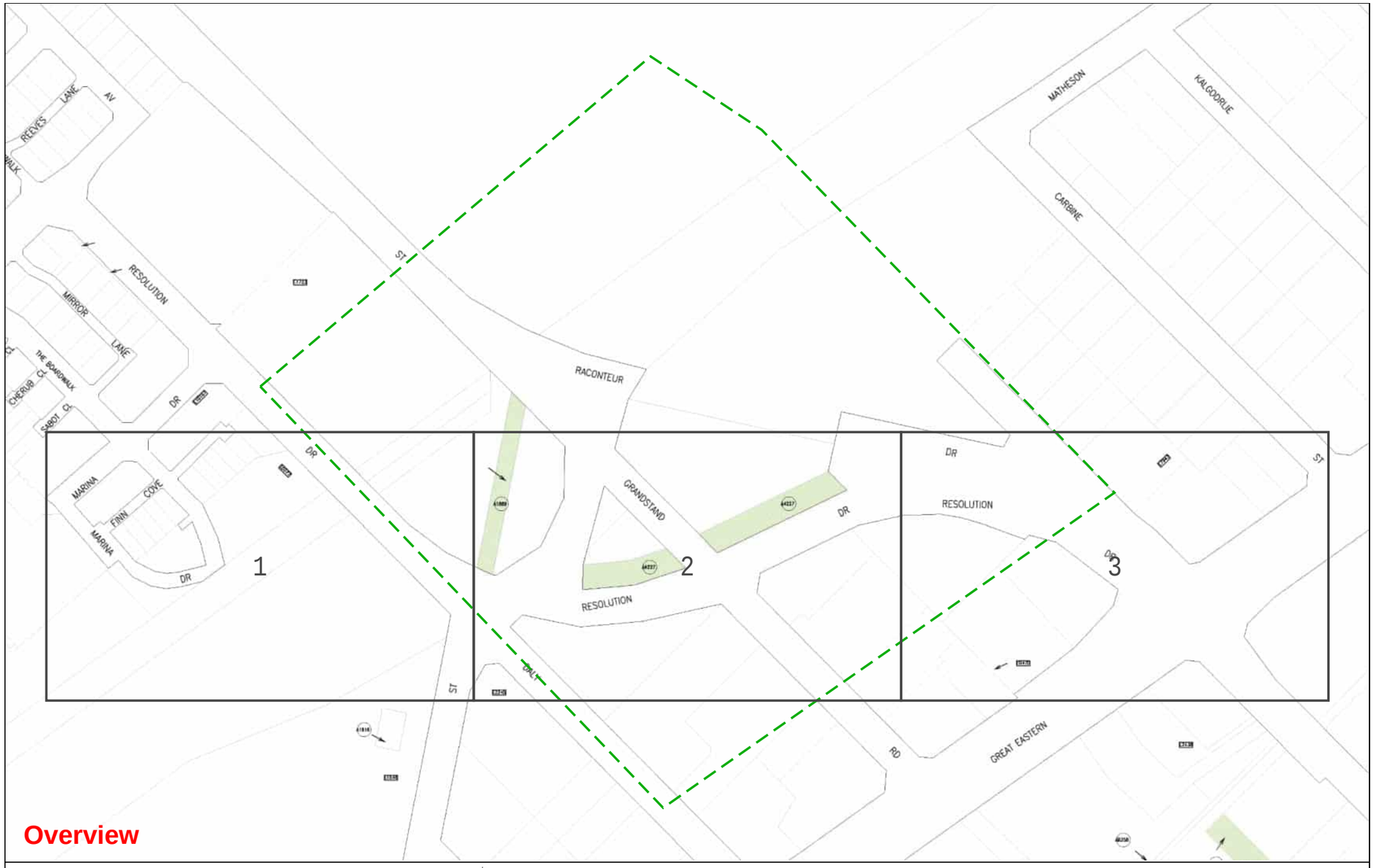
Page 9

Attachment 12.1.4 Engineering Servicing Report




The Vocus Group includes related bodies corporate of Vocus Communications Limited ACN 084 115 499.

Attachment 12.1.4 Engineering Servicing Report




**Overview**

WATER CORPORATION

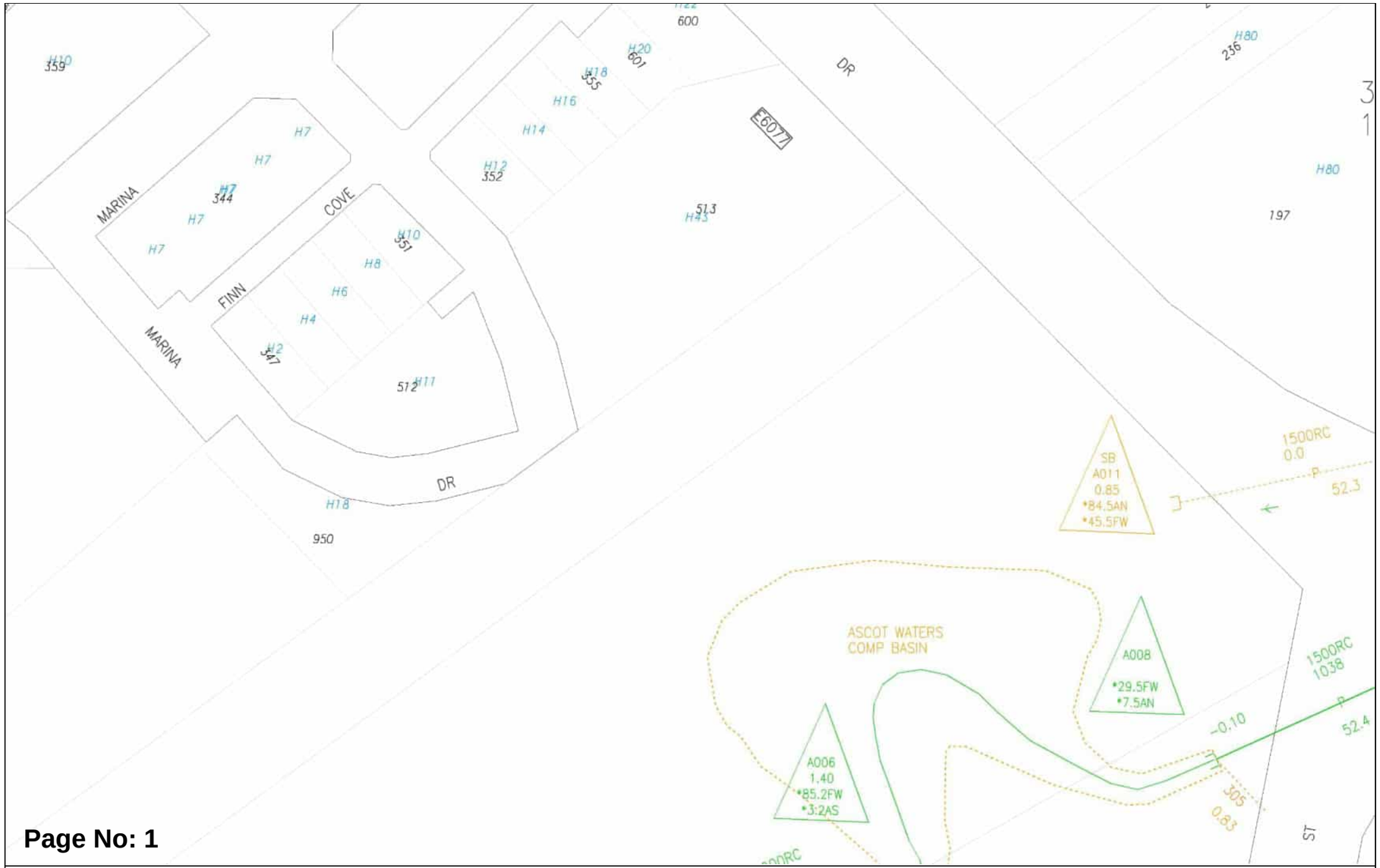
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Job No.: 36962243
Sequence No.: 240900613
Print Date: 21 Jun 2024

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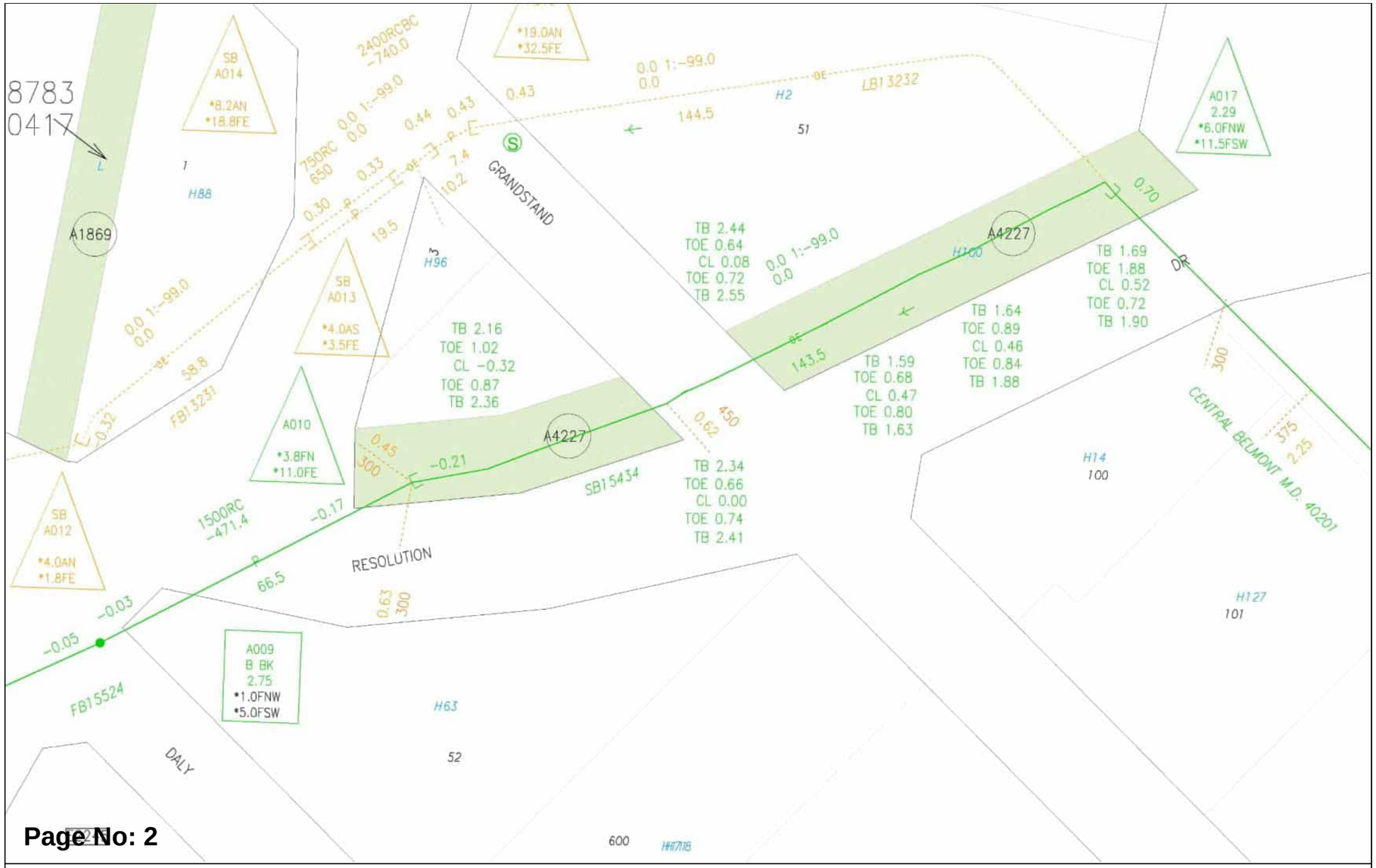
**Drainage**

The Water Corporation has taken due care in the preparation of this map but accepts no responsibility for any inaccuracies or inappropriate use. This plan may be reproduced in its entirety for the purpose of site work planning but shall not otherwise be altered or published in any form without the permission of the Water Corporation. The Water Corporation may need to be advised of any planned ground disturbing activities near facilities on this map. Refer to Brochure - "Protecting Buried Pipelines". Please report any inaccuracies to Asset Registration Team by email to asset.registration@watercorporation.com.au.

Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report




**Page No: 2**

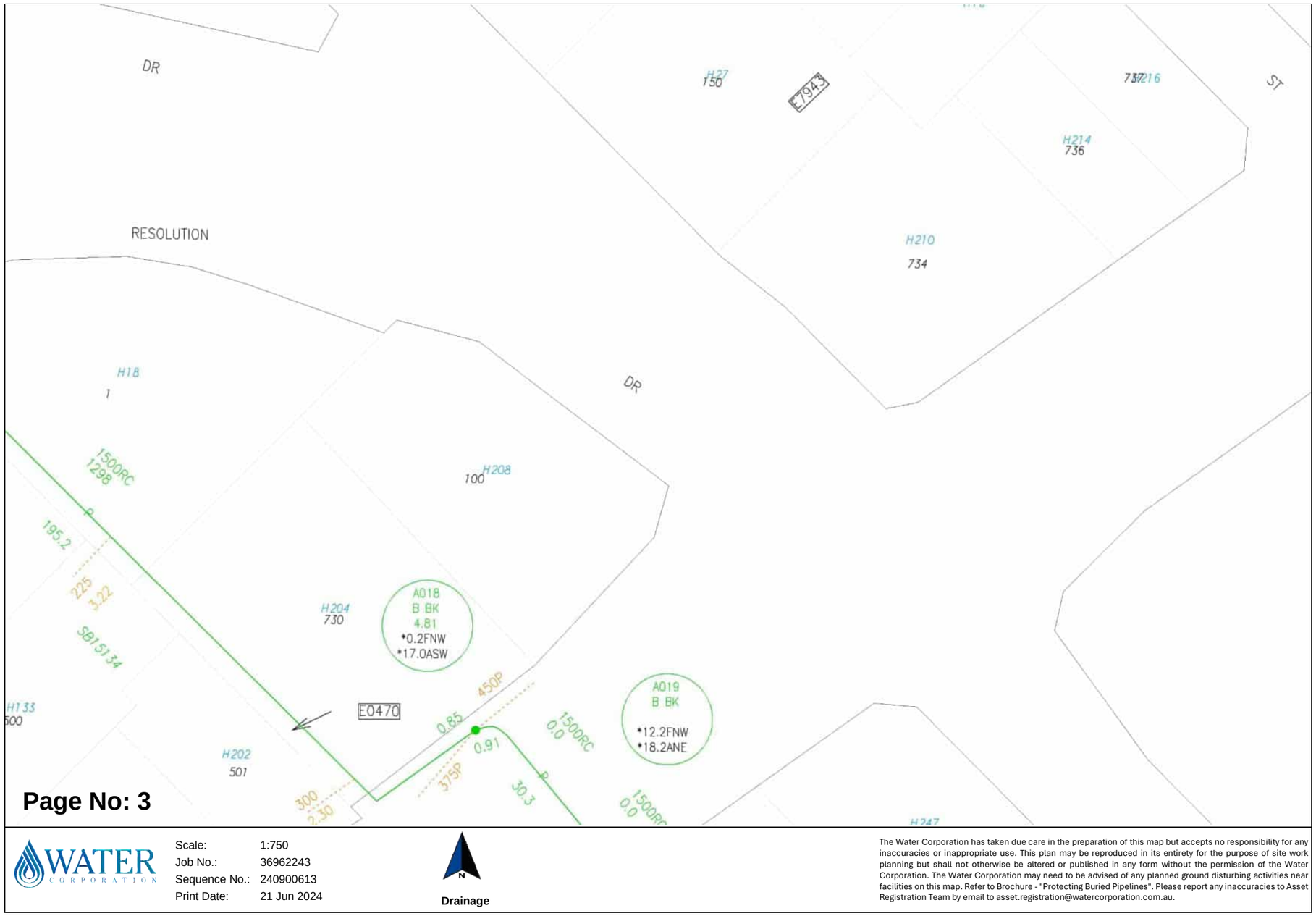
WATER CORPORATION

| | |
|---|---|
| Scale: | 1:750 |
| Job No.: | 36962243 |
| Sequence No.: | 240900613 |
| Print Date: | 21 Jun 2024 |

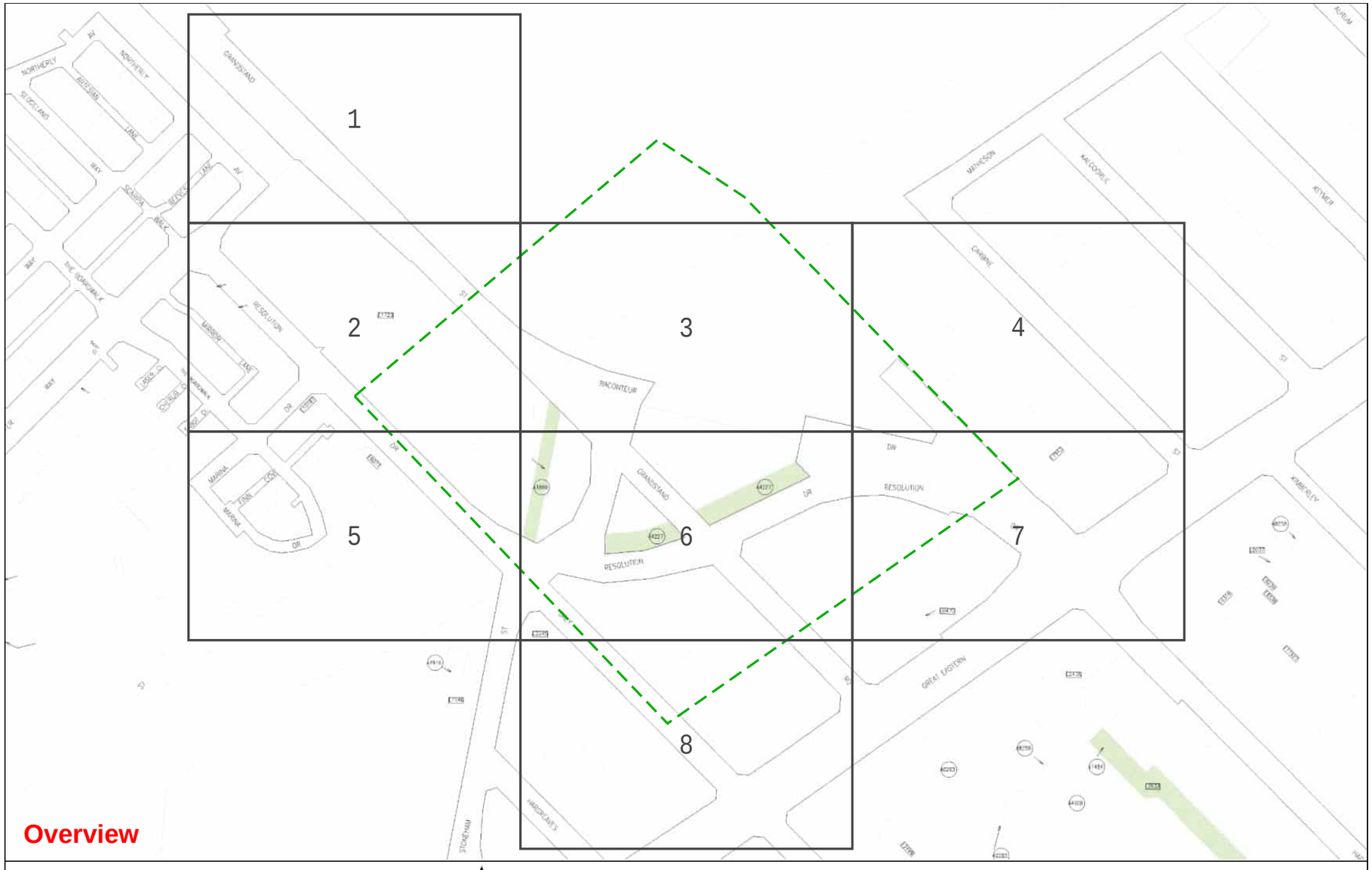
**Drainage**

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Attachment 12.1.4 Engineering Servicing Report



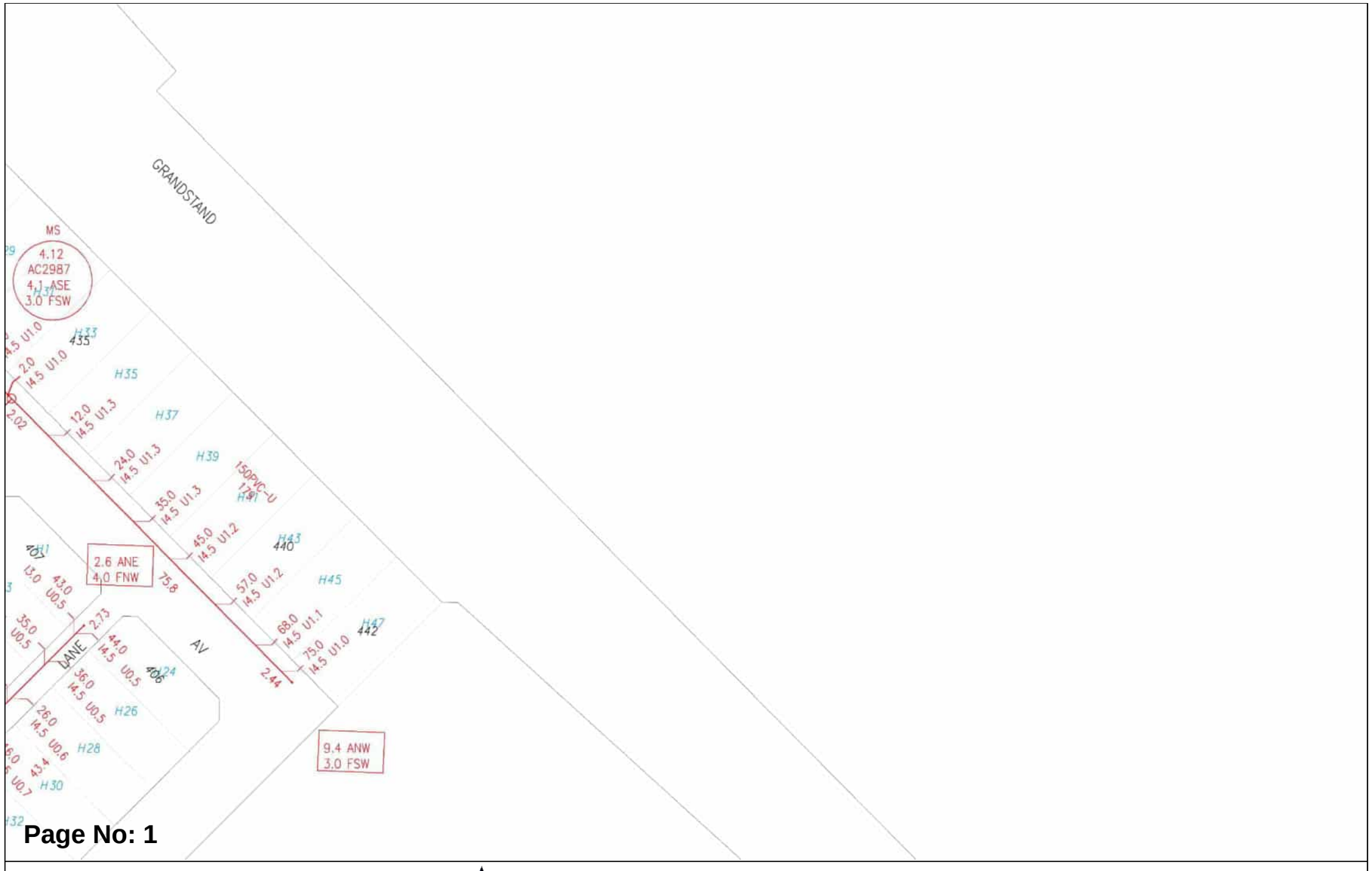
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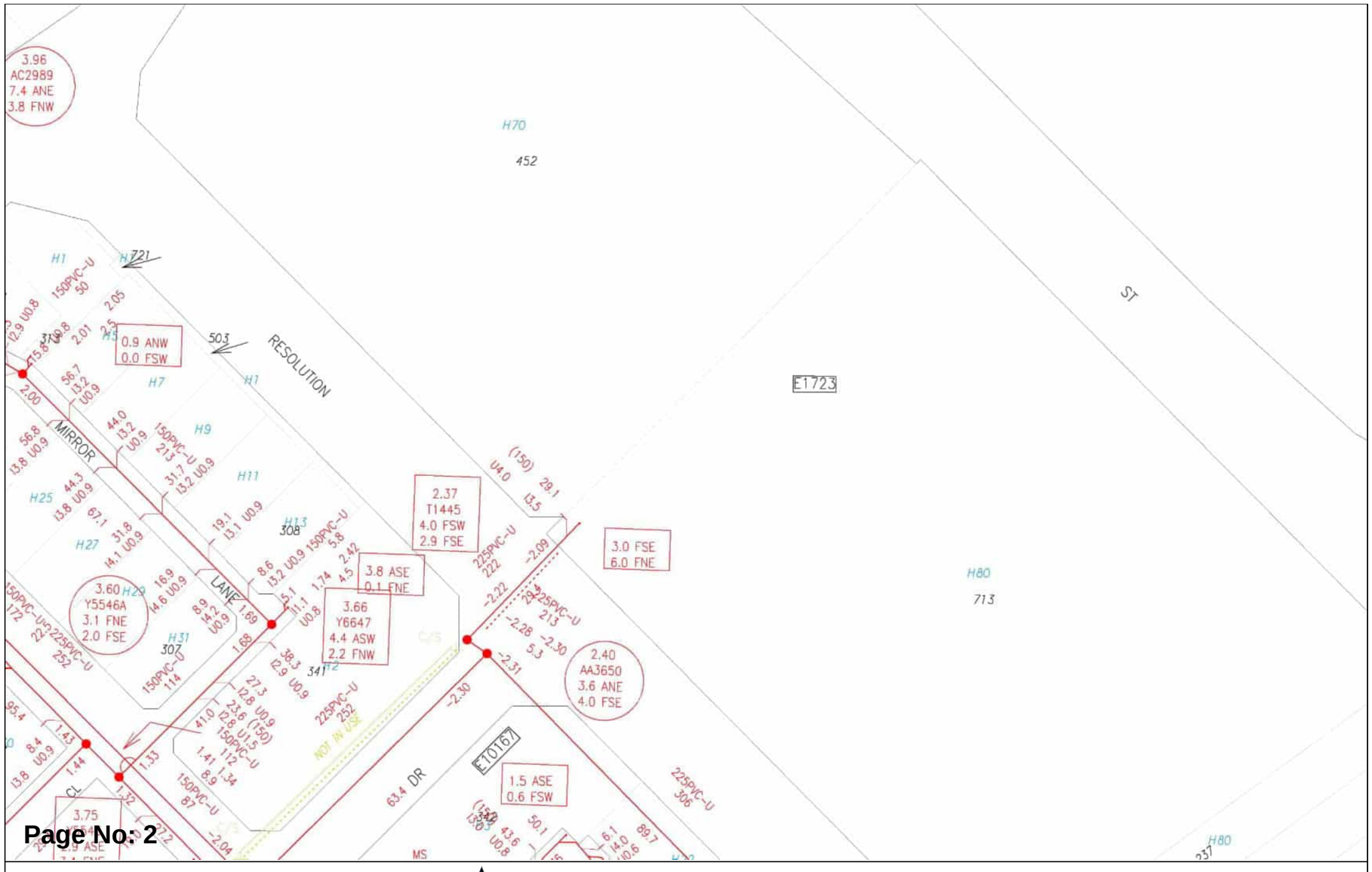

Plans generated 21 Jun 2024 by PelicanCorp TicketAccess Software | www.pelicancorp.com

Water Corp - Non-critical Plan.docx (21 May 2024)

Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report




**Page No: 2**

WATER CORPORATION

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| Scale: | 1:750 |
| Job No.: | 36962243 |
| Sequence No.: | 240900613 |
| Print Date: | 21 Jun 2024 |

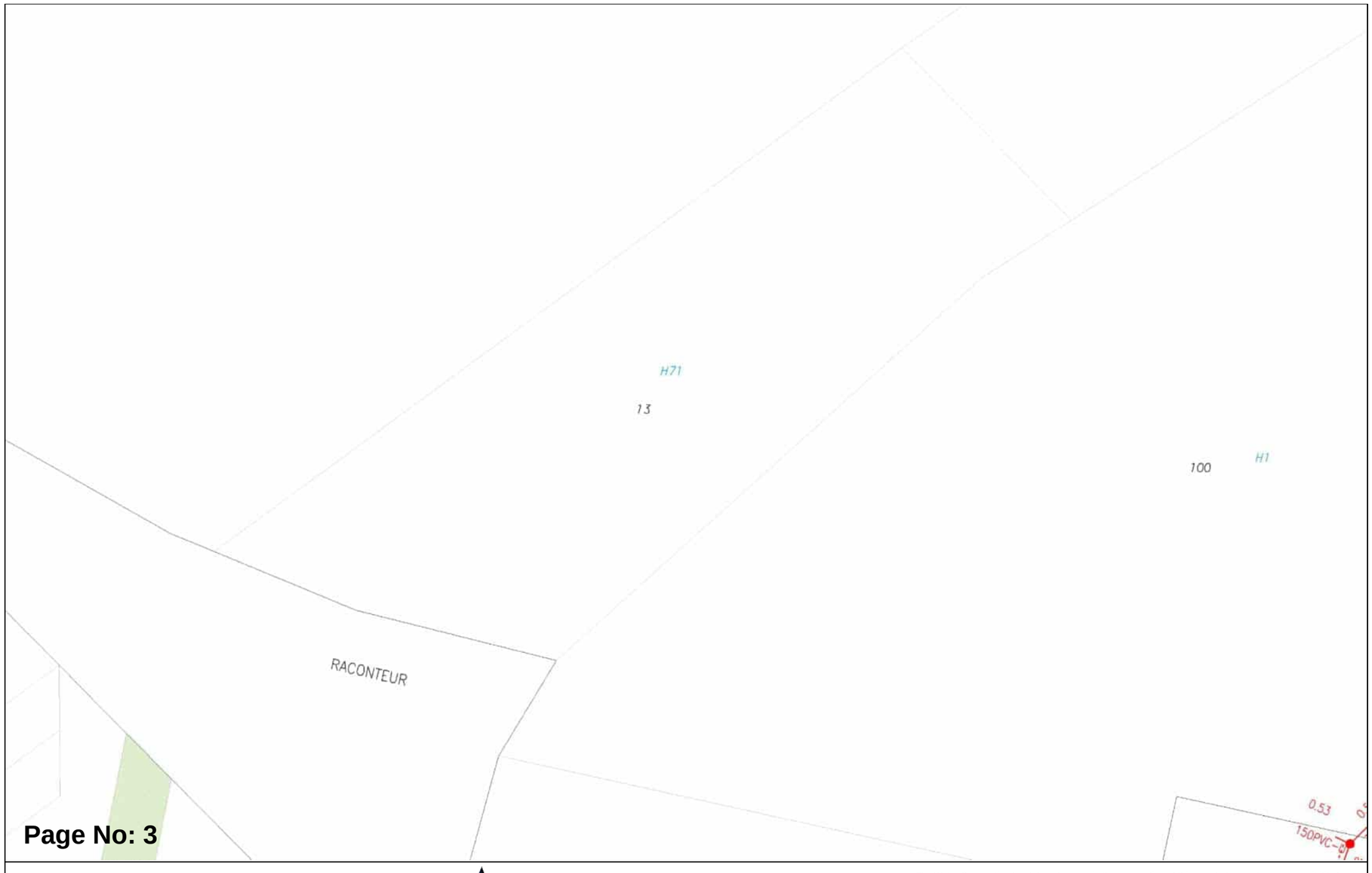
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**Sewer**

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Attachment 12.1.4 Engineering Servicing Report




**Page No: 3**

WATER CORPORATION

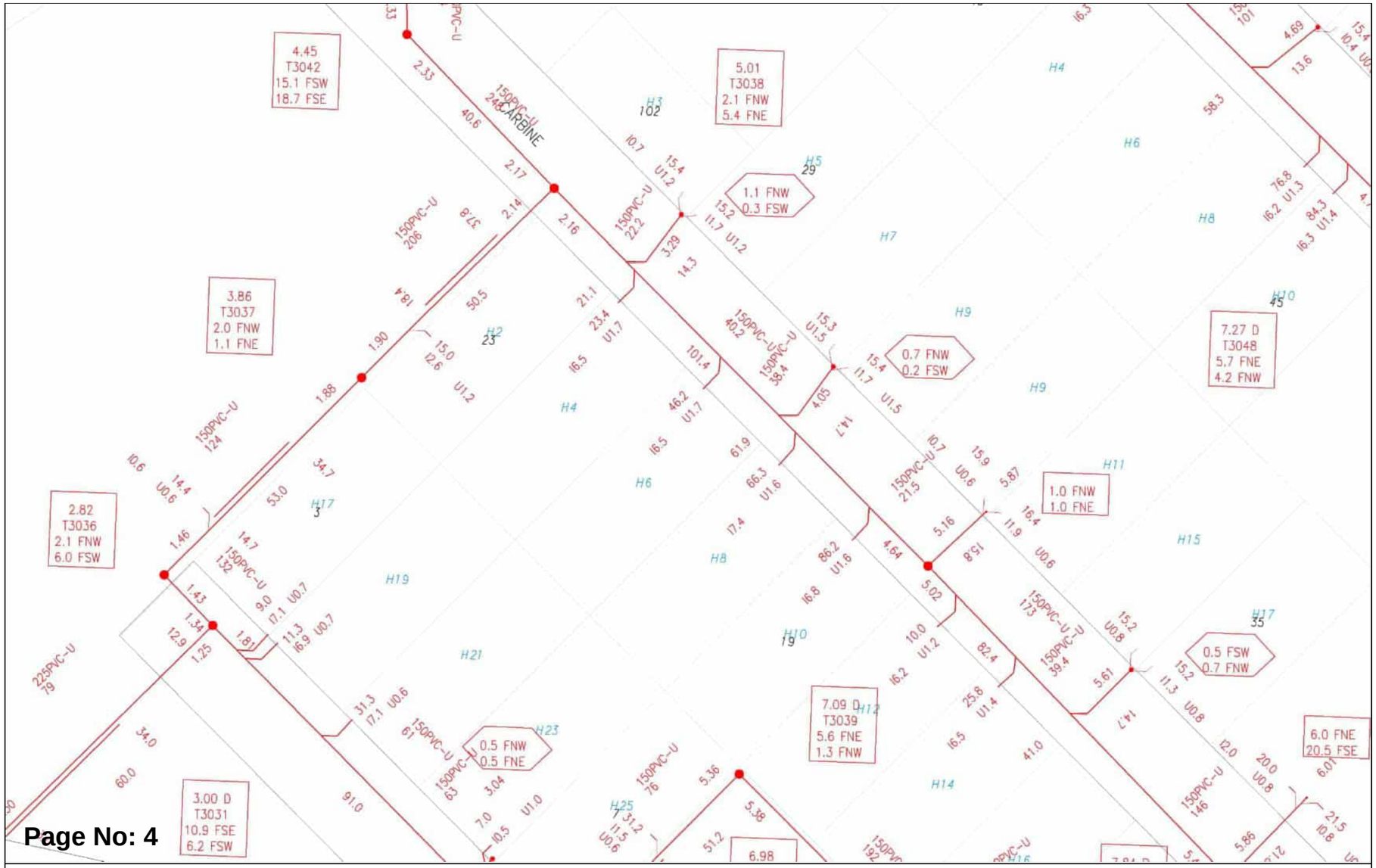
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**Sewer**

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Attachment 12.1.4 Engineering Servicing Report




**Page No: 4**

WATER CORPORATION

Scale: 1:750
Job No.: 36962243
Sequence No.: 240900613
Print Date: 21 Jun 2024

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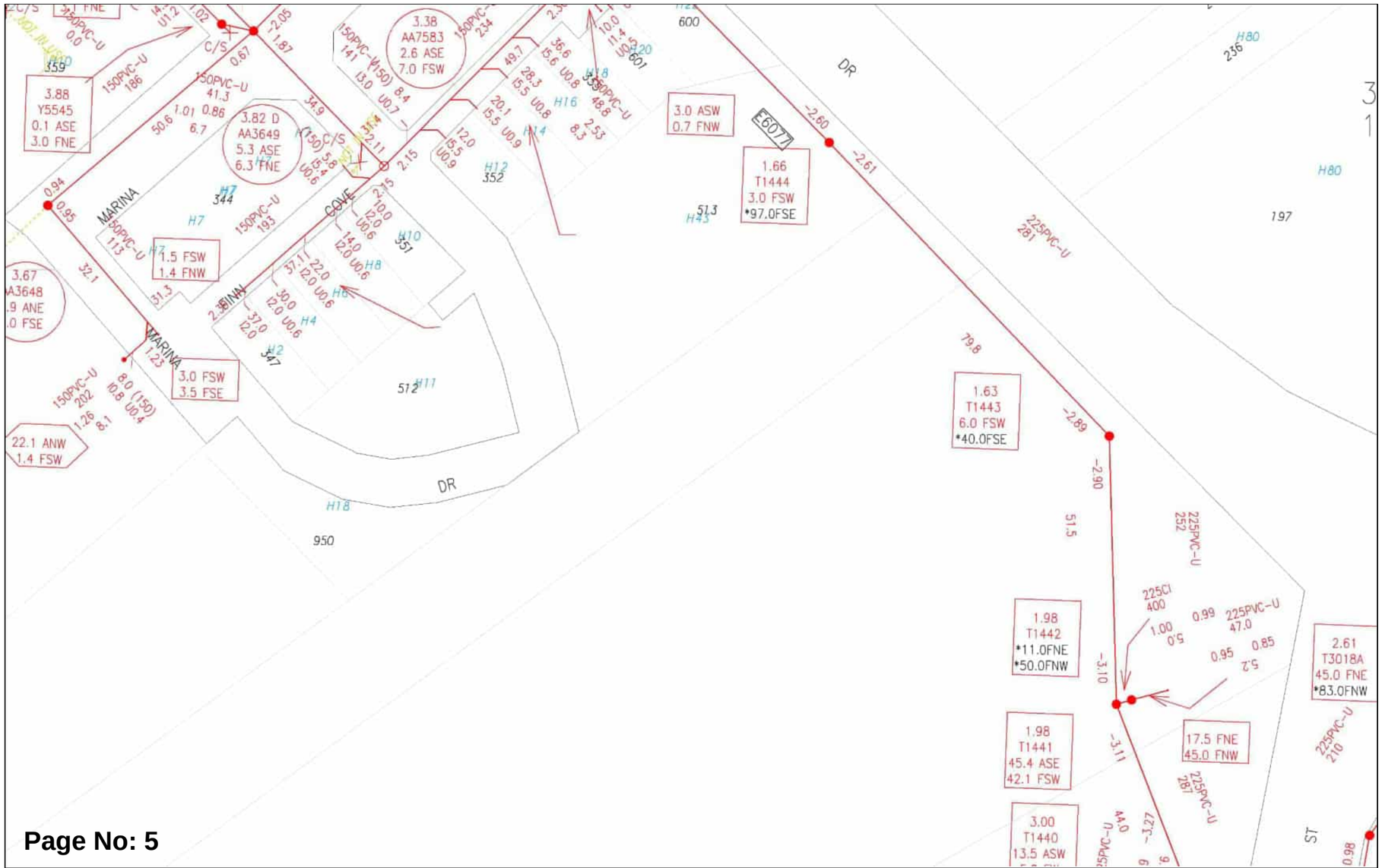
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Plans generated 21 Jun 2024 by PelicanCorp TicketAccess Software | www.pelicancorp.com

Water Corp - Non-critical Plan.docx (21 May 2024)

Attachment 12.1.4 Engineering Servicing Report



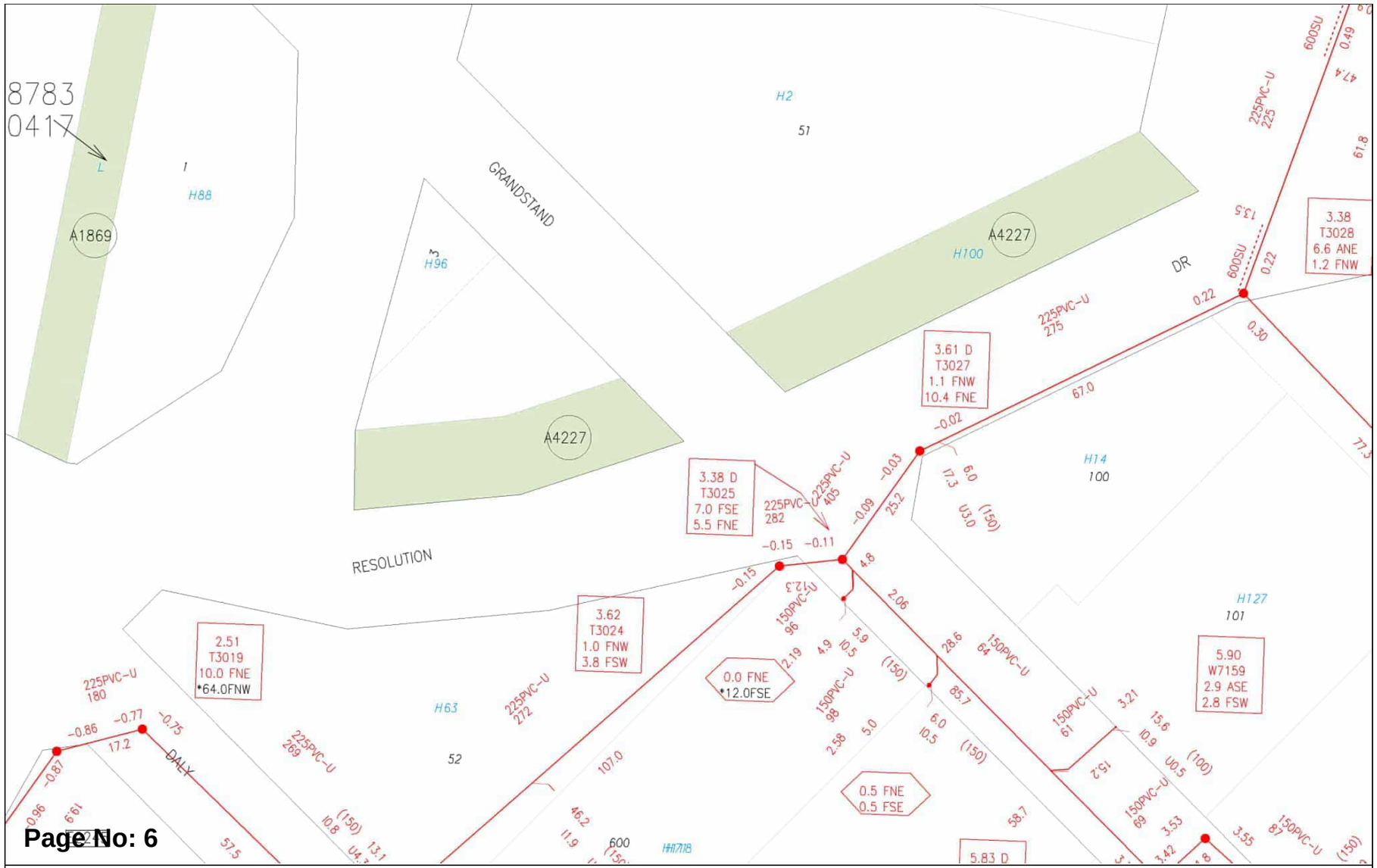

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| Sequence No.: | 240900613 |
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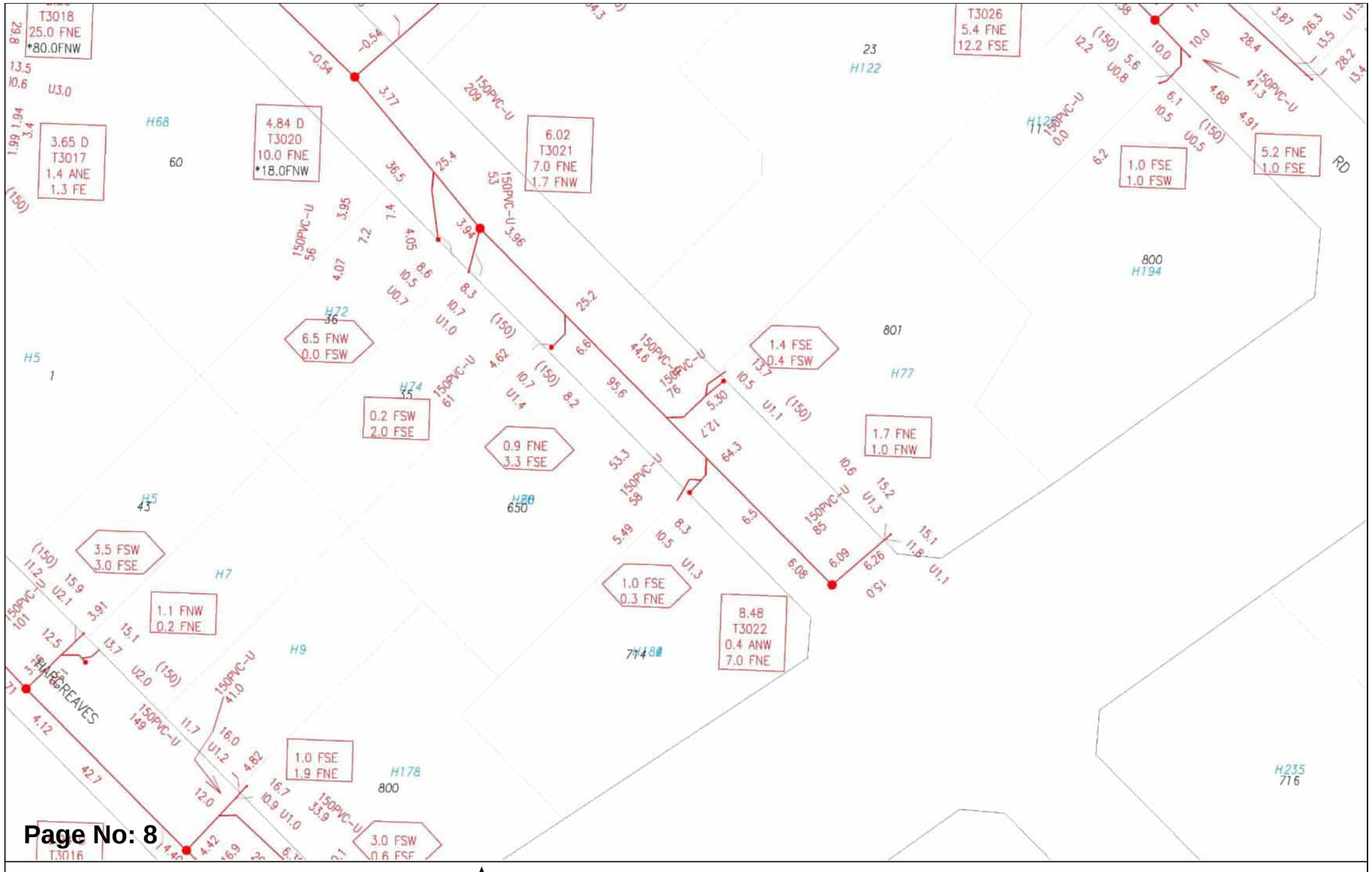
Attachment 12.1.4 Engineering Servicing Report




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Water Corp - Non-critical Plan.docx (21 May 2024)

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**Page No: 8**

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| Print Date: | 21 Jun 2024 |

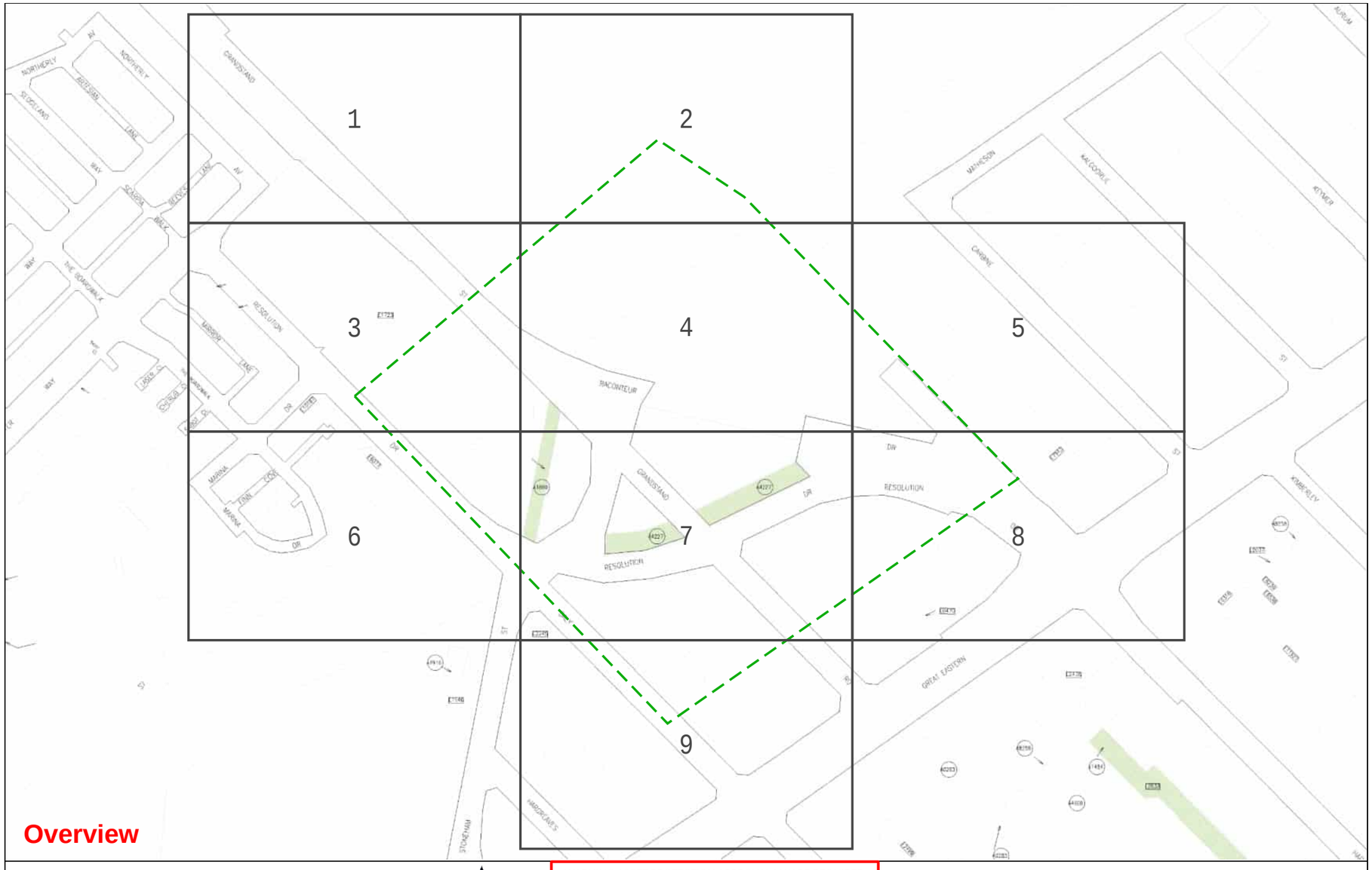
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Attachment 12.1.4 Engineering Servicing Report




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|---|---|---|---|
| WATER CORPORATION | Scale: | 1:3075 | Water |
| | Job No.: | 36962243 | |
| | Sequence No.: | 240900613 | |
| | Print Date: | 21 Jun 2024 | |

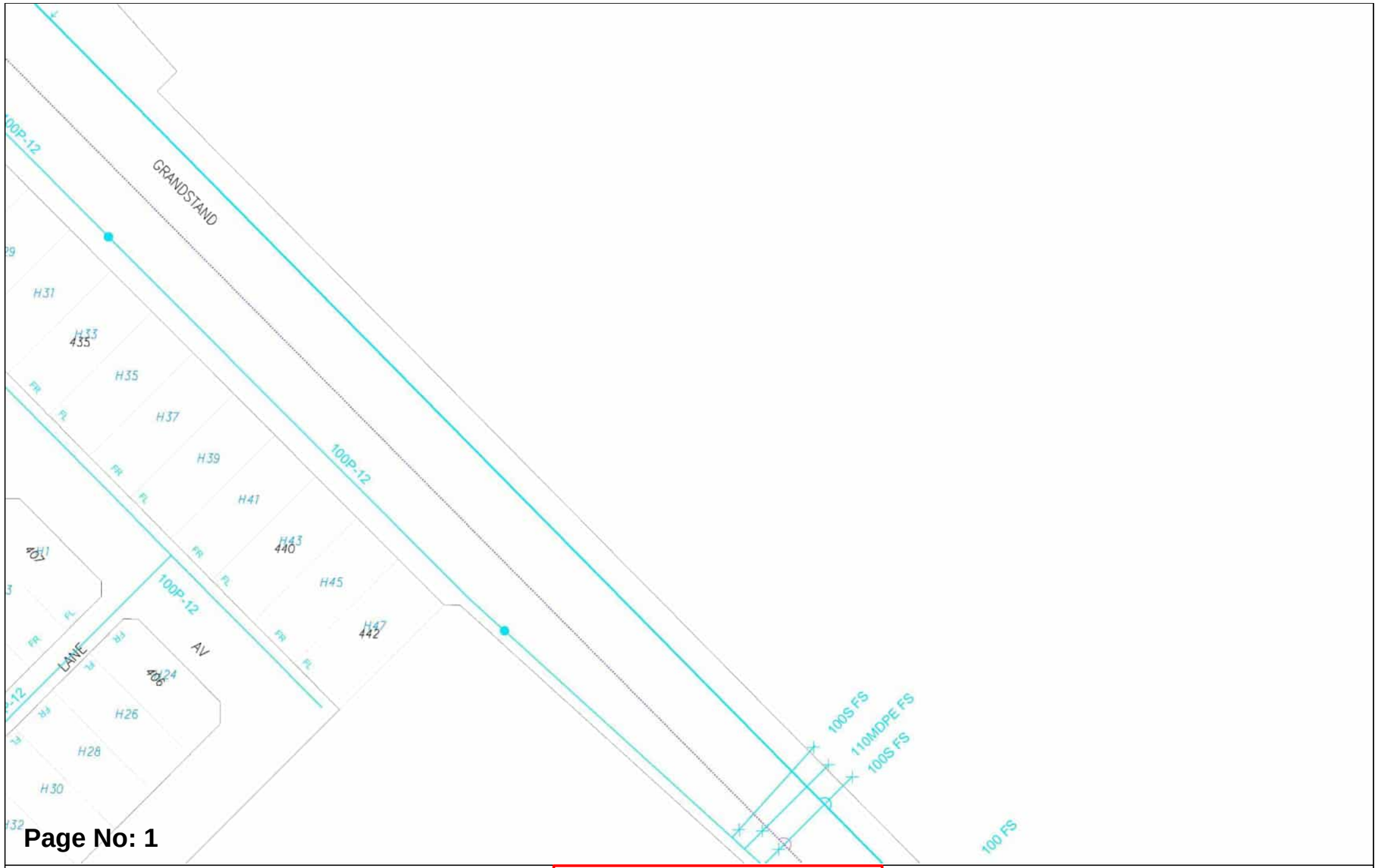
WARNING ASSET PROTECTION APPROVAL MAY BE REQUIRED
Apply for approval to work near our assets at:
Working near assets (watercorporation.com.au)
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Water Corp - Critical Plan.docx (21 May 2024)

Attachment 12.1.4 Engineering Servicing Report



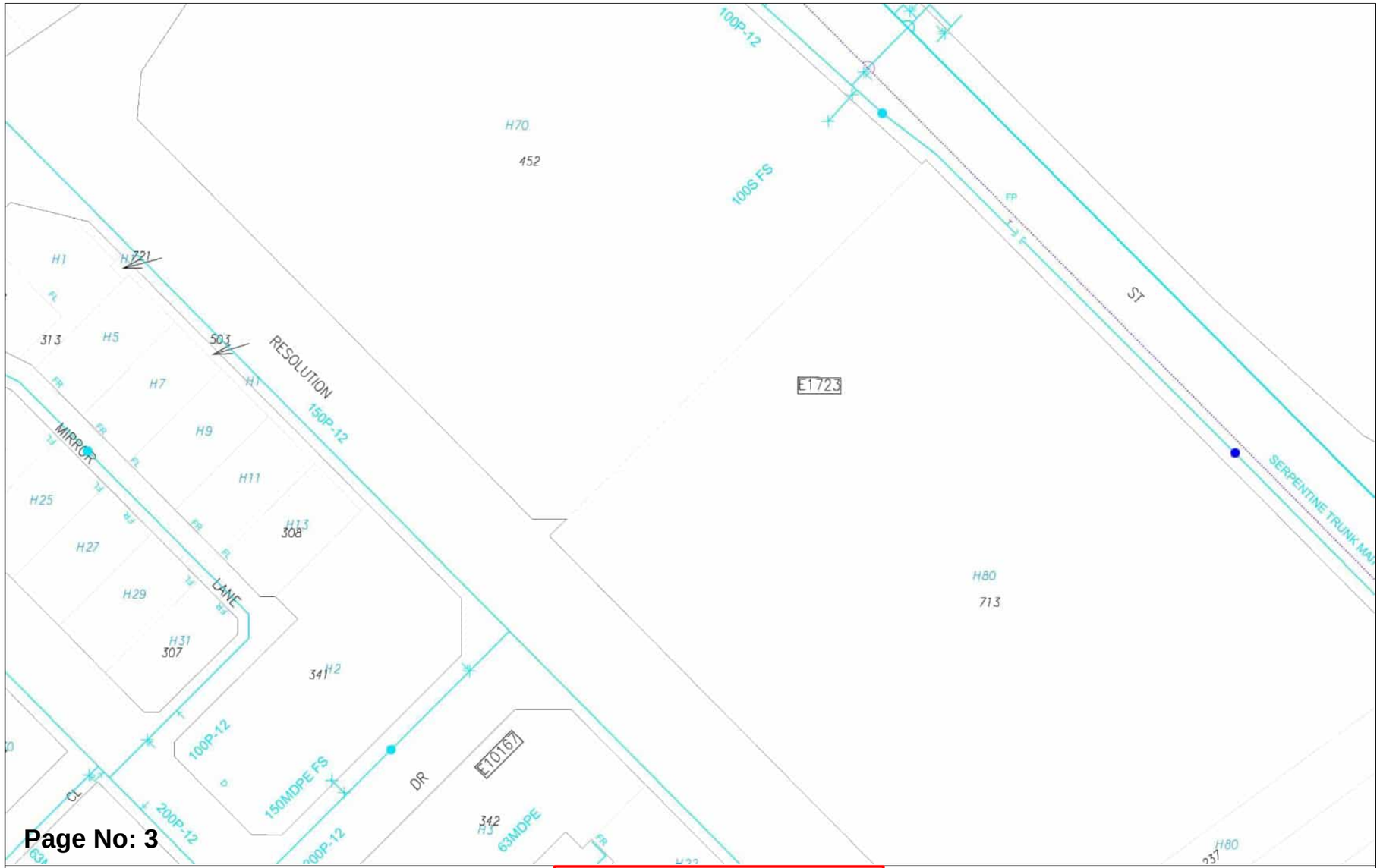
Attachment 12.1.4 Engineering Servicing Report

**Page No: 2**

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| Job No.: | 36962243 | | |
| Sequence No.: | 240900613 | | |
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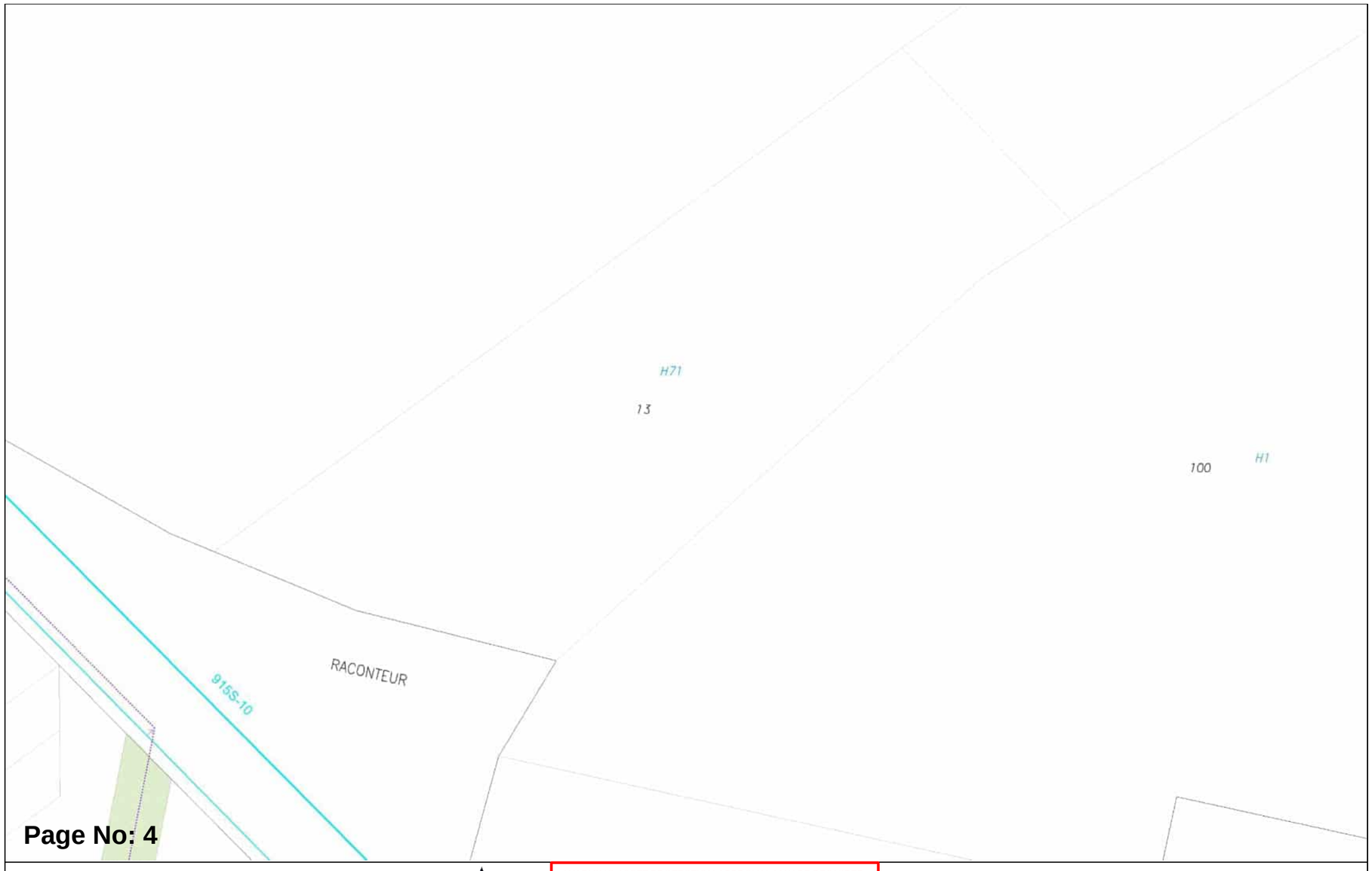
Attachment 12.1.4 Engineering Servicing Report



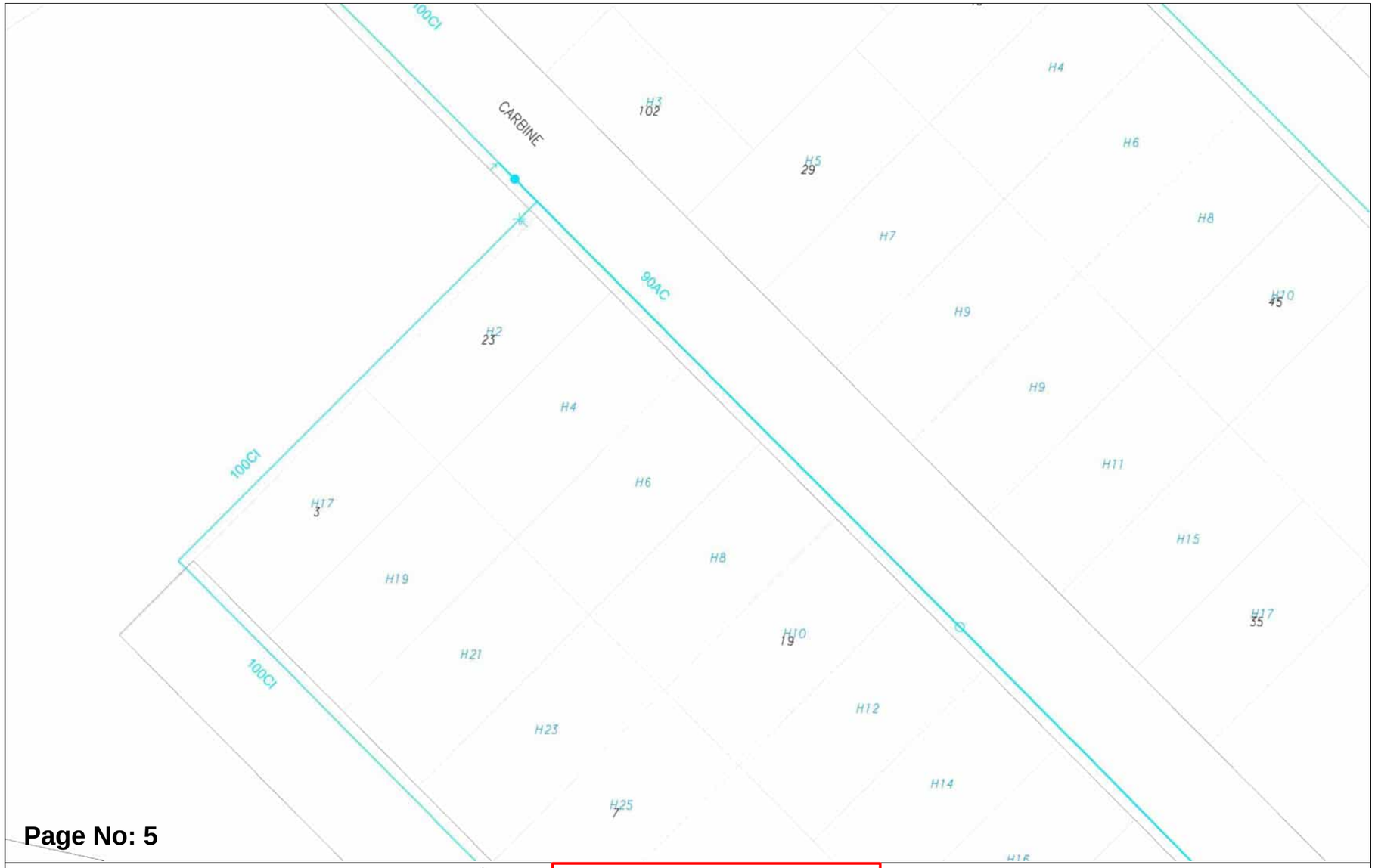

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Water Corp - Critical Plan.docx (21 May 2024)

Attachment 12.1.4 Engineering Servicing Report



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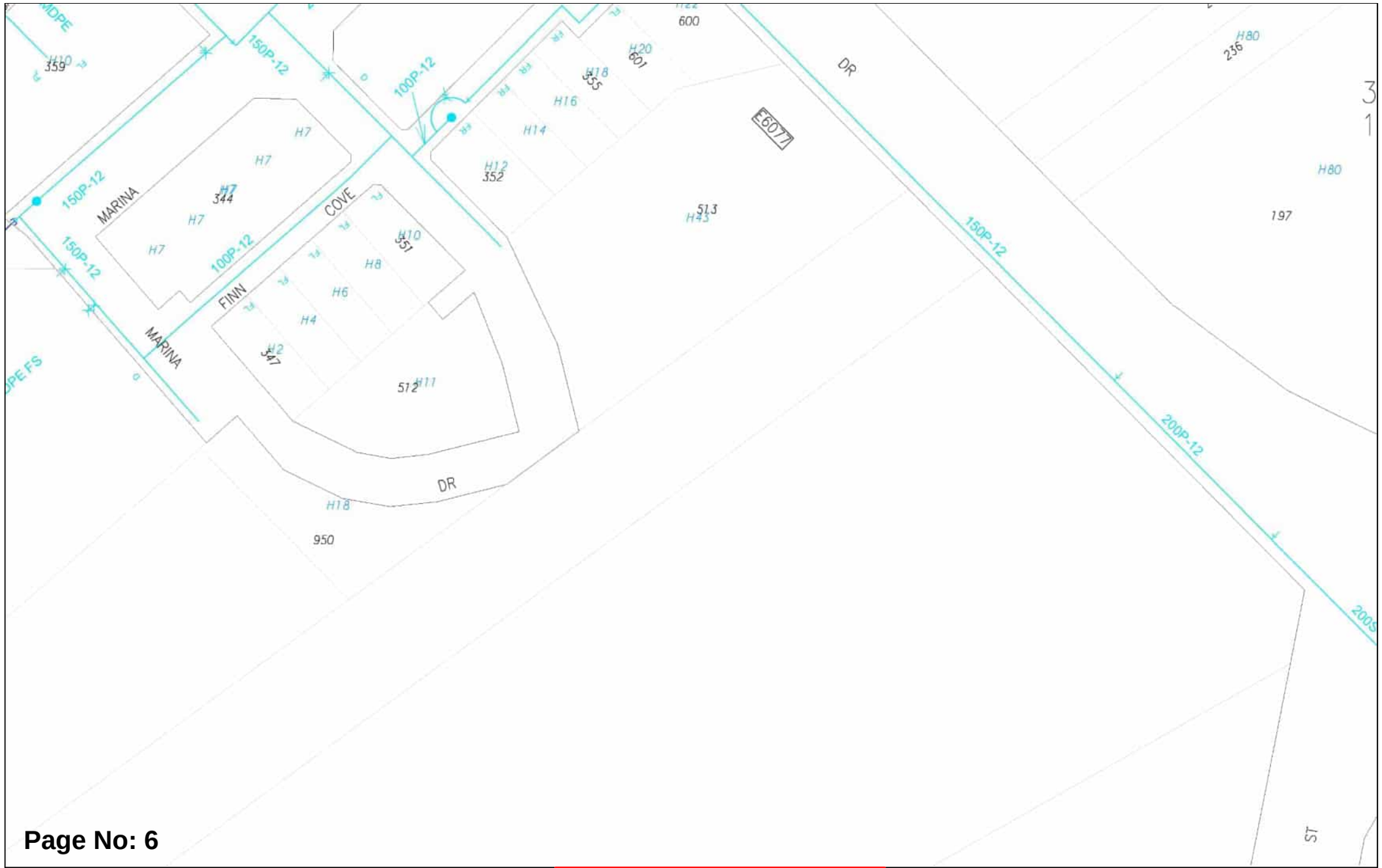

**Page No: 5**

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|---|---|---|---|---|
| WATER CORPORATION | Scale: 1:750<br>Job No.: 36962243<br>Sequence No.: 240900613<br>Print Date: 21 Jun 2024 | Water | WARNING ASSET PROTECTION APPROVAL MAY BE REQUIRED<br>Apply for approval to work near our assets at:<br>Working near assets (watercorporation.com.au)<br>Unauthorised work within prescribed proximities of Water Corporation Assets is prohibited. | The Water Corporation has taken due care in the preparation of this map but accepts no responsibility for any inaccuracies or inappropriate use. This plan may be reproduced in its entirety for the purpose of site work planning but shall not otherwise be altered or published in any form without the permission of the Water Corporation. The Water Corporation may need to be advised of any planned ground disturbing activities near facilities on this map. Refer to Brochure - "Protecting Buried Pipelines". Please report any inaccuracies to Asset Registration Team by email to asset.registration@watercorporation.com.au. |

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Water Corp - Critical Plan.docx (21 May 2024)

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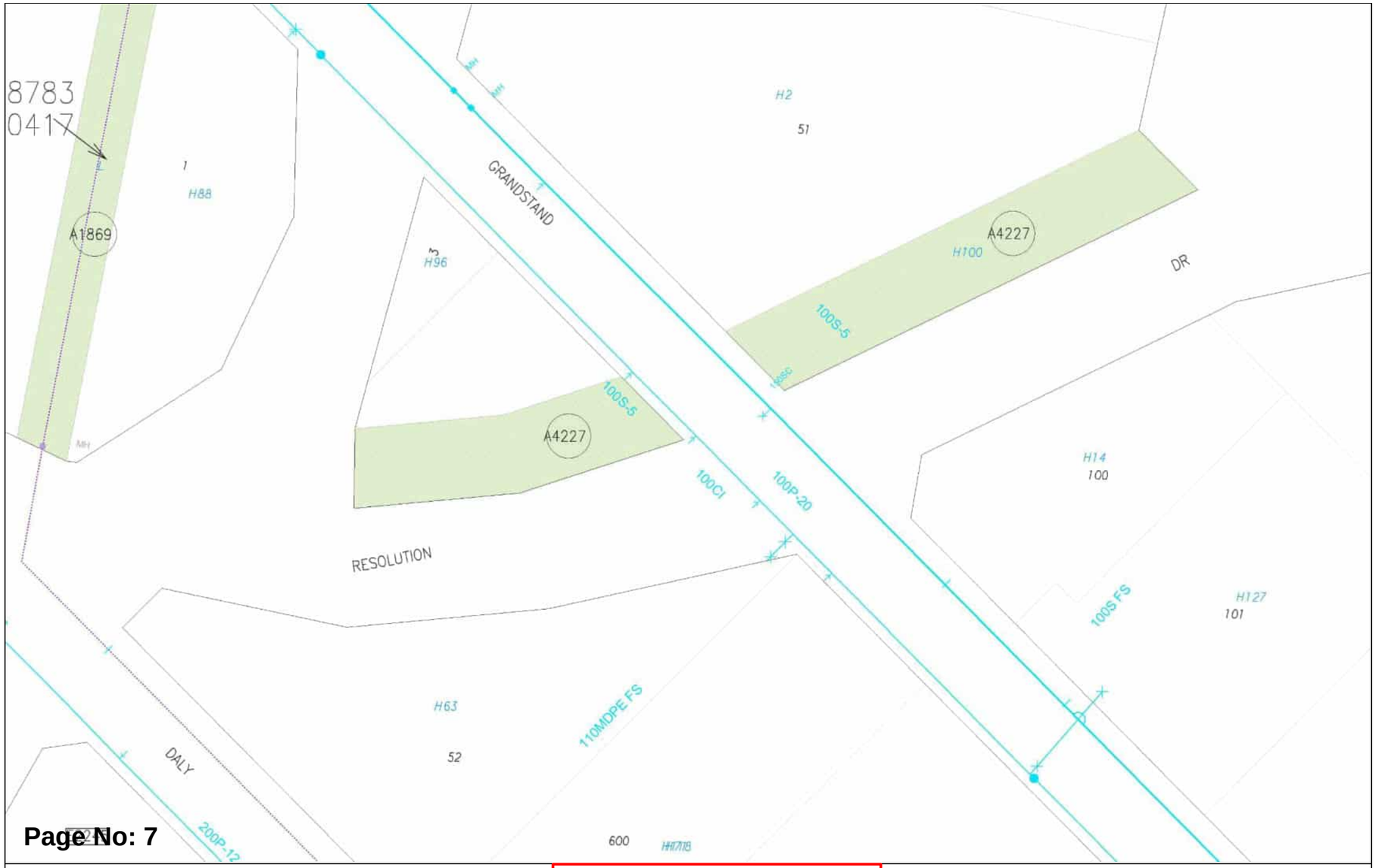

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| | Job No.: | 36962243 | Water | | |
| | Sequence No.: | 240900613 | | | |
| | Print Date: | 21 Jun 2024 | | | |

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Water Corp - Critical Plan.docx (21 May 2024)

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Attachment 12.1.4 Engineering Servicing Report




**Page No: 8**

WATER CORPORATION

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| Scale: | 1:750 |
| Job No.: | 36962243 |
| Sequence No.: | 240900613 |
| Print Date: | 21 Jun 2024 |

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Water

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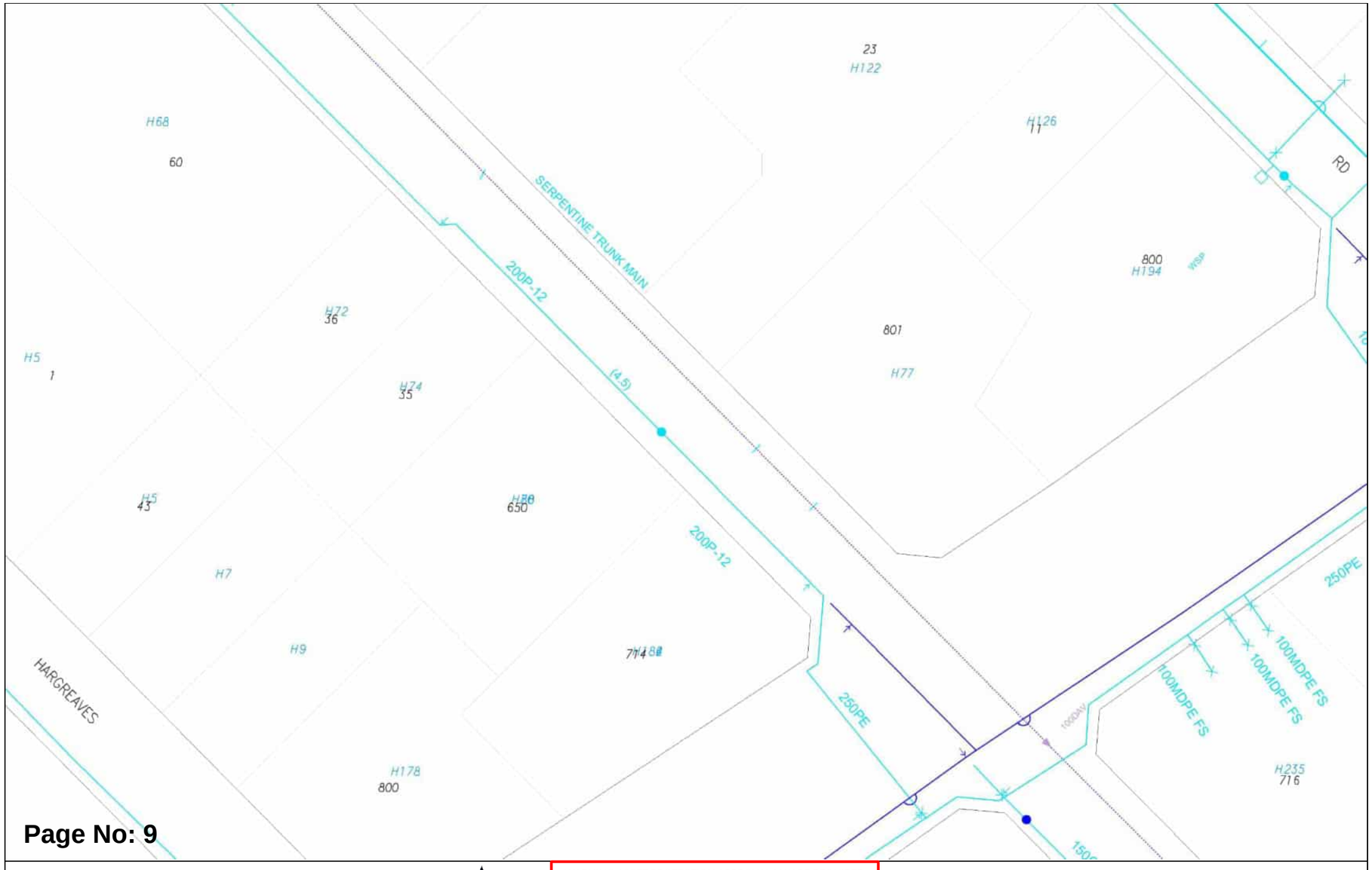
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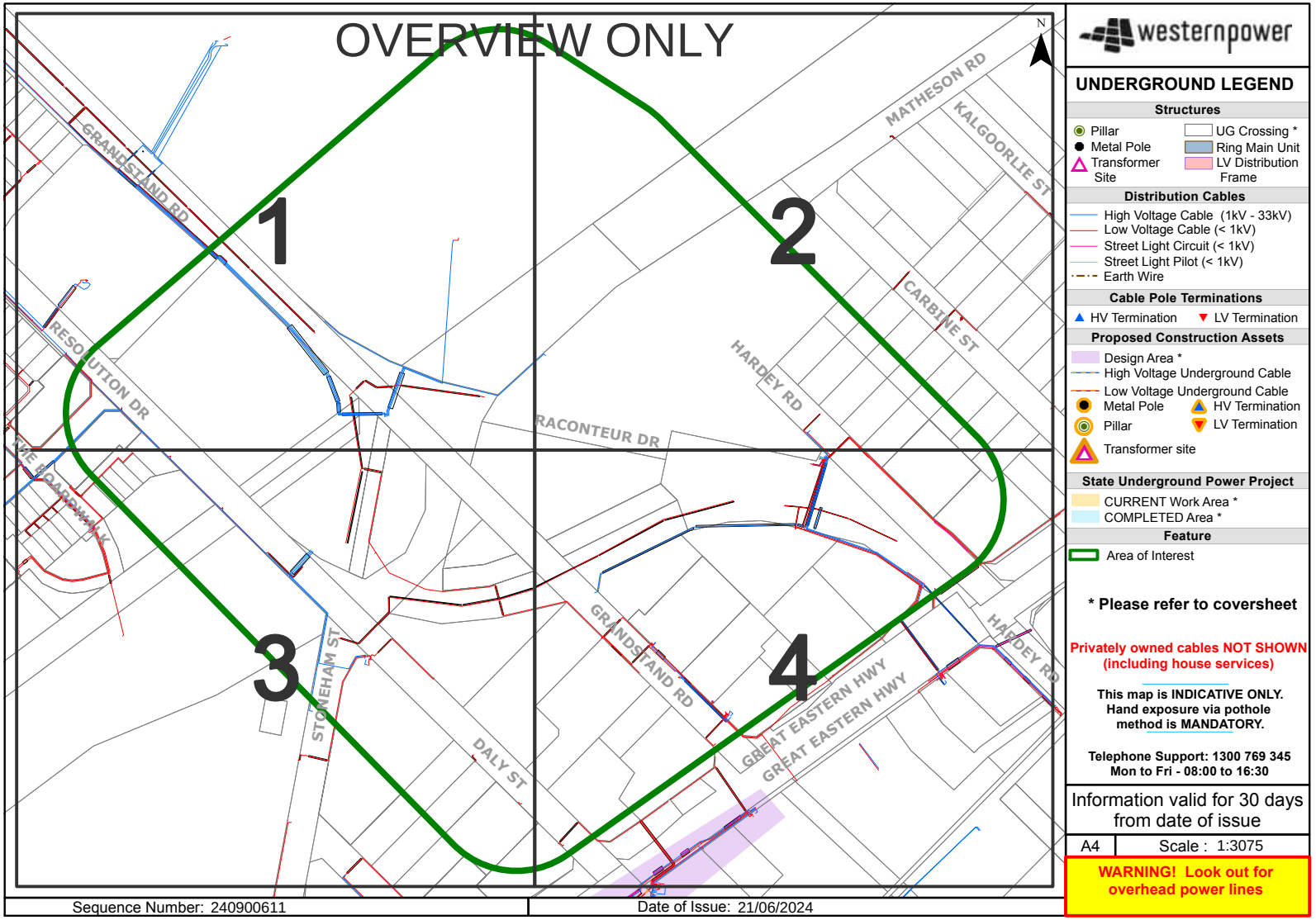
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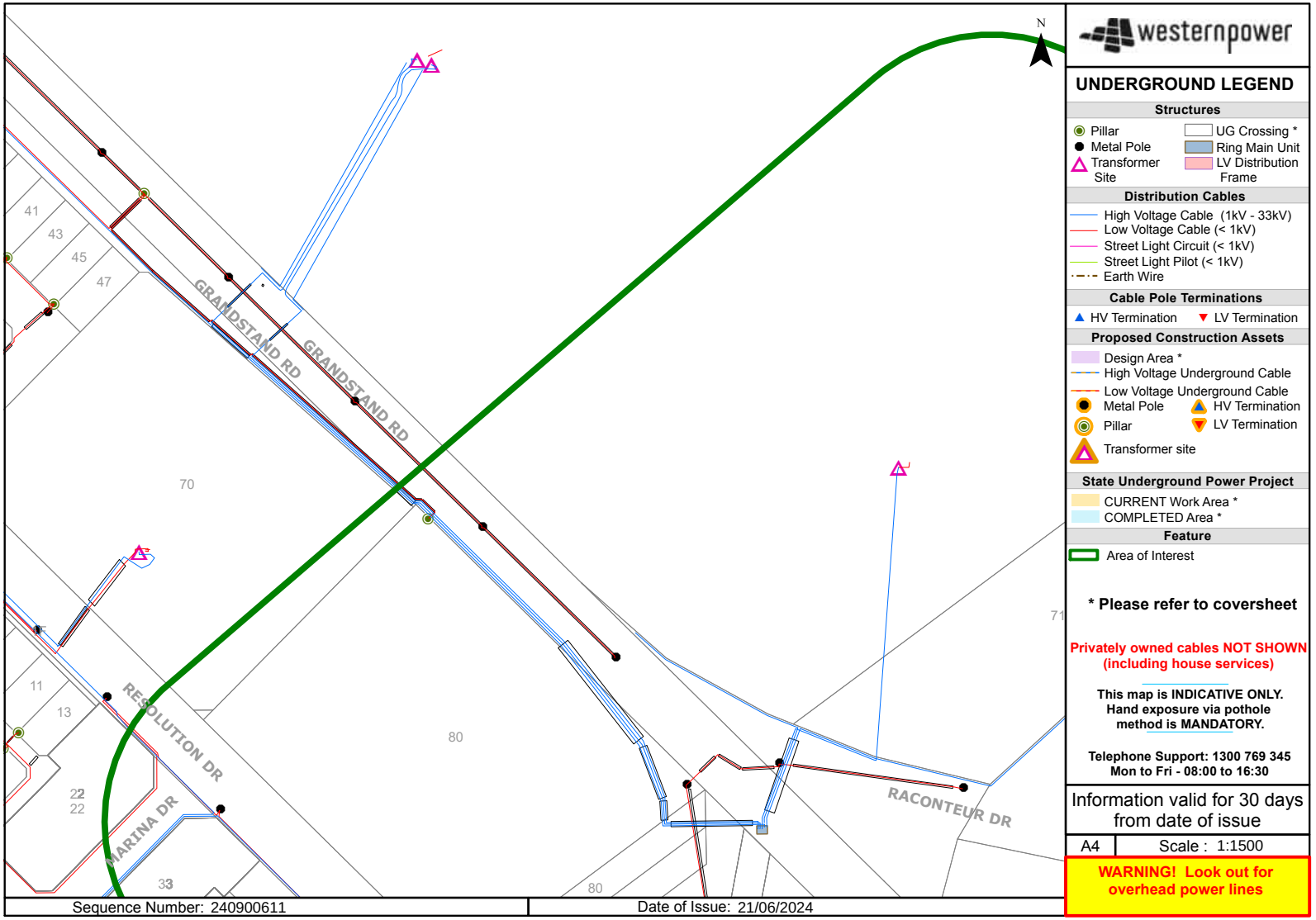
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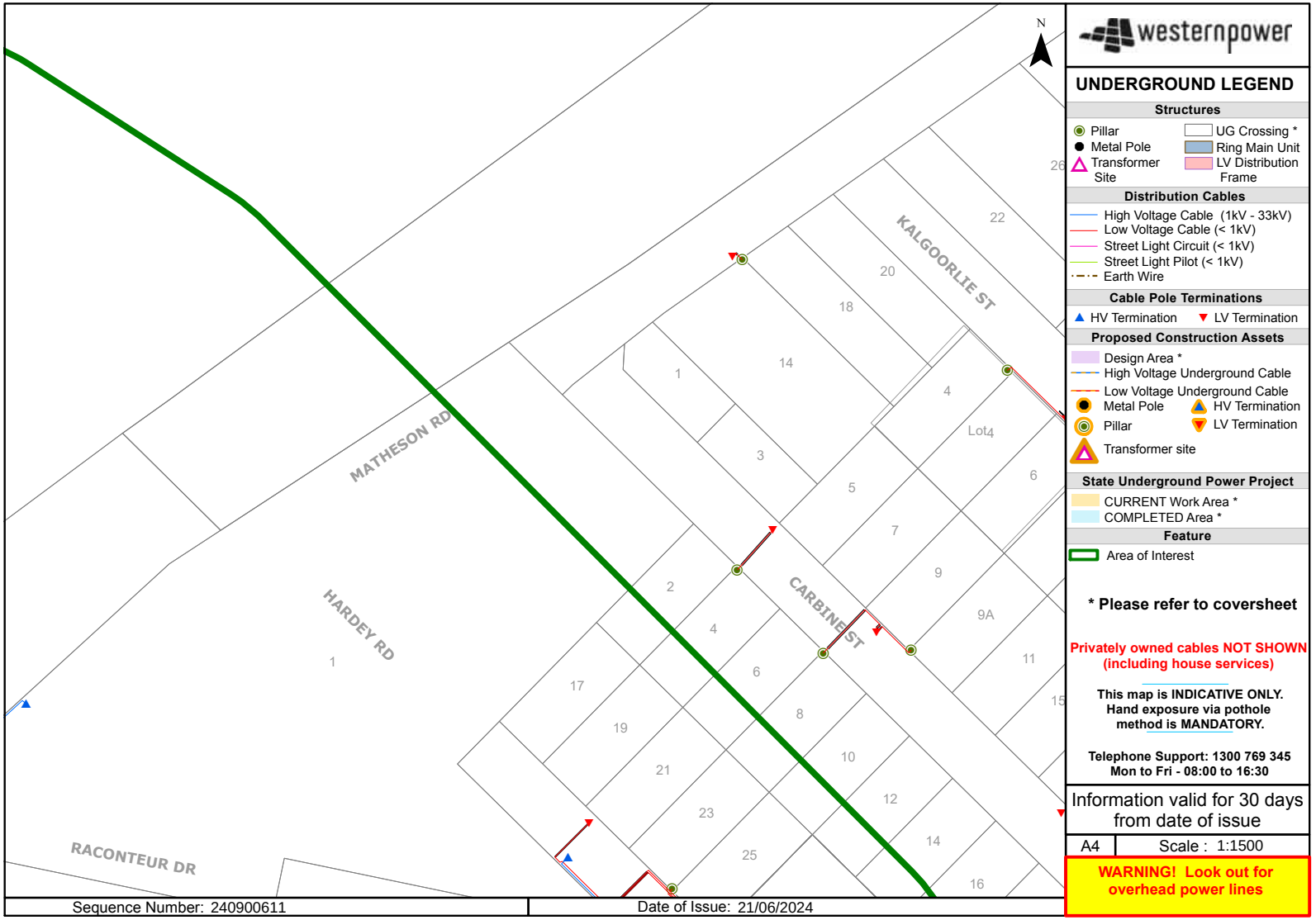
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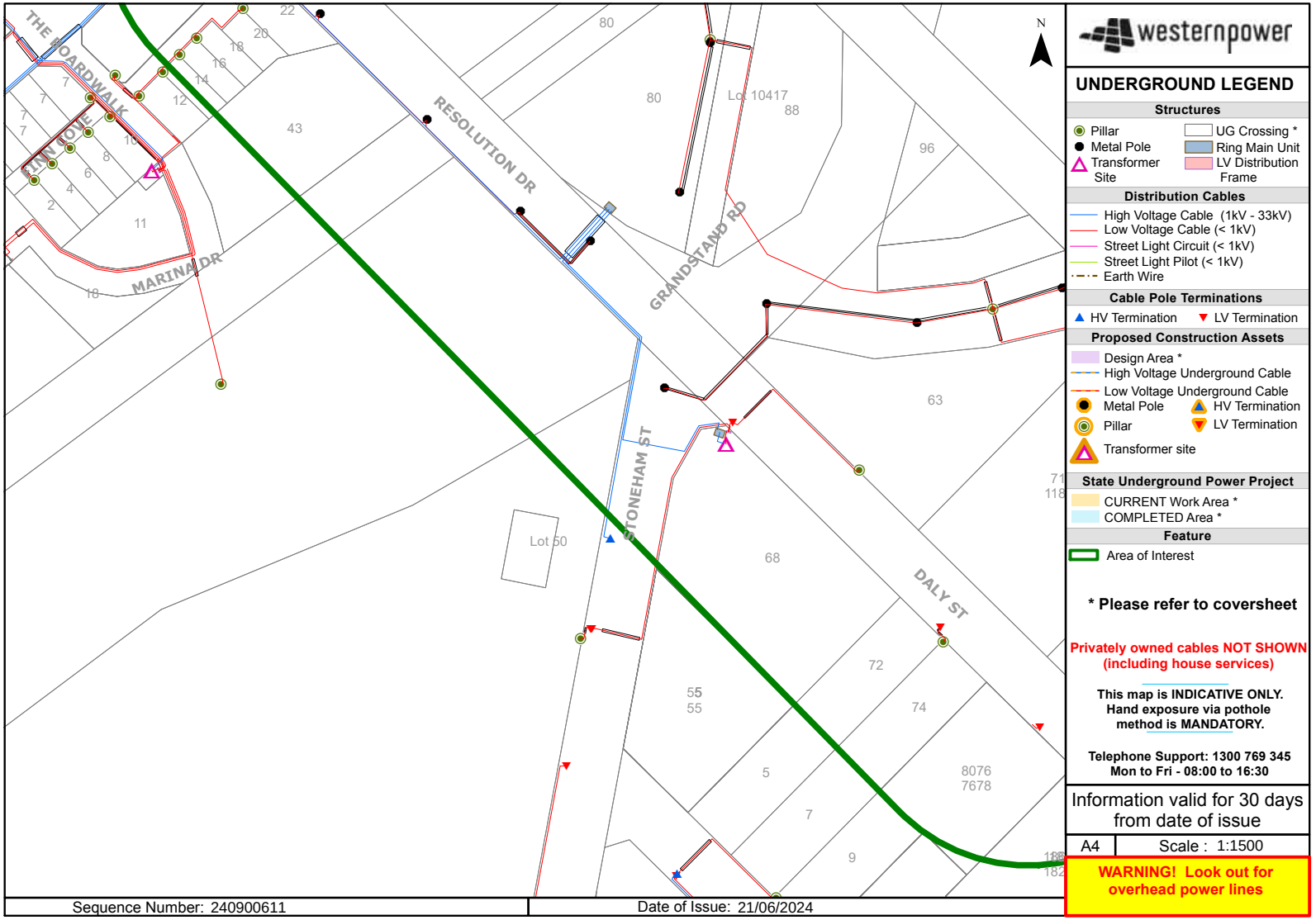
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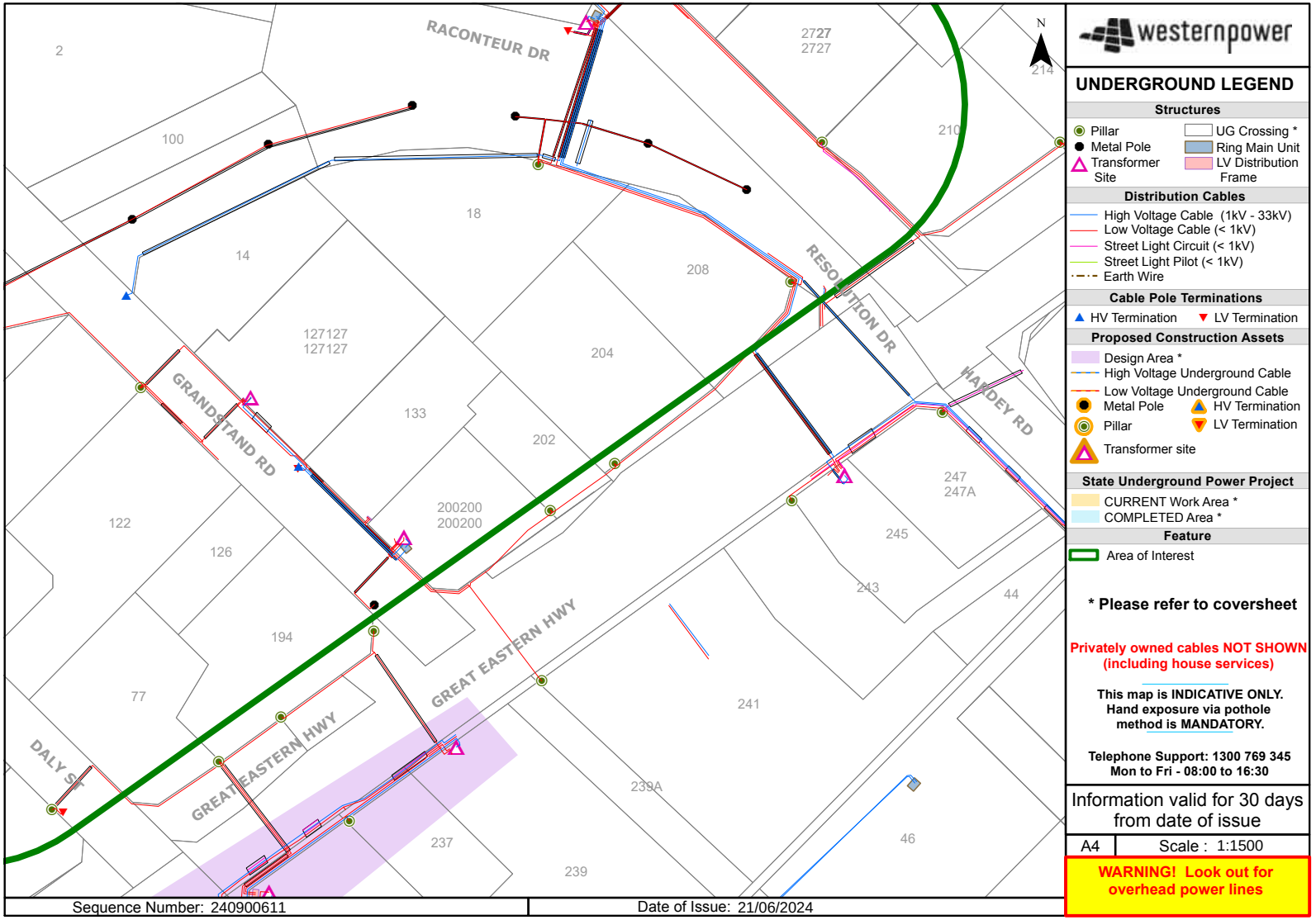
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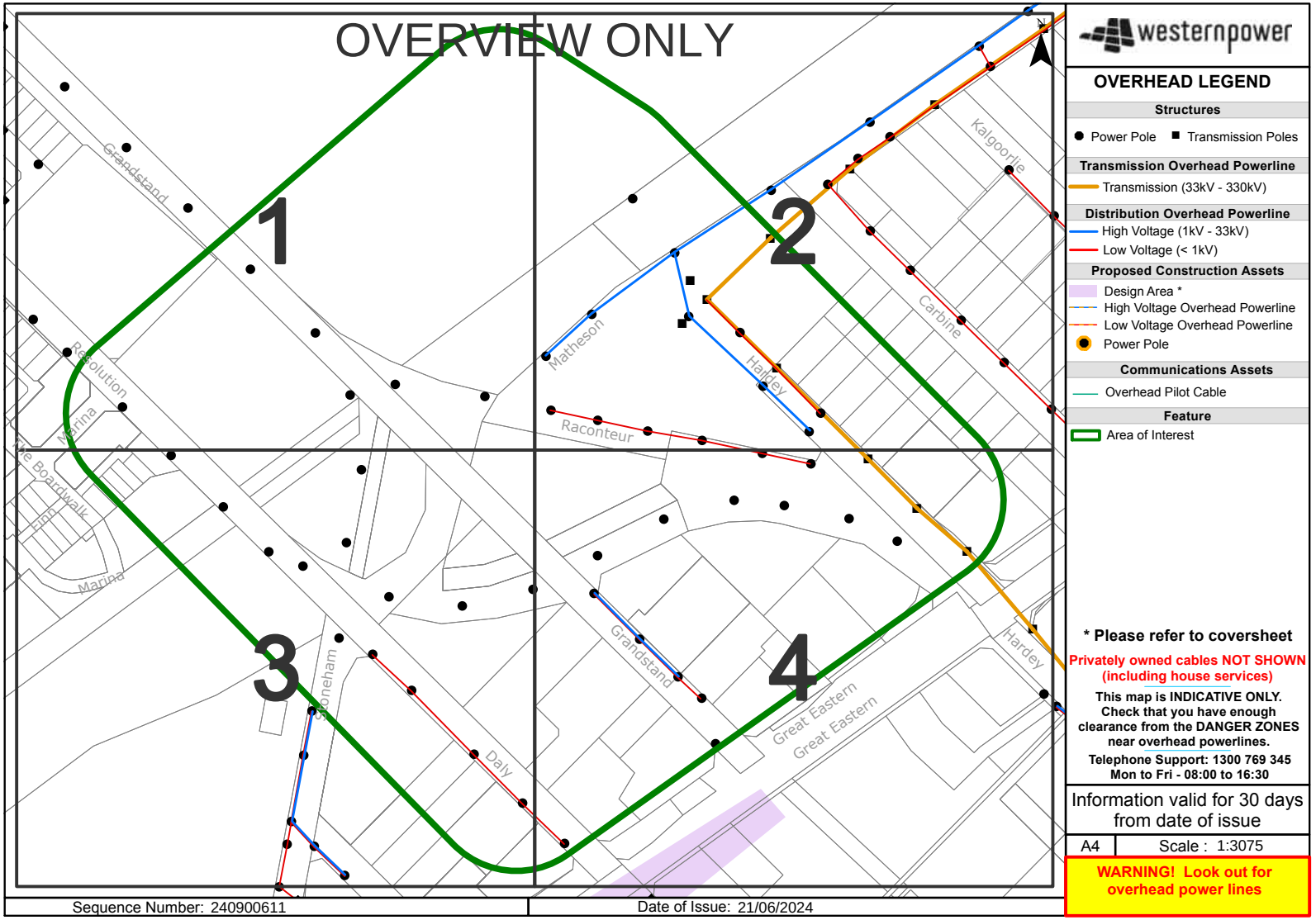
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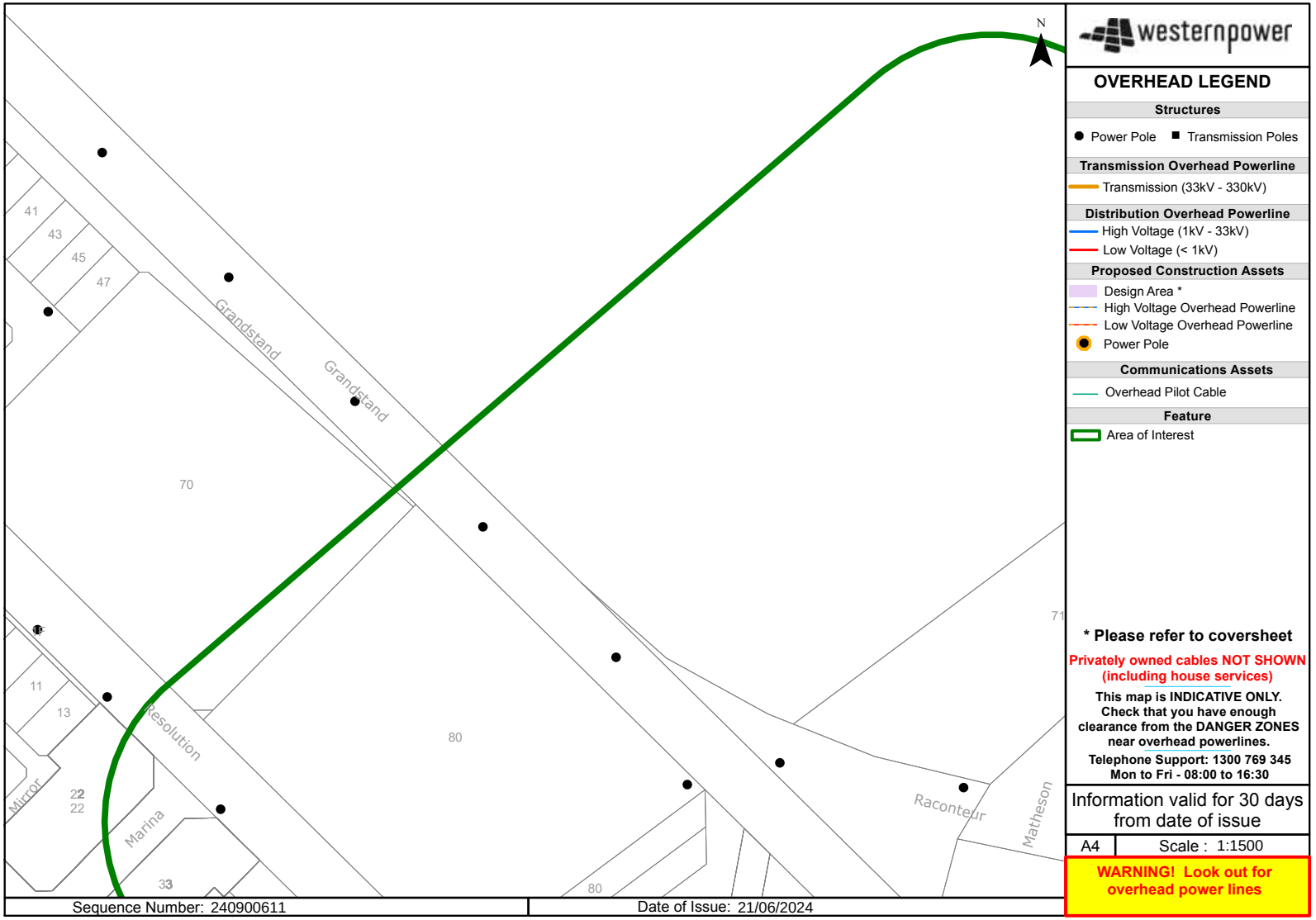
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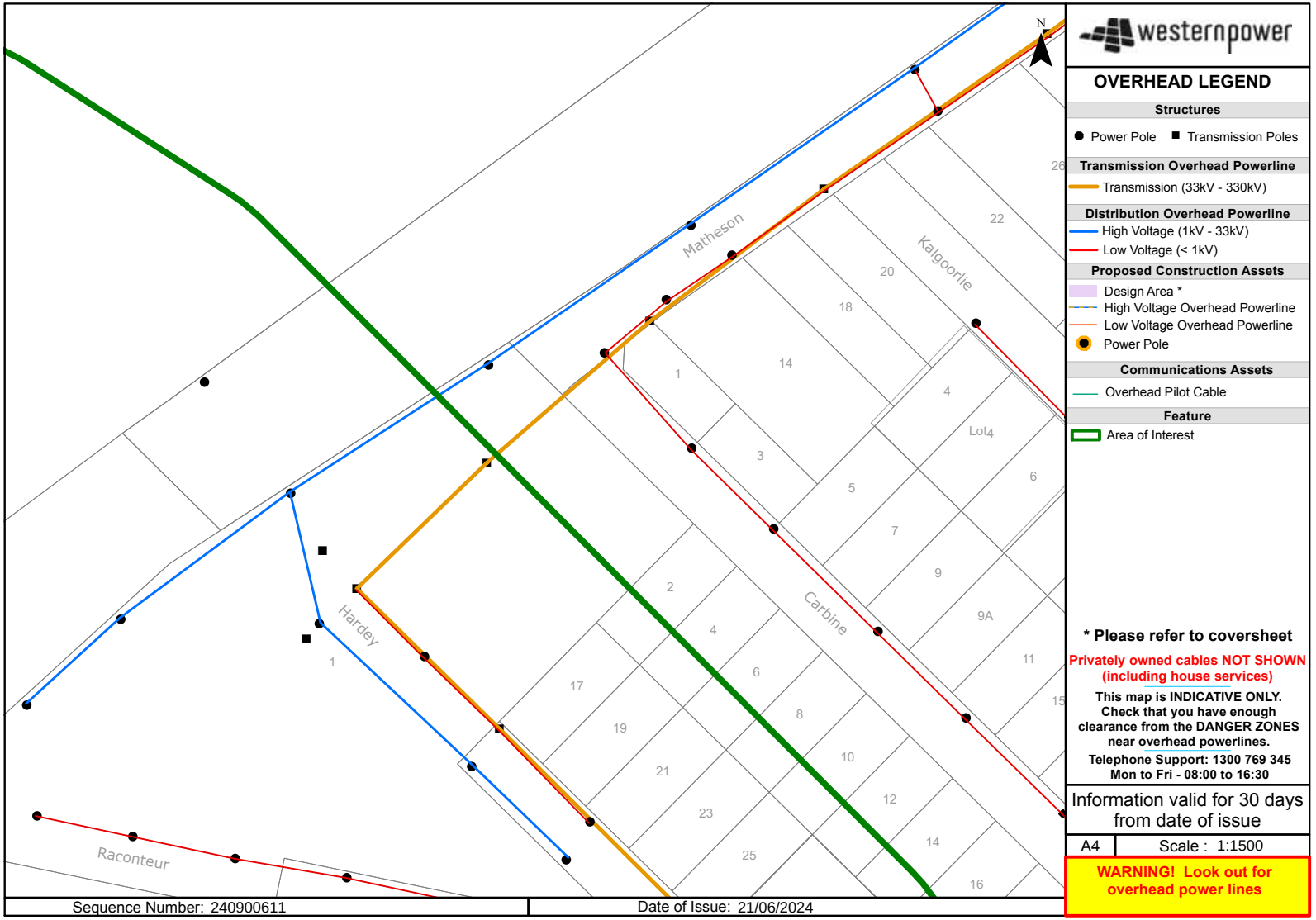
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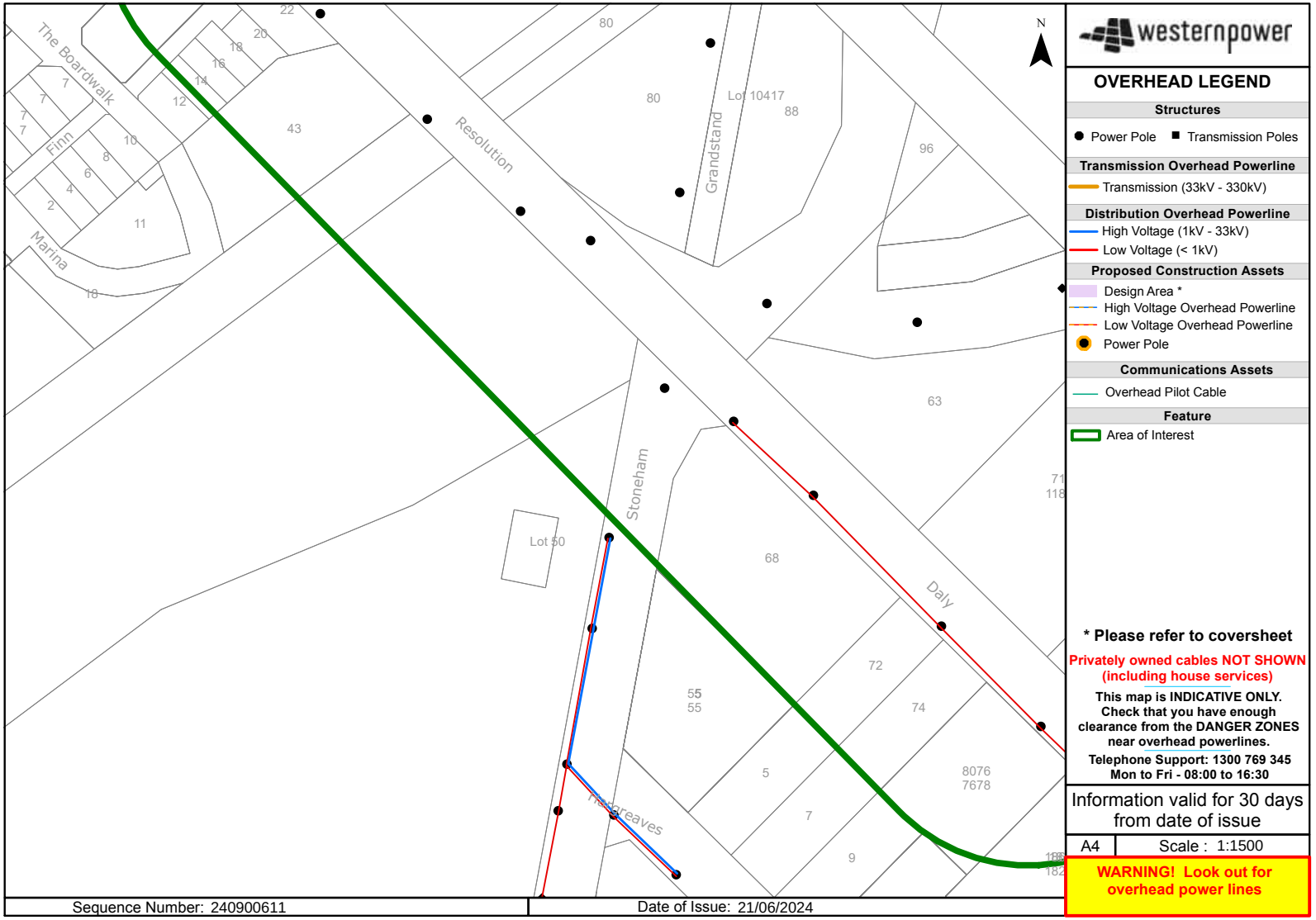
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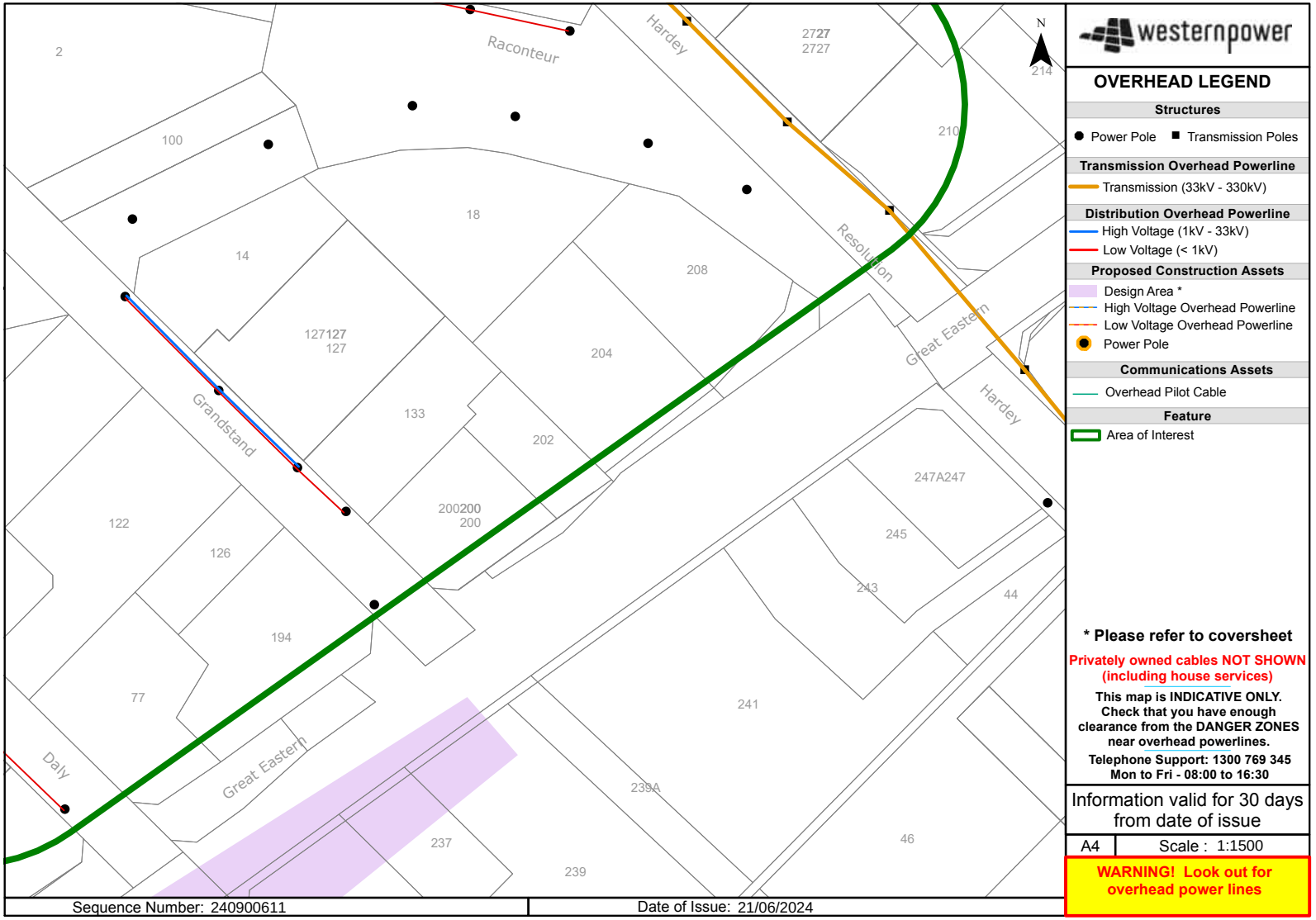
Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report

Job ID 36962243

**Precinct E**

## End of document

**This document may exclude some files (eg. DWF or ZIP files)**

This document was automatically generated at a point-in-time. Be aware that the source information from which this document was created may have changed since it was produced. This document may contain incomplete or out-of-date information. Always check your enquiry details in the BYDA Referral Service for the most recent information. For copyright information refer to individual responses.

Attachment 12.1.4 Engineering Servicing Report

Job No 36962238

BEFORE YOU DIG www.byda.com.au

byda.com.au

## Contact Details

| Contact | Contact number | Company | Enquirer ID |
|---|---|---|---|
| Justin Zielinski | 0420 304 451 | - | 3140642 |

**Email**
jzielinski@tabec.com.au

**Address**
54 Havelock Street
West Perth WA 6005

## Job Site and Enquiry Details

**WARNING:** The map below only displays the location of the proposed job site and does not display any asset owners' pipe or cables. The area highlighted has been used only to identify the participating asset owners, who will send information to you directly.

| Enquiry date | Start date | End date | On behalf of | Job purpose | Locations | Onsite activities |
|---|---|---|---|---|---|---|
| 21/06/2024 | 24/06/2024 | 24/06/2024 | Private | Design | Both Road | Planning & Design |



Check that the location of the job site is correct. If not, you must submit a new enquiry.

If the scope of works change or plan validity dates expire, you must submit a new enquiry.

Do NOT dig without plans. Safe excavation is your responsibility. If you don't understand the plans or how to proceed safely, please contact the relevant asset owners.

**User Reference**
Preinct D

**Address**
70 Grandstand Road
Ascot WA 6104

**Notes/description**
-

## Your Responsibility and Duty of Care

- **Lodging an enquiry does not authorise project commencement.** Before starting work, you must obtain all necessary information from all affected asset owners.
- If you don't receive plans within 2 business days, contact the asset owner & quote their sequence number.
- Always follow the 5Ps of Safe Excavation (page 2), and locate assets before commencing work.
- Ensure you comply with State legislative requirements for Duty of Care and safe digging.
- If you damage an underground asset, you MUST advise the asset owner immediately.
- By using the BYDA service, you agree to the Privacy Policy and Term of Use.
- For more information on safe digging practices, visit www.byda.com.au

## Asset Owner Details

Below is a list of asset owners with underground infrastructure in and around your job site. It is your responsibility to identify the presence of these assets. Plans issued by Members are indicative only unless specified otherwise. Note: not all asset owners are registered with BYDA. You must contact asset owners not listed here directly.

| Referral ID (Seq. no) | Authority Name | Phone | Status |
|---|---|---|---|
| 240900580 | ATCO Gas Australia | 1300 926 755 | NOTIFIED |
| 240900576 | NBN Co (WA) | 1800 687 626 | NOTIFIED |
| 240900574 | Optus (WA) | 1800 505 777 | NOTIFIED |
| 240900578 | Telstra (WA) | 1800 653 935 | NOTIFIED |
| 240900575 | Vocus (WA) | 1800 262 663 | NOTIFIED |
| 240900579 | Water Corporation | 13 13 95 | NOTIFIED |
| 240900577 | Western Power | 13 10 87 | NOTIFIED |

END OF UTILITIES LIST

**Lodge your FREE enquiry online any time at byda.com.au**

Attachment 12.1.4 Engineering Servicing Report

# ATCO UNDERGROUND ASSET DETAILS ASSETS AFFECTED

GAS DIVISION

**ASSETS AFFECTED – see accompanying Plan**

**Job No:** **36962238**
**Sequence No:** **240900580**
Date of Issue: 21 June 2024
Phone: **1300 926 755**

**Justin Zielinski**
**ATCO Gas Australia**
54 Havelock Street
West Perth
WA 6005

**BYDA Utility Registration Name:** Private
**BYDA Location:** **70 Grandstand Road Ascot WA 6104**

**ATTENTION:** This response to your enquiry has been interpreted from details in your requested DBYD picture location request only (not any street address you gave). It is your duty to ensure the accompanying plan/s match your geographical area of works.

**IF YOU SEE, HEAR, SMELL OR OTHERWISE DETECT GAS,**
**LEAVE THE IMMEDIATE AREA AND THEN CALL 13 13 52**

Our records indicate that ATCO gas infrastructure ***IS PRESENT*** in the vicinity of and/or surrounding area of the above enquiry. This response relates only to ATCO assets. Your Duty of Care requires that personnel **Must** at all times comply with, and have on site, this information sheet and the accompanying plan(s). All plans are subject to this information sheet. You should refer to the ATCO Self-service Portal (Link Here) or if unsure, contact ATCO on **1300 926 755** during business hours.

All information provided is to be used as a guide only (see Disclaimer item **5**). It does not absolve you or third parties from your Duty of Care obligations, including to take additional precautions where work has the potential to impact on gas assets, public safety or the environment, or from your duties at law (including Reg 3.21 of the Occupational Safety and Health Regulations 1996).

## WARNINGS

- No works of any type within 15 metres of any **CRITICAL GAS ASSET** infrastructure without prior approval from ATCO
- **NO HOT WORK** within 15 metres of any gas infrastructure except in compliance with applicable laws & *Australian Standard 1674.* **Do Not** let heat sources or hot works impact on any gas infrastructure and take into consideration that the ground or adjacent structures may also be capable of transmitting heat so as to circumvent protection afforded by a heat shield or barrier
- **DANGER** - Gas can cause asphyxiation and is flammable. Keep all ignition sources well away (e.g., flames, matches/ lighters, sparks, electrical devices, vehicles or engines, mobile phones, cameras)
- Gas pipes **Must Not** be unsupported or left without adequate cover or protection without prior approval from ATCO
- Damage to the pipe coating or pipe itself can be very dangerous if not given immediate attention. Report any damage to ATCO immediately on **13 13 52**. **Do Not** attempt to repair any damaged gas infrastructure
- No alteration or removal of live or abandoned gas infrastructure without prior written approval from ATCO
- Any abandoned or proposed gas infrastructure indicated on the gas plans **Must** be treated as live
- Never assume the location or depth of any gas infrastructure. Pipes may not follow straight lines or maintain a constant depth. Always check carefully (e.g., by careful hand digging of potholes)
- Unauthorised repairs or tampering with gas infrastructure may result in prosecution under the *Energy Operators (Powers) Act 1979*. ATCO Gas Australia reserves all rights to recover compensation for loss or damage to its gas infrastructure or other property including for indirect or consequential losses.

## Attachment 12.1.4 Engineering Servicing Report

**PLANS:**

Plans provided are current for **30 days only** from date of request. You must use current plans at all times.

Plans do not show all gas service lines (which connect gas mains to individual meter positions). See condition **3.c)** below.

If plan shows **additional detail** symbols ( * ) or ( ) in the area of proposed works it is **your duty** to obtain that further detail from the number below.

Plans (including the location of pipes, services, infrastructure and boundaries) are **approximate only**. You **Must** use safe and proper procedures – including **potholing** (see condition **4** below).

Plans are not a guide as to gas availability for connection purposes.

**To call ATCO:** **Weekdays from 7.30am to 3.30pm, call – 1300 926 755 After hours, weekends and emergencies, call – 13 13 52**

**CONDITIONS FOR WORKS IN THE VICINITY OF ATCO ASSETS**

**1. Compliance with Warnings**

You **Must** comply with the Warnings contained in this information sheet and the accompanying plan(s).

**2. Compliance with 'Working around Gas Infrastructure' Document (Link Here) applicable laws and duty of care**

All work (including but not limited to using Excavator's Augers, Directional, drilling machines, 'Ditch Witch' type trenching machine, Loader, Dozer, Skid Steer (Bob Cat)) **Must** comply with all applicable requirements in the 'Working around Gas Infrastructure' Document and with all applicable laws and Australian Standards. All due care must be exercised to locate any gas infrastructure in the vicinity and when conducting any works near them.

**3. All Gas Infrastructure**

All work that may have any impact upon any gas infrastructure (see **3.a)**, **b)** and **c)** below for examples) should be carefully planned with notification to ATCO well in advance of commencement. Contact ATCO on **1300 926 755** or visit Atco's online self-service portal (Link Here). Amongst other things, this includes excavation of or near gas pipelines, boring/drilling, crossings of pipelines (including by other underground infrastructure e.g. drains, power cables, etc.), road works and structural installations. In addition:

a) Critical Asset

No works of any type are permitted within 15 meters of these pipelines without prior approval from ATCO. For approvals contact ATCO on **1300 926 755** or visit the Atco online Self-service portal (Link Here)

You **Must** ascertain the location of any Critical Asset, in relation to your proposed work by:

- Locating a straight line between two marker danger signs, and
- Assessing the distance from this line to your proposed work area.

ATCO may require stand-by supervision during your works and will advise of attendance requirements.

b) Non Critical Assets

These pipelines are installed in most streets throughout the Perth metro area and several country centers. Main valves, regulator sets, and test points also exist at intervals along these pipelines. Where work may impact upon these pipelines or assets then ATCO **Must** be contacted as per item **3** above.

c) Gas Services and Meters

If a gas meter is installed on a property, an underground gas service pipe will run from the meter position to the gas main in the street. Plans do not show all gas service lines (with the exception of Critical Assets), but their presence must be anticipated. Most gas meter boxes installed since 1996 will include a sticker giving approximate guidelines for the gas service line location. All due care must be exercised to locate any gas services in the vicinity and when conducting any works near them.

**4. Compliance with Safe Work Practices**

It is your responsibility to have and comply with adequate safe work practices and procedures. Without limiting your obligations:

**PLAN** The complete & current Before you Dig Australia documentation and plans must always be on site & referred to for the duration of work. Refer to regulation 3.21 of the Occupational Safety and Health Regulations 1996 and the Utility Providers "Code of Practice" for further useful information.

**PREPARE** Prepare by reviewing the Before you Dig Australia Documentation and contacting ATCO if you need assistance. Look for onsite ATCO asset and infrastructure clues such as pit lids, marker posts and meters. No works of any type are permitted within 15 meters of a **CRITICAL ASSET** without prior approval from ATCO. For approvals contact ATCO on **1300 926 755** or visit the Atco website Self Service portal (Link Here) and allow suitable

processing time. Atco recommends engaging a BYDA Certified Locator which includes undertaking electronic location prior to potholing.

**POTHOLE** Using current Before you Dig Australia plans, all gas pipes should be located (including any deviation in the direction of a gas pipe) by exposing them by careful digging using a HAND SHOVEL. Where the proposed work is parallel to a gas pipeline, pothole every 10 meters along the entire route. Damage to the pipe coating or to the pipe itself can create a very dangerous situation if not given immediate attention. If damage does occur, it **Must** be reported to ATCO immediately on Ph. **13 13 52**.

**PROTECT** Supervise and monitor all excavations near gas infrastructure using a dedicated spotter. Where any gas infrastructure is required to be exposed, adequate protection of the gas infrastructure is required to prevent potential damage. Also implement appropriate controls when conducting 'hot work' (in accordance with AS 1674) in the vicinity of the ATCO infrastructure such as; isolation; separation distance; the placement of an effective non-combustible barrier of sufficient size and thermal resistance for the intensity, type and duration of heat exposure; gas monitoring; monitoring the environment surrounding the ATCO infrastructure to ensure it is not being impacted by the work, and other controls as necessary.

**PROCEED** You should **only proceed** with your excavation work after you have planned, prepared, potholed (unless prohibited) and have protective measures in place. All locations markers/pegs are to be removed on completion of works. If you are unsure, **DO NOT** Proceed. Call ATCO on **1300 926 755**

**5. Disclaimer and Further Terms**

a) Nothing in this document, any accompanying plan or the 'Additional Information for Working around Gas Infrastructure' (AGA-O&M-PR24) (together called "**Documents**") purports to exclude or modify any term, condition or warranty to the extent that by law it cannot lawfully be excluded or modified by agreement or notice, including but not limited to those contained in Schedule 2 of the *Competition and Consumer Act* 2010 (Cth) and corresponding provisions of any state legislation.

b) If any of ATCO, or their respective related entities, officers, employees, agents, contractors or advisers (together called "**Associates**") is liable for a breach of a term, condition or warranty described in paragraph **5.a)** above, its liability is, to the fullest extent permitted by law, limited to any one or more of the following as it determines in its absolute discretion:

i) in relation to goods supplied by them, replacing or repairing the goods, supplying an equivalent item, paying the cost of replacing or repairing the goods or paying the cost of acquiring or hiring an equivalent item; and

ii) in relation to services supplied by them, the re-supply of the services or the payment of the cost of having the services re-supplied.

c) Subject to paragraphs **5.a)** and **b)**, but otherwise despite any other provision in the Documents, no representation or warranty is made or given (whether expressly or by implication) by any of ATCO or their respective Associates in respect of any information contained or referred to in any of the Documents or in any other communication from ATCO concerning any of the Documents or the subject matter of any of the Documents ("Information"). In particular, but without limiting the generality of the foregoing limitation, none of ATCO or their respective Associates makes any warranty or representation as to the truth, accuracy, completeness, reliability, currency, timeliness, quality or fitness for any purpose of or the standard of care taken in the preparation of any Document or Information (including, but not limited to, the accuracy of the scale of, or the location of anything or symbol shown on, any plan or diagram).

d) Subject to paragraphs **5.a)** and **b)**, to the maximum extent permitted by law, none of ATCO or their respective Associates is liable to any person or other body ("**Recipient**") who receives or otherwise obtains access to all or any part or parts of the Documents or Information, in any way (including, but not limited to, liability for negligence, breach of statutory duty or lack of care) in respect of any cost, expense, damages, loss or liability, including, but not limited to:

i) any financial or economic loss, cost, expense or damage, including but not limited to loss of production, loss of profit, loss of revenue, loss of use, loss of contract, loss of goodwill or loss of business opportunity;

ii) any new or increased costs or expenses, including but not limited to financing or operating costs;

iii) any failure to achieve any actual or anticipated saving in respect of any cost or expense;

iv) any cost, expense, damage or loss resulting from any liability of the Recipient to any other person or body howsoever and whensoever arising, suffered or incurred by the Recipient in relation to, or in connection with, the disclosure to them of, or use of, or reliance on, all or any

part or parts of the Documents or Information.

e) By using any Document or Information, each Recipient is taken to represent and warrant to ATCO that the Recipient will comply with the conditions and other terms referred to in the Documents or Information, including but not limited to conditions that:

i) the Recipient **Must** comply with the conditions in numbered paragraphs **1** to **4** above and this paragraph **5**;

ii) as between ATCO and each Recipient, ATCO owns the Information and all rights and title in and to the Information are to remain vested in ATCO;

iii) no Recipient has any right, title or interest in the Information or, except as expressly provided for in the Documents, any license or right to copy, alter, modify, publish or otherwise use or deal with the Information without prior written approval from ATCO;

iv) ATCO makes no representation and gives no warranty as to its right to disclose any Information;

v) the Recipient relies on any Information entirely at its own risk and expense;

vi) the Recipient **Must** undertake its own independent due diligence and investigations in relation to the Information;

vii) none of ATCO or their respective Associates owes the Recipient any duty of care in respect of the Information; and

viii) none of ATCO or their respective Associates is under any obligation to correct, update or revise any Documents or Information.

**GAS MAIN AND SERVICE IDENTIFICATION**

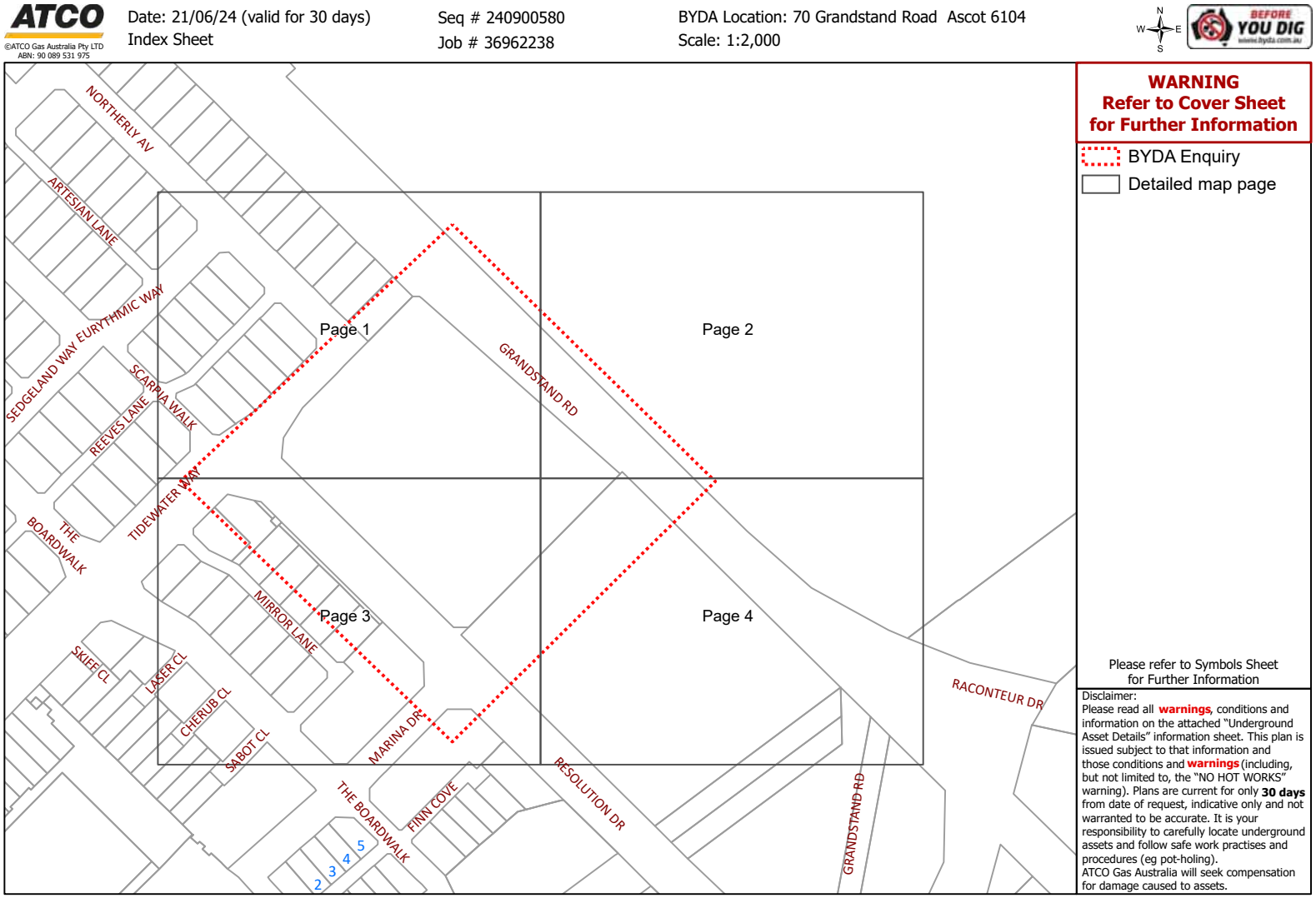
**LEGEND**

1. Critical Asset (See **WARNINGS** page 1)
2. Pipe Diameter (millimetres)
3. Pipe Material
   CI = Cast Iron PE = Polyethylene
   GI = Galvanised Iron PVC = PVC
   ST = Steel
4. Alignment (in metres from property line)
5. Pressure in main (MP 70 kPa = Medium Pressure and MAOP (Maximum Allowable Operating Pressure)
6. Off-line Service – service may not be straight line to meter. (**WARNING – OLS may not always be shown on plan**. See item **Error: Reference source not found** above)
7. Service Valve in the vicinity
   (**NOTE:** Service Valve may be **"BURIED"**)
8. Pre-laid Service laid in Common Trench
9. Main Status: (See **WARNINGS** page 1)
   9a. AB = Abandoned Mains
   9b. PROP = Proposed Mains
10. Customer Connection: Does not indicate actual location of Meter Position
    D2 (D = Domestic & 2 = Number of Meters)
    C1 (C = Commercial & 1 = Number of Meters)
11. **Additional detail available and Must be obtained if within area of proposed works – see page 2 above.**
12. Depth of Cover (DOC) in metres.



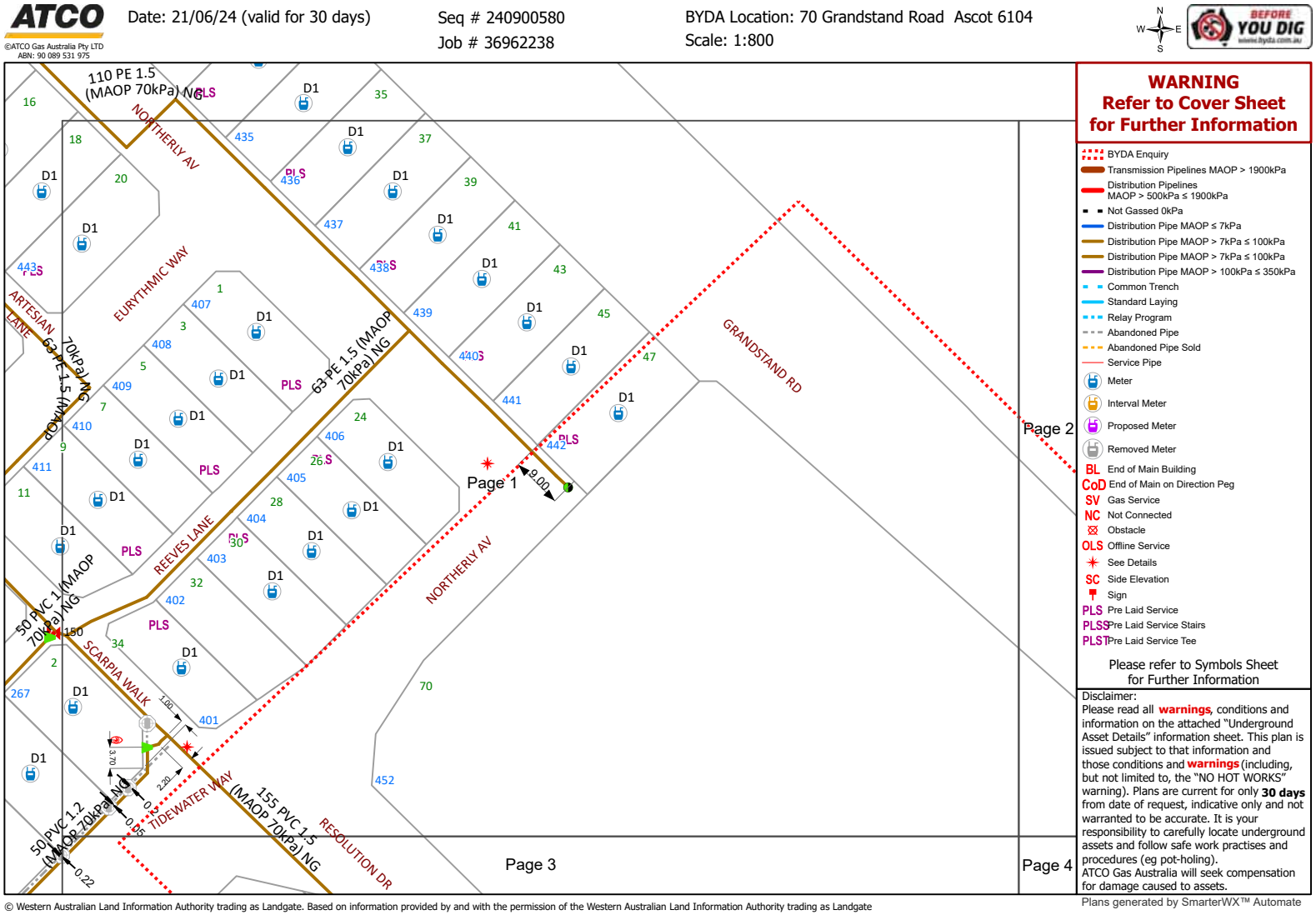

IF UNSURE, PLEASE CONTACT ATCO ON **1300 926 755**

Attachment 12.1.4 Engineering Servicing Report

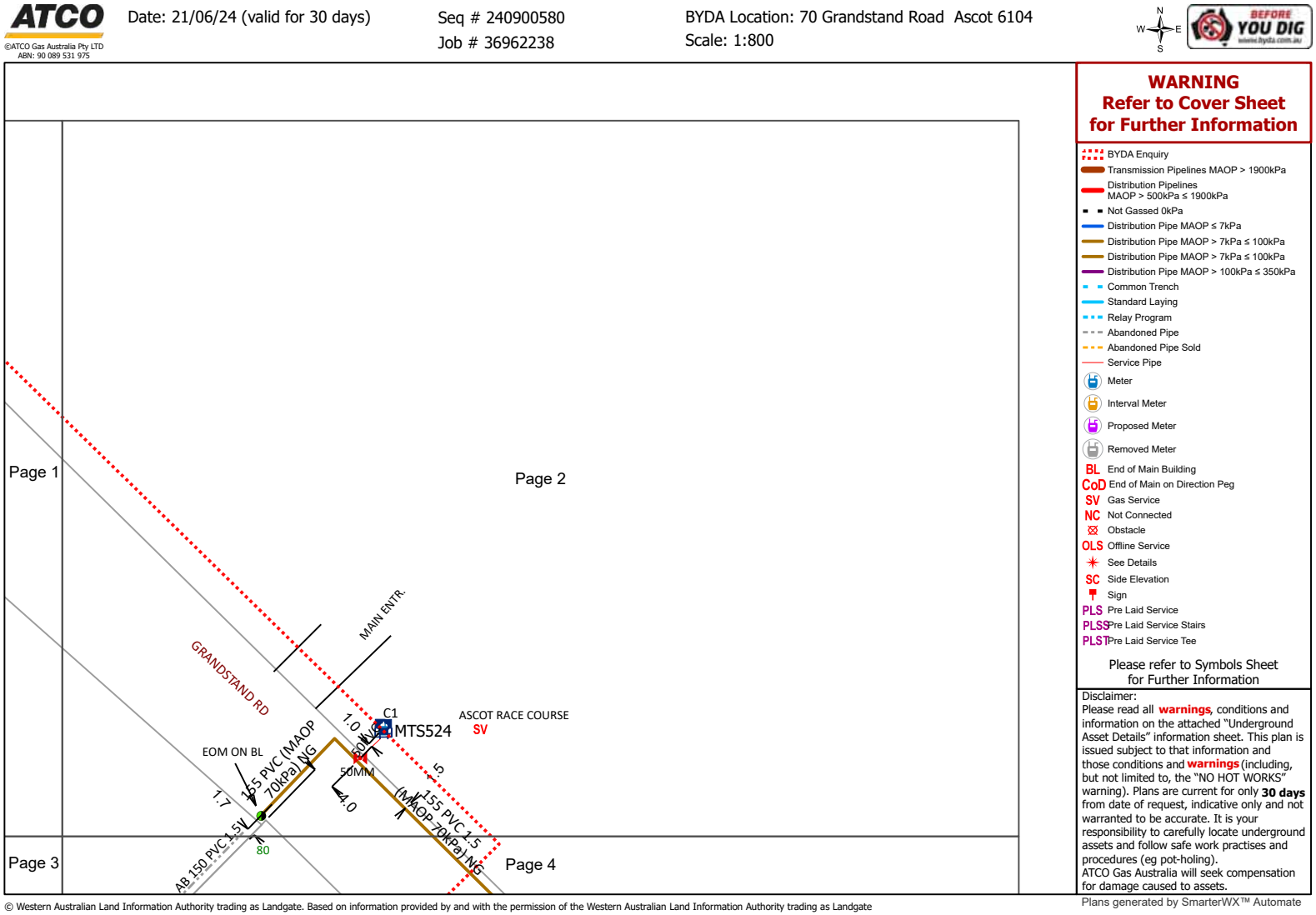



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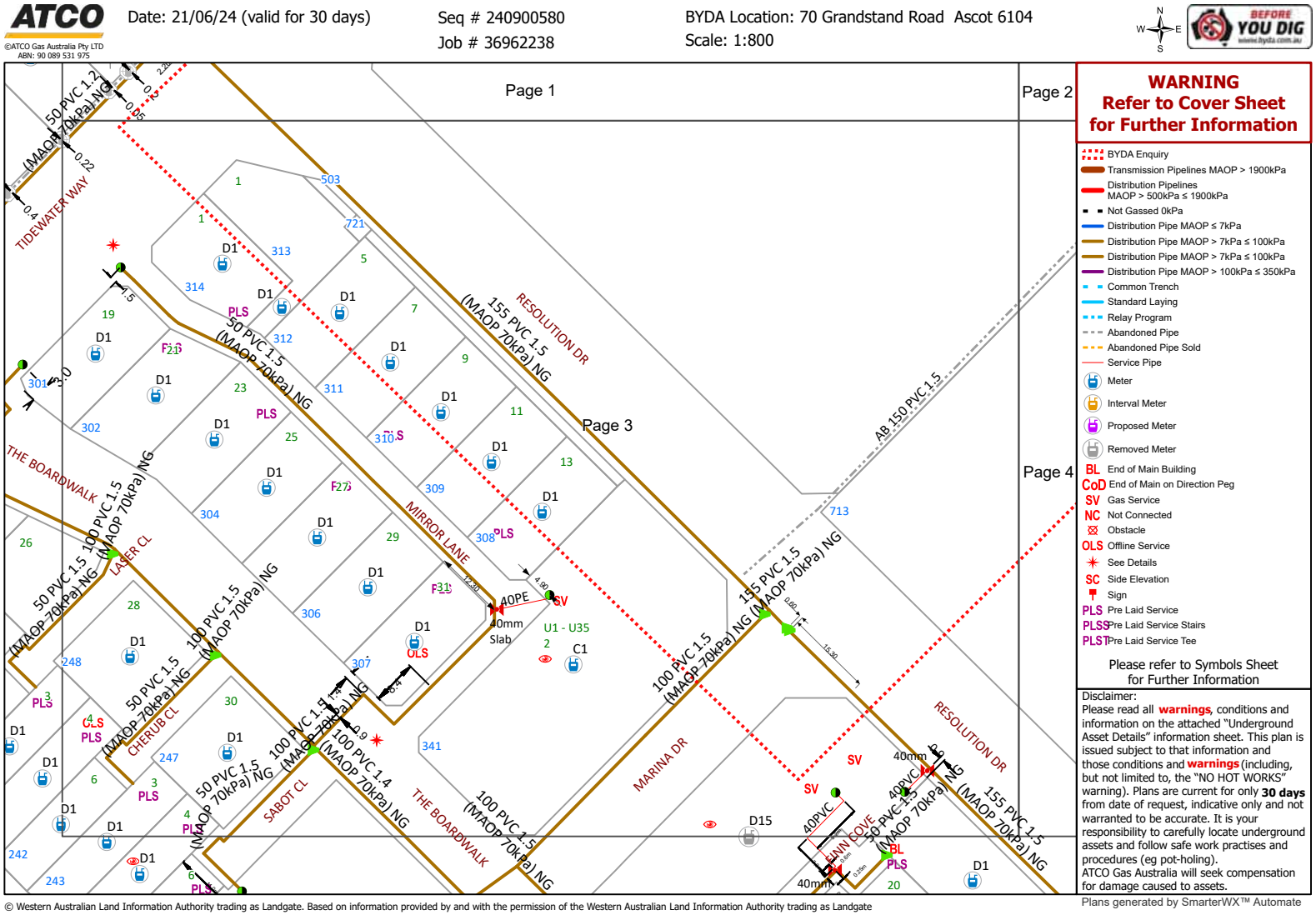
Attachment 12.1.4 Engineering Servicing Report



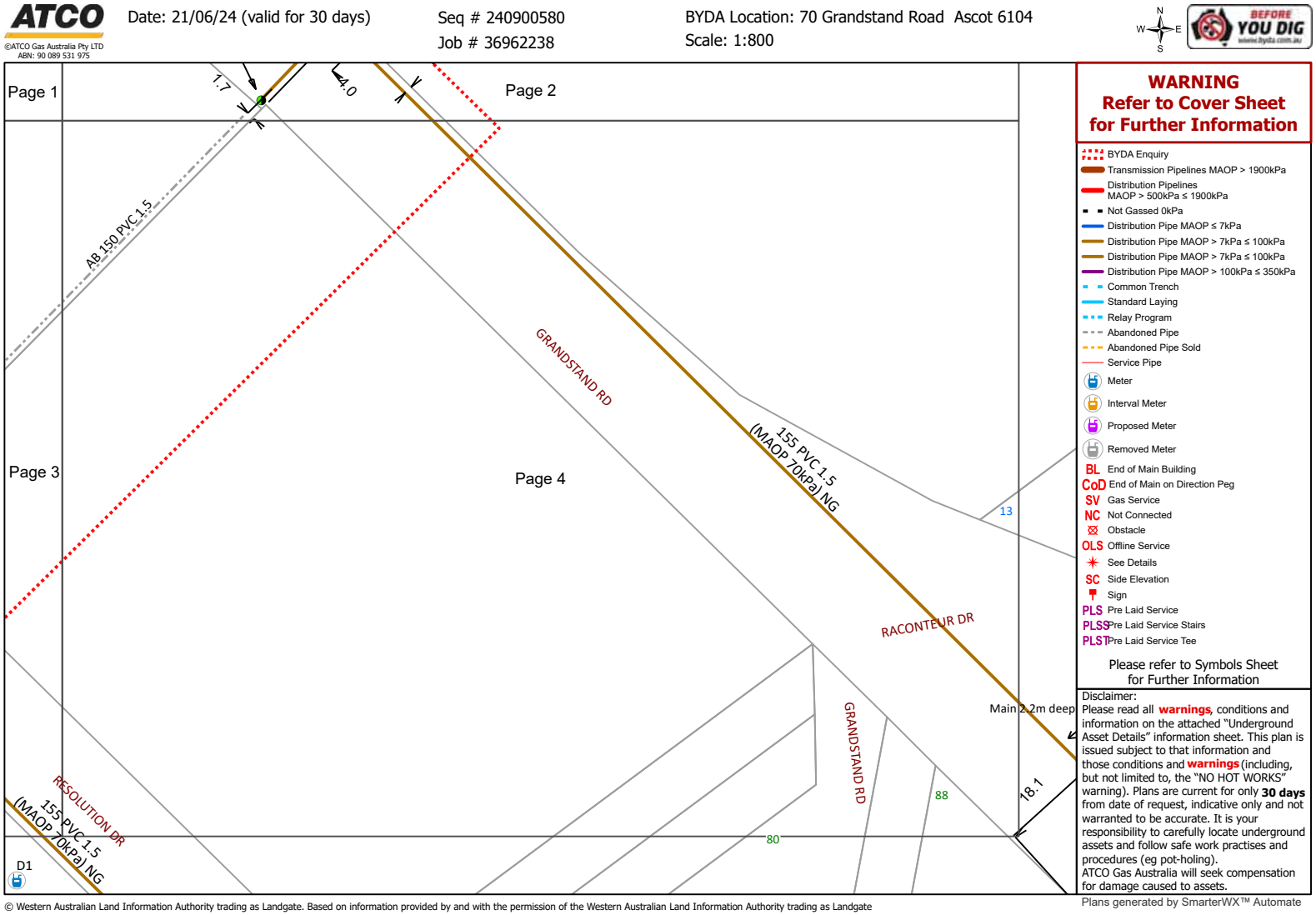
Attachment 12.1.4 Engineering Servicing Report



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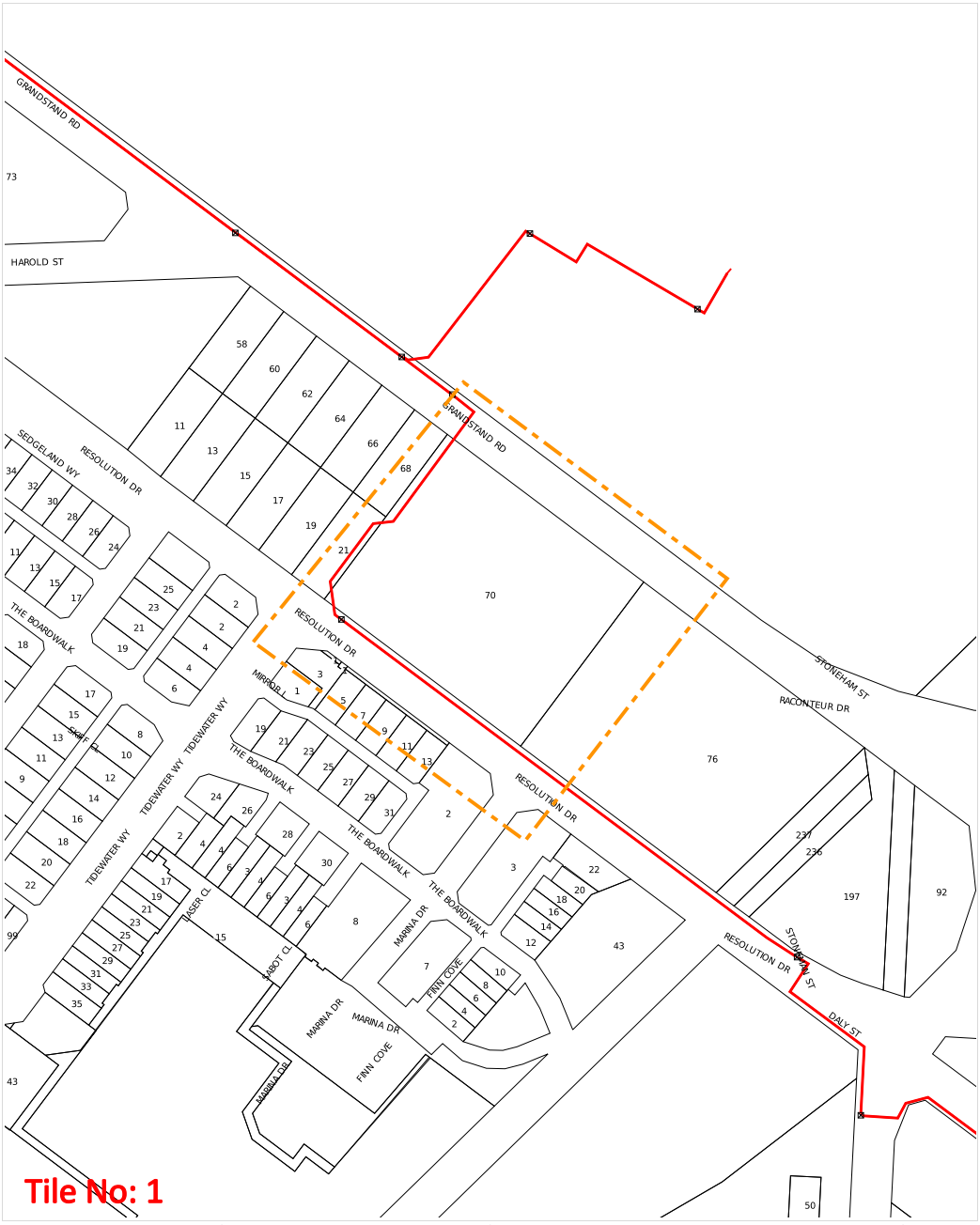
Attachment 12.1.4 Engineering Servicing Report



## Emergency Contacts

You must immediately report any damage to the **nbn™** network that you are/become aware of.
Notification may be by telephone - 1800 626 329.

Attachment 12.1.4 Engineering Servicing Report




WARNING: This document is confidential and may also be privileged. Confidentiality nor privilege is not waived or destroyed by virtue of it being transmitted to an incorrect addressee. Unauthorised use of the contents is therefore strictly prohibited. Any information contained in this document that has been extracted from our records is believed to be accurate, but no responsibility is assumed for any error or omission. Optus Plans and information supplied are valid for 30 days from the date of issue. If this timeline has elapsed, please raise a new enquiry.

Sequence Number: 240900574

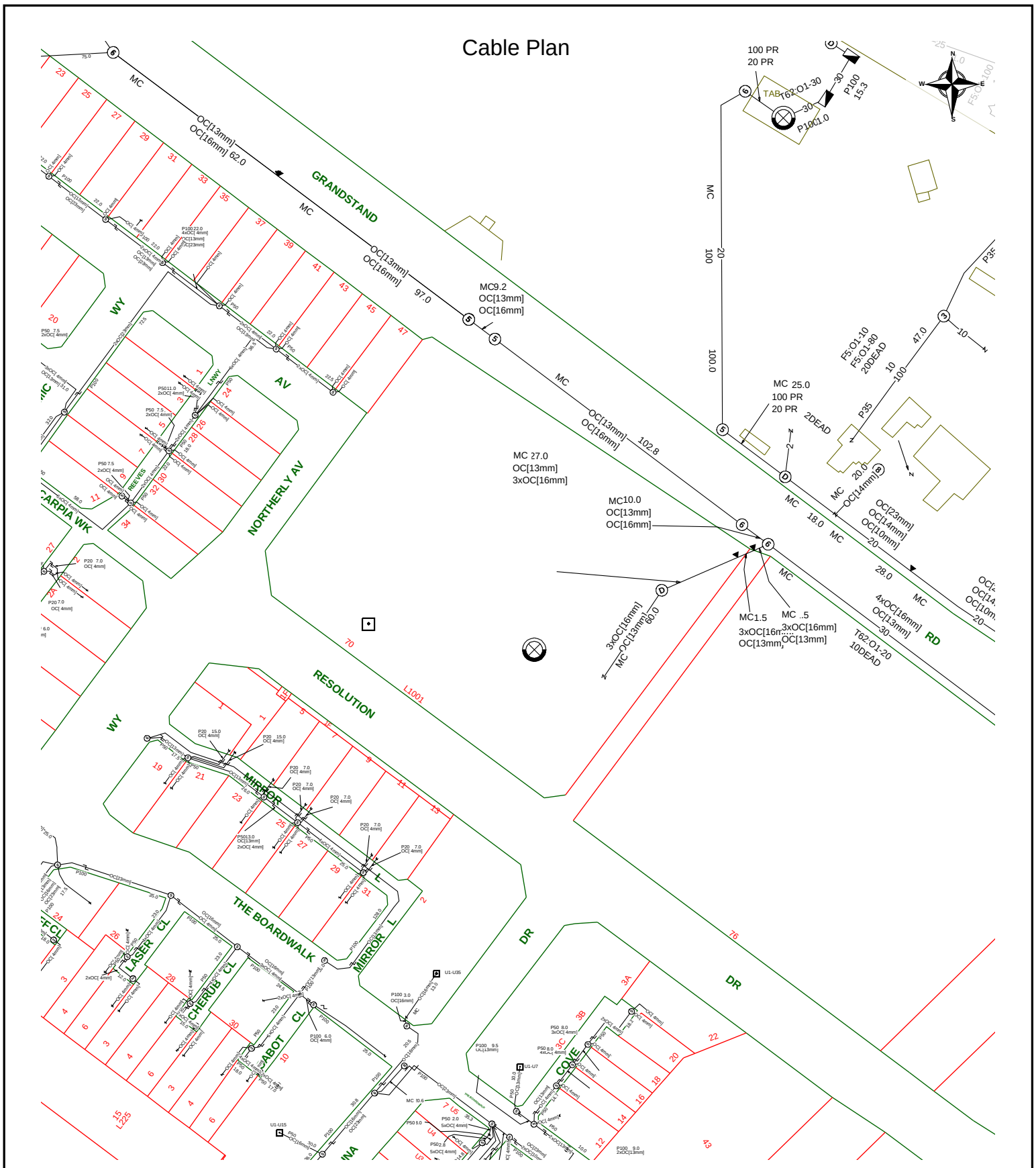
Date Generated: 21 Jun 2024

For all Optus DBYD plan enquiries –
Email: Fibre.Locations@optus.net.au
For urgent onsite assistance contact 1800 505 777
Optus Limited ACN 052 833 208

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Attachment 12.1.4 Engineering Servicing Report

# Cable Plan




| | |
|---|---|
| Report Damage: https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment<br>Ph - 13 22 03<br>Email - Telstra.Plans@team.telstra.com<br>Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries | Sequence Number: 240900578 |
| TELSTRA LIMITED A.C.N. 086 174 781 | CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance. |
| Generated On 21/06/2024 19:05:32 | |

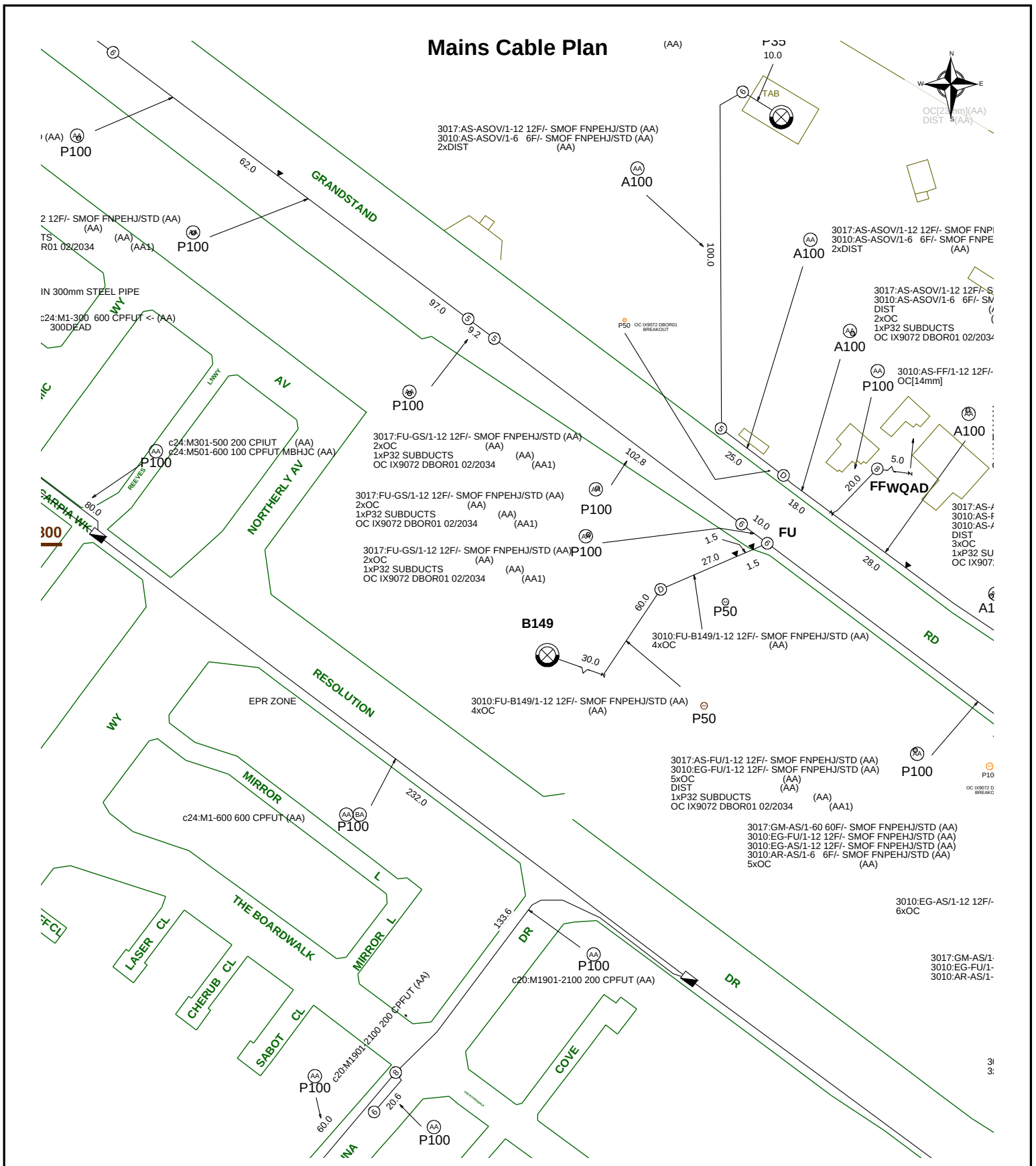
The above plan must be viewed in conjunction with the Mains Cable Plan on the following page

WARNING
Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information.
As such,Telstra supplied location information is indicative only.Spatial accuracy is not applicable to Quality Level D.
Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it.
Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy.
Further on site investigation is required to validate the exact location of Telstra plant prior to commencing construction work.
A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works.

See the Steps- Telstra Duty of Care that was provided in the email response.

**Page 1 of 2**

Attachment 12.1.4 Engineering Servicing Report



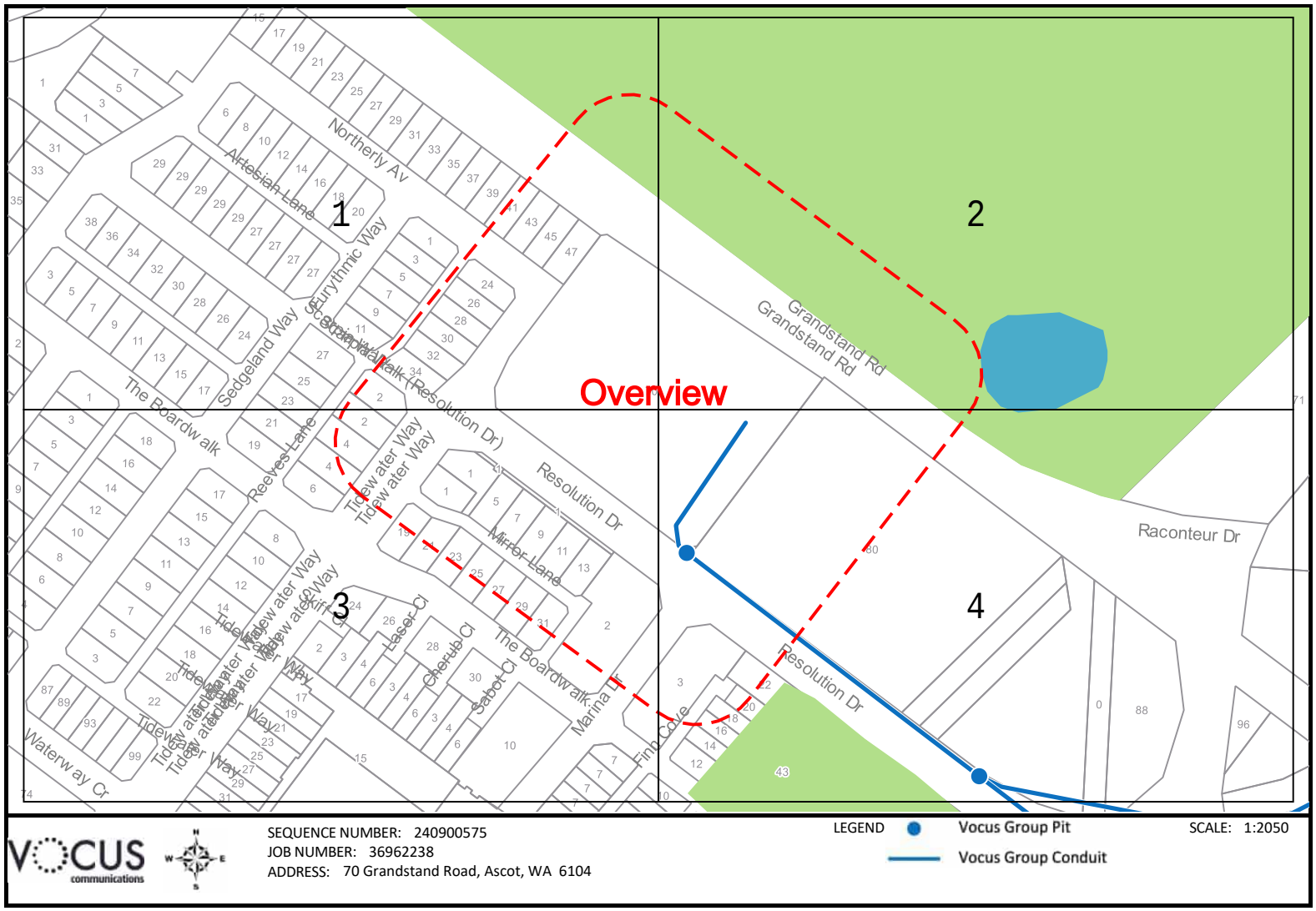

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| Report Damage: https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment<br>Ph - 13 22 03<br>Email - Telstra.Plans@team.telstra.com<br>Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries | Sequence Number: 240900578 |
| TELSTRA LIMITED A.C.N. 086 174 781 | CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance. |
| Generated On 21/06/2024 19:05:34 | |

WARNING
Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information.
As such,Telstra supplied location information is indicative only.Spatial accuracy is not applicable to Quality Level D.
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Further on site investigation is required to validate the exact location of Telstra plant prior to commencing construction work.
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See the Steps- Telstra Duty of Care that was provided in the email response.

Page 2 of 2

Attachment 12.1.4 Engineering Servicing Report

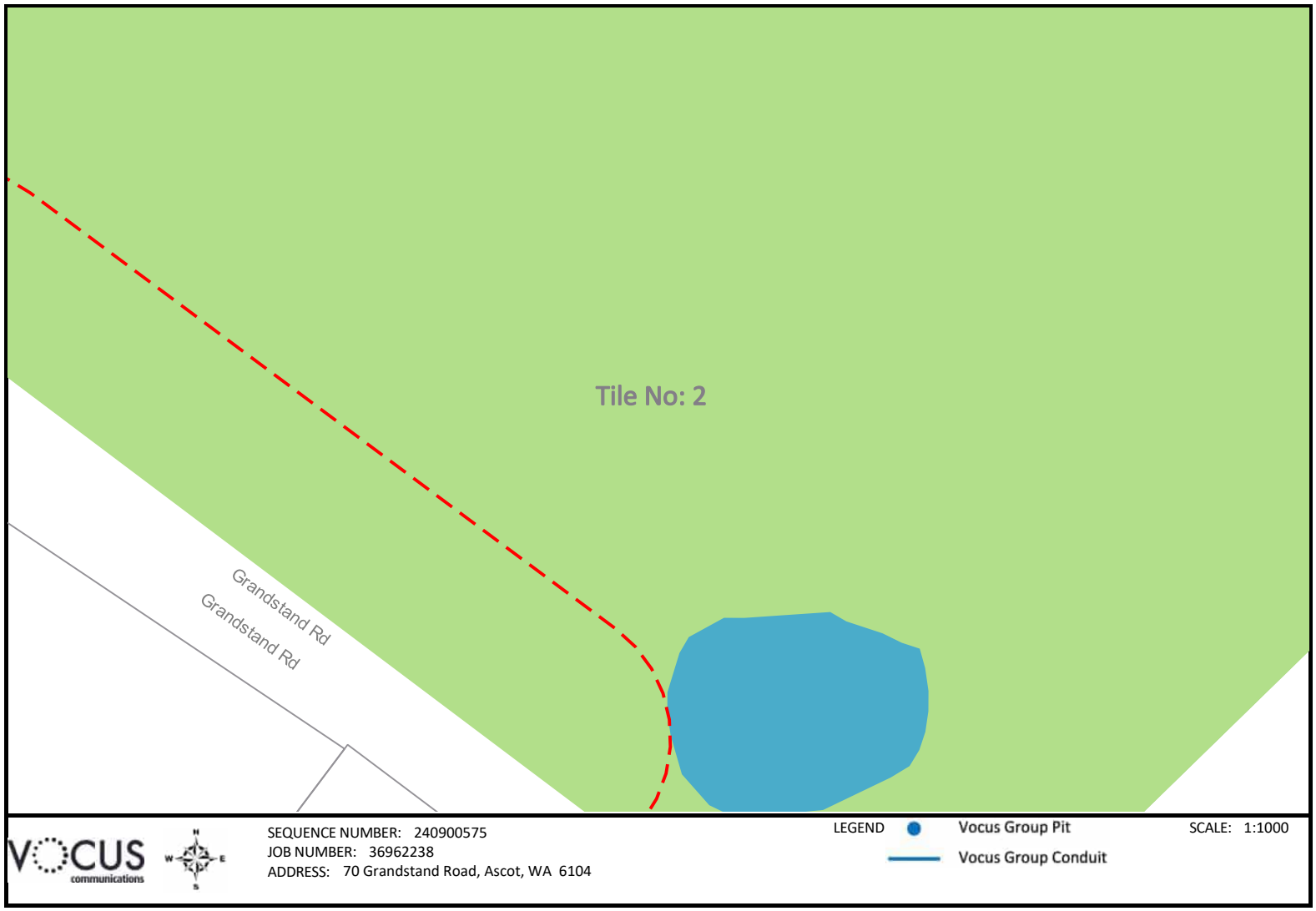


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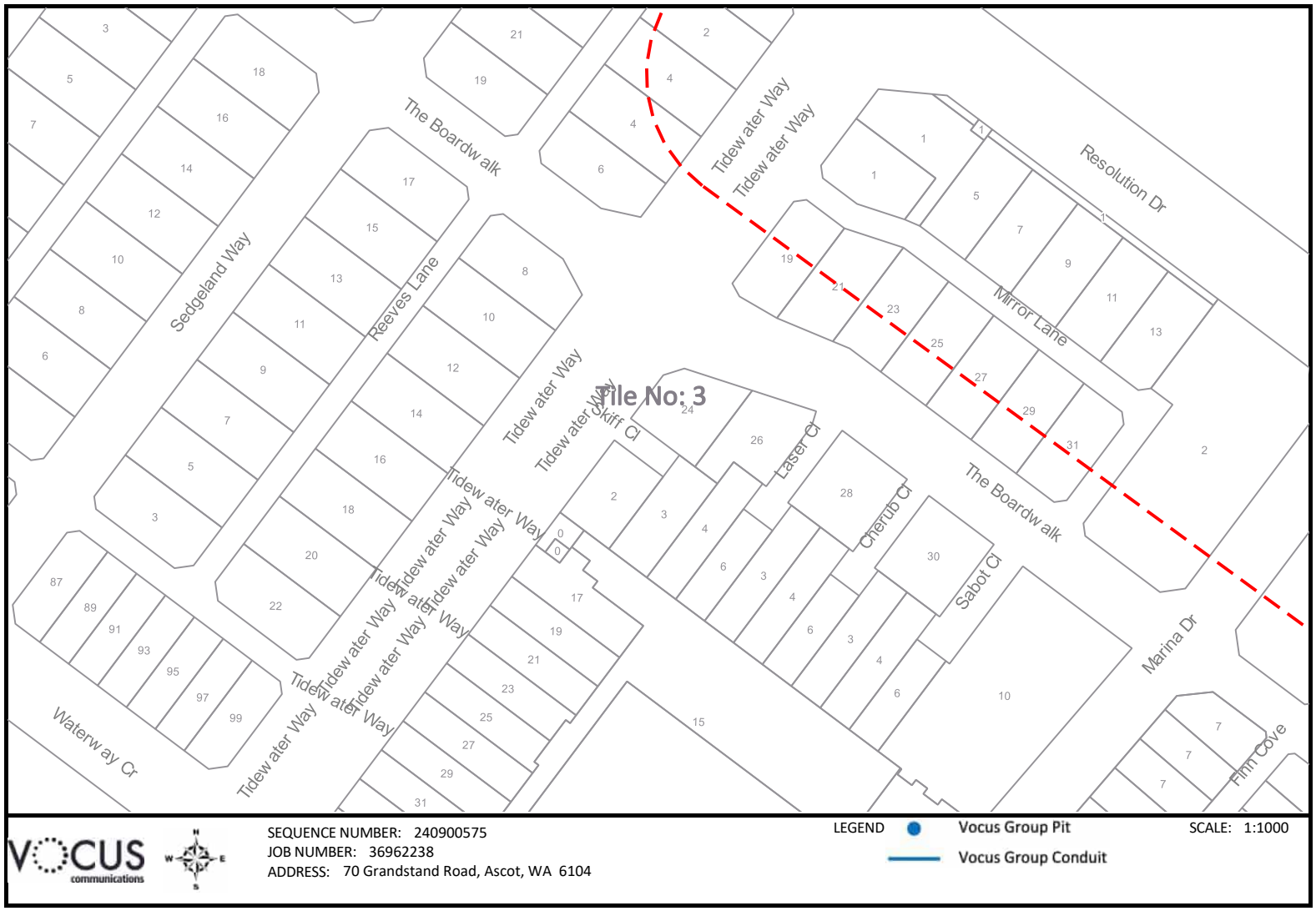

The Vocus Group includes related bodies corporate of Vocus Communications Limited ACN 084 115 499.

Attachment 12.1.4 Engineering Servicing Report



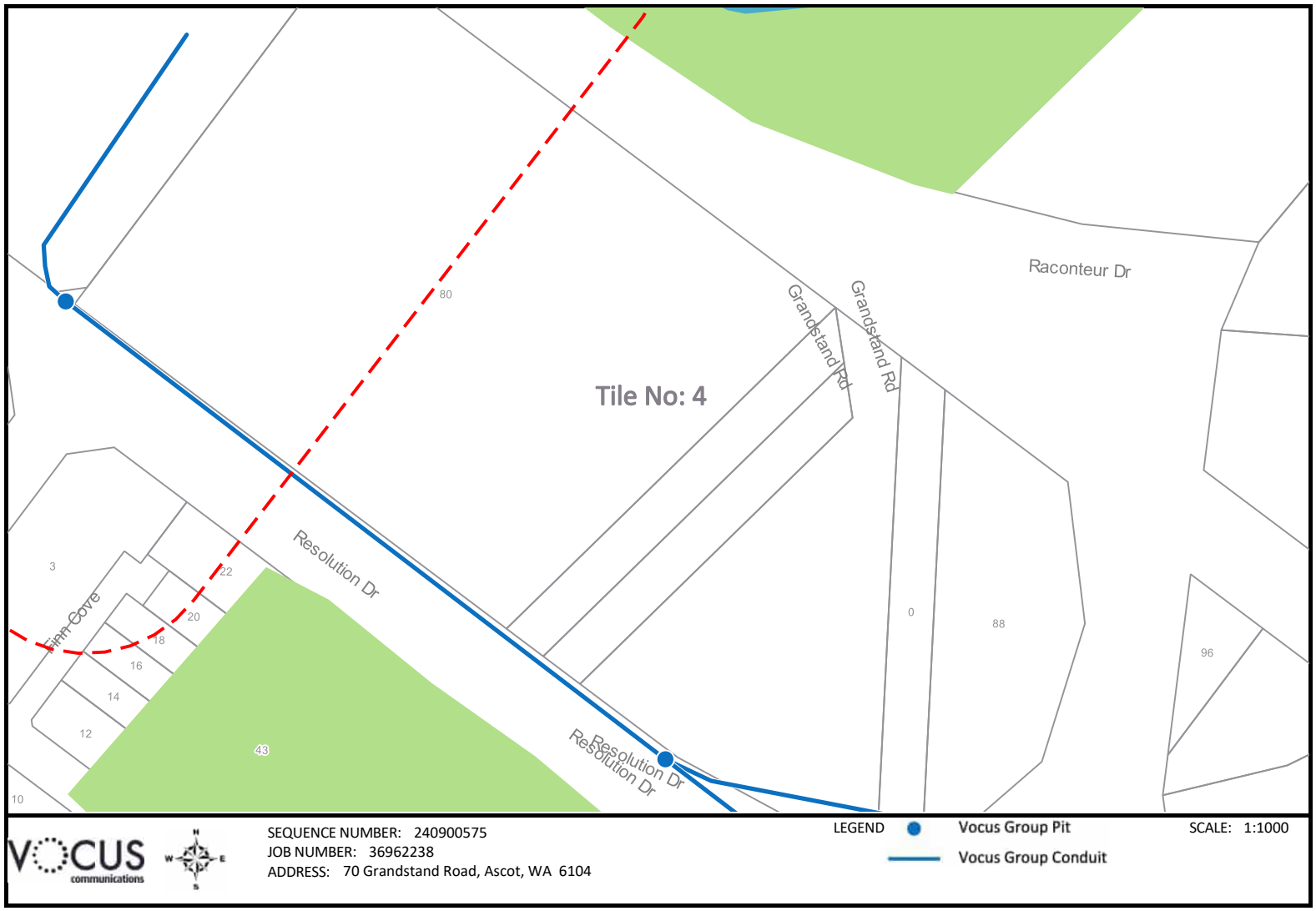

The Vocus Group includes related bodies corporate of Vocus Communications Limited ACN 084 115 499.

Attachment 12.1.4 Engineering Servicing Report



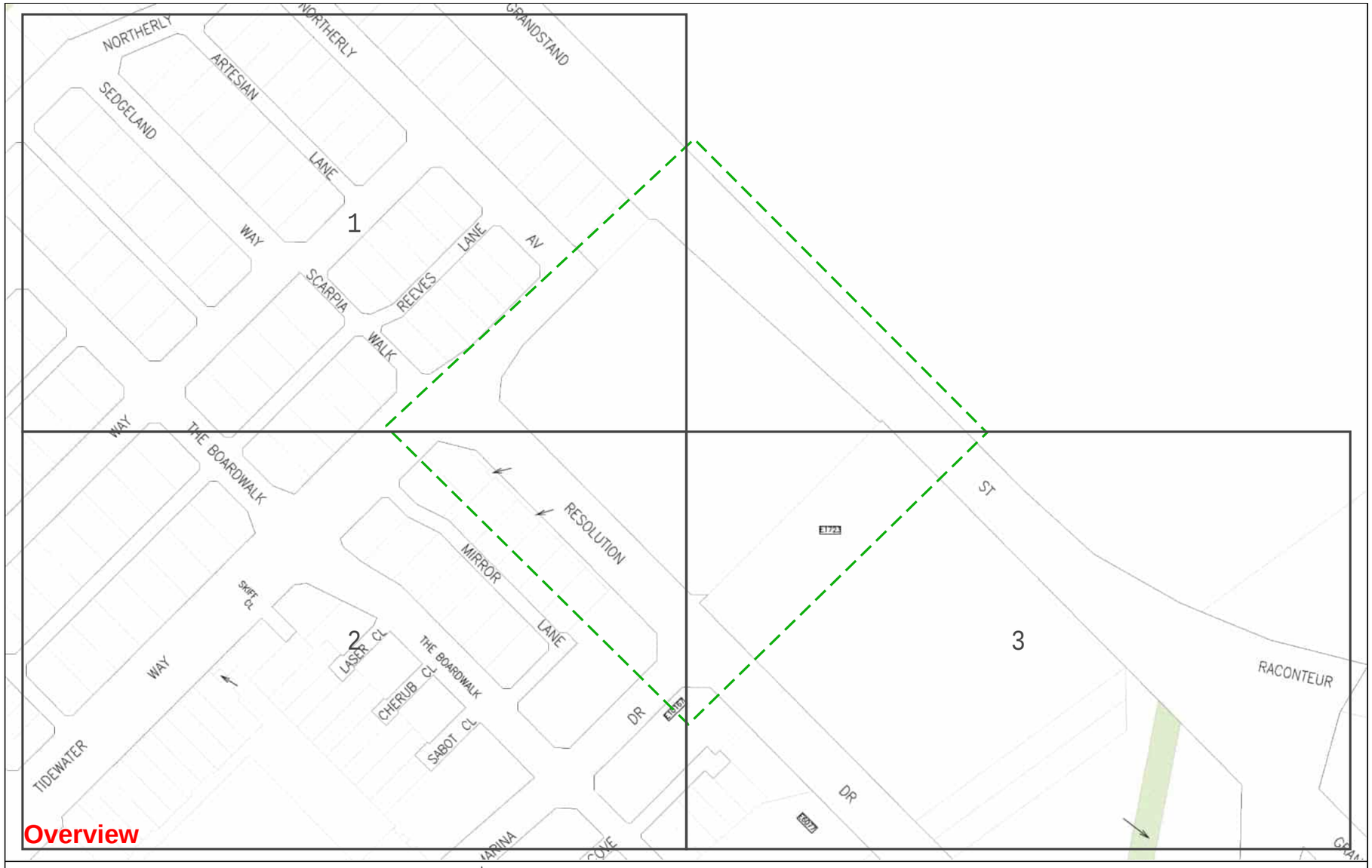

The Vocus Group includes related bodies corporate of Vocus Communications Limited ACN 084 115 499.

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Attachment 12.1.4 Engineering Servicing Report




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Water Corp - Non-critical Plan.docx (21 May 2024)

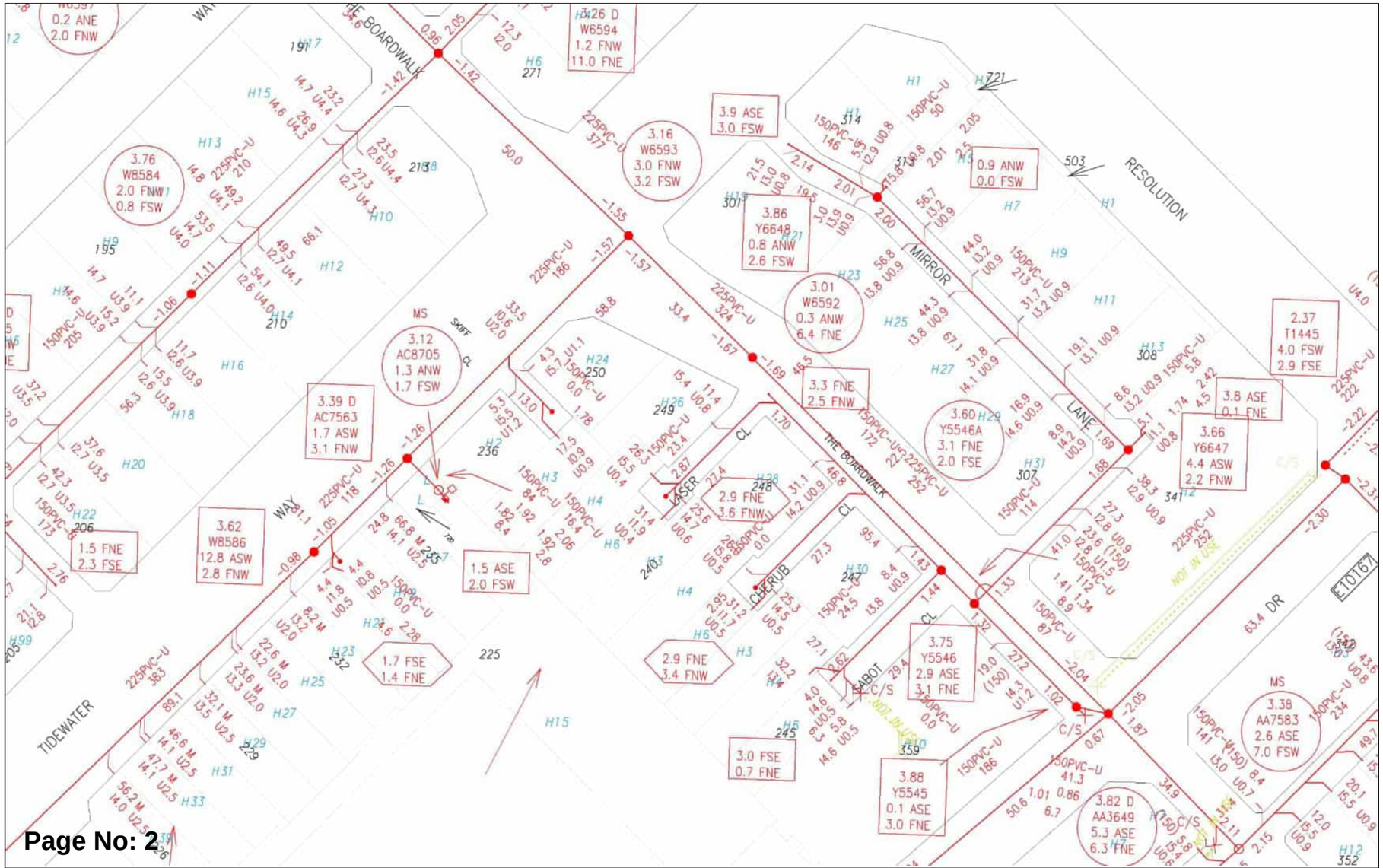
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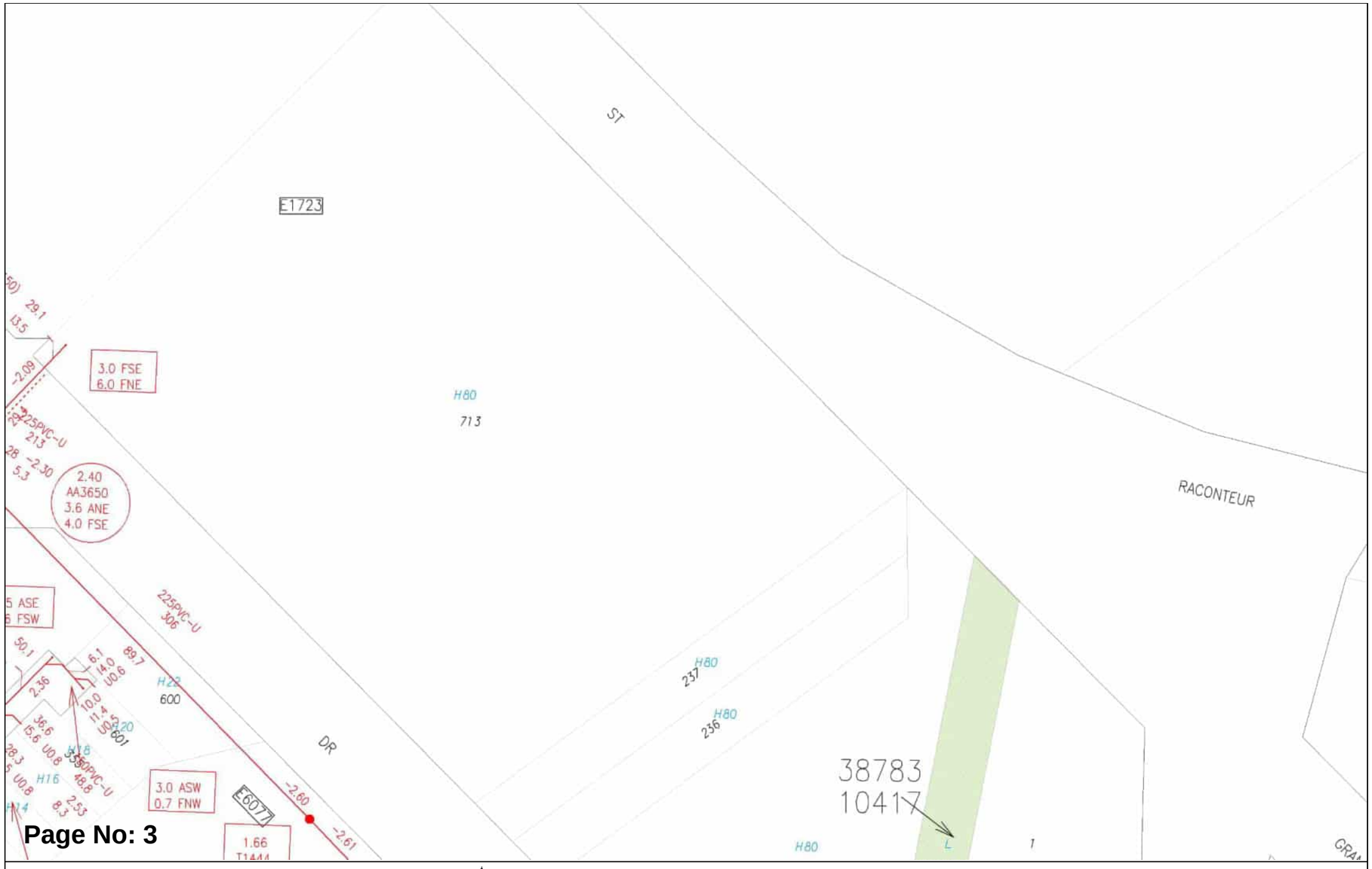

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Water Corp - Non-critical Plan.docx (21 May 2024)

Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report




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| Scale: | 1:750 |
| Job No.: | 36962238 |
| Sequence No.: | 240900579 |
| Print Date: | 21 Jun 2024 |

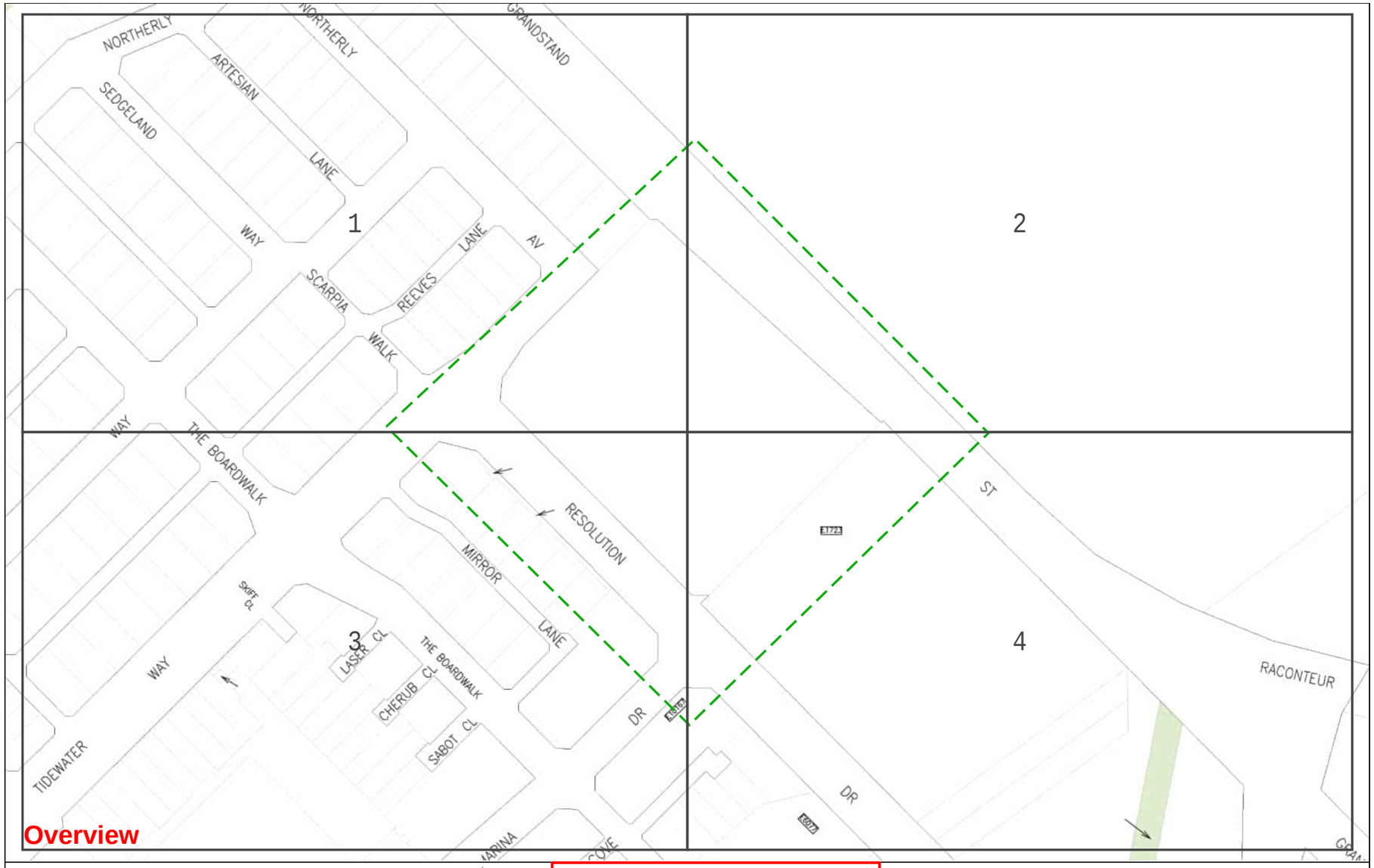
Sewer

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Water Corp - Non-critical Plan.docx (21 May 2024)

Attachment 12.1.4 Engineering Servicing Report




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Water Corp - Critical Plan.docx (21 May 2024)

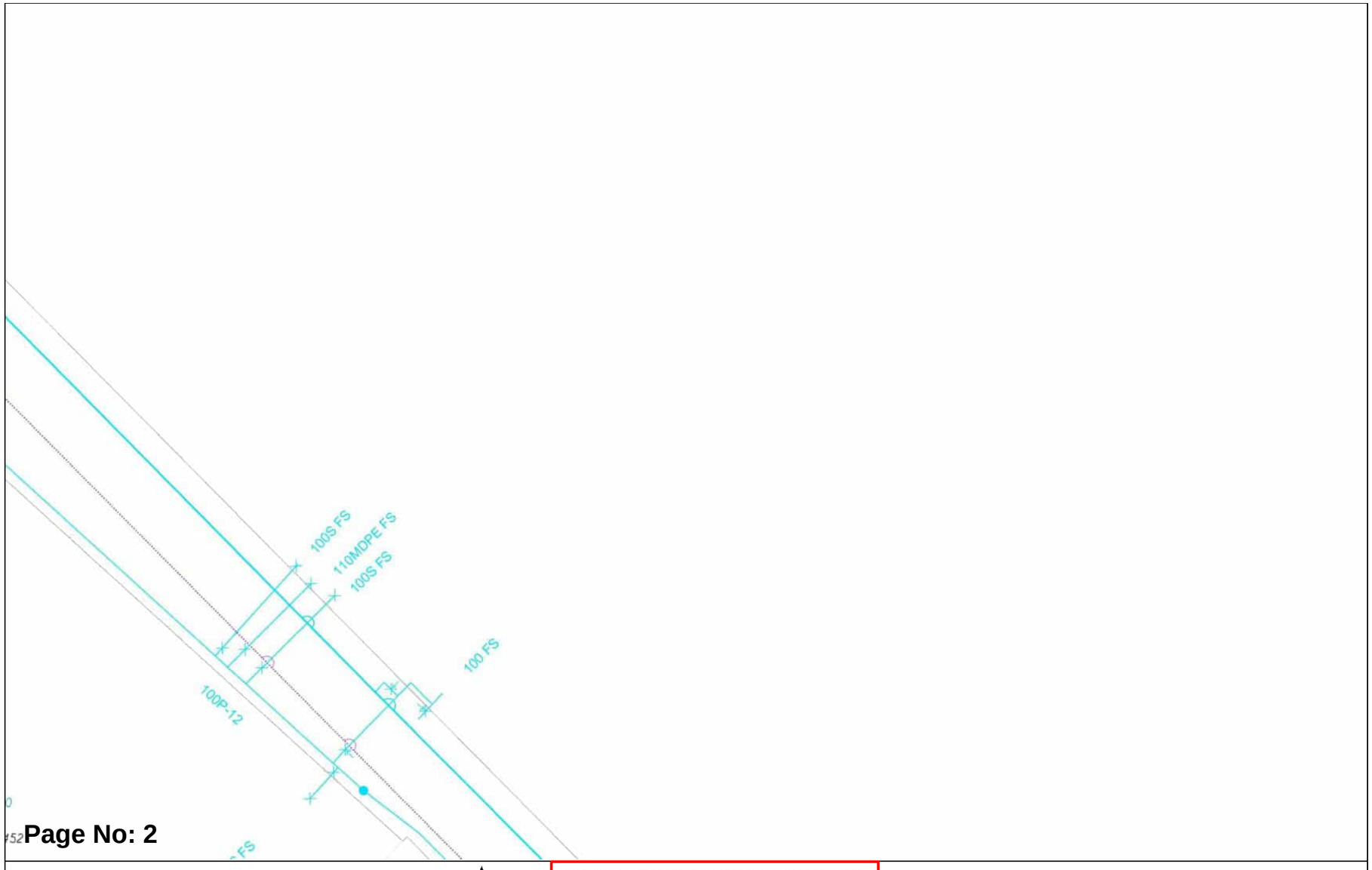
Attachment 12.1.4 Engineering Servicing Report




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Water Corp - Critical Plan.docx (21 May 2024)

Attachment 12.1.4 Engineering Servicing Report




**Page No: 2**

WATER CORPORATION

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| Job No.: | 36962238 |
| Sequence No.: | 240900579 |
| Print Date: | 21 Jun 2024 |

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Water

WARNING ASSET PROTECTION APPROVAL MAY BE REQUIRED

Apply for approval to work near our assets at:

Working near assets (watercorporation.com.au)

Unauthorised work within prescribed proximities of Water Corporation Assets is prohibited.

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Water Corp - Critical Plan.docx (21 May 2024)

Attachment 12.1.4 Engineering Servicing Report




**Page No: 3**

WATER CORPORATION

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| Job No.: | 36962238 |
| Sequence No.: | 240900579 |
| Print Date: | 21 Jun 2024 |

Water

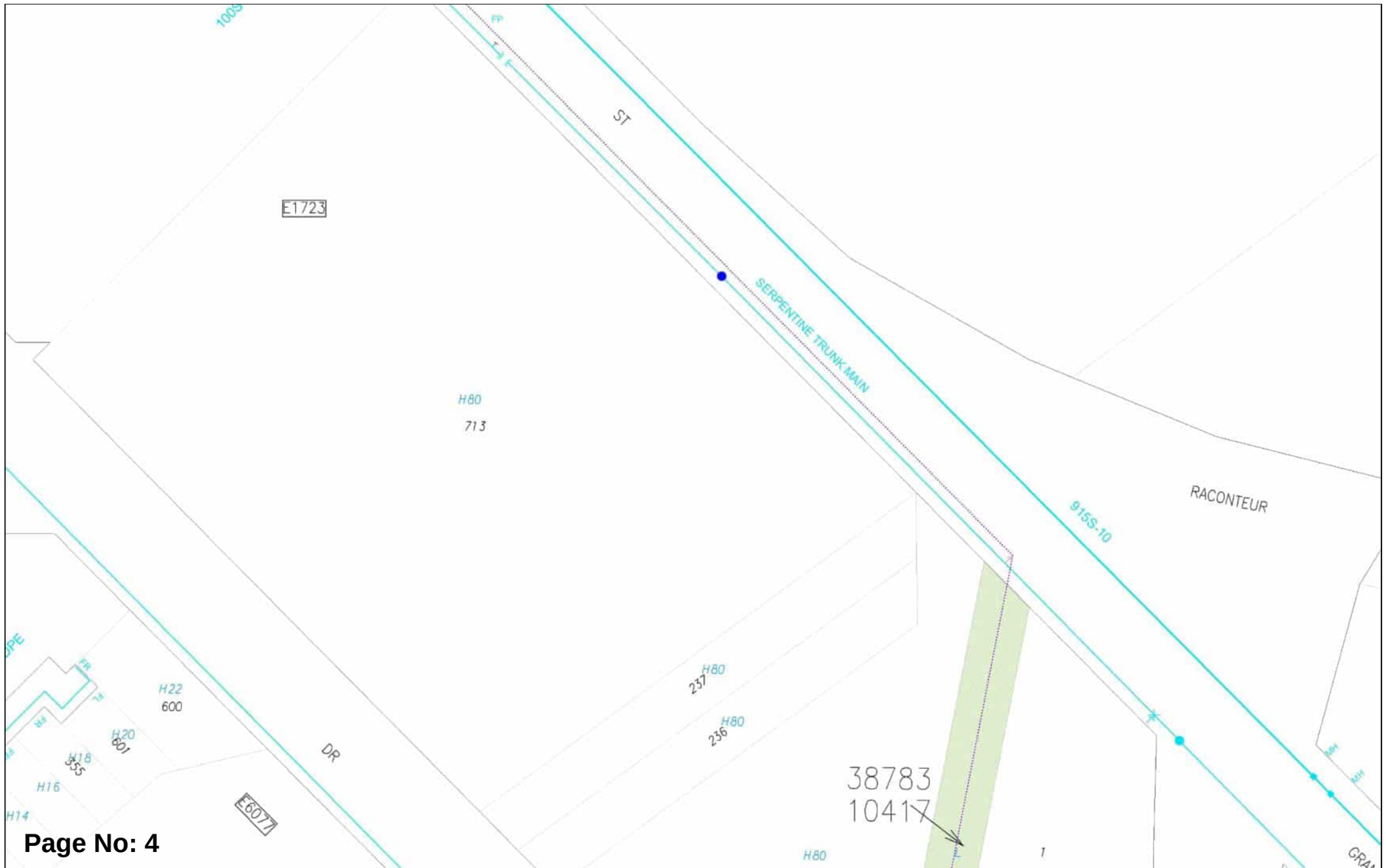
WARNING ASSET PROTECTION APPROVAL MAY BE REQUIRED

Apply for approval to work near our assets at:
Working near assets (watercorporation.com.au)

Unauthorised work within prescribed proximities of Water Corporation Assets is prohibited.

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Attachment 12.1.4 Engineering Servicing Report




WATER CORPORATION

Scale: 1:750
Job No.: 36962238
Sequence No.: 240900579
Print Date: 21 Jun 2024

Water

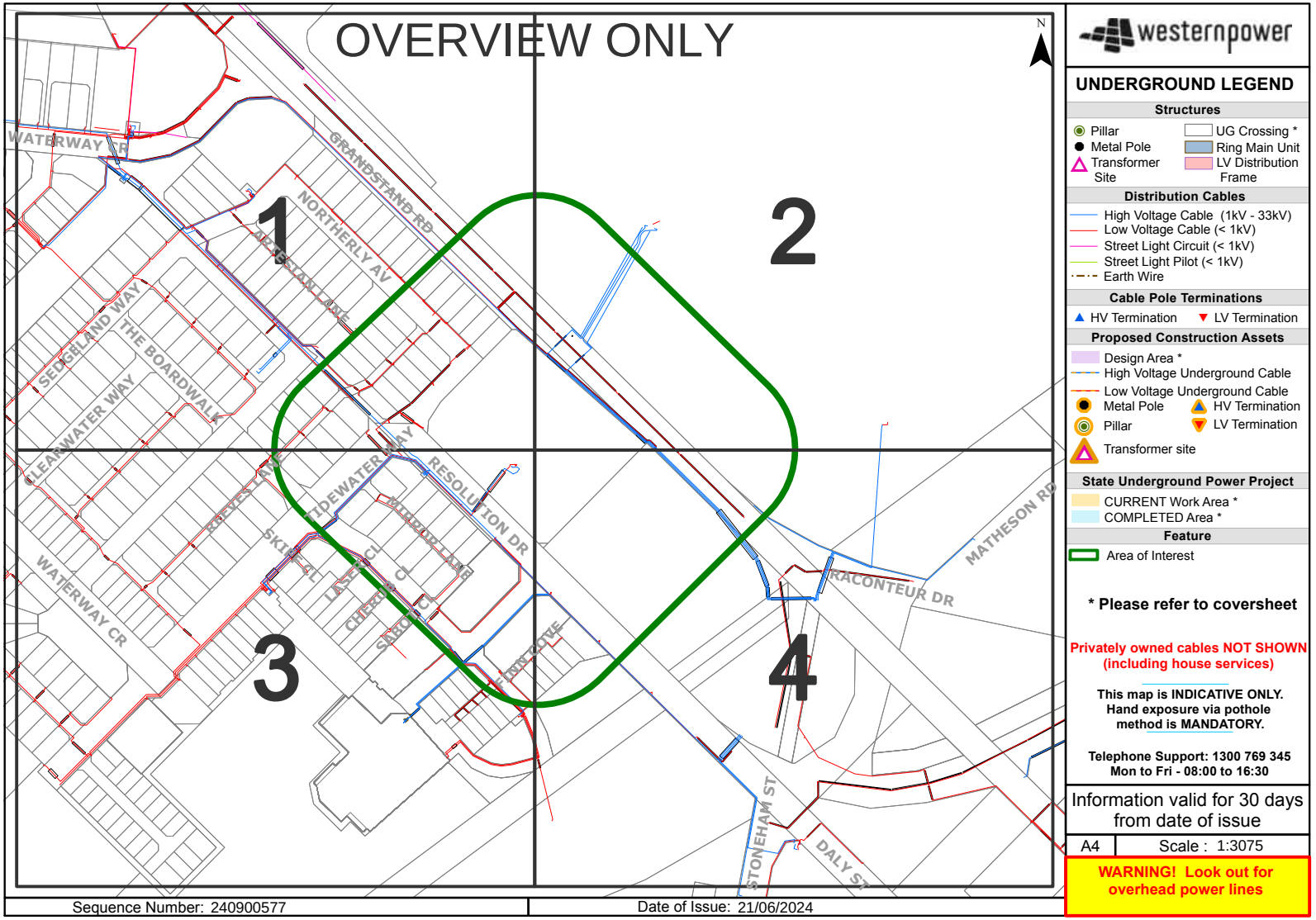
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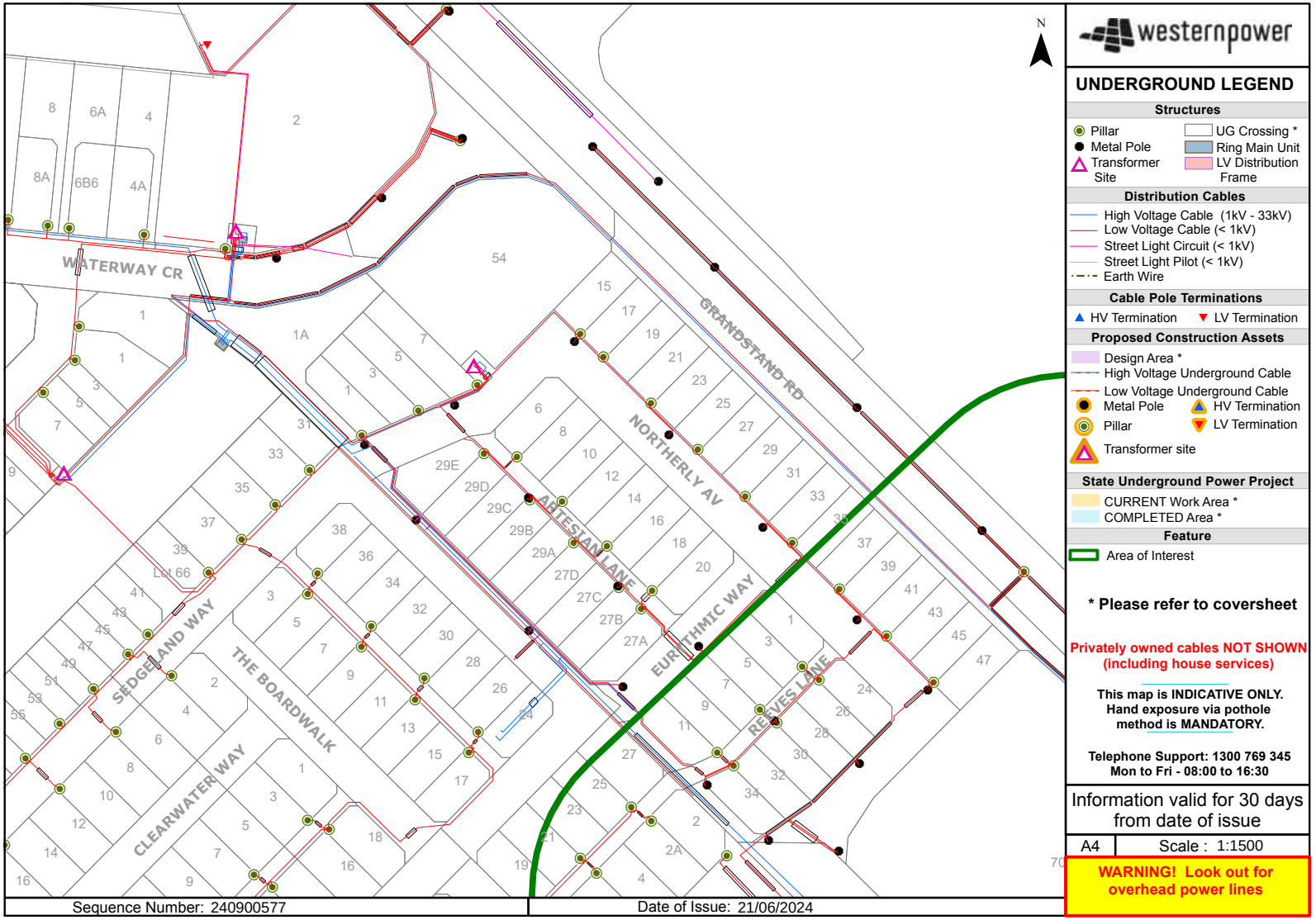
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Water Corp - Critical Plan.docx (21 May 2024)

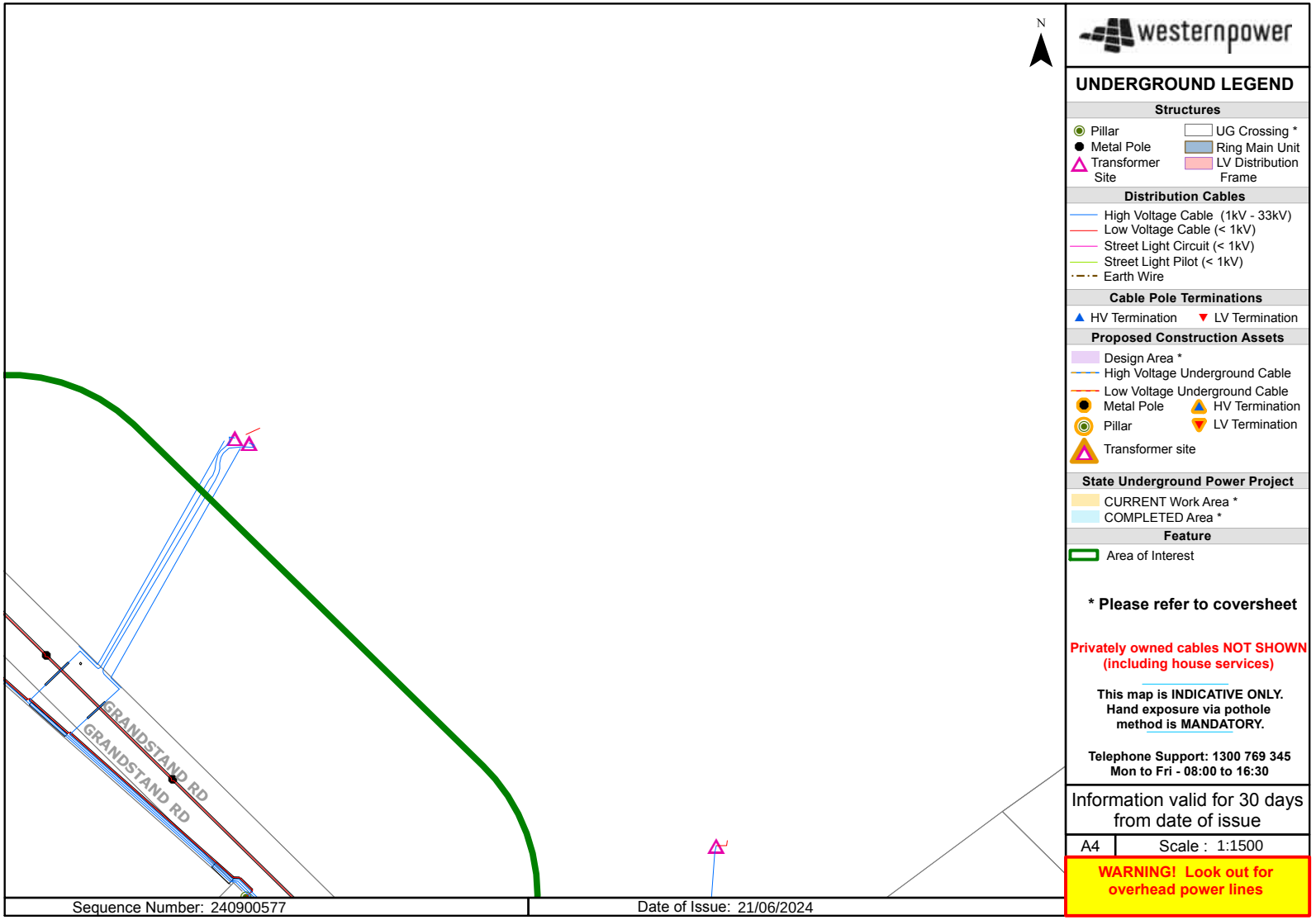
Attachment 12.1.4 Engineering Servicing Report



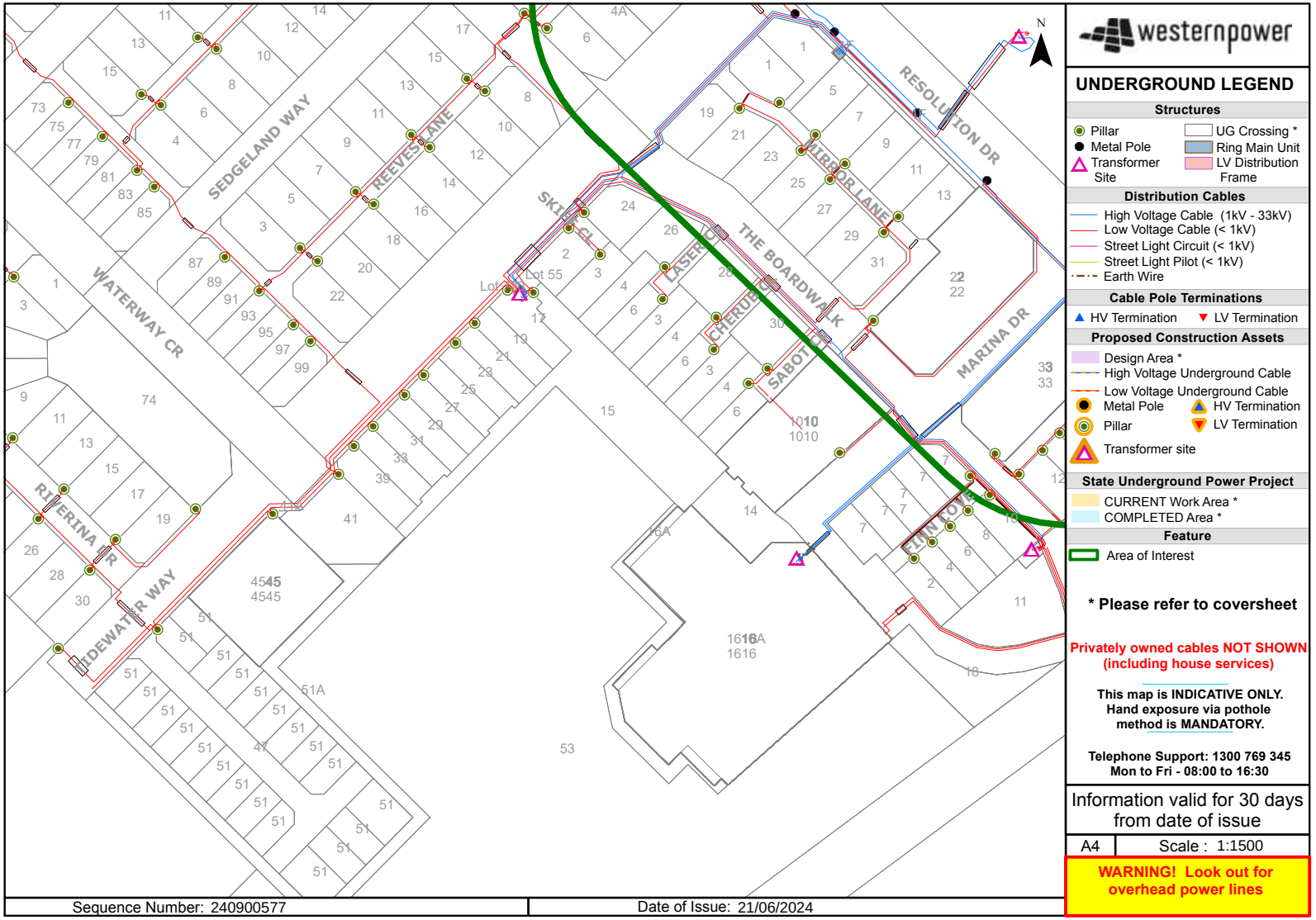
Attachment 12.1.4 Engineering Servicing Report



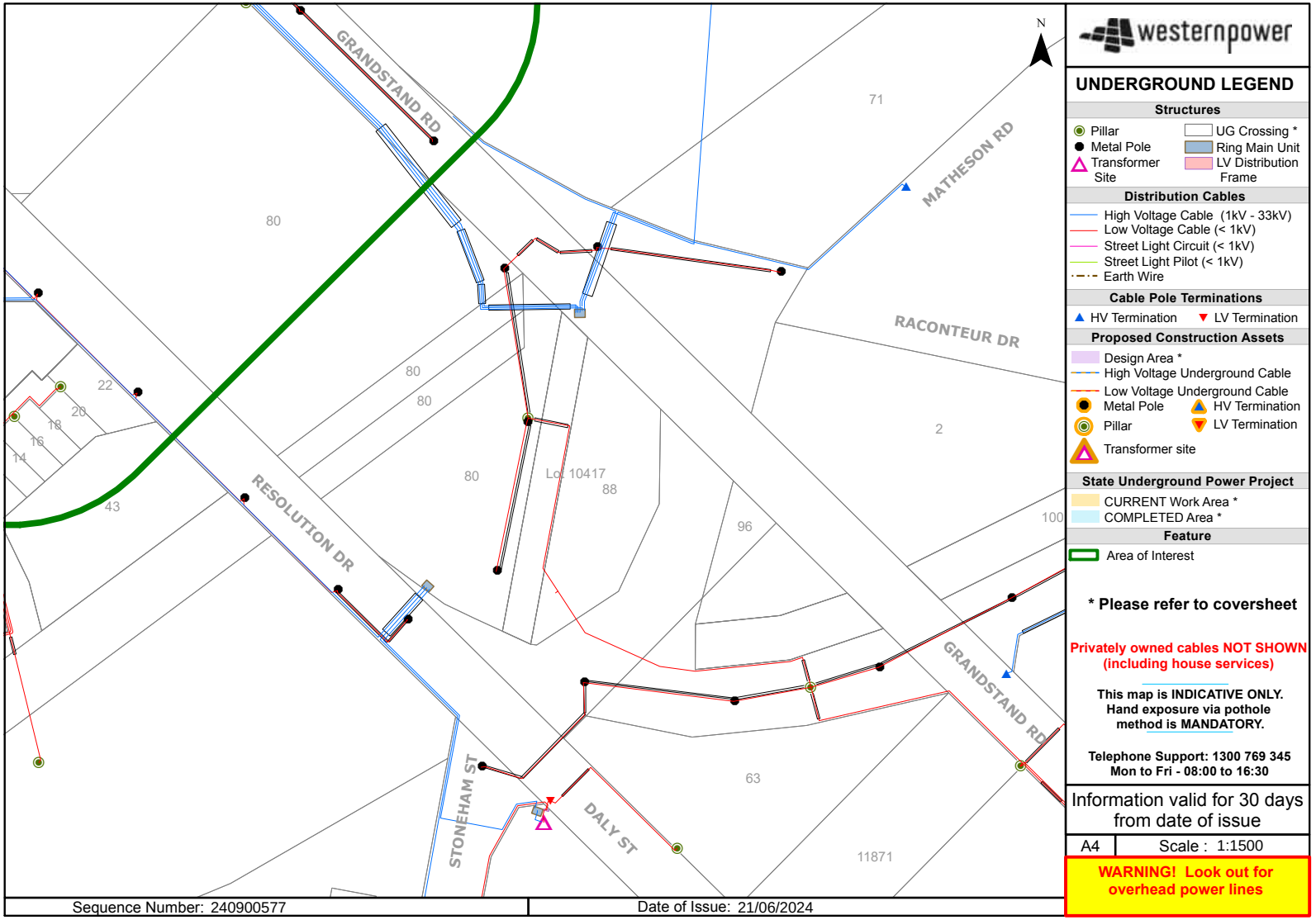
Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report

Job ID 36962238
**Preinct D**

BEFORE YOU DIG www.byda.com.au

## End of document

**This document may exclude some files (eg. DWF or ZIP files)**

This document was automatically generated at a point-in-time. Be aware that the source information from which this document was created may have changed since it was produced. This document may contain incomplete or out-of-date information. Always check your enquiry details in the BYDA Referral Service for the most recent information. For copyright information refer to individual responses.

Attachment 12.1.4 Engineering Servicing Report

Job No 36962250

BEFORE YOU DIG www.byda.com.au

byda.com.au

## Contact Details

| Contact | Contact number | Company | Enquirer ID |
|---|---|---|---|
| Justin Zielinski | 0420 304 451 | - | 3140642 |

**Email**
jzielinski@tabec.com.au

**Address**
54 Havelock Street
West Perth WA 6005

## Job Site and Enquiry Details

**WARNING:** The map below only displays the location of the proposed job site and does not display any asset owners' pipe or cables. The area highlighted has been used only to identify the participating asset owners, who will send information to you directly.

| Enquiry date | Start date | End date | On behalf of | Job purpose | Locations | Onsite activities |
|---|---|---|---|---|---|---|
| 21/06/2024 | 24/06/2024 | 24/06/2024 | Private | Design | Both Road | Planning & Design |



Check that the location of the job site is correct. If not, you must submit a new enquiry.

If the scope of works change or plan validity dates expire, you must submit a new enquiry.

Do NOT dig without plans. Safe excavation is your responsibility. If you don't understand the plans or how to proceed safely, please contact the relevant asset owners.

**User Reference**
Precinct C - 2

**Address**
71 Matheson Road
Ascot WA 6104

**Notes/description**
-

## Your Responsibility and Duty of Care

- **Lodging an enquiry does not authorise project commencement.** Before starting work, you must obtain all necessary information from all affected asset owners.
- If you don't receive plans within 2 business days, contact the asset owner & quote their sequence number.
- Always follow the 5Ps of Safe Excavation (page 2), and locate assets before commencing work.
- Ensure you comply with State legislative requirements for Duty of Care and safe digging.
- If you damage an underground asset, you MUST advise the asset owner immediately.
- By using the BYDA service, you agree to the Privacy Policy and Term of Use.
- For more information on safe digging practices, visit www.byda.com.au

## Asset Owner Details

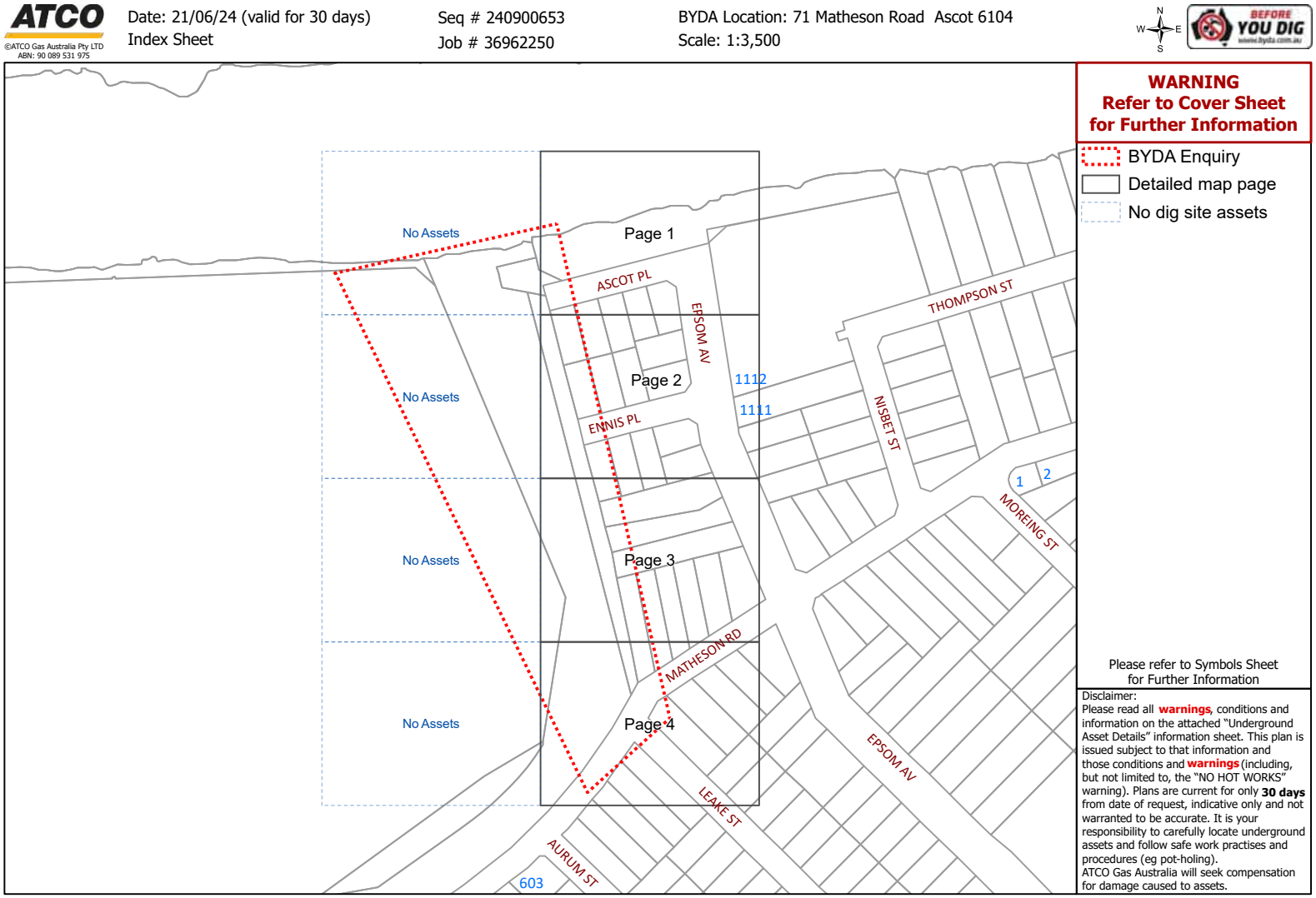
Below is a list of asset owners with underground infrastructure in and around your job site. It is your responsibility to identify the presence of these assets. Plans issued by Members are indicative only unless specified otherwise. Note: not all asset owners are registered with BYDA. You must contact asset owners not listed here directly.

| Referral ID (Seq. no) | Authority Name | Phone | Status |
|---|---|---|---|
| 240900653 | ATCO Gas Australia | 1300 926 755 | NOTIFIED |
| 240900649 | NBN Co (WA) | 1800 687 626 | NOTIFIED |
| 240900651 | Telstra (WA) | 1800 653 935 | NOTIFIED |
| 240900652 | Water Corporation | 13 13 95 | NOTIFIED |
| 240900650 | Western Power | 13 10 87 | NOTIFIED |

END OF UTILITIES LIST

**Lodge your FREE enquiry online any time at byda.com.au**

Attachment 12.1.4 Engineering Servicing Report




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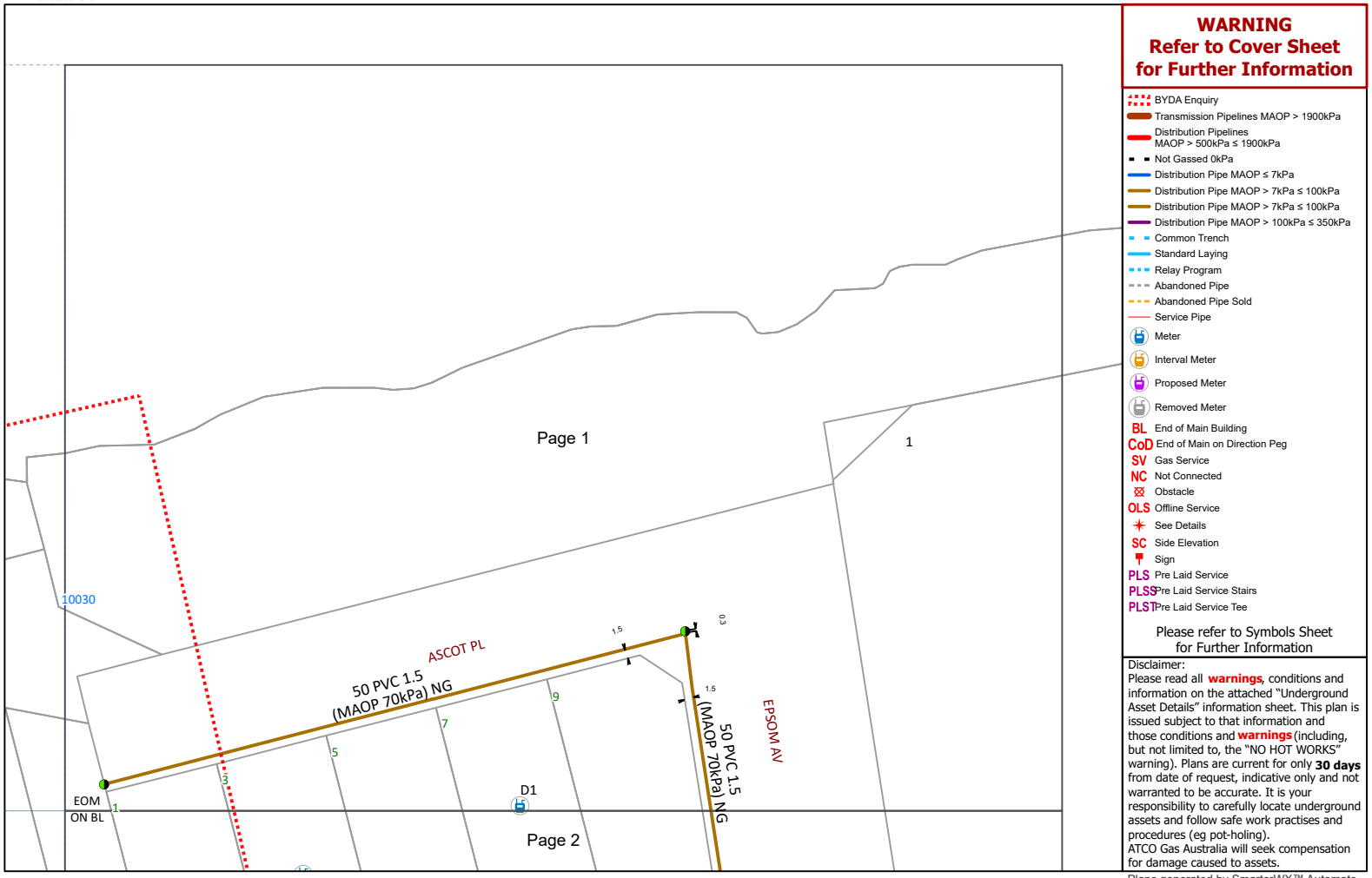
Attachment 12.1.4 Engineering Servicing Report

ATCO
©ATCO Gas Australia Pty LTD
ABN: 90 089 531 975

Date: 21/06/24 (valid for 30 days)

Seq # 240900653
Job # 36962250

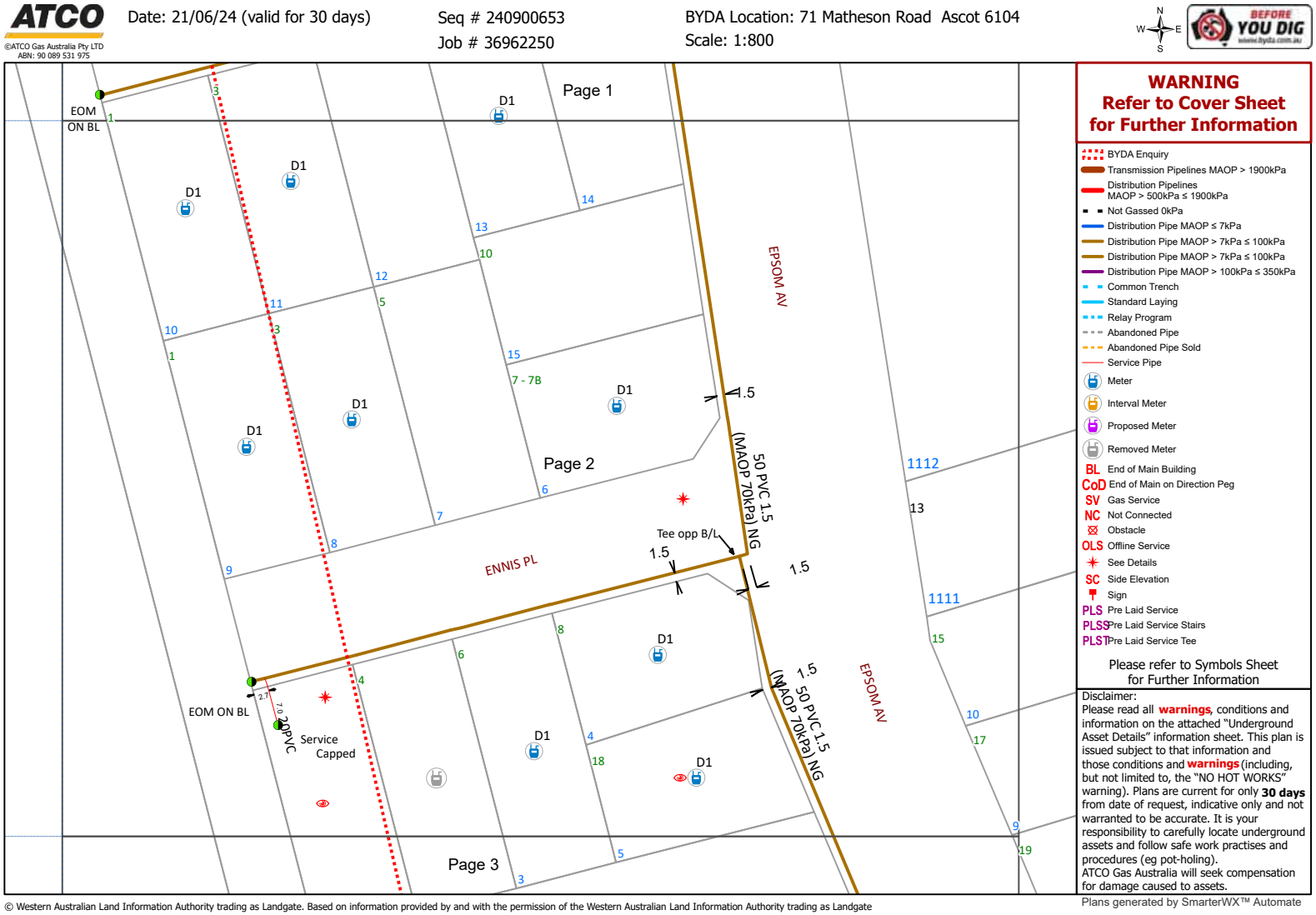
BYDA Location: 71 Matheson Road Ascot 6104
Scale: 1:800



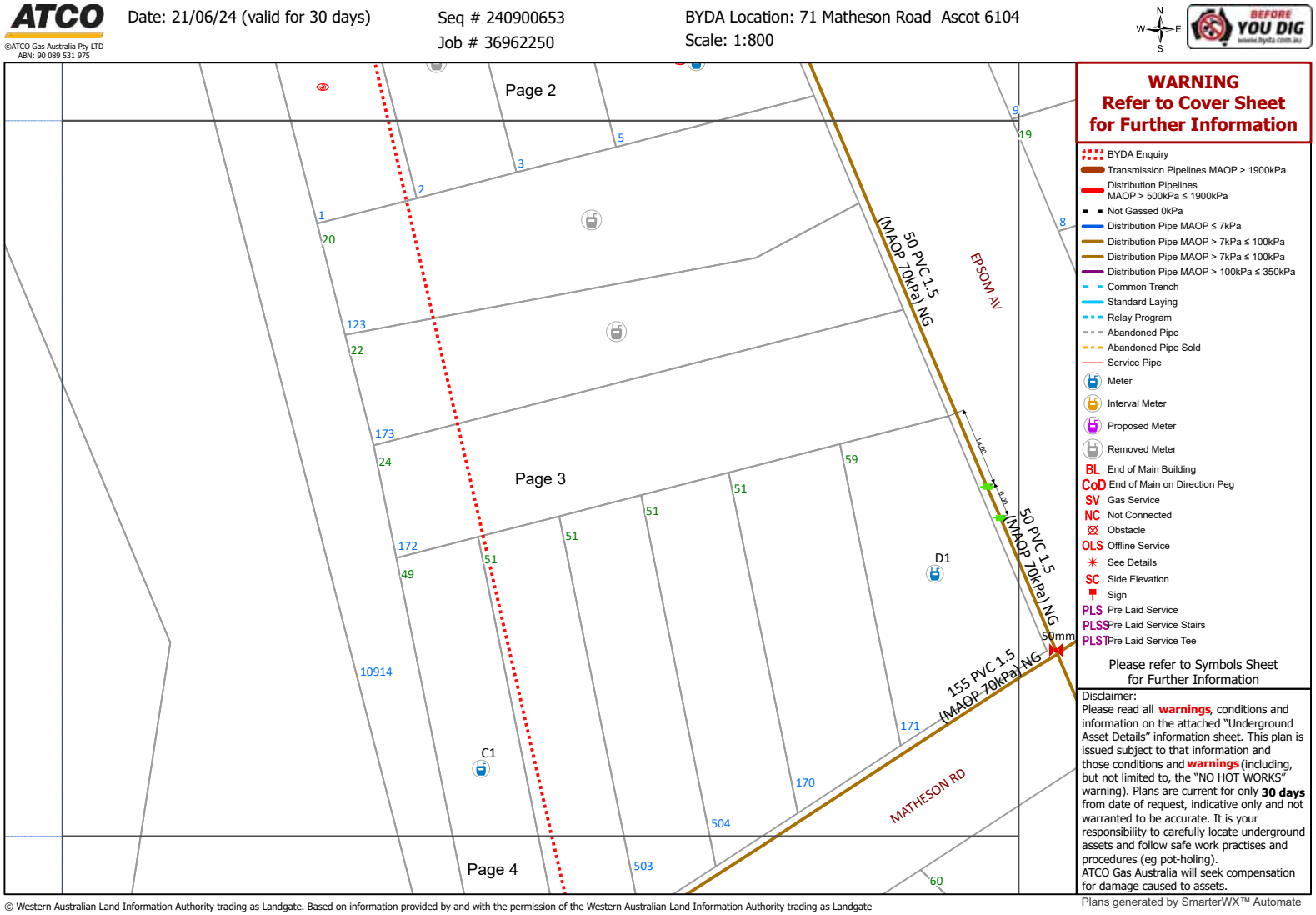

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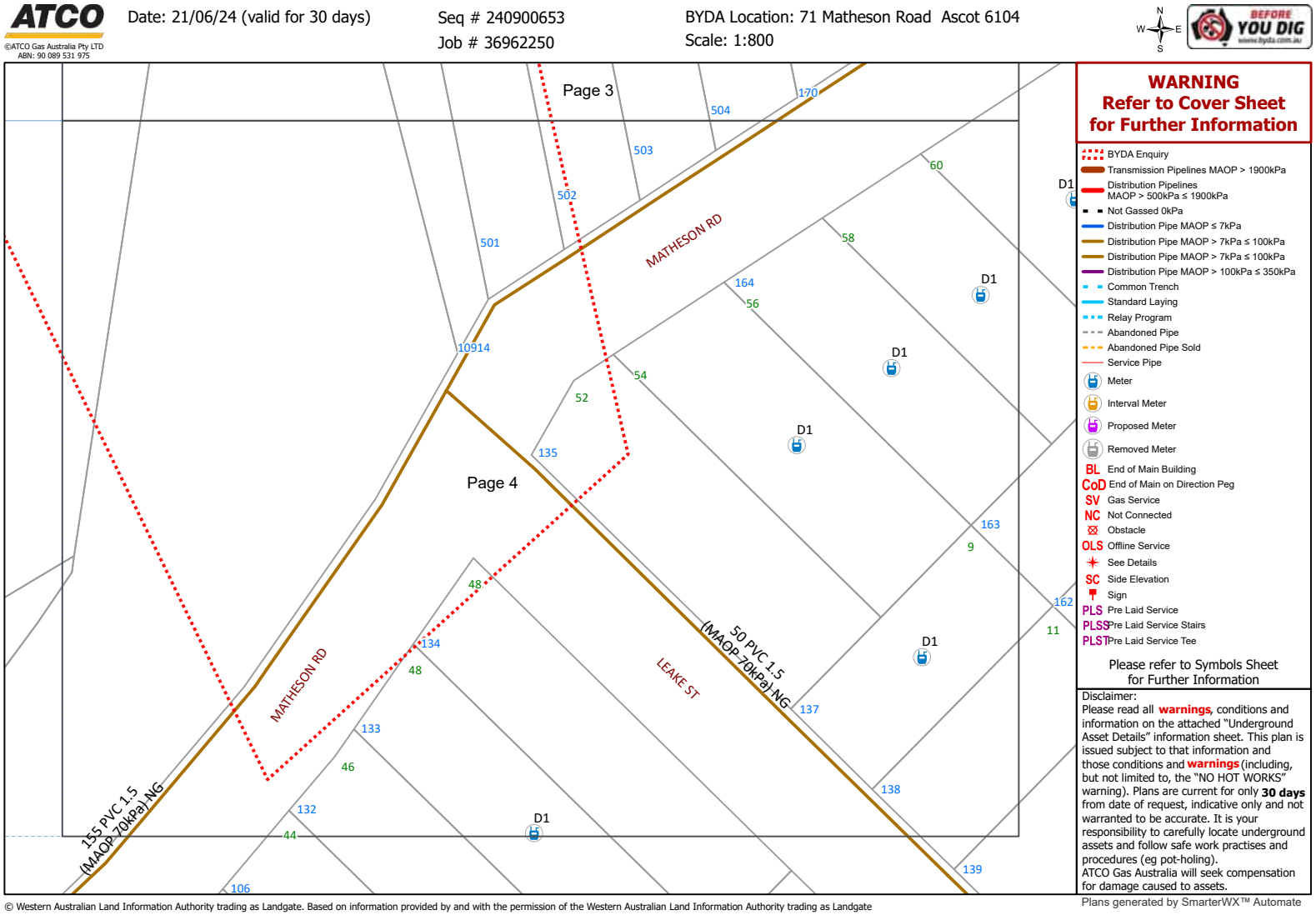
Attachment 12.1.4 Engineering Servicing Report



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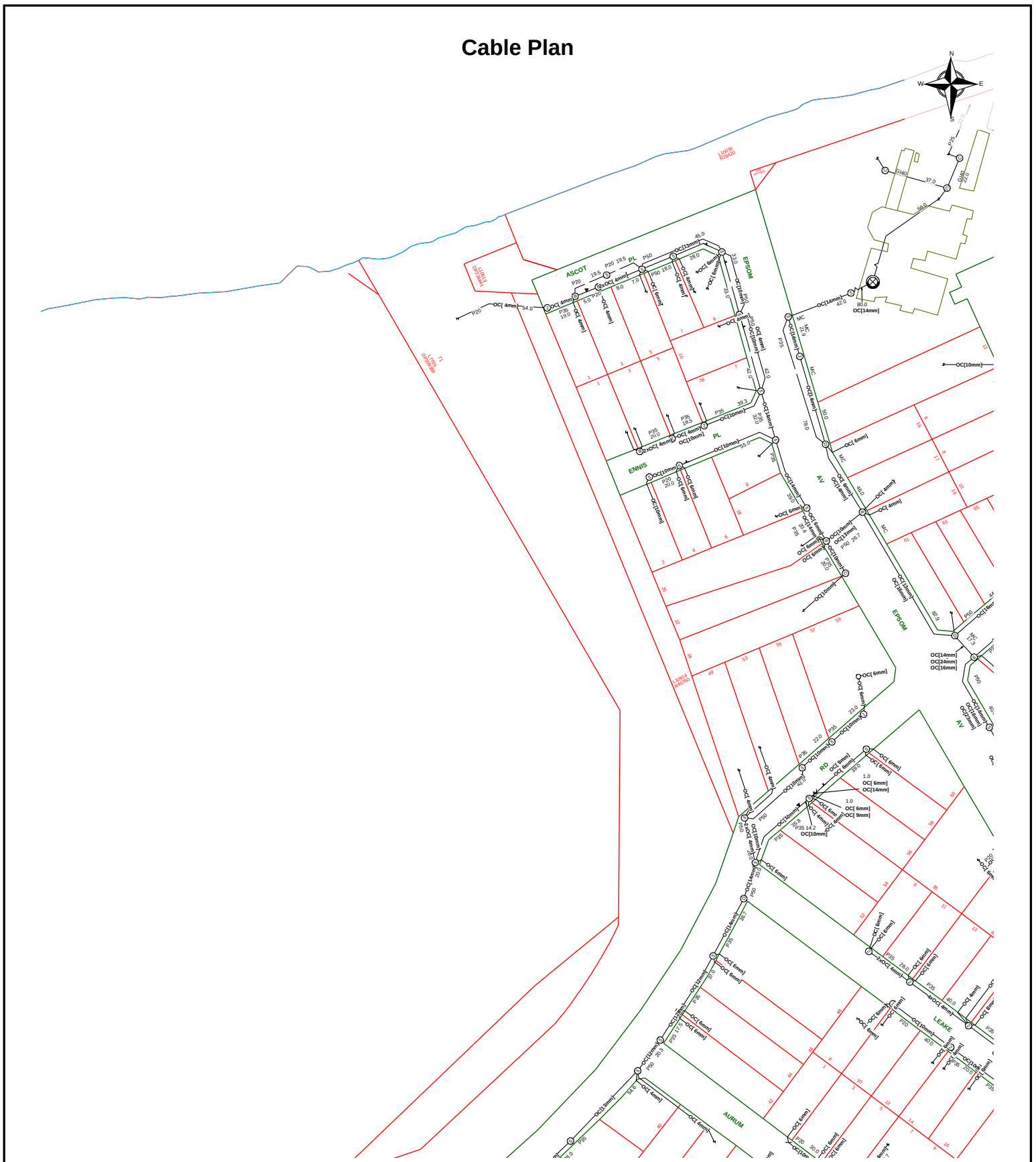


## Emergency Contacts

You must immediately report any damage to the **nbn™** network that you are/become aware of. Notification may be by telephone - 1800 626 329.

Attachment 12.1.4 Engineering Servicing Report

## Cable Plan




| | |
|---|---|
| Report Damage: https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment<br>Ph - 13 22 03<br>Email - Telstra.Plans@team.telstra.com<br>Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries | Sequence Number: 240900651 |
| TELSTRA LIMITED A.C.N. 086 174 781 | CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance. |
| Generated On 21/06/2024 19:09:58 | |

The above plan must be viewed in conjunction with the Mains Cable Plan on the following page

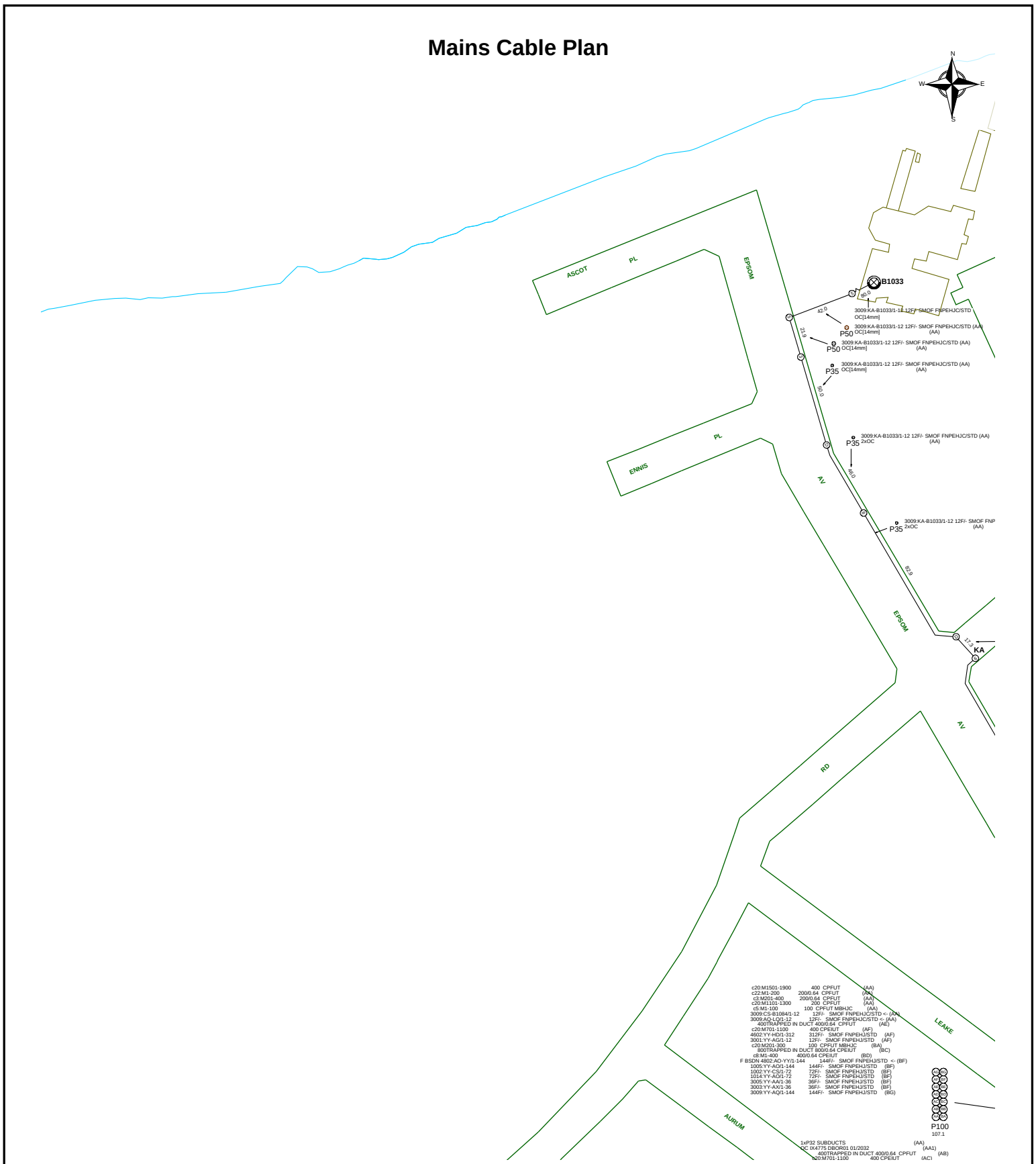
WARNING
Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information.
As such,Telstra supplied location information is indicative only.Spatial accuracy is not applicable to Quality Level D.
Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it.
Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy.
Further on site investigation is required to validate the exact location of Telstra plant prior to commencing construction work.
A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works.

See the Steps- Telstra Duty of Care that was provided in the email response.

Page 1 of 2

Attachment 12.1.4 Engineering Servicing Report

## Mains Cable Plan




| | |
|---|---|
| Report Damage: https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment<br>Ph - 13 22 03<br>Email - Telstra.Plans@team.telstra.com<br>Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries | Sequence Number: 240900651 |
| TELSTRA LIMITED A.C.N. 086 174 781 | CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance. |
| Generated On 21/06/2024 19:09:59 | |

WARNING
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See the Steps- Telstra Duty of Care that was provided in the email response.

Page 2 of 2

Attachment 12.1.4 Engineering Servicing Report




**Overview**

WATER CORPORATION

Scale: 1:3075
Job No.: 36962250
Sequence No.: 240900652
Print Date: 21 Jun 2024

N

Water

WARNING ASSET PROTECTION APPROVAL MAY BE REQUIRED

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Working near assets (watercorporation.com.au)

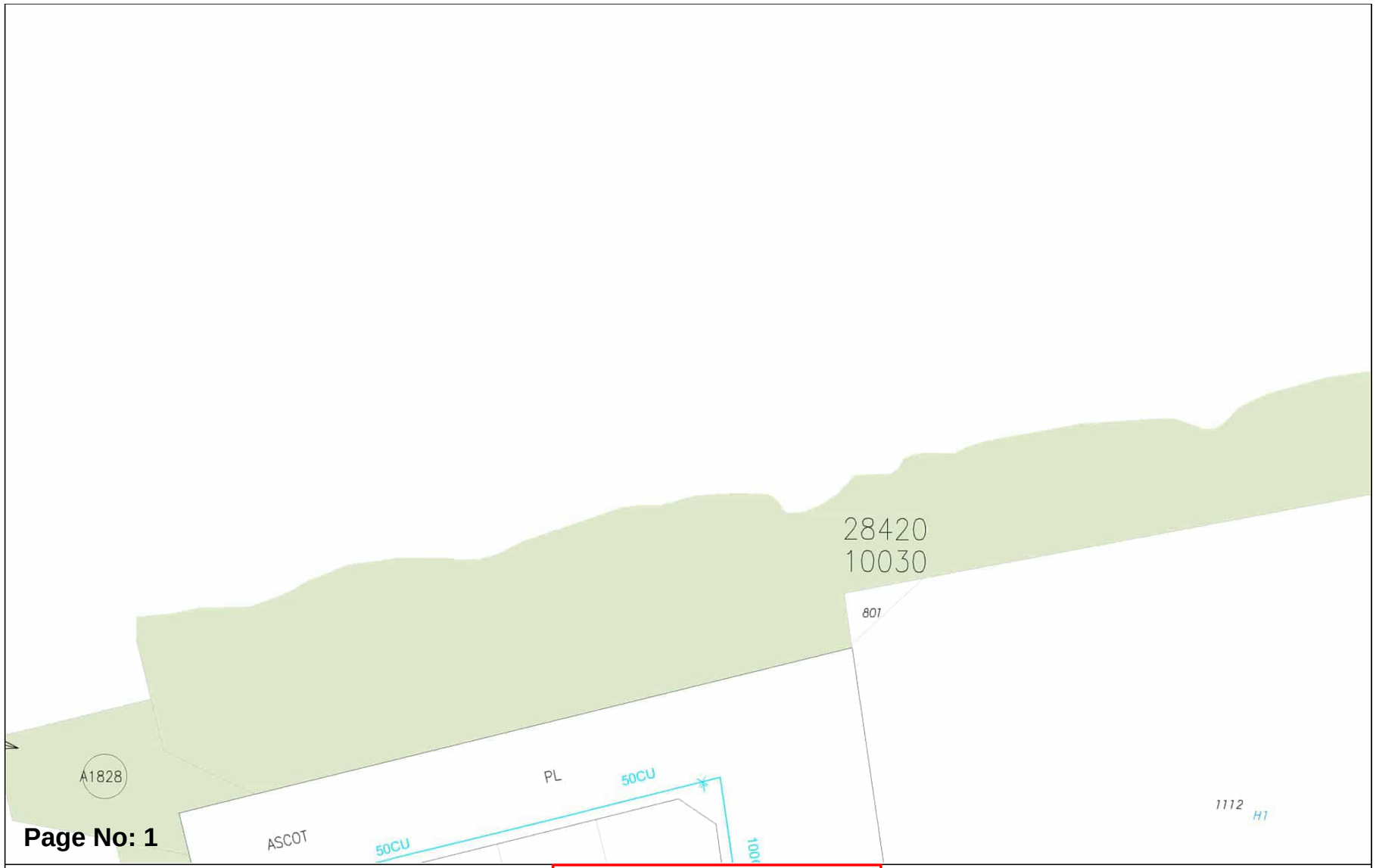
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Attachment 12.1.4 Engineering Servicing Report




**Page No: 2**

WATER CORPORATION

| | |
|---|---|
| Scale: | 1:750 |
| Job No.: | 36962250 |
| Sequence No.: | 240900652 |
| Print Date: | 21 Jun 2024 |

Water

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**Page No: 3**

WATER CORPORATION

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|---|---|
| Scale: | 1:750 |
| Job No.: | 36962250 |
| Sequence No.: | 240900652 |
| Print Date: | 21 Jun 2024 |

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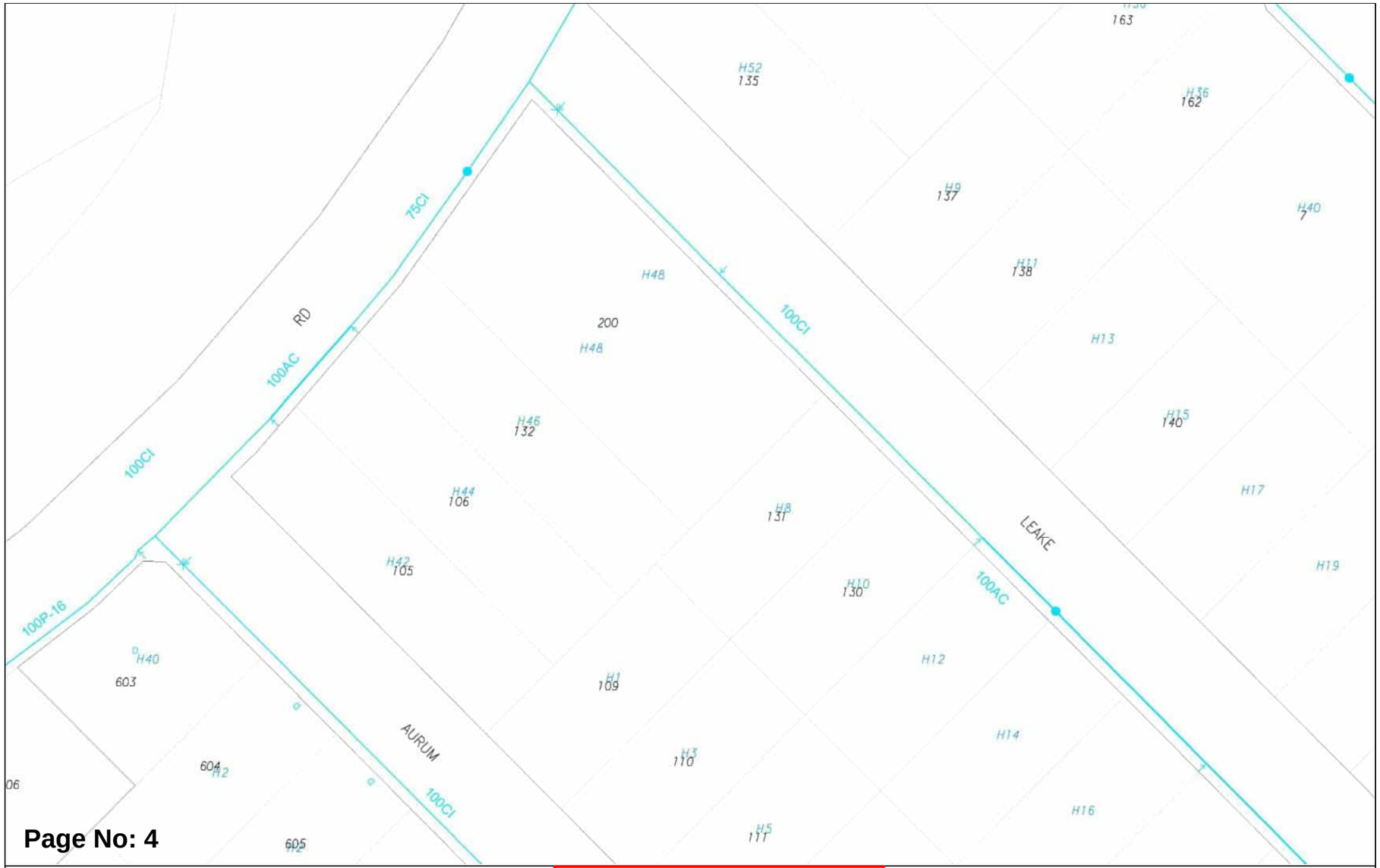
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**Overview**

WATER CORPORATION

| | |
|---|---|
| Scale: | 1:3075 |
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| Sequence No.: | 240900652 |
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**Sewer**

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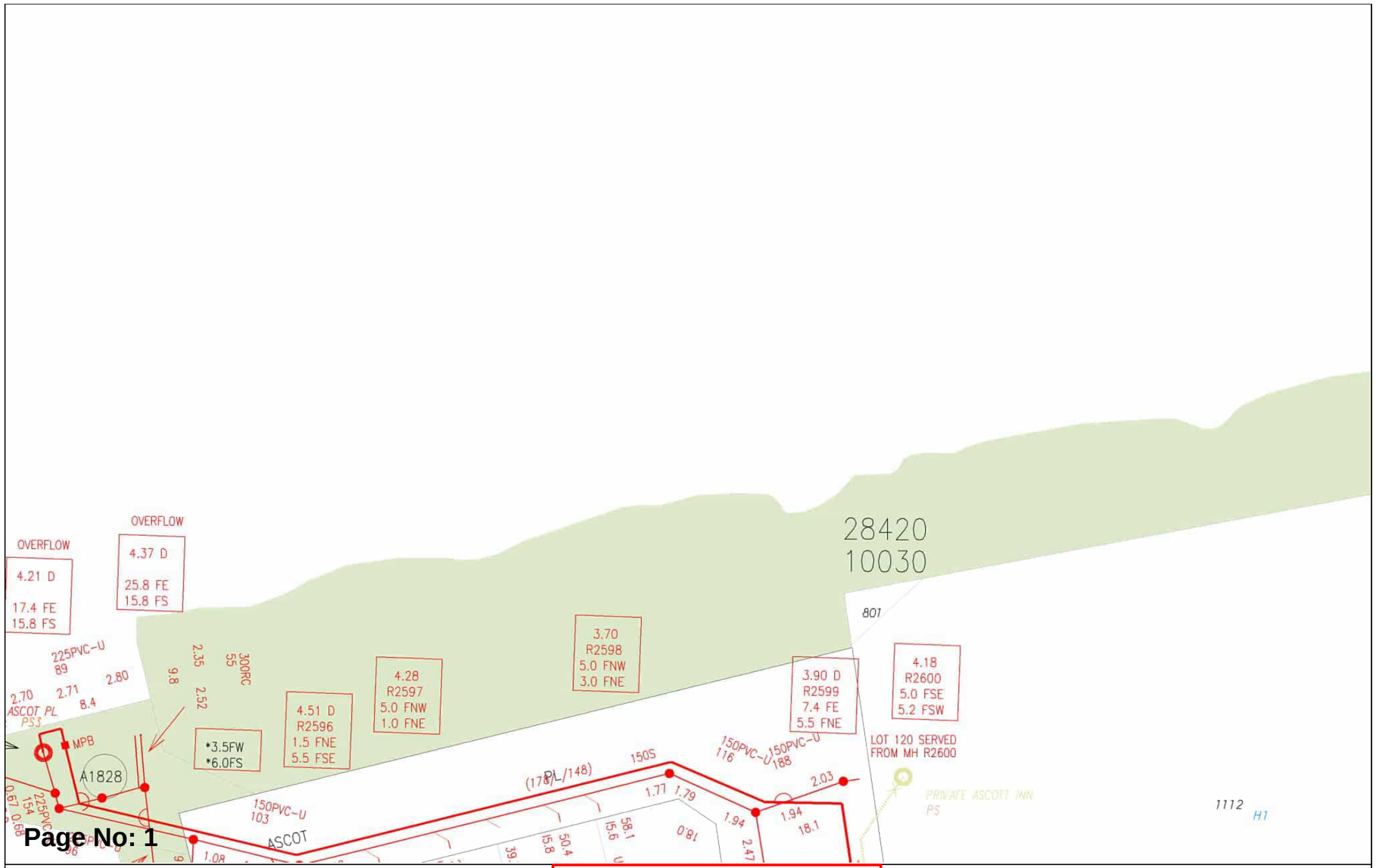
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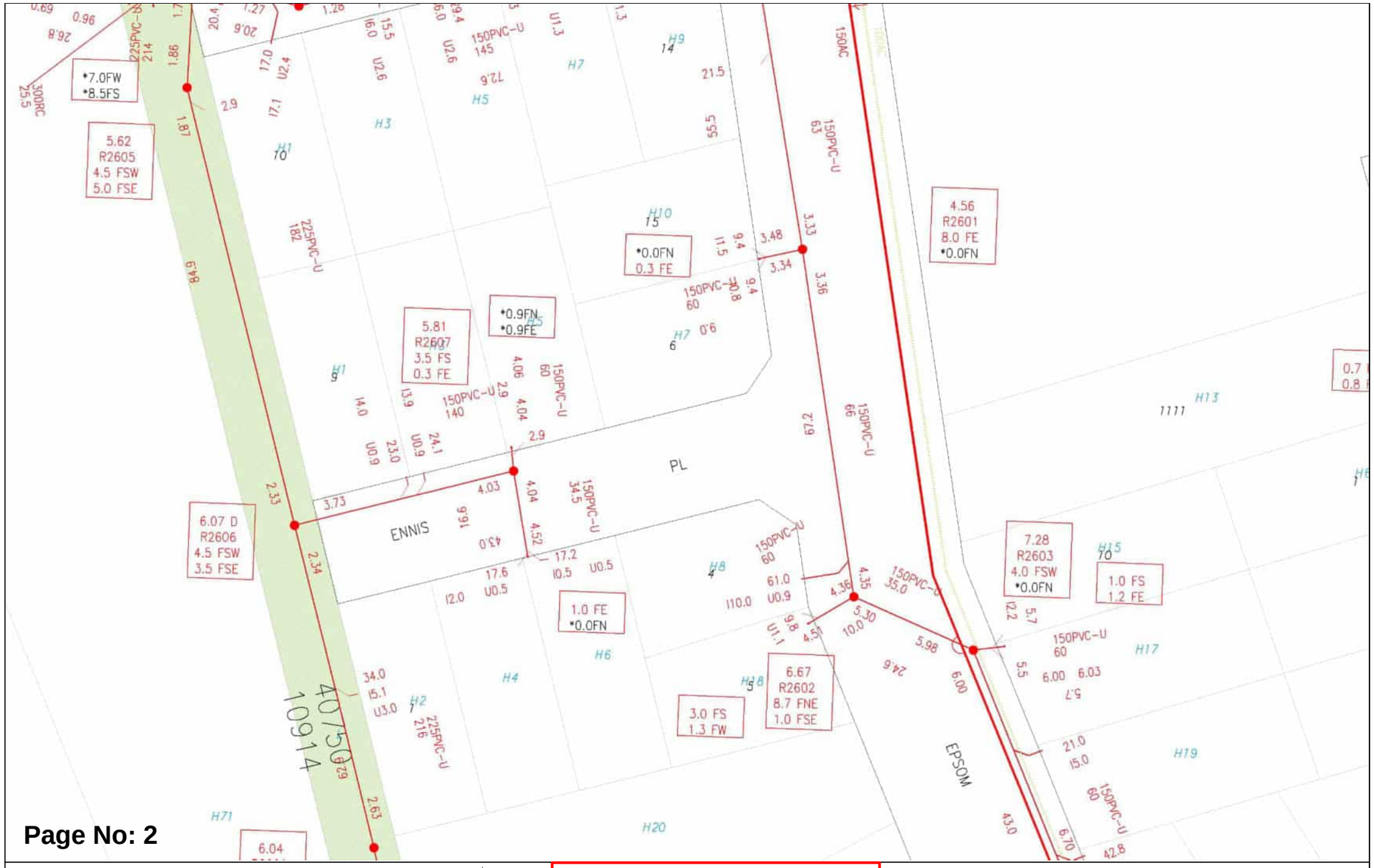
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**Page No: 2**

WATER CORPORATION

Scale: 1:750
Job No.: 36962250
Sequence No.: 240900652
Print Date: 21 Jun 2024

N

Sewer

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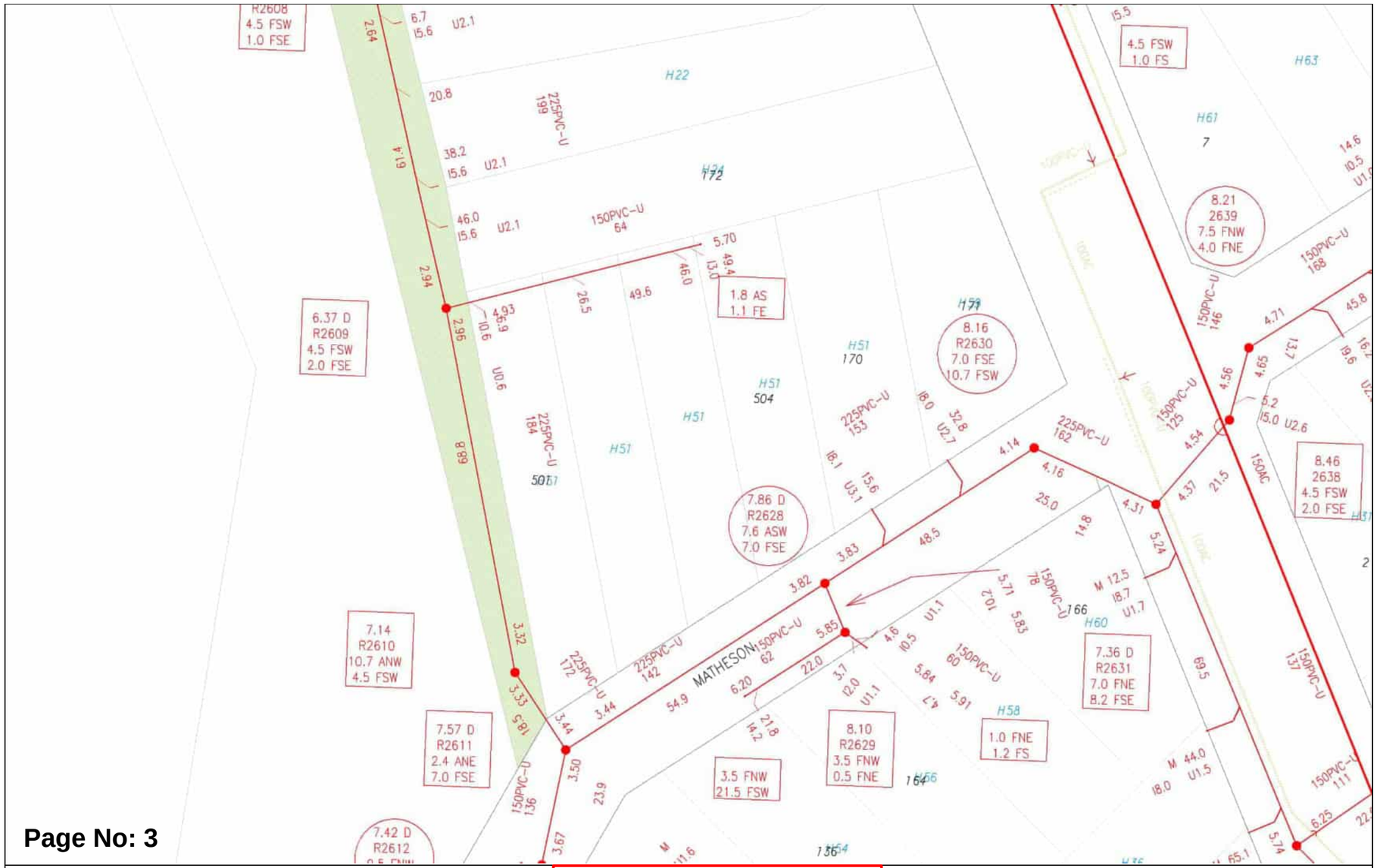
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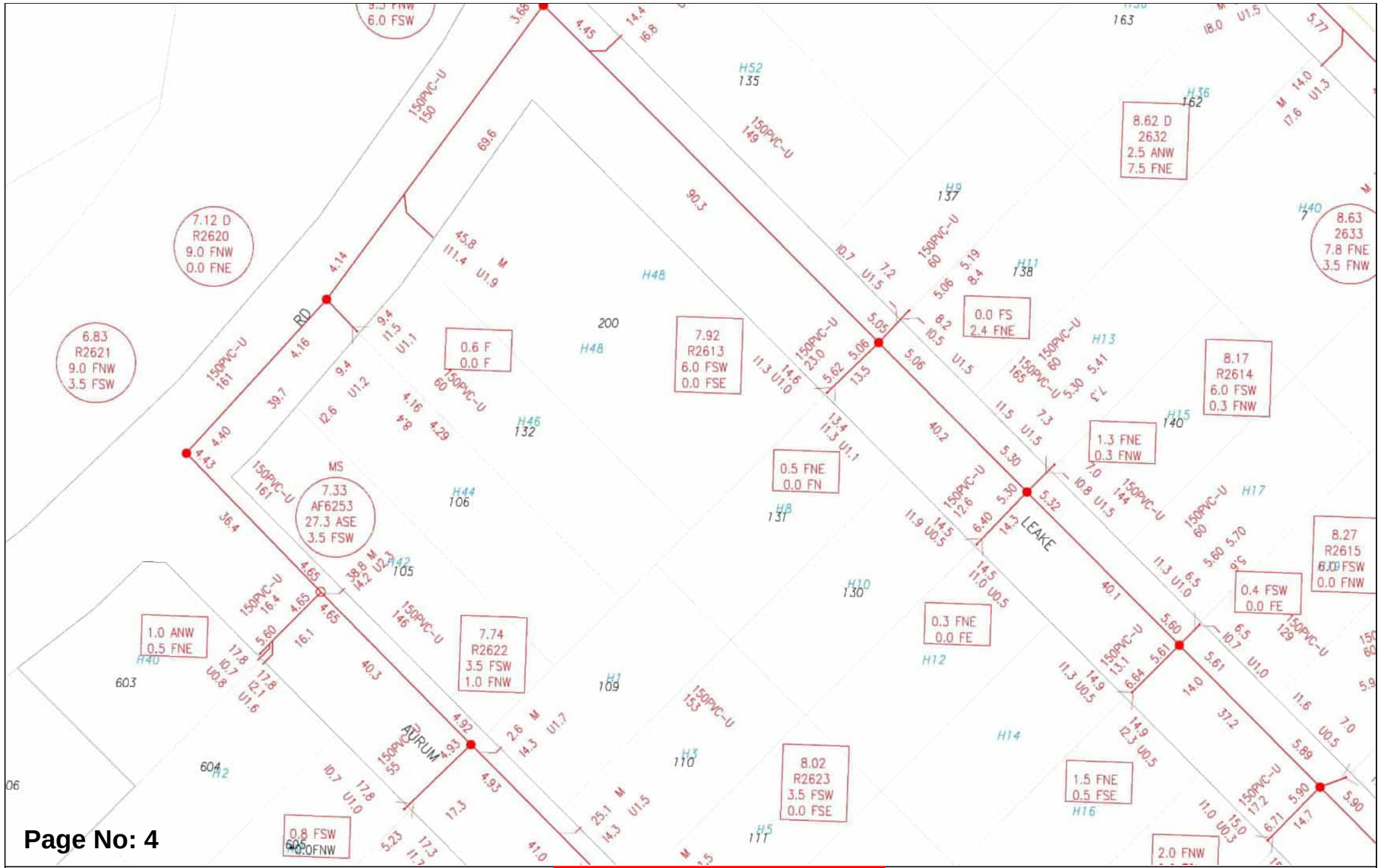



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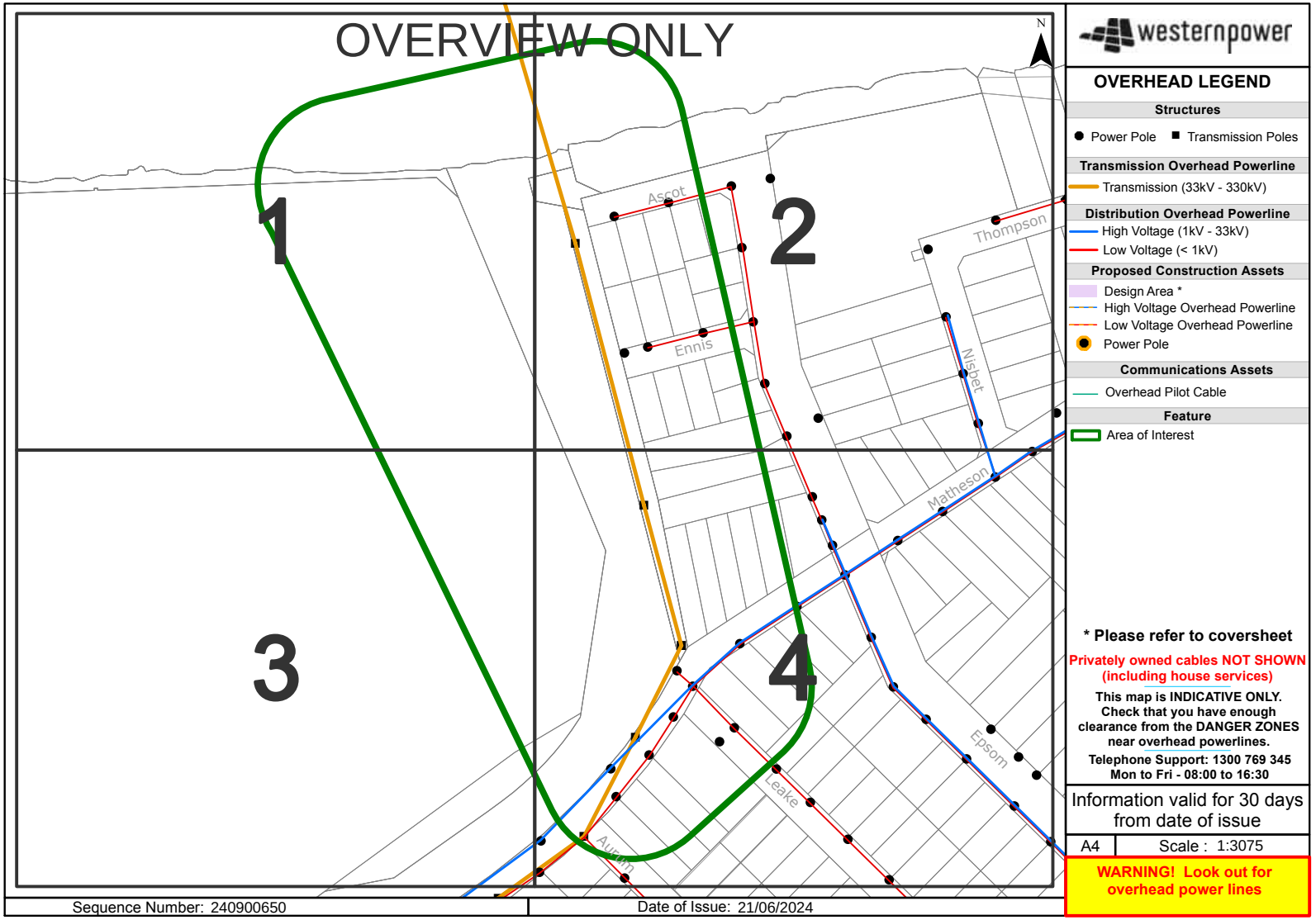
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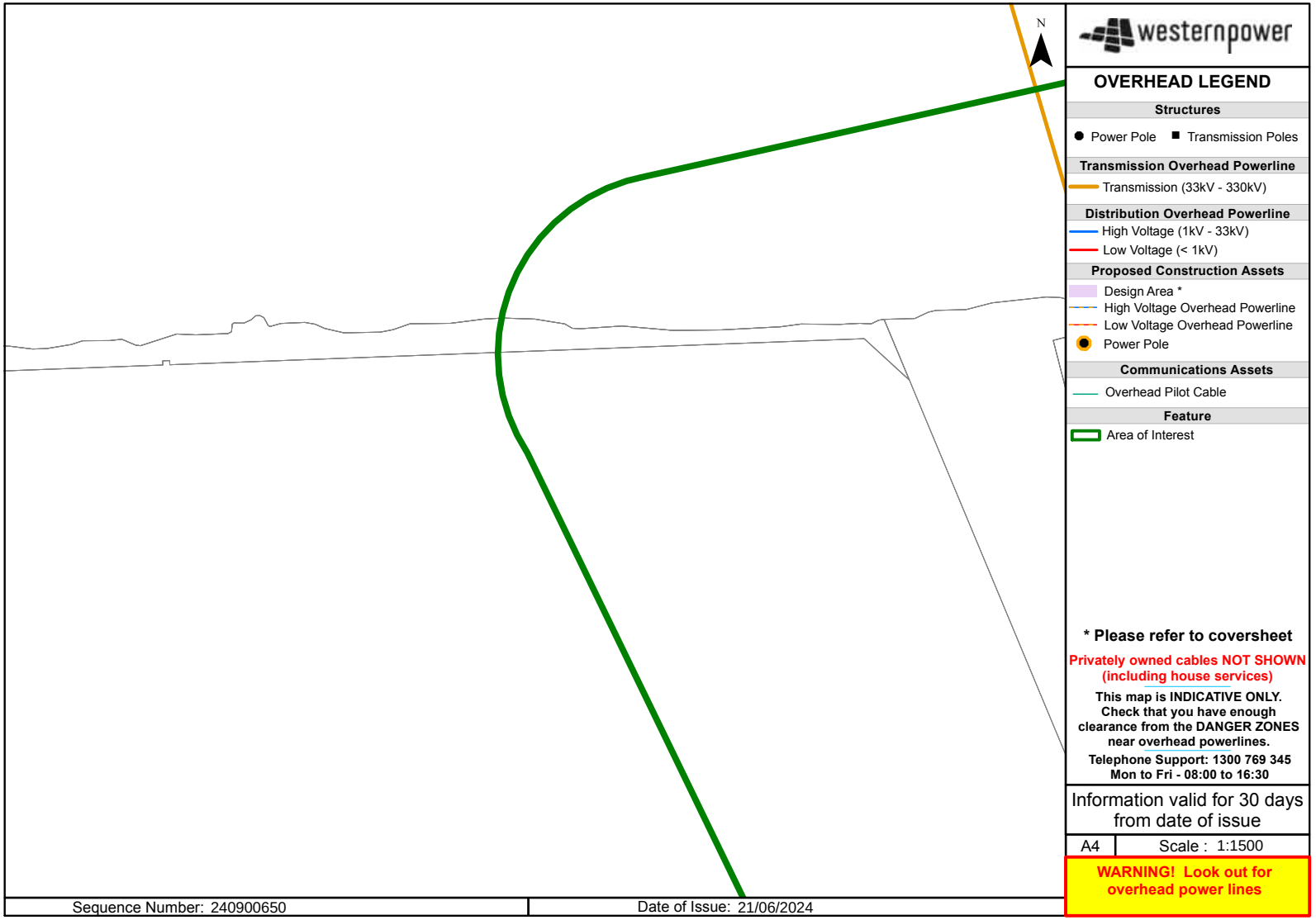

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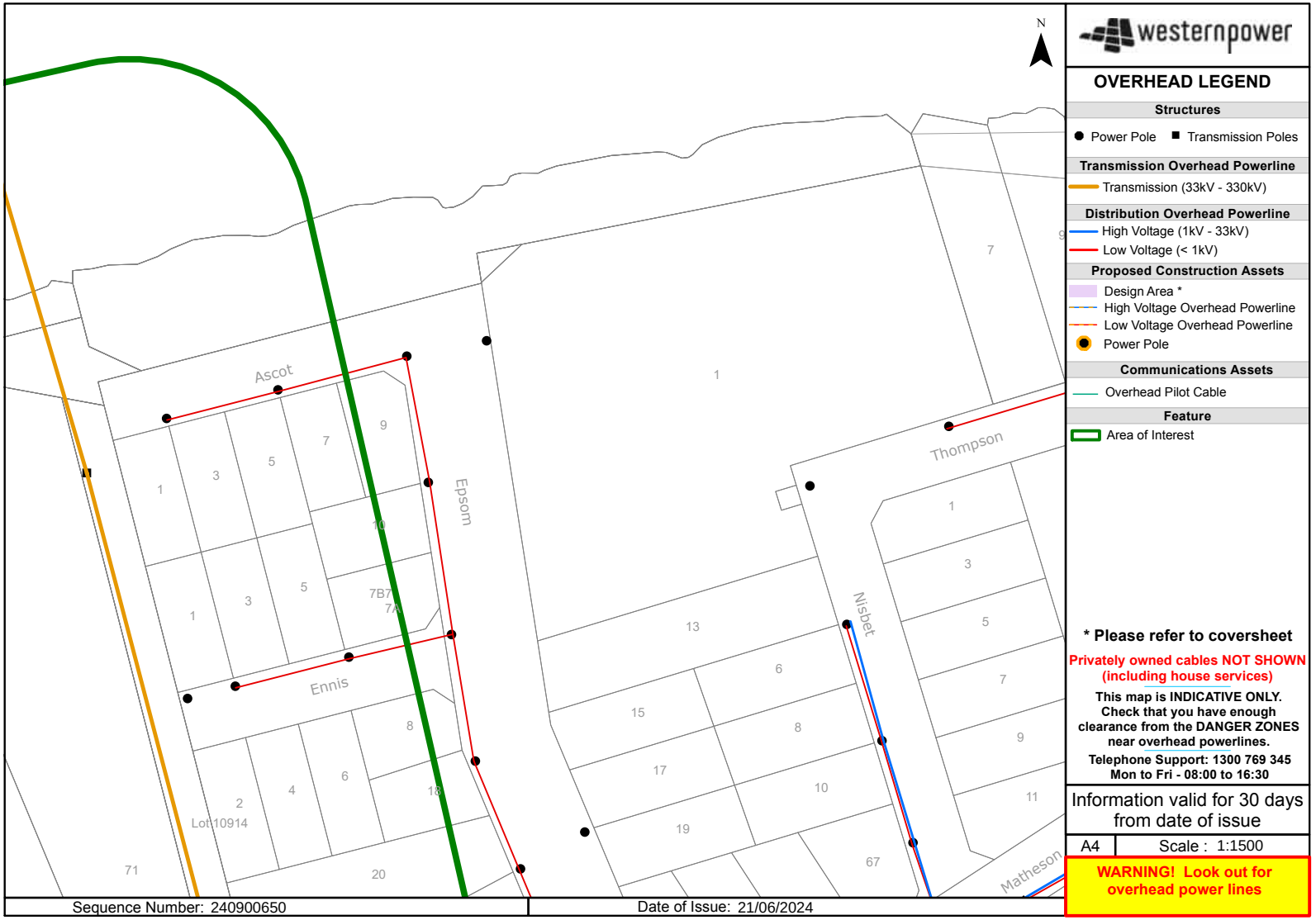
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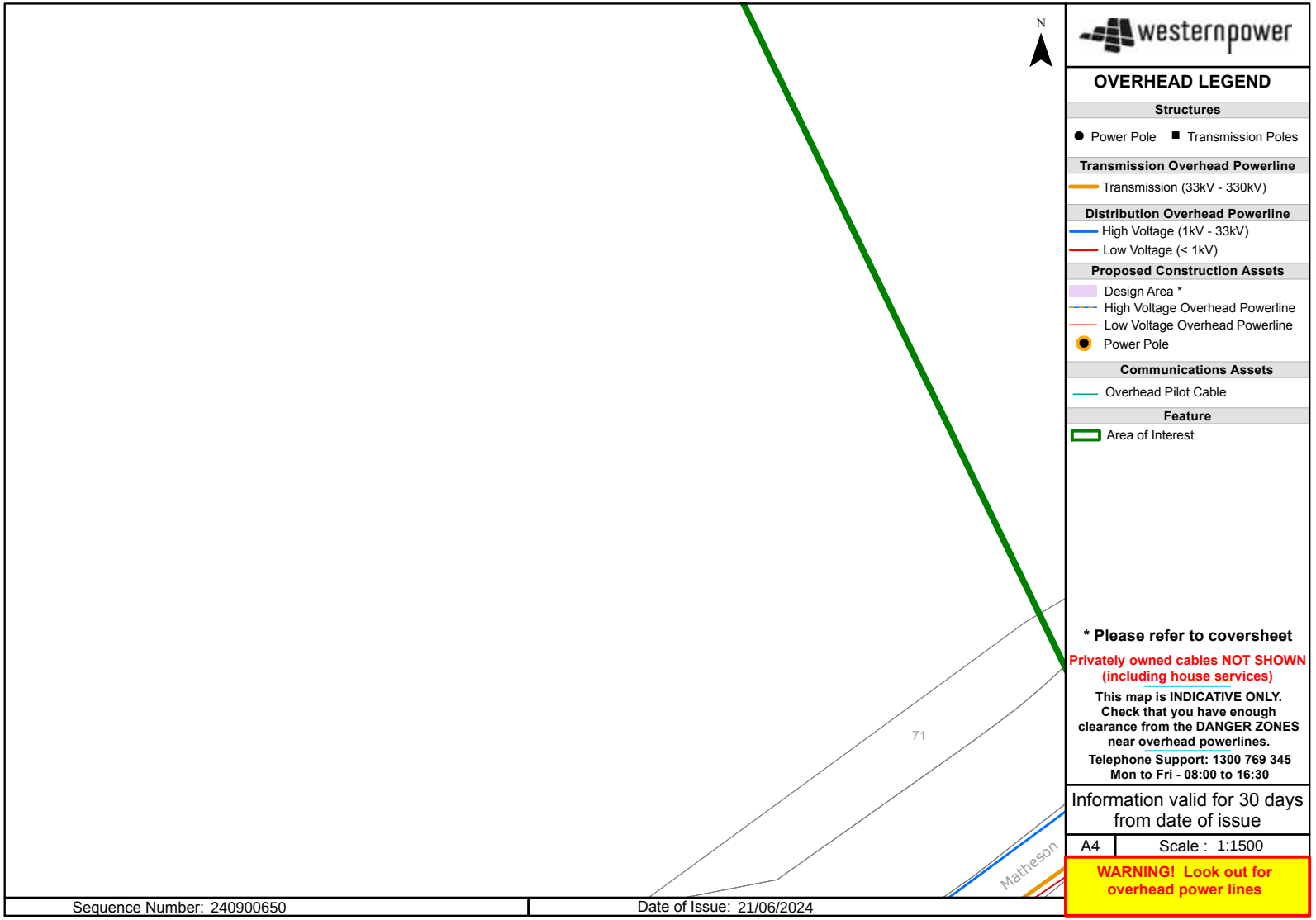
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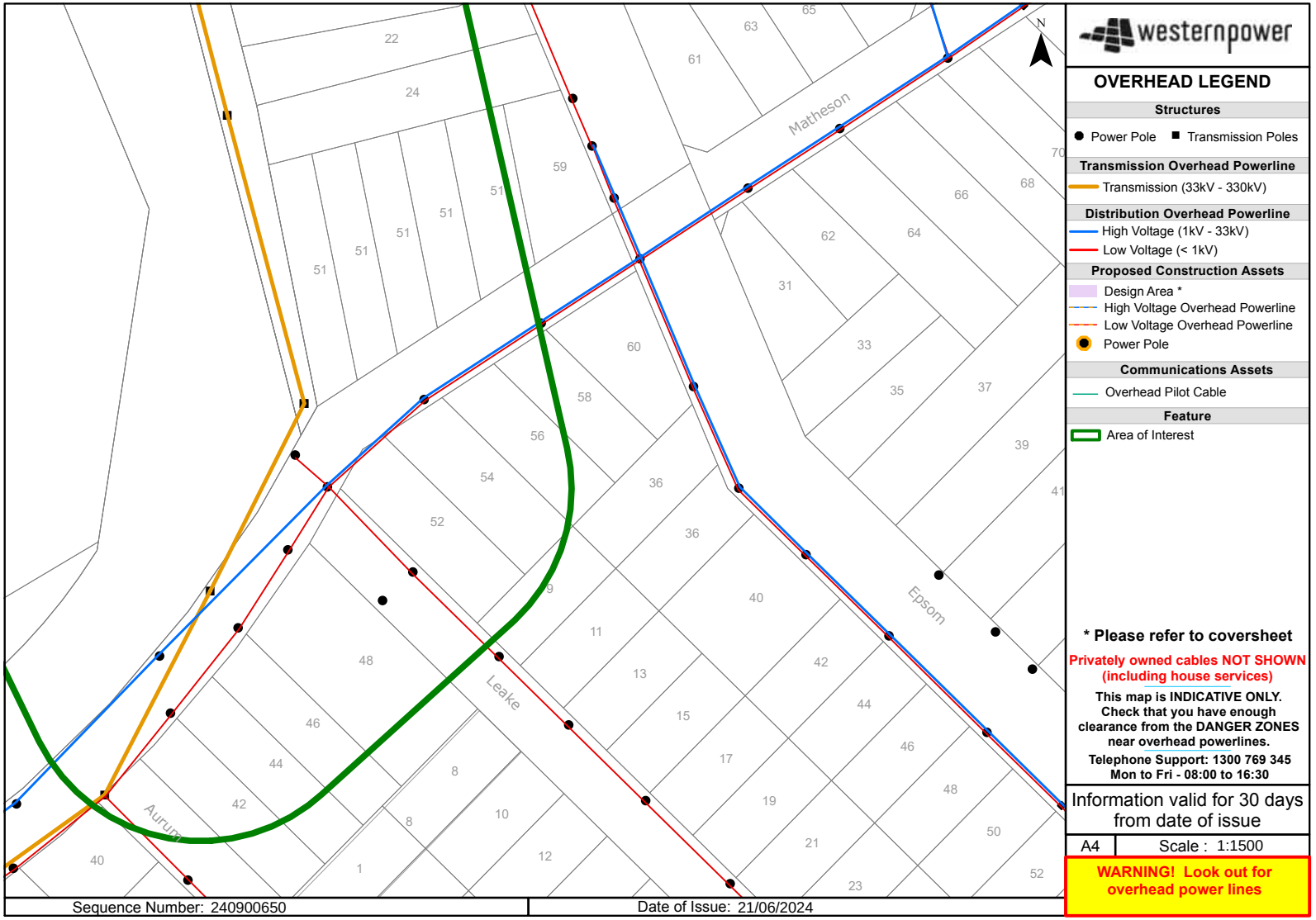
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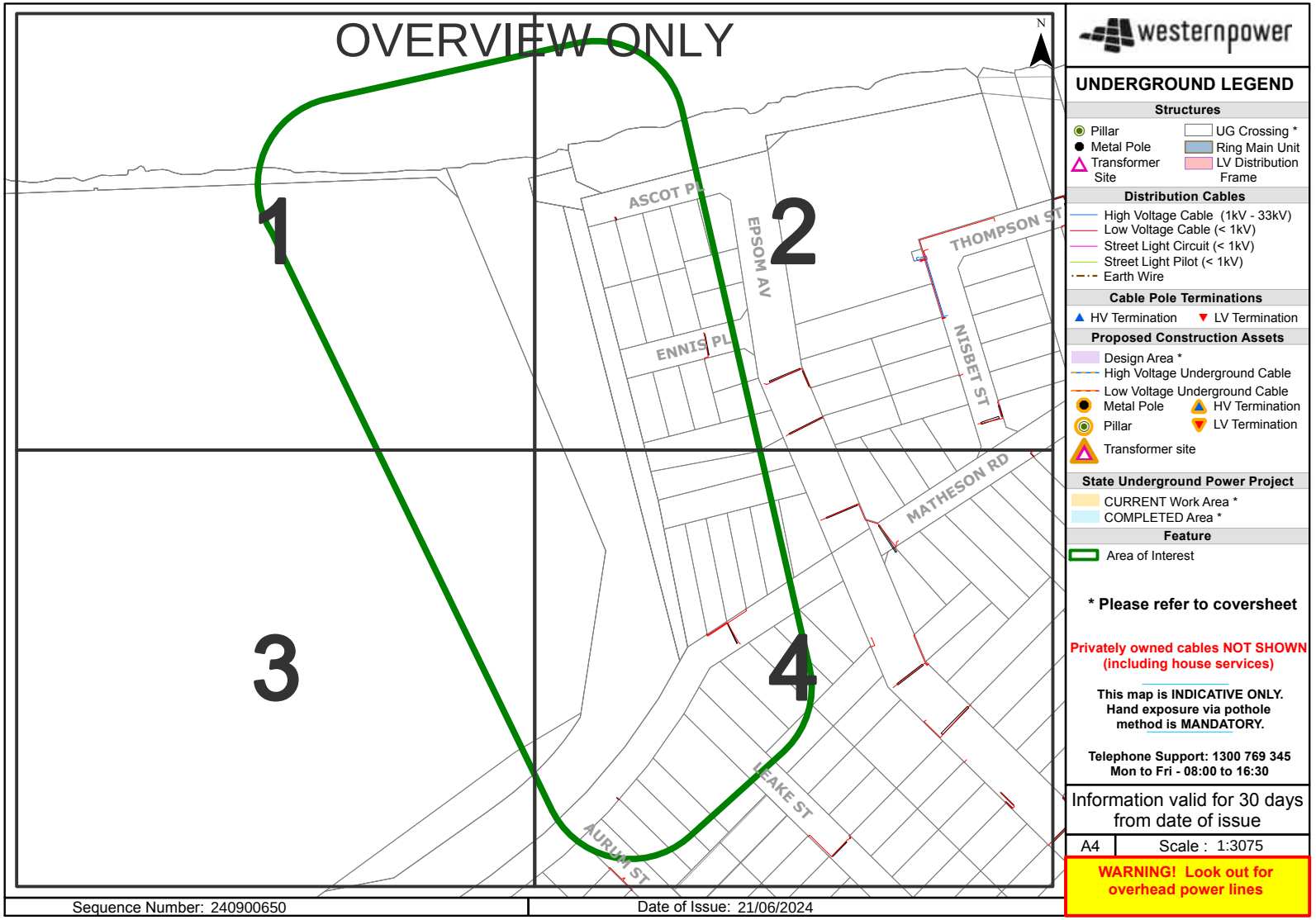
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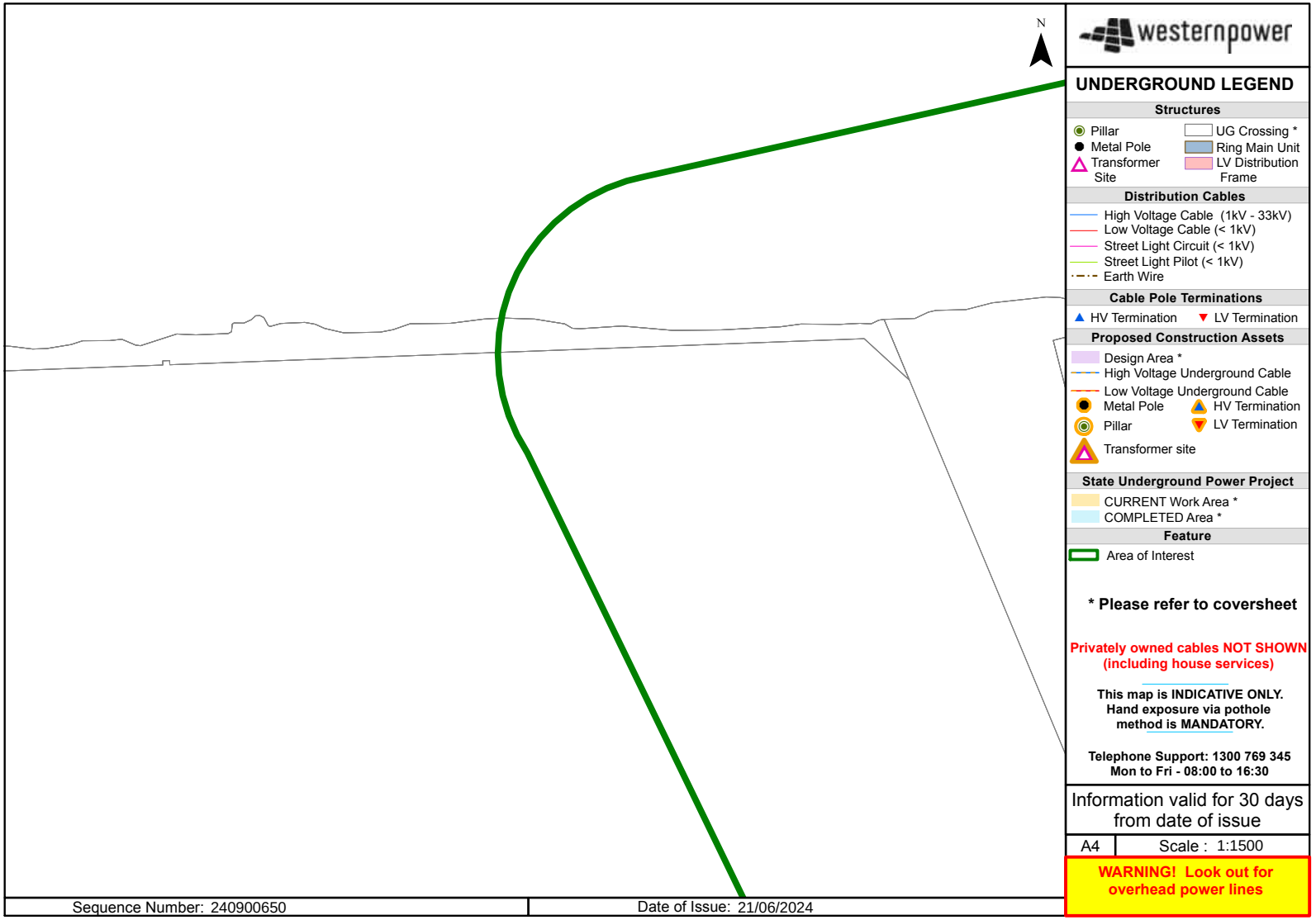
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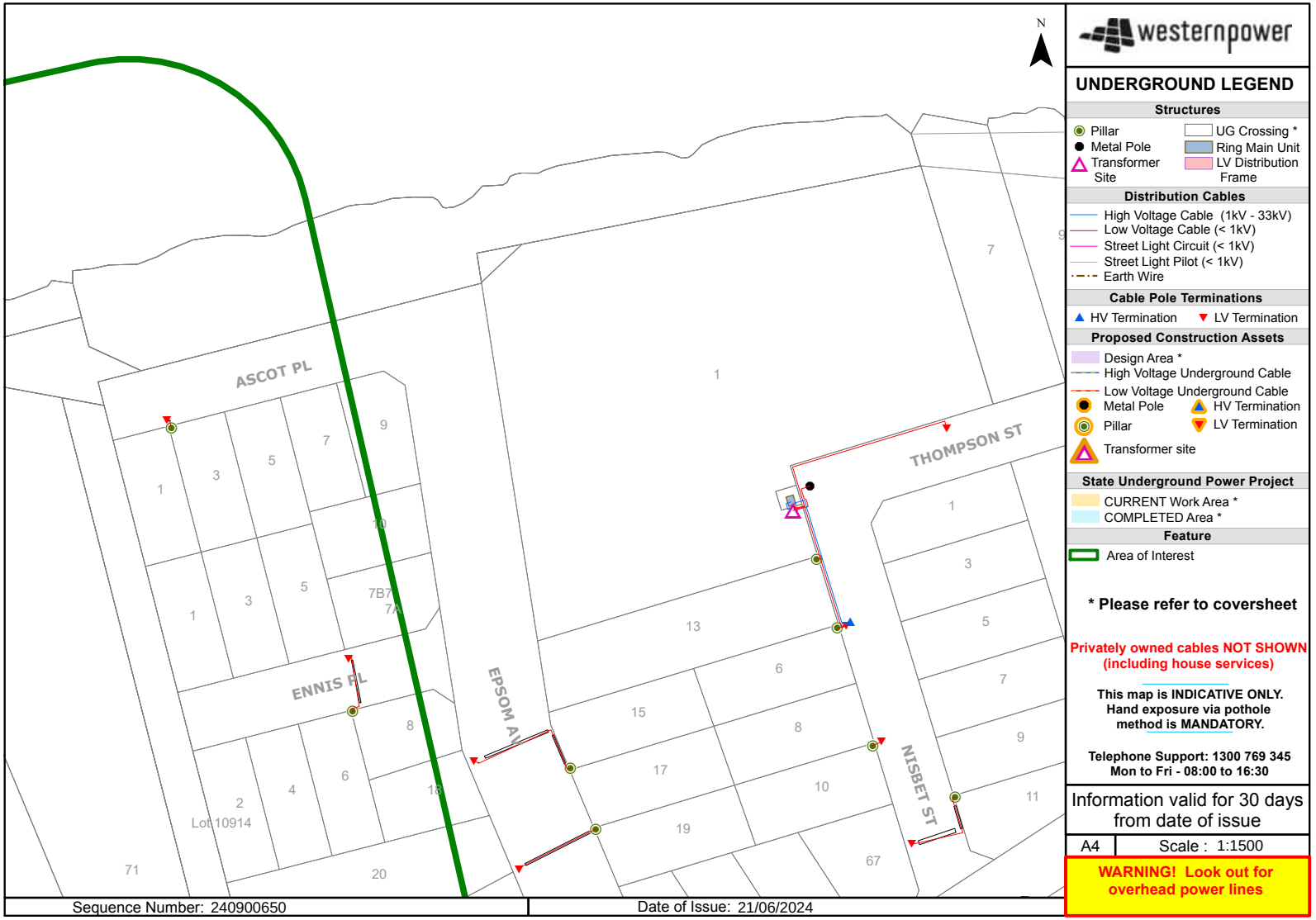
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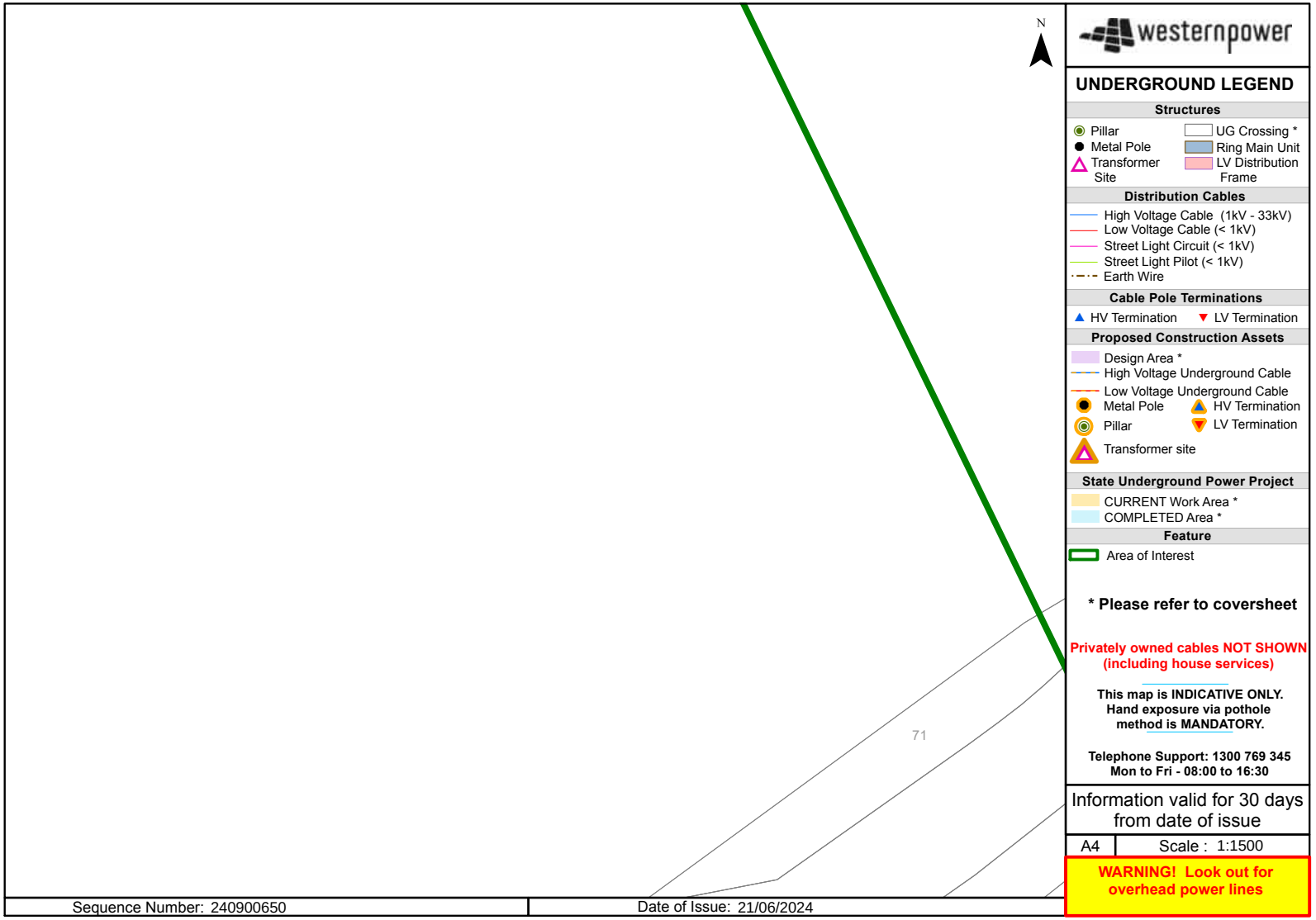
Attachment 12.1.4 Engineering Servicing Report



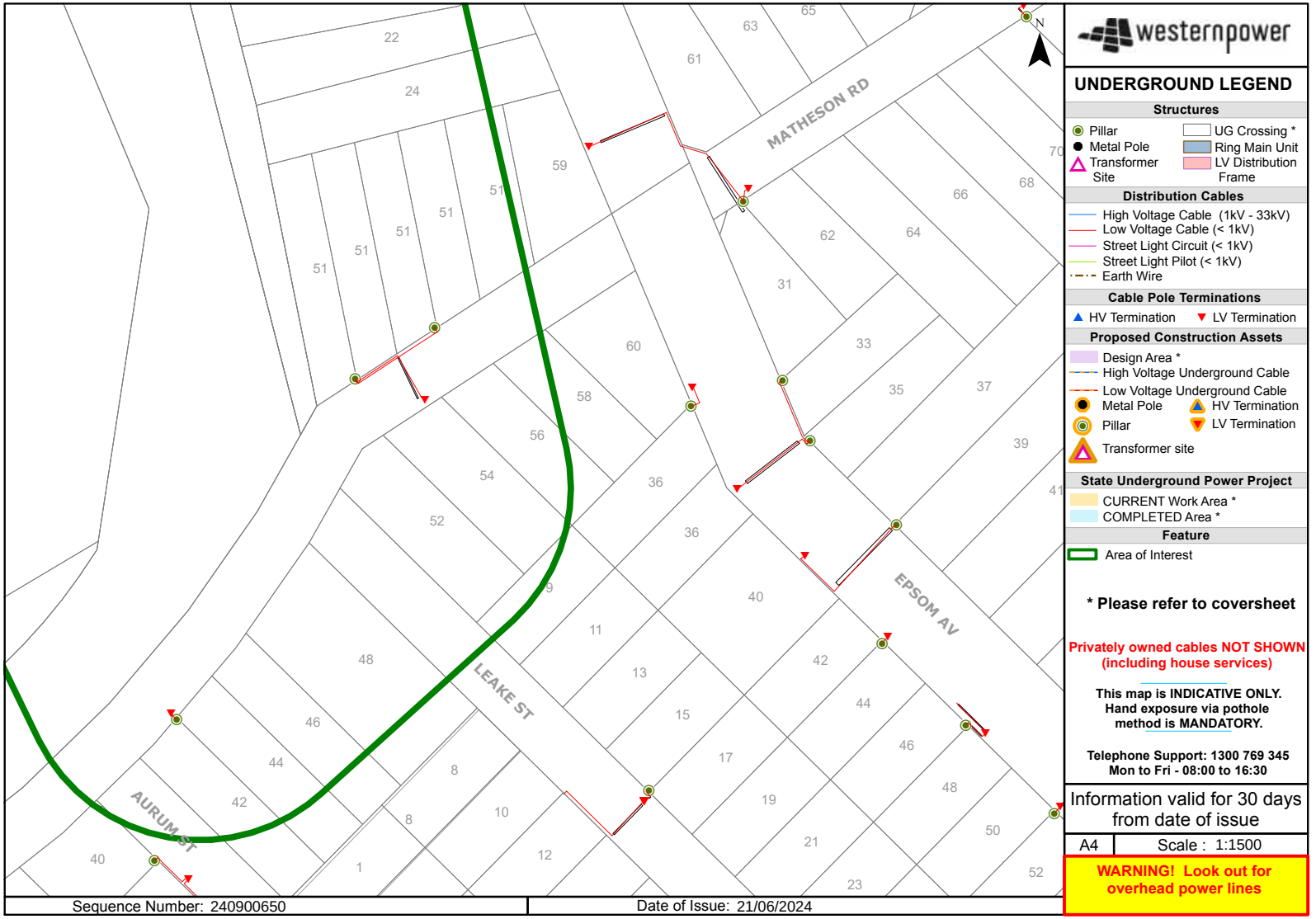
Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report

Job No 36962248

BEFORE YOU DIG www.byda.com.au

byda.com.au

## Contact Details

| Contact | Contact number | Company | Enquirer ID |
|---|---|---|---|
| Justin Zielinski | 0420 304 451 | - | 3140642 |

**Email**
jzielinski@tabec.com.au

**Address**
54 Havelock Street
West Perth WA 6005

## Job Site and Enquiry Details

**WARNING:** The map below only displays the location of the proposed job site and does not display any asset owners' pipe or cables. The area highlighted has been used only to identify the participating asset owners, who will send information to you directly.

| Enquiry date | Start date | End date | On behalf of | Job purpose | Locations | Onsite activities |
|---|---|---|---|---|---|---|
| 21/06/2024 | 24/06/2024 | 24/06/2024 | Private | Design | Both Road | Planning & Design |



Check that the location of the job site is correct. If not, you must submit a new enquiry.

If the scope of works change or plan validity dates expire, you must submit a new enquiry.

Do NOT dig without plans. Safe excavation is your responsibility. If you don't understand the plans or how to proceed safely, please contact the relevant asset owners.

**User Reference**
Precinct C - 1

**Address**
30 Matheson Road
Ascot WA 6104

**Notes/description**
-

## Your Responsibility and Duty of Care

- **Lodging an enquiry does not authorise project commencement.** Before starting work, you must obtain all necessary information from all affected asset owners.
- If you don't receive plans within 2 business days, contact the asset owner & quote their sequence number.
- Always follow the 5Ps of Safe Excavation (page 2), and locate assets before commencing work.
- Ensure you comply with State legislative requirements for Duty of Care and safe digging.
- If you damage an underground asset, you MUST advise the asset owner immediately.
- By using the BYDA service, you agree to the Privacy Policy and Term of Use.
- For more information on safe digging practices, visit www.byda.com.au

## Asset Owner Details

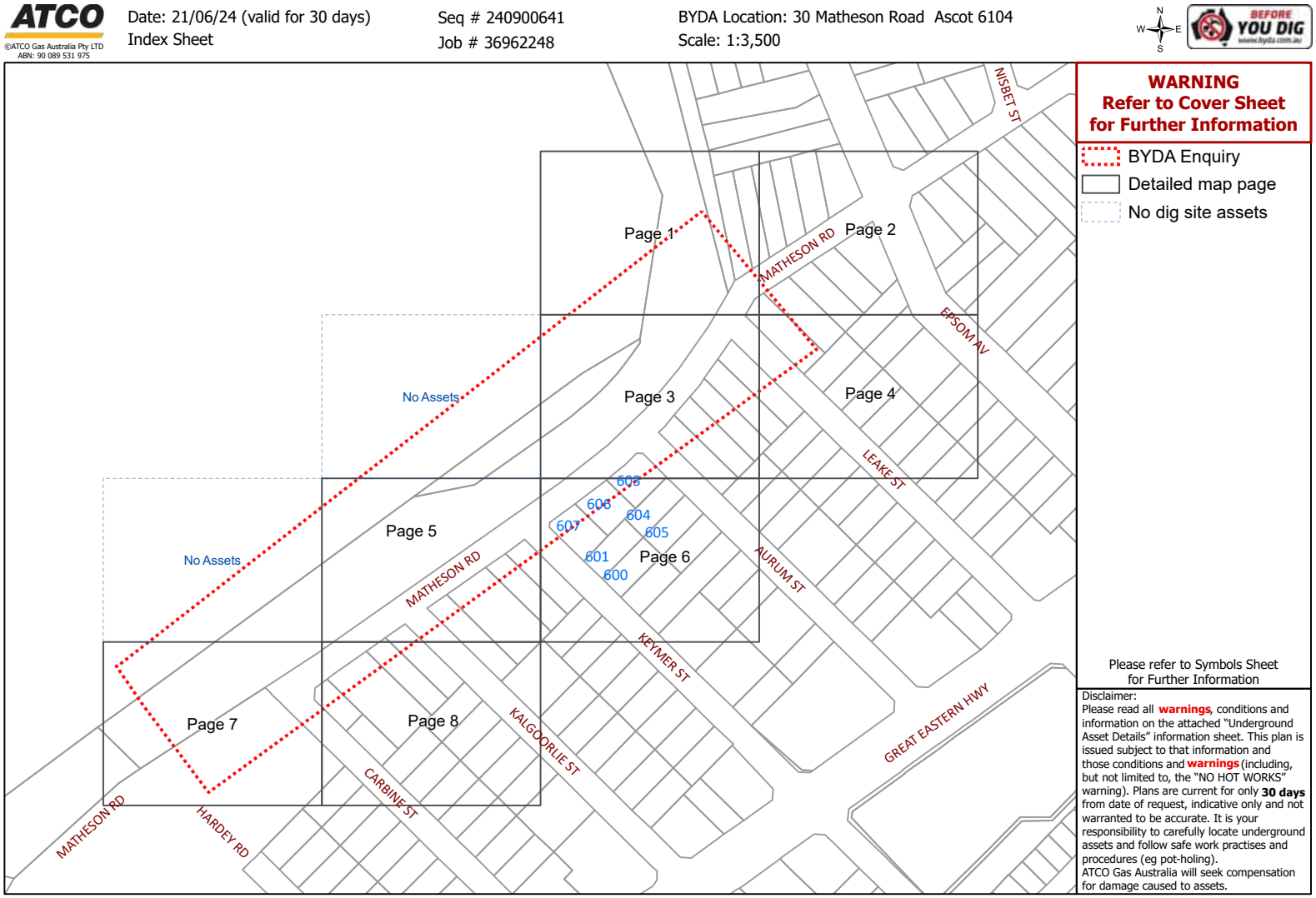
Below is a list of asset owners with underground infrastructure in and around your job site. It is your responsibility to identify the presence of these assets. Plans issued by Members are indicative only unless specified otherwise. Note: not all asset owners are registered with BYDA. You must contact asset owners not listed here directly.

| Referral ID (Seq. no) | Authority Name | Phone | Status |
|---|---|---|---|
| 240900641 | ATCO Gas Australia | 1300 926 755 | NOTIFIED |
| 240900637 | NBN Co (WA) | 1800 687 626 | NOTIFIED |
| 240900639 | Telstra (WA) | 1800 653 935 | NOTIFIED |
| 240900640 | Water Corporation | 13 13 95 | NOTIFIED |
| 240900638 | Western Power | 13 10 87 | NOTIFIED |

END OF UTILITIES LIST

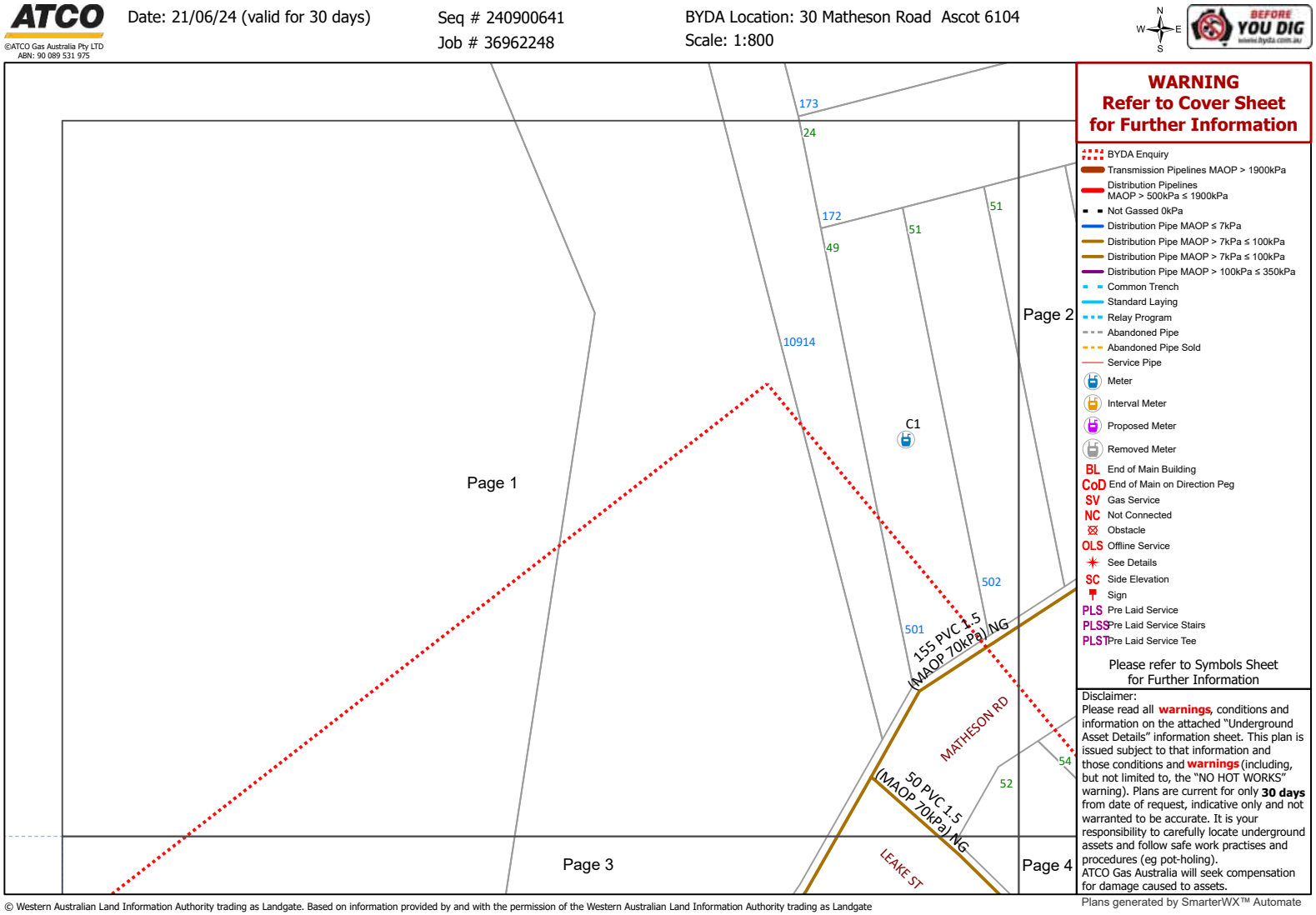
**Lodge your FREE enquiry online any time at byda.com.au**

Attachment 12.1.4 Engineering Servicing Report

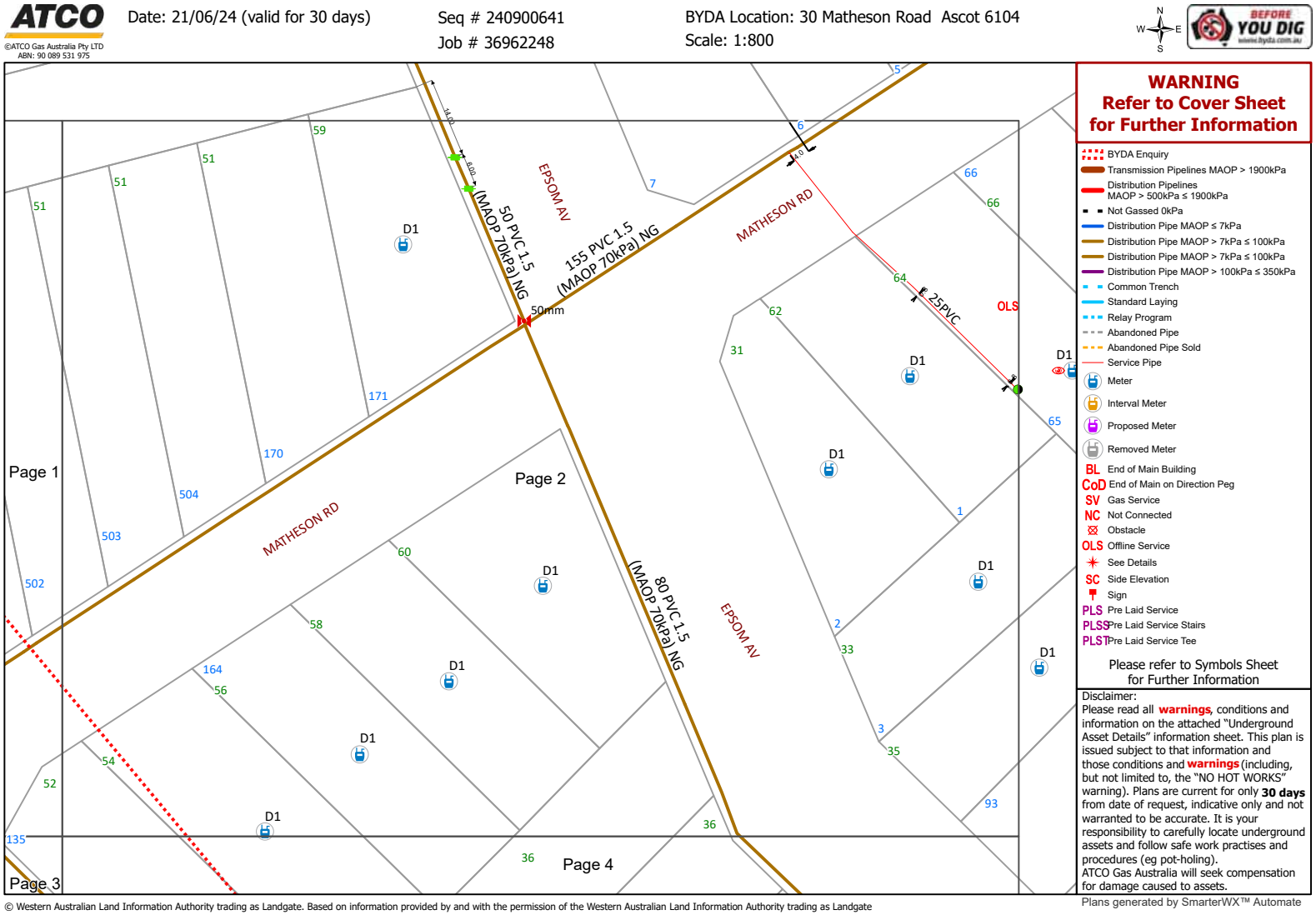



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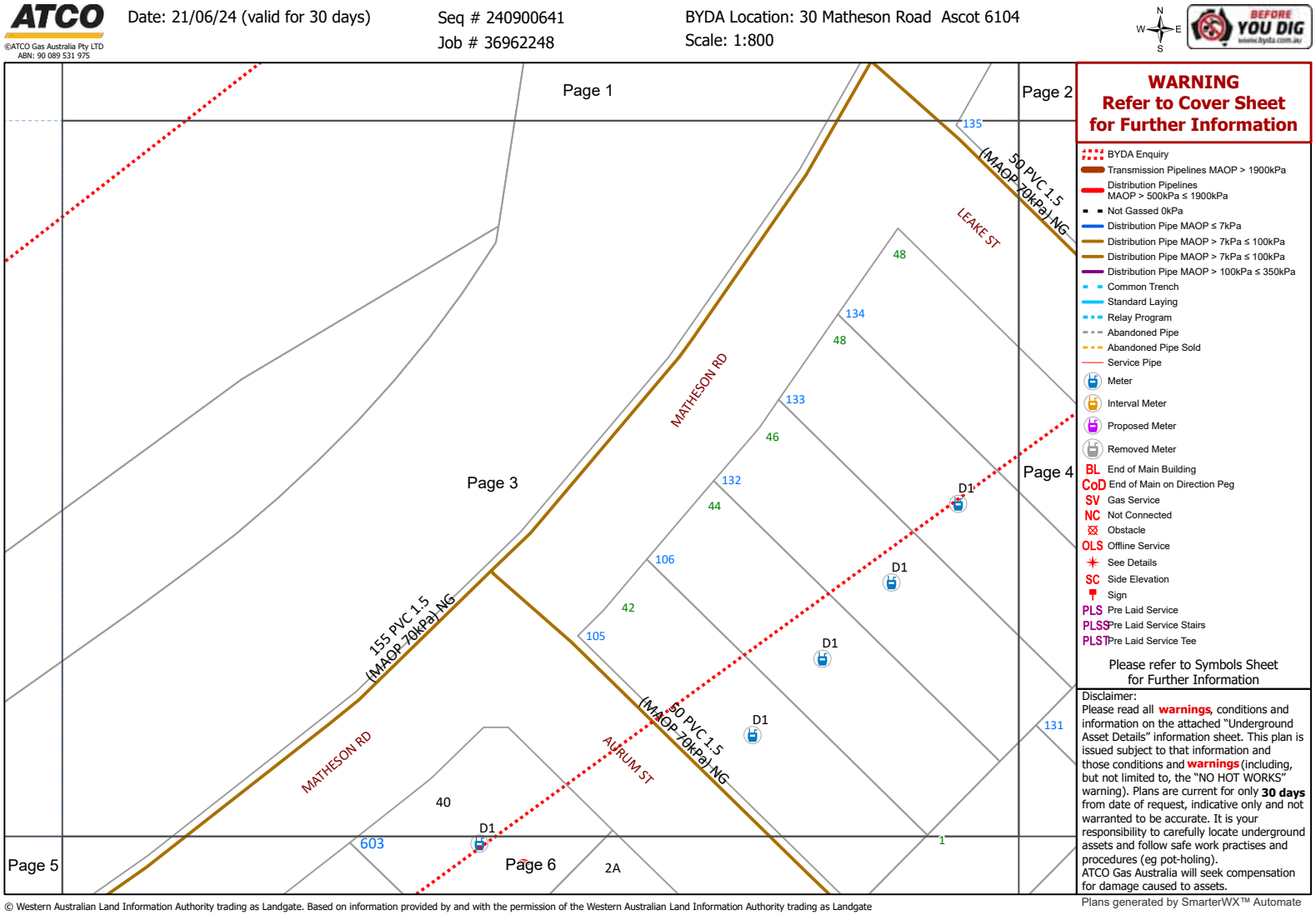
Attachment 12.1.4 Engineering Servicing Report



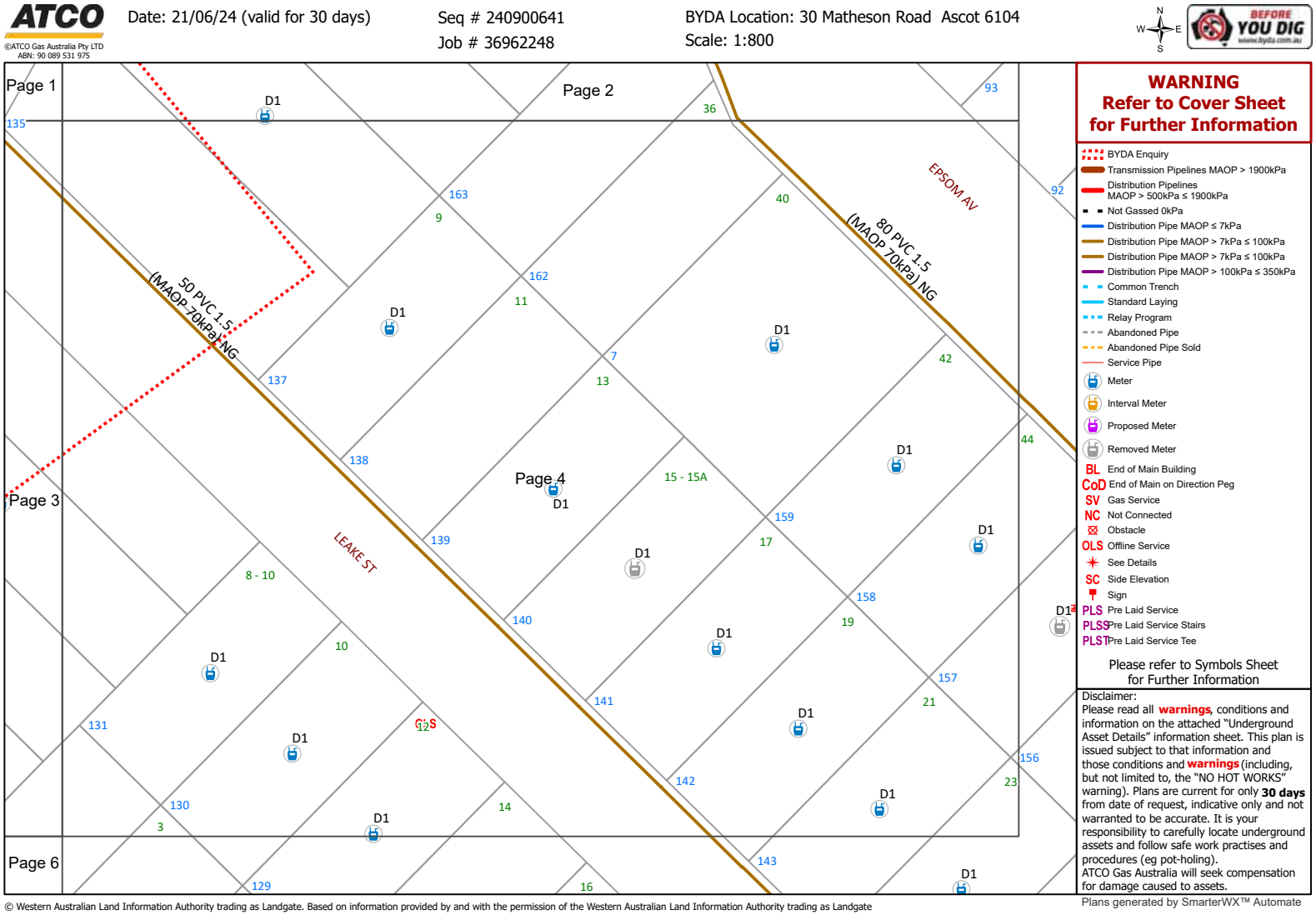
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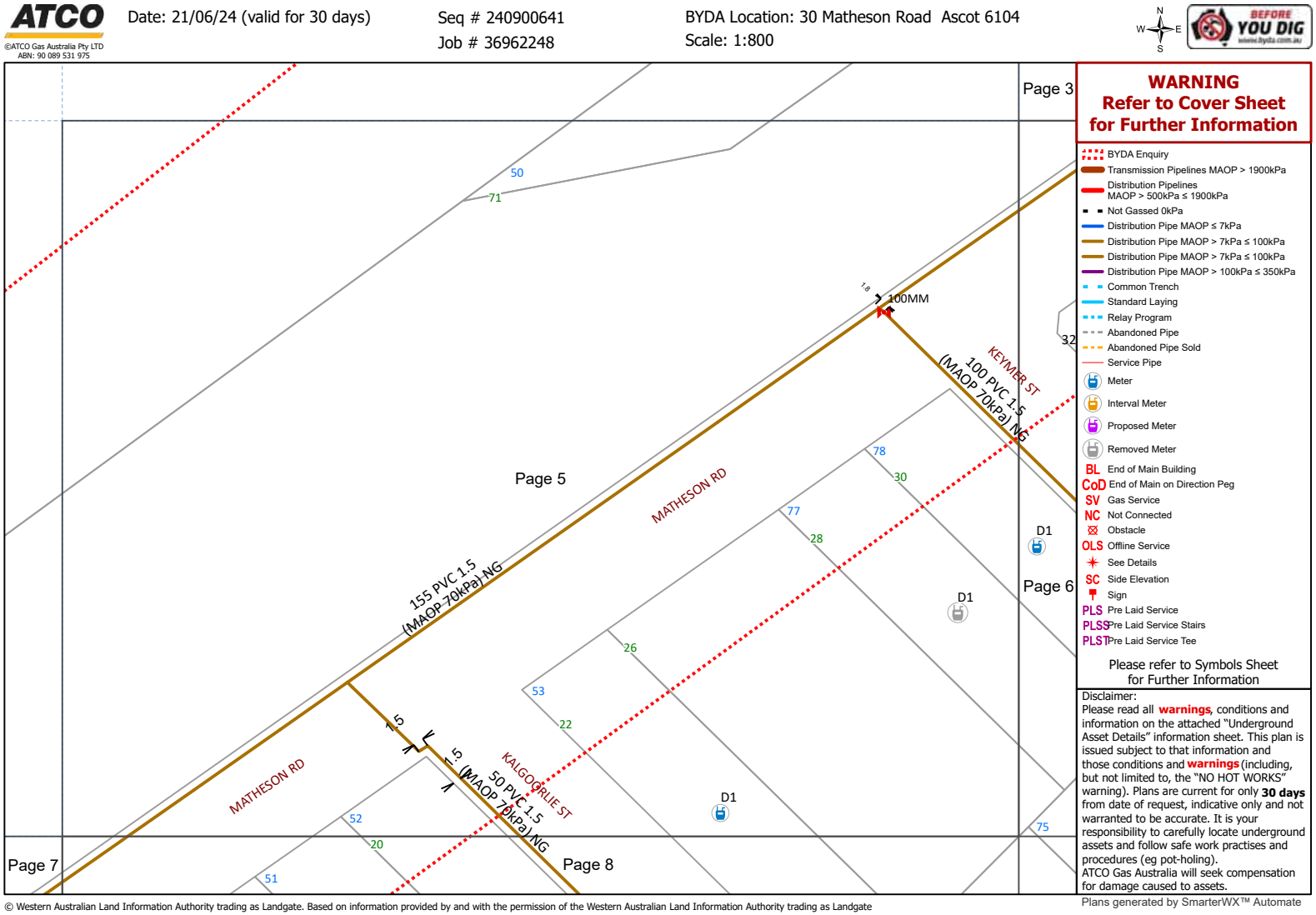
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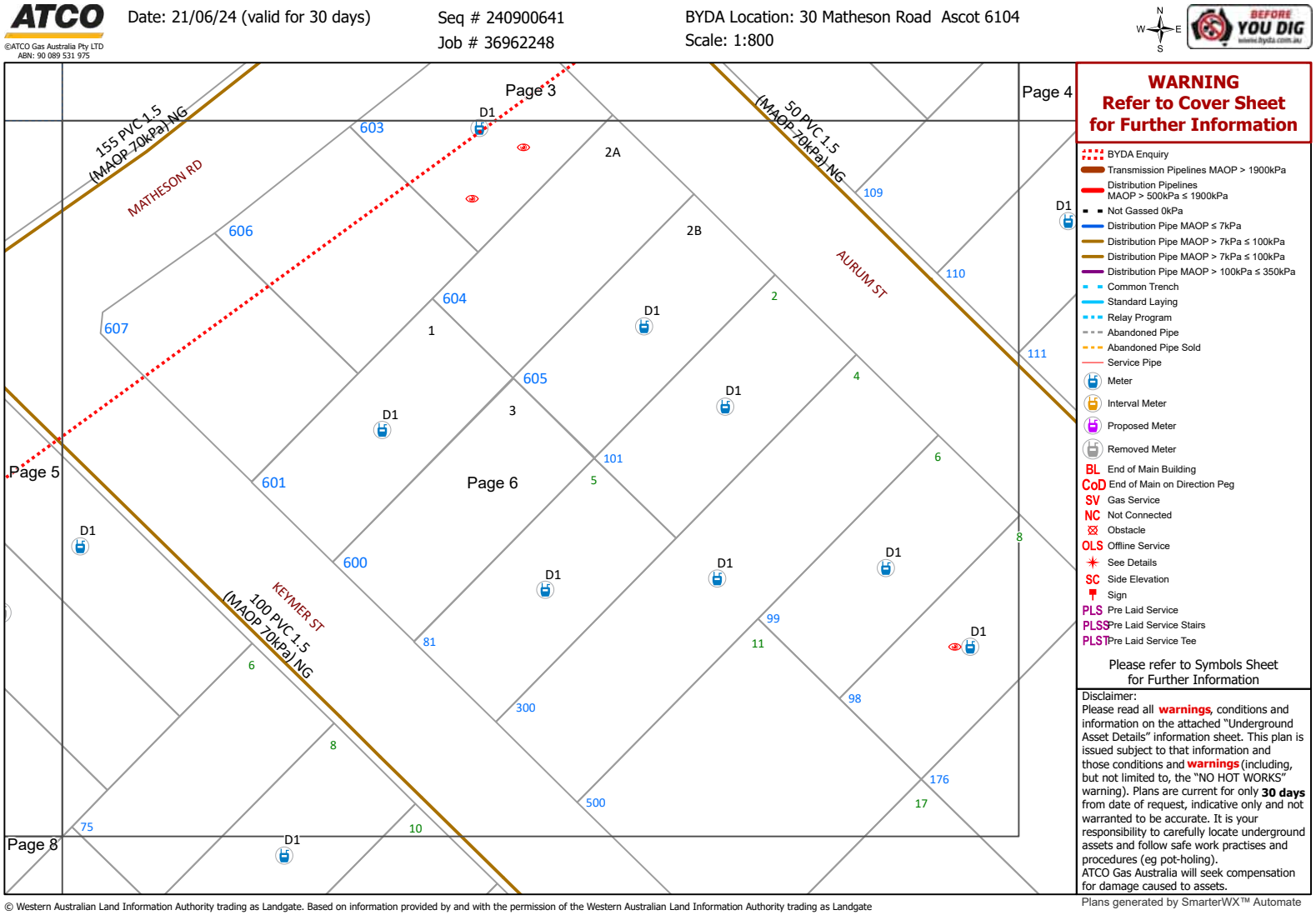
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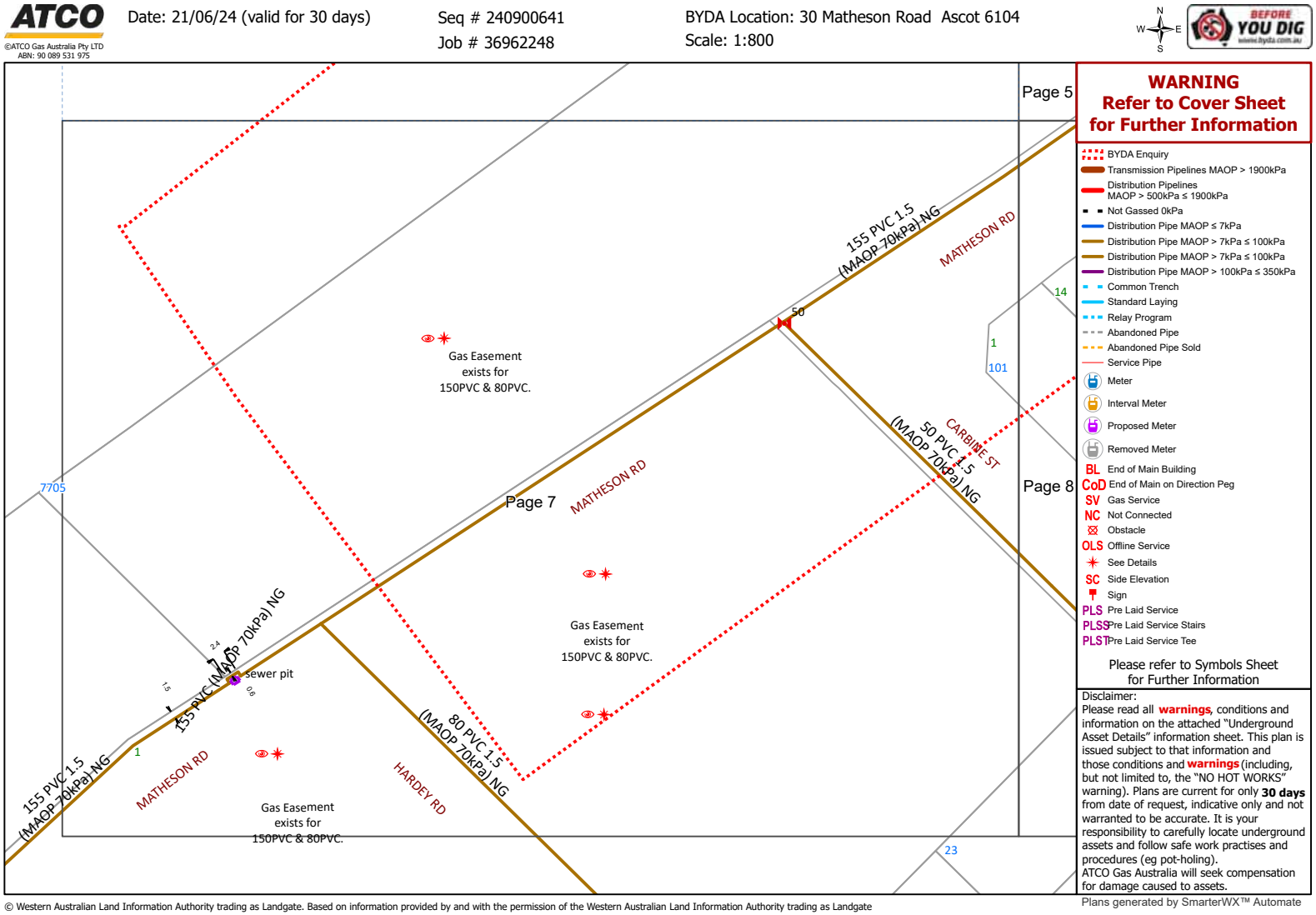
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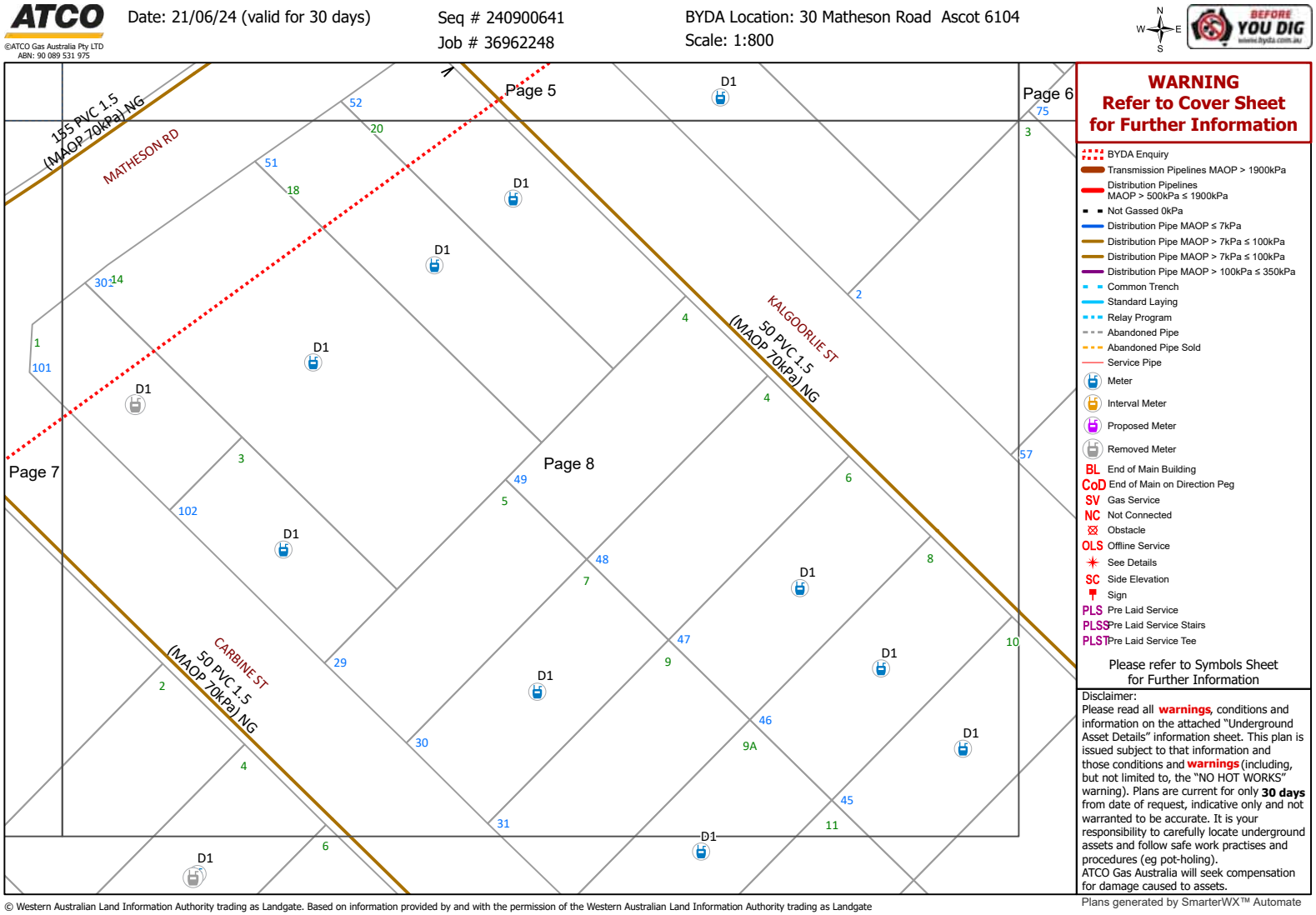
Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report

# ATCO UNDERGROUND ASSET DETAILS ASSETS AFFECTED

GAS DIVISION

**ASSETS AFFECTED – see accompanying Plan**

**Justin Zielinski**
**ATCO Gas Australia**
54 Havelock Street
West Perth
WA 6005

**Job No:** **36962248**
**Sequence No:** **240900641**
Date of Issue: 21 June 2024
Phone: **1300 926 755**

**BYDA Utility Registration Name:** Private
**BYDA Location:** **30 Matheson Road Ascot WA 6104**

**ATTENTION:** This response to your enquiry has been interpreted from details in your requested DBYD picture location request only (not any street address you gave). It is your duty to ensure the accompanying plan/s match your geographical area of works.

**IF YOU SEE, HEAR, SMELL OR OTHERWISE DETECT GAS,**
**LEAVE THE IMMEDIATE AREA AND THEN CALL 13 13 52**

Our records indicate that ATCO gas infrastructure ***IS PRESENT*** in the vicinity of and/or surrounding area of the above enquiry. This response relates only to ATCO assets. Your Duty of Care requires that personnel **Must** at all times comply with, and have on site, this information sheet and the accompanying plan(s). All plans are subject to this information sheet. You should refer to the ATCO Self-service Portal (Link Here) or if unsure, contact ATCO on **1300 926 755** during business hours.

All information provided is to be used as a guide only (see Disclaimer item **5**). It does not absolve you or third parties from your Duty of Care obligations, including to take additional precautions where work has the potential to impact on gas assets, public safety or the environment, or from your duties at law (including Reg 3.21 of the Occupational Safety and Health Regulations 1996).

## WARNINGS

- No works of any type within 15 metres of any **CRITICAL GAS ASSET** infrastructure without prior approval from ATCO
- **NO HOT WORK** within 15 metres of any gas infrastructure except in compliance with applicable laws & *Australian Standard 1674.* **Do Not** let heat sources or hot works impact on any gas infrastructure and take into consideration that the ground or adjacent structures may also be capable of transmitting heat so as to circumvent protection afforded by a heat shield or barrier
- **DANGER** - Gas can cause asphyxiation and is flammable. Keep all ignition sources well away (e.g., flames, matches/ lighters, sparks, electrical devices, vehicles or engines, mobile phones, cameras)
- Gas pipes **Must Not** be unsupported or left without adequate cover or protection without prior approval from ATCO
- Damage to the pipe coating or pipe itself can be very dangerous if not given immediate attention. Report any damage to ATCO immediately on **13 13 52**. **Do Not** attempt to repair any damaged gas infrastructure
- No alteration or removal of live or abandoned gas infrastructure without prior written approval from ATCO
- Any abandoned or proposed gas infrastructure indicated on the gas plans **Must** be treated as live
- Never assume the location or depth of any gas infrastructure. Pipes may not follow straight lines or maintain a constant depth. Always check carefully (e.g., by careful hand digging of potholes)
- Unauthorised repairs or tampering with gas infrastructure may result in prosecution under the *Energy Operators (Powers) Act 1979*. ATCO Gas Australia reserves all rights to recover compensation for loss or damage to its gas infrastructure or other property including for indirect or consequential losses.

## Attachment 12.1.4 Engineering Servicing Report

**PLANS:**

Plans provided are current for **30 days only** from date of request. You must use current plans at all times.

Plans do not show all gas service lines (which connect gas mains to individual meter positions). See condition **3.c)** below.

If plan shows **additional detail** symbols ( * ) or ( ) in the area of proposed works it is **your duty** to obtain that further detail from the number below.

Plans (including the location of pipes, services, infrastructure and boundaries) are **approximate only**. You **Must** use safe and proper procedures – including **potholing** (see condition **4** below).

Plans are not a guide as to gas availability for connection purposes.

**To call ATCO:** **Weekdays from 7.30am to 3.30pm, call – 1300 926 755 After hours, weekends and emergencies, call – 13 13 52**

**CONDITIONS FOR WORKS IN THE VICINITY OF ATCO ASSETS**

**1. Compliance with Warnings**

You **Must** comply with the Warnings contained in this information sheet and the accompanying plan(s).

**2. Compliance with 'Working around Gas Infrastructure' Document (Link Here) applicable laws and duty of care**

All work (including but not limited to using Excavator's Augers, Directional, drilling machines, 'Ditch Witch' type trenching machine, Loader, Dozer, Skid Steer (Bob Cat)) **Must** comply with all applicable requirements in the 'Working around Gas Infrastructure' Document and with all applicable laws and Australian Standards. All due care must be exercised to locate any gas infrastructure in the vicinity and when conducting any works near them.

**3. All Gas Infrastructure**

All work that may have any impact upon any gas infrastructure (see **3.a)**, **b)** and **c)** below for examples) should be carefully planned with notification to ATCO well in advance of commencement. Contact ATCO on **1300 926 755** or visit Atco's online self-service portal (Link Here). Amongst other things, this includes excavation of or near gas pipelines, boring/drilling, crossings of pipelines (including by other underground infrastructure e.g. drains, power cables, etc.), road works and structural installations. In addition:

a) Critical Asset

No works of any type are permitted within 15 meters of these pipelines without prior approval from ATCO. For approvals contact ATCO on **1300 926 755** or visit the Atco online Self-service portal (Link Here)

You **Must** ascertain the location of any Critical Asset, in relation to your proposed work by:

- Locating a straight line between two marker danger signs, and
- Assessing the distance from this line to your proposed work area.

ATCO may require stand-by supervision during your works and will advise of attendance requirements.

b) Non Critical Assets

These pipelines are installed in most streets throughout the Perth metro area and several country centers. Main valves, regulator sets, and test points also exist at intervals along these pipelines. Where work may impact upon these pipelines or assets then ATCO **Must** be contacted as per item **3** above.

c) Gas Services and Meters

If a gas meter is installed on a property, an underground gas service pipe will run from the meter position to the gas main in the street. Plans do not show all gas service lines (with the exception of Critical Assets), but their presence must be anticipated. Most gas meter boxes installed since 1996 will include a sticker giving approximate guidelines for the gas service line location. All due care must be exercised to locate any gas services in the vicinity and when conducting any works near them.

**4. Compliance with Safe Work Practices**

It is your responsibility to have and comply with adequate safe work practices and procedures. Without limiting your obligations:

**PLAN** The complete & current Before you Dig Australia documentation and plans must always be on site & referred to for the duration of work. Refer to regulation 3.21 of the Occupational Safety and Health Regulations 1996 and the Utility Providers "Code of Practice" for further useful information.

**PREPARE** Prepare by reviewing the Before you Dig Australia Documentation and contacting ATCO if you need assistance. Look for onsite ATCO asset and infrastructure clues such as pit lids, marker posts and meters. No works of any type are permitted within 15 meters of a **CRITICAL ASSET** without prior approval from ATCO. For approvals contact ATCO on **1300 926 755** or visit the Atco website Self Service portal (Link Here) and allow suitable

processing time. Atco recommends engaging a BYDA Certified Locator which includes undertaking electronic location prior to potholing.

**POTHOLE** Using current Before you Dig Australia plans, all gas pipes should be located (including any deviation in the direction of a gas pipe) by exposing them by careful digging using a HAND SHOVEL. Where the proposed work is parallel to a gas pipeline, pothole every 10 meters along the entire route. Damage to the pipe coating or to the pipe itself can create a very dangerous situation if not given immediate attention. If damage does occur, it **Must** be reported to ATCO immediately on Ph. **13 13 52**.

**PROTECT** Supervise and monitor all excavations near gas infrastructure using a dedicated spotter. Where any gas infrastructure is required to be exposed, adequate protection of the gas infrastructure is required to prevent potential damage. Also implement appropriate controls when conducting 'hot work' (in accordance with AS 1674) in the vicinity of the ATCO infrastructure such as; isolation; separation distance; the placement of an effective non-combustible barrier of sufficient size and thermal resistance for the intensity, type and duration of heat exposure; gas monitoring; monitoring the environment surrounding the ATCO infrastructure to ensure it is not being impacted by the work, and other controls as necessary.

**PROCEED** You should **only proceed** with your excavation work after you have planned, prepared, potholed (unless prohibited) and have protective measures in place. All locations markers/pegs are to be removed on completion of works. If you are unsure, **DO NOT** Proceed. Call ATCO on **1300 926 755**

**5. Disclaimer and Further Terms**

a) Nothing in this document, any accompanying plan or the 'Additional Information for Working around Gas Infrastructure' (AGA-O&M-PR24) (together called "**Documents**") purports to exclude or modify any term, condition or warranty to the extent that by law it cannot lawfully be excluded or modified by agreement or notice, including but not limited to those contained in Schedule 2 of the *Competition and Consumer Act* 2010 (Cth) and corresponding provisions of any state legislation.

b) If any of ATCO, or their respective related entities, officers, employees, agents, contractors or advisers (together called "**Associates**") is liable for a breach of a term, condition or warranty described in paragraph **5.a)** above, its liability is, to the fullest extent permitted by law, limited to any one or more of the following as it determines in its absolute discretion:

i) in relation to goods supplied by them, replacing or repairing the goods, supplying an equivalent item, paying the cost of replacing or repairing the goods or paying the cost of acquiring or hiring an equivalent item; and

ii) in relation to services supplied by them, the re-supply of the services or the payment of the cost of having the services re-supplied.

c) Subject to paragraphs **5.a)** and **b)**, but otherwise despite any other provision in the Documents, no representation or warranty is made or given (whether expressly or by implication) by any of ATCO or their respective Associates in respect of any information contained or referred to in any of the Documents or in any other communication from ATCO concerning any of the Documents or the subject matter of any of the Documents ("Information"). In particular, but without limiting the generality of the foregoing limitation, none of ATCO or their respective Associates makes any warranty or representation as to the truth, accuracy, completeness, reliability, currency, timeliness, quality or fitness for any purpose of or the standard of care taken in the preparation of any Document or Information (including, but not limited to, the accuracy of the scale of, or the location of anything or symbol shown on, any plan or diagram).

d) Subject to paragraphs **5.a)** and **b)**, to the maximum extent permitted by law, none of ATCO or their respective Associates is liable to any person or other body ("**Recipient**") who receives or otherwise obtains access to all or any part or parts of the Documents or Information, in any way (including, but not limited to, liability for negligence, breach of statutory duty or lack of care) in respect of any cost, expense, damages, loss or liability, including, but not limited to:

i) any financial or economic loss, cost, expense or damage, including but not limited to loss of production, loss of profit, loss of revenue, loss of use, loss of contract, loss of goodwill or loss of business opportunity;

ii) any new or increased costs or expenses, including but not limited to financing or operating costs;

iii) any failure to achieve any actual or anticipated saving in respect of any cost or expense;

iv) any cost, expense, damage or loss resulting from any liability of the Recipient to any other person or body howsoever and whensoever arising, suffered or incurred by the Recipient in relation to, or in connection with, the disclosure to them of, or use of, or reliance on, all or any

part or parts of the Documents or Information.

e) By using any Document or Information, each Recipient is taken to represent and warrant to ATCO that the Recipient will comply with the conditions and other terms referred to in the Documents or Information, including but not limited to conditions that:

i) the Recipient **Must** comply with the conditions in numbered paragraphs **1** to **4** above and this paragraph **5**;

ii) as between ATCO and each Recipient, ATCO owns the Information and all rights and title in and to the Information are to remain vested in ATCO;

iii) no Recipient has any right, title or interest in the Information or, except as expressly provided for in the Documents, any license or right to copy, alter, modify, publish or otherwise use or deal with the Information without prior written approval from ATCO;

iv) ATCO makes no representation and gives no warranty as to its right to disclose any Information;

v) the Recipient relies on any Information entirely at its own risk and expense;

vi) the Recipient **Must** undertake its own independent due diligence and investigations in relation to the Information;

vii) none of ATCO or their respective Associates owes the Recipient any duty of care in respect of the Information; and

viii) none of ATCO or their respective Associates is under any obligation to correct, update or revise any Documents or Information.

**GAS MAIN AND SERVICE IDENTIFICATION**

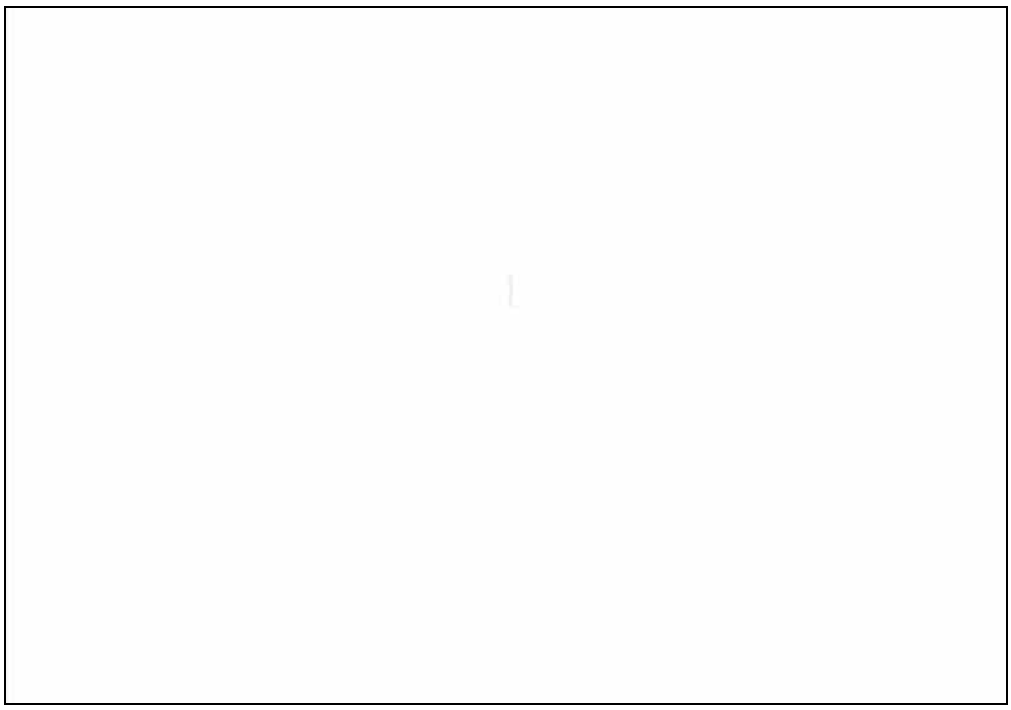
**LEGEND**

1. Critical Asset (See **WARNINGS** page 1)
2. Pipe Diameter (millimetres)
3. Pipe Material
   CI = Cast Iron PE = Polyethylene
   GI = Galvanised Iron PVC = PVC
   ST = Steel
4. Alignment (in metres from property line)
5. Pressure in main (MP 70 kPa = Medium Pressure and MAOP (Maximum Allowable Operating Pressure)
6. Off-line Service – service may not be straight line to meter. (**WARNING – OLS may not always be shown on plan**. See item **Error: Reference source not found** above)
7. Service Valve in the vicinity
   (**NOTE:** Service Valve may be **"BURIED"**)
8. Pre-laid Service laid in Common Trench
9. Main Status: (See **WARNINGS** page 1)
   9a. AB = Abandoned Mains
   9b. PROP = Proposed Mains
10. Customer Connection: Does not indicate actual location of Meter Position
    D2 (D = Domestic & 2 = Number of Meters)
    C1 (C = Commercial & 1 = Number of Meters)
11. **Additional detail available and Must be obtained if within area of proposed works – see page 2 above.**
12. Depth of Cover (DOC) in metres.

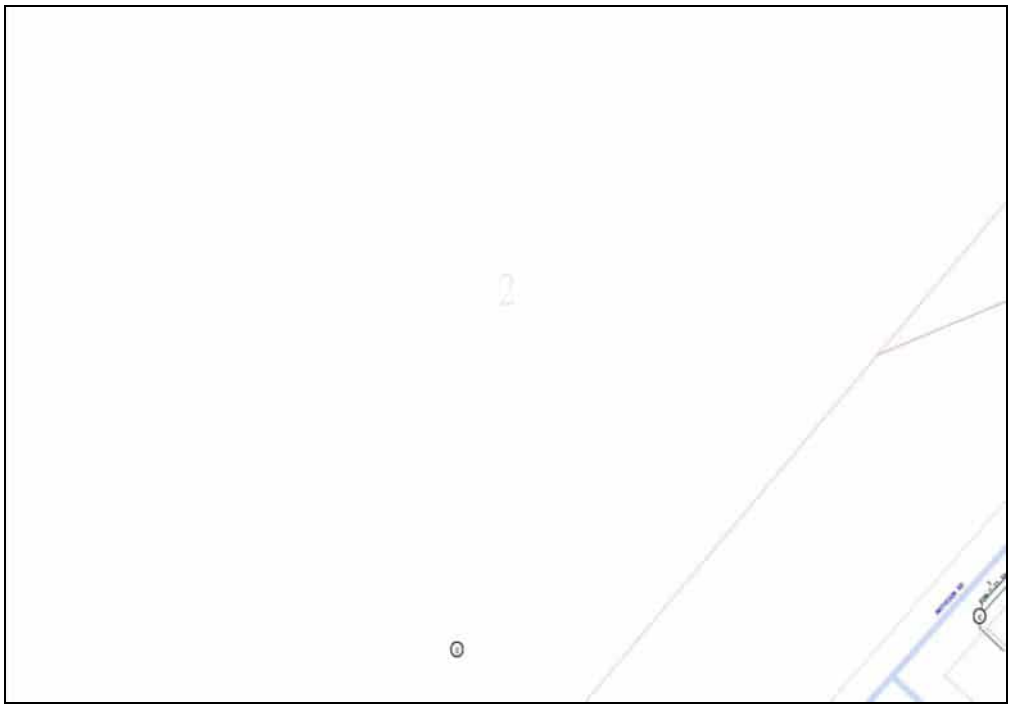



IF UNSURE, PLEASE CONTACT ATCO ON **1300 926 755**

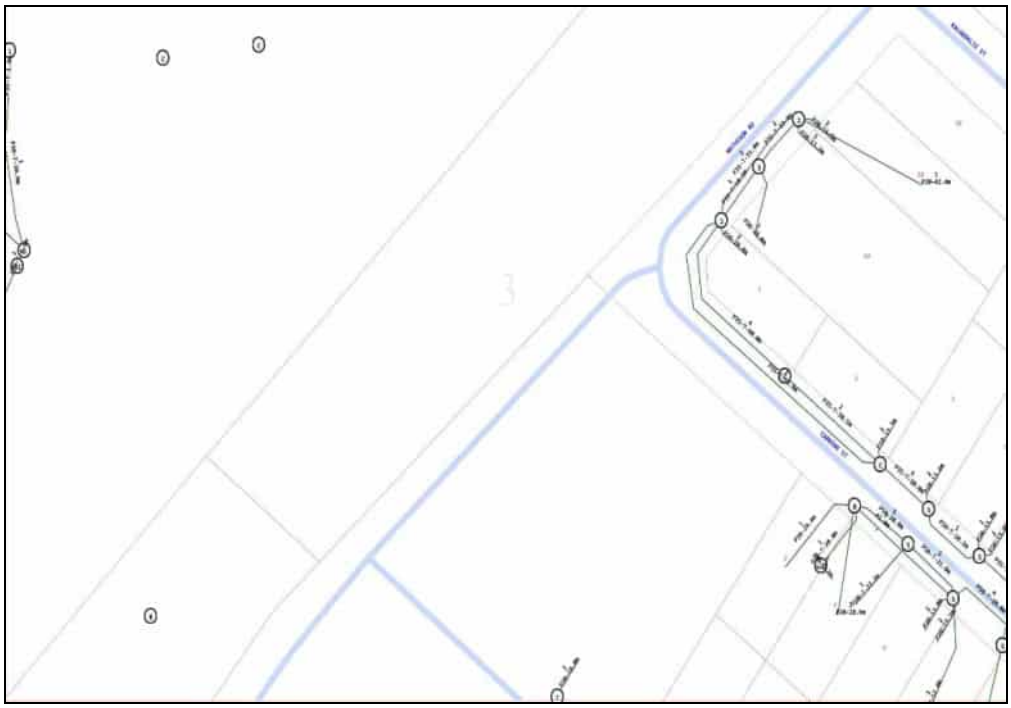
Attachment 12.1.4 Engineering Servicing Report



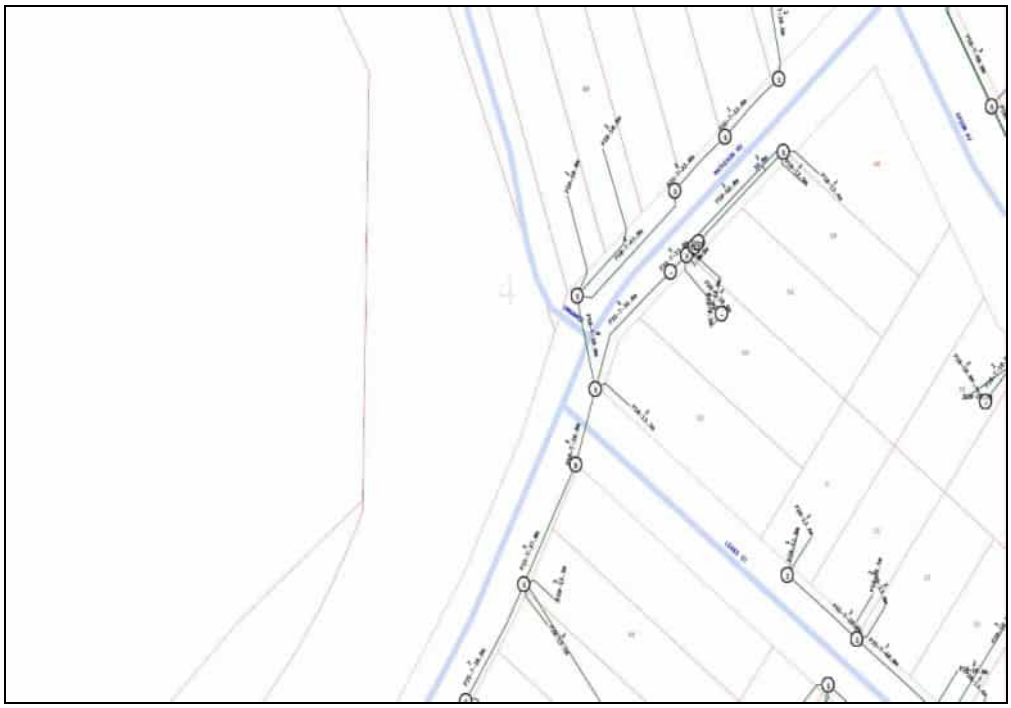
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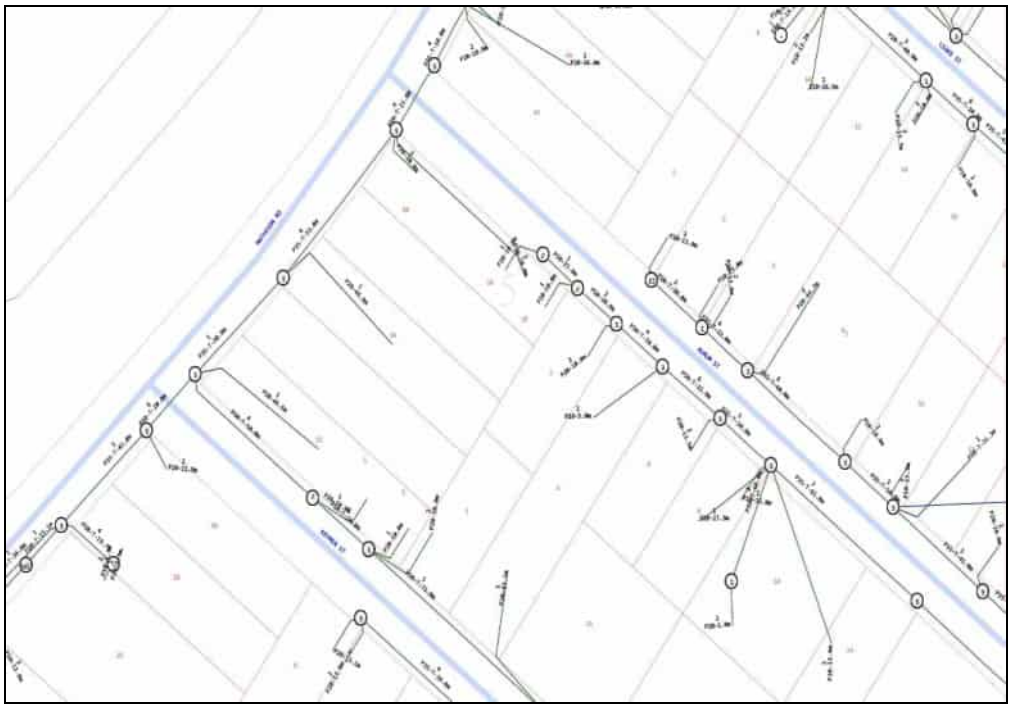
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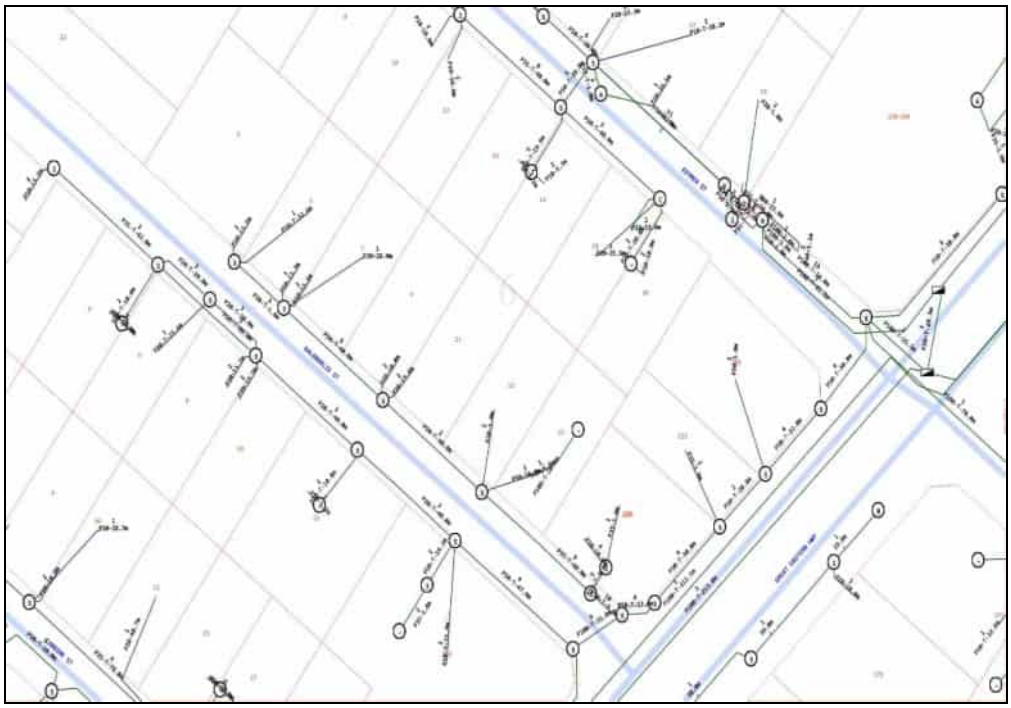
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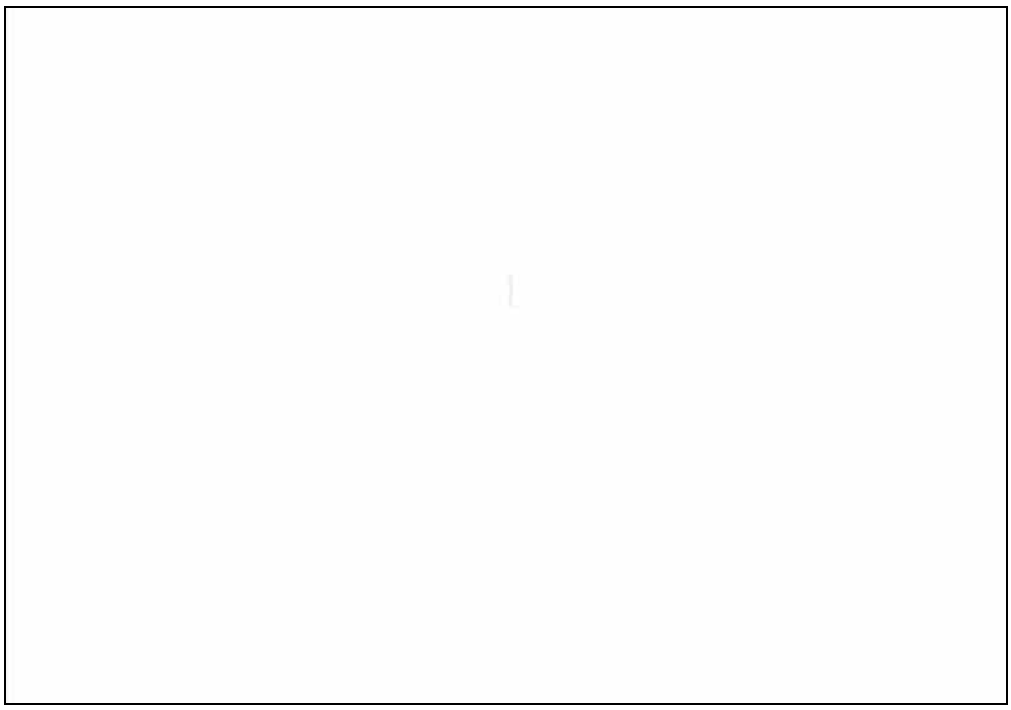
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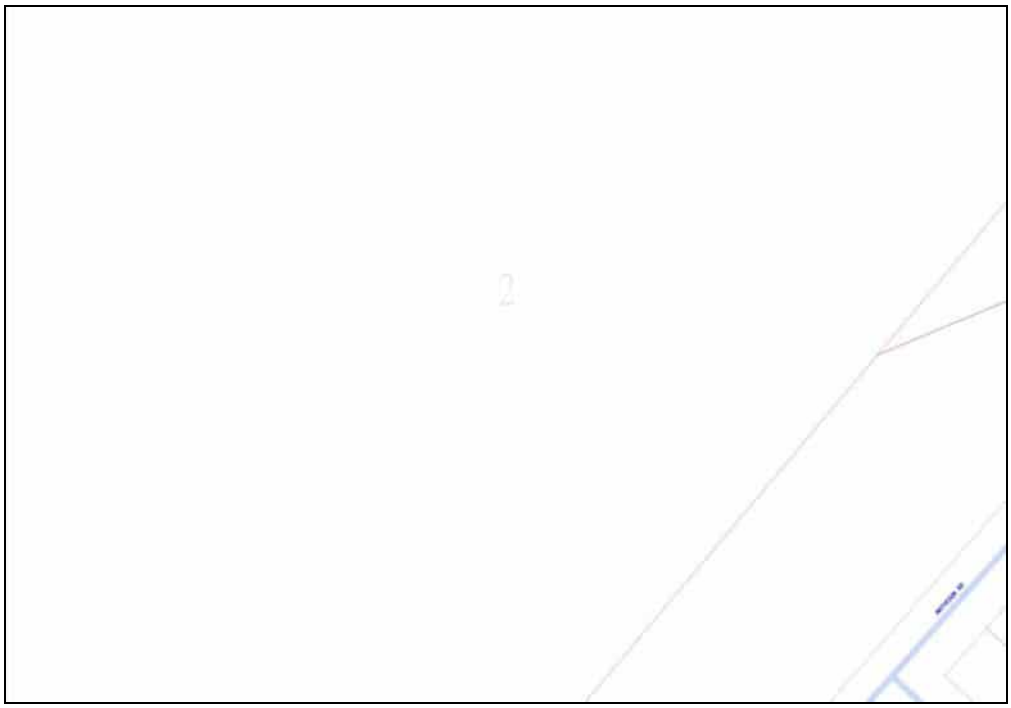
## Emergency Contacts

You must immediately report any damage to the **nbn™** network that you are/become aware of.
Notification may be by telephone - 1800 626 329.

Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report



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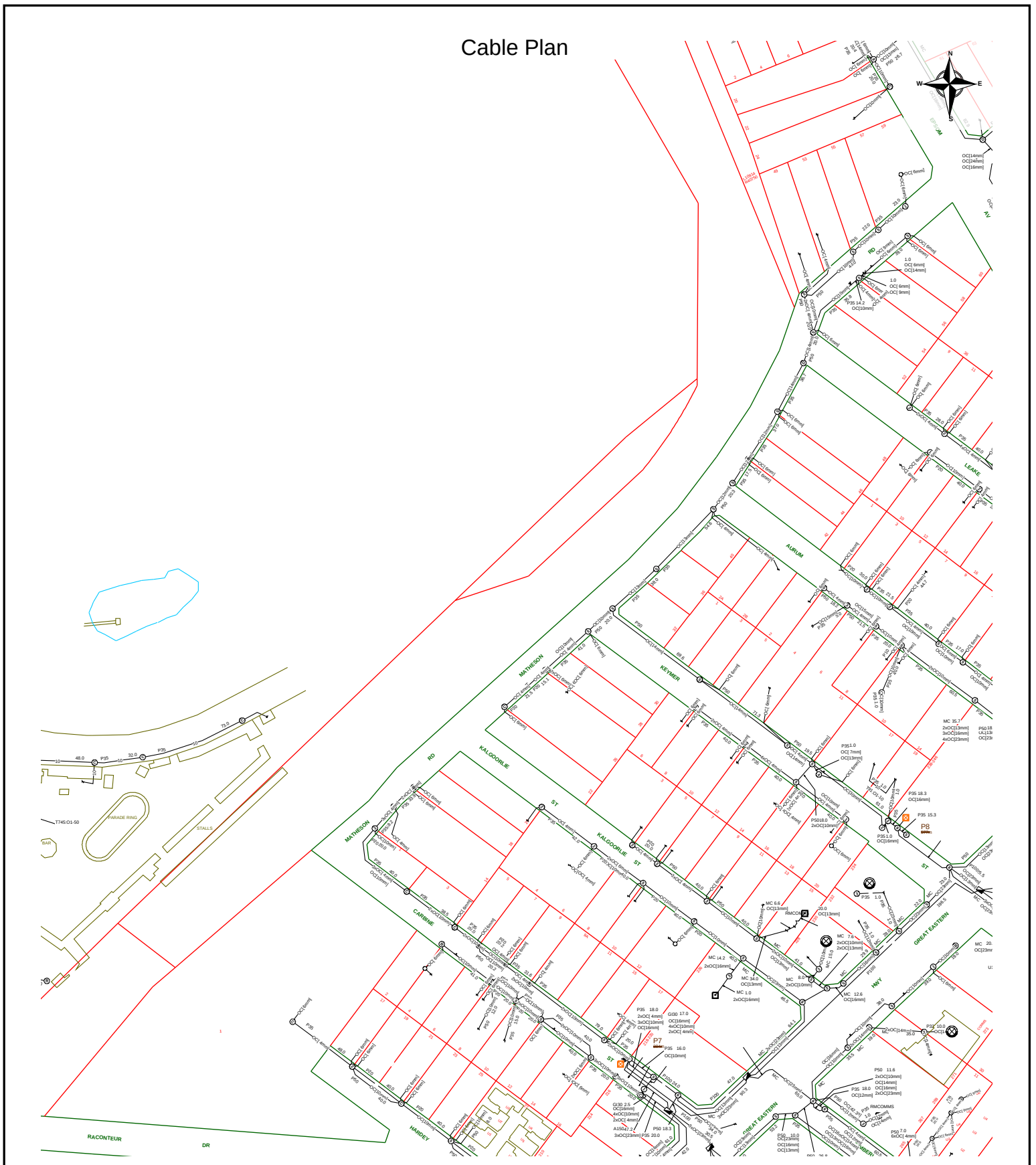


## Emergency Contacts

You must immediately report any damage to the **nbn™** network that you are/become aware of.
Notification may be by telephone - 1800 626 329.

Attachment 12.1.4 Engineering Servicing Report

## Cable Plan




| | |
|---|---|
| Report Damage: https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment<br>Ph - 13 22 03<br>Email - Telstra.Plans@team.telstra.com<br>Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries | Sequence Number: 240900639 |
| TELSTRA LIMITED A.C.N. 086 174 781 | CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance. |
| Generated On 21/06/2024 19:09:59 | |

The above plan must be viewed in conjunction with the Mains Cable Plan on the following page

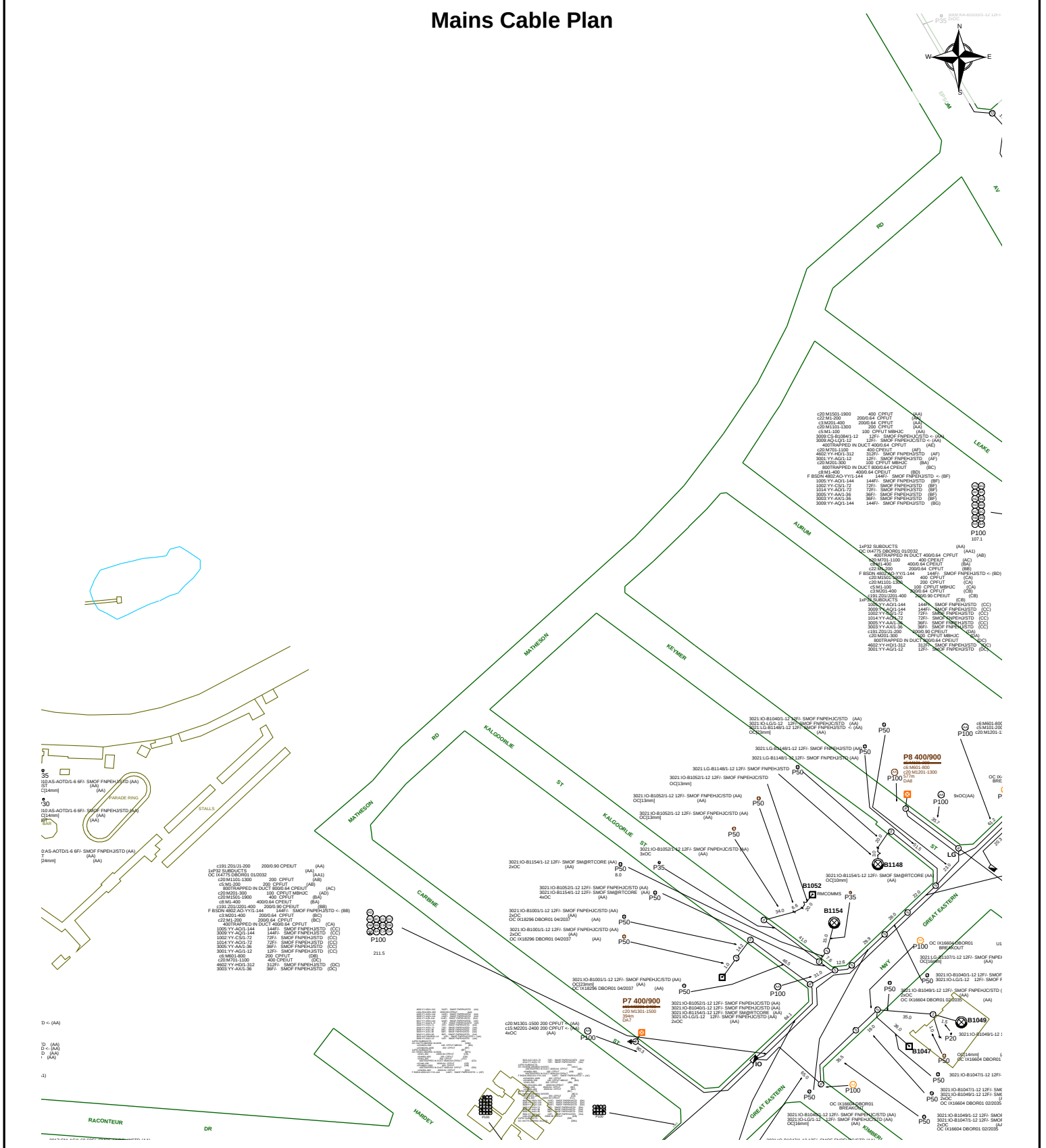
WARNING
Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information.
As such,Telstra supplied location information is indicative only.Spatial accuracy is not applicable to Quality Level D.
Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it.
Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy.
Further on site investigation is required to validate the exact location of Telstra plant prior to commencing construction work.
A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works.

See the Steps- Telstra Duty of Care that was provided in the email response.

**Page 1 of 2**

Attachment 12.1.4 Engineering Servicing Report

## Mains Cable Plan



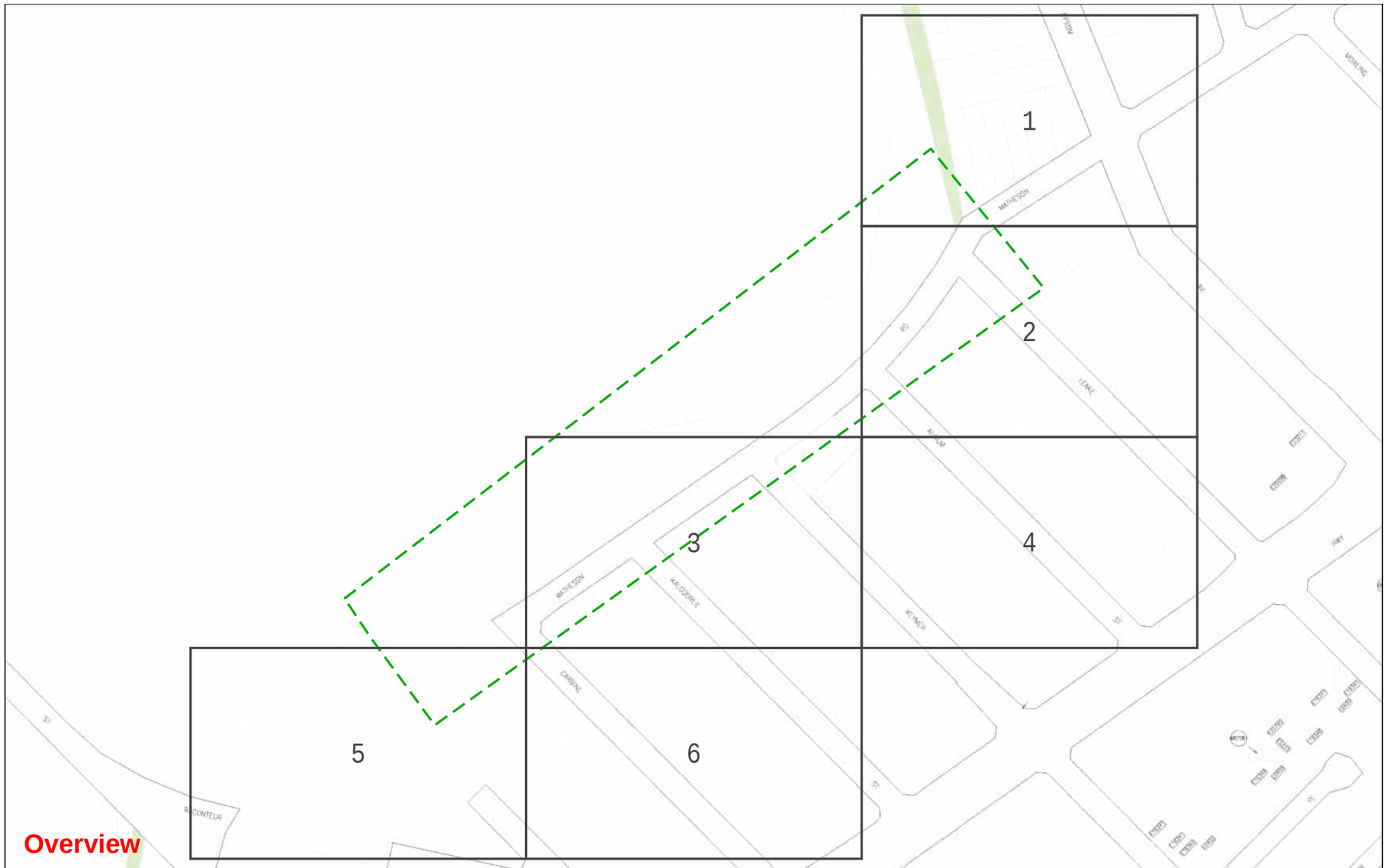

| | |
|---|---|
| Report Damage: https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment<br>Ph - 13 22 03<br>Email - Telstra.Plans@team.telstra.com<br>Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries | Sequence Number: 240900639 |
| TELSTRA LIMITED A.C.N. 086 174 781 | CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance. |
| Generated On 21/06/2024 19:10:01 | |

WARNING
Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information.
As such,Telstra supplied location information is indicative only.Spatial accuracy is not applicable to Quality Level D.
Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it.
Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy.
Further on site investigation is required to validate the exact location of Telstra plant prior to commencing construction work.
A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works.

See the Steps- Telstra Duty of Care that was provided in the email response.

Page 2 of 2

Attachment 12.1.4 Engineering Servicing Report




WATER CORPORATION

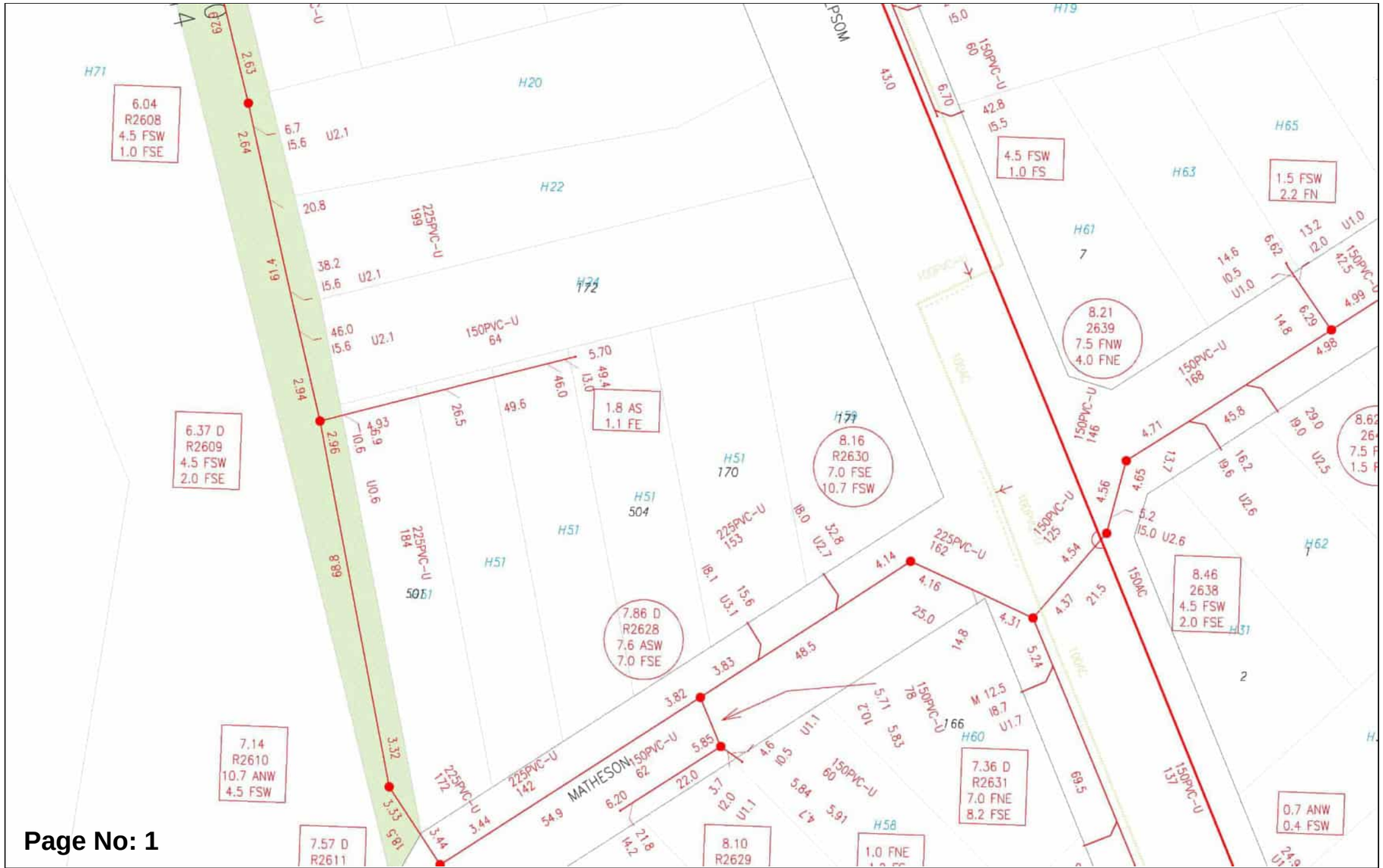
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Sequence No.: 240900640
Print Date: 21 Jun 2024

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Sewer

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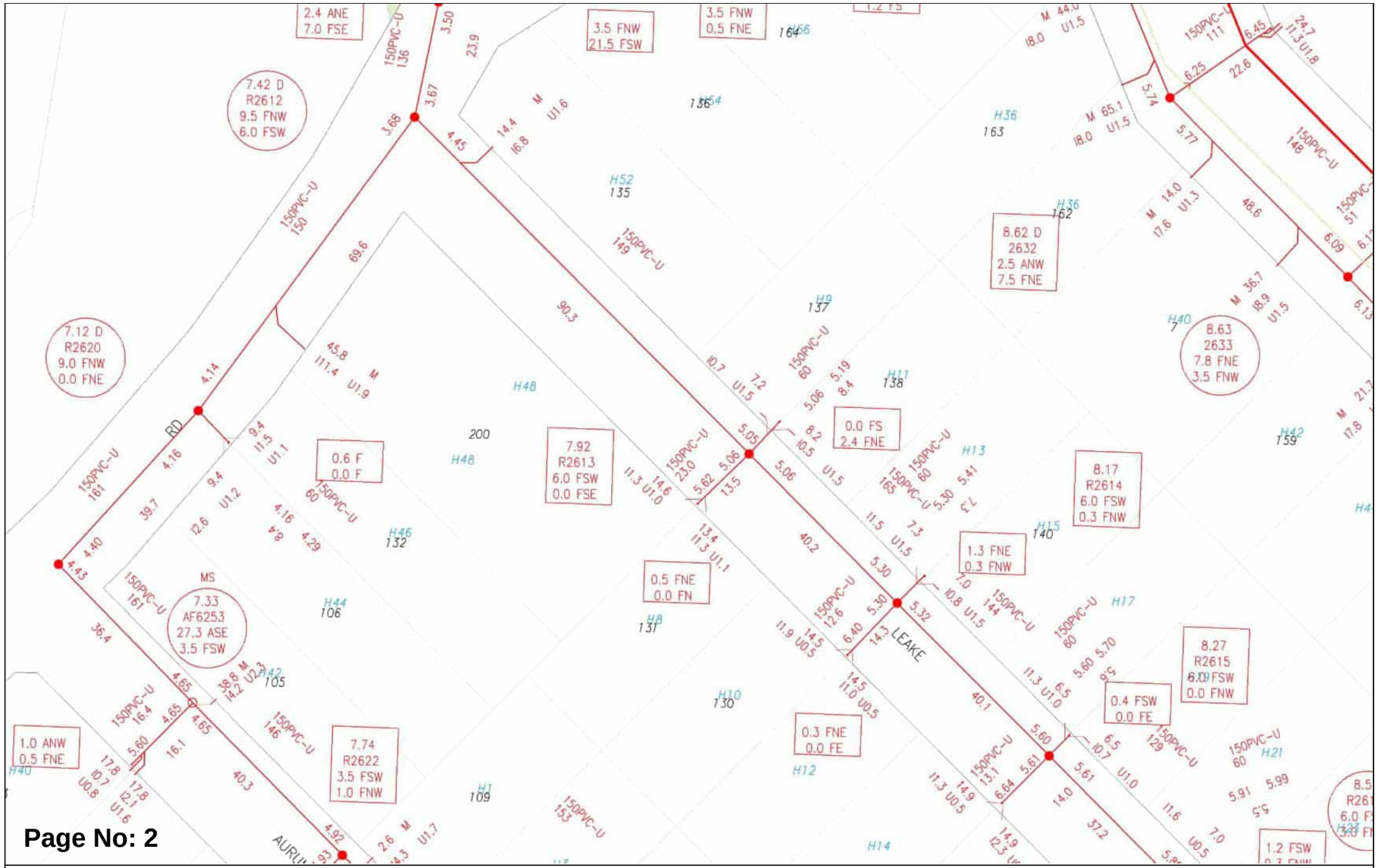
Attachment 12.1.4 Engineering Servicing Report




Plans generated 21 Jun 2024 by PelicanCorp TicketAccess Software | www.pelicancorp.com

Water Corp - Non-critical Plan.docx (21 May 2024)

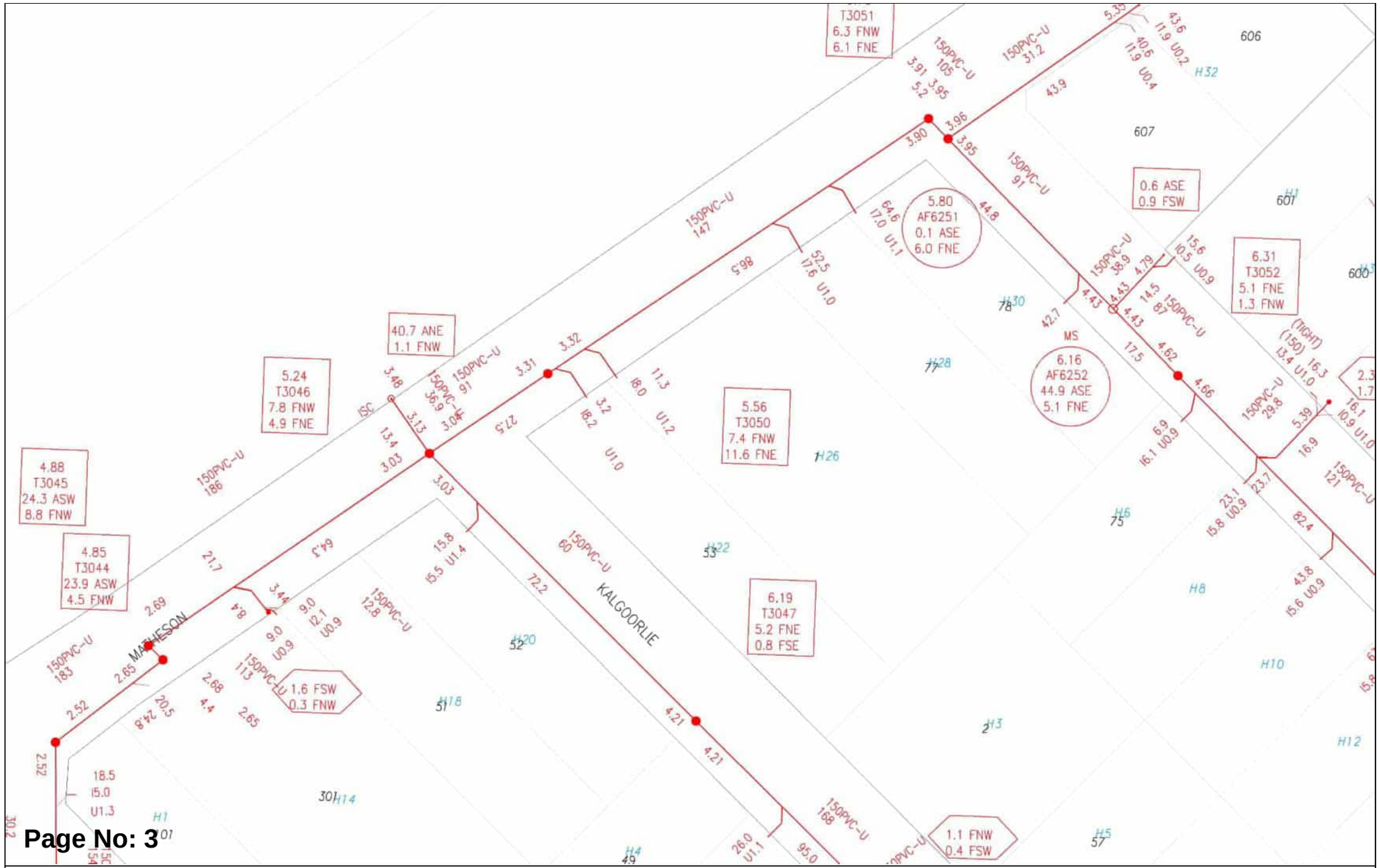
Attachment 12.1.4 Engineering Servicing Report




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Water Corp - Non-critical Plan.docx (21 May 2024)

Attachment 12.1.4 Engineering Servicing Report




WATER CORPORATION

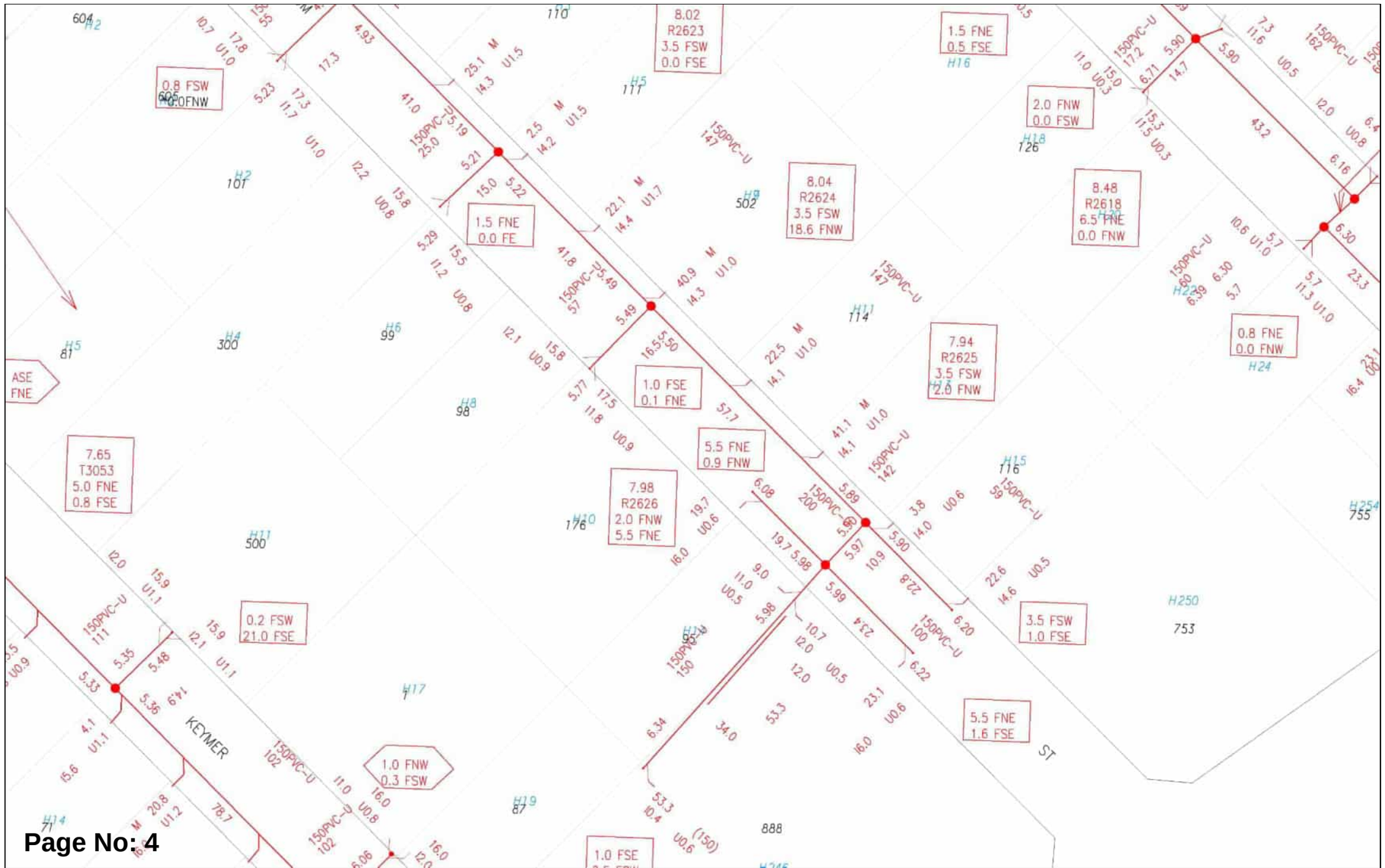
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| Print Date: | 21 Jun 2024 |

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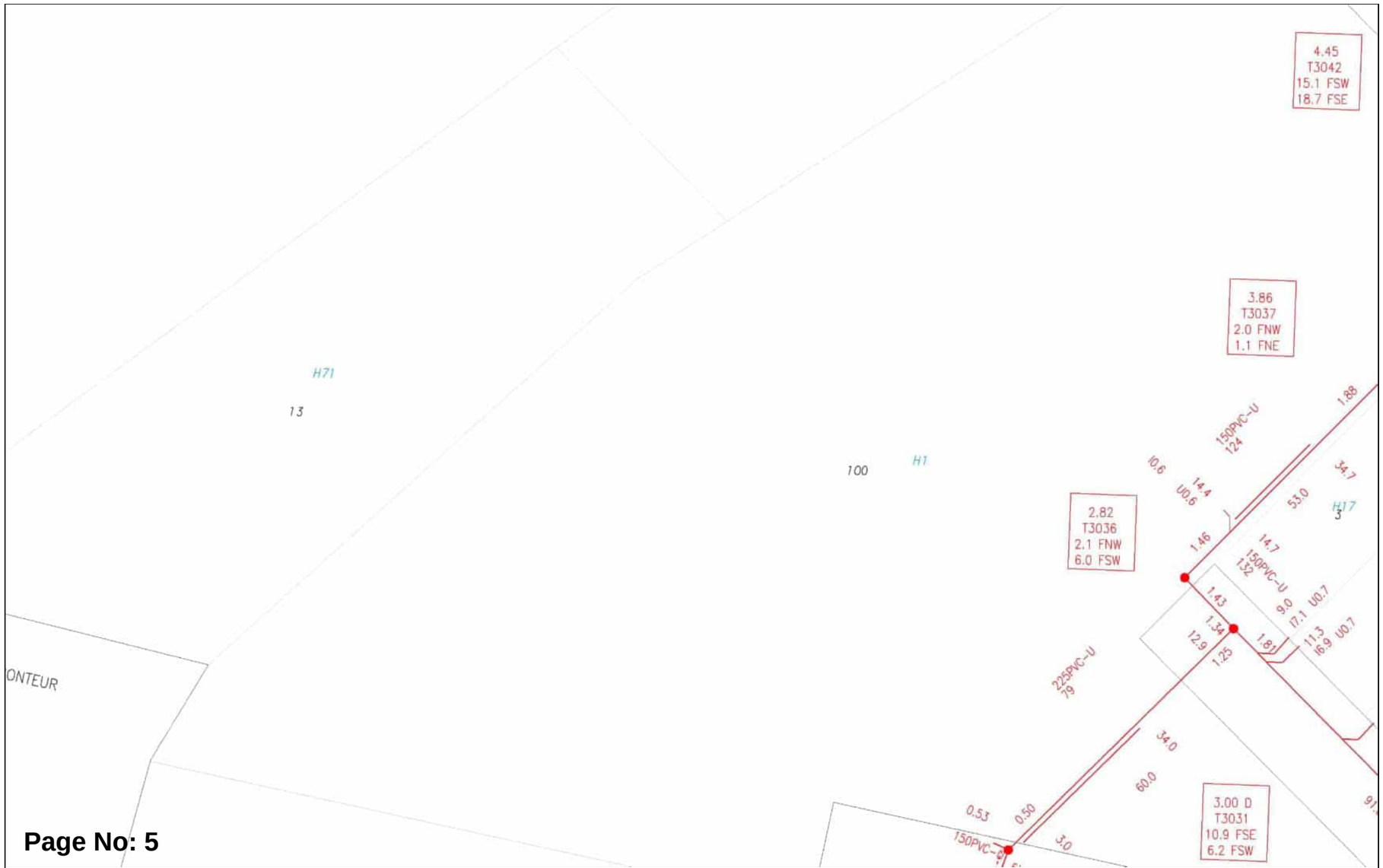



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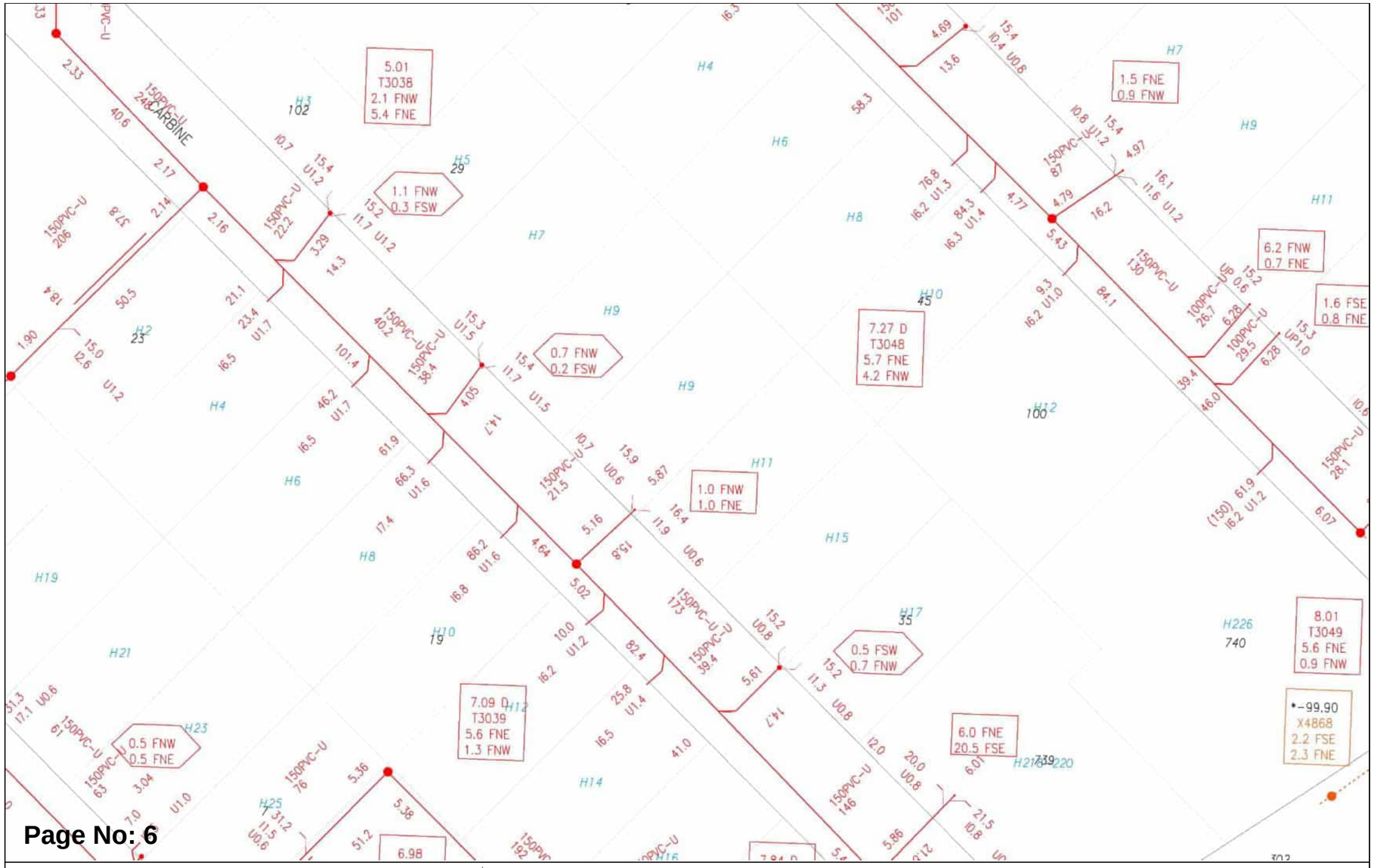
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Water Corp - Non-critical Plan.docx (21 May 2024)

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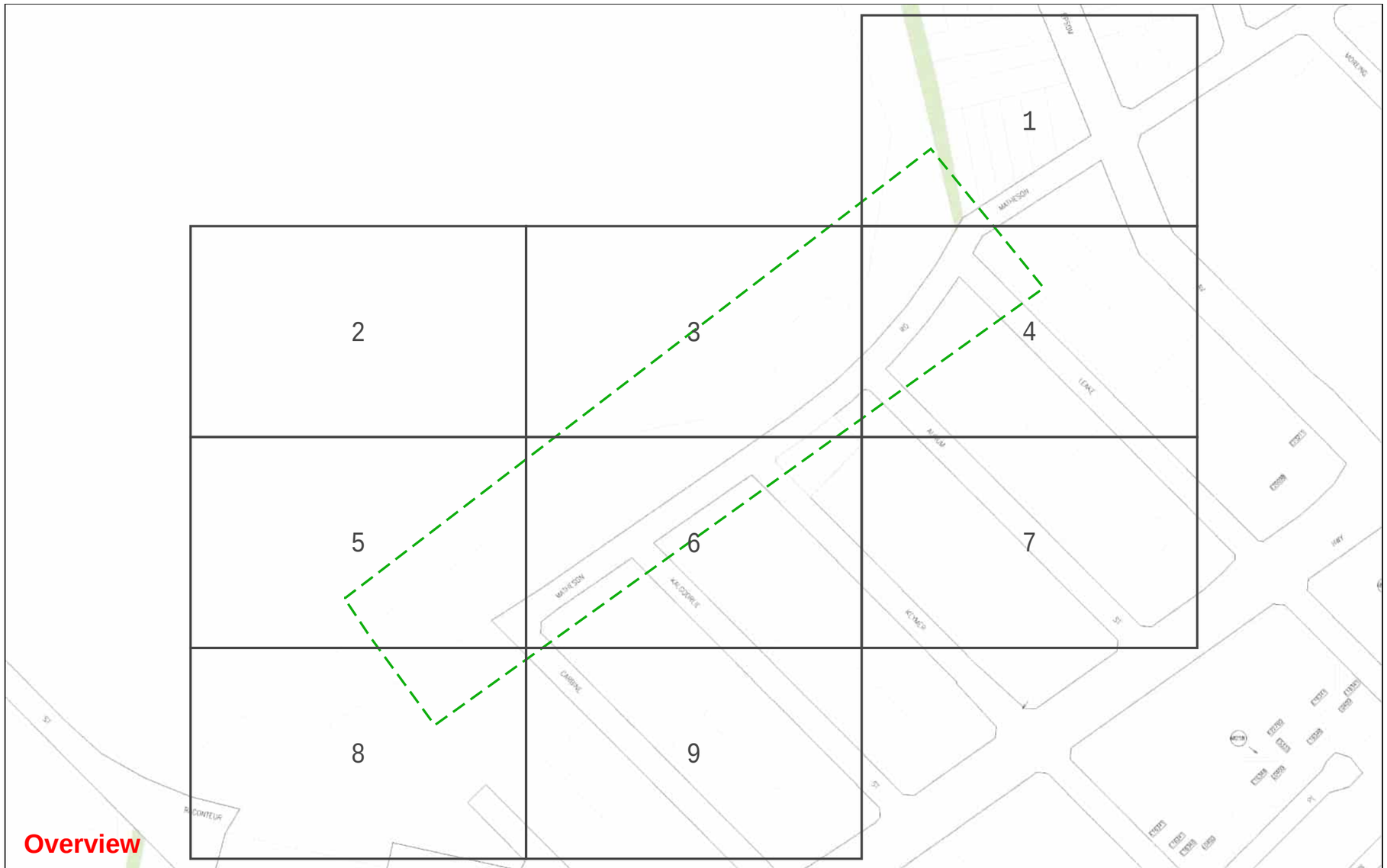

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| Sequence No.: | 240900640 |
| Print Date: | 21 Jun 2024 |

Sewer

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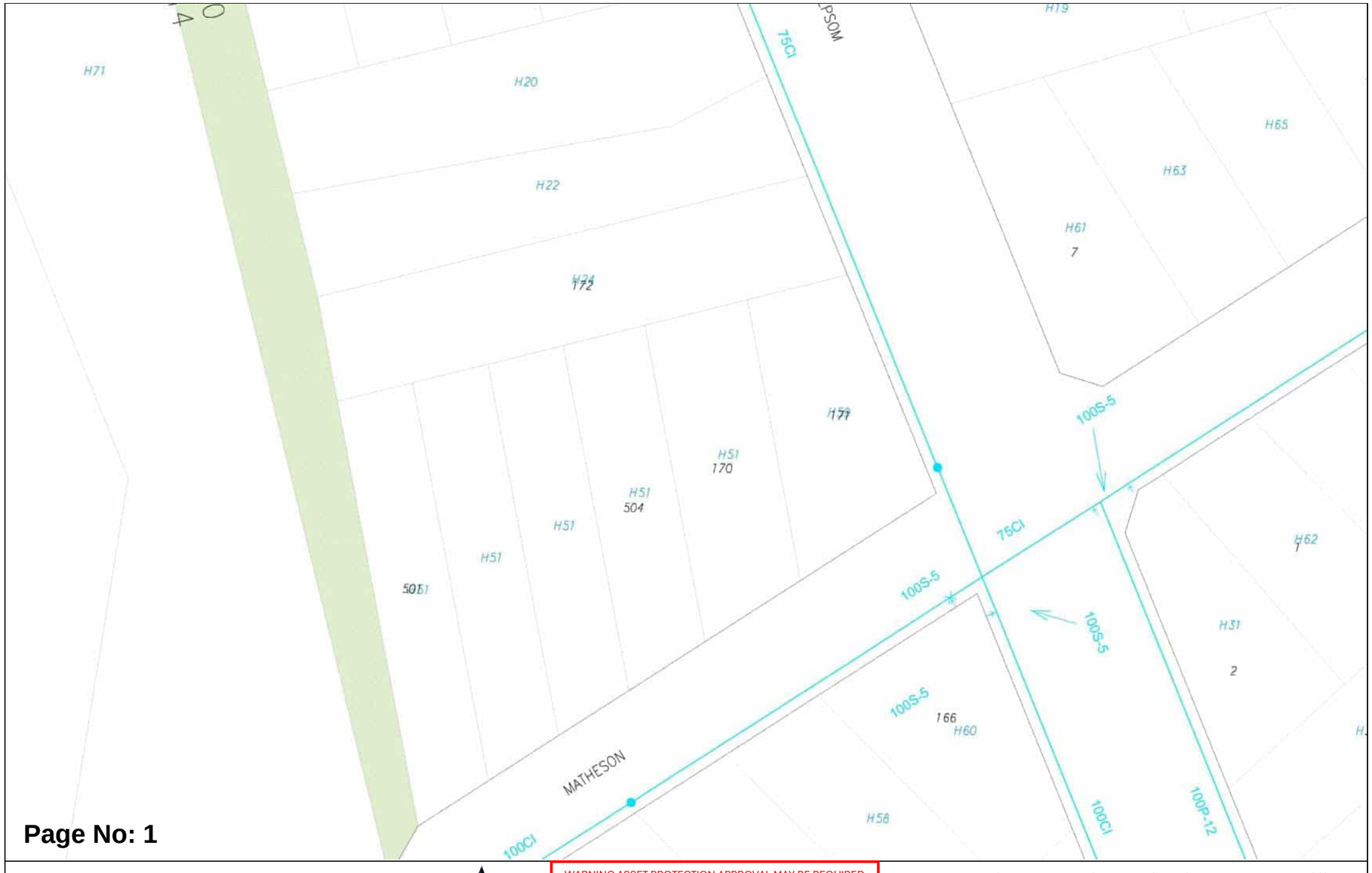
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Attachment 12.1.4 Engineering Servicing Report




**Page No: 1**

WATER CORPORATION

Scale: 1:750
Job No.: 36962248
Sequence No.: 240900640
Print Date: 21 Jun 2024

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**Water**

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Apply for approval to work near our assets at:
Working near assets (watercorporation.com.au)

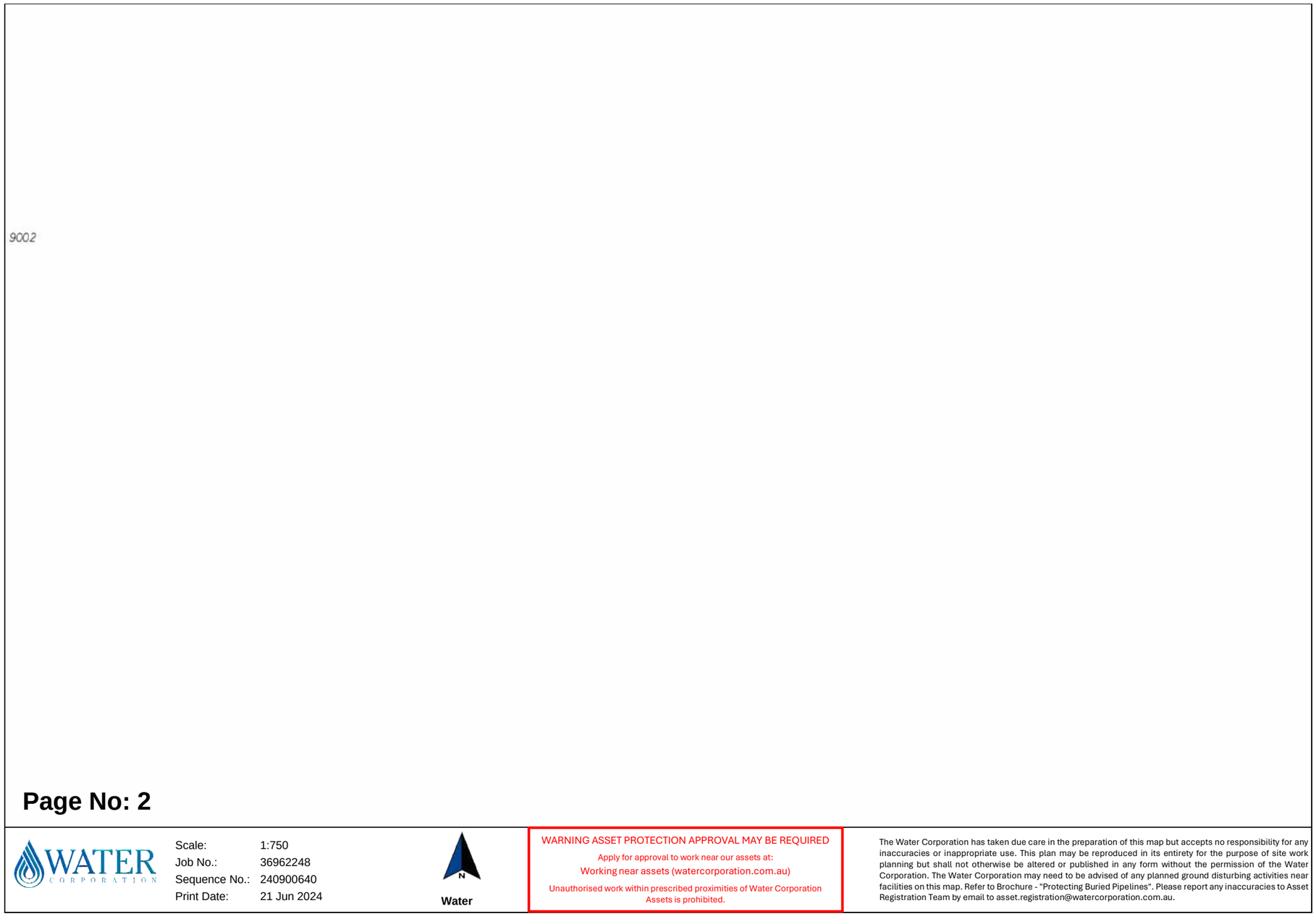
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WATER CORPORATION

Scale: 1:750
Job No.: 36962248
Sequence No.: 240900640
Print Date: 21 Jun 2024

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Water

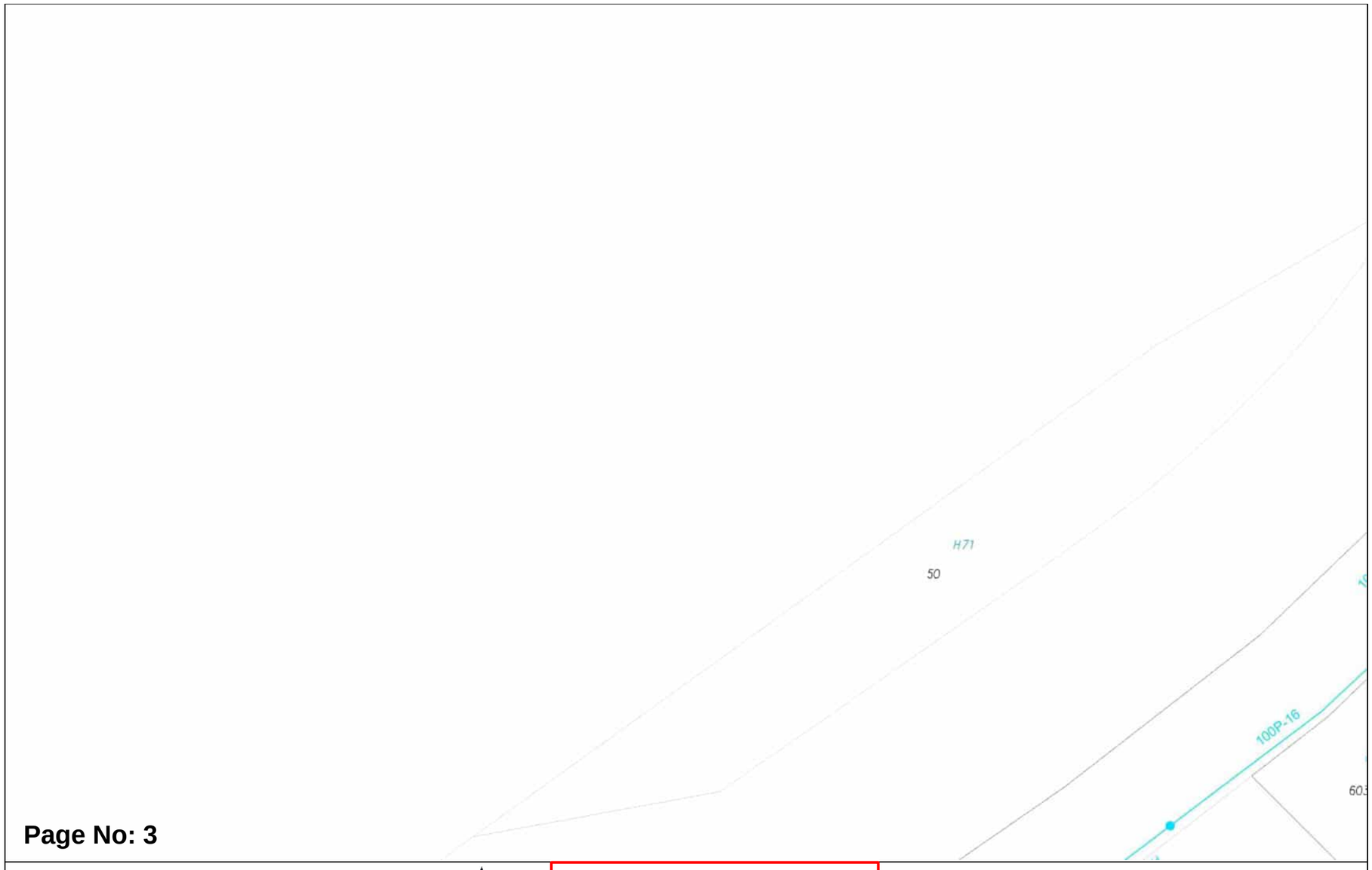
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Attachment 12.1.4 Engineering Servicing Report




**Page No: 3**

WATER CORPORATION

Scale: 1:750
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Water

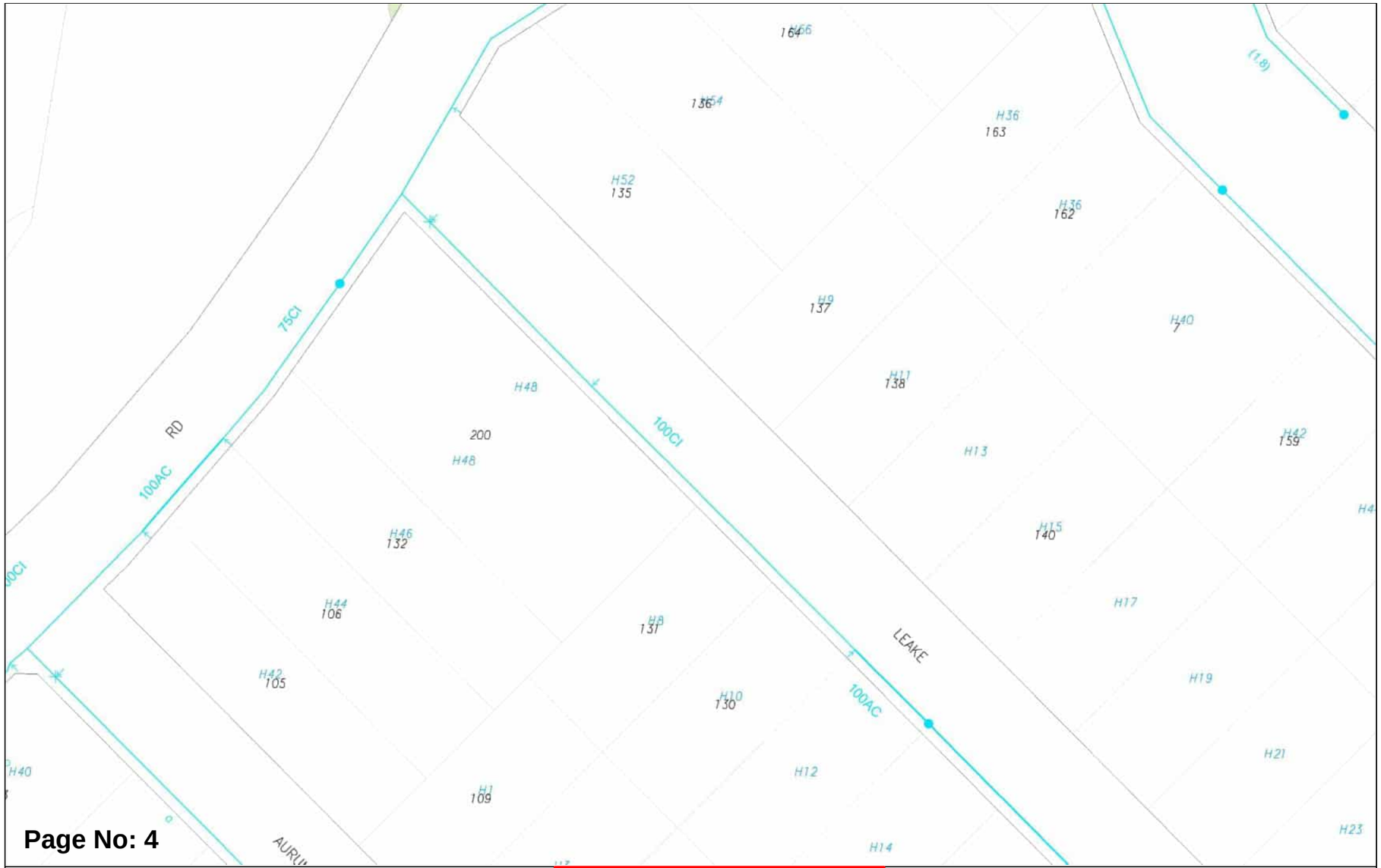
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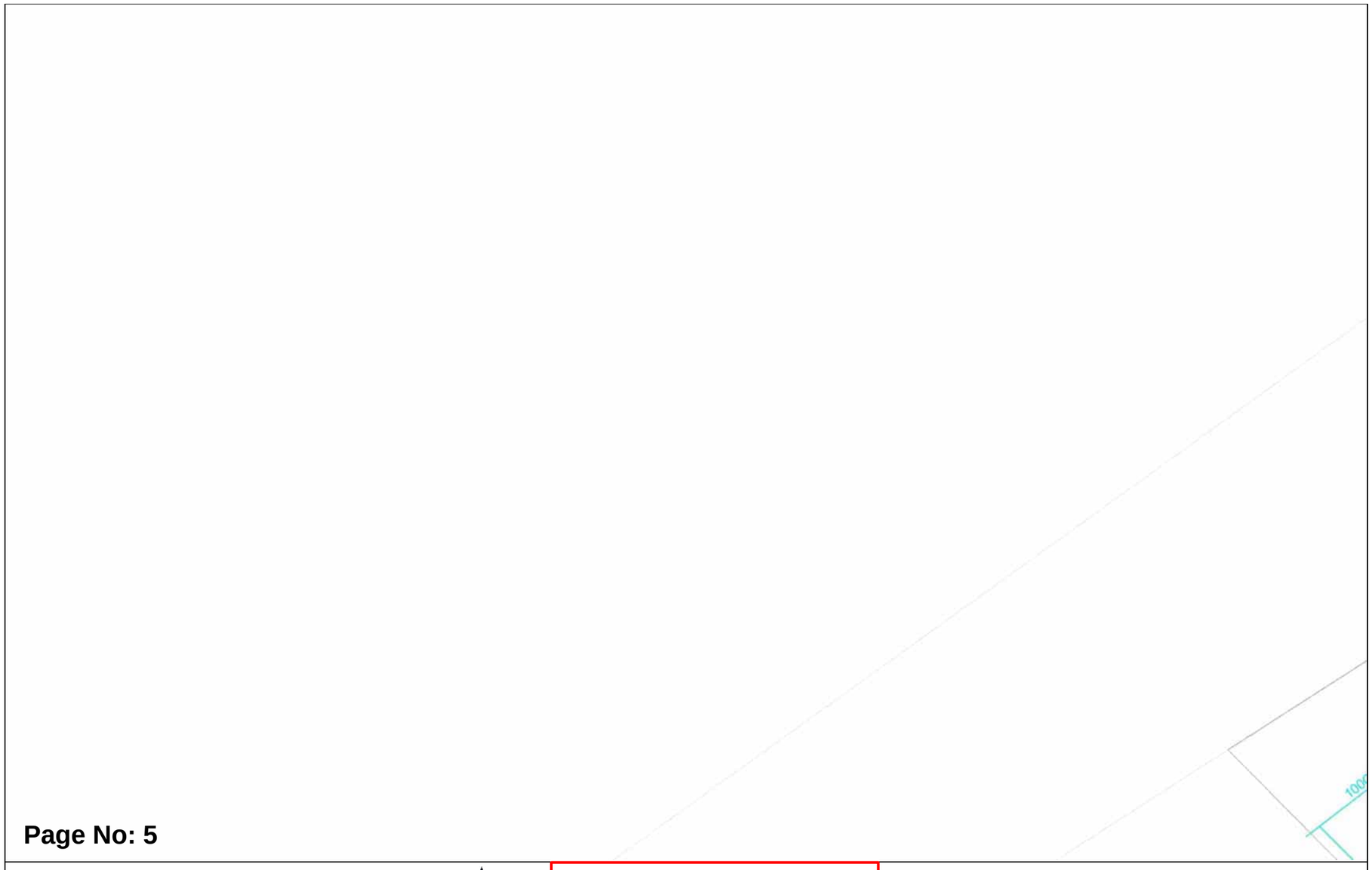
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Attachment 12.1.4 Engineering Servicing Report



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WATER CORPORATION

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| Scale: | 1:750 |
| Job No.: | 36962248 |
| Sequence No.: | 240900640 |
| Print Date: | 21 Jun 2024 |

Water

WARNING ASSET PROTECTION APPROVAL MAY BE REQUIRED

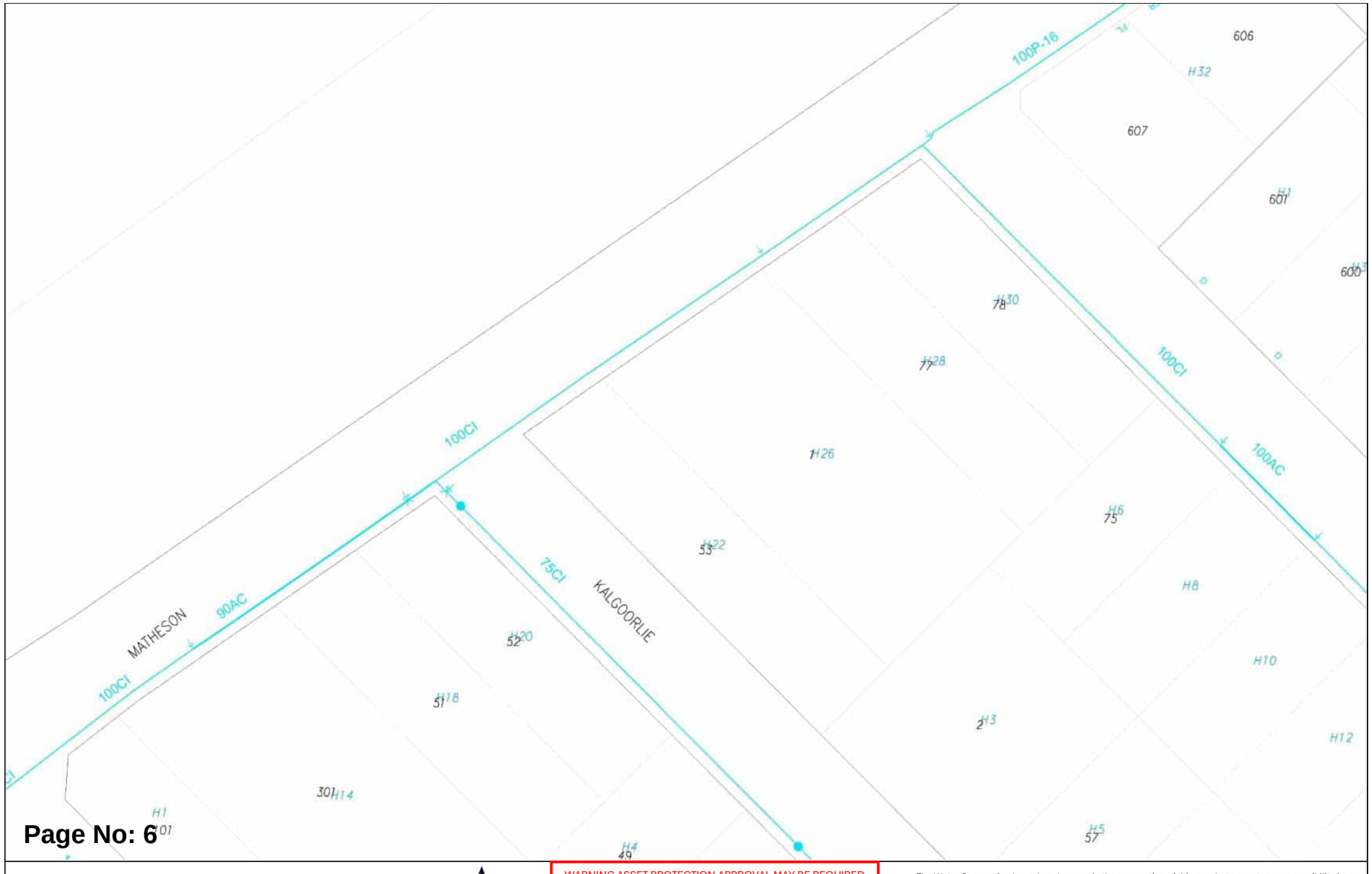
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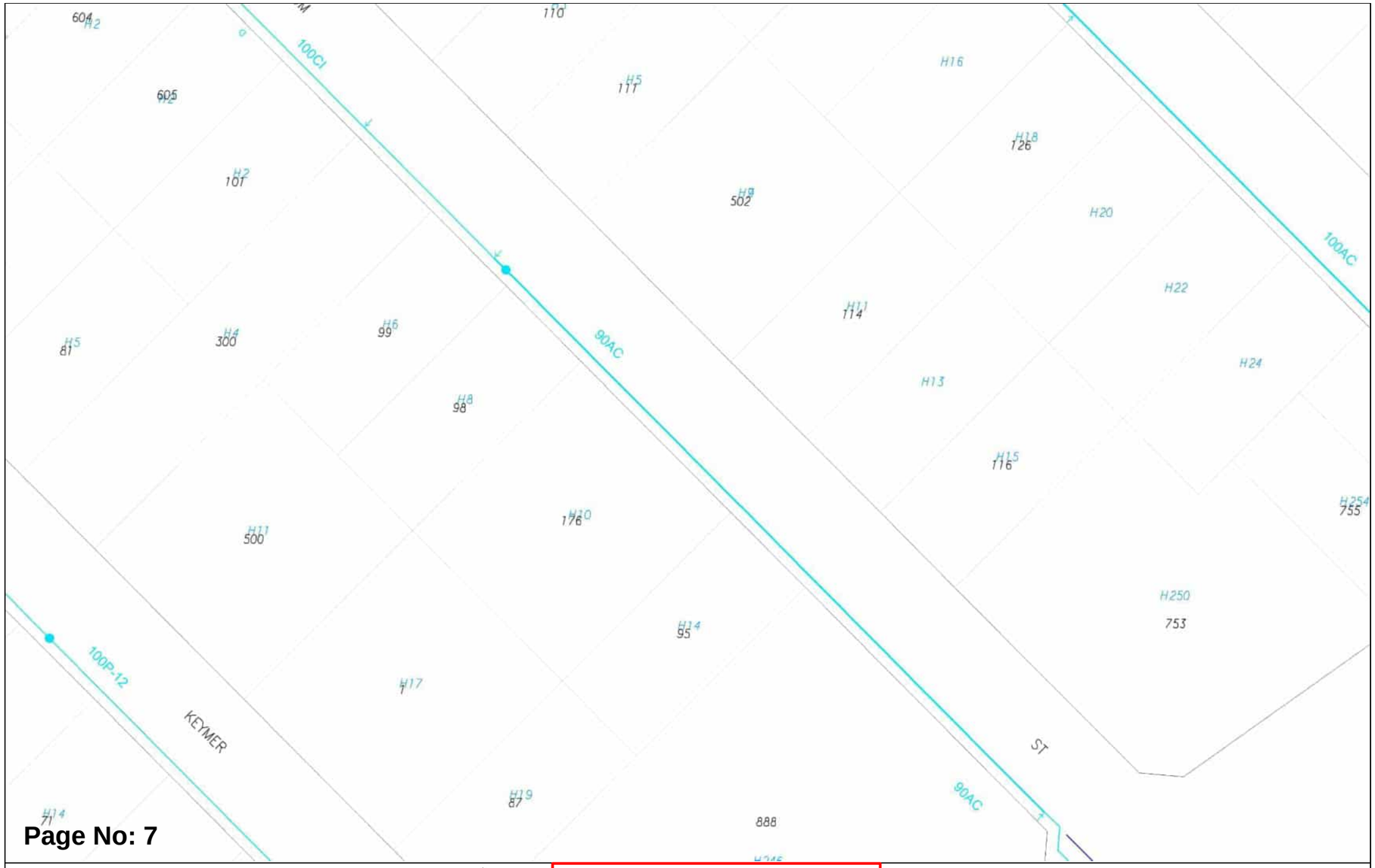
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Attachment 12.1.4 Engineering Servicing Report




**Page No: 7**

WATER CORPORATION

Scale: 1:750
Job No.: 36962248
Sequence No.: 240900640
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**Water**

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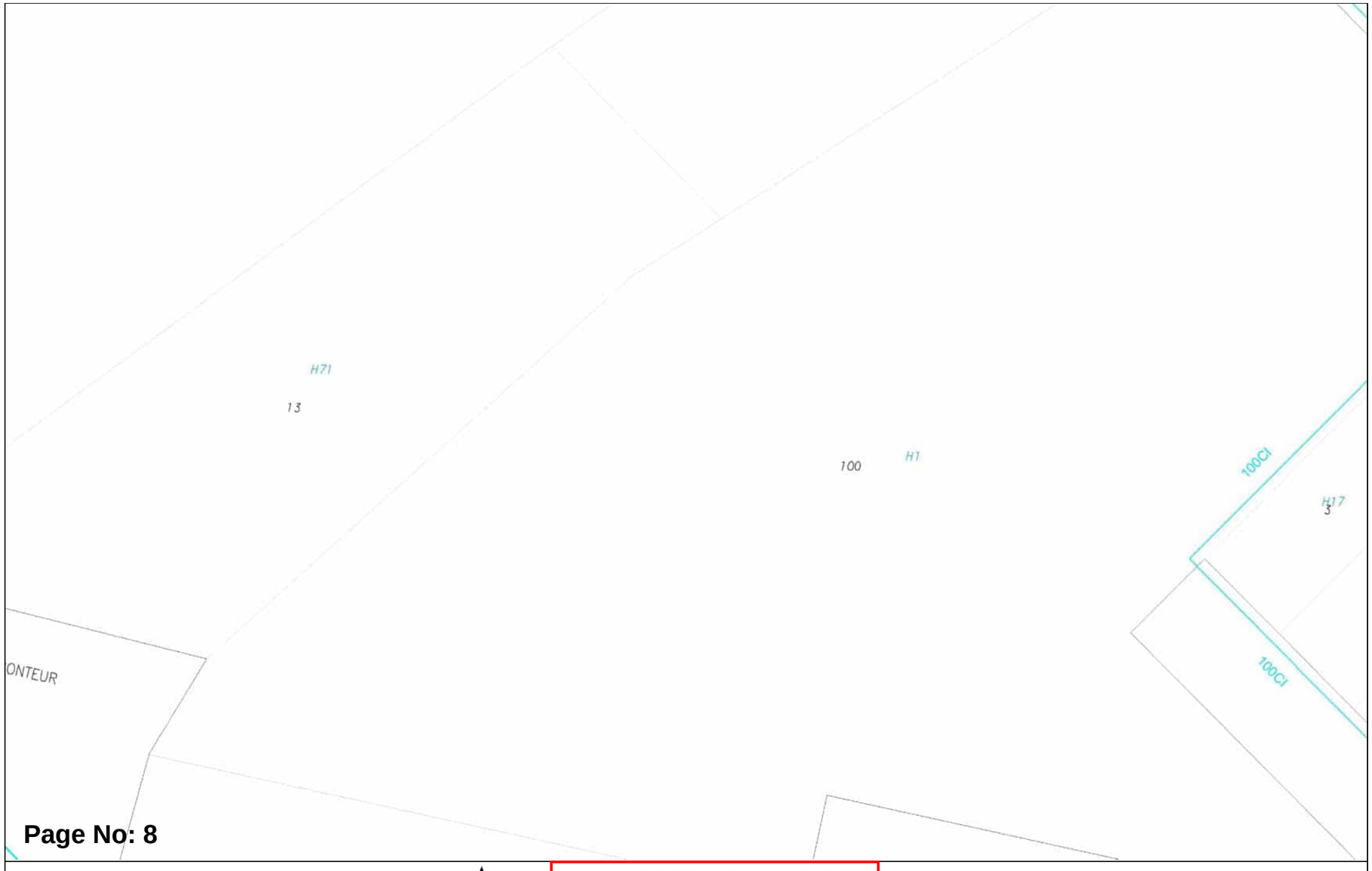
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**Page No: 8**

WATER CORPORATION

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| Sequence No.: | 240900640 |
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Water

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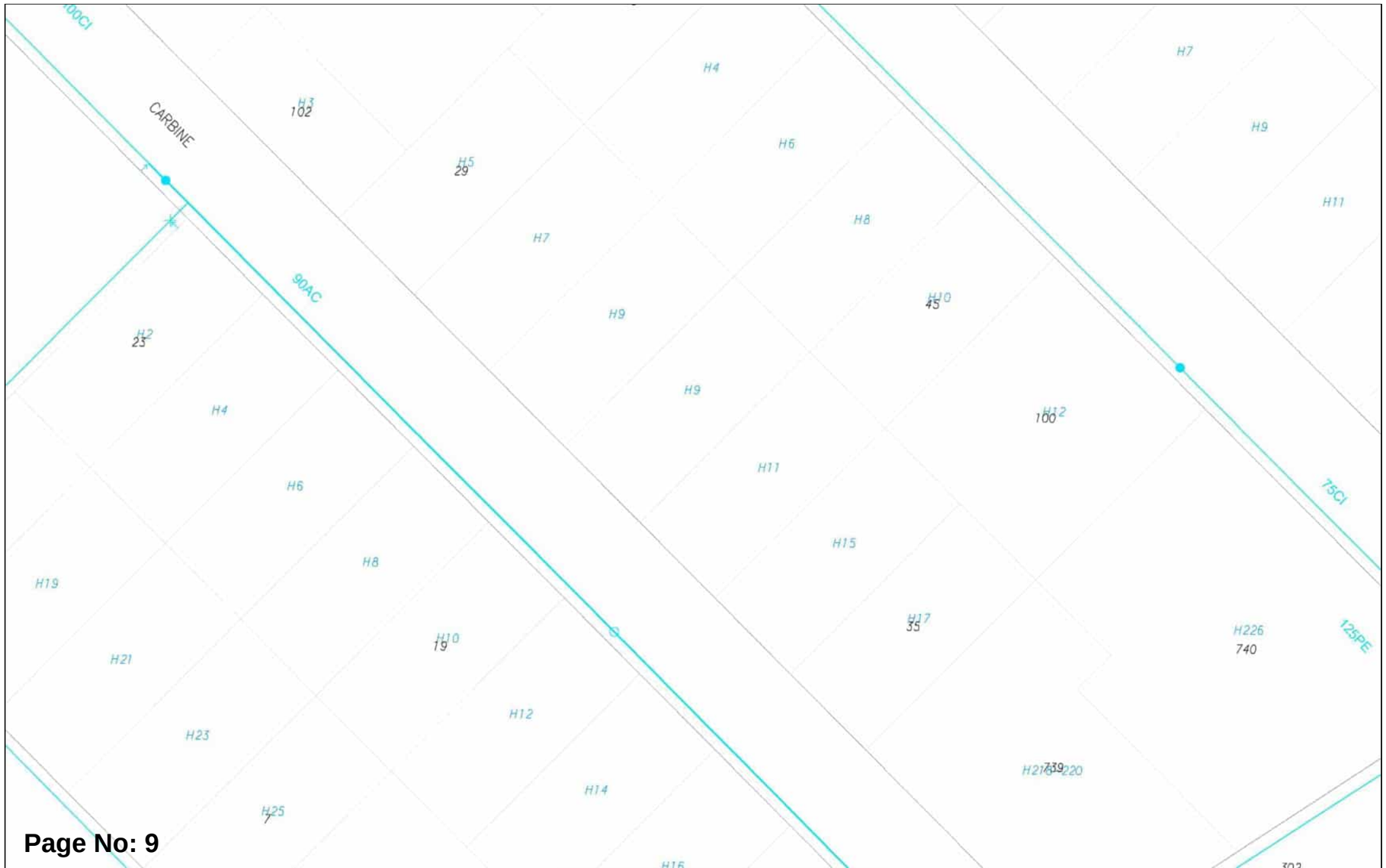
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WATER CORPORATION

Scale: 1:750
Job No.: 36962248
Sequence No.: 240900640
Print Date: 21 Jun 2024

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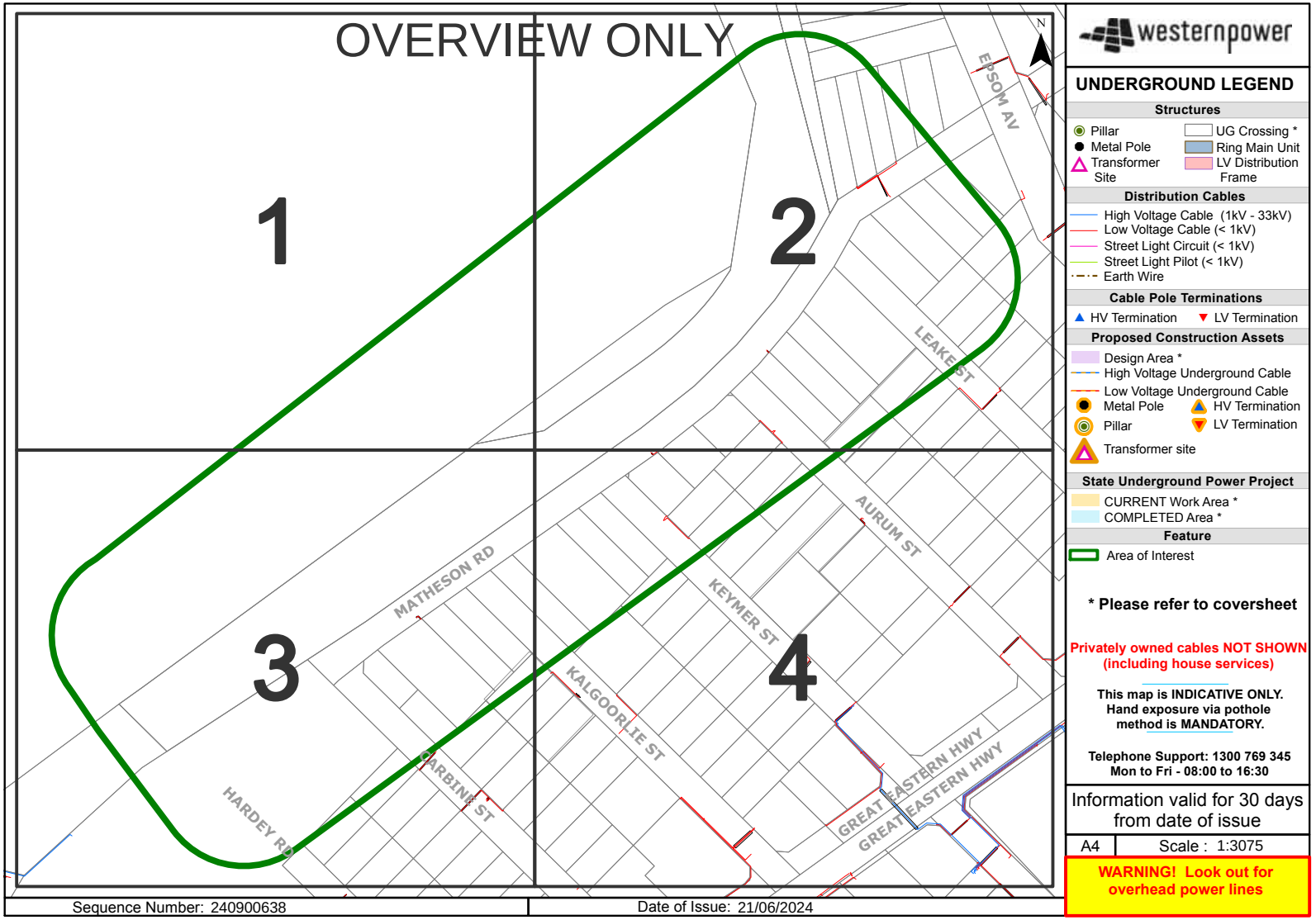
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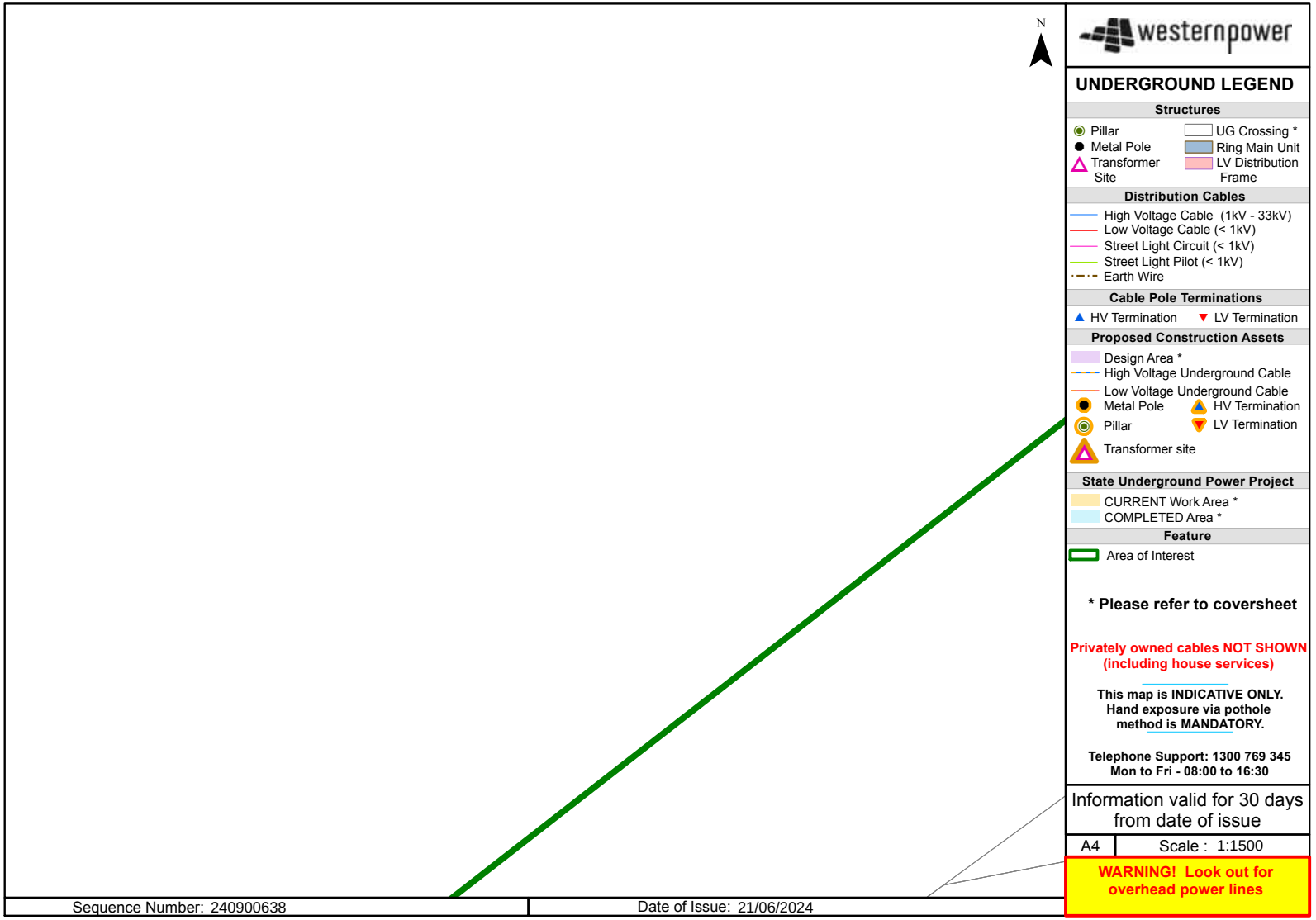
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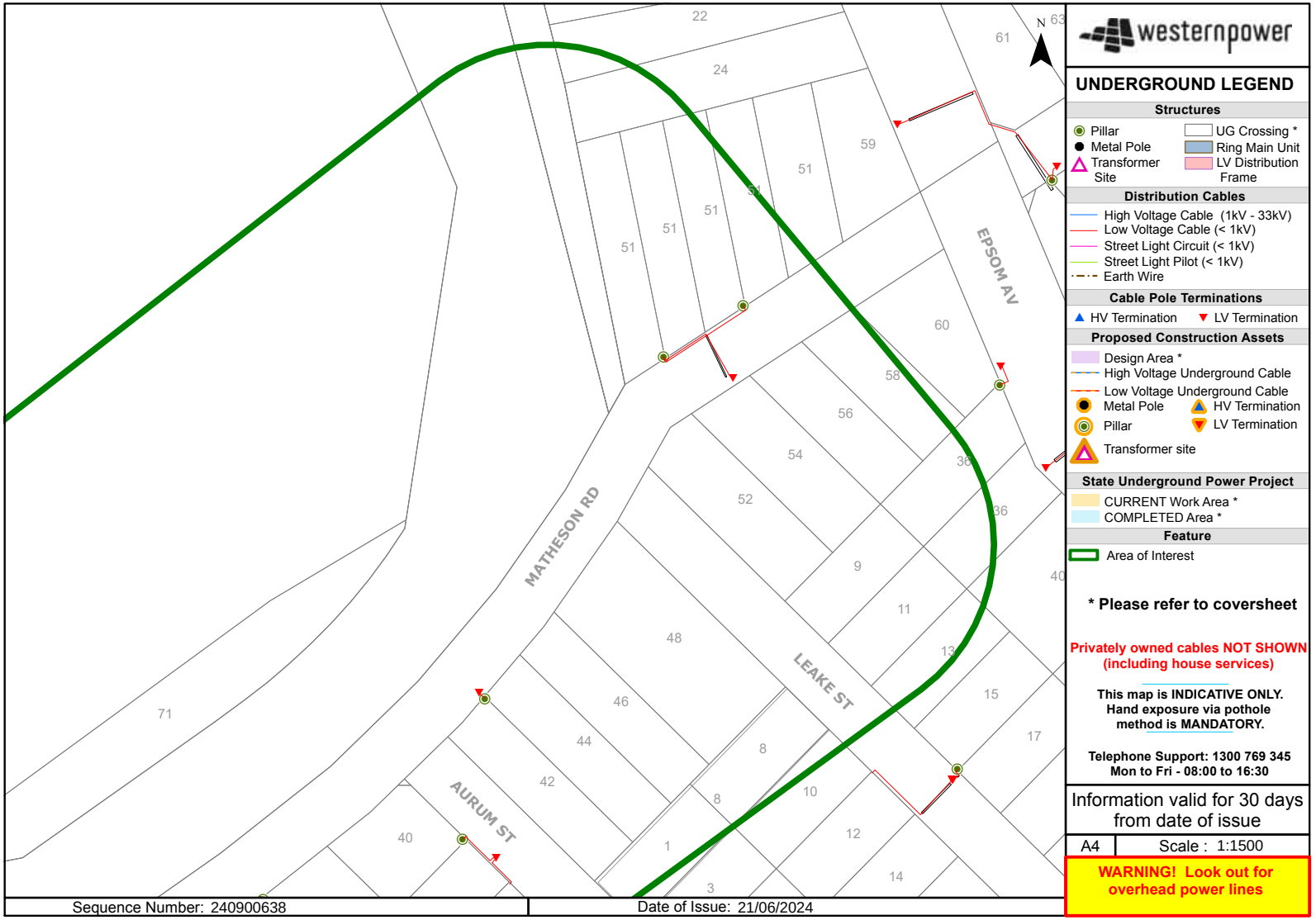
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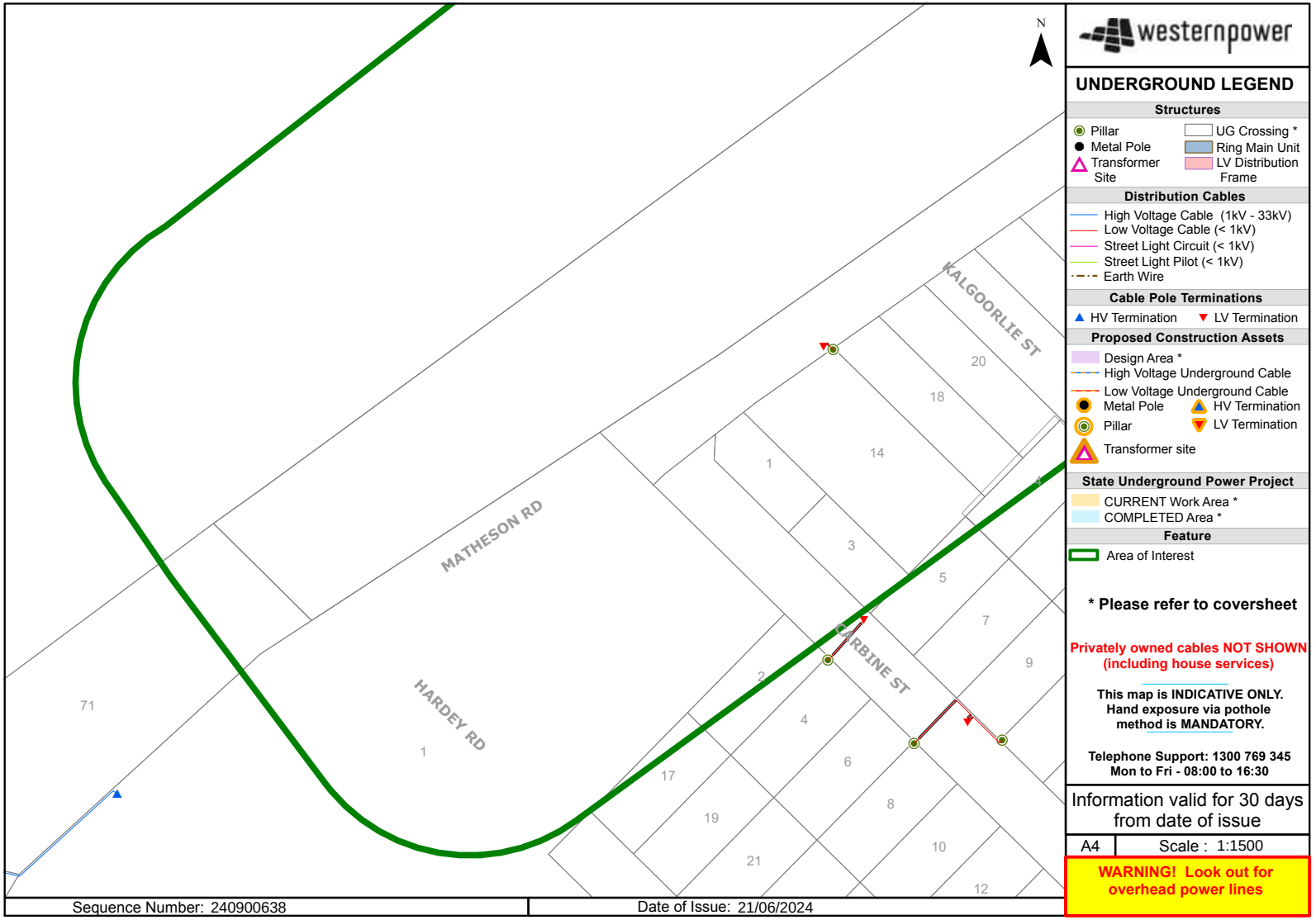
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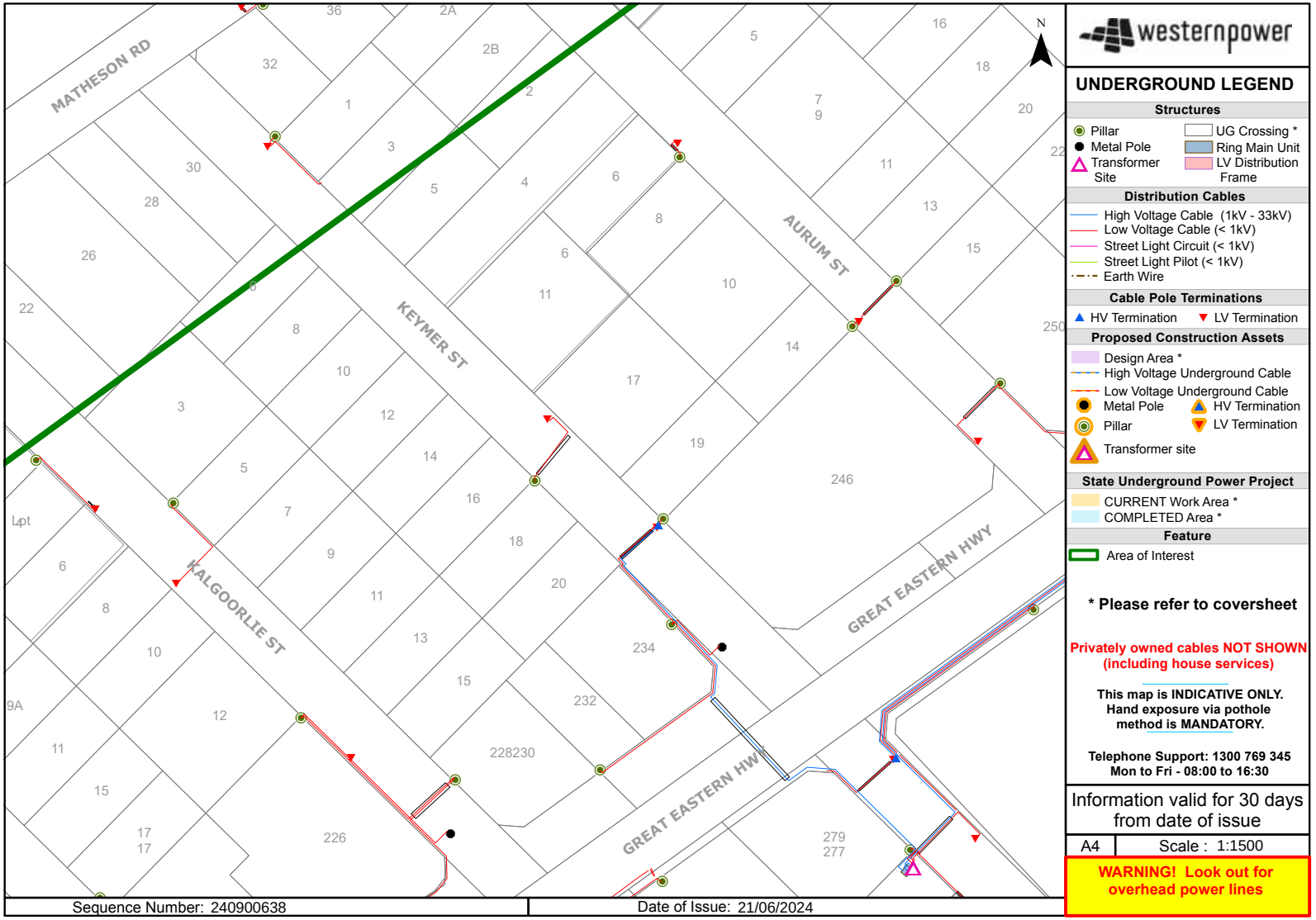
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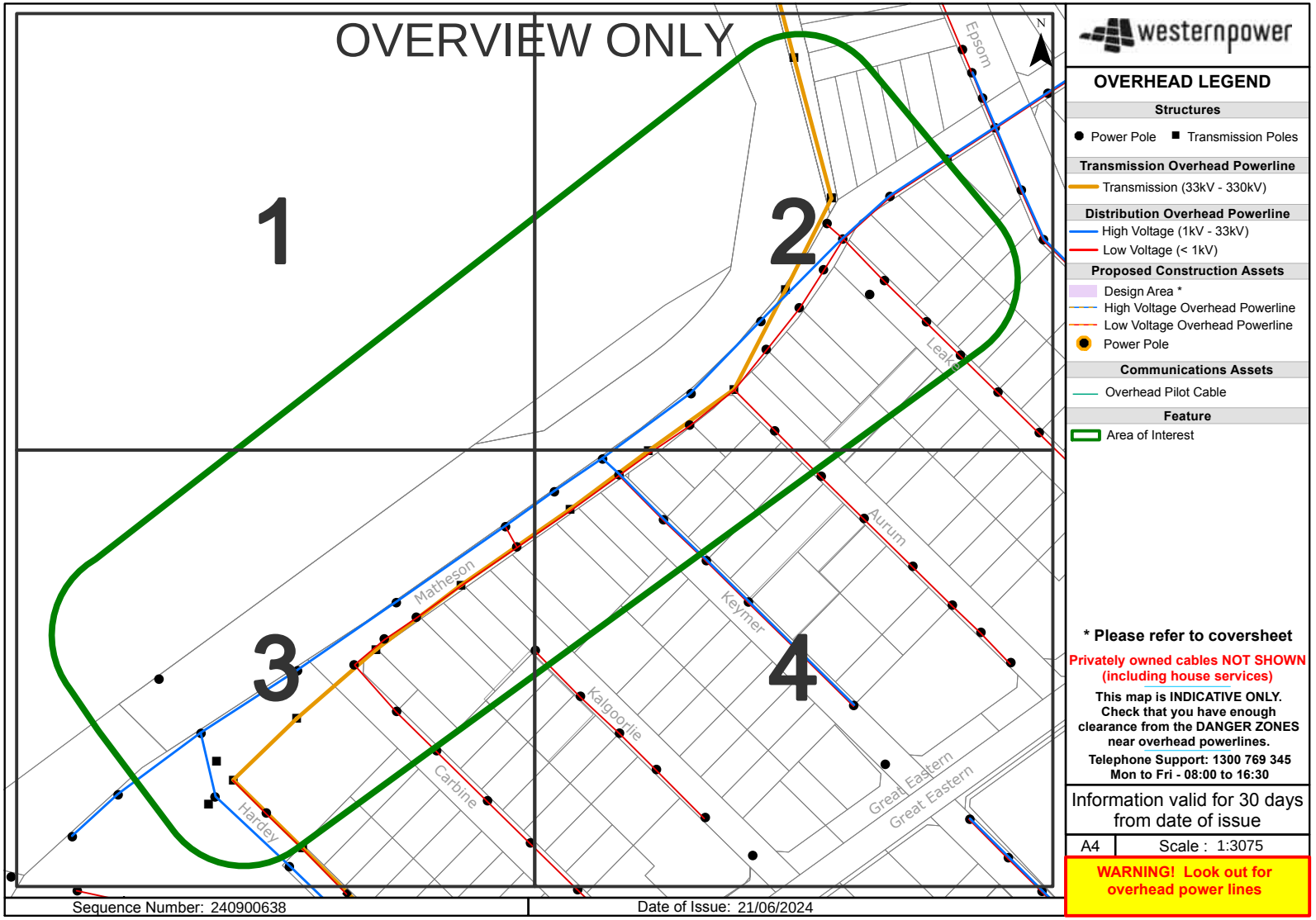
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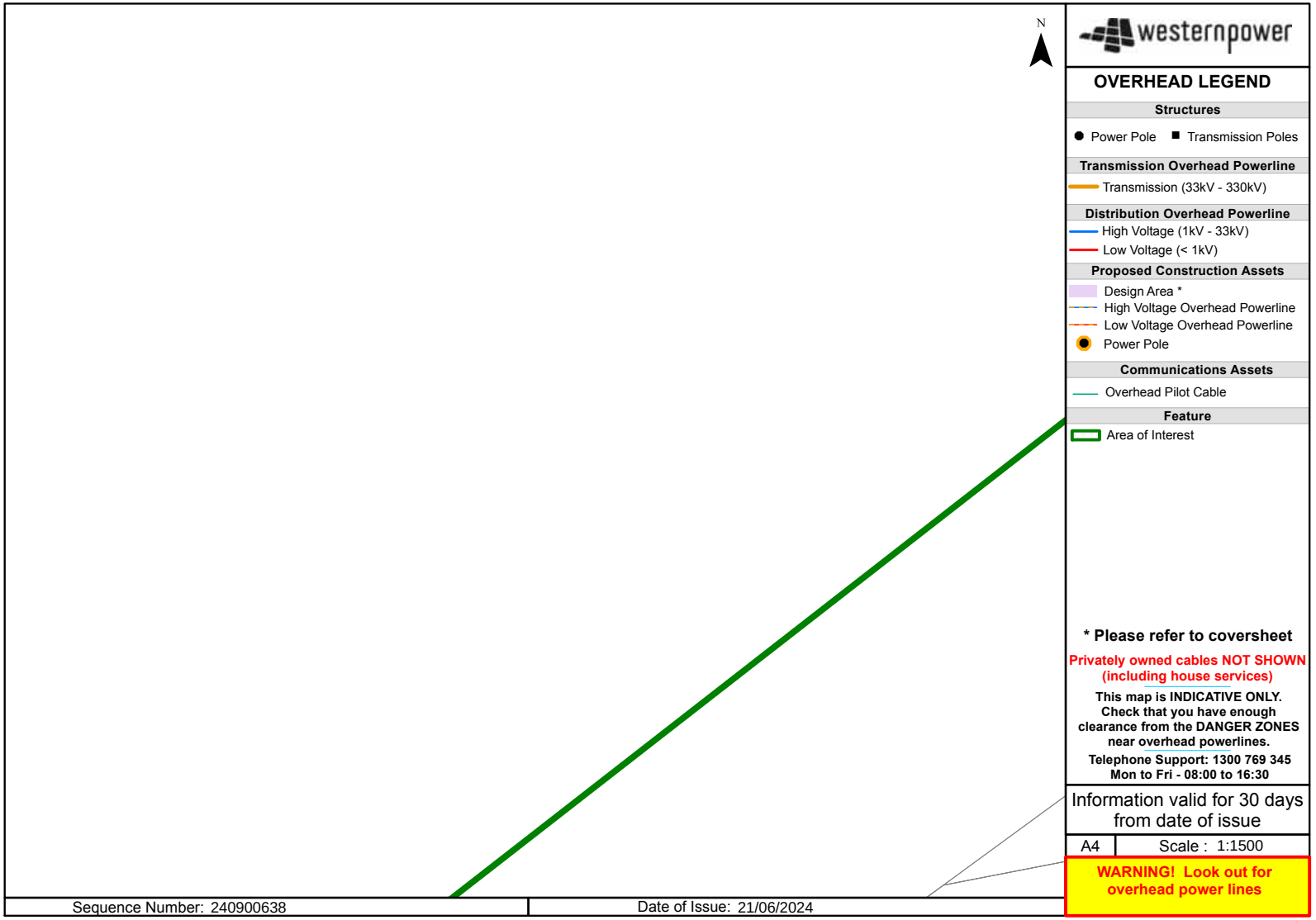
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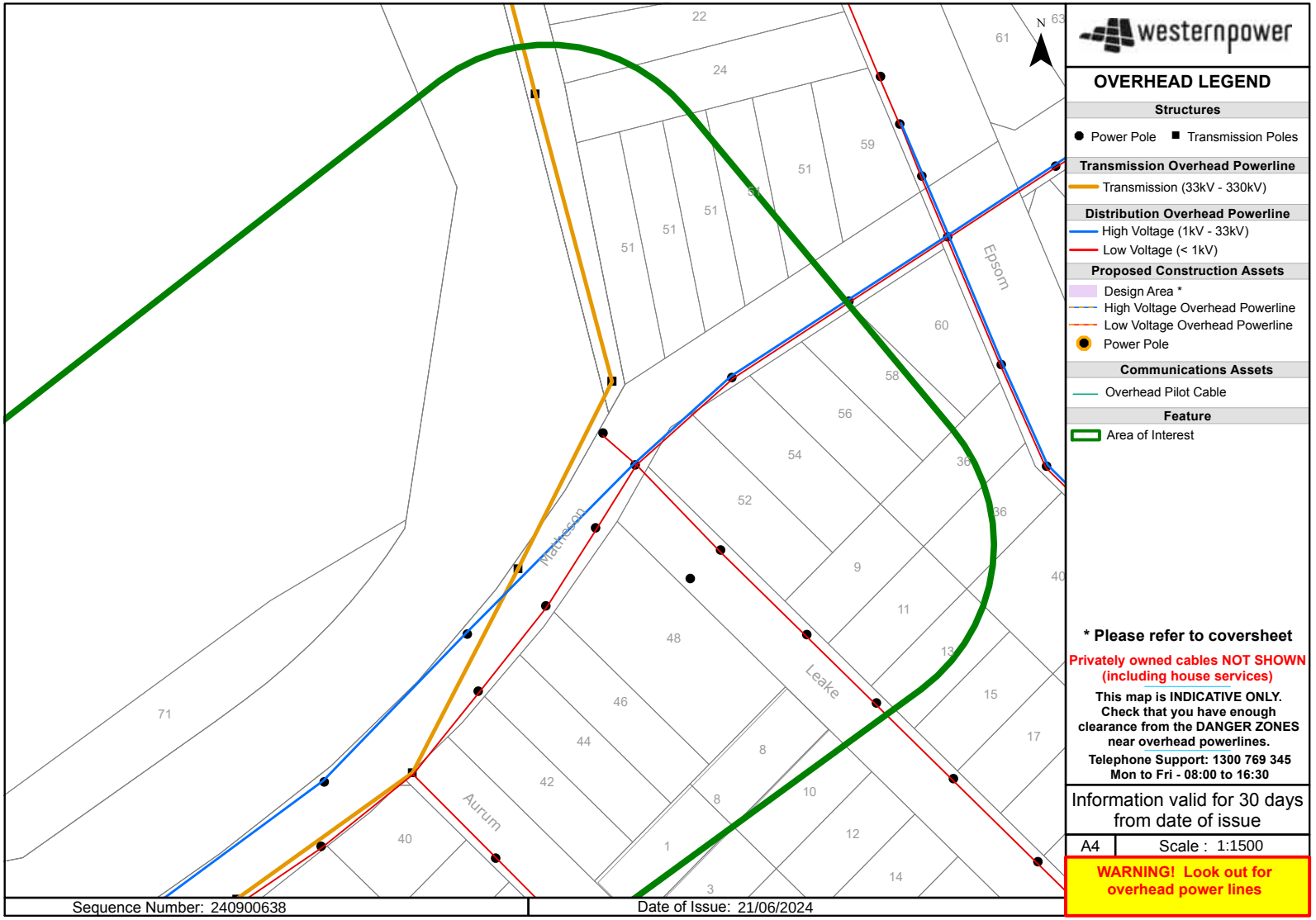
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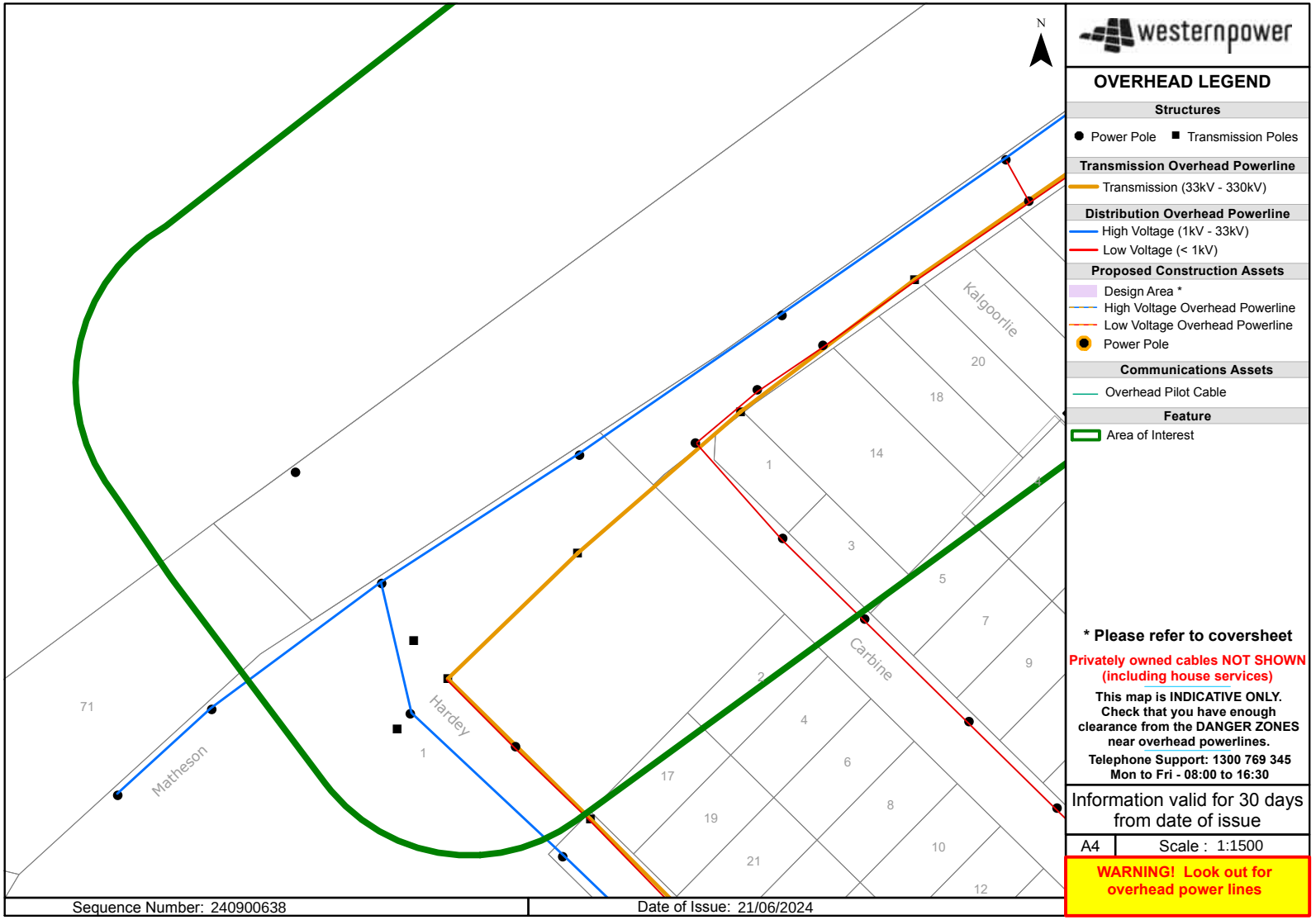
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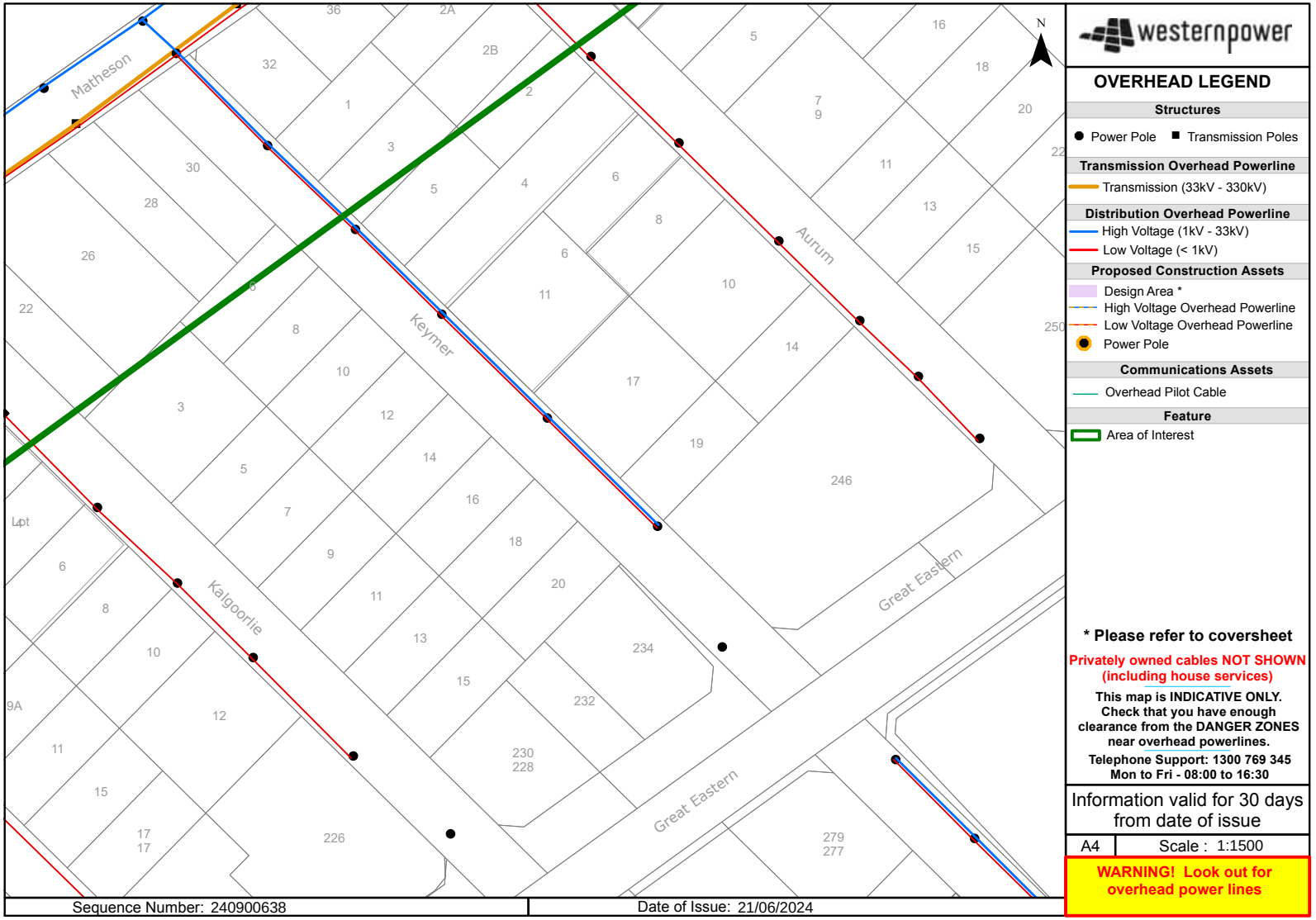
Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report

Job No 36968397

BEFORE YOU DIG www.byda.com.au

byda.com.au

## Contact Details

| Contact | Contact number | Company | Enquirer ID |
|---|---|---|---|
| Justin Zielinski | 0420 304 451 | - | 3140642 |

**Email**
jzielinski@tabec.com.au

**Address**
54 Havelock Street
West Perth WA 6005

## Job Site and Enquiry Details

**WARNING:** The map below only displays the location of the proposed job site and does not display any asset owners' pipe or cables. The area highlighted has been used only to identify the participating asset owners, who will send information to you directly.

| Enquiry date | Start date | End date | On behalf of | Job purpose | Locations | Onsite activities |
|---|---|---|---|---|---|---|
| 24/06/2024 | 25/06/2024 | 25/06/2024 | Private | Design | Both Road | Planning & Design |




Check that the location of the job site is correct. If not, you must submit a new enquiry.

If the scope of works change or plan validity dates expire, you must submit a new enquiry.

Do NOT dig without plans. Safe excavation is your responsibility. If you don't understand the plans or how to proceed safely, please contact the relevant asset owners.

**User Reference**
Precinct B

**Address**
39 Northerly Avenue
Ascot WA 6104

**Notes/description**
-

## Your Responsibility and Duty of Care

- **Lodging an enquiry does not authorise project commencement.** Before starting work, you must obtain all necessary information from all affected asset owners.
- If you don't receive plans within 2 business days, contact the asset owner & quote their sequence number.
- Always follow the 5Ps of Safe Excavation (page 2), and locate assets before commencing work.
- Ensure you comply with State legislative requirements for Duty of Care and safe digging.
- If you damage an underground asset, you MUST advise the asset owner immediately.
- By using the BYDA service, you agree to the Privacy Policy and Term of Use.
- For more information on safe digging practices, visit www.byda.com.au

## Asset Owner Details

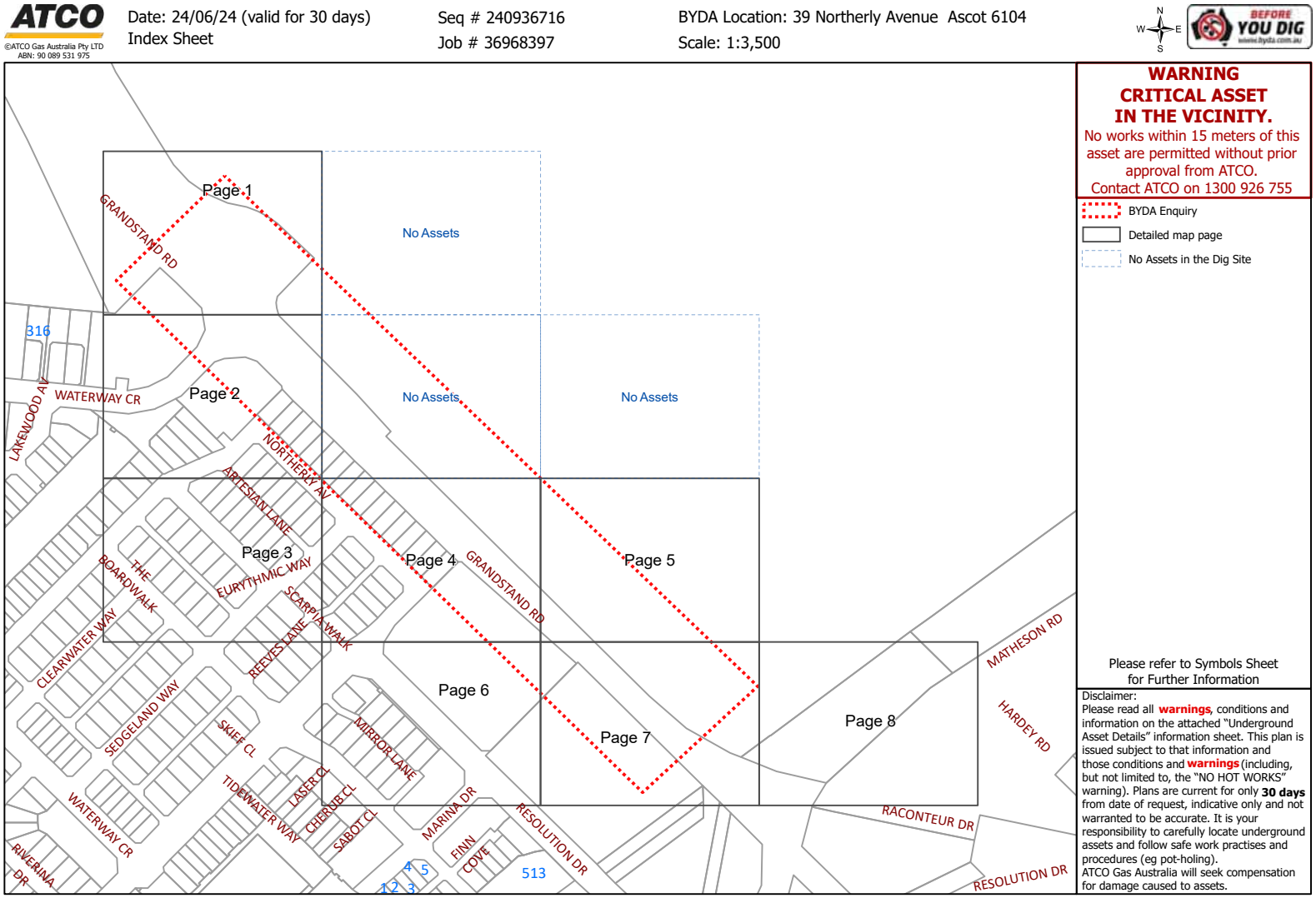
Below is a list of asset owners with underground infrastructure in and around your job site. It is your responsibility to identify the presence of these assets. Plans issued by Members are indicative only unless specified otherwise. Note: not all asset owners are registered with BYDA. You must contact asset owners not listed here directly.

| Referral ID (Seq. no) | Authority Name | Phone | Status |
|---|---|---|---|
| 240936716 | ATCO Gas Australia | 1300 926 755 | NOTIFIED |
| 240936712 | NBN Co (WA) | 1800 687 626 | NOTIFIED |
| 240936708 | Optus (WA) | 1800 505 777 | NOTIFIED |
| 240936709 | Public Transport Authority - Bus Stops | 13 62 13 | NOTIFIED |
| 240936714 | Telstra (WA) | 1800 653 935 | NOTIFIED |
| 240936711 | TPG Telecom (WA) | 1800 786 306 | NOTIFIED |
| 240936710 | Vocus (WA) | 1800 262 663 | NOTIFIED |
| 240936715 | Water Corporation | 13 13 95 | NOTIFIED |
| 240936713 | Western Power | 13 10 87 | NOTIFIED |

END OF UTILITIES LIST

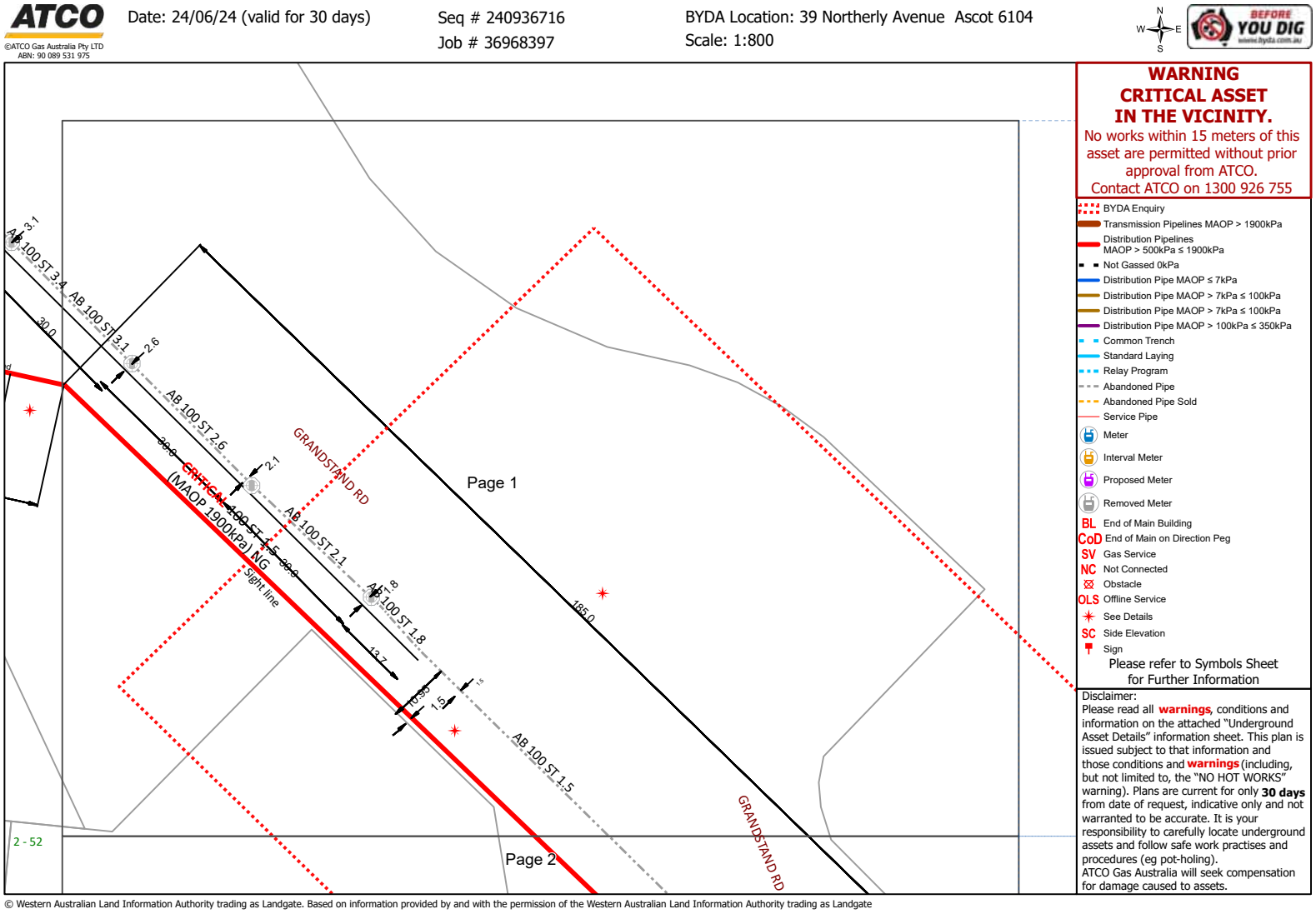
**Lodge your FREE enquiry online any time at byda.com.au**

Attachment 12.1.4 Engineering Servicing Report

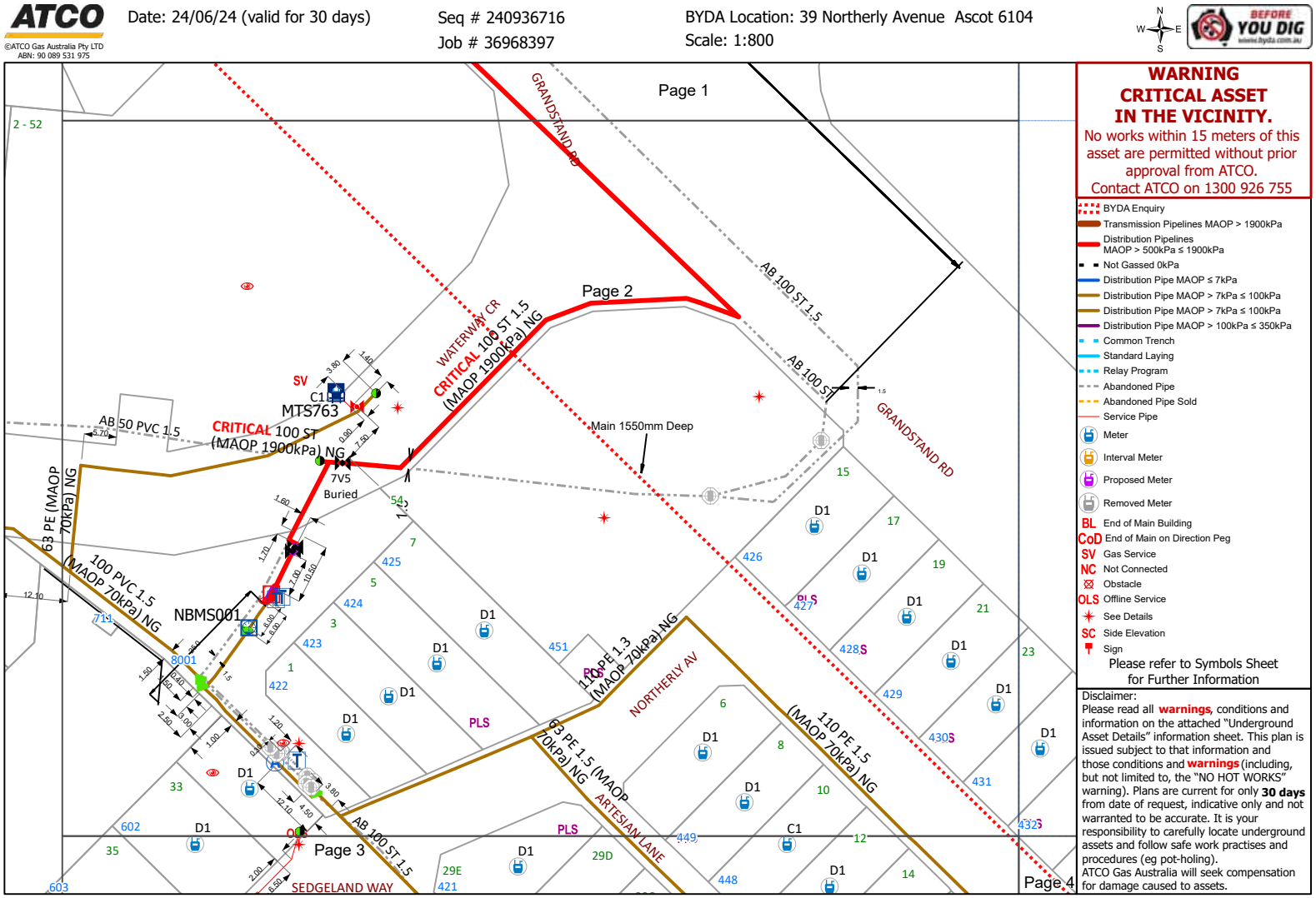



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Attachment 12.1.4 Engineering Servicing Report

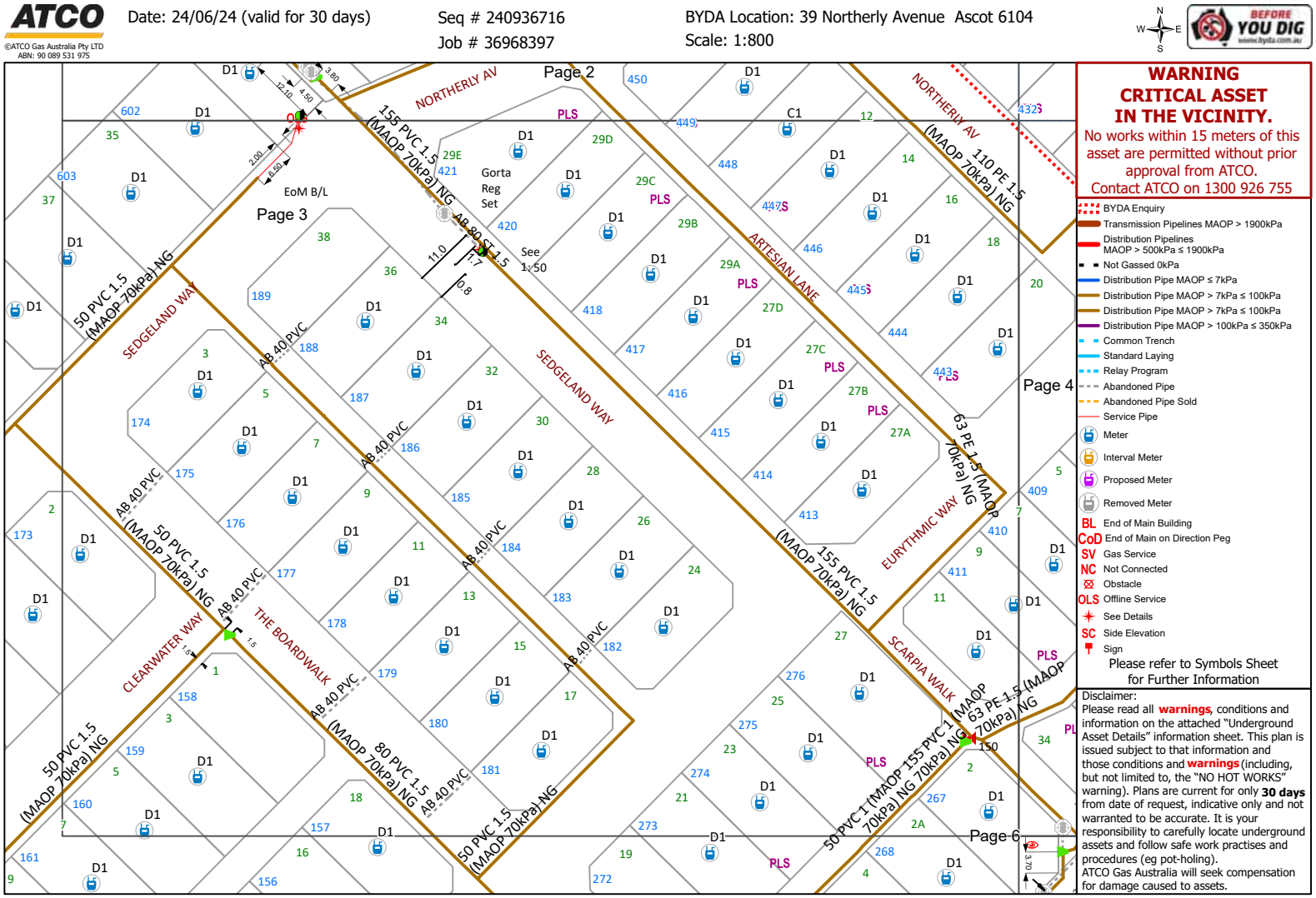


Attachment 12.1.4 Engineering Servicing Report



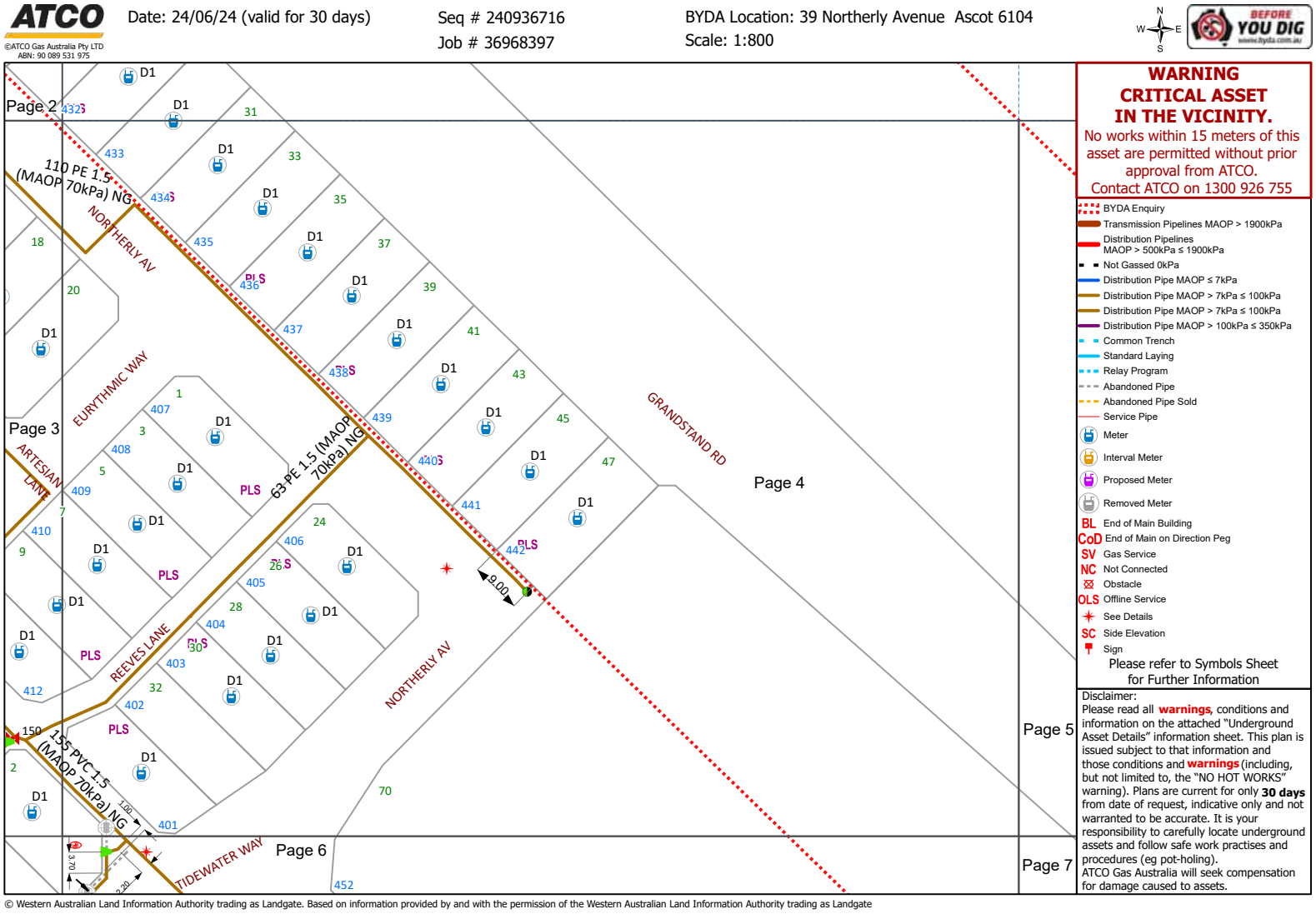

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Attachment 12.1.4 Engineering Servicing Report



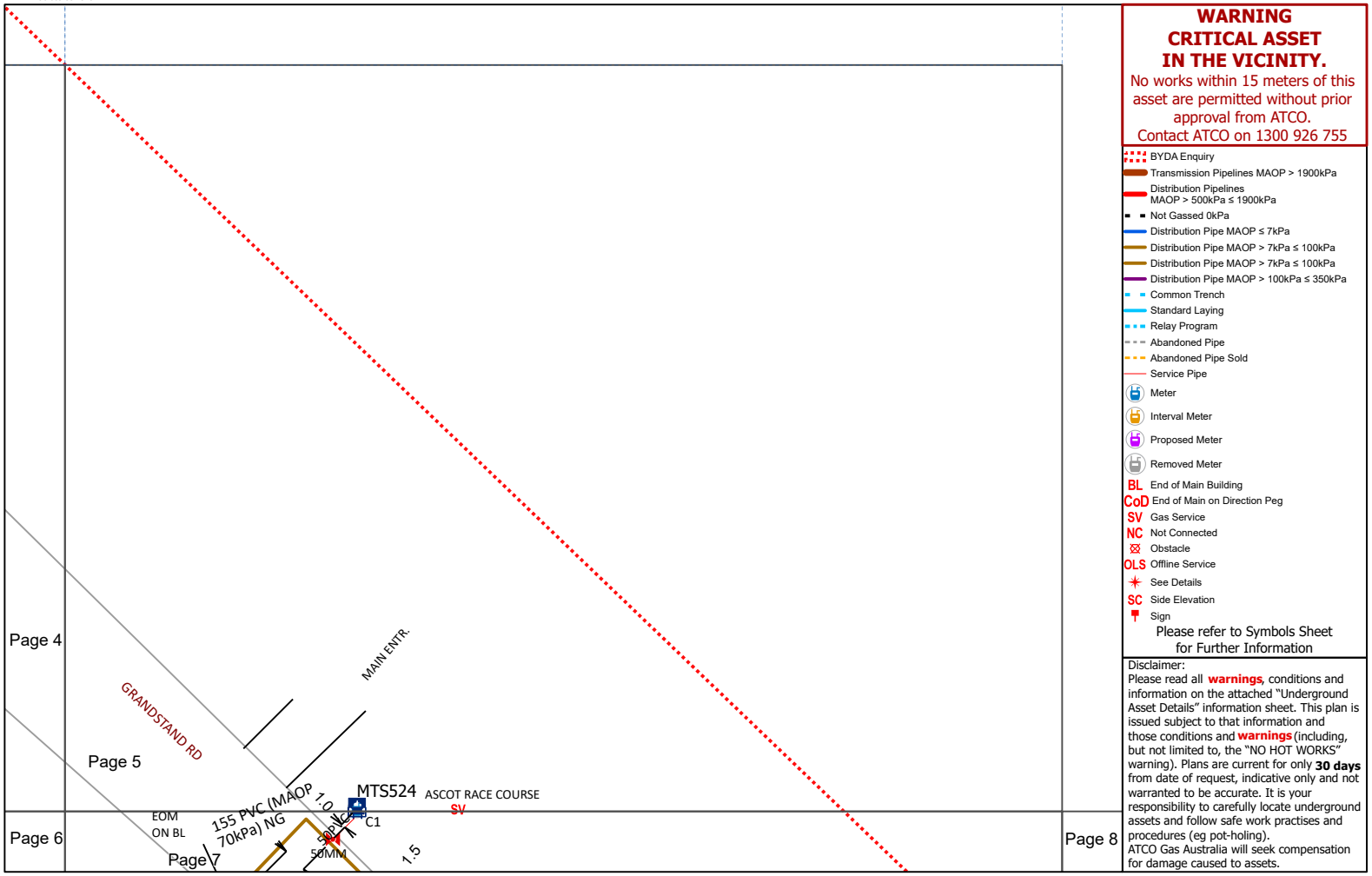
Attachment 12.1.4 Engineering Servicing Report

ATCO
©ATCO Gas Australia Pty LTD
ABN: 90 089 531 975

Date: 24/06/24 (valid for 30 days)

Seq # 240936716
Job # 36968397

BYDA Location: 39 Northerly Avenue Ascot 6104
Scale: 1:800




**WARNING**
**CRITICAL ASSET**
**IN THE VICINITY.**
No works within 15 meters of this asset are permitted without prior approval from ATCO.
Contact ATCO on 1300 926 755

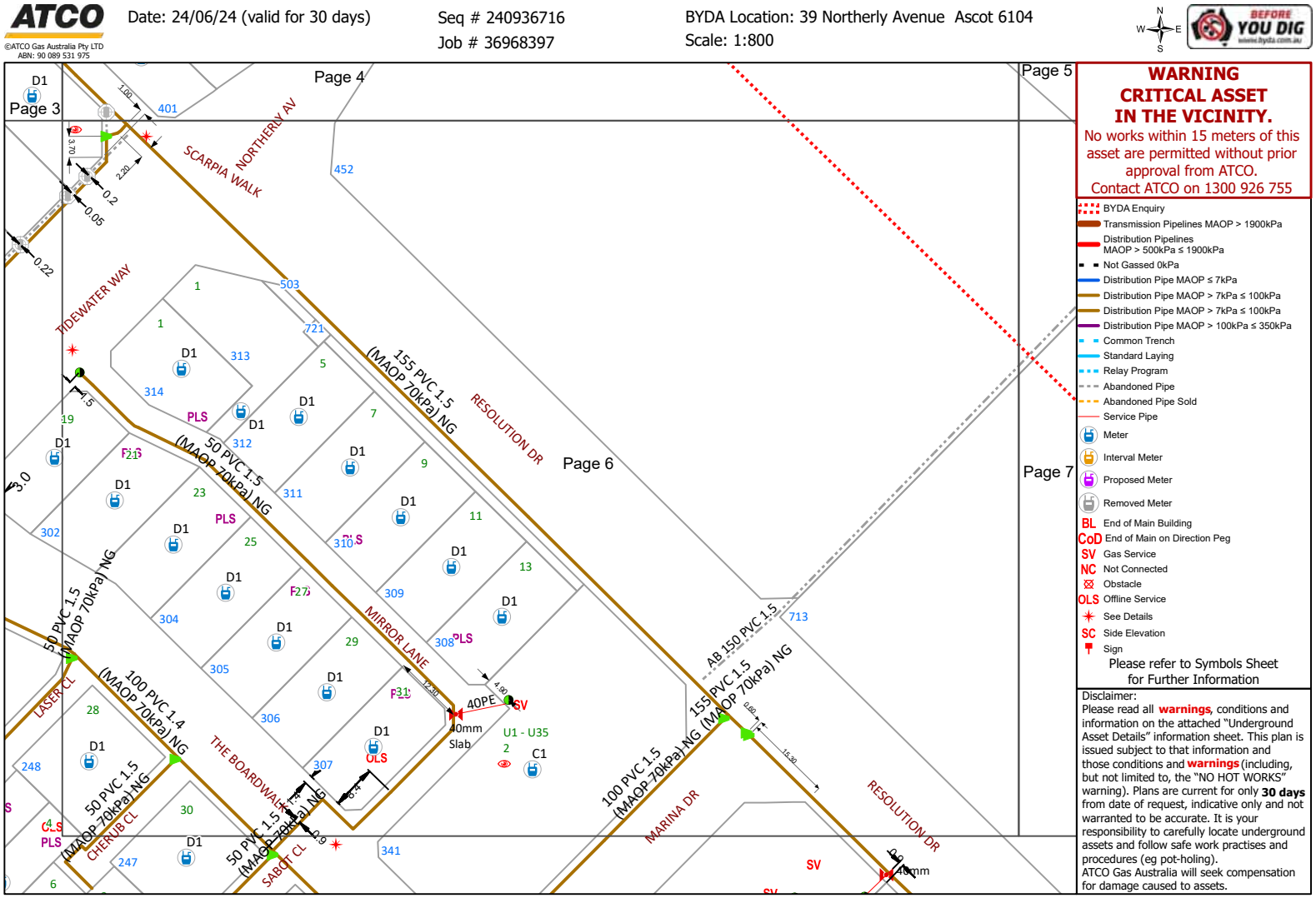
- BYDA Enquiry
- Transmission Pipelines MAOP > 1900kPa
- Distribution Pipelines MAOP > 500kPa ≤ 1900kPa
- Not Gassed 0kPa
- Distribution Pipe MAOP ≤ 7kPa
- Distribution Pipe MAOP > 7kPa ≤ 100kPa
- Distribution Pipe MAOP > 7kPa ≤ 100kPa
- Distribution Pipe MAOP > 100kPa ≤ 350kPa
- Common Trench
- Standard Laying
- Relay Program
- Abandoned Pipe
- Abandoned Pipe Sold
- Service Pipe
- Meter
- Interval Meter
- Proposed Meter
- Removed Meter
- BL End of Main Building
- CoD End of Main on Direction Peg
- SV Gas Service
- NC Not Connected
- Obstacle
- OLS Offline Service
- See Details
- SC Side Elevation
- Sign

Please refer to Symbols Sheet for Further Information

Disclaimer:
Please read all **warnings**, conditions and information on the attached "Underground Asset Details" information sheet. This plan is issued subject to that information and those conditions and **warnings** (including, but not limited to, the "NO HOT WORKS" warning). Plans are current for only **30 days** from date of request, indicative only and not warranted to be accurate. It is your responsibility to carefully locate underground assets and follow safe work practises and procedures (eg pot-holing).
ATCO Gas Australia will seek compensation for damage caused to assets.

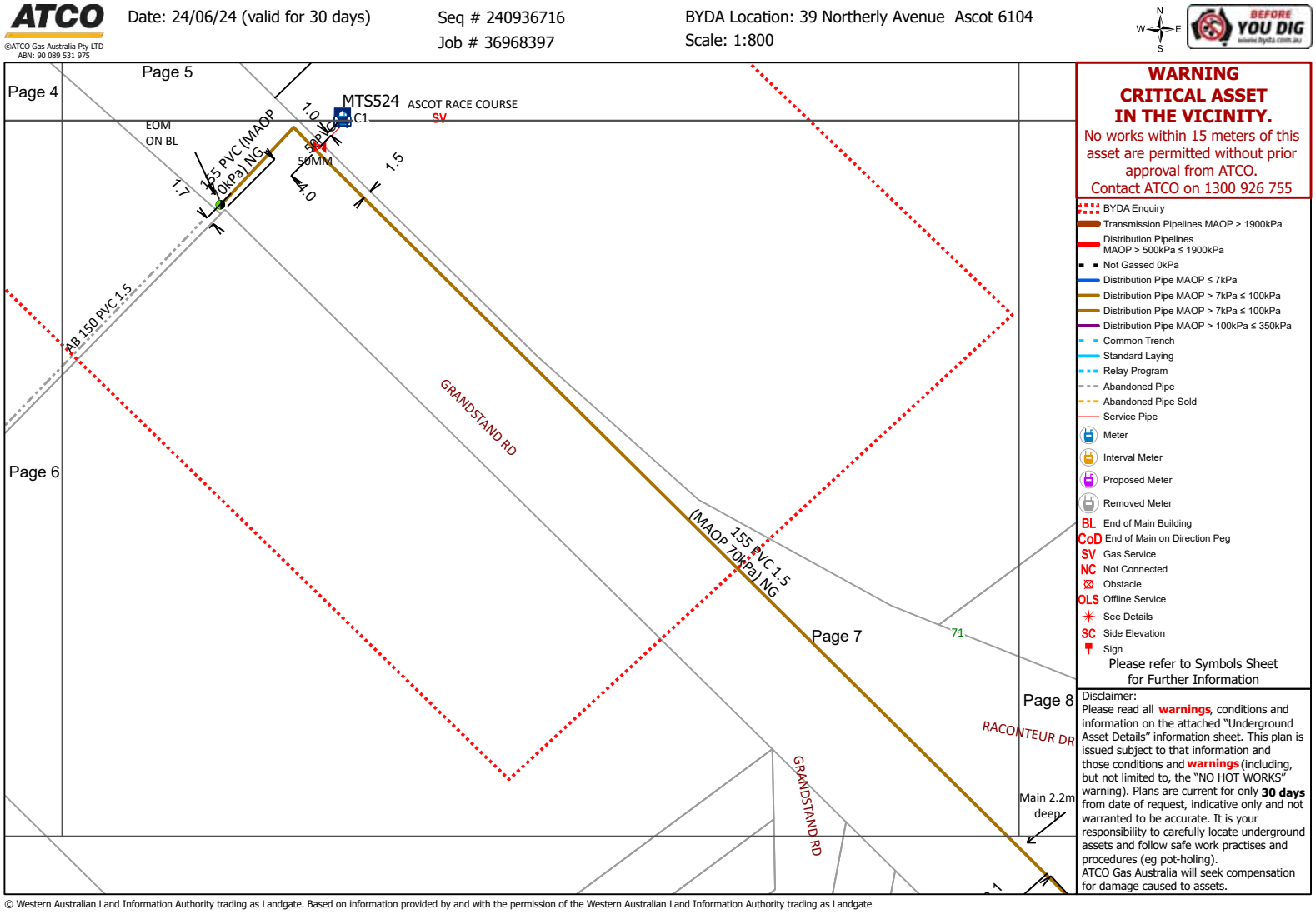
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Attachment 12.1.4 Engineering Servicing Report

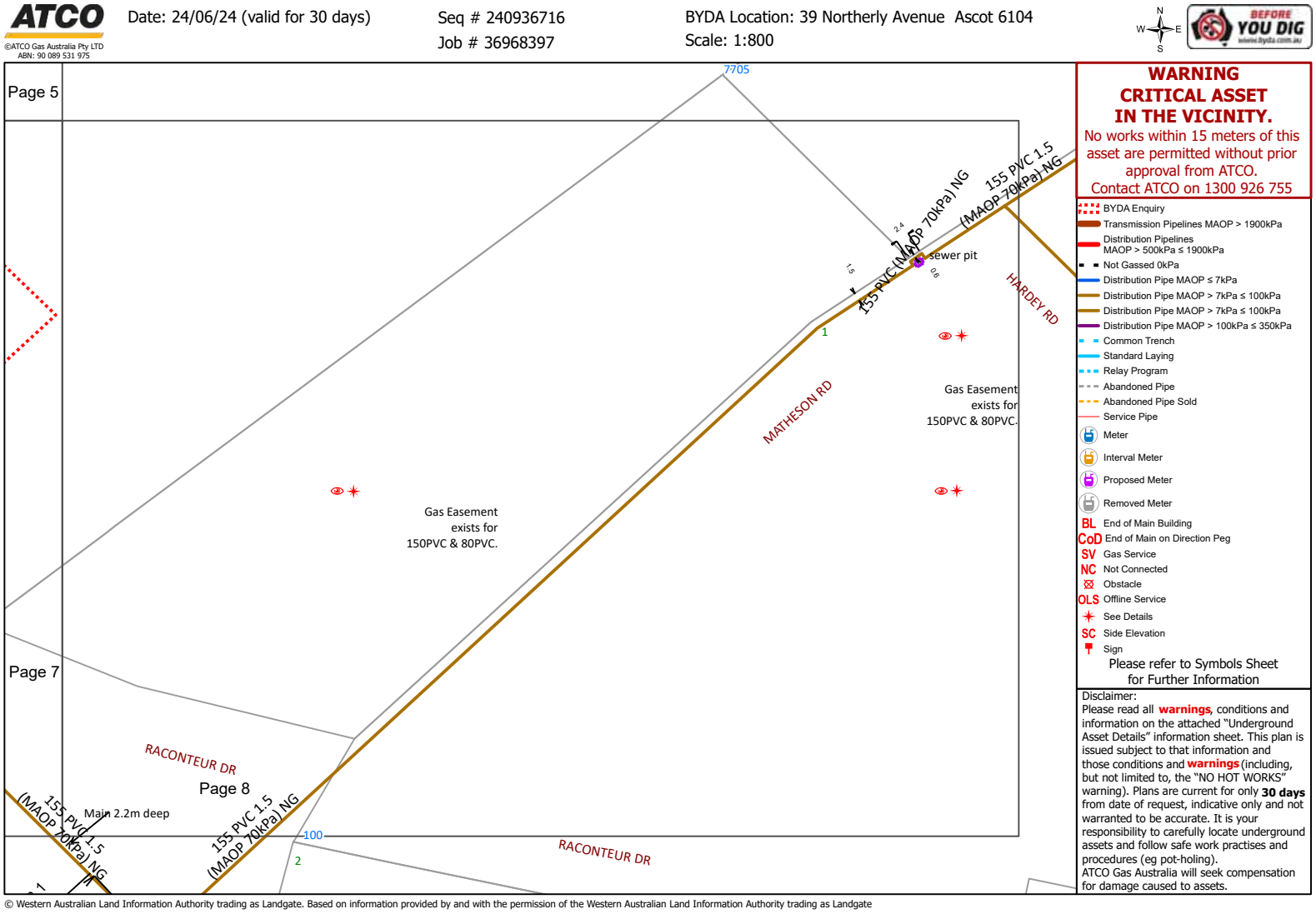



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Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report



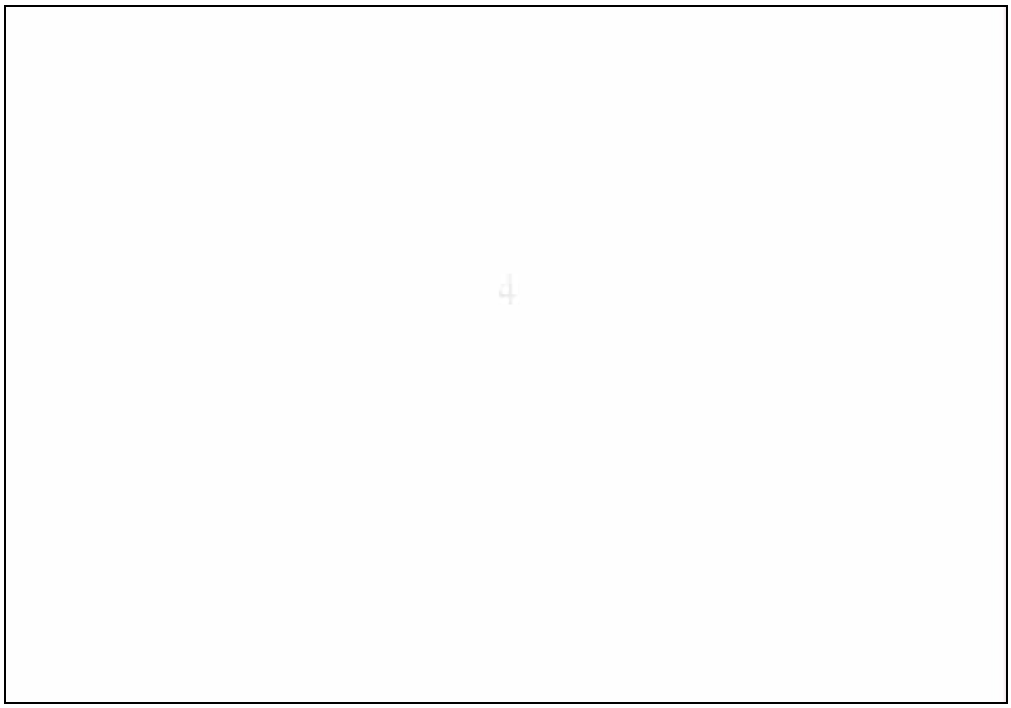
Attachment 12.1.4 Engineering Servicing Report



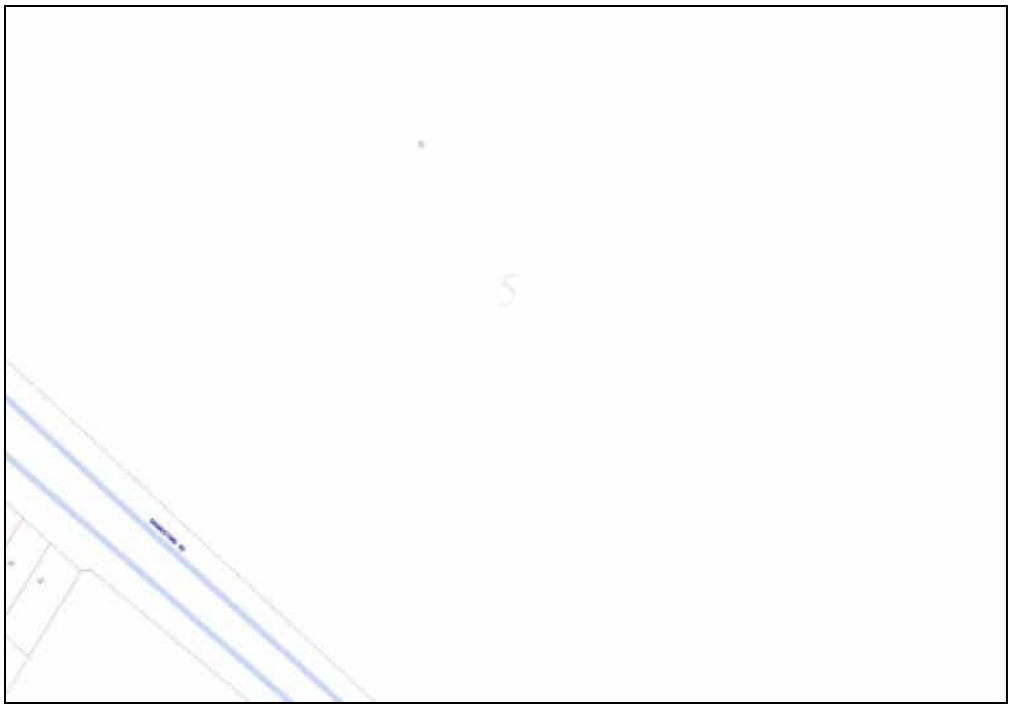
Attachment 12.1.4 Engineering Servicing Report



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Attachment 12.1.4 Engineering Servicing Report



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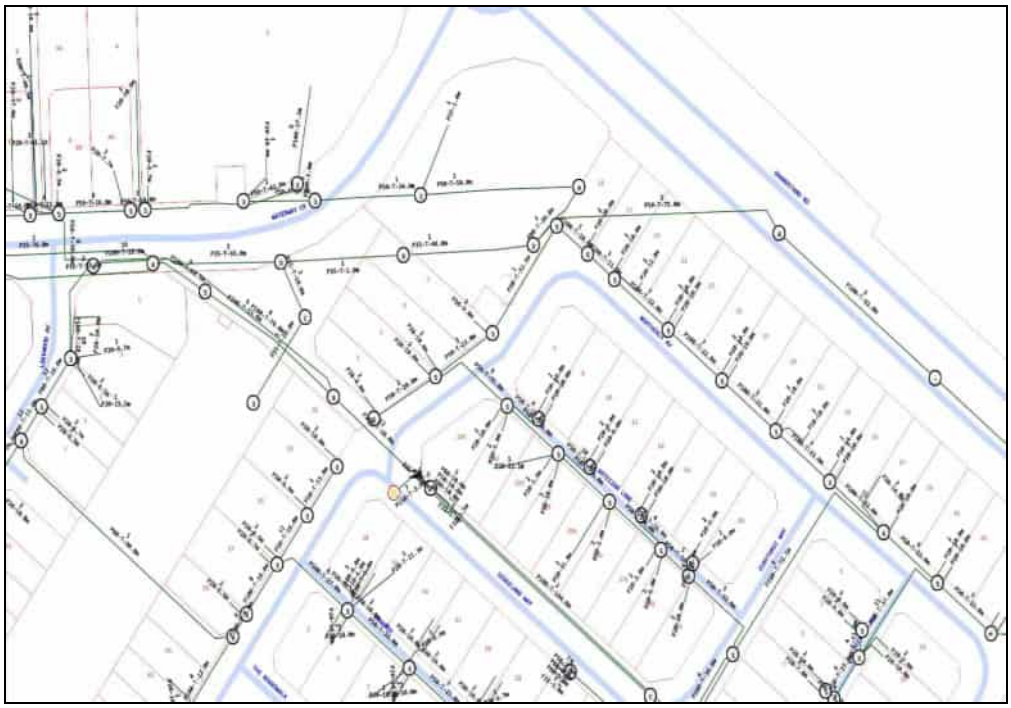
## Emergency Contacts

You must immediately report any damage to the **nbn™** network that you are/become aware of.
Notification may be by telephone - 1800 626 329.

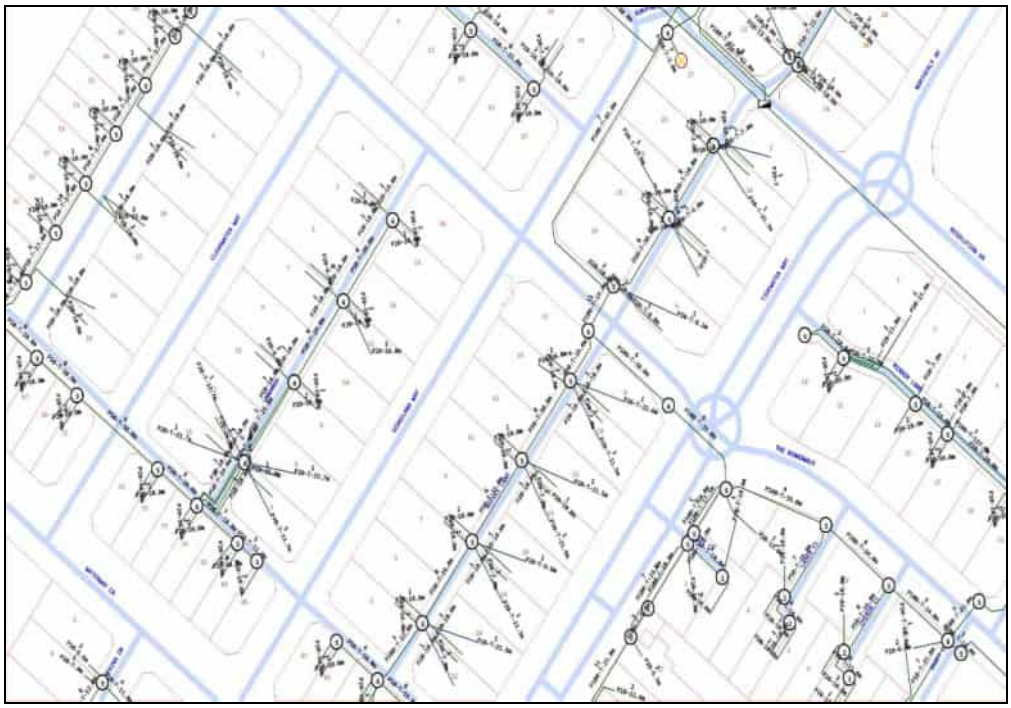
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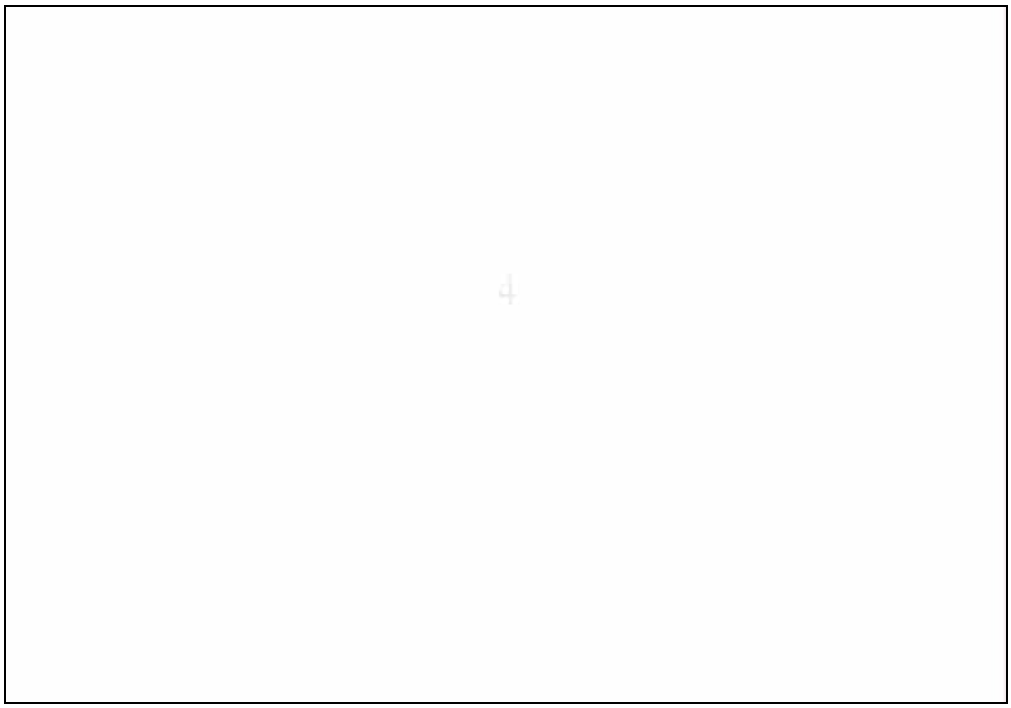
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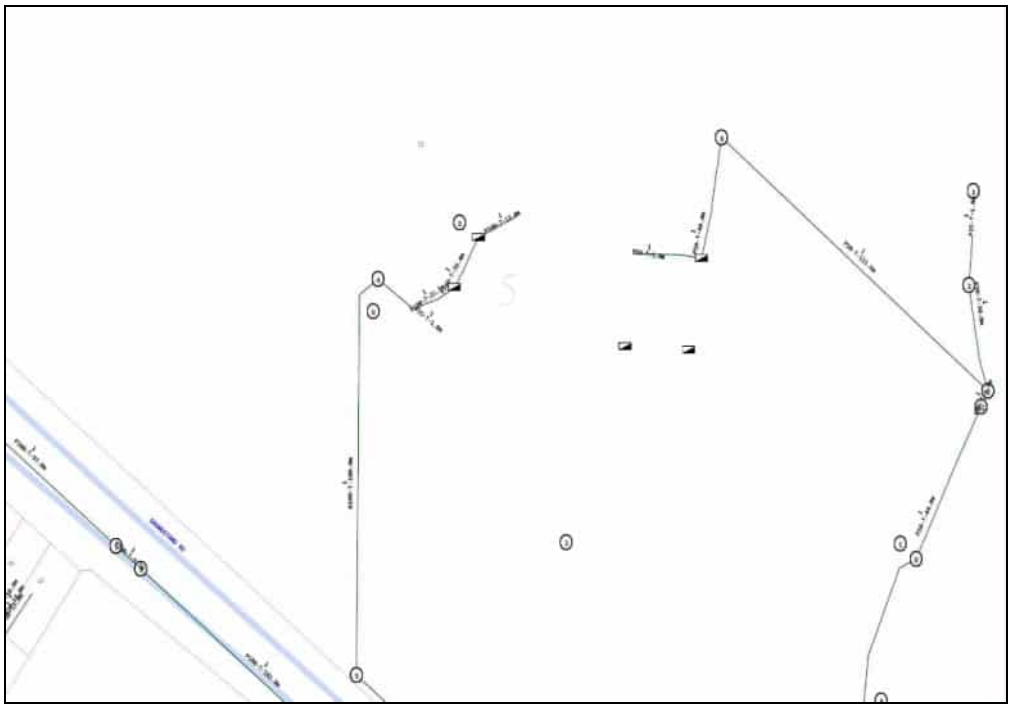
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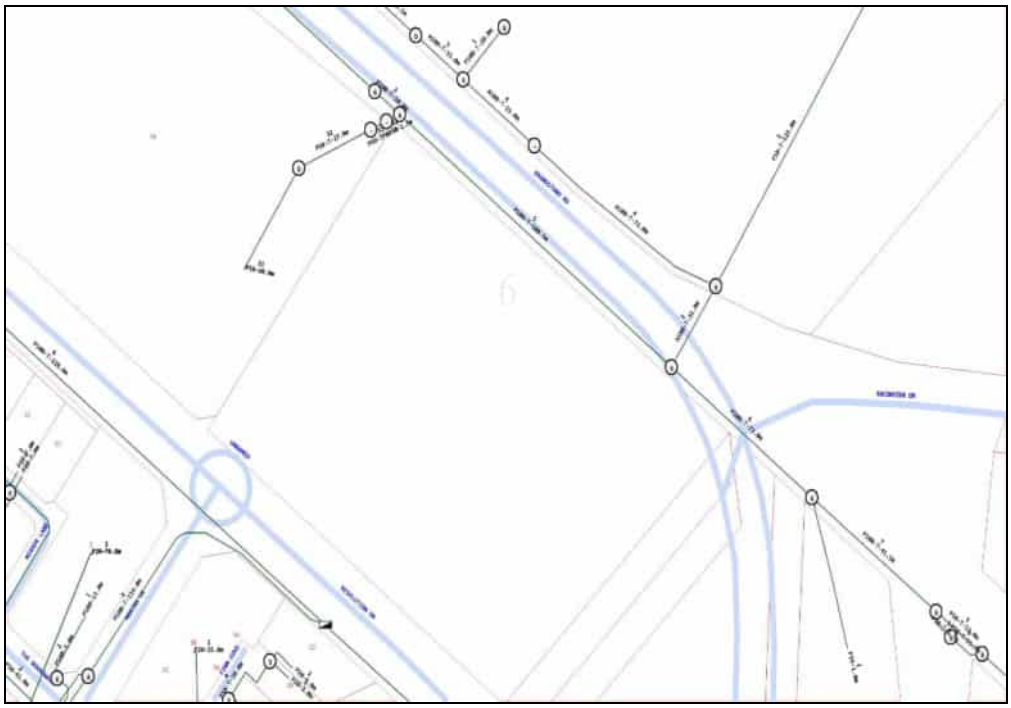
Attachment 12.1.4 Engineering Servicing Report



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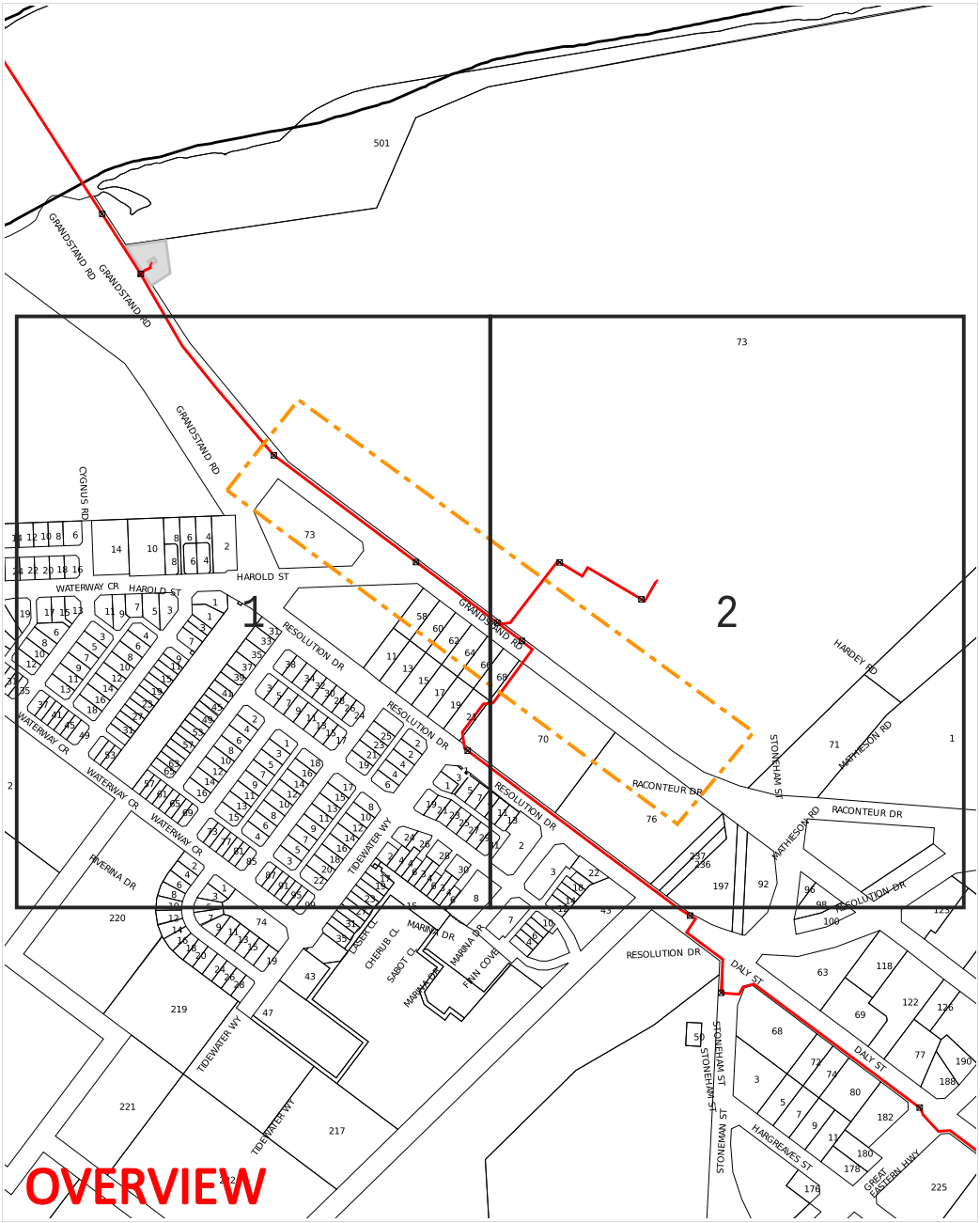
Attachment 12.1.4 Engineering Servicing Report



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Attachment 12.1.4 Engineering Servicing Report




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Sequence Number: 240936708

Date Generated: 24 Jun 2024

For all Optus DBYD plan enquiries –
Email: Fibre.Locations@optus.net.au
For urgent onsite assistance contact 1800 505 777
Optus Limited ACN 052 833 208

Plans generated 24 Jun 2024 by Pelicancorp TicketAccess Software | www.pelicancorp.com

Attachment 12.1.4 Engineering Servicing Report




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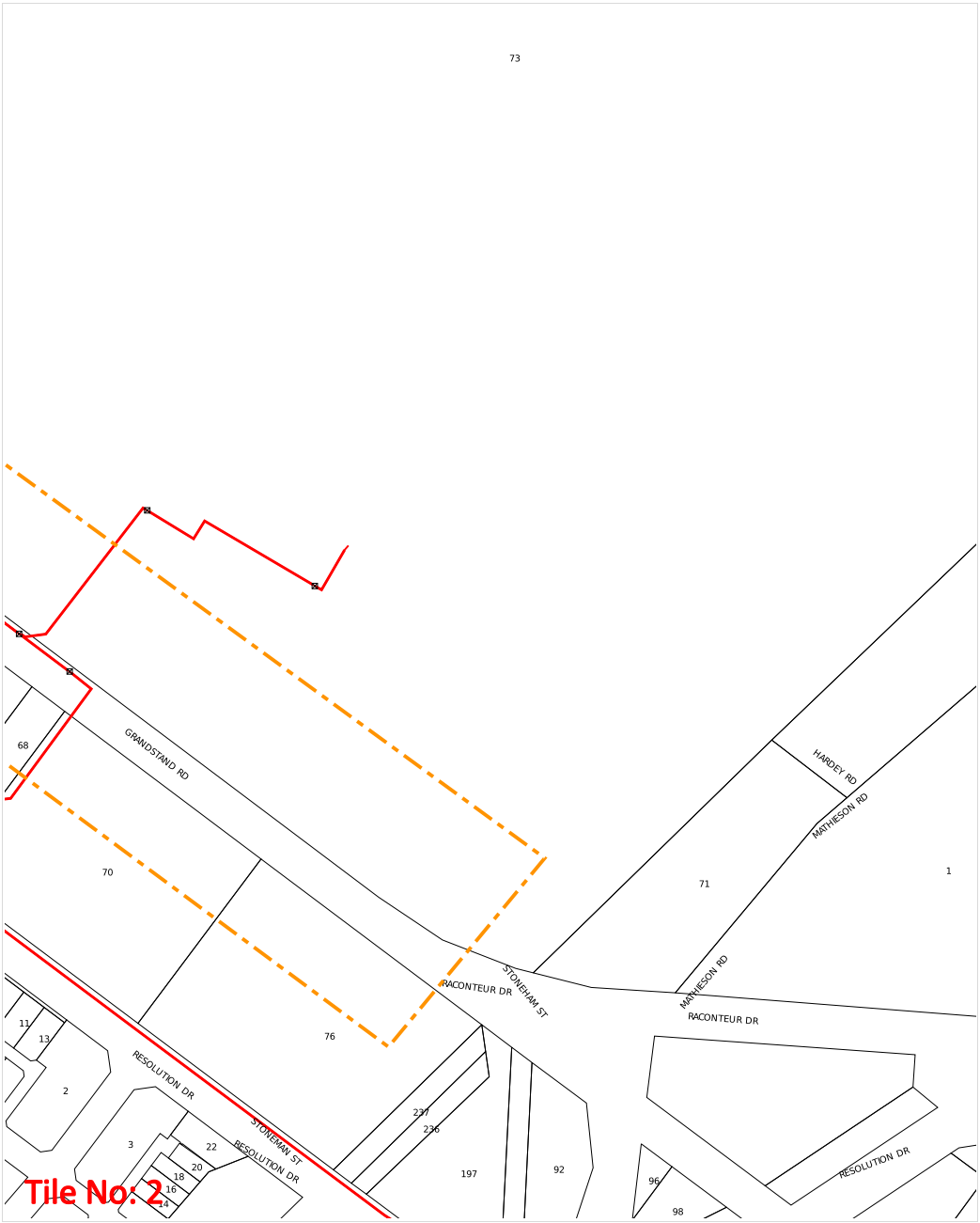
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Sequence Number: 240936708

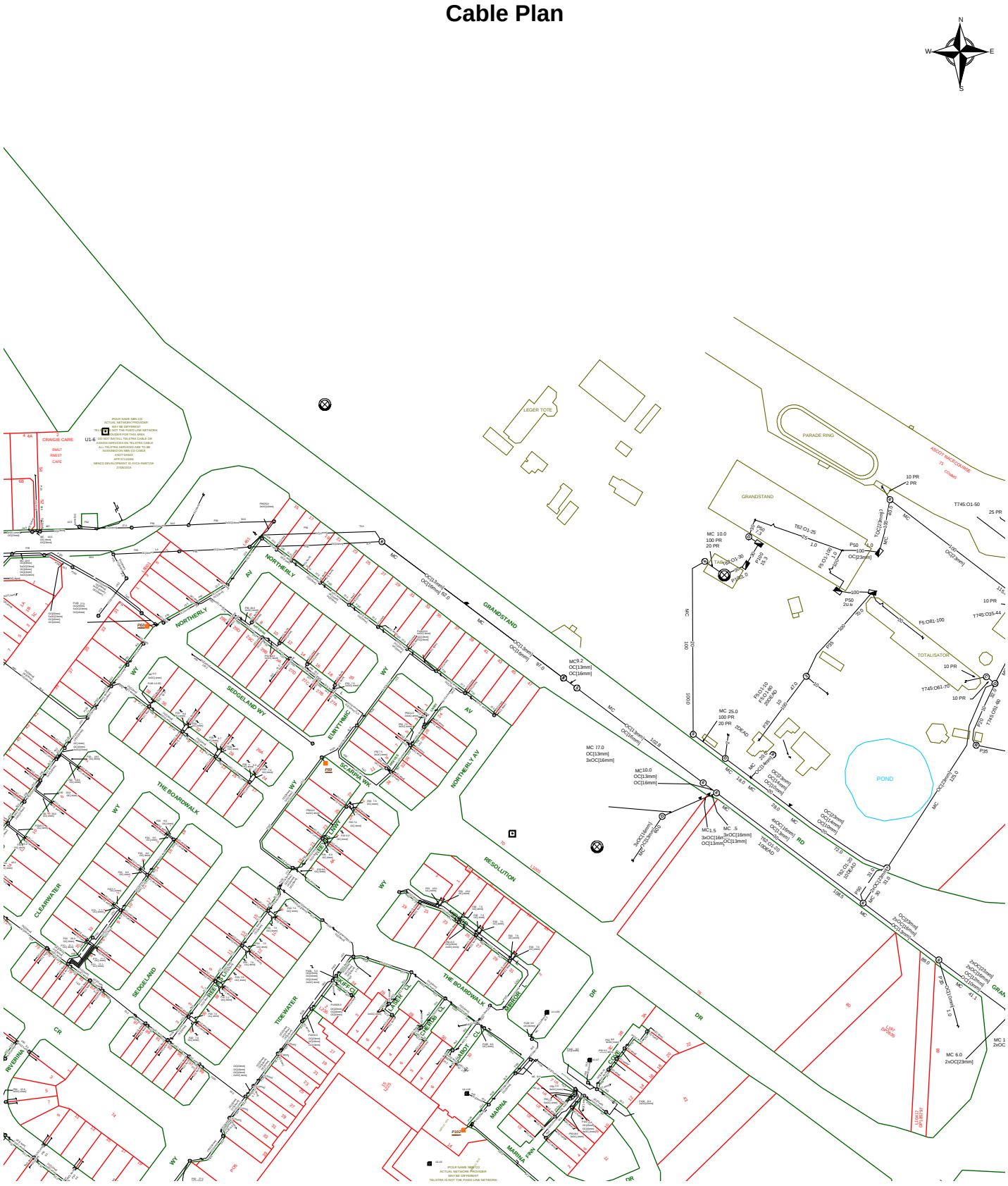
Date Generated: 24 Jun 2024

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Email: Fibre.Locations@optus.net.au
For urgent onsite assistance contact 1800 505 777
Optus Limited ACN 052 833 208

Plans generated 24 Jun 2024 by Pelicancorp TicketAccess Software | www.pelicancorp.com

Attachment 12.1.4 Engineering Servicing Report

## Cable Plan




| | |
|---|---|
| Report Damage: https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment<br>Ph - 13 22 03<br>Email - Telstra.Plans@team.telstra.com<br>Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries | Sequence Number: 240936714 |
| TELSTRA LIMITED A.C.N. 086 174 781 | CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance. |
| Generated On 24/06/2024 09:36:36 | |

The above plan must be viewed in conjunction with the Mains Cable Plan on the following page

WARNING
Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information.
As such,Telstra supplied location information is indicative only.Spatial accuracy is not applicable to Quality Level D.
Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it.
Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy.
Further on site investigation is required to validate the exact location of Telstra plant prior to commencing construction work.
A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works.

See the Steps- Telstra Duty of Care that was provided in the email response.

Page 1 of 2

Attachment 12.1.4 Engineering Servicing Report

# Mains Cable Plan




| | |
|---|---|
| Report Damage: https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment<br>Ph - 13 22 03<br>Email - Telstra.Plans@team.telstra.com<br>Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries | Sequence Number: 240936714 |
| TELSTRA LIMITED A.C.N. 086 174 781 | CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance. |
| Generated On 24/06/2024 09:36:39 | |

WARNING
Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information.
As such,Telstra supplied location information is indicative only.Spatial accuracy is not applicable to Quality Level D.
Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it.
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A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works.

See the Steps- Telstra Duty of Care that was provided in the email response.

Page 2 of 2

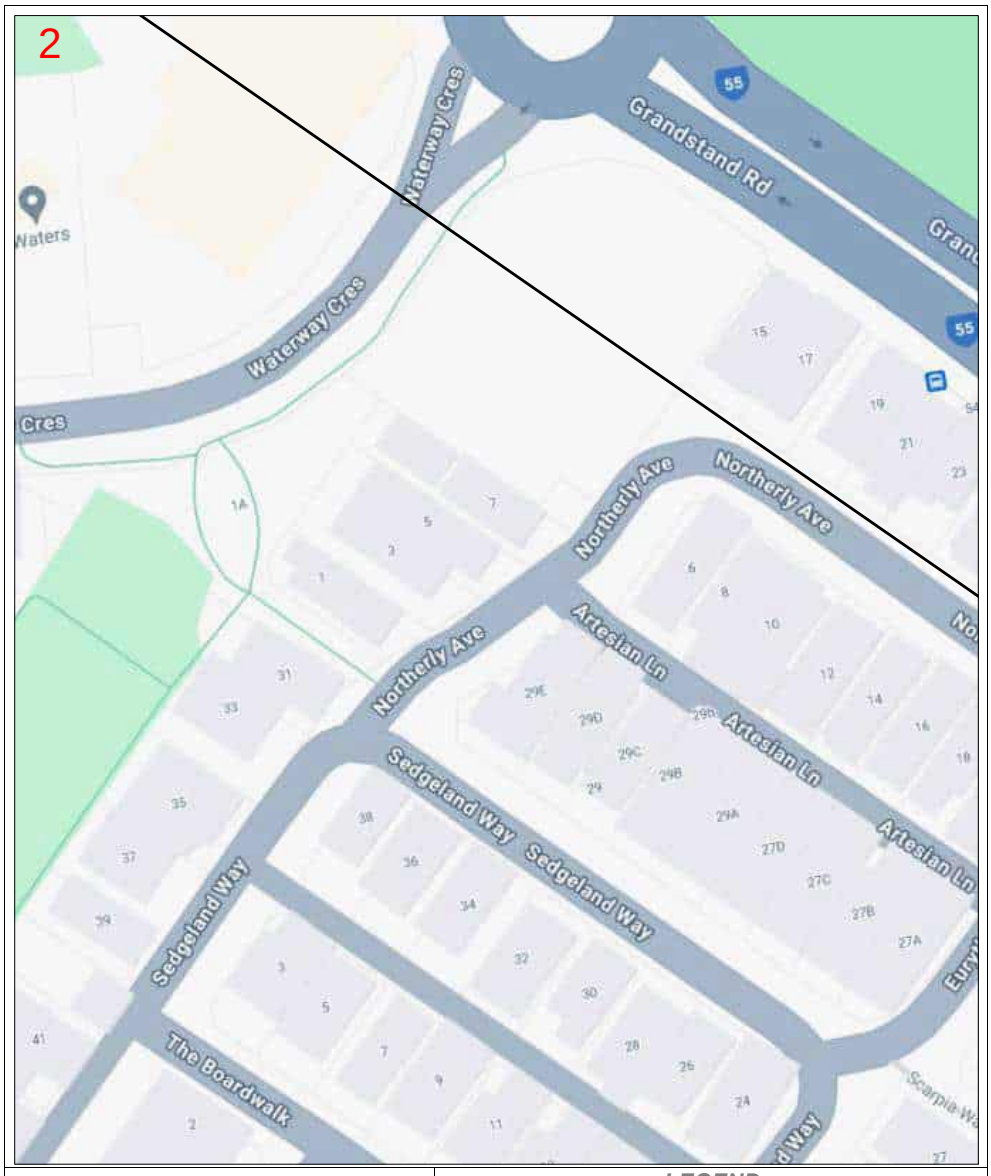
Attachment 12.1.4 Engineering Servicing Report




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Page 3

Attachment 12.1.4 Engineering Servicing Report




**Enquiry Number:** 240936711

**Map Sheet:** 2

**Scale:** 1: 750

0 0.008km

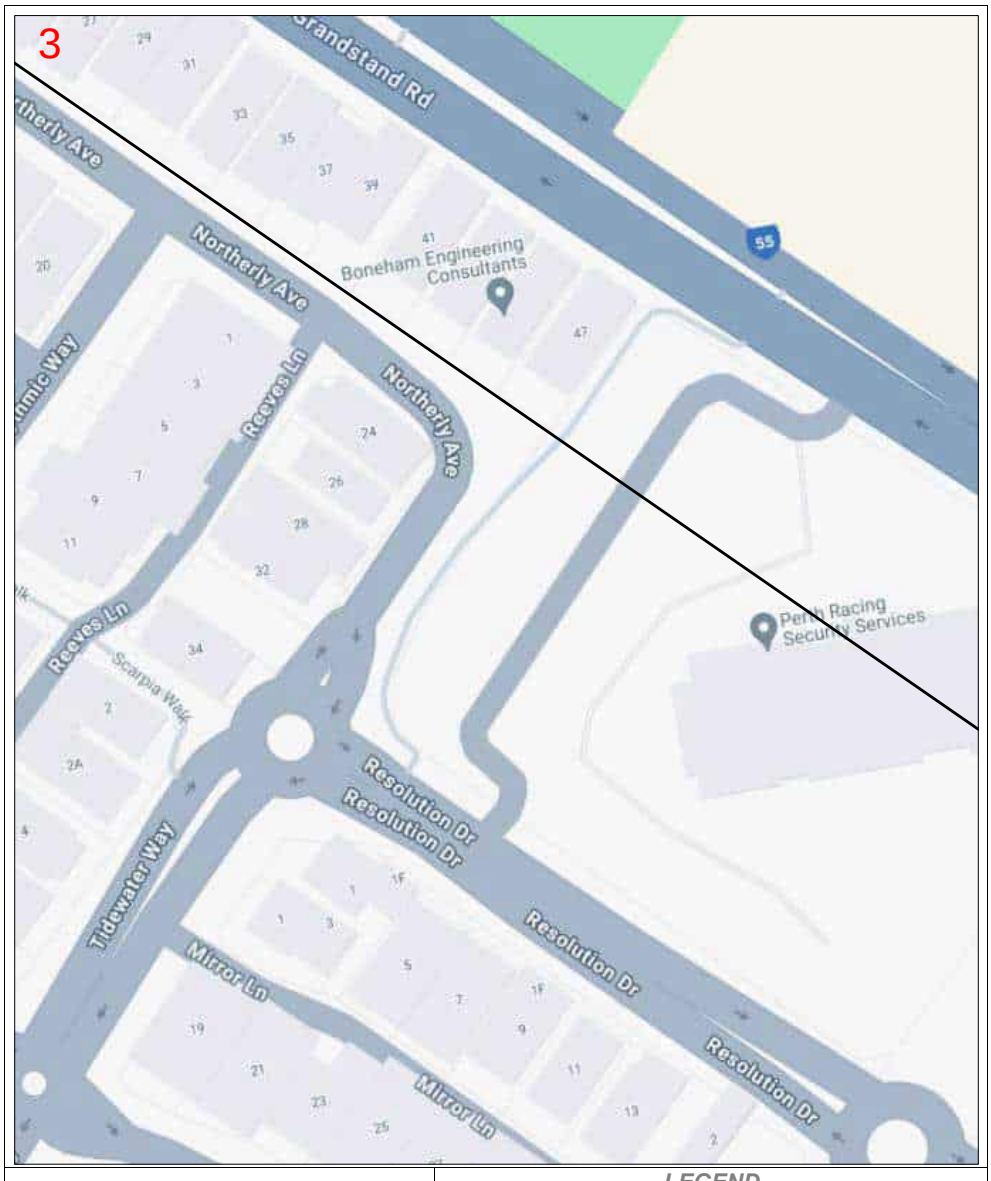
N

**LEGEND**

| | |
|---|---|
| BYDA Work Area | |
| AAPT/PowerTel Pit | TransACT Pit |
| AAPT/PowerTel Duct | TransACT Duct |
| DDA Pit | SOUL Pattinson Telecoms Pit |
| DDA Duct | SOUL Pattinson Telecoms Duct |
| Agile/Adam Pit | PIPE Networks Pit |
| Agile/Adam Duct | PIPE Networks Duct |

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Attachment 12.1.4 Engineering Servicing Report




**Enquiry Number:** 240936711

**Map Sheet:** 3

**Scale:** 1: 750

0 0.008km

N

LEGEND

| | |
|---|---|
| BYDA Work Area | |
| AAPT/PowerTel Pit | TransACT Pit |
| AAPT/PowerTel Duct | TransACT Duct |
| DDA Pit | SOUL Pattinson Telecoms Pit |
| DDA Duct | SOUL Pattinson Telecoms Duct |
| Agile/Adam Pit | PIPE Networks Pit |
| Agile/Adam Duct | PIPE Networks Duct |

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Attachment 12.1.4 Engineering Servicing Report




**Enquiry Number:** 240936711

**Map Sheet:** 4

**Scale:** 1: 750

0 0.008km

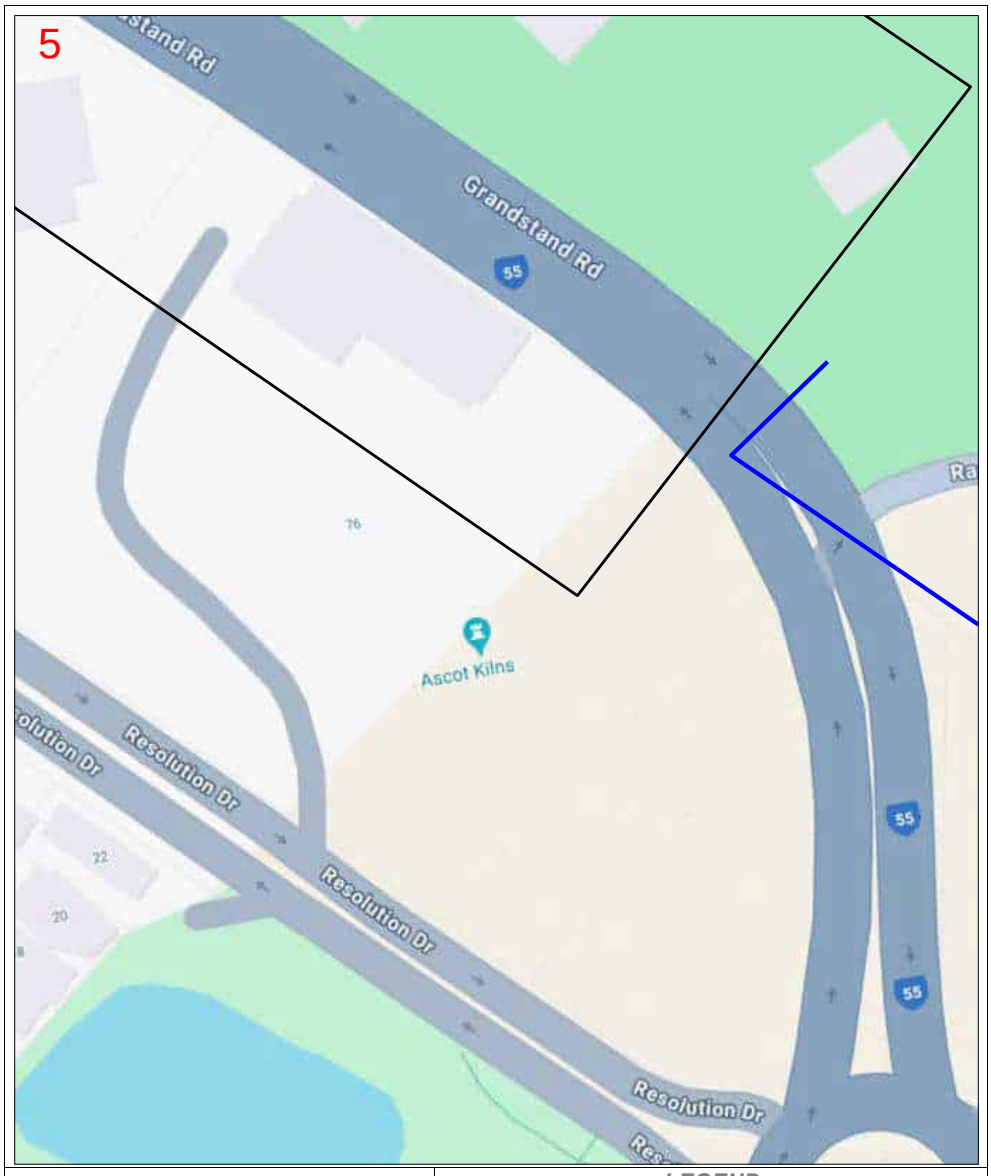
N

LEGEND

| | | | |
|---|---|---|---|
| BYDA Work Area | | | |
| AAPT/PowerTel Pit | | TransACT Pit | |
| AAPT/PowerTel Duct | | TransACT Duct | |
| DDA Pit | | SOUL Pattinson Telecoms Pit | |
| DDA Duct | | SOUL Pattinson Telecoms Duct | |
| Agile/Adam Pit | | PIPE Networks Pit | |
| Agile/Adam Duct | | PIPE Networks Duct | |

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Attachment 12.1.4 Engineering Servicing Report




**Enquiry Number:** 240936711

**Map Sheet:** 5

**Scale:** 1: 750

0 0.008km

N

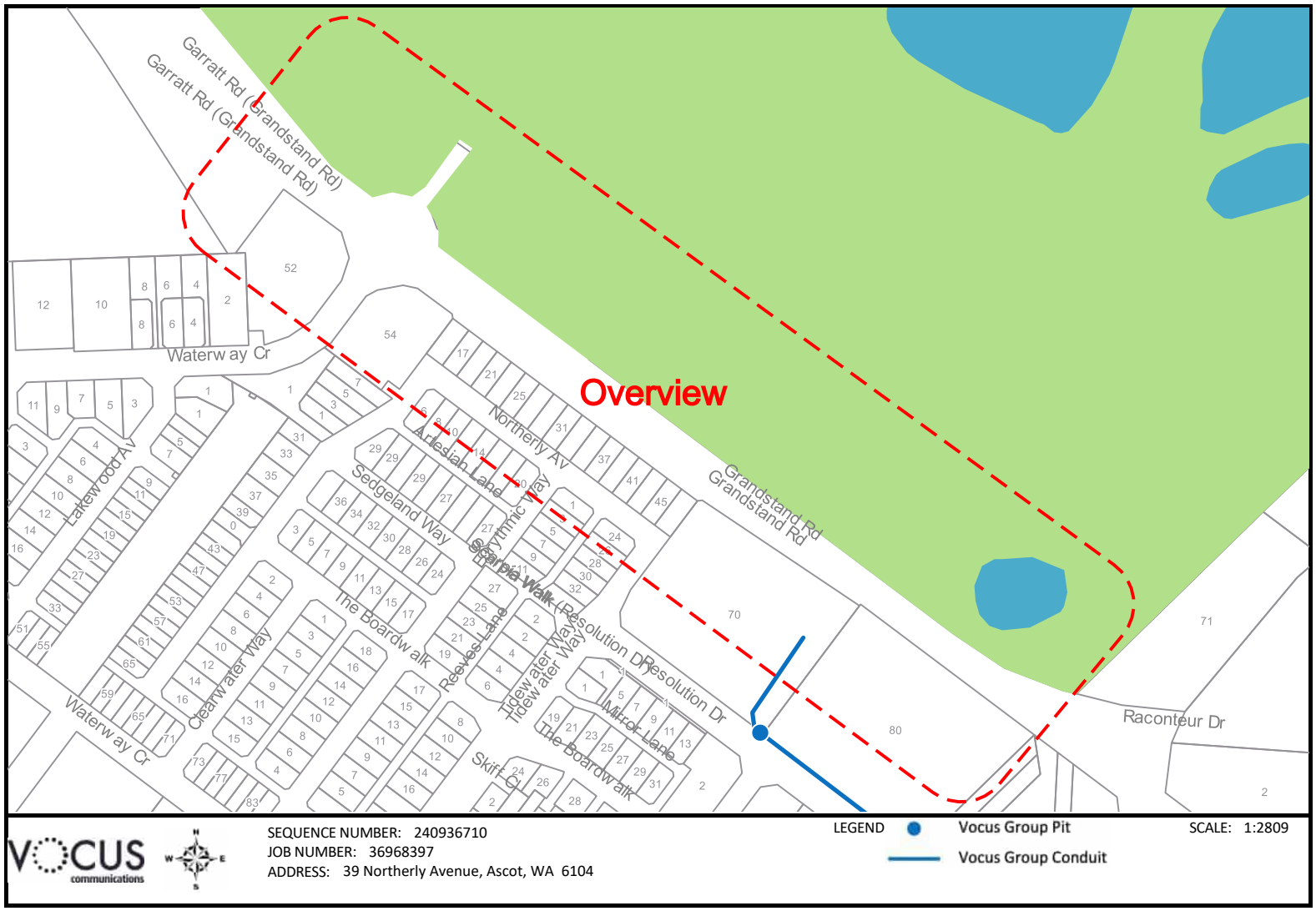
LEGEND

BYDA Work Area

| | |
|---|---|
| AAPT/PowerTel Pit | TransACT Pit |
| AAPT/PowerTel Duct | TransACT Duct |
| DDA Pit | SOUL Pattinson Telecoms Pit |
| DDA Duct | SOUL Pattinson Telecoms Duct |
| Agile/Adam Pit | PIPE Networks Pit |
| Agile/Adam Duct | PIPE Networks Duct |

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Attachment 12.1.4 Engineering Servicing Report




The Vocus Group includes related bodies corporate of Vocus Communications Limited ACN 084 115 499.

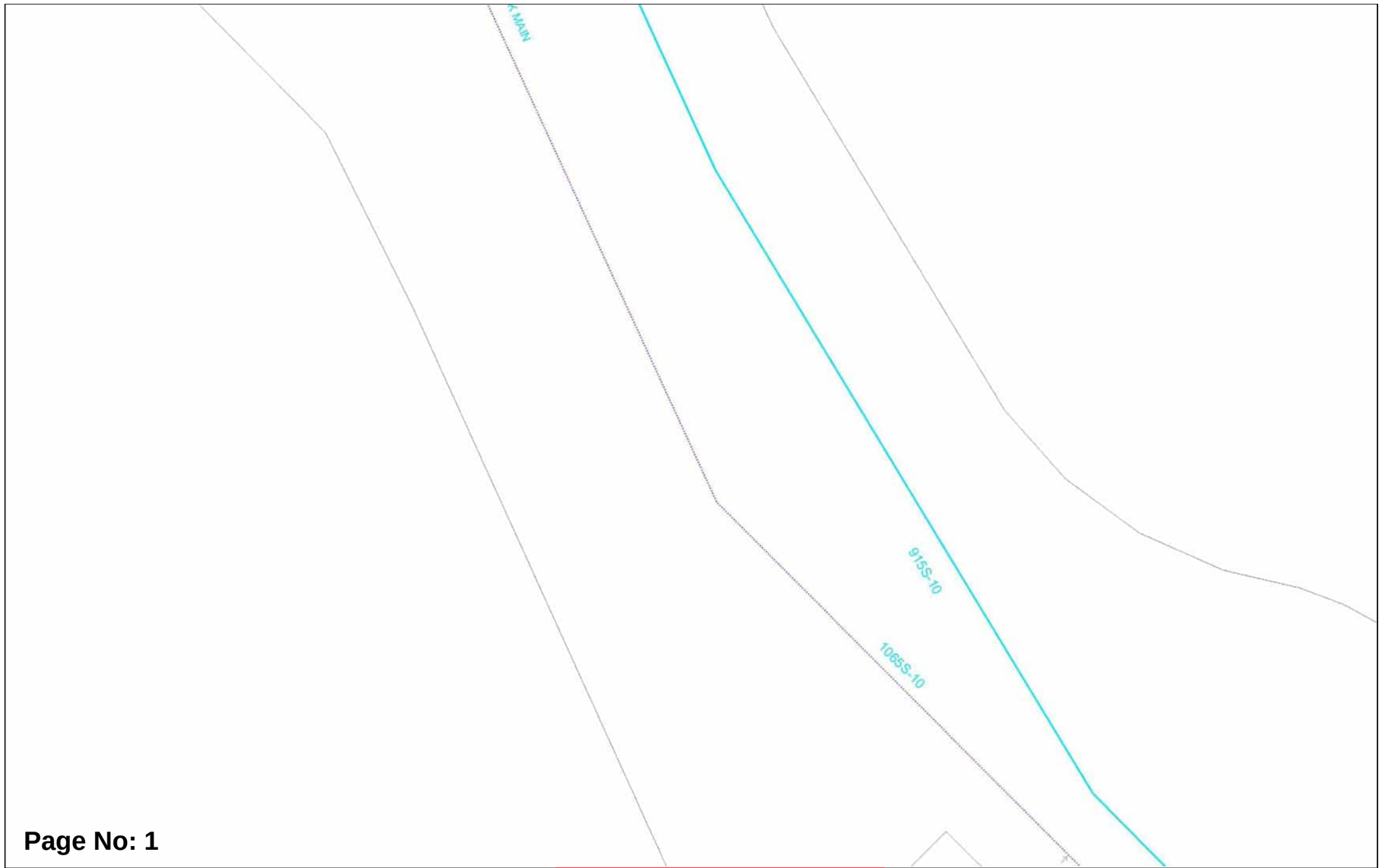
Attachment 12.1.4 Engineering Servicing Report




Plans generated 24 Jun 2024 by PelicanCorp TicketAccess Software | www.pelicancorp.com

Water Corp - Critical Plan.docx (21 May 2024)

Attachment 12.1.4 Engineering Servicing Report




**Page No: 1**

WATER CORPORATION

Scale: 1:750
Job No.: 36968397
Sequence No.: 240936715
Print Date: 24 Jun 2024

N

Water

WARNING ASSET PROTECTION APPROVAL MAY BE REQUIRED

Apply for approval to work near our assets at:
Working near assets (watercorporation.com.au)

Unauthorised work within prescribed proximities of Water Corporation Assets is prohibited.

The Water Corporation has taken due care in the preparation of this map but accepts no responsibility for any inaccuracies or inappropriate use. This plan may be reproduced in its entirety for the purpose of site work planning but shall not otherwise be altered or published in any form without the permission of the Water Corporation. The Water Corporation may need to be advised of any planned ground disturbing activities near facilities on this map. Refer to Brochure - "Protecting Buried Pipelines". Please report any inaccuracies to Asset Registration Team by email to asset.registration@watercorporation.com.au.

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Water Corp - Critical Plan.docx (21 May 2024)

Attachment 12.1.4 Engineering Servicing Report



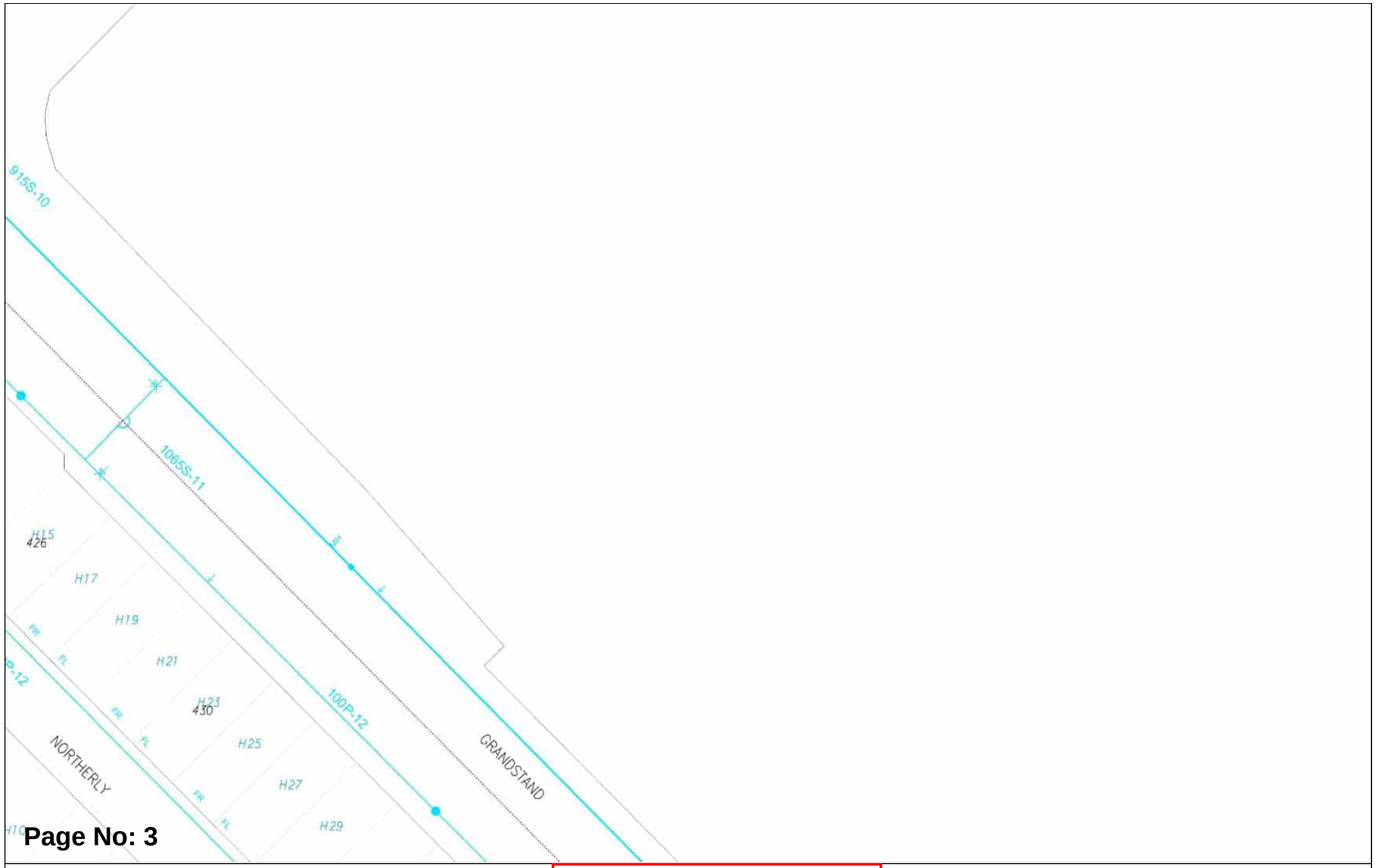

**Page No: 2**

| | | | |
|---|---|---|---|
| WATER CORPORATION | Scale: 1:750<br>Job No.: 36968397<br>Sequence No.: 240936715<br>Print Date: 24 Jun 2024 | N<br>Water | WARNING ASSET PROTECTION APPROVAL MAY BE REQUIRED<br>Apply for approval to work near our assets at:<br>Working near assets (watercorporation.com.au)<br>Unauthorised work within prescribed proximities of Water Corporation Assets is prohibited. | The Water Corporation has taken due care in the preparation of this map but accepts no responsibility for any inaccuracies or inappropriate use. This plan may be reproduced in its entirety for the purpose of site work planning but shall not otherwise be altered or published in any form without the permission of the Water Corporation. The Water Corporation may need to be advised of any planned ground disturbing activities near facilities on this map. Refer to Brochure - "Protecting Buried Pipelines". Please report any inaccuracies to Asset Registration Team by email to asset.registration@watercorporation.com.au. |

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Water Corp - Critical Plan.docx (21 May 2024)

Attachment 12.1.4 Engineering Servicing Report




**Page No: 3**

| | | | |
|---|---|---|---|
| Scale: | 1:750 | Water | |
| Job No.: | 36968397 | | |
| Sequence No.: | 240936715 | | |
| Print Date: | 24 Jun 2024 | | |

WARNING ASSET PROTECTION APPROVAL MAY BE REQUIRED

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Attachment 12.1.4 Engineering Servicing Report




WATER CORPORATION

| | |
|---|---|
| Scale: | 1:750 |
| Job No.: | 36968397 |
| Sequence No.: | 240936715 |
| Print Date: | 24 Jun 2024 |

N

Water

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Water Corp - Critical Plan.docx (21 May 2024)

Attachment 12.1.4 Engineering Servicing Report

**Page No: 5**

WATER CORPORATION

| | |
|---|---|
| Scale: | 1:750 |
| Job No.: | 36968397 |
| Sequence No.: | 240936715 |
| Print Date: | 24 Jun 2024 |

N

**Water**

WARNING ASSET PROTECTION APPROVAL MAY BE REQUIRED

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Working near assets (watercorporation.com.au)

Unauthorised work within prescribed proximities of Water Corporation Assets is prohibited.

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Attachment 12.1.4 Engineering Servicing Report




**Page No: 6**

WATER CORPORATION

| | |
|---|---|
| Scale: | 1:750 |
| Job No.: | 36968397 |
| Sequence No.: | 240936715 |
| Print Date: | 24 Jun 2024 |

N

Water

WARNING ASSET PROTECTION APPROVAL MAY BE REQUIRED

Apply for approval to work near our assets at:

Working near assets (watercorporation.com.au)

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**Page No: 7**

WATER CORPORATION

Scale: 1:750
Job No.: 36968397
Sequence No.: 240936715
Print Date: 24 Jun 2024

N
Water

WARNING ASSET PROTECTION APPROVAL MAY BE REQUIRED
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Attachment 12.1.4 Engineering Servicing Report

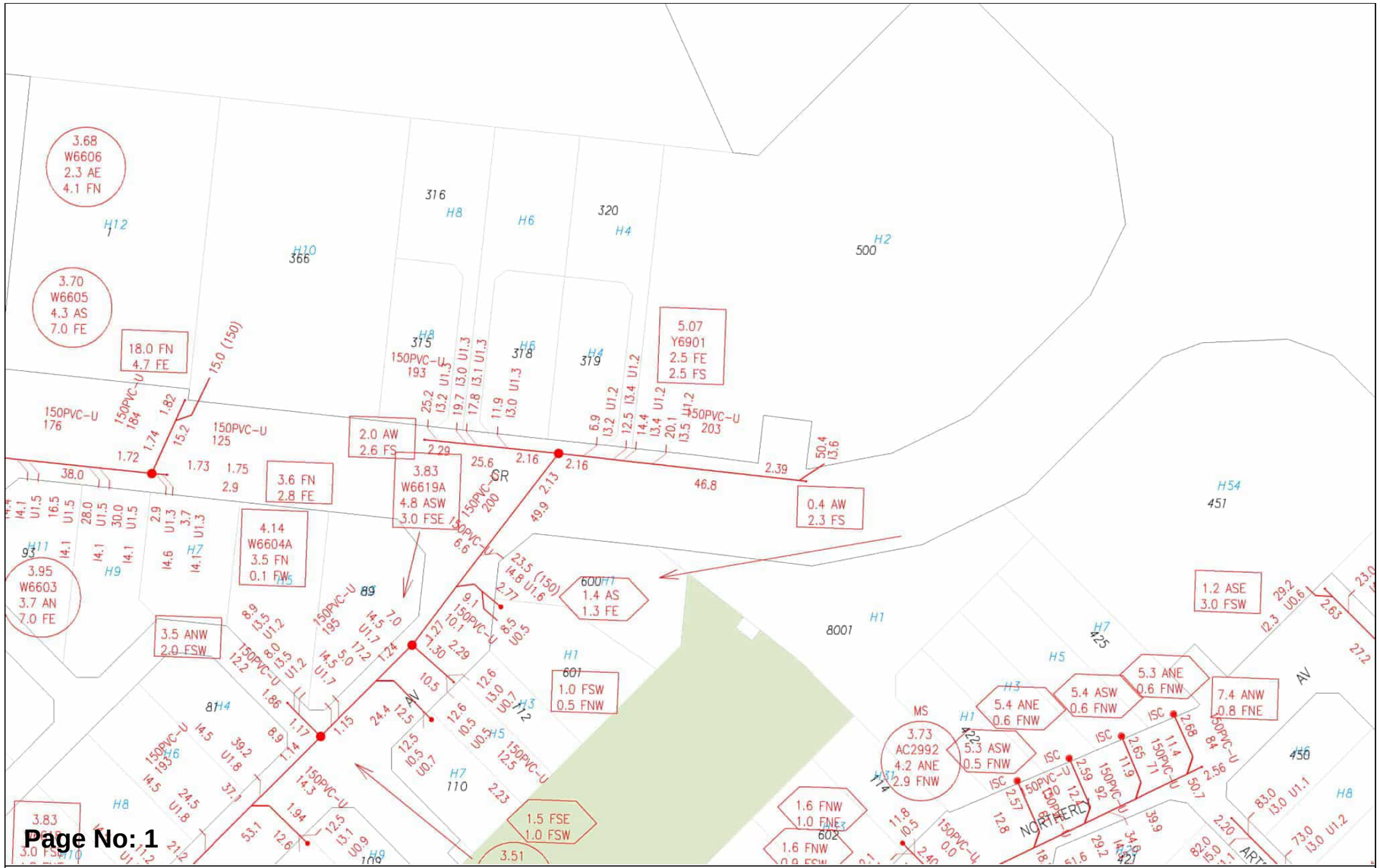



| | |
|---|---|
| Scale: | 1:2790 |
| Job No.: | 36968397 |
| Sequence No.: | 240936715 |
| Print Date: | 24 Jun 2024 |

Sewer

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Attachment 12.1.4 Engineering Servicing Report




**Page No: 1**

WATER CORPORATION

Scale: 1:750
Job No.: 36968397
Sequence No.: 240936715
Print Date: 24 Jun 2024

N

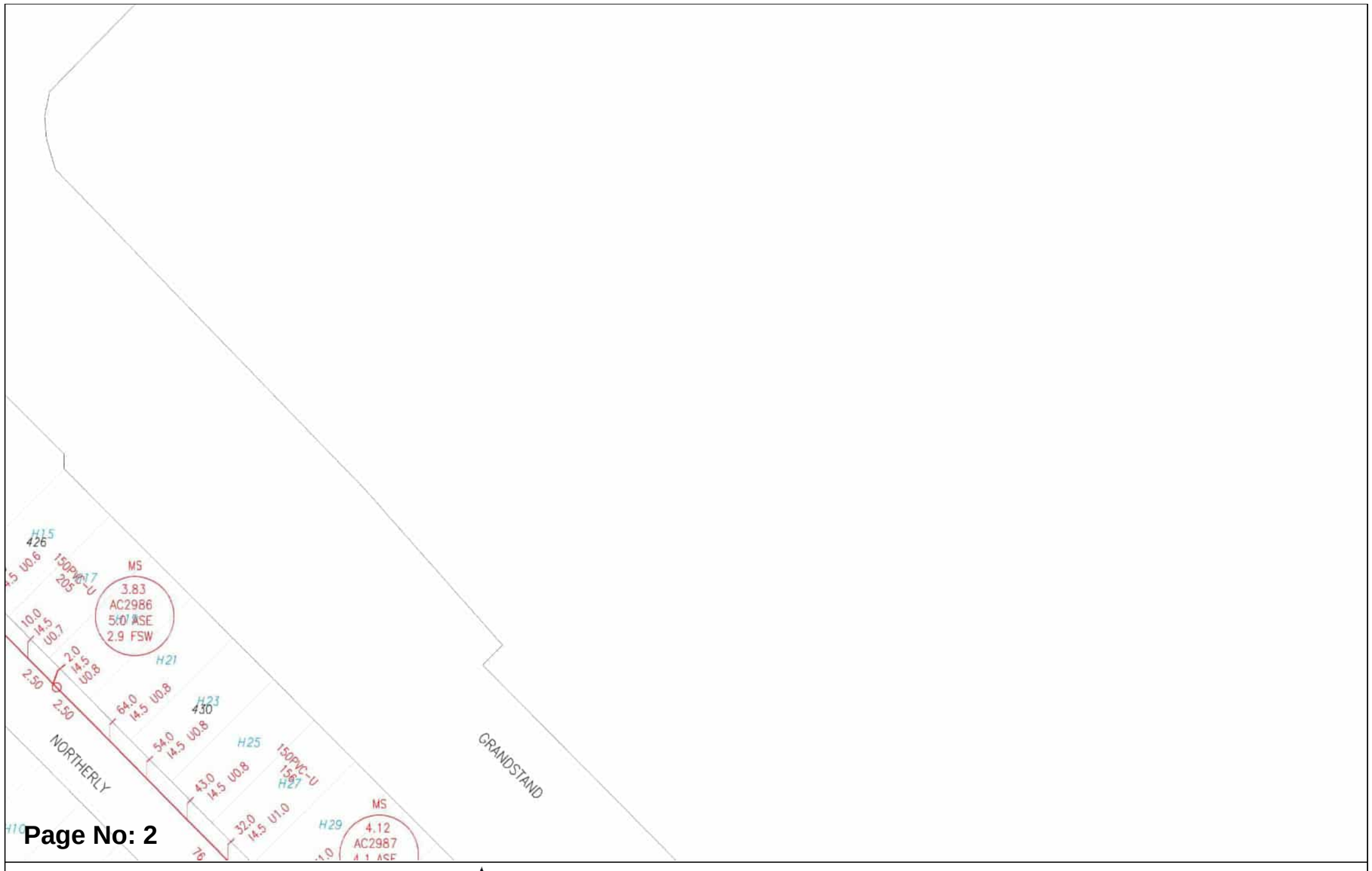
**Sewer**

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Water Corp - Non-critical Plan.docx (21 May 2024)

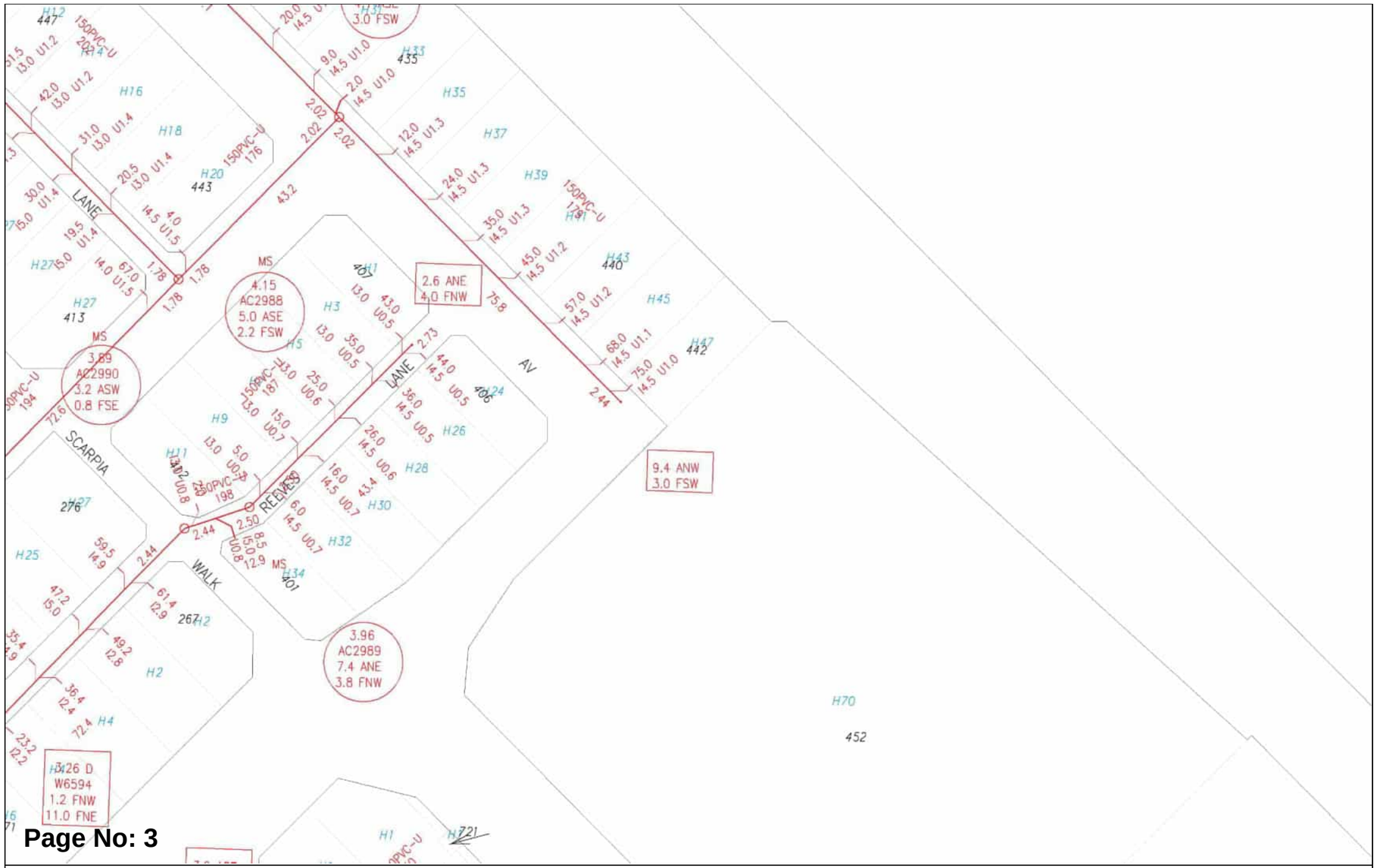
Attachment 12.1.4 Engineering Servicing Report




Plans generated 24 Jun 2024 by PelicanCorp TicketAccess Software | www.pelicancorp.com

Water Corp - Non-critical Plan.docx (21 May 2024)

Attachment 12.1.4 Engineering Servicing Report

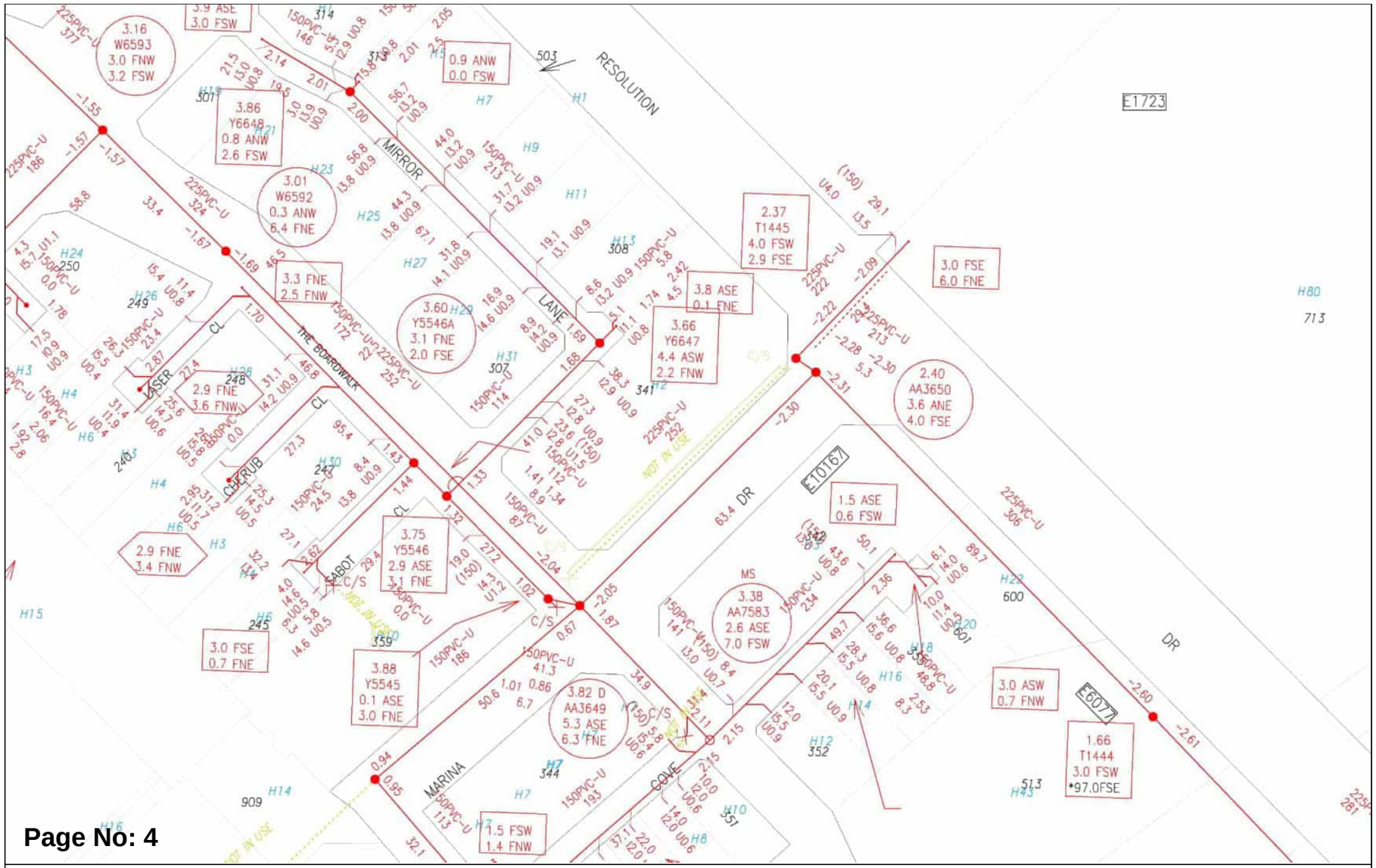



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Water Corp - Non-critical Plan.docx (21 May 2024)

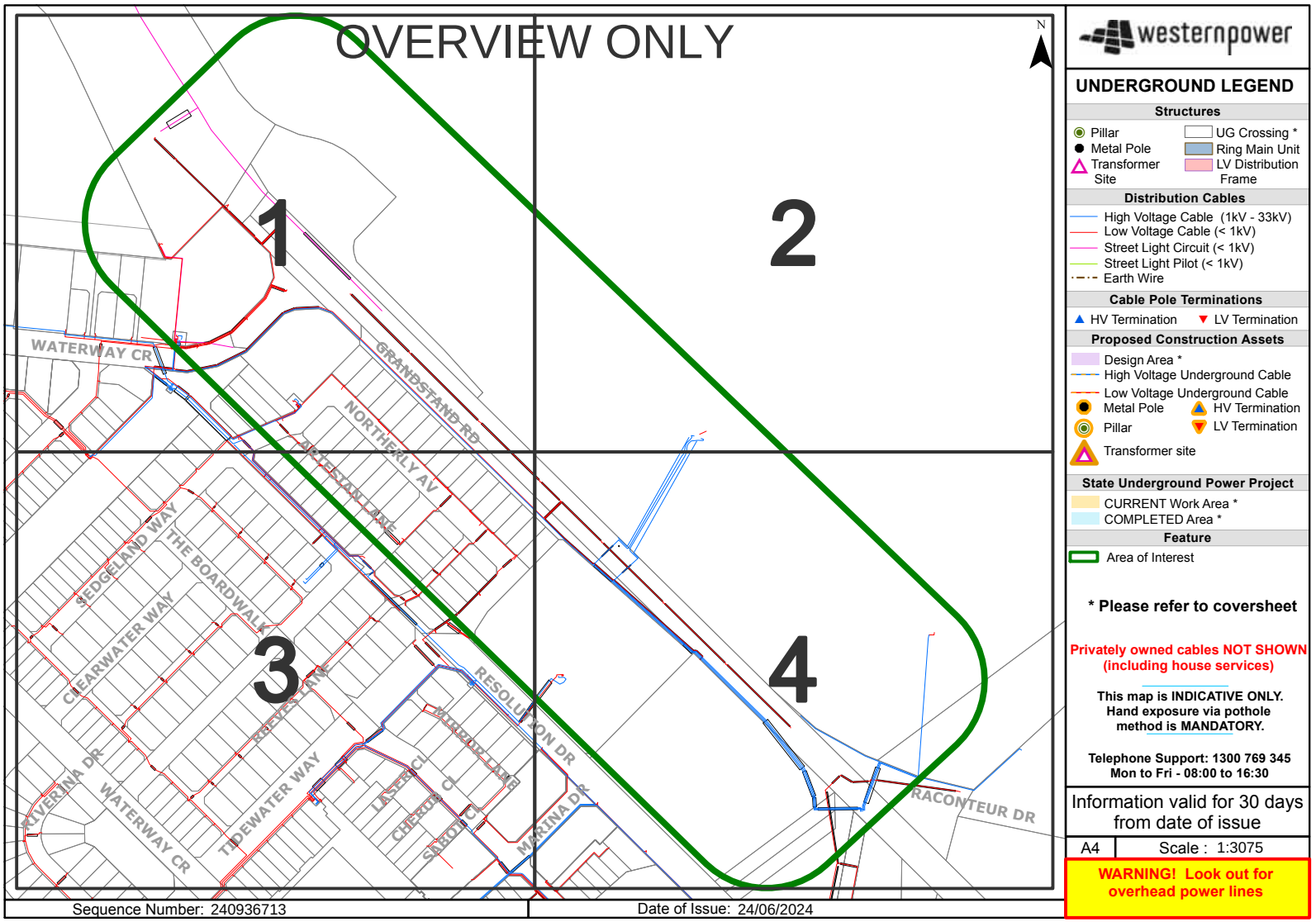
Attachment 12.1.4 Engineering Servicing Report



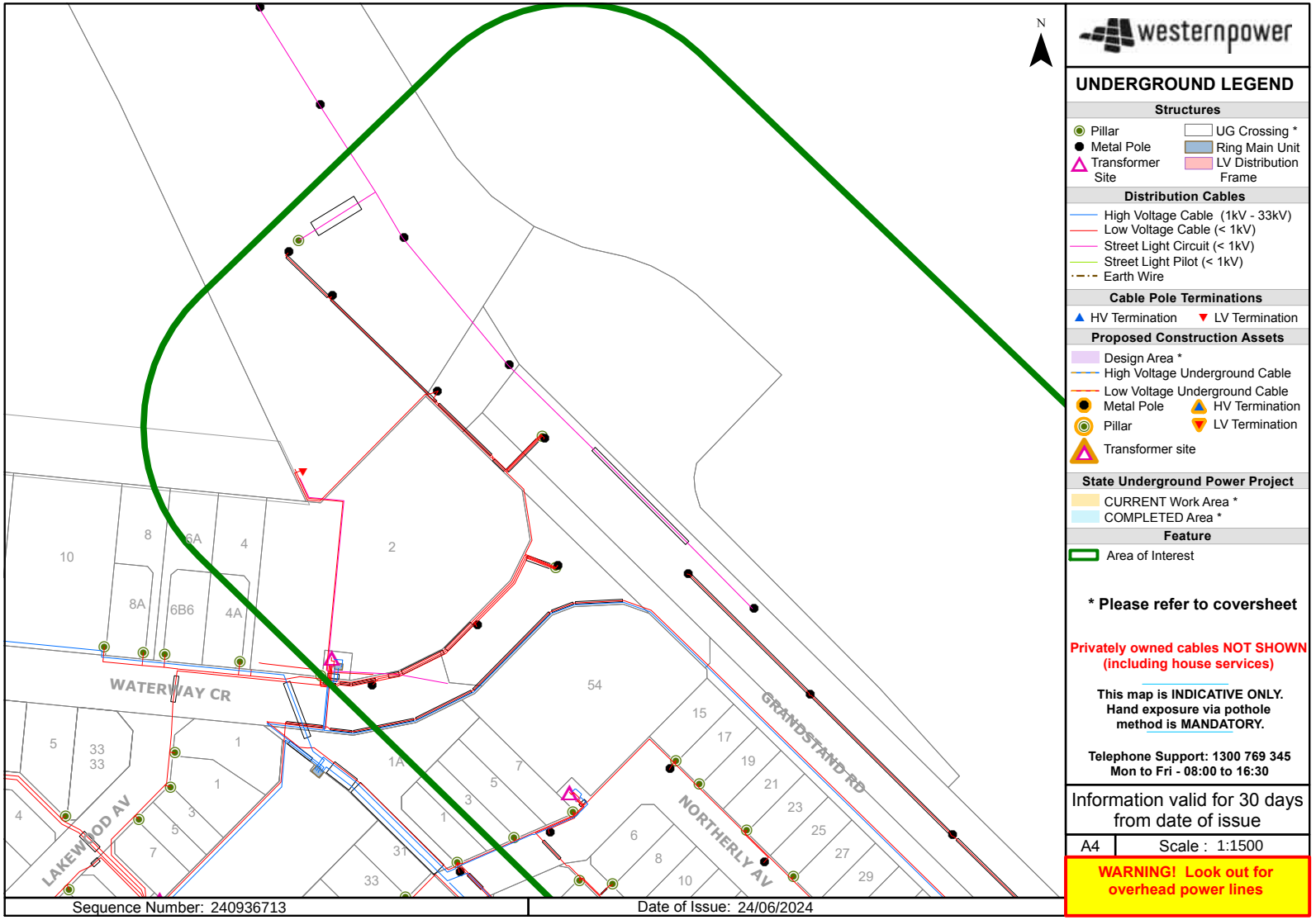

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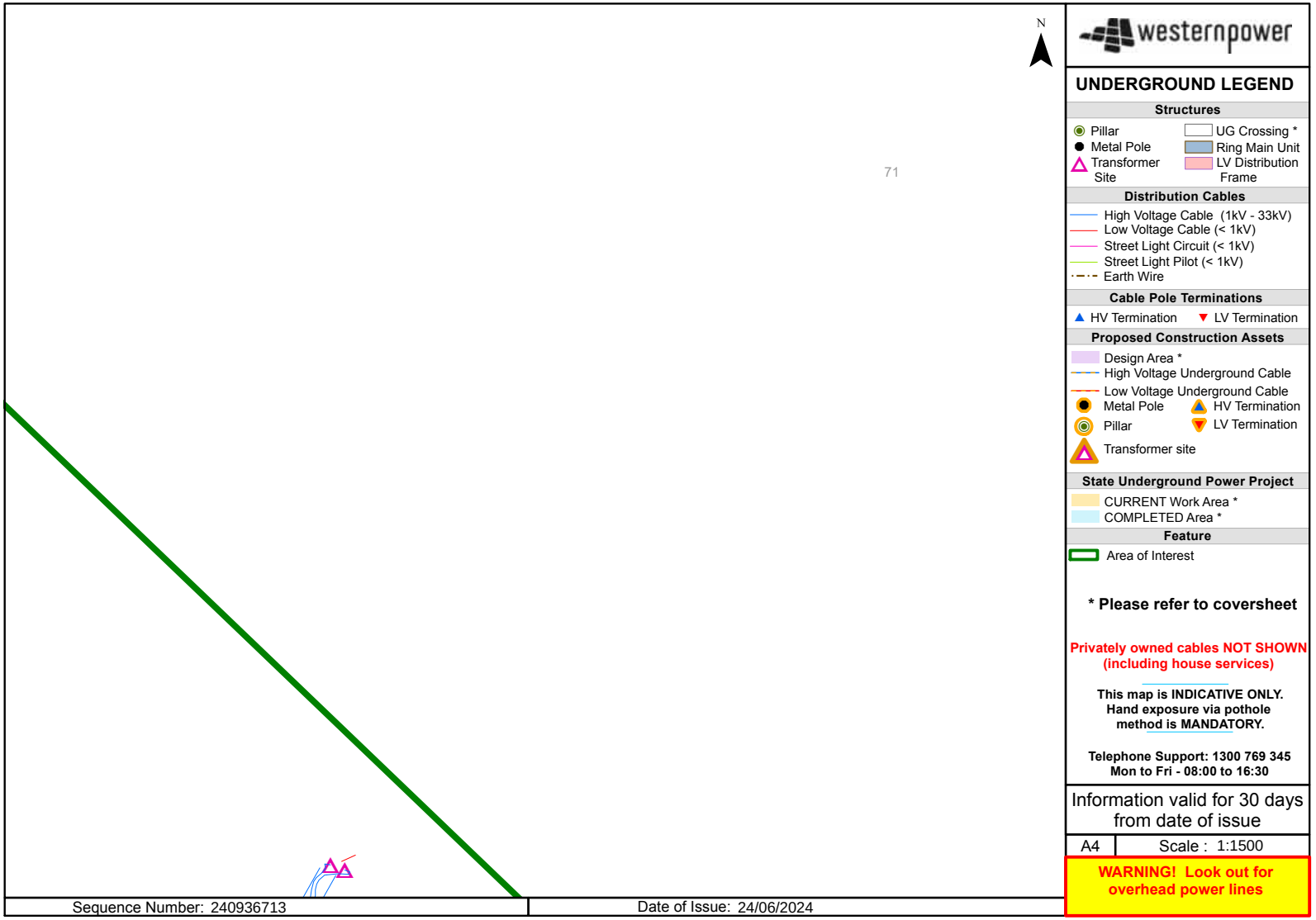
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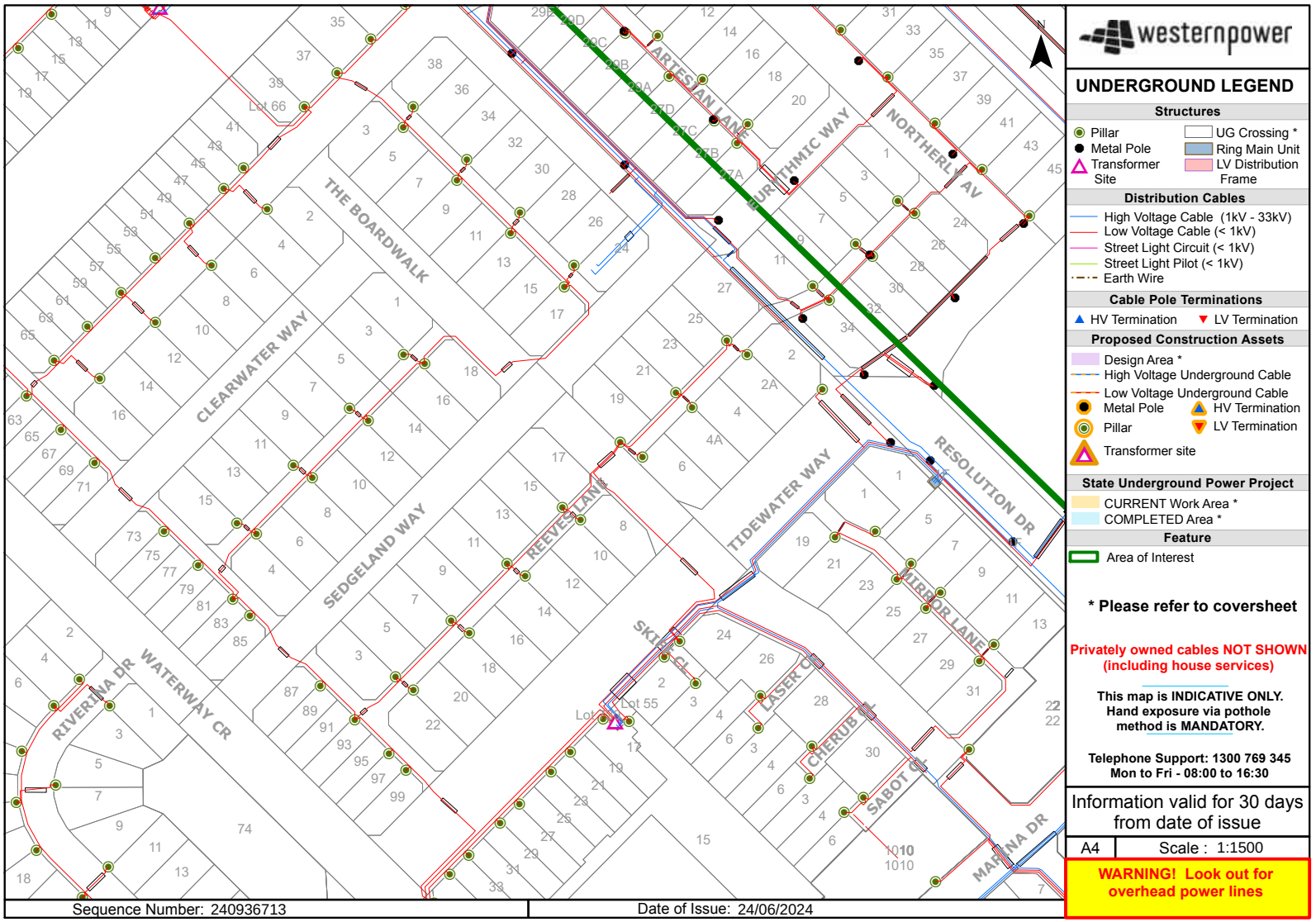
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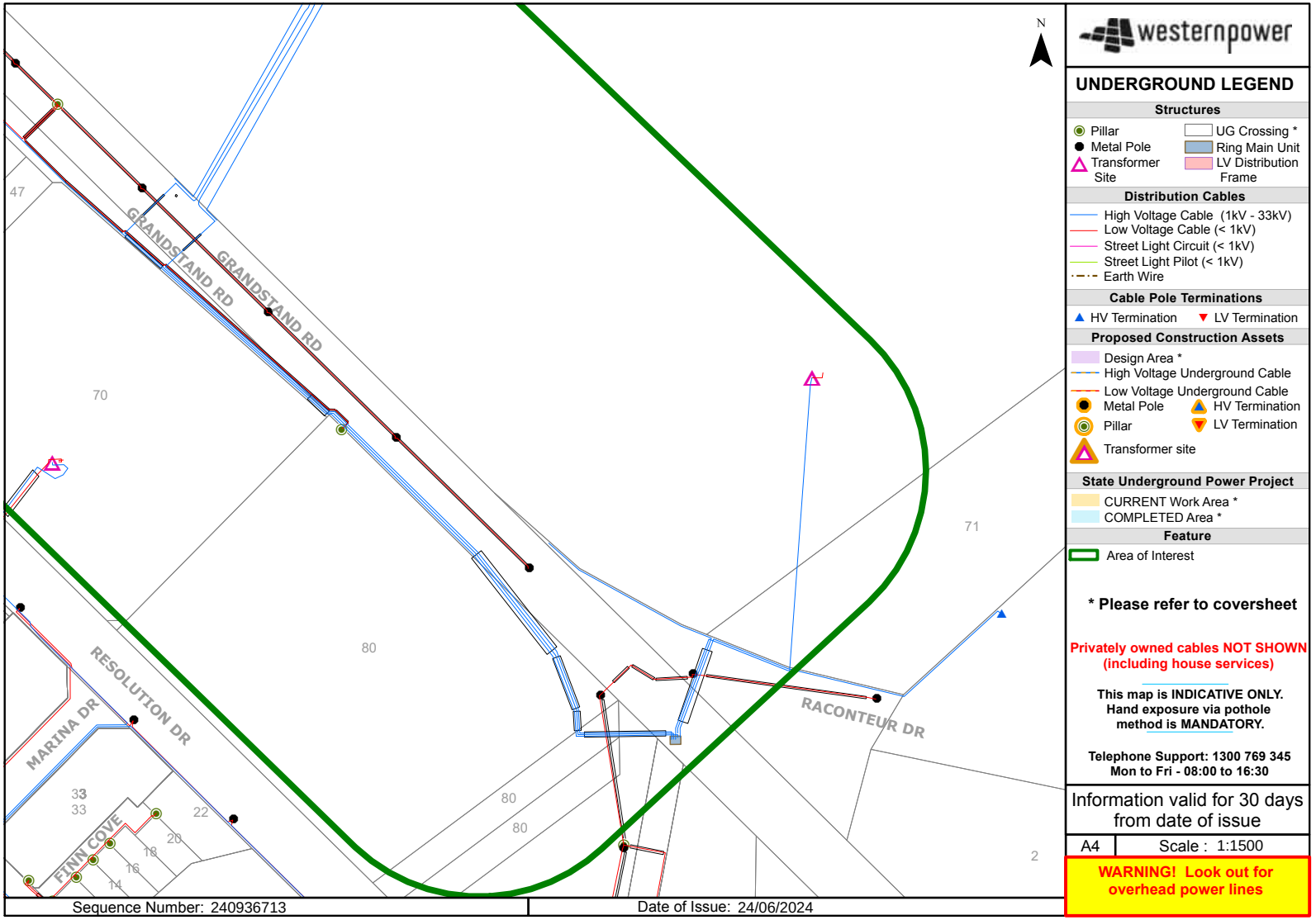
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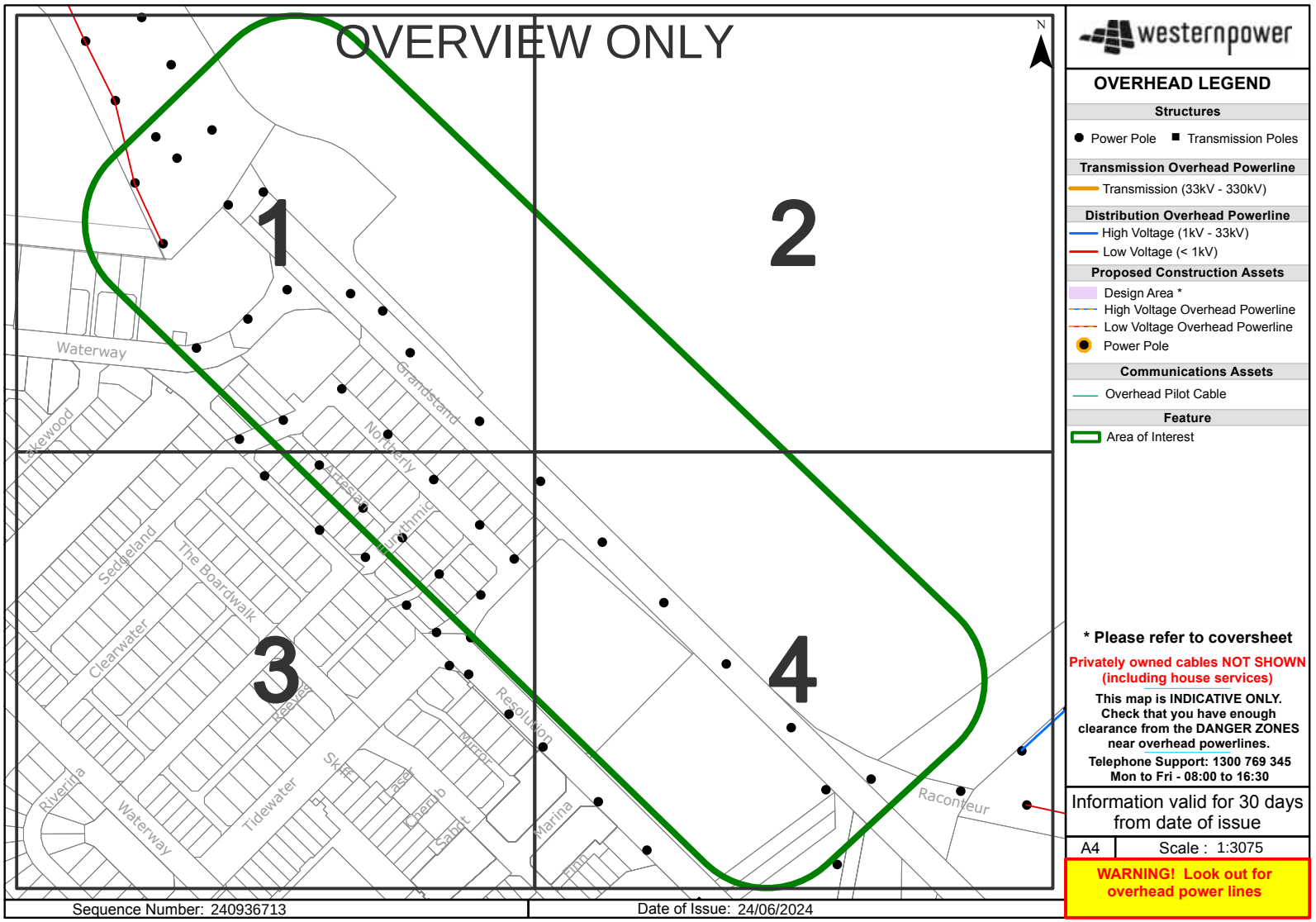
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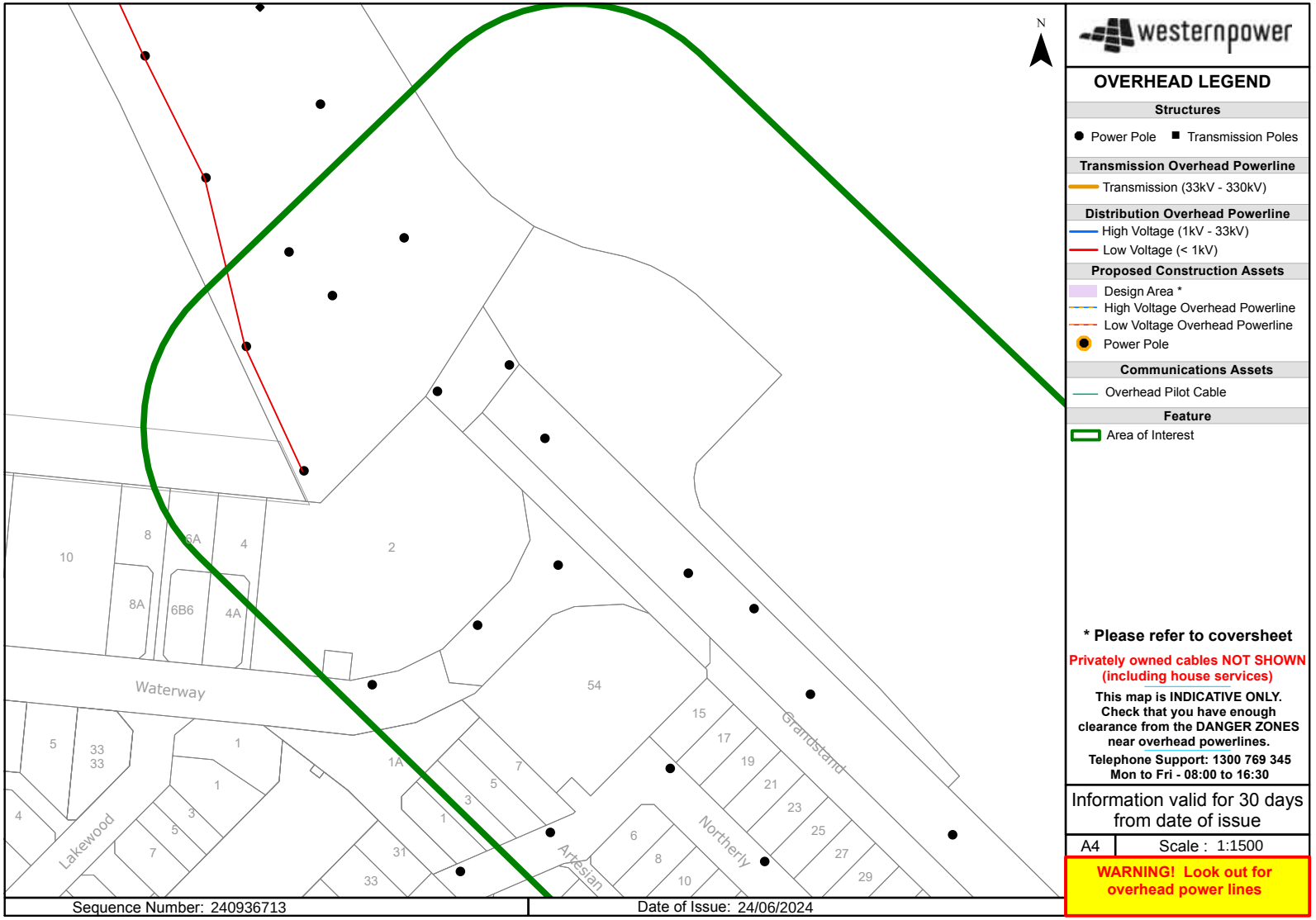
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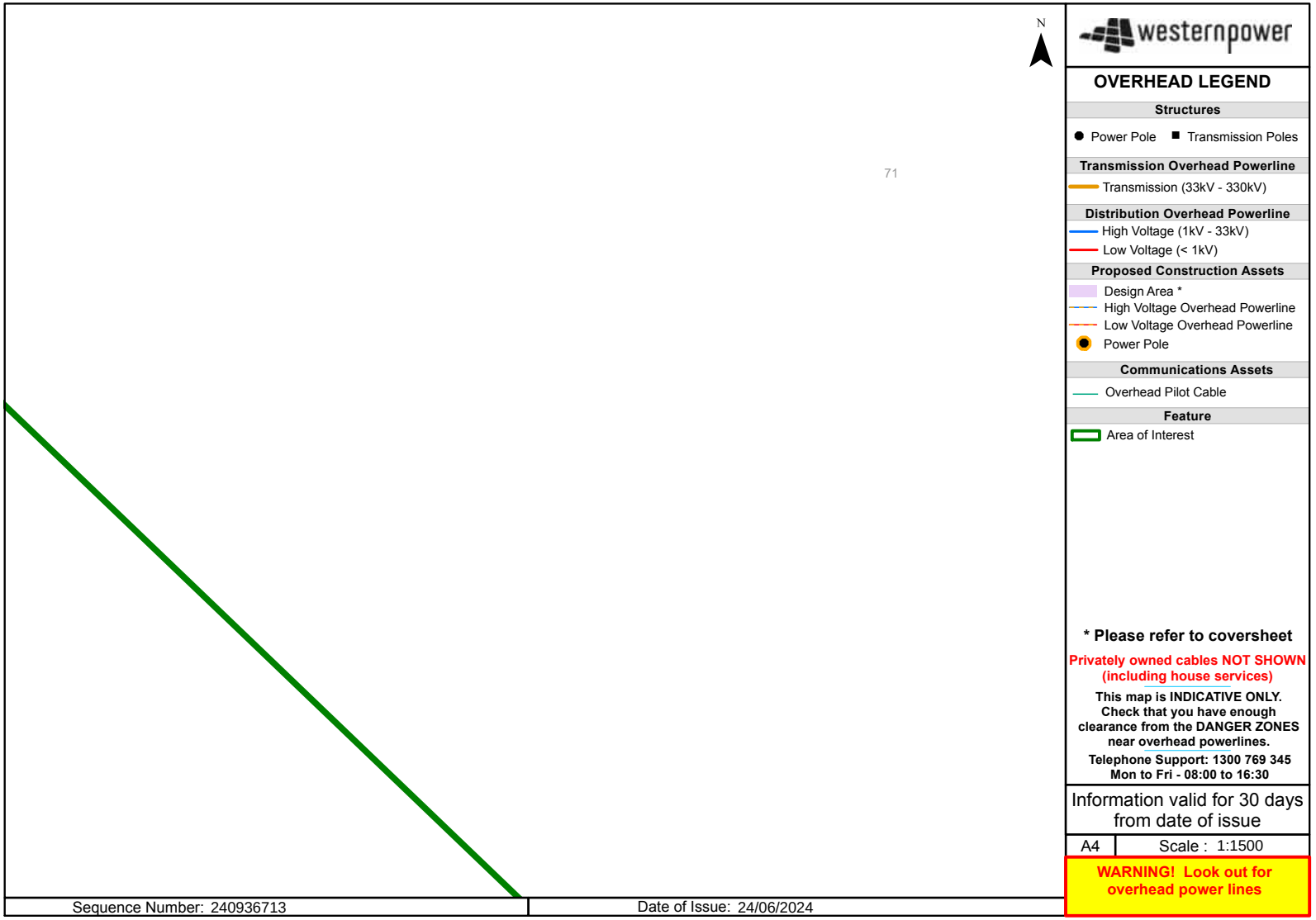
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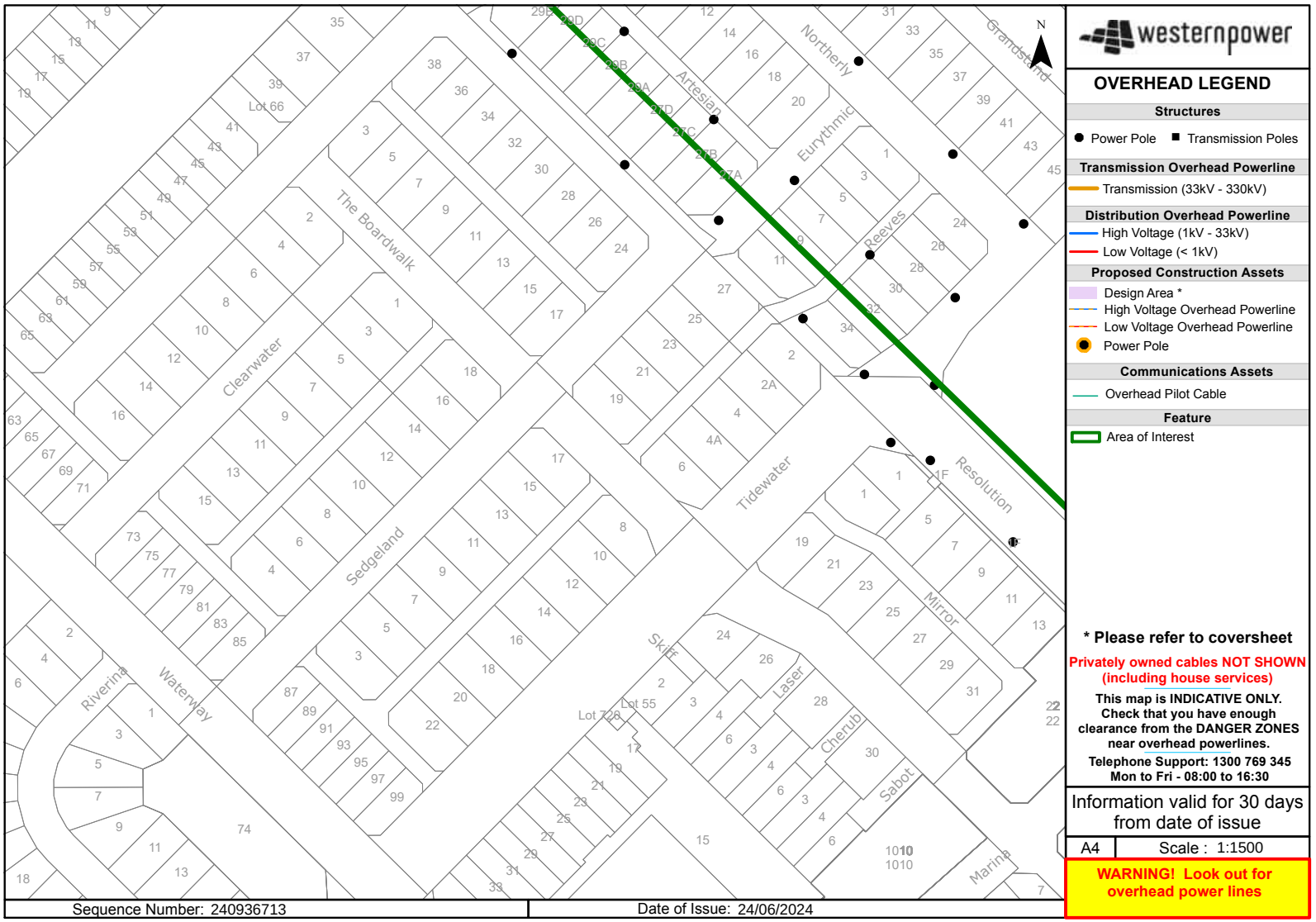
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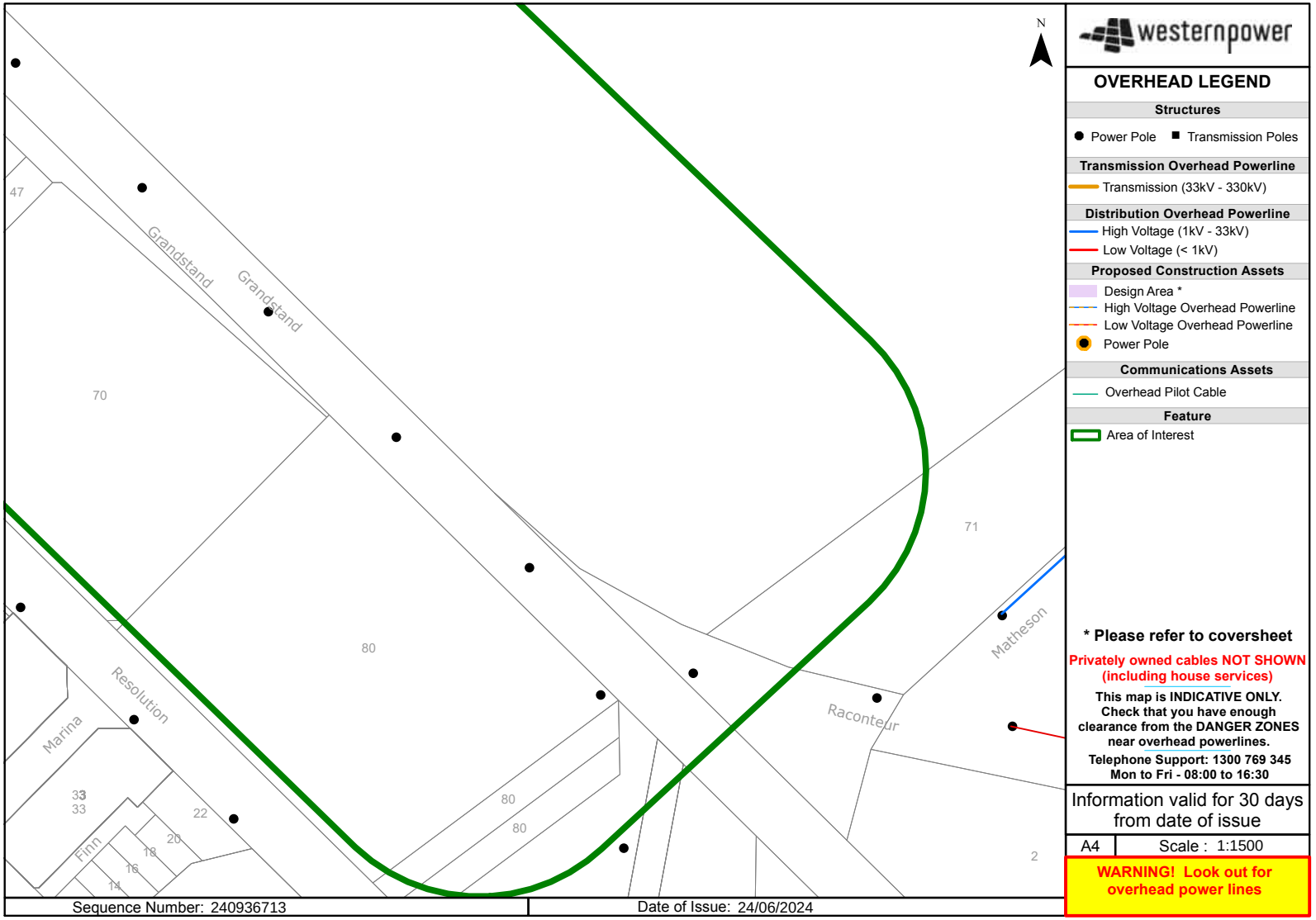
Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report



Attachment 12.1.4 Engineering Servicing Report

Job No 36962214

BEFORE YOU DIG www.byda.com.au

byda.com.au

## Contact Details

| Contact | Contact number | Company | Enquirer ID |
|---|---|---|---|
| Justin Zielinski | 0420 304 451 | - | 3140642 |

**Email**
jzielinski@tabec.com.au

**Address**
54 Havelock Street
West Perth WA 6005

## Job Site and Enquiry Details

**WARNING:** The map below only displays the location of the proposed job site and does not display any asset owners' pipe or cables. The area highlighted has been used only to identify the participating asset owners, who will send information to you directly.

| Enquiry date | Start date | End date | On behalf of | Job purpose | Locations | Onsite activities |
|---|---|---|---|---|---|---|
| 21/06/2024 | 24/06/2024 | 24/06/2024 | Private | Design | Both Road | Subdivision |



Check that the location of the job site is correct. If not, you must submit a new enquiry.

If the scope of works change or plan validity dates expire, you must submit a new enquiry.

Do NOT dig without plans. Safe excavation is your responsibility. If you don't understand the plans or how to proceed safely, please contact the relevant asset owners.

**User Reference**
Precinct A

**Address**
75 Grandstand Road
Ascot WA 6104

**Notes/description**
-

## Your Responsibility and Duty of Care

- **Lodging an enquiry does not authorise project commencement.** Before starting work, you must obtain all necessary information from all affected asset owners.
- If you don't receive plans within 2 business days, contact the asset owner & quote their sequence number.
- Always follow the 5Ps of Safe Excavation (page 2), and locate assets before commencing work.
- Ensure you comply with State legislative requirements for Duty of Care and safe digging.
- If you damage an underground asset, you MUST advise the asset owner immediately.
- By using the BYDA service, you agree to the Privacy Policy and Term of Use.
- For more information on safe digging practices, visit www.byda.com.au

## Asset Owner Details

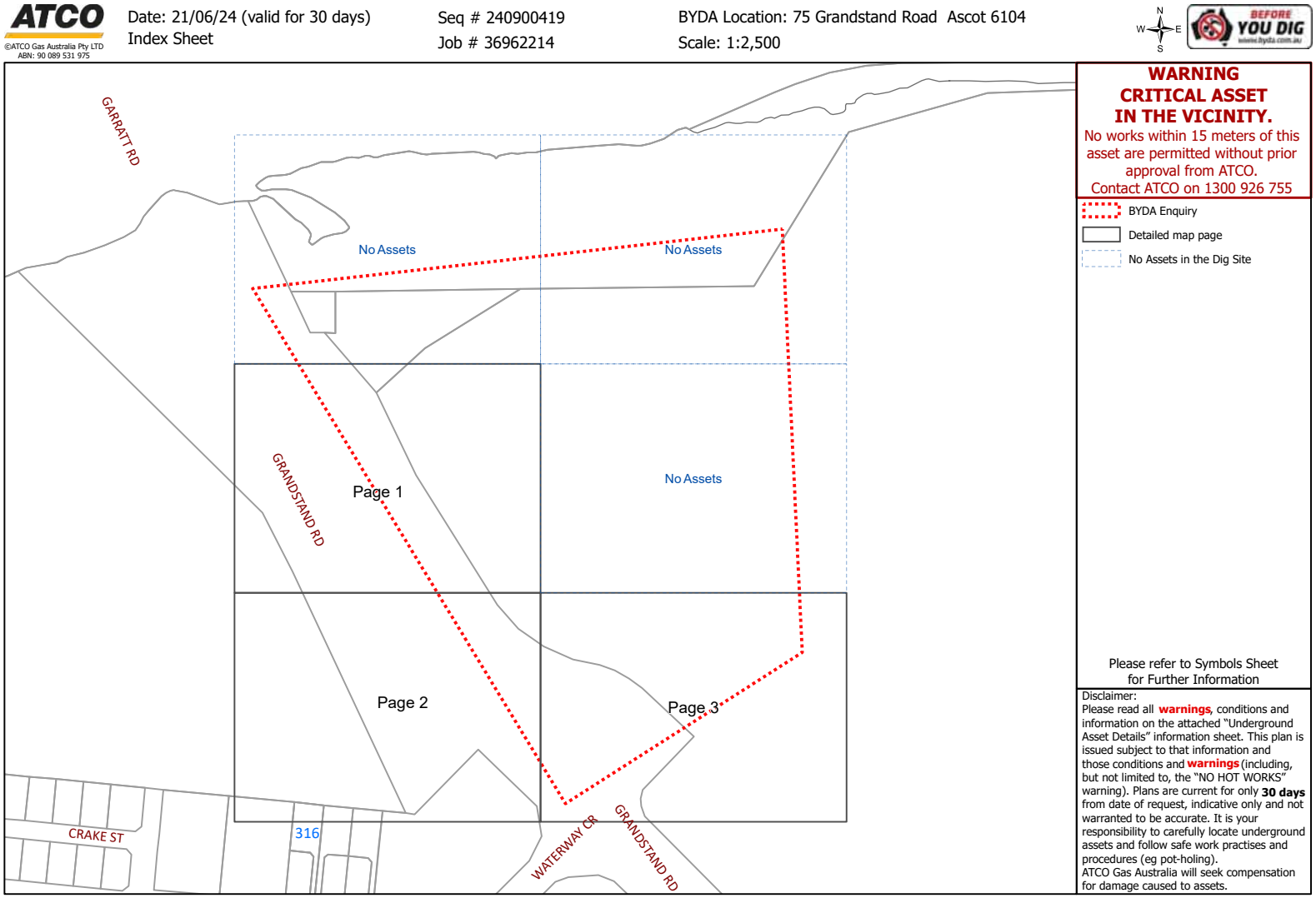
Below is a list of asset owners with underground infrastructure in and around your job site. It is your responsibility to identify the presence of these assets. Plans issued by Members are indicative only unless specified otherwise. Note: not all asset owners are registered with BYDA. You must contact asset owners not listed here directly.

| Referral ID (Seq. no) | Authority Name | Phone | Status |
|---|---|---|---|
| 240900419 | ATCO Gas Australia | 1300 926 755 | NOTIFIED |
| 240900415 | NBN Co (WA) | 1800 687 626 | NOTIFIED |
| 240900413 | Optus (WA) | 1800 505 777 | NOTIFIED |
| 240900417 | Telstra (WA) | 1800 653 935 | NOTIFIED |
| 240900414 | TPG Telecom (WA) | 1800 786 306 | NOTIFIED |
| 240900418 | Water Corporation | 13 13 95 | NOTIFIED |
| 240900416 | Western Power | 13 10 87 | NOTIFIED |

END OF UTILITIES LIST

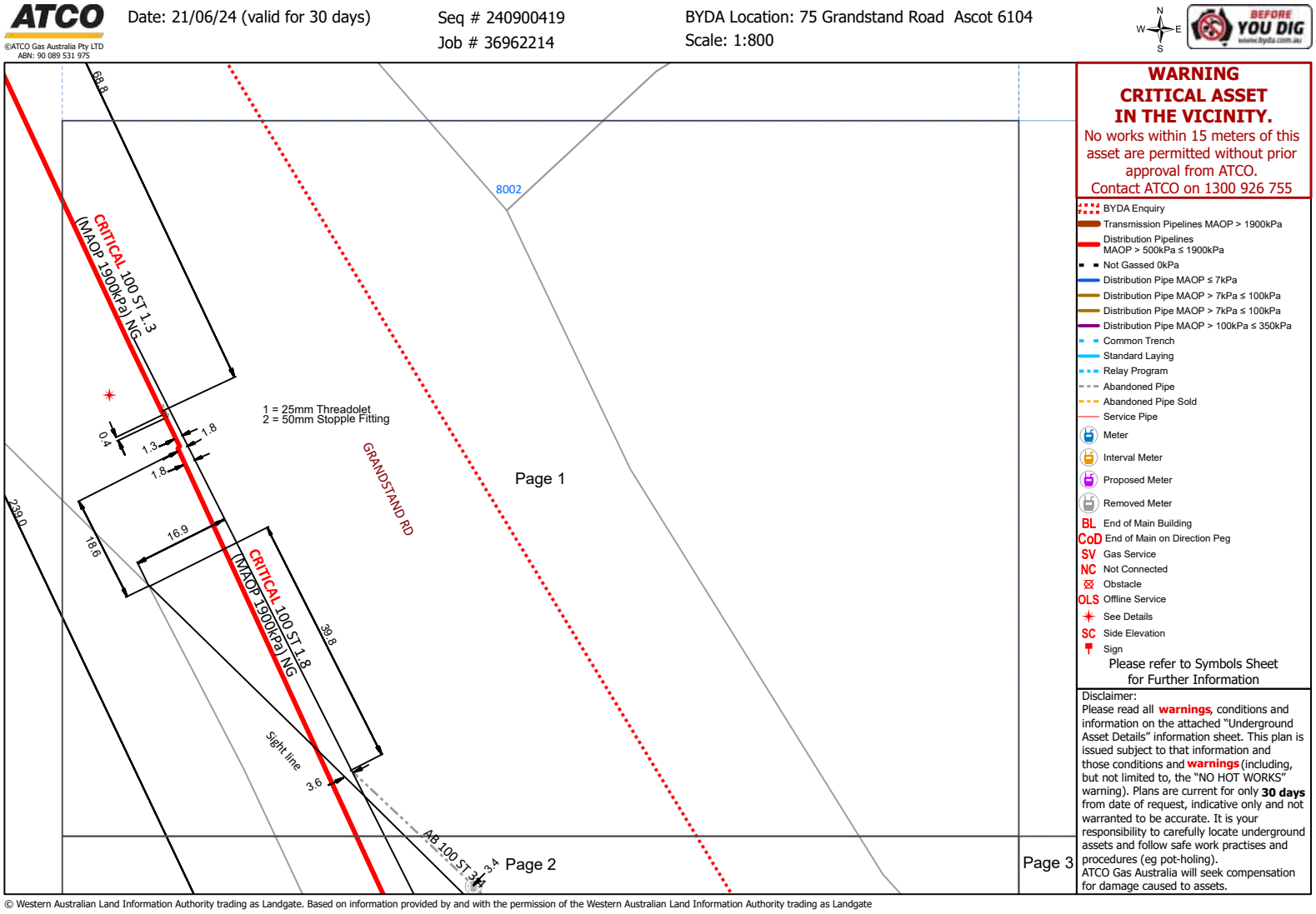
**Lodge your FREE enquiry online any time at byda.com.au**

Attachment 12.1.4 Engineering Servicing Report

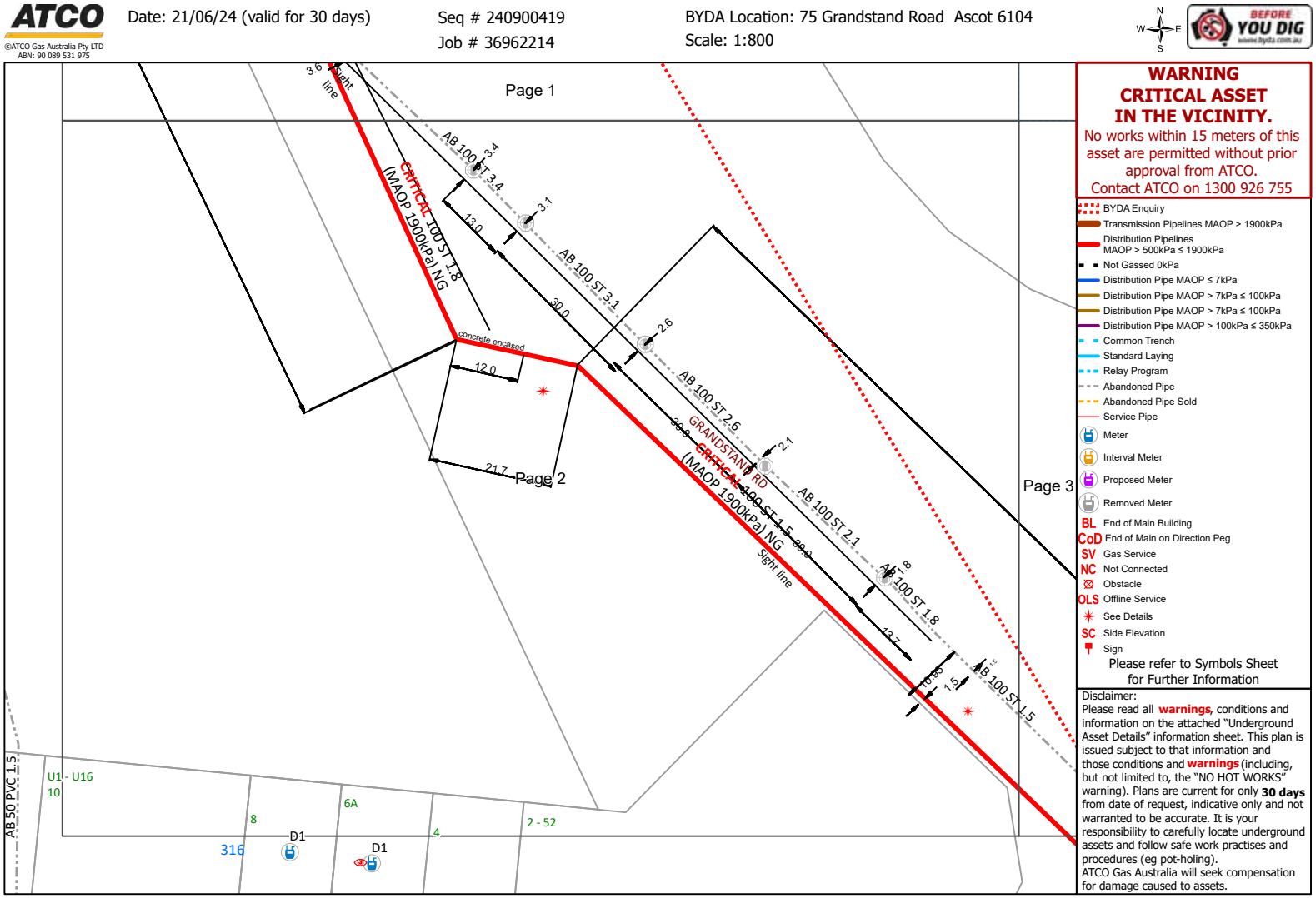



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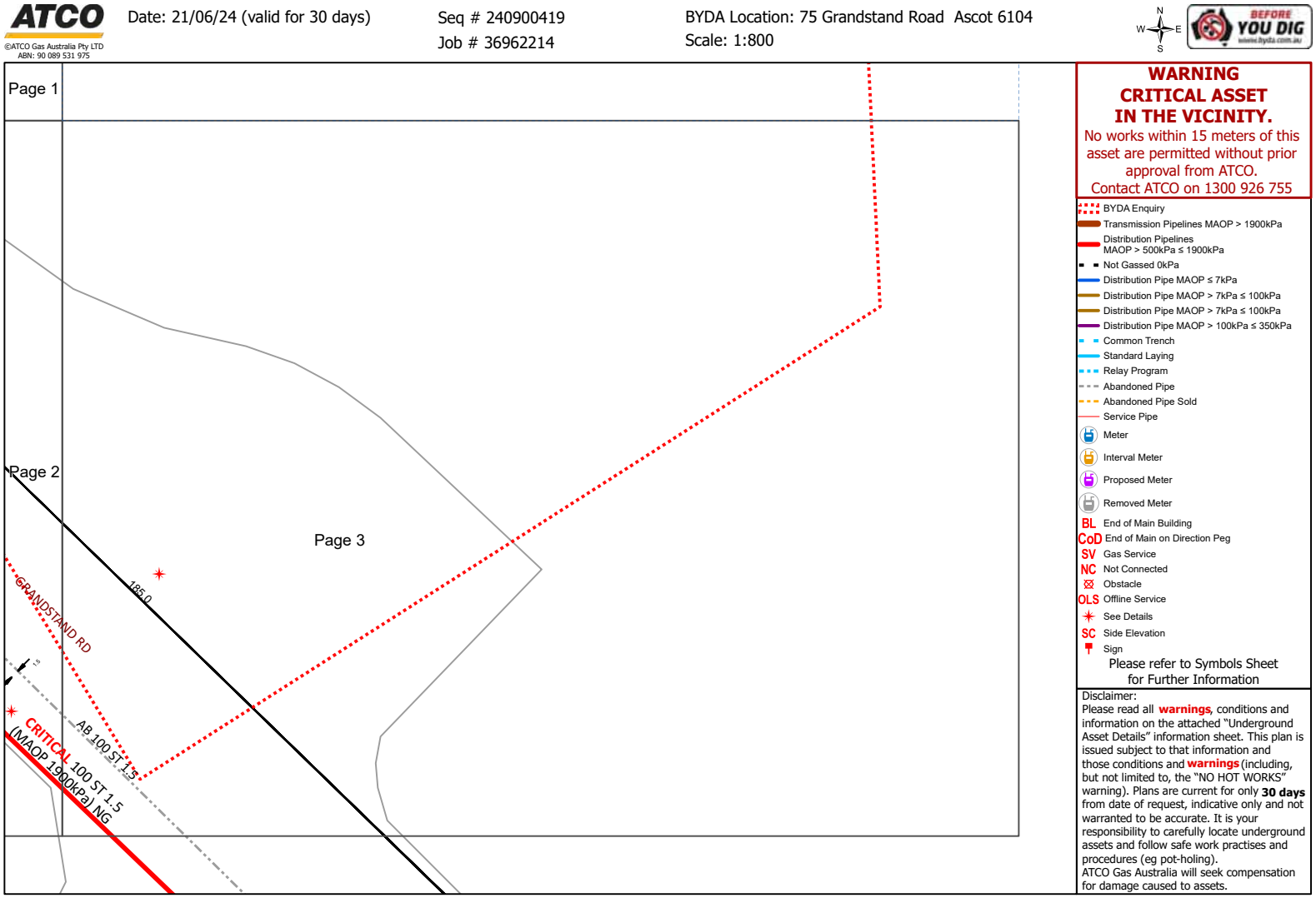
Attachment 12.1.4 Engineering Servicing Report



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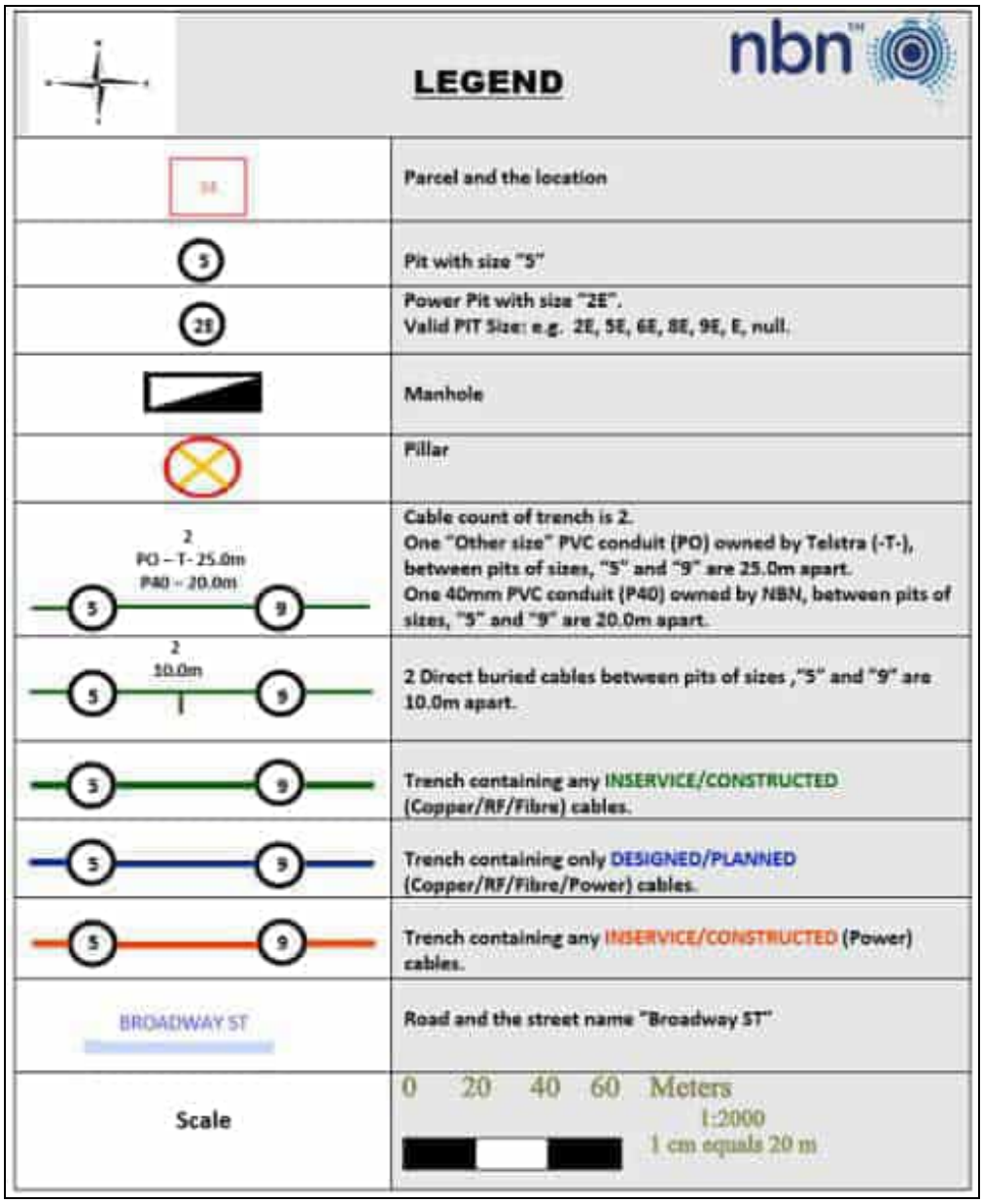


Attachment 12.1.4 Engineering Servicing Report




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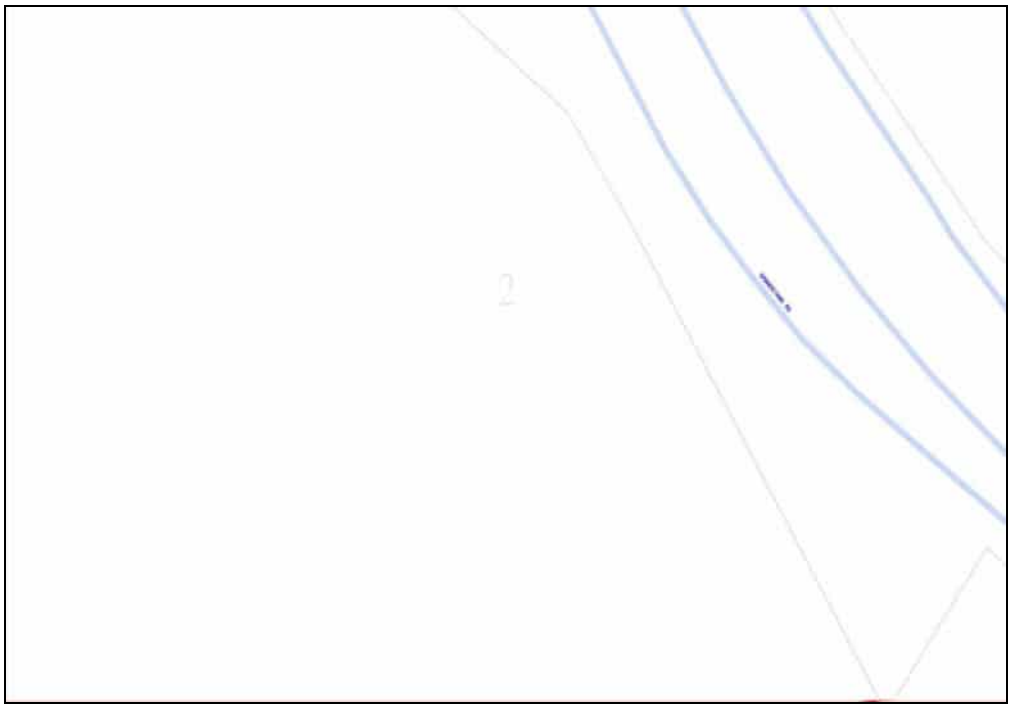
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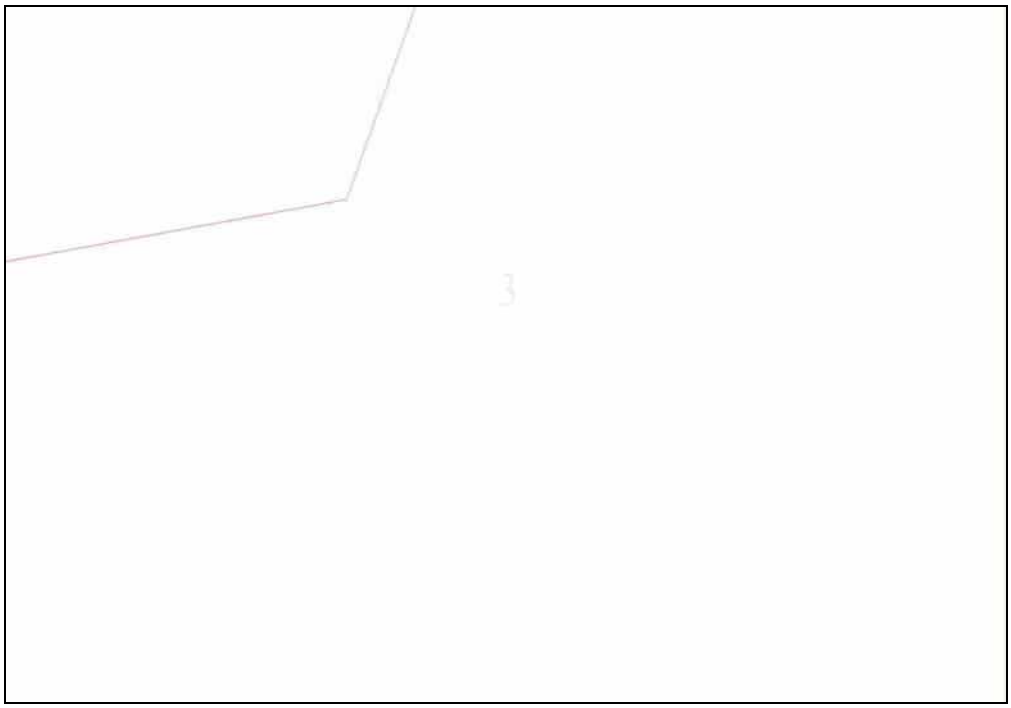
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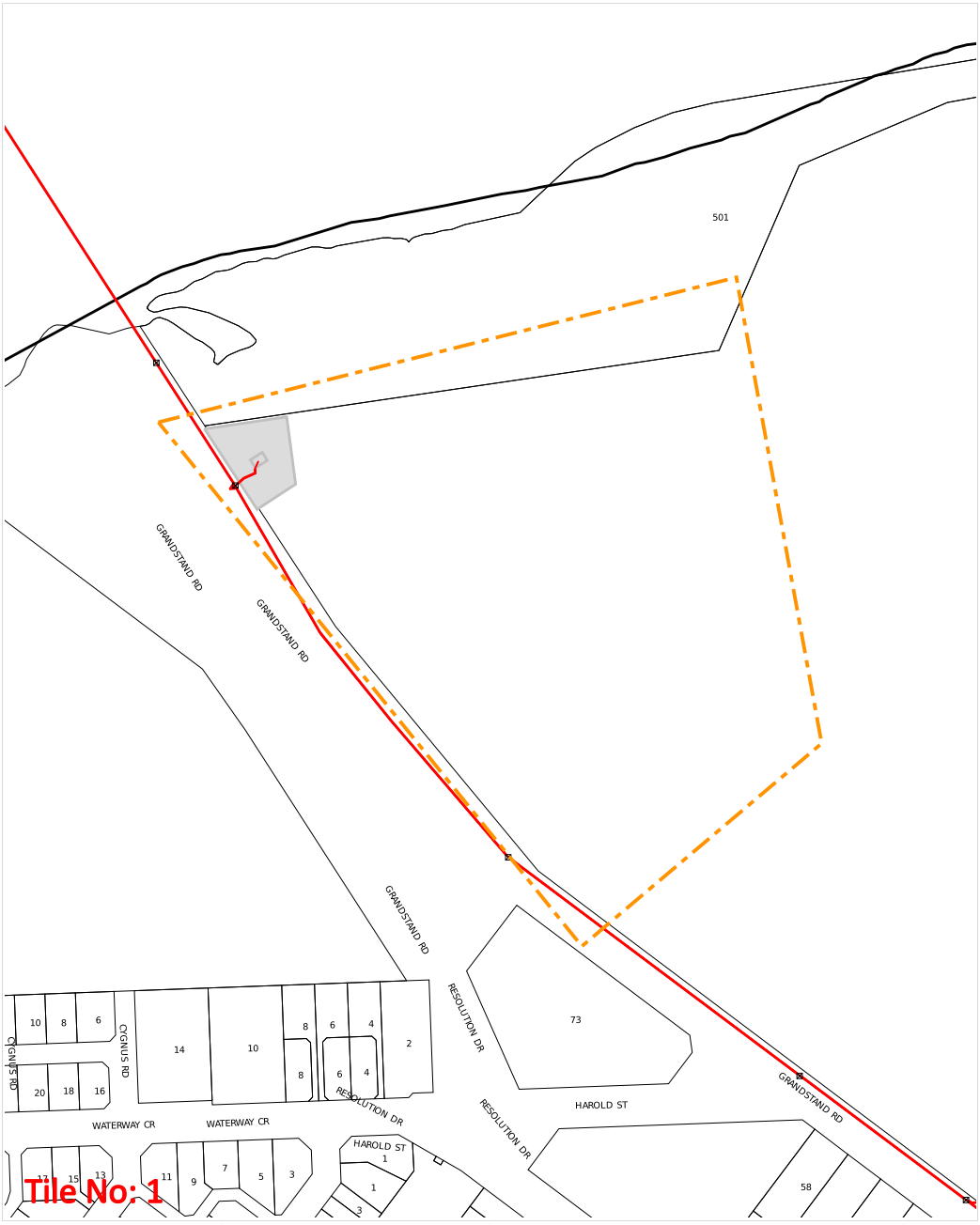
Attachment 12.1.4 Engineering Servicing Report



## Emergency Contacts

You must immediately report any damage to the **nbn™** network that you are/become aware of.
Notification may be by telephone - 1800 626 329.

Attachment 12.1.4 Engineering Servicing Report



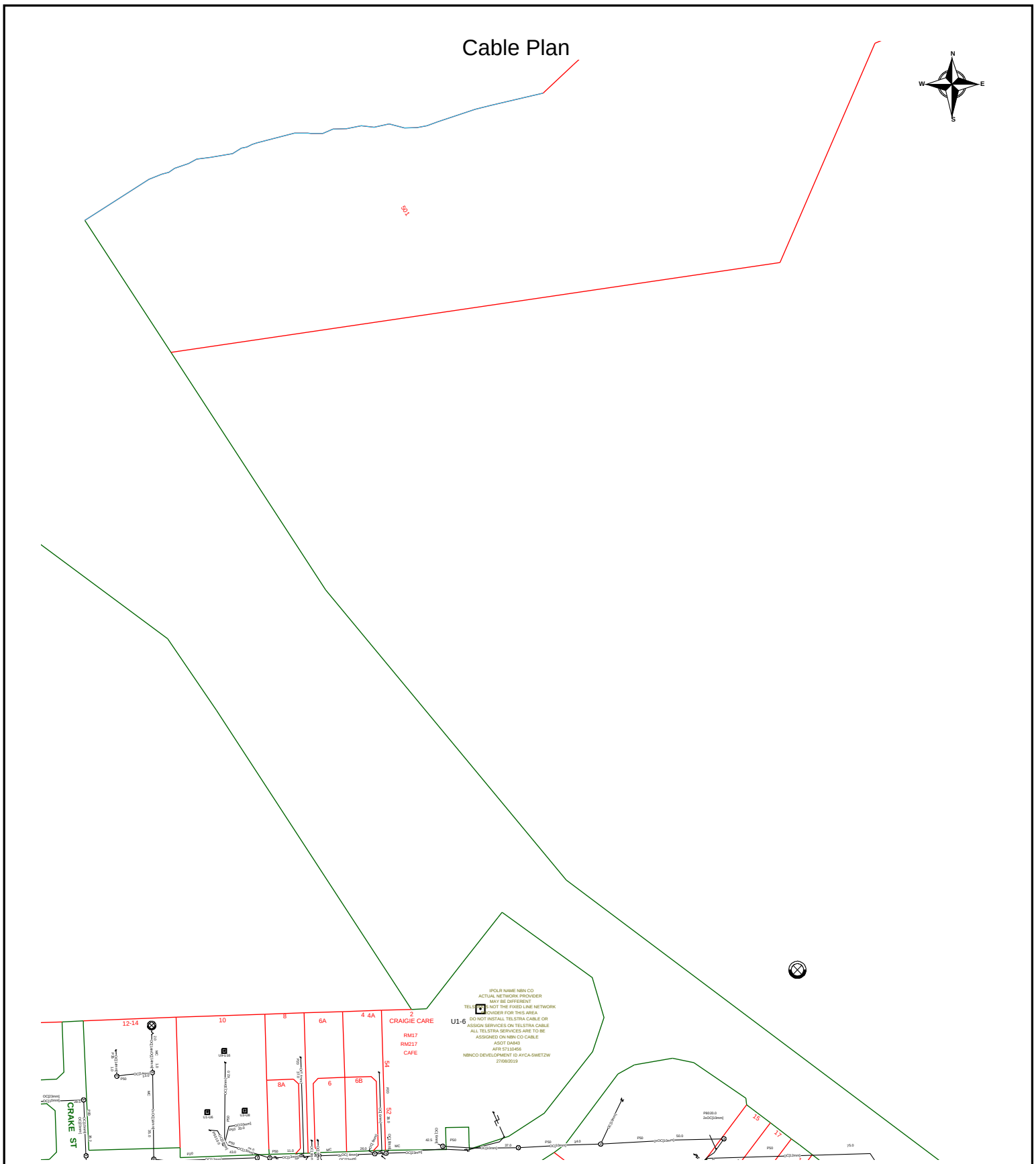

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Sequence Number: 240900413 Date Generated: 21 Jun 2024

For all Optus DBYD plan enquiries –
Email: Fibre.Locations@optus.net.au
For urgent onsite assistance contact 1800 505 777
Optus Limited ACN 052 833 208

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Attachment 12.1.4 Engineering Servicing Report




| | |
|---|---|
| Report Damage: https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment<br>Ph - 13 22 03<br>Email - Telstra.Plans@team.telstra.com<br>Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries | Sequence Number: 240900417 |
| TELSTRA LIMITED A.C.N. 086 174 781 | CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance. |
| Generated On 21/06/2024 19:05:14 | |

The above plan must be viewed in conjunction with the Mains Cable Plan on the following page

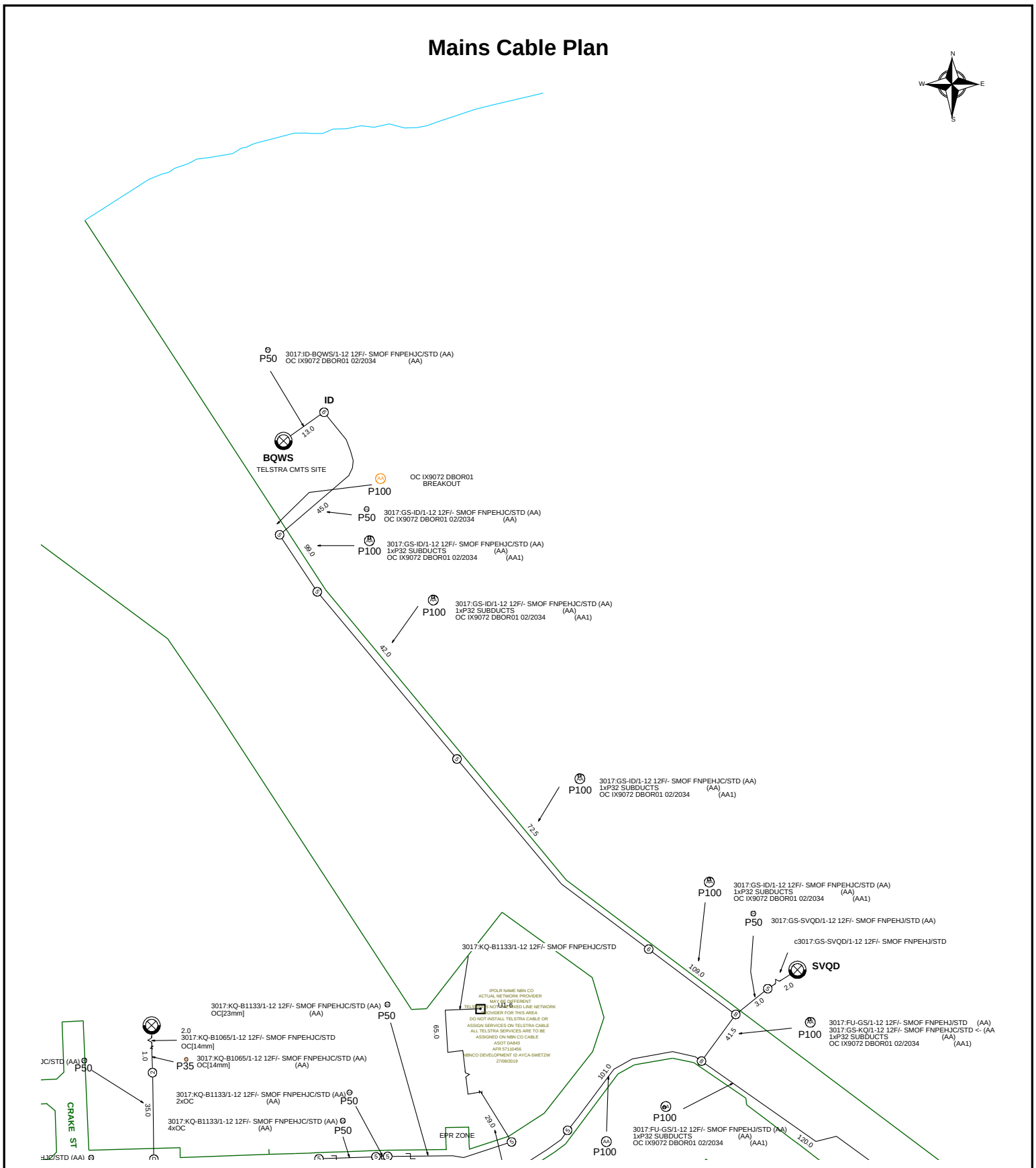
WARNING
Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information.
As such,Telstra supplied location information is indicative only.Spatial accuracy is not applicable to Quality Level D.
Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it.
Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy.
Further on site investigation is required to validate the exact location of Telstra plant prior to commencing construction work.
A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works.

See the Steps- Telstra Duty of Care that was provided in the email response.

**Page 1 of 2**

Attachment 12.1.4 Engineering Servicing Report

## Mains Cable Plan




| | |
|---|---|
| Report Damage: https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment<br>Ph - 13 22 03<br>Email - Telstra.Plans@team.telstra.com<br>Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries | Sequence Number: 240900417 |
| TELSTRA LIMITED A.C.N. 086 174 781 | CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance. |
| Generated On 21/06/2024 19:05:16 | |

WARNING
Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information.
As such,Telstra supplied location information is indicative only.Spatial accuracy is not applicable to Quality Level D.
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Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy.
Further on site investigation is required to validate the exact location of Telstra plant prior to commencing construction work.
A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works.

See the Steps- Telstra Duty of Care that was provided in the email response.

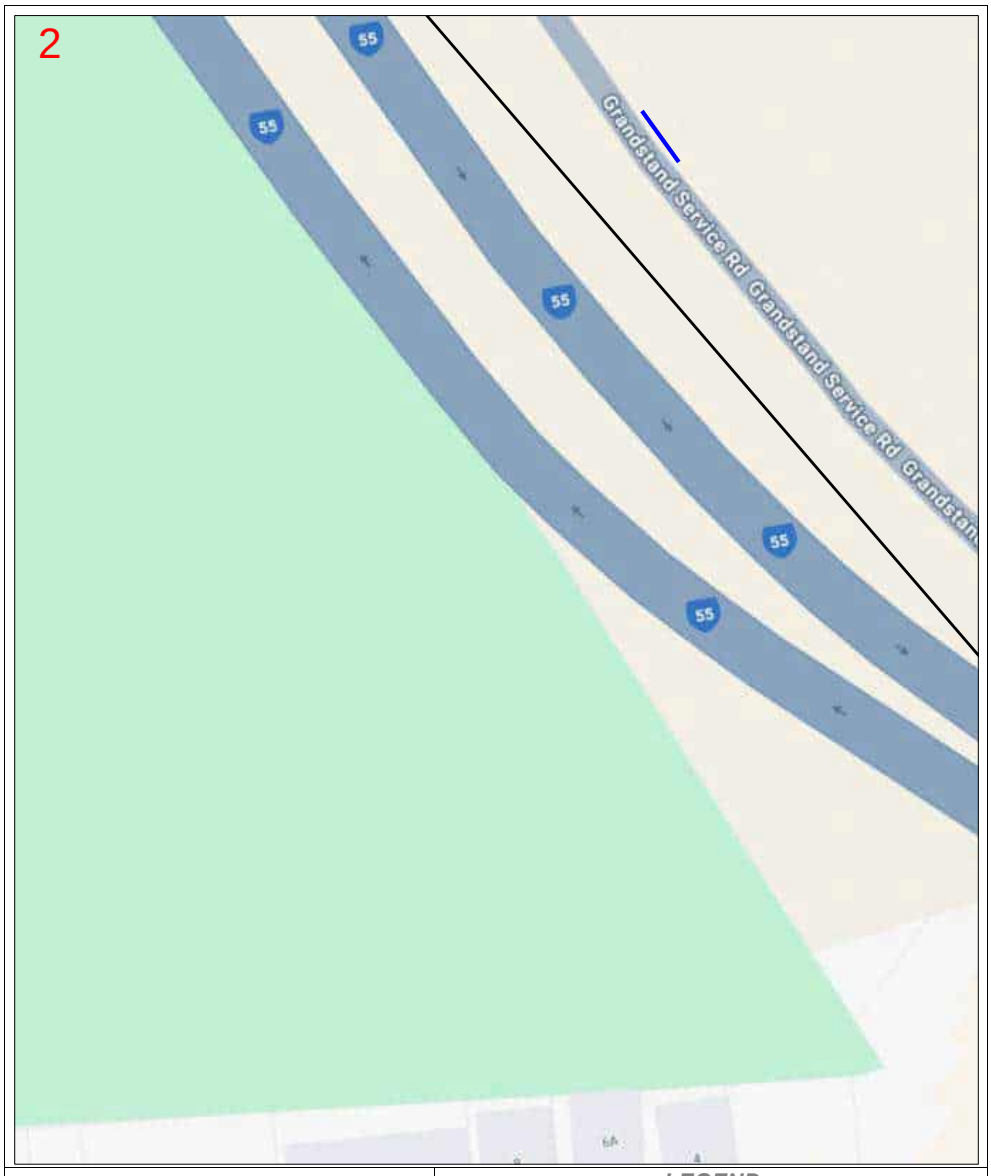
Page 2 of 2

Attachment 12.1.4 Engineering Servicing Report




Page 3

Attachment 12.1.4 Engineering Servicing Report




**Enquiry Number:** 240900414

**Map Sheet:** 2

**Scale:** 1: 750

0 0.008km

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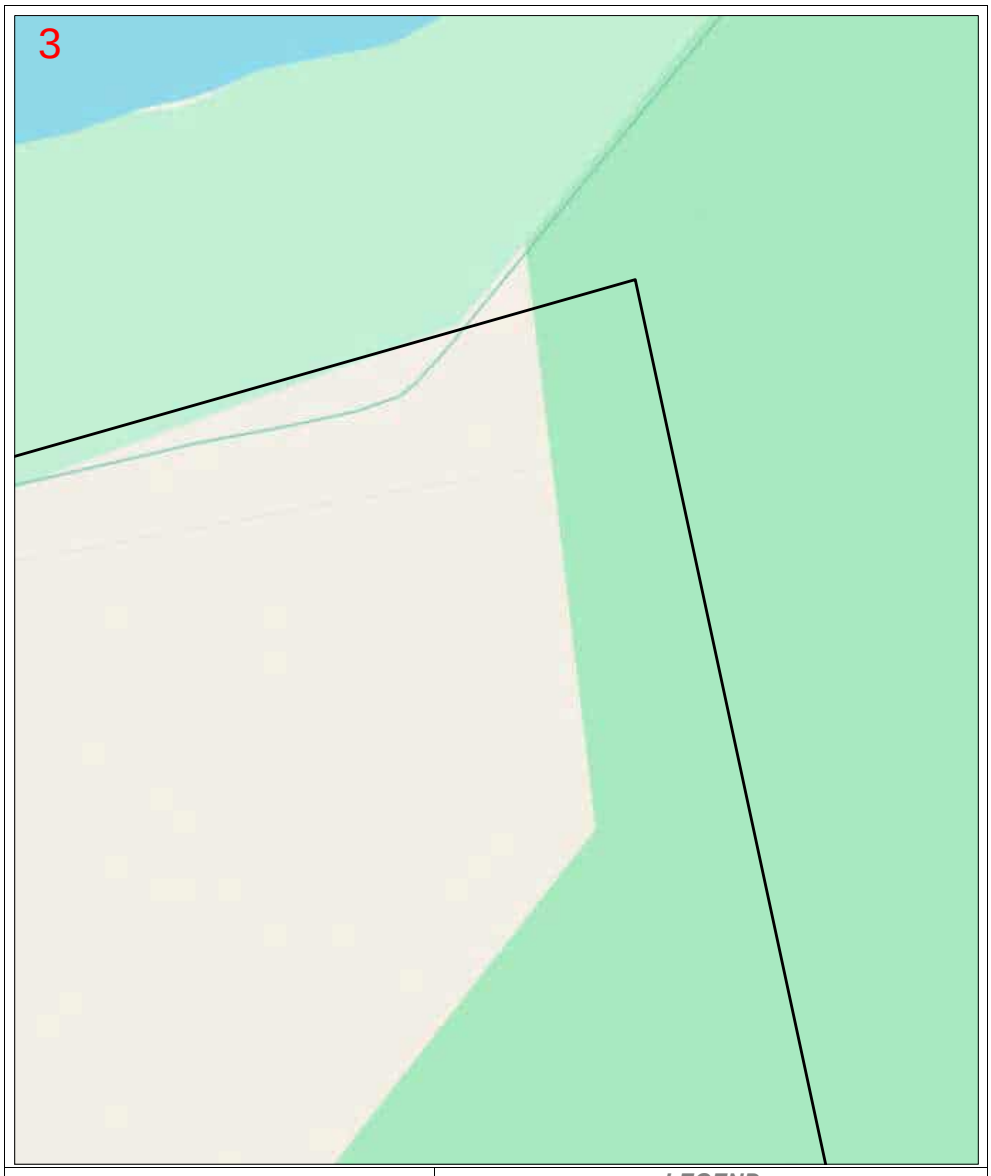
LEGEND

BYDA Work Area

| | |
|---|---|
| AAPT/PowerTel Pit | TransACT Pit |
| AAPT/PowerTel Duct | TransACT Duct |
| DDA Pit | SOUL Pattinson Telecoms Pit |
| DDA Duct | SOUL Pattinson Telecoms Duct |
| Agile/Adam Pit | PIPE Networks Pit |
| Agile/Adam Duct | PIPE Networks Duct |

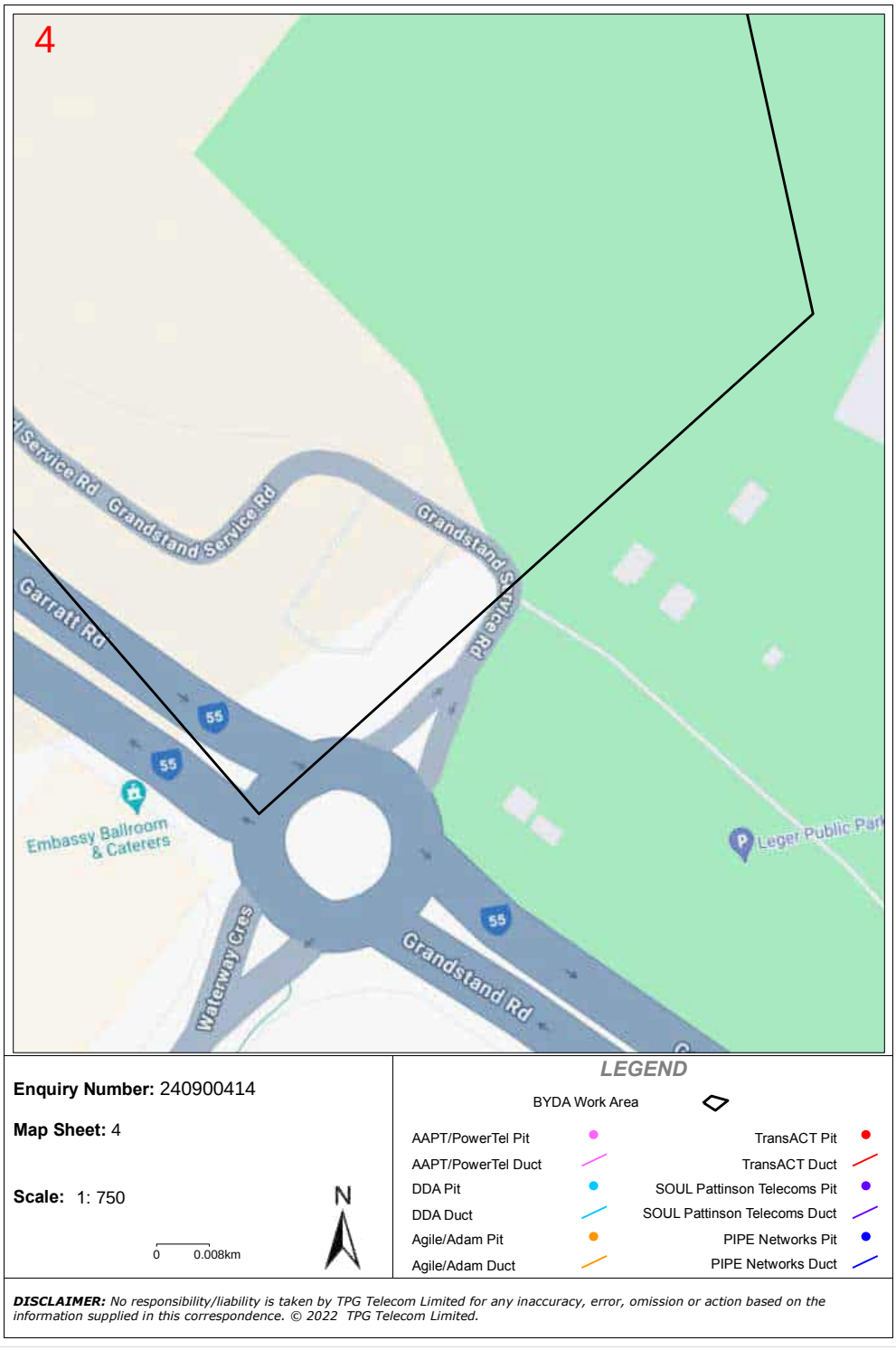
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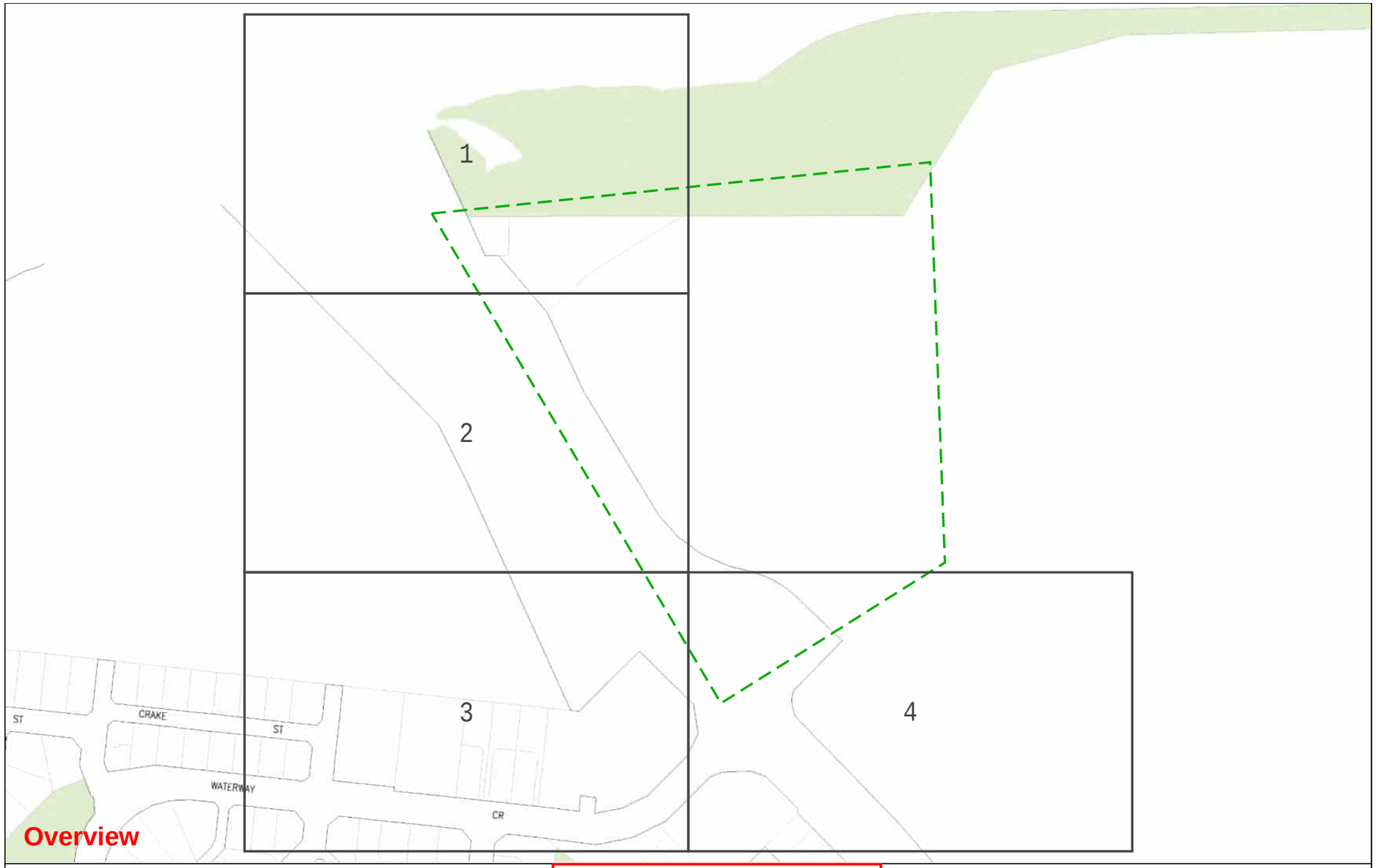

Page 5

Attachment 12.1.4 Engineering Servicing Report




Page 6

Attachment 12.1.4 Engineering Servicing Report




WATER CORPORATION

Scale: 1:2306
Job No.: 36962214
Sequence No.: 240900418
Print Date: 21 Jun 2024

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Water

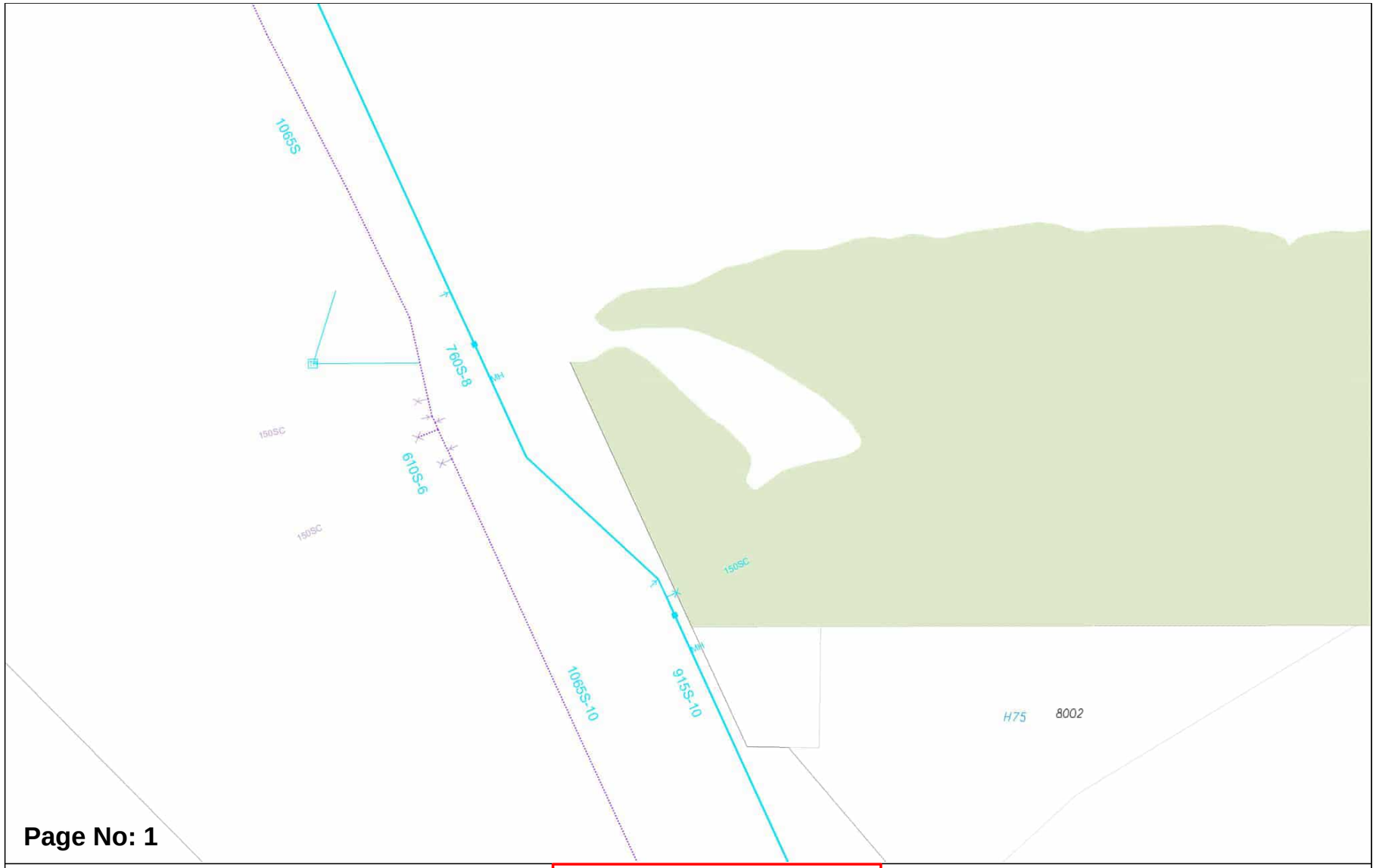
WARNING ASSET PROTECTION APPROVAL MAY BE REQUIRED
Apply for approval to work near our assets at:
Working near assets (watercorporation.com.au)
Unauthorised work within prescribed proximities of Water Corporation Assets is prohibited.

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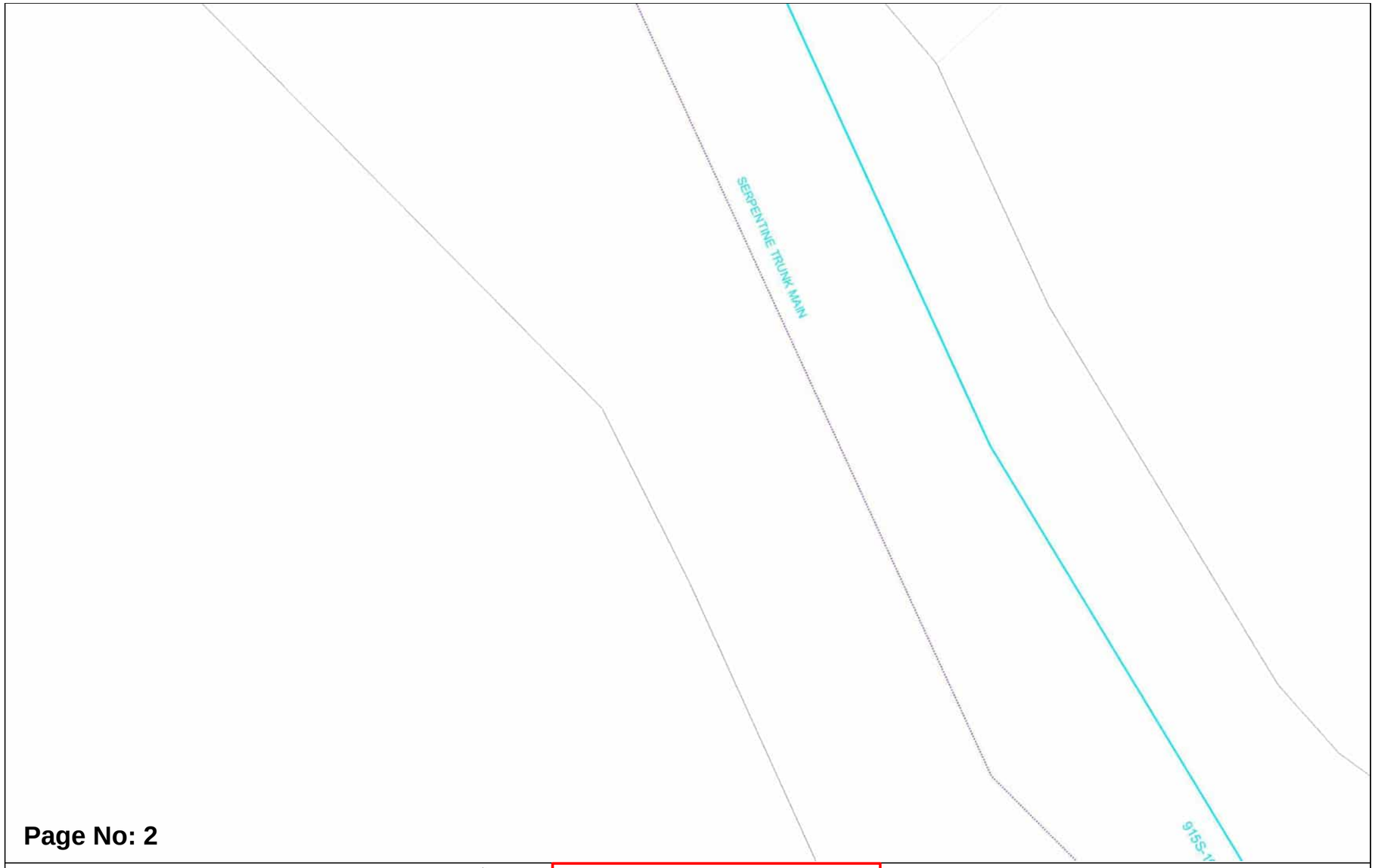
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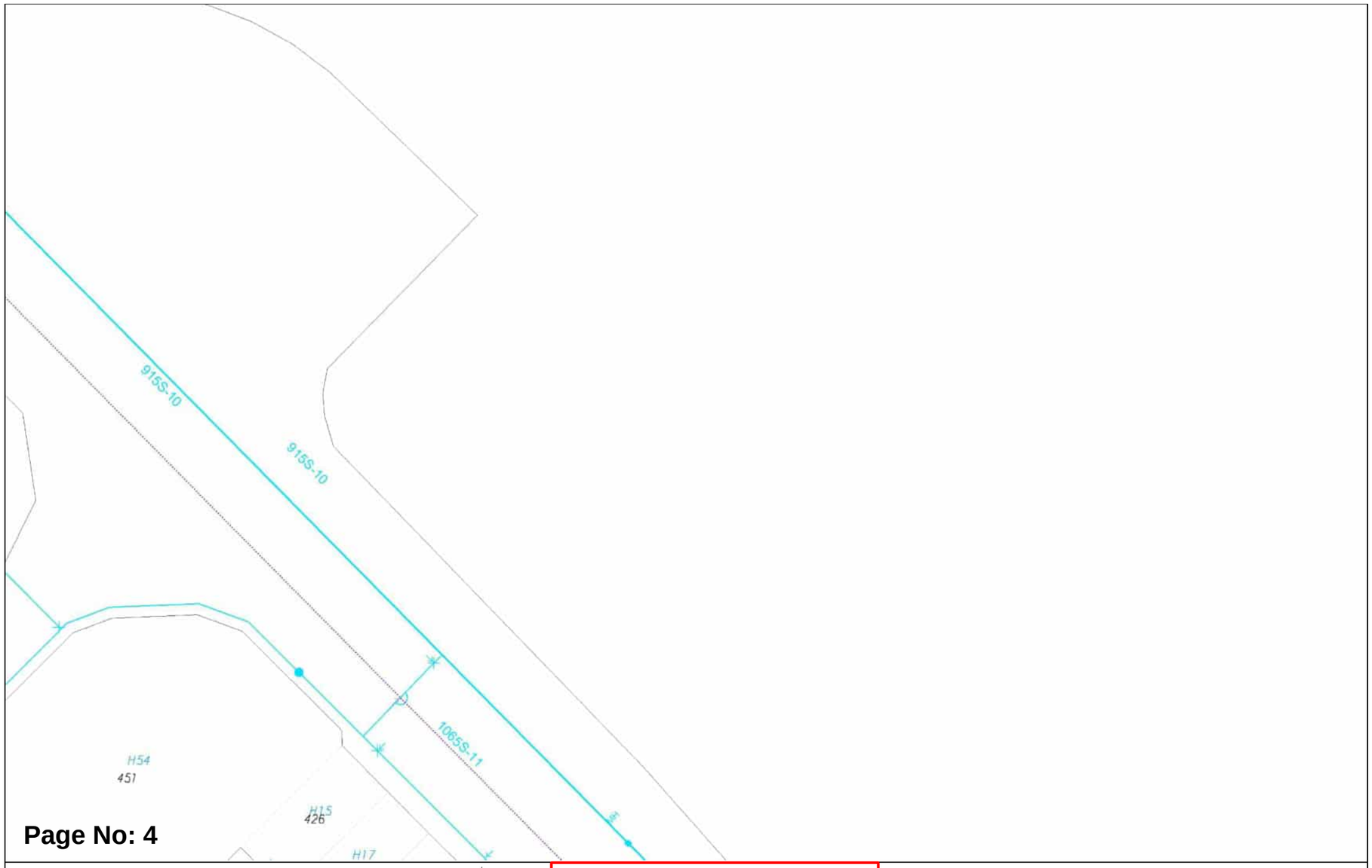
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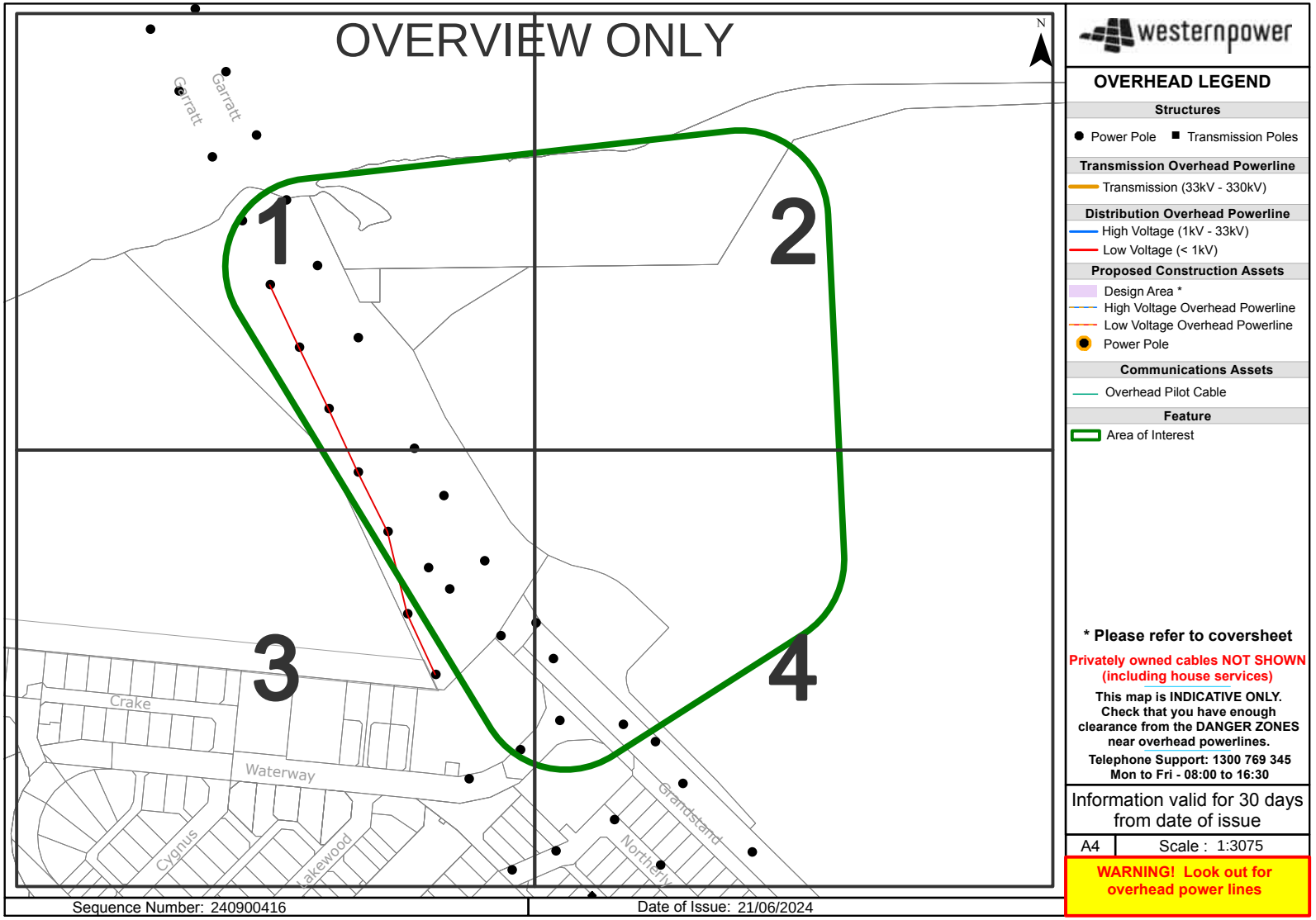
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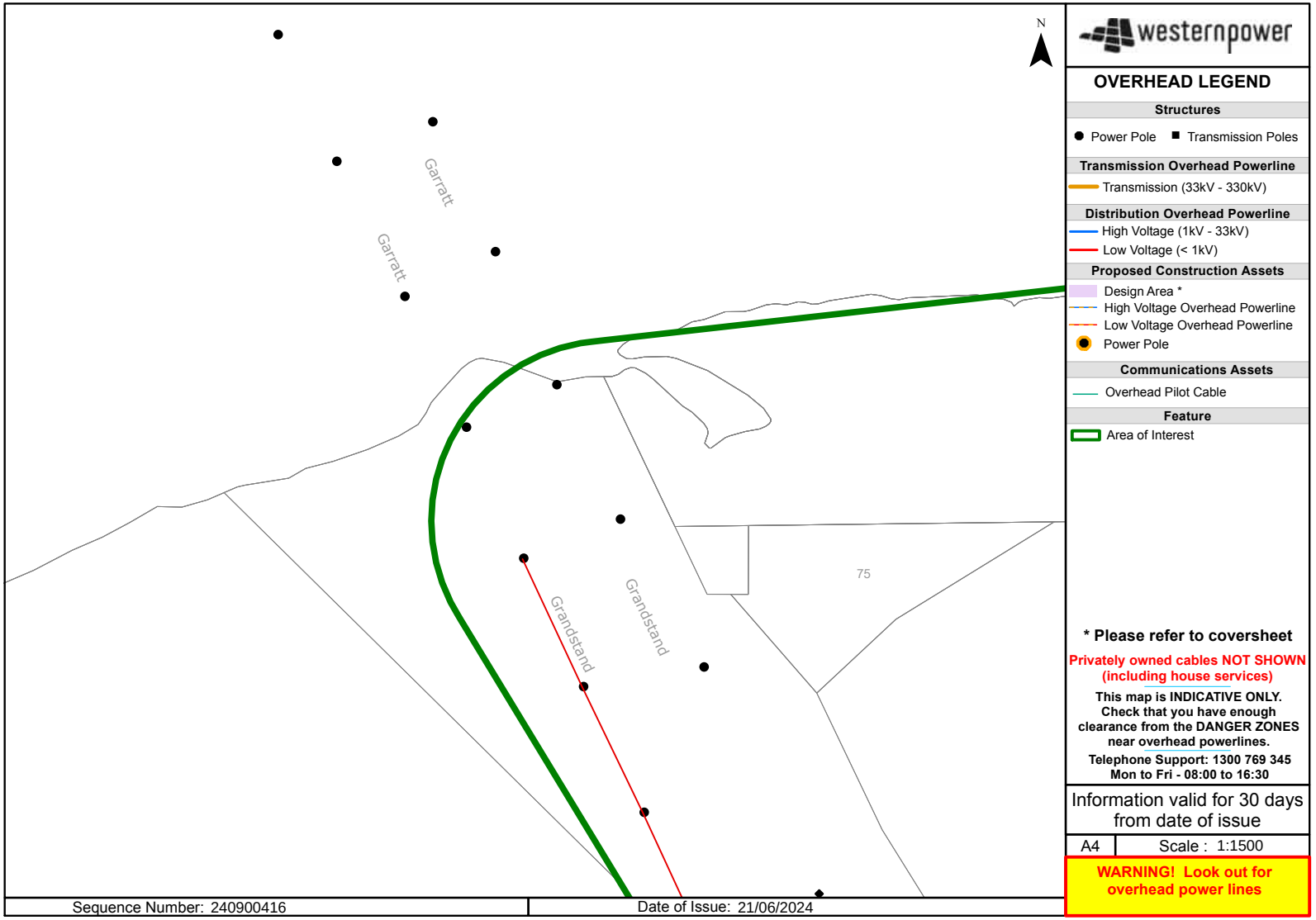
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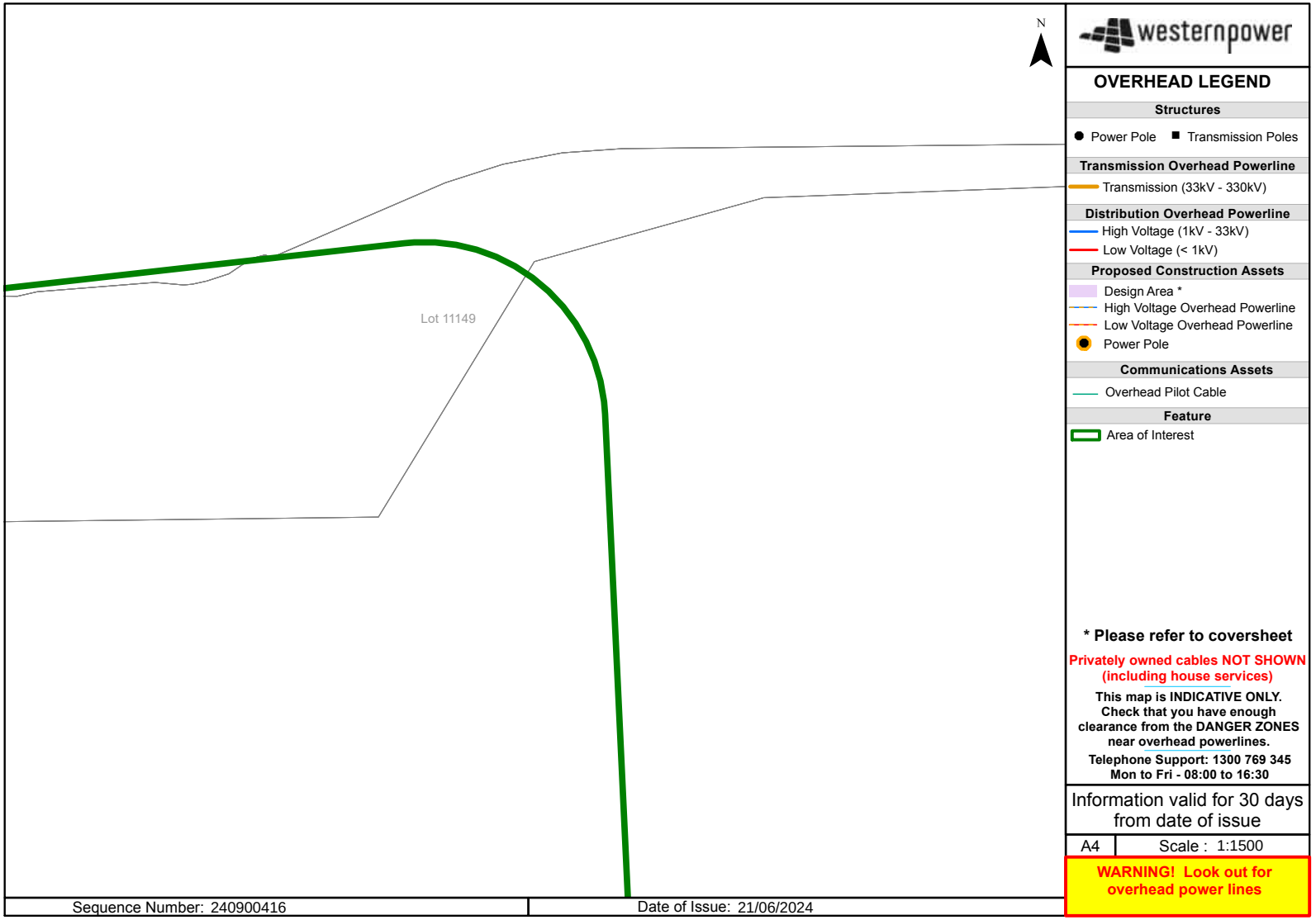
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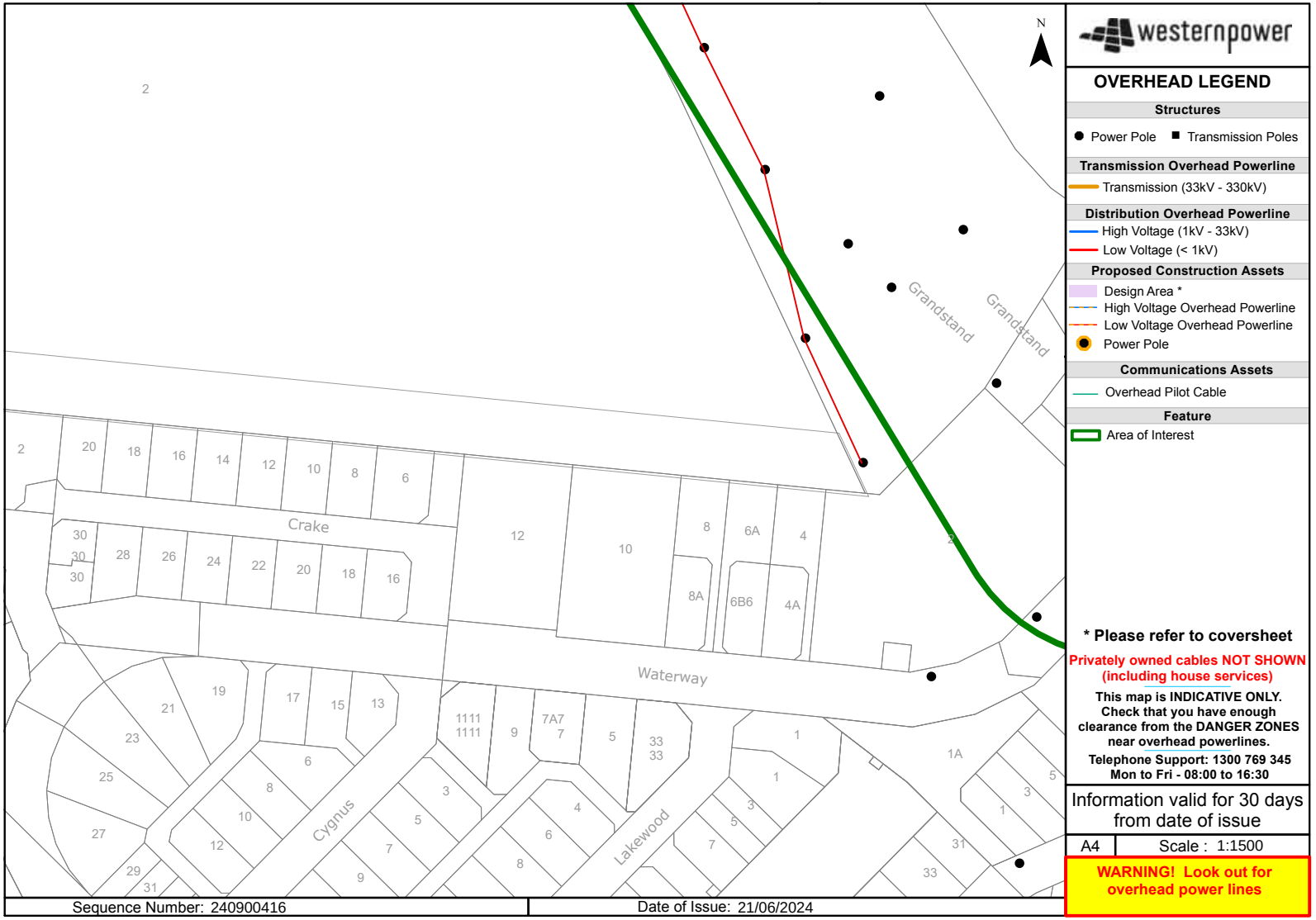
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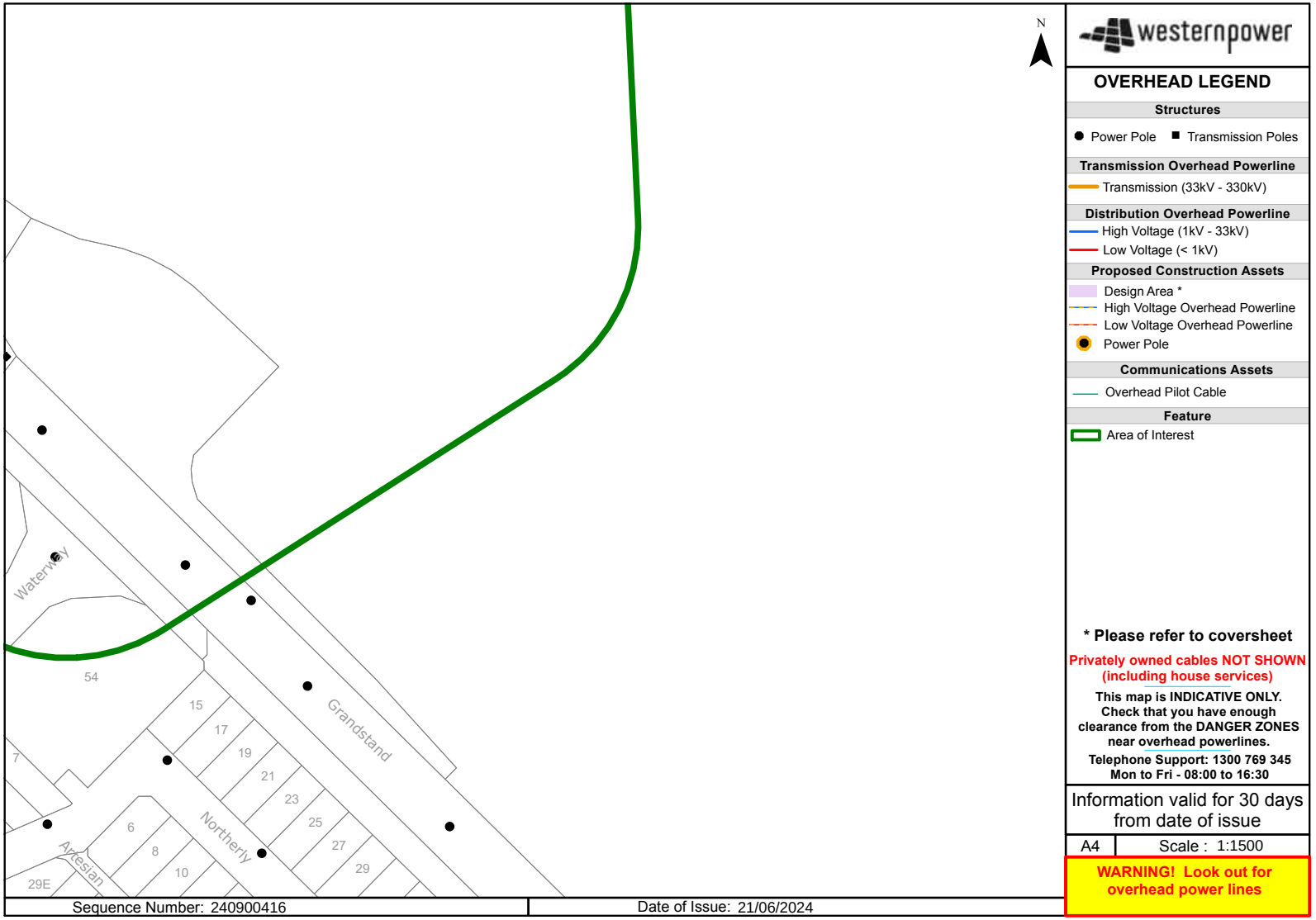
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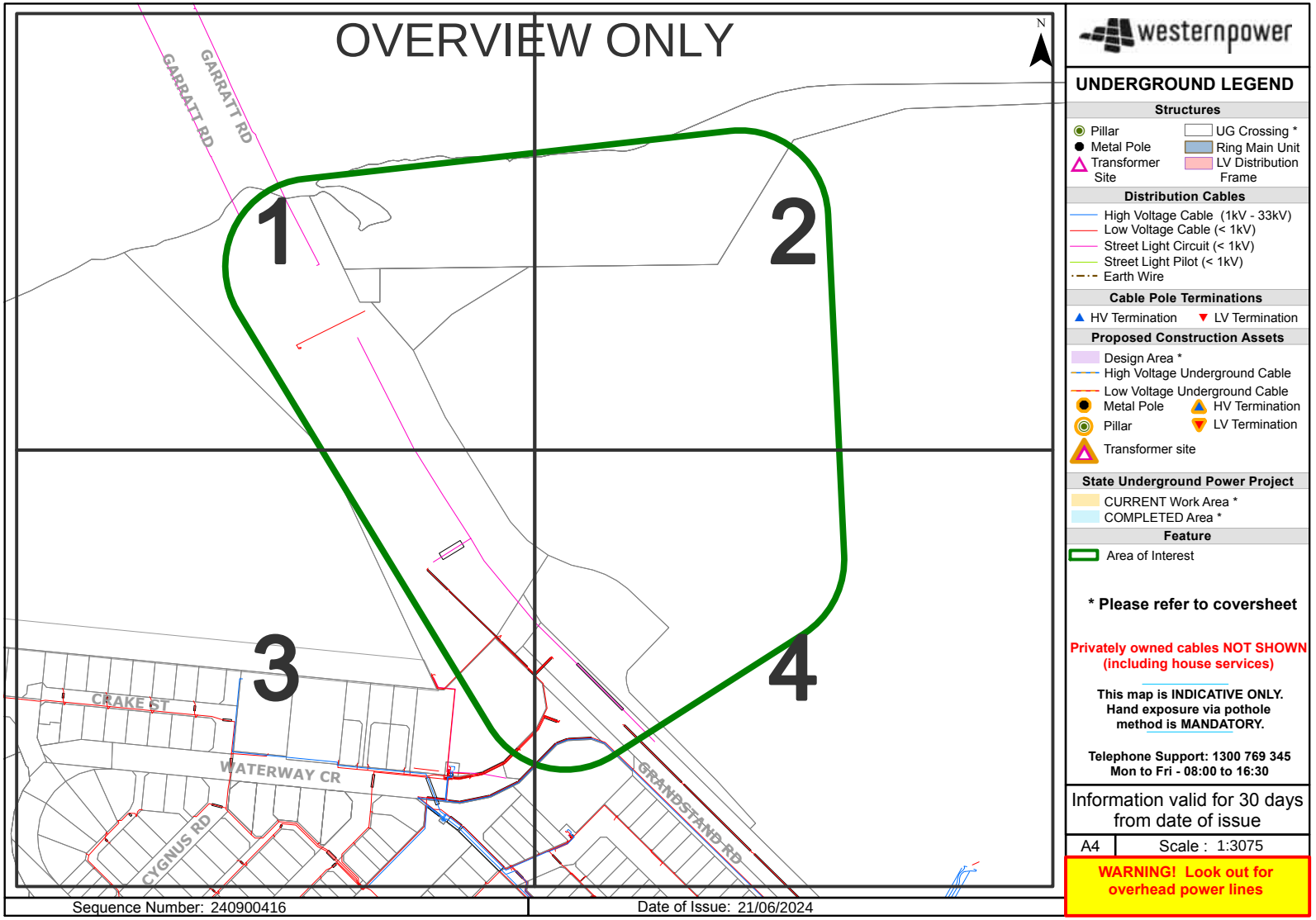
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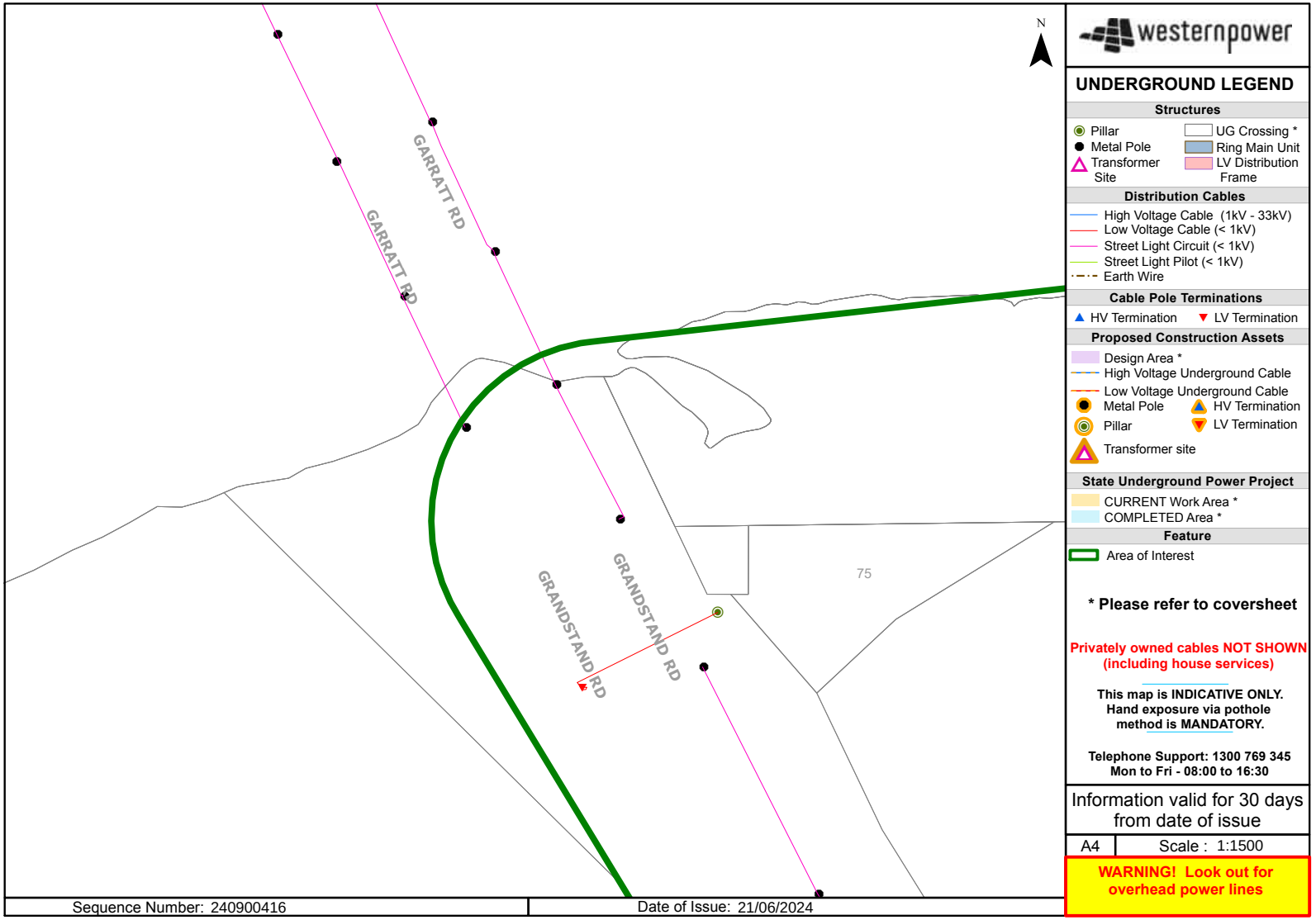
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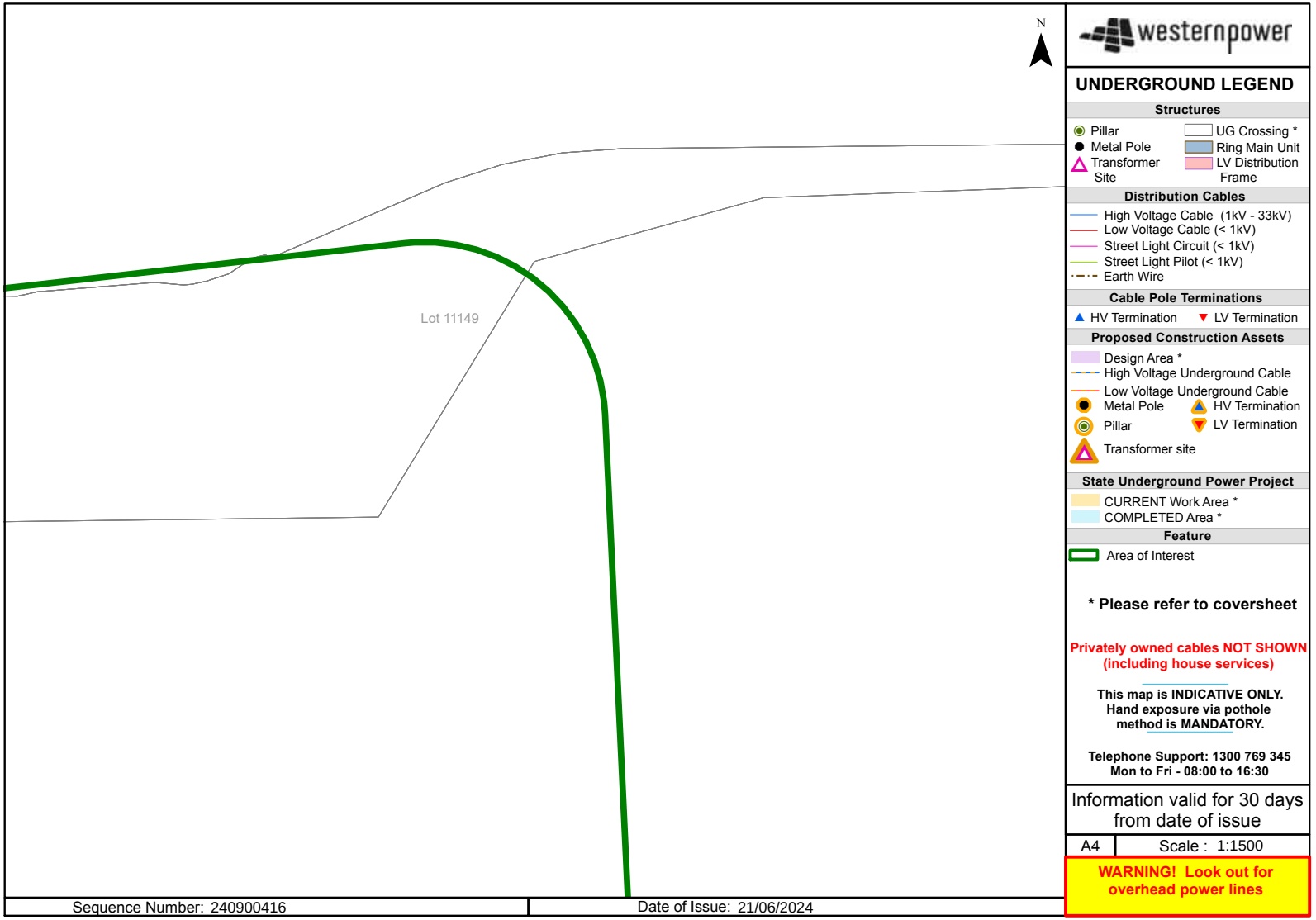
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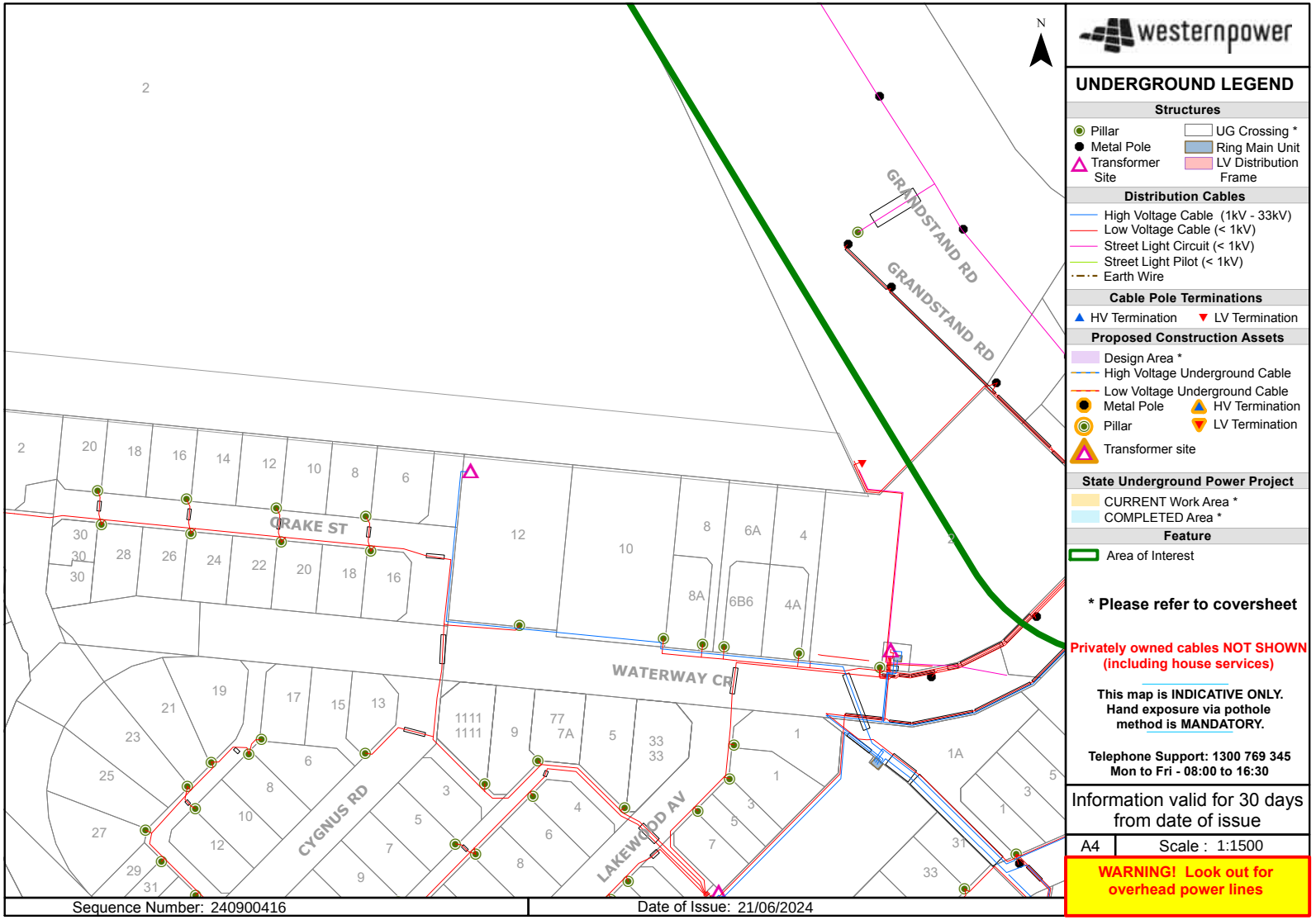
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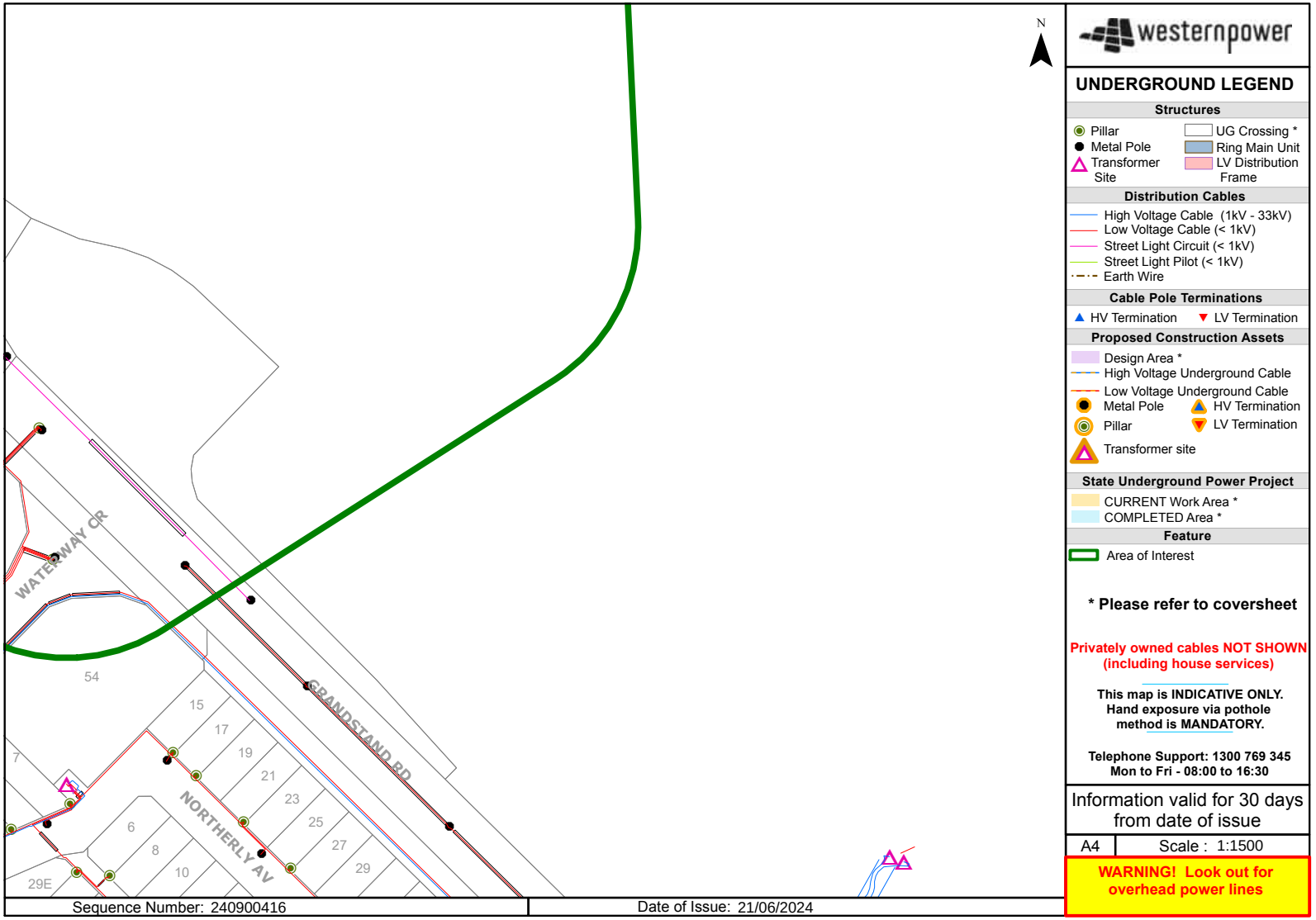
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**Perth Racing**

# Ascot Racecourse Local Structure Plan and Scheme Amendment

## Transport Impact Assessment

May 2024

Project Code: 07575

**PJA**
Level 9, Quay Perth
18 The Esplanade
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WA 6000
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Attachment 12.1.5 Transport Impact Assessment



Introduction

## Version Control and Approval

| Version | Date | Main Contributor | Issued by | Approved by |
|---|---|---|---|---|
| A - DRAFT | 04 April 2024 | Lucy Briggs / Rodney Ding | TM | TM |
| B - FINAL | 08 May 2024 | Rodney Ding | TM | TM |

**Prepared for:**

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Introduction

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# 1 Introduction

## 1.1 Background

On behalf of Perth Racing (Applicant), Davison Advisory Services commissioned PJA Australia Pty Ltd to prepare this Transport Impact Assessment (TIA) for the proposed Local Structure Plan and the Scheme Amendment for the Applicant's landholding, encompassing Ascot Racecourse and surrounding land in the City of Belmont, Western Australia.

This assessment has been prepared in accordance with the Western Australian Planning Commission (WAPC) *Transport Impact Assessment Guidelines Volume 2 – Planning Schemes, Structure Plans & Activity Centre Plans (2016)*. This is the most appropriate level of TIA for a proposed Local Structure Plan and Scheme Amendment submission.

## 1.2 Summary of TIA

In accordance with WAPC Guidelines for Transport Impact Assessments, this report sets out the details of the proposed Local Structure Plan (LSP) and Scheme Amendment in the context of the movement network, assesses the site in terms of connectivity by active and public transport, parking and vehicular access. The TIA also reviews the future traffic generation of the LSP and any potential impacts that may need to be mitigated.

Under the WAPC Guidelines for TIAs, a LSP and/or Scheme Amendment requires a 'broad brush' assessment of the impacts of the development, given structure planning is for a larger area. This report sets recommendations for more detailed traffic analysis at later stages of the planning process, subject to the LSP and Scheme Amendment being ultimately supported.

This TIA also refers to the developing City of Belmont's Golden Gateway LSP (GGLSP) which currently encompasses part of the land under the ownership of the Applicant, which has been a catalyst to complete this LSP and Scheme Amendment to guide development in this area in a considered way. In pre-submission discussions with the City of Belmont's strategic planners, the support in principle for the Applicant to undertake a LSP has been provided and it is understood that through a later iteration of the concurrent Golden Gateway LSP, the City of Belmont will look to remove the Applicant's landholdings from the GGLSP.

## 1.3 Regional and Local Policy Context

### 1.3.1 Metropolitan Region Scheme (MRS)

The Site area is currently zoned for the most part as 'Private Recreation' for the area in use as Ascot Racecourse, with the surrounding land within the site boundary zoned as 'Urban'. Some land surrounding the site boundary to the north and west is also zoned as 'Parks and Recreation-Restricted Public Access' and the Great Eastern Highway is zoned as a 'Primary Regional Road'. **Figure 1-1** illustrates the site area's MRS zoning in map 16.

**Figure 1-1: MRS Zone Maps 16**




*Source: Metropolitan Region Scheme*

### 1.3.2 City of Belmont Local Planning Scheme No.15

Under the provisions of *the City of Belmont Local Planning Scheme No.15* (LPS No.15) the site area is for the most part zoned as 'Place of Public Assembly' comprising the area in use as Ascot Racecourse, in the southern extent of the site a small parcel is zoned as 'Mixed Use'. The area surrounding the site boundary largely comprises of 'Mixed Use', 'Mixed Business' and 'Residential and Stables' zoning, the latter of which is bespoke to the Ascot Racecourse area and is intended "to provide for compatible and environmentally responsible use of land in proximity" to the Racecourse and Swan River to the north-west.

Part 4 of LPS No.15 sets out the general development requirements for each key zone, inclusive of the minimum car and bicycle parking requirements for largely non-residential land uses (Table 2 and Table 3), residential parking requirements are set out separately. These parking requirements will be considered as the LSP and Scheme Amendment progresses.

**Figure 1-2** illustrates the LSP area zoning in the context of the site area.





**Figure 1-2: City of Belmont's Local Planning Scheme 15**




*Source: Local Planning Scheme 15, Local Zoning, City of Belmont*

### 1.3.3 City of Belmont's Redcliffe Station Precinct Activity Centre Plan & DA6

The Redcliffe Station Precinct Activity Centre Plan (RSPACP) is an extension of the Development Area 6 (DA6) Vision Plan and Implementation Strategy adopted by the City of Belmont in 2014. As set out on Council's website:

*"Development Area 6 (DA6) is DA6) is a redevelopment area bound by Great Eastern Highway, Coolgardie Avenue, Redcliffe Road, Fauntleroy Avenue and Tonkin Highway, as well as Perth Airport's Airport West Precinct. This area can be easily distinguished into two main areas:*

- *Perth Airport's Airport West Precinct*
- *A portion of the Redcliffe neighbourhood between Perth Airport and Great Eastern Highway.*

*Perth Airport Pty Ltd is responsible for planning work for its Airport West Precinct through the preparation and review of the Perth Airport Masterplan.*

*For the remainder of the DA6 Precinct in Redcliffe, in December 2022, the WAPC wrote to advise landowners about the initiation of Improvement Plan 45 – Redcliffe Station Precinct. The Improvement Plan itself does not change the development potential of land at this point in time. Initiating the Improvement Plan is the first step of the planning pathway to establish the appropriate development potential and planning standards for future development in the precinct. The Improvement Plan sets out the broad objectives for the redevelopment of the area, after which an Improvement Scheme is prepared. The Improvement Scheme will set out the specific standards for future development.*

*The DPLH has been tasked to prepare the Improvement Scheme and has advised that the City will continue to play an important role in the development and delivery of this planning framework for the precinct. The Department is currently making arrangements to progress an Improvement Scheme for the Development Area 6 Precinct, which will take several months to prepare. Once drafted, there will be a minimum 90-day consultation period. The Department will subsequently review submissions and assess if any modifications to the Improvement Scheme are necessary, prior to making a recommendation to the Minister for Planning".*

The City of Belmont's Vision Plan for DA6 area is shown in Figure 1-3.

**Figure 1-3: DA6 Vision Plan**




*Source: City of Belmont*

### 1.3.4 Recent Movement Network Upgrades in Ascot

The City of Belmont confirmed the following recent movement network upgrades in the vicinity of the subject site over the last approximate three years:

a) Network changes due to the Tonkin Gap Project: Motorists using Garratt Road bridge to access Great Eastern Highway and Guildford Road rather than the previous Tonkin Highway route increased and the City observed increased rat running over Stanton Road bridge, Abernethy Road (entire route), Hardey Road and Kooyong Road.

Introduction

b) Redcliffe Train station opened 9 October 2022. This enabled bus network changes including new routes and frequency every 10 minutes. New super-buses will be established from the train station to the Perth CBD via Great Eastern Highway.

c) A 24/7 Woolworths opened near DFO late 2023.

d) Marina Drive residential development is complete and operational.

e) Belmont is slowing in rate of redeveloping the blocks of land from single site dwellings to multi-dwellings.

f) The Springs development area near Rowe Avenue & Riversdale Road, Rivervale: Increase in residential development from The Springs development. City is planning to restrict one car bay per unit, allowing all other on-street bays to be for visitors and people visiting the commercial shops and local businesses. The City has installed 'P' signs which have encouraged Fly-in/Fly-out (FIFO) workers and ALL DAY motorists heading to the Perth CBD. The City has commenced a parking strategy to review the parking. No paid parking will be involved.

Among the aforementioned projects, the Tonkin Gap project and the Marina Drive residential development are expected to directly impact the Ascot LSP area. Specifically, the Marina Drive development serves as an access point to/from Resolution Drive, via the western arm of the existing roundabout. Meanwhile, the Tonkin Gap project's construction diversions were routed via Garratt Road and subsequently Grandstand Road. However, with the recent completion of new traffic counts in 2024 as part of this Ascot LSP, both aforementioned projects (now complete) have been incorporated into the updated traffic counts, providing a basis for assessing the network's suitability and functionality.

# 2 Existing Situation

## 2.1 Existing Site Context and Land Uses

The Site is located in the Ascot suburb of Perth, immediately south of the Swan River, bound to the south-west by Grandstand Road (State Road 55) and south-east/east by Resolution Drive and largely residential land uses, with some stables.

As the site is already well established as Ascot Racecourse, vehicular access can already be achieved from several points along Grandstand Road and Matheson Road, via Raconteur Drive (from Grandstand Road) and further minor accesses via the residential streets to the south-east of the site such as Hardey Road (north), Carbine Street, Leake Street and Ascot Place. The location of the Site is illustrated in **Figure 2-1**.

**Figure 2-1: Site Location**




*Source Mapping: NearMap 2024*

## 2.2 Existing Road Network

The Site is located north-east of Grandstand Road and north-west of Matheson Road and Resolution Drive. Each carriageway abutting the site boundary is within the care and control of the City of Belmont, though the extent of Matheson Road and Raconteur Drive that sits within the site boundary is under the ownership of the Applicant.

**Figure 2-2** shows the layout and classification of the roads surrounding the site, including the primary road network. Grandstand Road is classified under the Main Roads WA Road Hierarchy as a Distributor A, though it is worth noting that further north, the Garratt Road Bridge is classified as a Primary Distributor. This will be due to the management of the bridge sitting with Main Roads rather than the Local Government. Grandstand Road is a dual carriageway road, each side typically measuring 7.0m to 7.8m wide. No on-road cycle lane facilities are provided. A single continuous shared use path along the north-eastern side of Grandstand Road exists, with intermittent (not all continuous) provision on the south-western side. For large portions, the footpaths are separated from the carriageway by a landscaped kerbed area or colour-contrasted paving to provide separation from the road for a more pleasant walking/riding experience.

Raconteur Drive diverts east from Grandstand Road, as a one-way single-lane carriageway providing access to Matheson Road and an existing car park for Ascot Racecourse (horse float car park). Again, there are no on-road cycle lane facilities but a pedestrian footpath exists on the northern side of the carriageway connecting to Grandstand Road and another pedestrian path exists along Matheson Road (southern side) from east of Carbine Street all the way to Moreing Street. There is also a horse path along the northern side of Matheson Road that extends from the racecourse in an easterly direction. Beyond the site boundary, Matheson Road is classified as an Access Road under the Mains Road WA Road Hierarchy and no pedestrian or cycle infrastructure is noted on this route.

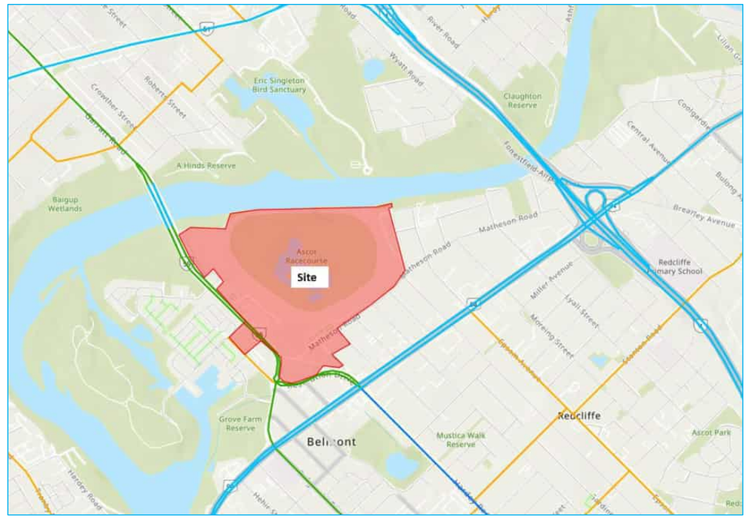
South of the site boundary, Resolution Drive continues west as a Distributor A route, from the Grandstand Road / Stoneham Street / Resolution Drive roundabout intersection. Resolution Drive is a single carriageway with shoulders of approx. 1.8m, each side of the approx. 3.5m carriageway. East of the roundabout, Resolution Drive meets the Great Eastern Highway (National Route 1 / National Highway 94) and Hardey Road via a signal-controlled intersection.

Stoneham Street continues ahead from Grandstand Road as a dual carriageway on approach to a signal-controlled intersection with the Great Eastern Highway and Belgravia Street. Great Eastern Highway is classified as a Primary Distributor while Belgravia Street continues from Stoneham Street as a Distributor A.

**Figure 2-3** over page sets out the speed limits for the road network surrounding the site. Grandstand Road, Resolution Road, Stoneham Street and the Great Eastern Highway are all subject to a 60km/hr speed limit. The remaining access roads surrounding the site are subject to a 40km/h speed limit, including Matheson Road.

Existing Situation

**Figure 2-2: Road Hierarchy**

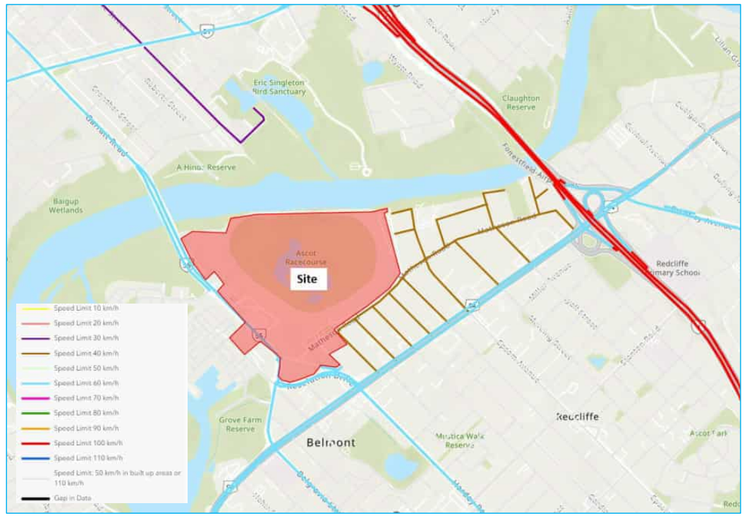



*Source: MRWA Road Information Mapping System*

Road classifications are defined in the Main Roads Functional Hierarchy as follows:

- **Primary Distributors** (light blue): Form the regional and inter-regional grid of MRWA traffic routes and carry large volumes of fast-moving traffic. Some are strategic freight routes, and all are National or State roads. They are managed by Main Roads.
- **Regional Distributors** (red): Roads that are not Primary Distributors but link significant destinations and are designed for efficient movement of people and goods within and beyond regional areas. They are managed by Local Government.
- **District Distributor A** (green): These carry traffic between industrial, commercial, and residential areas and connect to Primary Distributors. These are likely to be truck routes and provide only limited access to adjoining property. They are managed by Local Government.
- **District Distributor B** (dark blue): Perform a similar function to "District Distributor A" but with reduced capacity due to flow restrictions from access to and roadside parking alongside adjoining property. These are often older roads with traffic demand in excess of that originally intended. District Distributor A and B roads run between land-use cells and not through them, forming a grid that would ideally be around 1.5 kilometres apart. They are managed by Local Government.
- **Local Distributors** (orange): Carry traffic within a cell and link District Distributors at the boundary to access roads. The route of the Local Distributor discourages through traffic so that the cell formed by the grid of District Distributors only carries traffic belonging to or serving the area. These roads should accommodate buses but discourage trucks. They are managed by Local Government.
- **Access Roads** (grey): Provide access to abutting properties with amenity, safety and aesthetic aspects having priority over the vehicle movement function. These roads are bicycle and pedestrian friendly. They are managed by Local Government.

**Figure 2-3: Speed Classifications**




*Source: MRWA Road Information Mapping System*

## 2.3 Existing RAV Network

The road network around the site does not currently form part of the Restricted Access Vehicle (RAV) Network.

## 2.4 Existing Key Intersections

The key intersections within the study area are as follows, with further detail and layouts shown below:

- Resolution Drive / Stoneham Street / Grandstand Road Roundabout
- Raconteur Drive / Grandstand Road Intersection
- Resolution Drive / Great Eastern Highway / Hardey Road Signalised Intersection
- Stoneham Street / Great Eastern Highway / Belgravia Street Signalised Intersection
- Garratt Road / Guildford Road Signalised Intersection.

All of the above intersections are modelled for traffic performance in this TIA with the exception of the Guildford Road intersection which is some 1.7km away from the LSP area.

**South of Site:**

Resolution Drive / Stoneham Street / Grandstand Road: The 4-way roundabout is located approx. 700m south of the site and connects Grandstand Road (providing several site accesses) with the Great Eastern Highway further south. Figure 2-4 shows the existing geometry of the intersection, Grandstand Road and Stoneham Street both have two-lane approaches to the roundabout while both approaches from Resolution Drive have a single lane approach.

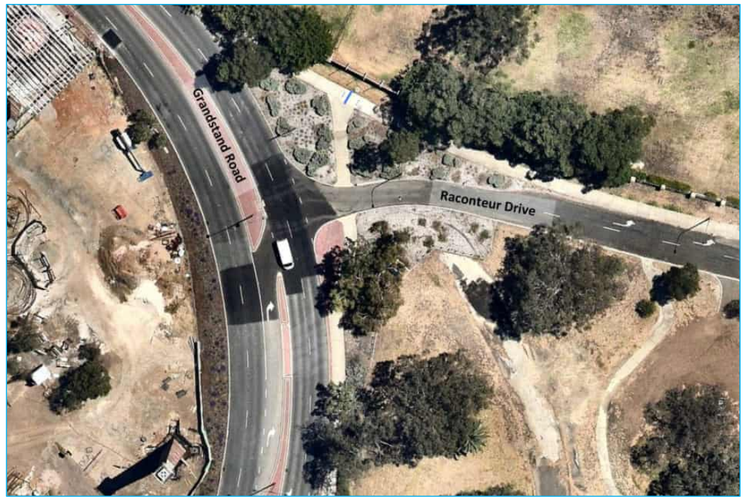
**Figure 2-4: Resolution Drive / Stoneham Street / Grandstand Road – 4-way roundabout**




*Source Mapping: NearMap 2024*

Raconteur Drive / Grandstand Road: The 3-way priority-controlled intersection is located approx. 500m south of the site and provides access to Raconteur Drive connecting to Matheson Road for one of the Ascot Racecourse car parks. As Raconteur Drive is one-way in this section, the intersection allows only left-in and right-in turning movements from each side of Grandstand Road (unless otherwise permitted under race day traffic management controls). **Figure 2-4** shows the existing geometry of the intersection.

**Figure 2-5: Raconteur Drive / Grandstand Road – 3-way priority-controlled intersection (left-in / right in only)**




*Source Mapping: NearMap 2024*

Resolution Drive / Great Eastern Highway / Hardey Road: The 4-way signalised intersection is located approx. 1km south of the site and provides access to existing residential areas to the south-east of Ascot Racecourse. **Figure 2-4** shows the existing geometry of the intersection. This includes three through lanes in each direction on the Great Eastern Highway, an intersection bus queue jump lane, a left-turn lane and a right-turn/U-turn lane.

Existing Situation

**Figure 2-6: Resolution Drive / Great Eastern Highway / Hardey Road – 4-way signalised intersection**




*Source Mapping: NearMap 2024*

Stoneham Street / Great Eastern Highway / Belgravia Street Signalised Intersection: The 4-way signalised intersection is located approx. 1km south of the site and provides access to existing residential areas to the south-east of Ascot Racecourse. **Figure 2-7** shows the existing geometry of the intersection. This includes three through lanes in each direction on the Great Eastern Highway, as well as bus queue jump lane for buses, a left-turn lane and a right-turn/U-turn lane.

**Figure 2-7: Stoneham Street / Great Eastern Highway / Belgravia Street – 4-way signalised intersection**




*Source Mapping: NearMap 2024*

**North-West of the Site:**

Garratt Road / Guildford Road Signalised Intersection: This 4-way signalised intersection is located approximately 1.7km north-west of the site and provides access to existing residential areas to the north-west of Ascot Racecourse. **Figure 2-8** shows the existing geometry of the intersection.

Existing Situation

**Figure 2-8: Garratt Road / Guildford Road – 4-way signalised intersection**




*Source – NearMap 2024*

## 2.5 Existing Traffic Volumes

PJA contacted the City of Belmont, who kindly provided their latest traffic count data for the intersection of Resolution Drive/Grandstand Road/Stoneham Street from surveys undertaken in 2017 as part of the GGLSP studies presently being undertaken by the City. In addition to this, recent traffic counts were commissioned by PJA as part of the Ascot Racecourse project in February 2024.

Complementing the existing SCATS traffic counts at the signalised intersections, traffic counts were undertaken at the intersection of Resolution Drive/Raconteur Drive priority-controlled intersection and Grandstand Road/Waterway Crescent roundabout.

Midblock traffic counts were sourced from the Main Roads TrafficMap, and these indicate that there are the following daily traffic flows on the key roads near the Ascot Racecourse:

- Grandstand Road 16,670 vehicles per day (vpd) – 2018 counts
- Resolution Drive 7,860 vpd – 2021 counts
- Stoneham Street 14,270 vpd – 2018 counts.

Review of these midblock traffic flows over an extended period[1] up to the present day, indicates that traffic flows in the Ascot area have been increasing by approximately 0.75% per annum. Advice from the City, informed from the development of the traffic model for the Golden Gateway LSP, has indicated a 0.5% growth rate.

Thus, for the derivation of equivalent 2024 traffic flows for the intersection of Resolution Drive/Grandstand Road/Stoneham Street, the traffic flows to and from the main legs of the intersection has been increased by 0.5% per annum from 2017 to 2024. This was discussed with the City as being appropriate for use for the Ascot LSP.

These actual and/or derived counted 2024 traffic flows are shown below in Figure 2-9.

**Figure 2-9: Peak Hour 2024 Traffic Flows**




## 2.6 Existing Pedestrian / Cycle Networks

Existing pedestrian / cycle networks are illustrated in **Figure 2-10.** The first part of the below figure shows the proximity of the Perth-Midland Principal Shared Path (PSP) to the site, as it links through Meltham and Bayswater north of the site. The Perth-Midland PSP is a high-quality urban dual-use pathway which runs parallel to the Midland railway line. To access the PSP from the site, shared used paths are available on the northern side of the Garratt Road Bridge to/from the site which

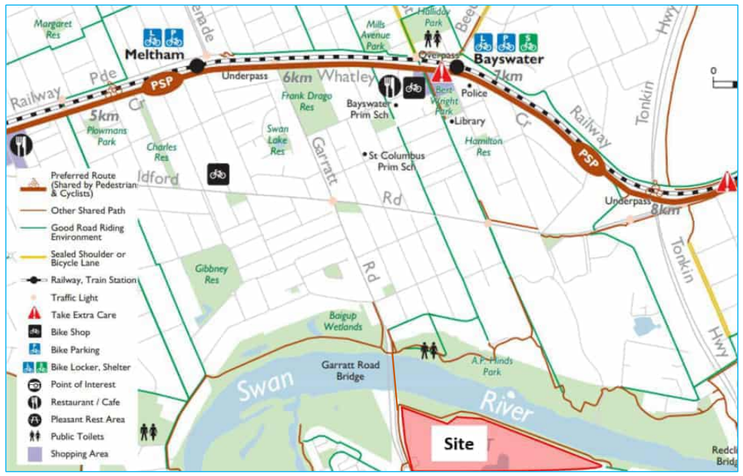
[1] Extended period over approximately 20 years (2002 – 2021).

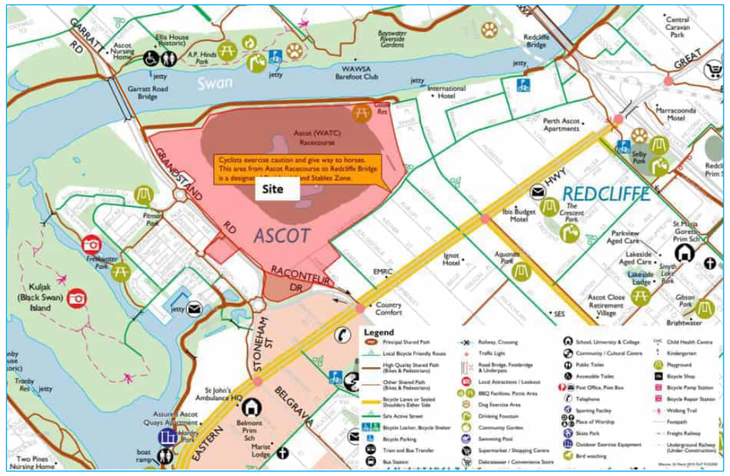
also runs parallel to the Swan River. From here, Leake Street and King William Street are two roads with good road riding environments in order to reach the PSP.

The second part of the figure below shows the existing cycle infrastructure available to the south, west and east of the site. One of the modal integration items to note is for cyclists to exercise caution and to give way to horses in the area between the racecourse and adjacent Redcliffe Bridge as a designated 'Residential and Stables' zone.

Immediately north of the site, a high-quality shared path for cyclists and pedestrians in available between the shared paths along Grandstand Road and Ascot Place. A number of local roads surrounding the site are highlighted as local cycle friendly routes including Matheson Road and Epsom Avenue. Additionally, the Great Eastern Highway is highlighted as providing cycle lanes or sealed shoulders on either side of the carriageway, though these are largely provided as on-road cycle lanes with no physical separation and are combined with, or are immediately adjacent to, bus lanes with vehicles travelling above the Safe System speeds of 30km/h for vulnerable road users.

**Figure 2-10: Existing Pedestrian / Cycle Networks**




Source: WA Department of Transport (2024)

## 2.7 Existing Public Transport

The main bus stops accessible from the site are on Grandstand Road immediately adjacent to one of the key pedestrian access points to the racecourse. Based on a desktop review, the infrastructure provided at these stops is limited as a shelter with seating is only available on the south-western side while a raised kerb to assist with reduced mobility access is only available for a short distance on the north-eastern side of Grandstand Road. It would be recommended that the City of Belmont undertake a review of these bus stops (irrespective of this development), particularly as they serve a significant destination.

These stops are served by the bus 998/999 which provided clockwise and anti-clockwise routes of the Perth CircleRoute (shown in purple in **Figure 2-11**), respectively. This circular route has limited stops and a good frequency of every 15 minutes, Monday-Saturday and every 30 minutes on Sundays, which encompasses many of Perth's suburbs encircling central Perth and locally providing connectivity to Bayswater Rail Station. Ascot Racecourse is serviced by the clockwise service at 06:03 on weekdays and a last service at 22:13. A shortened service is available on weekends and public holidays. These timings are reflected similarly in the anticlockwise service.

Additional frequent bus services are accessible from the site along the Great Eastern Highway as shown in **Figure 2-11** including services towards Redcliffe Station, central Perth and Perth Airport.

Existing Situation

**Figure 2-11: Public Transport Services**



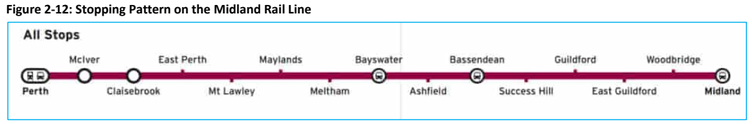

*Source: WA Department of Transport (2024)*

**Rail Services**

Bayswater Train Station is accessible via bus service 999 and provides access to both the Midland Railway Line and the Airport Line.

During the week, the Midland railway line carries passenger rail services between Perth city, and stations in between as shown in **Figure 2-12**, at intervals of approximately 10 to 15 minutes between 05:00am and 21:00pm. The frequency reduces past 9pm to every 30 minutes until 12:30am.

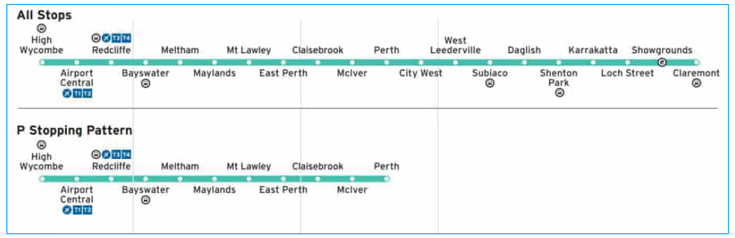
**Figure 2-12: Stopping Pattern on the Midland Rail Line**




*Source: Transperth*

The Airport Line operates from Claremont to High Wycombe via Perth Station, with some services throughout the day just terminating at Perth Station. Both variations of the route are shown in **Figure 2-13**. The service provides a fast connection to Perth Airport, operating every 12 minutes during the peak period, every 15 minutes during the day and every 30 minutes at night.

**Figure 2-13: Stopping Pattern on the Airport Rail Line**




*Source: Transperth*

Overall, the existing public transport service within the vicinity of the Site is good with moderate-to-high frequency of services operating during the network peak periods.

## 2.8 Crash Assessment

A search of the Main Roads WA Reporting Centre for crash data was undertaken. This search covered all recorded traffic accidents for the most recently available five-year reporting period between 1 January 2019 and 31 December 2023 for the study area shown in **Figure 2-14** and **Figure 2-15** which includes the following intersections:

- Resolution Drive / Stoneham Street / Grandstand Road Roundabout
- Raconteur Drive / Grandstand Road Intersection
- Resolution Drive / Great Eastern Highway / Hardey Road Signalised Intersection
- Stoneham Street / Great Eastern Highway / Belgravia Street Signalised Intersection

Both figures highlight how the majority of recorded crashes within the study area are 'Property Damage Only' and mostly occur on the midblock carriageway itself rather than the intersections noted above. The majority of these incidents occur on the Great Eastern Highway, which is typical as a 'Primary Distributor' with higher volumes (crash exposure).

The recorded crash types for the 200 crashes recorded in the study area are shown in **Table 2-1** below. The 'Hospital' and 'Medical' crashes recorded are typically rear-end, non-collision and right-angle types of crash.

**Table 2-1: Crash Data for Study Area**

| Type of Crash | Fatal | Hospital | Medical | Major PDO* | Minor PDO* | Total |
|---|---|---|---|---|---|---|
| Rear End | - | 4 | 19 | 62 | 40 | 125 |
| Sideswipe | - | - | - | 8 | 11 | 19 |
| Hit Object | - | - | - | 2 | 3 | 5 |
| Head On | - | - | - | - | - | - |
| Non-Collision | - | 1 | - | 1 | 1 | 3 |
| Right Angle | - | - | 1 | 12 | 10 | 23 |
| Other | - | 1 | - | 5 | 6 | 12 |
| Total | 0 | 6 | 20 | 90 | 71 | 187 |

**Property Damage Only*

Existing Situation

**Figure 2-14: Summary of All Crashes in Latest 5-Year Period**

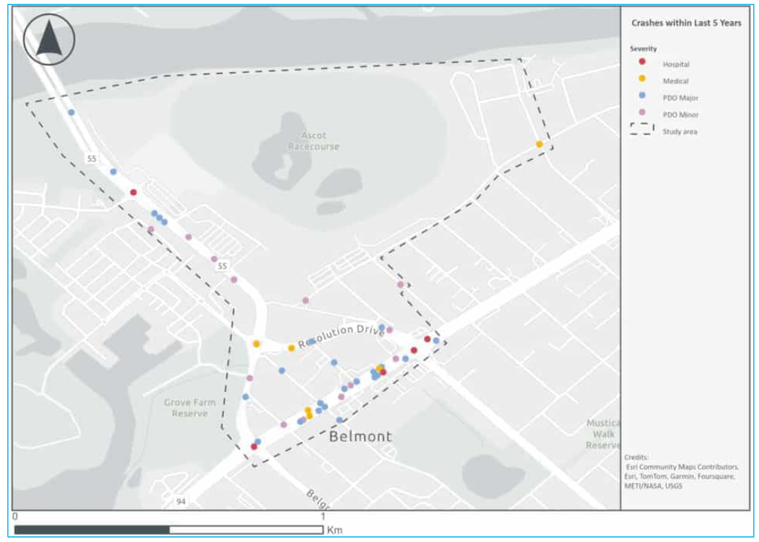
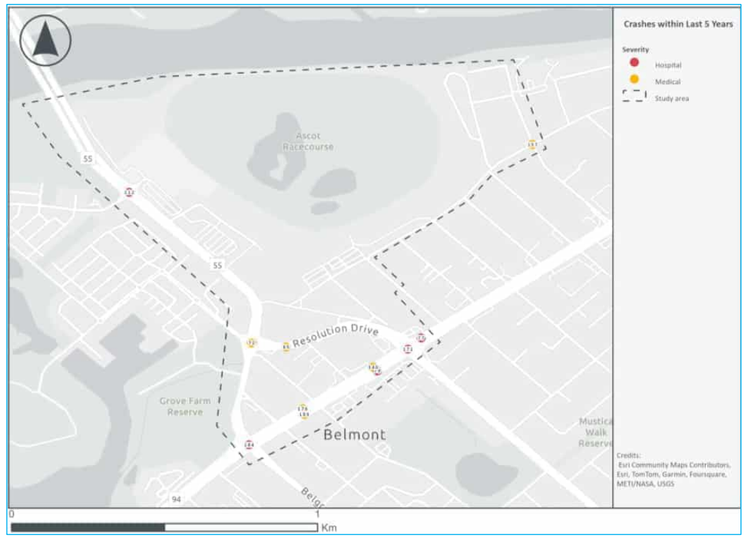



**Figure 2-15: Hospital and Medical Severity Crashes in the Latest 5-Year Period**



# 3 Proposed Local Structure Plan and Scheme Amendment

## 3.1 Proposed Zoning

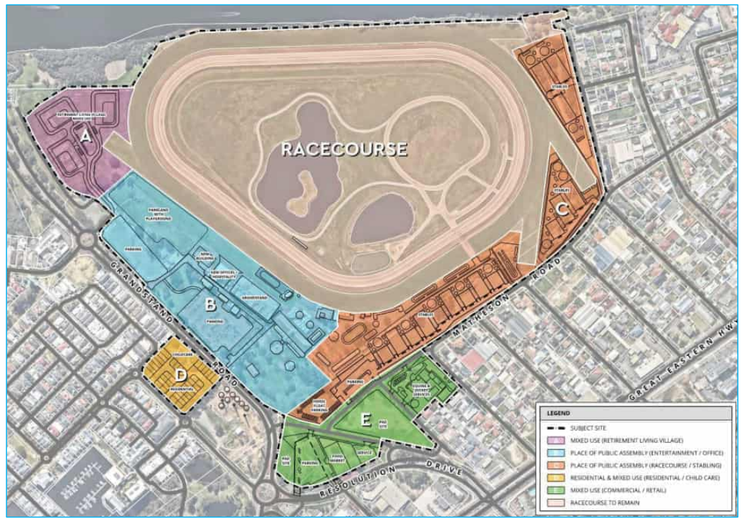
In Section 1 of this TIA, the site area was identified as largely dedicated to uses relating to Ascot Racecourse, such as 'Private Recreation' (MRS) or 'Place of Public Assembly' (LPS No.15), with some areas within the site boundary zoned as 'Urban' or 'Mixed Use'.

The Ascot LSP and Scheme Amendment proposes rezoning areas within the site boundary into five specific precincts, as summarised in **Table 3-1**, set out in **Figure 3-1** (**Appendix B**).

**Table 3-1: Proposed Land Use Yield**

| Precinct | Proposed Zoning | Proposed Uses | Proposed Built Form/Yield |
|---|---|---|---|
| A | Mixed Use | Retirement Living Village | – 330-390 retirement apartments (across 3 buildings of up to 15 storeys, each with 110-130 apartments).<br>– Maximum 300m$^2$ café. |
| B | Place Of Public Assembly (No Change to Existing Zone) | Entertainment / Racecourse Administration Office<br>– (New building with replace the footprint of an existing building and existing building rebuilt adjacent to new building.) | – New building - Office on Ground Floor, approx. 61 people across 680m$^2$ NLA (Net Lettable Area).<br>– New Building - Hospitality venue on Upper Floor - Total building footprint of 1,020m$^2$<br>– Parkland with a playground. |
| C | Place Of Public Assembly (No Change to Existing Zone) | Racecourse / Stabling | – 3 On-course stabling complexes.<br>– Approx. 400 stables.<br>– Parking area inc. Horse float parking. |
| D | Residential & Mixed Use (R60) | Residential / Child Care | – Child care centre fronting Grandstand Rd, across approx. 2,100m$^2$ for 70-90 children.<br>– Residential development with a yield of approx. 41 lots. |
| E | Mixed Use (with additional use of 'shop') | Commercial / Retail | – Site 1: 3,400m$^2$ retail floorspace and 2,500m$^2$ commercial floorspace<br>– Site 2: 5,200-7,100m$^2$ commercial floorspace.<br>– Site 3: Equine Centre - 'Jockey Health' inc. 'consulting room' type uses. |

**Figure 3-1: Proposed Masterplan Concept**




*Source: Rowe Group Design, 2024*

### 3.2 Vehicular Driveway Access Arrangements

While individual lot driveway access arrangements and car parking typically fall outside the scope of a general Structure Plan-level transport assessment outlined in the WAPC Guidelines, the Ascot LSP Applicant is proactively presenting several solutions upfront to enhance future lot access arrangements and network performance. These suggestions and recommendations are intended for discussion purposes only and are subject to further refinement in subsequent stages of development planning.

As highlighted in Section 2, the existing racecourse is served by a number of vehicular access points from Grandstand Road and Matheson Road.

It is acknowledged that in the draft GGLSP, a new roundabout intersection was previously proposed to replace the existing Grandstand Road / Raconteur Drive intersection, introducing an opportunity for a high capacity and controlled access to the racecourse via a new 4th arm of the roundabout. This arm would have also provided direct access for horse floats looking to travel northbound on Grandstand Road. However, it is understood that this new roundabout option was mooted based on stakeholder feedback during the City's draft GGLSP advertising period and subsequently the current intersection format will be retained.

Notwithstanding the above, for the Ascot LSP, this Grandstand Road and Resolution Drive intersection presents a major opportunity to modify the permissible movements at the restricted access point, to improve the overall access strategy for the LSP. This is further explored.

For the proposed Precinct B (Entertainment / Racecourse Administration Office) car park, vehicular access from the members carpark onto Grandstand Road, is expected to be retained as left-in/left-out (LILO). There are existing roundabouts at either end of the racecourse at Waterway Crescent and Resolution Drive that provide the same function as right turns at the crossover points. The traffic concern with allowing any right turns at the Precinct B crossovers is the added delay for patrons queuing and waiting to access the parking areas or when leaving after the races. If the LSP was to pursue direct right turn options at the Precinct B crossovers, it is recommended that the impacts would need to be assessed in finer detail, on a number of different peak weekend race days. Only the AM and PM effects of the wider development coinciding with the typical AM and PM commuter peaks has been examined for this LSP, as these would represent the highest traffic flow on a regular basis. The median island is wide enough for the northern two crossovers to potentially have two-stage right turn movements, but the southern crossover has a narrower median opposite, and therefore would not appear to have enough width to allow for two-staged median movements.

Any crossover to Precinct D (Child Care and Residential) onto Grandstand Road is recommended in the form of a LILO. A LILO is supported in balancing the needs of access to the child care centre and the amenity of residents on Northerly Avenue and Resolution Drive. There would be some non-local child care centre traffic along Resolution Drive if no LILO on Grandstand Road was permitted. As such, a LILO should be pursued to/from Grandstand Boulevard to Precinct D, which would need to be integrated safely with the operations of the crossover on the opposite side of the road to the racecourse. This can be assessed in detail in later stages, post LSP endorsement as an approval of a Scheme Amendment is not contingent on these details and available wider accessibility.

For the driveway accesses for Precinct E (commercial precinct) east of the roundabout, there is limited frontage available along Resolution Drive between Raconteur Drive and Grandstand Road. As such, full movement crossovers are unlikely to be possible due to road safety and as such likely to be in the form of LILOs.

Given the above restrictions for most access points to LILOs due to geometrical constraints, a relief valve is needed to support northbound traffic (right turning vehicle demands from the east). In this regard, the existing intersection of Grandstand Road and Resolution Drive is proposed to be open permanently to traffic with left and right turns allowed from Grandstand Road into Raconteur Drive and a left turn out from Raconteur Drive onto Grandstand Road (LILO-RI). These are the same movements currently permitted at this intersection on race days to allow racecourse patrons to park and exit. This critical left turn out to, and right turn in from Grandstand Road are both expected to operate satisfactorily with acceptable queues and delays to support the Ascot LSP (refer Section 6). Ultimate development queues are expected to be able to be contained within the current right turn pocket length on Grandstand Road.

### 3.3 Parking Impacts

Again, while individual lot driveway access arrangements and car parking typically fall outside the scope of a general Structure Plan-level transport assessment outlined in the WAPC Guidelines, the Ascot LSP Applicant is proactively presenting several solutions upfront to enhance future lot access arrangements.

The proposed redevelopment of Precinct E (commercial/retail) will impact the availability for parking that currently occurs on race days. The redevelopment will alter existing race patron parking and also horse-float and jockey parking in Precinct E.

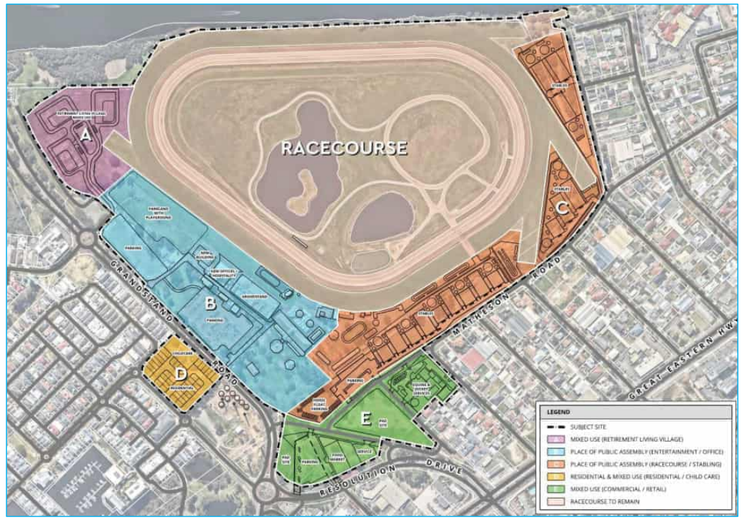
Current parking layout in **Figure 3-2** shows typical parking demand for an opening racing day on 14th October 2023. This shows paved patron parking and members parking within Precinct B (the racecourse entertainment) and patron parking within Precincts C (stabling) and E (commercial/retail). Similarly, the proposed development of Precinct C with the relocation of jockey parking and horse float parking towards the south west extremity of Precinct C will impact the ability of patrons to park within this existing area on race days. A similar impact is expected for Precinct E, where retail development will impact parking currently occurring across this land.

From **Figure 3-2** aerial imagery, there was assessed to be approximately 270 cars parked across the patron parking areas straddling the clouded area across Precincts B, C and E at the south east end of the racecourse.

**Figure 3-2: Typical Parking on Race Days**




**Figure 3-3: Possible Future Parking Layout**




The current patron parking within Precinct C (stabling) and E (commercial/retail) will be the most impacted by the LSP with these parking areas no longer available. The southern Precinct B patron parking area would still be available and could be managed to improve parking utilisation on race days. Based on observations of parking demand within the area of the grassed area in Precinct B and E, approximately 110 to 125 cars park within this area on a busy race day.

From the above aerial observations, it was found that there were approximately 40 spaces available within the patron parking in Precinct B at the north west end of the racecourse (accessed from the Waterways Crescent roundabout), approximately 70 spaces available within the member's parking area (accessed grom Grandstand Road) and the possibility to park up to 75 cars on the grassed area between the patron and member parking areas, all up approximately 185 cars could be parked.

Combined, this indicates that supply across the sites would more than meet the total demand for car parking with a **surplus of approximately 60 to 75 parking spaces** for the currently observed parking demand for a busy typical race day at Ascot. This is based on typical race days. For non-typical large events (such as the New Years Perth Cup) the traffic management plan for the racecourse would be appropriate for continued adoption.

To further manage the relocation of parking within the racecourse it is a recommendation of this TIA to implement a Travel Demand Plan for typical race days to actively discourage patrons from using their private motor vehicle to drive to and from the racecourse. This plan may include both the encouragement in the use of the currently available public transport services near the racecourse, improvement in private services, and the uptake of ride share services.

Routes 998 and 999 (CircleRoutes) stop on Grandstand Road immediately in front of the racecourse and high frequency bus service 940 stops on Great Eastern Highway. The CircleRoutes provide onward connections to Morley Bus Station via the new Bayswater Train Station (soon to be completed with Airport, Ellenbrook and Perth-Midland services and be the busiest station outside of Perth Station). Route 940 runs between Elizabeth Quay bus station (immediately next to Elizabeth Quay train station) and Redcliffe train station.

Implementing Travel Demand strategies to promote rideshare services (also known as Mobility as a Service (MaaS)) presents another option to reduce the reliance on private vehicle usage among Ascot Racecourse patrons. MaaS offers users a range of mobility options through a single platform or service provider, reducing congestion, alleviate parking demand, and promote other sustainable travel choices on race days.

Several strategies could be employed to encourage patrons to use MaaS options effectively and almost immediately:

- partnerships with MaaS providers and local transit agencies can enhance the integration of various transportation modes, ensuring seamless connectivity and ease of use for patrons.
- offering incentives such as discounted fares or priority access to race days for MaaS users (such as dedicated drop-off/pick-up areas) could further encourage patronage.
- By promoting MaaS as a viable alternative to private vehicle usage, the Ascot racecourse development could work towards addressing any perceived parking challenges.

The travel behaviours of patrons of entertainment services (hotels, taverns, restaurants, sporting venues etc) are now skewed towards using ride sharing instead of driving to these land uses. This in due to a combination of many factors but mostly the affordability, availability, attractiveness to latter generations and finally, allowing patrons to enjoy themselves without worry of driving under the influence.

### 3.4 Proposed Internal Transport Network

The proposed Local Structure Plan sets out the indicative future road network for the Scheme Amendment area, which is shown in **Figure 3-1**. The internal network will be detailed further as the lot submissions for each precinct are lodged for assessment. The City of Belmont places high importance on sustainable transport modes (public transport, walking and cycling) and would be seeking high-quality cycling facilities, footpaths, street trees etc to facilitate and reduce reliance on low-occupancy private car modes.

### 3.5 Assessment Years and Time Periods

This TIA analyses the existing base year of 2024 and the anticipated opening year of 2036 'with' and 'without' the full build-out of the Ascot LSP. Section 7 of this report discusses the assessment years and development traffic generation in more detail.

### 3.6 Pedestrian and Cyclist Access

Pedestrian and cyclist access has not yet been fully defined; however, it should be provided generally in accordance with the requirements of national and local guidance, the Department of Transport's Long Term Cycle Network, and areas comprising largely residential uses should be in accordance with *Liveable Neighbourhoods* and Safe System Engineering.

The proposed pedestrian and cyclist facilities should aim to provide a permeable road network within the subject site and create attractive opportunities that maximise the use of non-private vehicle transport modes. Section 5 of this report discusses access to public transport and recommended improvements.

## 4 Changes to External Transport Network

Part of the Ascot Racecourse development is currently within the GGLSP, with Precincts D and E falling wholly within the currently nominated GGLSP area with part of Precinct C. The draft Movement and Access Strategy report prepared by the GGLSP proposed road network changes as part of the LSP to support the LSP, noting that the proposal of a new roundabout at Resolution Drive / Grandstand Boulevard have been mooted based on advertising feedback from stakeholders. Accordingly, the GGLSP is presently in the process of being modified, to address agency concerns and comments and as such the road network is expected to remain much the same as it is presently.

The previous draft proposed road network is shown below in Figure 4-1. The proposed new roundabout, north of the current roundabout at Grandstand Road/Resolution Drive/Stoneham Street, was proposed to be a 3-way roundabout and would have provided Ascot Racecourse Precinct E an opportunity for a fourth approach entry.

The retention of the current road network does have the benefit of retaining Precinct E to be unbisected by any major roadway.

**Figure 4-1: Golden Gateway Local Structure Plan**




*Source: Golden Gateway Public Realm Strategy*

# 5 Integration with Surrounding Area

## 5.1 Surrounding Attractors / Generators

As Ascot Racecourse is already very well established in the local area, a variety of uses including retail, food, beverage and recreational uses are available in the local area primarily along the Great Eastern Highway and on the Racecourse site itself. In addition, as an attractor and a key employment location itself, the racecourse is located in close proximity to large residential areas of Redcliffe, Belmont, Rivervale and Maylands surrounding the site.

Approximately 1.2 km to the south of the Site, is Belmont Primary School.

## 5.2 Proposed Changes to Surrounding Land Uses

The City of Belmont's LPS No.15 details the proposed local zoning of land uses within the area surrounding the Site including DA6 to the south of Great Eastern Highway. The proposed changes to these zones are set out in full in Section 3 of this TIA, in the context of the existing zones.

## 5.3 Level of Overall Accessibility

As Ascot Racecourse is already very well established in the local area, the existing levels of accessibility will be maintained and built upon with the proposals to improve access for all to the site.

## 5.4 Pedestrian and Cyclist Accessibility

The existing shared path network on the northern side of Grandstand Road provides good active transport links to the area surrounding Ascot Racecourse. This will be further enhanced by the improvements proposed within the Ascot LSP and Scheme Amendment, as well as the Public Realm Strategy being developed as part of the GGLSP.

It is a recommendation of this TIA that, investigations be undertaken to extend the existing footpath network surrounding the racecourse, including south of Grandstand Road and improving pedestrian and cycle connections towards the local amenities on Great Eastern Highway and Belmont Primary School. If feasible, this would encourage trips on foot and wheels to local centres and help increase public transport usage to reduce the reliance on private vehicles.

# 6 Analysis of Transport Network

## 6.1 Assessment Years and Time Period

Each intersection will be assessed using the following two scenarios:

- **Scenario 1** – 2024 'current situation'.
- **Scenario 2** – 2036 'without development'.
- **Scenario 3** – 2036 'with Ascot LSP development'.

Scenario 1 sets the baseline for the area for the current traffic flows as surveyed and derived from intersection counts.

Scenario 2 without the development flows have been based on expected traffic flows in 2036 with no development of the Ascot Racecourse nor the effects of the GGLSP. In discussion with the City of Belmont, it was apparent that the previous modelling assessments undertaken for the GGLSP are presently needing to be revised by the GGLSP team. Consequently, there are too many unknowns relating to the GGLSP to assess/assume the outcomes or specific intersection turning movement traffic flows for various scenarios of the GGLSP and the adoption of the draft (now mooted) traffic flows would lead to erroneous results. Accordingly, the 2036 without development Scenario 2 assumes current traffic flows will increase to 2036 with no GGLSP influences.

Scenario 3 is with full development traffic anticipated in 2036 when all precincts are assumed to be fully developed, in line with the Ascot Racecourse anticipated rollout.

## 6.2 Background Traffic

The background traffic assumptions for this assessment have been based on PJA's consultation with the City of Belmont on the City's current GGLSP traffic assumptions, concluding a 0.5% growth per annum from 2021 through to 2036 is to be applied. Advice from the City of Belmont goes further to say that this growth rate is expected to be maintained through to 2041, beyond the assessment year as noted above. This growth has been applied to major traffic flows on the network but excluding traffic flows to and from:

- Waterways Crescent
- Resolution Drive west of the Grandstand Road/Resolution Drive/Stoneham Street roundabout.

The reason is that the two local Access Roads are established with the Marina Drive residential development recently completed and opened, and therefore 'ultimate' flows are captured in the 2024 base data collated.

## 6.3 Traffic Generation

The traffic generation rates in the AM peak trips for the Bulky Goods and Supermarket land uses are based on 20% of the expected PM peak flows.

The trip generation for Precinct A retirement village is based on a rate of 3 trips er dwelling per day and is appropriate, given that it is expected the units will have limited parking and that the demographics of the residents are expected to suggest a lower car ownership.

Table 6-1, sourced from the various sources, have been used to calculate an estimate of the traffic generated in the AM and PM peak periods. Given the location of the Site, the above is considered robust trip rates, with no reductions applied to account for linked or internal trips.

No trips were assigned to Precinct B (Racecourse) as the use of the racecourse in the AM and PM peaks during normal weekdays is comparatively negligible. The use of this precinct is expected to be at its highest on weekends and big race days, where traffic management may be utilised on Grandstand Road.

Likewise, no trips were assigned to Precinct C (the Stables). The reason for this is that activity at the stables typically occur well before the AM peak when horses are trained on the course early in the morning. After which, traffic movements from the stables will typically then occur after the typical network AM peak period.

Finally, for the retail use in Precinct E (Commercial / Retail), this was assumed to be a café of approximately 100-200m$^2$ in gross floor area. This development alone is not expected to generate notable trips independently, but any café patronage would be reciprocal between the proposed supermarket and commercial floorspace proposed to be located under the one roof. The café will also likely attract employees in the nearby area, who are expected to walk to and from the establishment.

The AM trips rates for the Bulky Goods and Supermarket land uses are based on 20% of the expected PM peak flows.

The trip generation for the retirement village is based on a rate of 3 trips er dwelling per day and is appropriate, given that it is expected the units will have limited parking and that the demographics of the residents are expected to suggest a lower car ownership.

**Table 6-1: Trip Generation Rates**

| Land Use | AM Peak Hour | | PM Peak Hour | |
|---|---|---|---|---|
| | In | Out | In | Out |
| Retirement (Precinct A) | 0.075 trips per dwelling | 0.225 trips per dwelling | 0.2 trips per dwelling | 0.1 trips per dwelling |
| Racecourse (Precinct B) | NIL | NIL | NIL | NIL |
| Stables (Precinct C) | NIL | NIL | NIL | NIL |
| Residential (Precinct D) | 0.2 trips per dwelling | 0.6 trips per dwelling | 0.5 trips per dwelling | 0.3 trips per dwelling |
| Child Care (Precinct D) | 0.25 trips per child | 0.25 trips per child | 0.15 trips per child | 0.15 trips per child |
| Jockey Services (Precinct E) | 1.6 trips per 100m$^2$ | 0.4 trips per 100m$^2$ | 0.4 trips per 100m$^2$ | 1.6 trips per 100m$^2$ |
| Supermarket (Precinct E) | 1.55 trips per 100m$^2$ | 1.55 trips per 100m$^2$ | 7.75 trips per 100m$^2$ | 7.75 trips per 100m$^2$ |
| Commercial (Precinct E) | 0.32 trips per 100m$^2$ | 0.08 trips per 100m$^2$ | 0.4 trips per 100m$^2$ | 1.6 trips per 100m$^2$ |
| Retail (Precinct E) | NIL | NIL | NIL | NIL |
| Bulky Goods Retail (Precinct E) | 0.2 trips per 100m$^2$ | 0.2 trips per 100m$^2$ | 1.0 trips per 100m$^2$ | 1.0 trips per 100m$^2$ |

Application of the above noted trip generation rates leads to the creation of Table 7-2 which summarises the trip volumes derived from the adopted generation rates.

**Table 6-2: Estimated LSP Traffic Generation (vehicles per hour)**

| Land Use | AM Peak Hour | | PM Peak Hour | |
|---|---|---|---|---|
| | In | Out | In | Out |
| Retirement (Precinct A) | 29 | 88 | 78 | 39 |
| Racecourse (Precinct B) | 0 | 0 | 0 | 0 |
| Stables (Precinct C) | 0 | 0 | 0 | 0 |
| Residential (Precinct D) | 8 | 24 | 21 | 11 |

| Land Use | AM Peak Hour | | PM Peak Hour | |
|---|---|---|---|---|
| | In | Out | In | Out |
| Child Care (Precinct D) | 20 | 20 | 12 | 12 |
| Jockey Services (Precinct E) | 21 | 5 | 5 | 21 |
| Supermarket (Precinct E) | 72 | 18 | 224 | 224 |
| Commercial (Precinct E) | 1 | 0 | 4 | 4 |
| Retail (Precinct E) | 0 | 0 | 0 | 0 |
| Bulky Goods Retail (Precinct E) | 31 | 8 | 96 | 96 |
| **Total** | **182** | **163** | **440** | **407** |

The Site is expected to generate a total of 345 two-way vehicle trips in the AM peak hour and approximately 845 in the PM peak hour. The overall development is expected to generate the highest flows in the PM and thus the PM peak has been chosen as the basis for the following intersection assessment as these higher flows would be putting the road network under the greatest stress.

Of the above generated trips, 50% of the trips associated with the supermarket have been assumed to be pass-by trips. These trips already exist on the adjacent road network, with drivers diverted from the adjacent road network onto the site and then to exit the site to continue on their journey.

### 6.4 Future Year Traffic Growth

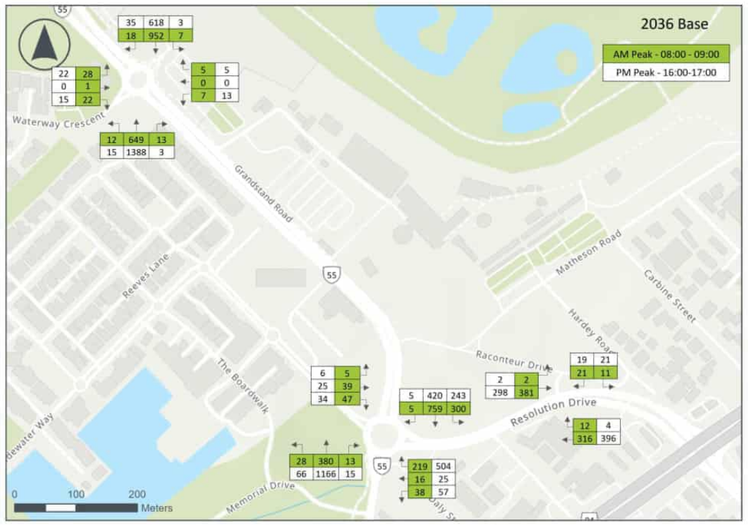
As previously discussed, the future year growth rates to 2036 (and further to 2041) were provided by the City. From 2021 to 2041 traffic flows are expected to increase by 0.5% per annum linear growth. With the Ascot Waters area being now fully developed (apart from the Precinct D component) traffic flows to and from the legs of intersections into Ascot Waters has been assumed to have zero future traffic growth.

### 6.5 Traffic Distribution and Assignment

The distribution of trips to and from the Site via the various site accesses have been estimated based on the existing traffic flow percentage split travelling in each direction in the AM and PM peak periods.

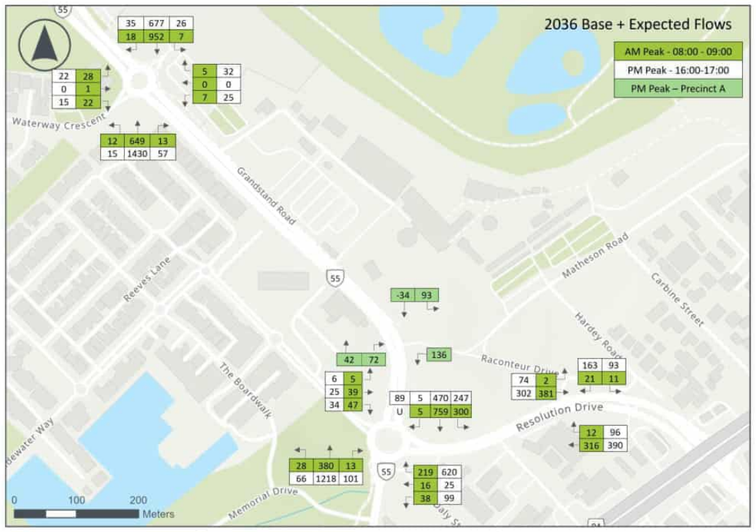
The percentage split of traffic is in keeping with the expectation that a greater proportion of trips generated by the Site will travel in same direction as the commuter peak for the residential and retirement uses. For the commercial attractions, this will be in the same direction as the commuter peak flows for the pass-by trips, but for new trips these will be attracted to the site based on the arrival flow proportions entering the Ascot Racecourse area along Grandstand Road, Resolution Drive and Stoneham Street. The estimated 2036 flows with expected distribution is presented in **Figure 6-1** to **Figure 6-3.**

**Figure 6-1: Base 2036 Traffic Flows (no development; background growth only)**



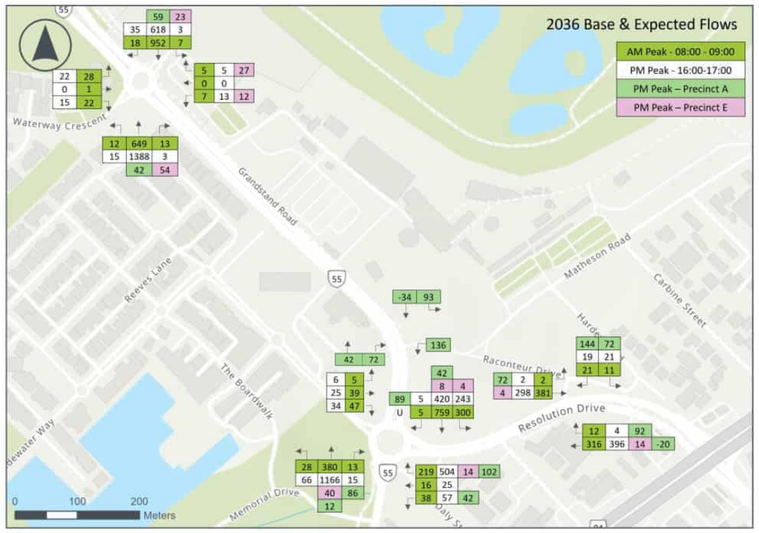

Credits: Esri Community Maps Contributors, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, Foursquare, METI/NASA,

**Figure 6-2: 2036 Traffic Flows (plus Precinct A Development Flows)**




Credits: Esri Community Maps Contributors, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, Foursquare, METI/NASA,

**Figure 6-3: 2036 Traffic Flows (with Ultimate Ascot LSP Development Flows)**




Credits: Esri Community Maps Contributors, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, Foursquare, METI/NASA,

The above figure focuses on the distribution of traffic onto the road network for typical AM and PM peak periods. The Racecourse access has not been shown on this figure as the peak movements to and from the racecourse are expected to occur on a Saturday, when traffic flows on Grandstand Road are approximately 60% of typical PM peak values. Peak Racecourse flow is typically at approximately 12pm, prior to the start of the first race at the racecourse and the expected peak arrival time of patrons. The last race typically concludes at about 5:30pm and traffic flows at that time on Grandstand Road are approximately 50% of PM peak flows, this at a time when patrons will be leaving the racecourse at the highest rate.

To put the above into context, the peak weekend flows on Grandstand Road are approximately the same as the inter-peak weekday flows at about the same time.

## 6.6 Intersection Performance

SIDRA analysis was undertaken at the following intersections to estimate the impact of the development generated traffic on the surrounding transport network:

- Resolution Drive / Stoneham Street / Grandstand Road Roundabout
- Raconteur Drive / Grandstand Road Intersection
- Grandstand Road and Waterways Cresent Roundabout
- Resolution Drive / Raconteur Drive intersection.

SIDRA results for each approach are presented below in the form of Degree of Saturation (DOS), Average Delay, Level of Service (LOS) and 95th Percentile Queue. These characteristics are defined as follows:

- **Degree of Saturation (DOS)**: is the ratio of the arrival traffic flow to the capacity of the approach during the same period. The theoretical intersection capacity is exceeded for an un-signalised intersection where DOS > 0.80;
- **95% Queue:** is the statistical estimate of the queue length up to or below which 95% of all observed queues would be expected;
- **Average Delay:** is the average of all travel time delays for vehicles through the intersection. An unsignalised intersection is considered to be operated at capacity where the average delay exceeds 40 seconds for any movement; and
- **Level of Service (LOS)**: is the qualitative measure describing operational conditions within a traffic stream and the perception by motorists and/or passengers.

## 6.7 Scenario 1 - Current Year 2024

The following presents the analysis of the key access points as noted above assuming current traffic flows on the road network and without the Ascot Racecourse developed.

**Figure 6-4: Current Performance – Grandstand Rd/Waterways Cres**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Grandstand Rd E | 0.45 | 4 | A | 26 |
| Precinct A | 0.03 | 7 | A | 1 |
| Grandstand Rd W | 0.20 | 4 | A | 12 |
| Waterway Cres | 0.05 | 10 | A | 2 |
| **Intersection** | **0.45** | **4** | **A** | **26** |

**Figure 6-5: Current Performance – Grandstand Rd/Raconteur Dr**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Grandstand Rd E | 0.45 | 0 | A | 0 |
| Raconteur Dr | NA | NA | NA | NA |
| Grandstand Rd W | 0.33 | 0 | A | 0 |
| **Intersection (based on minor leg appr/mvt)** | **0.45** | **0** | **A** | **0** |

**Figure 6-6: Current Performance – Grandstand Rd/Resolution Dr/Stoneham St**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Stoneham St S | 0.62 | 9 | A | 54 |
| Resolution Dr E | 0.74 | 15 | B | 47 |
| Grandstand Rd N | 0.33 | 4 | A | 21 |
| Resolution Dr W | 0.16 | 13 | B | 7 |
| **Intersection** | **0.74** | **9** | **A** | **55** |

**Figure 6-7: Current Performance – Resolution Dr/Raconteur Dr**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Resolution Dr E | 0.21 | 0 | A | 0 |
| Resolution Dr E RT | 0.003 | 4 | A | 0.1/0.5 |
| Raconteur Dr RT | 0.02 | 6 | A | 0.5 |
| Resolution Dr W | 0.16 | 0 | A | 0 |
| **Intersection (based on minor leg appr/mvt)** | **0.02** | **6** | **A** | **0.1/0.5** |

**Figure 6-8: Current Performance – Great Eastern Hwy/Resolution Dr/Hardey Rd**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Hardey Rd E | 0.52 | 76 | E | 99 |
| GEH N | 0.75(T)/0.90(R) | 44 | D | 306 |
| Resolution Dr W | 0.93 | 64 | E | 75 |
| GEH S | 0.83(T)/0.65(R) | 31 | C | 319 |
| **Intersection** | **0.93** | **42** | **D** | **319** |

**Figure 6-9: Current Performance – Great Eastern Hwy/Stoneham St/Belgravia St**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Belgravia St E | 0.81 | 72 | E | 172 |
| GEH N | 0.70(T)/0.63(R) | 17 | B | 173 |
| Stoneham St W | 0.93 | 92 | F | 129 |
| GEH S | 0.80(T)/0.88(R) | 25 | C | 294 |
| **Intersection** | **0.93** | **34** | **C** | **294** |

As summarised, apart from Great Eastern Highway, intersections all typically operate at a good level of service, with typically LoS A on all leg/movements, with some LoS B on the Resolution Drive approaches to the Resolution Drive / Stoneham Street / Grandstand Road Roundabout. The largest amount of queueing occurs at this same roundabout where it has a DoS (a

measure of how much traffic takes up the available traffic carrying capacity) of 0.74, this maximum being on the Resolution Drive eastern approach to the roundabout and considered acceptable. Intersections on Great Eastern Highway at Resolution Drive and Stoneham Street operate with DoS of approximately 0.7 to 0.85 on Great Eastern Highway with higher DoS on the western leg approaches (Resolution Drive and Stoneham Street) where DoS is approaching 0.93.

## 6.8 Scenario 2 – 2036 No Development, Background Traffic Growth

The following presents the analysis of the same intersections assuming a future growth horizon to 2036 with NO build out of the development. The intersections have been assessed based on the current geometries.

**Ascot LSP Area Intersections: Grandstand Road and Raconteur Drive**

**Figure 6-10: 2036 Performance – Grandstand Rd/Waterways Cres**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Grandstand Rd E | 0.54 | 4 | A | 38 |
| Precinct A | 0.03 | 7 | A | 1 |
| Grandstand Rd W | 0.25 | 4 | A | 15 |
| Waterway Cres | 0.06 | 13 | B | 3 |
| **Intersection** | **0.54** | **4** | **A** | **38** |

**Figure 6-11: 2036 Performance – Grandstand Rd/Raconteur Dr**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Grandstand Rd E | 0.54 | 0 | A | 0 |
| Raconteur Dr | NA | NA | NA | NA |
| Grandstand Rd W | 0.35 | 0 | A | 0 |
| **Intersection (based on minor leg appr/mvt)** | **0.54** | **0** | **A** | **0** |

**Figure 6-12: 2036 Performance – Grandstand Rd/Resolution Dr/Stoneham St**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Stoneham St S | 0.69 | 11 | B | 68 |
| Resolution Dr E | 0.81 | 17 | B | 59 |
| Grandstand Rd N | 0.35 | 4 | A | 23 |
| Resolution Dr W | 0.19 | 14 | B | 8 |
| **Intersection** | **0.81** | **10** | **A** | **68** |

**Figure 6-13: 2036 Performance – Resolution Dr/Raconteur Dr**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Resolution Dr E | 0.22 | 0 | A | 0 |
| Resolution Dr E RT | 0.002 | 6 | A | 0.6 |
| Raconteur Dr RT | 0.02 | 7 | A | 0.5/0.6 |
| Resolution Dr W | 0.17 | 0 | A | 0 |
| **Intersection (based on minor leg appr/mvt)** | **0.02** | **7** | **A** | **0.5/0.6** |

With no development, and with continued anticipated background traffic growth on the adjacent road network, the intersections are expected to still operate satisfactorily. Noted performance changes to each intersection are:

- Grandstand Road/Waterways Crescent

  This intersection is expected to be operating well, with an overall LoS A, the same as now. There is expected to be a lengthening of vehicle queues on Grandstand Road and a slight increase in the DoS, notably for the Grandstand Road eastern approach to the roundabout.

- Grandstand Road/Raconteur Drive

  Raconteur Drive is presently closed to traffic on non-race days.

- Grandstand Road/Resolution Drive/Stoneham Street

  With the background traffic growth, this intersection is still expected to operate satisfactorily in 2036. Queues are expected to slightly lengthen with the DoS increasing from 0.74 to 0.81. Overall, the intersection is expected to operate at a LoS A.

- Resolution Drive/Raconteur Drive

  This intersection is expected to operate in almost identical manner to how it presently operates. There is still expected to be minimal delays and good corresponding LoS. The DoS for the critical right turn from Raconteur Drive onto Resolution Drive is low at 0.02, this being a measure of good operational performance for this intersection.

**Great Eastern Highway Intersections**

**Figure 6-14: 2036 Performance – Great Eastern Hwy/Resolution Dr/Hardey Rd**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Hardey Rd E | 0.54 | 75 | E | 106 |
| GEH N | 0.71(T)/1.25(R) | 70 | E | 411 |
| Resolution Dr W | 1.24 | 132 | F | 126 |
| GEH S | 0.90(T)/0.90(R) | 30 | C | 410 |
| **Intersection** | **1.25** | **56** | **E** | **411** |

**Figure 6-15: 2036 Performance – Great Eastern Hwy/Stoneham St/Belgravia St**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Belgravia St E | 1.12 | 199 | F | 389 |
| GEH N | 0.65(T)/0.82(R) | 12 | B | 127 |
| Stoneham St W | 1.13 | 237 | F | 232 |
| GEH S | 0.91(T)/1.13(R) | 38 | D | 525 |
| **Intersection** | **1.13** | **67** | **E** | **525** |

- Great Eastern Highway/Resolution Drive/Hardey Road

  With the background traffic growth, this intersection is expected to be oversaturated in 2036. Queues are expected to slightly lengthen with the DoS increasing from 0.93 to 1.25, this high DoS as a result of the right turn lane on the northern Great Eastern Highway approach being over saturated. Overall, the intersection is expected to operate at a LoS E. Options tested to improve this intersection included the introduction of an additional right turn lane on the northern Great Eastern Highway approach, this was found to reduce the DoS to 0.99, based on the Resolution Drive approach.

- Great Eastern Highway/Stoneham Street/Belgravia Street

  Similar to the intersection above, with the background traffic growth, this intersection is expected to be oversaturated in 2036. Queues are expected to lengthen with the DoS increasing from 0.93 to 1.13, this high DoS as a result of the right turn lane on the southern Great Eastern Highway approach along with the Stoneham Street approach being over saturated. Overall, the intersection is expected to operate at a LoS E. Options tested to improve this intersection included the introduction of an additional right turn lane on the southern Great Eastern Highway approach, this was found to still have a similar overall DoS of 1.17, based on the Stoneham Street approach. But the DoS for the right turn movement on the southern approach on Great Eastern Highway reducing to 0.79.

## 6.9 Scenario 3 – 2036 With Ascot LSP Development

The following presents the analysis of the assessment of the road network assuming a future growth horizon to 2036 with full build out of the Ascot Racecourse LSP development for a comprehensive assessment.

<u>Ascot LSP Area Intersections: Grandstand Road and Raconteur Drive</u>

**Figure 6-16: 2036 Performance with Development – Grandstand Rd/Waterways Cres**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Grandstand Rd E | 0.54 | 5 | A | 38 |
| Precinct A | 0.10 | 8 | A | 3 |
| Grandstand Rd W | 0.28 | 4 | A | 16 |
| Waterway Cres | 0.06 | 13 | B | 3 |
| **Intersection** | **0.54** | **5** | **A** | **38** |

**Figure 6-17: 2036 Performance with Development – Grandstand Rd/Raconteur Dr**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Grandstand Rd E | 0.48 | 0 | A | 0 |
| Grandstand Rd E RT | 0.09 | 4 | A | 2 |
| Raconteur Dr | 0.08 | 6 | A | 2 |
| Grandstand Rd W | 0.18 | 0 | A | 0 |
| **Intersection (based on minor leg appr/mvt)** | **0.48** | **0.5** | **A** | **2** |

**Figure 6-18: 2036 Performance with Development – Grandstand Rd/Resolution Dr/Stoneham St**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Stoneham St S | 0.85 | 23 | C | 136 |
| Resolution Dr E | 0.86 | 17 | B | 79 |
| Grandstand Rd N | 0.28 | 5 | A | 16 |
| Resolution Dr W | 0.28 | 18 | B | 13 |
| **Intersection** | **0.86** | **17** | **B** | **136** |

**Figure 6-19: 2036 Performance with Development – Resolution Dr/Raconteur Dr**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Resolution Dr E | 0.22 | 0 | A | 0 |
| Resolution Dr E RT | 0.09 | 2.2 | A | 2 |
| Raconteur Dr RT | 0.19 | 8 | A | 3.9/4.9 |
| Resolution Dr W | 0.17 | 0 | A | 0 |
| **Intersection (based on minor leg appr/mvt)** | **0.19** | **8** | **A** | **3.9/4.9** |

With full development of the Ascot Racecourse LSP area, and with continued background traffic growth on the adjacent road network, the intersections are expected to still operate satisfactorily in Scenario 3 and only minor changes to performance results to each intersection as compared to the previous Scenario 2:

- Grandstand Road/Waterways Crescent

  This intersection is expected to continue to operate well, with an overall LoS A, the same as for the no-development Scenario 2. Other metrics for this intersection are expected to be similar to the 2036 scenario and thus there is expected to be no detrimental impact issues caused by the LSP development.

- Grandstand Road/Raconteur Drive

  This intersection is proposed to be open permanently to traffic with left and right turns allowed from Grandstand Road into Raconteur Drive and only a left turn out from Raconteur Drive onto Grandstand Road. These are the same

movements currently permitted at this intersection when the intersection is open on race days to allow racecourse patrons to park. It is noted that the critical right turn from Grandstand Road onto Raconteur Drive and the left turn from Raconteur Drive onto Grandstand Road are both expected to operate at LoS A with DoS of 0.8 to 0.9, acceptable queues and delays. Queues are expected to be able to be contained within the current right turn pocket length on Grandstand Road.

- Grandstand Road/Resolution Drive/Stoneham Street

  With the background traffic growth and the Ascot LSP development traffic, this intersection is still expected to operate satisfactorily in 2036. Queues are expected to lengthen to 136m (68m) on Stoneham Street and 79m (from 59m) on Resolution Drive eastern approach. Overall, the DoS for the intersection is expected to be 0.86, this again acceptable with a total average delay of 17s and overall LoS B. Across all measures, this intersection is expected to operate satisfactorily.

- Resolution Drive/Raconteur Drive

  This intersection is expected to still operate similar to 2024 as in 2036 without any development. The DoS for the right turn from Raconteur Drive onto Resolution Drive is expected to be 0.19 with slightly longer queues, but no more than a single vehicle queued either at Raconteur Drive prior to entering Resolution Drive, or within the median waiting to entering the western traffic flow back towards the roundabout at the intersection of Grandstand Road/Resolution Drive/Stoneham Street.

**Great Eastern Highway Intersections**

**Figure 6-20: 2036 Performance with Development – Great Eastern Hwy/Resolution Dr/Hardey Rd**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Hardey Rd E | 0.60 | 81 | F | 116 |
| GEH N | 0.72(T)/1.53(R) | 126 | F | 634 |
| Resolution Dr W | 1.51 | 204 | F | 195 |
| GEH S | 0.91(T)/0.90(R) | 30 | C | 417 |
| **Intersection** | **1.53** | **86** | **F** | **634** |

**Figure 6-21: 2036 Performance with Development – Great Eastern Hwy/Stoneham St/Belgravia St**

| Lane | PM Peak | | | |
|---|---|---|---|---|
| | Degree of Saturation | Average Delay (s) | Level of Service | 95th %ile Q (m) |
| Belgravia St E | 1.20 | 252 | F | 461 |
| GEH N | 0.63(T)/1.10(R) | 15 | B | 98 |
| Stoneham St W | 1.40 | 480 | F | 354 |
| GEH S | 0.88(T)/1.38(R) | 40 | D | 468 |
| **Intersection** | **1.40** | **103** | **F** | **468** |

- Great Eastern Highway/Resolution Drive/Hardey Road

  The addition of the LSP development traffic is expected to exacerbate the performance of this intersection, which is expected to be over capacity in 2036 without the development. The intersection is expected to be oversaturated with 2036 queues expected to lengthen and the DoS increasing from 1.25 to 1.53. This high DoS is a result of the right turn lane on the northern (or north-east orientated) Great Eastern Highway approach being oversaturated (demand exceeds capacity). Overall, the intersection is expected to operate at a LoS F, slightly worse than the expected E without the LSP development.

- Great Eastern Highway/Stoneham Street/Belgravia Street

  Similar to the highway intersection above, with the background traffic growth and the addition of the LSP development traffic, this intersection is expected to also be oversaturated in 2036. Queues are expected to lengthen with the DoS increasing from 1.13 to 1.40, this high DoS as a result of the right turn lane on the southern (or south-west orientated) Great Eastern Highway approach along with the Stoneham Street approach being oversaturated. Overall, the intersection is expected to operate at a LoS F, slightly worse than the expected E without the LSP development.

### 6.10 SIDRA Intersection Results

Analysis of the intersections in the Ascot LSP area at the 2024 (base) and 2036 (full development) design horizons shows that there is predicted to be no detrimental issues with respect to traffic queuing and delays for any movement in the PM peak period where the highest traffic flows are expected. This is on the basis that the existing intersection of Grandstand Road and Resolution Drive is able to be opened permanently to traffic as a LILO-RI as currently occurs on race days.

The Great Eastern Highway signalised intersections at Resolution Drive and Stoneham Street were also checked for performance in 2036. Unsurprisingly, these highway intersections are expected to be oversaturated in 2036, even without the Ascot LSP development, primarily due to increasing demands on Great Eastern Highway.

In summary, outside of the highway intersections, all parameters of this capacity assessment are within recognised thresholds for acceptable intersection operation.

# 7 Conclusions & Recommendations

This Transport Impact Assessment (TIA) for Ascot Racecourse has been prepared in accordance with the Western Australian Planning Commission (WAPC) *Transport Impact Assessment Guidelines Volume 2 – Planning Schemes, Structure Plans & Activity Centre Plans (2016)*, which is the most appropriate level of TIA for a proposed Scheme Amendment and Local Structure Plan submission.

The Site, which is the subject of this assessment, is currently zoned as Place of Public Assembly across the proposed five development Precinct. This zoning is proposed be changed to mixed use, place of public assembly, and residential across the five precincts to allow development in keeping with the Applicant's intention for this Site as a multi-use development and complements the intention for the proposed Golden Gateway LSP.

The following conclusions and recommendations have been made regarding the proposed development with respect to this TIA:

## 7.1 Overall Integration with Surrounding Attractors / Generators

As Ascot Racecourse is already very well established in the local area, a variety of uses including retail, food, beverage and recreational uses are available in the local area primarily along the route of the Great Eastern Highway and on the Racecourse site itself. In addition, as an attractor and employment location itself, the racecourse is located in close proximity to large residential areas of Redcliffe, Belmont, Rivervale and Maylands surrounding the site.

Approximately 1.2 km to the south of the Site, is situated Belmont Primary School.

## 7.2 Road Network Accessibility and Parking

The site is well located in relation to the existing road network with access available from the major road network through Ascot via current intersections.

The following key intersections are located on the main road network within the Ascot area and will be immediately affected by traffic flows to and from the development site:

- Resolution Drive / Stoneham Street / Grandstand Road Roundabout
- Raconteur Drive / Grandstand Road Intersection
- Grandstand Road and Waterways Cresent Roundabout
- Resolution Drive / Raconteur Drive intersection.

Under the WAPC Guidelines for TIAs, a Scheme Amendment requires a 'broad brush' assessment of the impacts of the development. While individual lot driveway access arrangements and car parking typically fall outside the scope of a general Structure Plan-level transport assessment outlined in the WAPC Guidelines, the Ascot LSP Applicant is proactively presenting discussions/solutions to enhance future lot access arrangements and network performance. These suggestions are subject to further refinement in subsequent stages of development planning.

Given the Ascot LSP restrictions for most access points will be LILOs due to geometrical constraints, a relief valve is needed to support northbound traffic (right turning vehicular demands from the east). In this regard, the existing intersection of Grandstand Road and Raconteur Drive is proposed to be opened permanently to traffic with left and right turns allowed from Grandstand Road into Raconteur Drive and a left turn out from Raconteur Drive onto Grandstand Road (LILO-RI). These are the same movements currently permitted at this intersection on race days to allow racecourse patrons to park and exit. This critical left turn out to, and right turn in from Grandstand Road are both expected to operate satisfactorily with acceptable queues and delays to support the Ascot LSP. Ultimate development queues are expected to be able to be contained within the current right turn pocket length on Grandstand Road.

Additionally, the Applicant has undertaken a high-level parking appraisal for the Ascot LSP, even though this is not a standard requirement of a Structure Plan assessment under the WAPC Guidelines. The exiting net parking availability of Ascot on a race day and the proposed new development areas combined, is estimated to be able to adequately meet the currently observed parking demand for a busy typical race day at Ascot. For non-typical large events (such as the New Years Perth Cup) the traffic management plan for the racecourse would be appropriate for continued adoption. To further ensure that racecourse patrons are well informed of parking distribution and pick up / set down areas, it is a recommendation of this TIA to implement a Travel Demand Plan to assist traffic management and actively discourage patrons from using their private motor vehicle to drive to and from the racecourse. This plan may include both the encouragement in the use of the currently available public transport services near the racecourse, improvement in private high occupancy services, and the uptake of ride share services (MaaS).

## 7.3 Pedestrian and Cycle Accessibility

The existing footpath network on the northern side of Grandstand Road provides good links to the area surrounding Ascot Racecourse. This will be further enhanced by the improvements proposed through the LSP and Scheme Amendment, as well as the Public Realm Strategy being developed as part of the Golden Gateway LSP.

It is a recommendation of this report that, investigations be undertaken to extend the existing footpath network surrounding the racecourse, including south of Grandstand Road and improving pedestrian and cycle connections towards the local amenities on Great Eastern Highway. If feasible, this would encourage trips on foot to local centres and help increase public transport usage to reduce the reliance on private vehicle modes.

## 7.4 Public Transport Accessibility

The main bus stops accessible from the site are on Grandstand Road immediately adjacent to one of the key pedestrian access points to the racecourse. Based on a desktop review, the infrastructure provided at these stops is limited as a shelter with seating is only available on the south-western side while a raised kerb to assist with reduced mobility access is only available for a short distance on the north-eastern side of Grandstand Road. It would be recommended that a review of these bus stops is undertaken irrespective of any development, particularly as they serve a significant destination, it could also be considered that the proposed development provides a contribution to these improvements.

Additional frequent bus services are accessible from the site along the Great Eastern Highway towards the new Bayswater Railway Sation, Redcliffe Station, central Perth and Perth Airport.

## 7.5 Analysis of the Transport Network

Analysis of the intersections in the Ascot area with and without the Ascot LSP has been assessed at the 2024 (current) and 2036 (ultimate) design horizons. The comparison of results show that there is predicted to be no detrimental issues with respect to traffic queuing and delays for any movement in the PM peak period (PM peak is when the highest traffic flows are expected). All parameters of this capacity assessment are within recognised thresholds for acceptable intersection operation.

The downstream Great Eastern Highway intersections were also assessed for completeness and were shown to operate above their capacity in 2036, this without the addition of the Ascot LSP development.

It is important to note that at the time of preparing this report, the details of the Golden Gateway Local Structure Plan were still under revision. Whilst every endeavour was made to interrogate the previous traffic modelling and road network proposals in the draft reports and liaise with key project members for updates, the details were still unfinished and presented too many unknowns to be adequately and accurately incorporated into this traffic modelling intersection analyses.

### 7.6 Recommendations

It is the recommendation of this TIA that:

- the existing intersection of Grandstand Road and Raconteur Drive be opened permanently to traffic as a LILO-RI as currently occurs on race days.
- Travel Demand Plan be undertaken to assist Ascot Racecourse patrons better utilise the parking available around the racecourse on race days and/or address this within the Ascot Event Traffic Management Plan.
- When GGLSP details are finalised, the external highway intersections be re-assessed in terms of their capacity to accommodate future development-generated traffic of the wider network and their anticipated background growth:
    - Great Eastern Highway/Resolution Drive/Hardey Road
    - Great Eastern Highway/Stoneham Street/Belgravia Street.

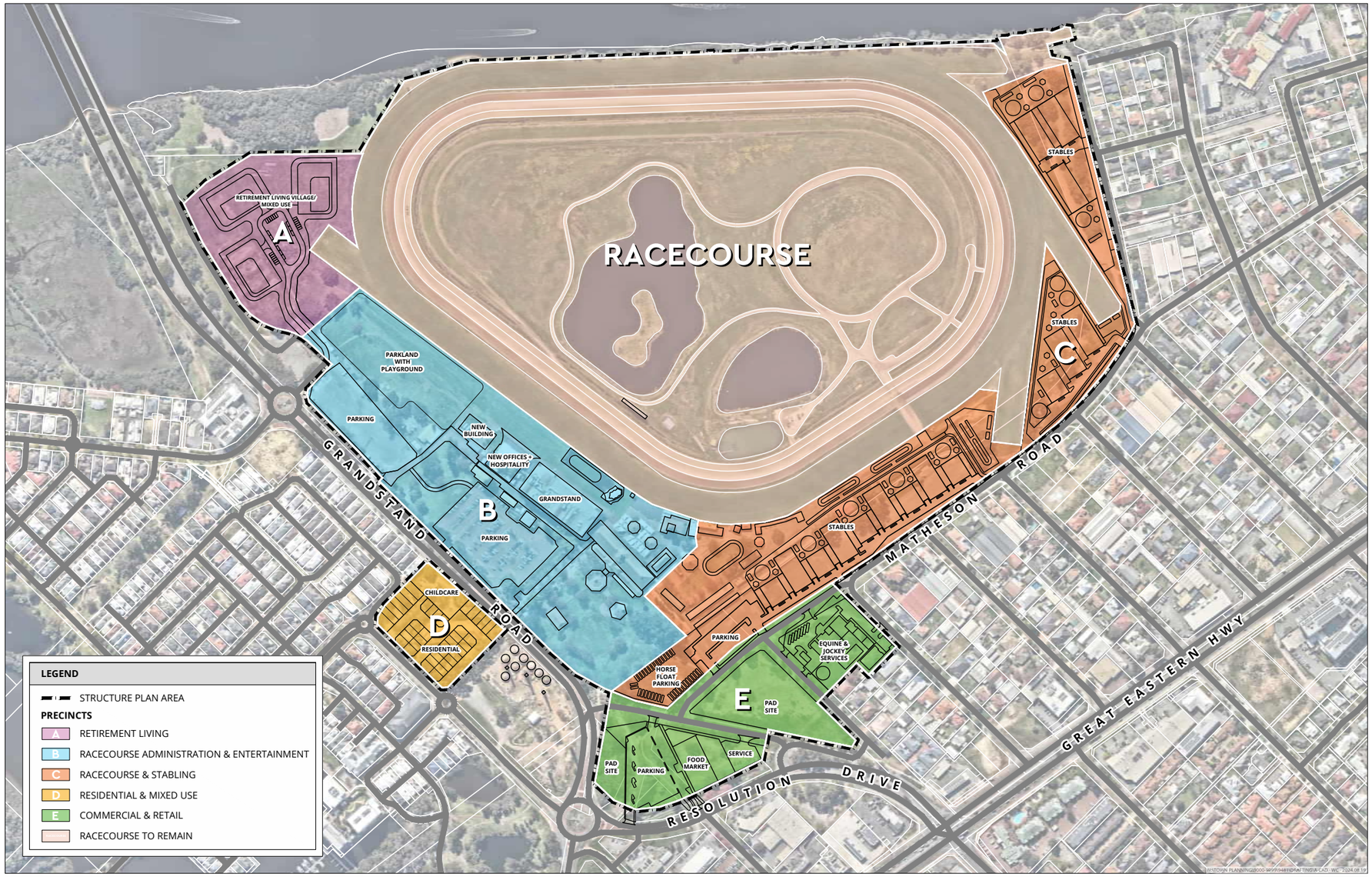
Attachment 12.1.5 Transport Impact Assessment

## Appendix A TIA Checklist

| Item | Provided | Comments/Proposals |
|---|---|---|
| Summary | Y | |
| Introduction / Background | Y | |
| Structure Plan Proposal | | |
| Regional context | Y | |
| Proposed land uses | Y | |
| Table of land uses and quantities | Y | |
| Major attractors / generators | Y | |
| Specific issues | Y | |
| Existing Situation | | |
| Existing land uses within structure plan | Y | |
| Existing land uses within 800m of structure plan area | Y | |
| Existing road network within structure plan area | Y | |
| Existing pedestrian / cycle network within structure plan area | Y | |
| Existing public transport services within structure plan area | Y | |
| Existing road network within 2 (or 5) km of the structure plan area | Y | |
| Traffic flows on roads within the structure plan area (PM and/or AM peak hours) | Y | |
| Existing pedestrian / cycle networks within 800m of the structure plan area. | Y | |
| Existing public transport services within 800m of the structure plan area. | Y | |
| Proposed Internal Transport Networks | | |
| Changes / additions to existing road network or proposed new road network | Y | |
| Road reservation widths | Y | |
| Road cross-sections & speed limits | Y | |
| Intersection controls | Y | |
| Pedestrian / cycle networks and crossing facilities | Y | |
| Changes to External Transport Networks | | |
| Road network | Y | |
| Intersection controls | Y | |
| Pedestrian/cycle networks and crossing facilities | Y | |
| Public transport services | Y | |
| Integration with the surrounding area | | |
| Trip attractors / generators within 800 metres | Y | |
| proposed changes to land uses within 800 metres | Y | |
| travel desire lines from development to these attractors/ generators | Y | |
| adequacy of external transport networks | Y | |
| deficiencies in external transport networks | Y | |
| remedial measures to address deficiencies | Y | |
| Analysis of internal transport networks | | |
| assessment years | Y | |
| time periods | Y | |
| Structure plan generated traffic | Y | |
| Extraneous (through) traffic | Y | |
| Design traffic flows (that is, total traffic) | Y | |
| Road cross-sections | Y | |
| Intersection controls | Y | |
| Access strategy | Y | |
| Pedestrian / cycle networks | Y | |
| Safe routes to schools | Y | |
| Pedestrian permeability & efficiency | Y | |
| Access to public transport | Y | |
| Analysis of external transport networks | | |
| Extent of analysis | Y | |
| Base flows for assessment year(s) | Y | |
| Total traffic flows | Y | |
| Road cross-sections | Y | |
| Intersection layouts and controls | Y | |
| Pedestrian / cycle networks | Y | |
| Conclusions | Y | |

## Appendix B Proposed Masterplan Precincts

Attachment 12.1.5 Transport Impact Assessment




**DRAFT MASTER PLAN CONCEPT**
VARIOUS LOTS - ASCOT RACECOURSE
ASCOT

N
0 100 m
SCALE @ A3: 1:4000
**9481-CON-01-D**

DRAWN: WC
DATE CREATED: 2024.08.19
PROJECTION: MGA50 GDA94
CADASTRE: LANDGATE
AERIAL: NEARMAP 20230831
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ROWE GROUP DESIGN

## Appendix C SIDRA Modelling Outputs

## LANE SUMMARY

**Site: 103a [Leg 1 PM (Site Folder: Raconteur T)]**

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

**Network: N101 [Raconteur PM with Dev (Network Folder: AM)]**

New Site
Site Category: Existing Design
Give-Way (Two-Way)
Design Life Analysis: Constant Number of Years = 12

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Median | | | | | | | | | | | | | | | |
| Lane 1 | 101 | 0.0 | 101 | 0.0 | 1149 | 0.088 | 100 | 2.2 | LOS A | 0.3 | 2.5 | Full | 6 | 0.0 | 0.0 |
| Approach | 101 | 0.0 | 101 | 0.0 | | 0.088 | | 2.2 | LOS A | 0.3 | 2.5 | | | | |
| North: Racecourse | | | | | | | | | | | | | | | |
| Lane 1 | 172 | 0.0 | 172 | 0.0 | 1298 | 0.132 | 100 | 5.7 | LOS A | 0.6 | 4.5 | Short | 50 | 0.0 | NA |
| Lane 2 | 150 | 0.0 | 150 | 0.0 | 1122 | 0.133 | 100 | 4.6 | LOS A | 0.5 | 3.9 | Full | 500 | 0.0 | 0.0 |
| Approach | 322 | 0.0 | 322 | 0.0 | | 0.133 | | 5.2 | LOS A | 0.6 | 4.5 | | | | |
| West: Raconteur Dr | | | | | | | | | | | | | | | |
| Lane 1 | 78 | 0.0 | 78 | 0.0 | 1772 | 0.044 | 100 | 5.6 | LOS A | 0.0 | 0.0 | Short | 75 | 0.0 | NA |
| Lane 2 | 314 | 2.5 | 314 | 2.5 | 1883 | 0.167 | 100 | 0.0 | LOS A | 0.0 | 0.0 | Full | 550 | 0.0 | 0.0 |
| Approach | 392 | 2.0 | 392 | 2.0 | | 0.167 | | 1.1 | NA | 0.0 | 0.0 | | | | |
| All Vehicles | 815 | 1.0 | 815 | 1.0 | | 0.167 | | 2.9 | NA | 0.6 | 4.5 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Approach Lane Flows (veh/h)**

South: Median

| Mov. From S To Exit: | T1 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|
| Lane 1 | 101 | 101 | 0.0 | 1149 | 0.088 | 100 | NA | NA |
| Approach | 101 | 101 | 0.0 | | 0.088 | | | |

North: Racecourse

| Mov. From N To Exit: | L2 E | T1 S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 172 | - | 172 | 0.0 | 1298 | 0.132 | 100 | 0.0 | 2 |
| Lane 2 | - | 150 | 150 | 0.0 | 1122 | 0.133 | 100 | NA | NA |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Approach | 172 | 150 | 322 | 0.0 | | 0.133 | | | |
| West: Raconteur Dr | | | | | | | | | |
| Mov. From W To Exit: | L2 N | T1 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 78 | - | 78 | 0.0 | 1772 | 0.044 | 100 | 0.0 | 2 |
| Lane 2 | - | 314 | 314 | 2.5 | 1883 | 0.167 | 100 | NA | NA |
| Approach | 78 | 314 | 392 | 2.0 | | 0.167 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | |
| All Vehicles | 815 | 1.0 | 0.167 | | | | | | |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| South: Median | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| North: Racecourse | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Raconteur Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |

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Project: C:\PJA\Phil Jones Associates\SharedData - 07575 Ascot Racecourse Local Structure Plan & Scheme Amendment\4. Technical\4.3 Analysis\4.3.1 Transport\07575_M_01_A_Ascot Racecourse LSP&SA.sip9

## LANE SUMMARY

**Site: 103b [Leg 2 PM (Site Folder: Raconteur T)]**

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

**Network: N101 [Raconteur PM with Dev (Network Folder: AM)]**

New Site
Site Category: Existing Design
Give-Way (Two-Way)
Design Life Analysis: Constant Number of Years = 12

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| East: Raconteur Dr | | | | | | | | | | | | | | | |
| Lane 1 | 417 | 3.8 | 417 | 3.8 | 1860 | 0.224 | 100 | 0.1 | LOS A | 0.0 | 0.0 | Full | 780 | 0.0 | 0.0 |
| Lane 2 | 101 | 0.0 | 101 | 0.0 | 1773 | 0.057 | 100 | 5.7 | LOS A | 0.0 | 0.0 | Short | 85 | 0.0 | NA |
| Approach | 518 | 3.0 | 518 | 3.0 | | 0.224 | | 1.2 | NA | 0.0 | 0.0 | | | | |
| North: Median | | | | | | | | | | | | | | | |
| Lane 1 | 150 | 0.0 | 150 | 0.0 | 781 | 0.192 | 100 | 3.4 | LOS A | 0.7 | 4.9 | Full | 6 | 0.0 | 0.0 |
| Approach | 150 | 0.0 | 150 | 0.0 | | 0.192 | | 3.4 | LOS A | 0.7 | 4.9 | | | | |
| All Vehicles | 668 | 2.3 | 668 | 2.3 | | 0.224 | | 1.7 | NA | 0.7 | 4.9 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Approach Lane Flows (veh/h)**

East: Raconteur Dr

| Mov. From E To Exit: | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 417 | - | 417 | 3.8 | 1860 | 0.224 | 100 | NA | NA |
| Lane 2 | - | 101 | 101 | 0.0 | 1773 | 0.057 | 100 | 0.0 | 1 |
| Approach | 417 | 101 | 518 | 3.0 | | 0.224 | | | |

North: Median

| Mov. From N To Exit: | R2 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|
| Lane 1 | 150 | 150 | 0.0 | 781 | 0.192 | 100 | NA | NA |
| Approach | 150 | 150 | 0.0 | | 0.192 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 668 | 2.3 | 0.224 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| East: Raconteur Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| North: Median | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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Project: C:\PJA\Phil Jones Associates\SharedData - 07575 Ascot Racecourse Local Structure Plan & Scheme Amendment\4. Technical\4.3 Analysis\4.3.1 Transport\07575_M_01_A_Ascot Racecourse LSP&SA.sip9

## LANE SUMMARY

**Site: 103a [Leg 1 PM (Site Folder: Grandstand/Raconteur)]**

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

**Network: N101 [Grandstand PM with Dev (Network Folder: AM)]**

New Site
Site Category: Existing Design
Give-Way (Two-Way)
Design Life Analysis: Constant Number of Years = 19

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NorthEast: Raconteur Dr | | | | | | | | | | | | | | | |
| Lane 1 | 100 | 0.0 | 100 | 0.0 | 1237 | 0.081 | 100 | 5.7 | LOS A | 0.3 | 2.4 | Short | 50 | 0.0 | NA |
| Lane 2 | 1 | 0.0 | 1 | 0.0 | 871 | 0.001 | 100 | 5.6 | LOS A | 0.0 | 0.0 | Full | 500 | 0.0 | 0.0 |
| Approach | 101 | 0.0 | 101 | 0.0 | | 0.081 | | 5.7 | LOS A | 0.3 | 2.4 | | | | |
| NorthWest: Grandstand Rd | | | | | | | | | | | | | | | |
| Lane 1 | 98 | 0.0 | 98 | 0.0 | 1548 | 0.063 | 100 | 5.8 | LOS A | 0.3 | 1.9 | Short | 75 | 0.0 | NA |
| Lane 2 | 345 | 3.5 | 345 | 3.5 | 1864 | 0.185 | 100 | 0.1 | LOS A | 0.0 | 0.0 | Full | 550 | 0.0 | 0.0 |
| Lane 3 | 345 | 3.5 | 345 | 3.5 | 1864 | 0.185 | 100 | 0.1 | LOS A | 0.0 | 0.0 | Full | 550 | 0.0 | 0.0 |
| Approach | 788 | 3.1 | 788 | 3.1 | | 0.185 | | 0.8 | LOS A | 0.3 | 1.9 | | | | |
| SouthWest: Median | | | | | | | | | | | | | | | |
| Lane 1 | 76 | 0.0 | 76 | 0.0 | 869 | 0.087 | 100 | 3.7 | LOS A | 0.3 | 2.2 | Full | 6 | 0.0 | 0.0 |
| Approach | 76 | 0.0 | 76 | 0.0 | | 0.087 | | 3.7 | LOS A | 0.3 | 2.2 | | | | |
| All Vehicles | 964 | 2.5 | 964 | 2.5 | | 0.185 | | 1.5 | NA | 0.3 | 2.4 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Approach Lane Flows (veh/h)**

NorthEast: Raconteur Dr

| Mov. From NE To Exit: | L2 SE | T1 SW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 100 | - | 100 | 0.0 | 1237 | 0.081 | 100 | 0.0 | 2 |
| Lane 2 | - | 1 | 1 | 0.0 | 871 | 0.001 | 100 | NA | NA |
| Approach | 100 | 1 | 101 | 0.0 | | 0.081 | | | |

NorthWest: Grandstand Rd

| Mov. From NW To Exit: | L2 NE | T1 SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 98 | - | 98 | 0.0 | 1548 | 0.063 | 100 | 0.0 | 2 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Lane 2 | - | 345 | 345 | 3.5 | 1864 | 0.185 | 100 | NA | NA |
| Lane 3 | - | 345 | 345 | 3.5 | 1864 | 0.185 | 100 | NA | NA |
| Approach | 98 | 690 | 788 | 3.1 | | 0.185 | | | |
| SouthWest: Median | | | | | | | | | |
| Mov. From SW To Exit: | T1 NE | Total | %HV | | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 76 | 76 | 0.0 | | 869 | 0.087 | 100 | NA | NA |
| Approach | 76 | 76 | 0.0 | | | 0.087 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | |
| All Vehicles | 964 | 2.5 | 0.185 | | | | | | |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate sec | Capacity veh/h | Deg. Satn veh/h | Min. Delay v/c | Merge Delay sec | sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| NorthEast: Raconteur Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthWest: Grandstand Rd | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| SouthWest: Median | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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## LANE SUMMARY

**Site: 103b [Leg 2 PM (Site Folder: Grandstand/Raconteur)]**

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

**Network: N101 [Grandstand PM with Dev (Network Folder: AM)]**

New Site
Site Category: Existing Design
Give-Way (Two-Way)
Design Life Analysis: Constant Number of Years = 19

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Grandtand Rd | | | | | | | | | | | | | | | |
| Lane 1 | 912 | 2.2 | 912 | 2.2 | 1888 | 0.483 | 100 | 0.3 | LOS A | 0.0 | 0.0 | Full | 780 | 0.0 | 0.0 |
| Lane 2 | 912 | 2.2 | 912 | 2.2 | 1888 | 0.483 | 100 | 0.3 | LOS A | 0.0 | 0.0 | Full | 780 | 0.0 | 0.0 |
| Lane 3 | 76 | 0.0 | 76 | 0.0 | 1770 | 0.043 | 100 | 5.7 | LOS A | 0.0 | 0.0 | Short | 50 | 0.0 | NA |
| Approach | 1900 | 2.1 | 1900 | 2.1 | | 0.483 | | 0.5 | NA | 0.0 | 0.0 | | | | |
| NorthEast: Median | | | | | | | | | | | | | | | |
| Lane 1 | 1 | 0.0 | 1 | 0.0 | 115 | 0.009 | 100 | 30.2 | LOS D | 0.0 | 0.2 | Full | 6 | 0.0 | 0.0 |
| Approach | 1 | 0.0 | 1 | 0.0 | | 0.009 | | 30.2 | LOS D | 0.0 | 0.2 | | | | |
| All Vehicles | 1901 | 2.1 | 1901 | 2.1 | | 0.483 | | 0.5 | NA | 0.0 | 0.2 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Approach Lane Flows (veh/h)**

SouthEast: Grandtand Rd

| Mov. From SE To Exit: | T1 NW | R2 NE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 912 | - | 912 | 2.2 | 1888 | 0.483 | 100 | NA | NA |
| Lane 2 | 912 | - | 912 | 2.2 | 1888 | 0.483 | 100 | NA | NA |
| Lane 3 | - | 76 | 76 | 0.0 | 1770 | 0.043 | 100 | 0.0 | 2 |
| Approach | 1824 | 76 | 1900 | 2.1 | | 0.483 | | | |

NorthEast: Median

| Mov. From NE To Exit: | R2 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|
| Lane 1 | 1 | 1 | 0.0 | 115 | 0.009 | 100 | NA | NA |
| Approach | 1 | 1 | 0.0 | | 0.009 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|

| | | | |
|---|---|---|---|
| All Vehicles | 1901 | 2.1 | 0.483 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| SouthEast: Grandtand Rd | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: Median | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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## LANE SUMMARY

**Site: 103a [Leg 1 PM - No Dev (Site Folder: Raconteur T)]**

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

**Network: N101 [Raconteur Current PM (Network Folder: AM)]**

New Site
Site Category: Existing Design
Give-Way (Two-Way)
Design Life Analysis: Constant Number of Years = 12

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Median | | | | | | | | | | | | | | | |
| Lane 1 | 4 | 0.0 | 4 | 0.0 | 1200 | 0.004 | 100 | 1.8 | LOS A | 0.0 | 0.1 | Full | 6 | 0.0 | 0.0 |
| Approach | 4 | 0.0 | 4 | 0.0 | | 0.004 | | 1.8 | LOS A | 0.0 | 0.1 | | | | |
| North: Racecourse | | | | | | | | | | | | | | | |
| Lane 1 | 23 | 0.0 | 23 | 0.0 | 1298 | 0.018 | 100 | 5.5 | LOS A | 0.1 | 0.6 | Short | 50 | 0.0 | NA |
| Lane 2 | 21 | 0.0 | 21 | 0.0 | 1202 | 0.018 | 100 | 4.1 | LOS A | 0.1 | 0.5 | Full | 500 | 0.0 | 0.0 |
| Approach | 45 | 0.0 | 45 | 0.0 | | 0.018 | | 4.9 | LOS A | 0.1 | 0.6 | | | | |
| West: Raconteur Dr | | | | | | | | | | | | | | | |
| Lane 1 | 2 | 0.0 | 2 | 0.0 | 1838 | 0.001 | 100 | 5.5 | LOS A | 0.0 | 0.0 | Short | 75 | 0.0 | NA |
| Lane 2 | 314 | 2.5 | 314 | 2.5 | 1883 | 0.167 | 100 | 0.0 | LOS A | 0.0 | 0.0 | Full | 550 | 0.0 | 0.0 |
| Approach | 316 | 2.5 | 316 | 2.5 | | 0.167 | | 0.1 | NA | 0.0 | 0.0 | | | | |
| All Vehicles | 365 | 2.1 | 365 | 2.1 | | 0.167 | | 0.7 | NA | 0.1 | 0.6 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Approach Lane Flows (veh/h)**

South: Median

| Mov. From S To Exit: | T1 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|
| Lane 1 | 4 | 4 | 0.0 | 1200 | 0.004 | 100 | NA | NA |
| Approach | 4 | 4 | 0.0 | | 0.004 | | | |

North: Racecourse

| Mov. From N To Exit: | L2 E | T1 S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 23 | - | 23 | 0.0 | 1298 | 0.018 | 100 | 0.0 | 2 |
| Lane 2 | - | 21 | 21 | 0.0 | 1202 | 0.018 | 100 | NA | NA |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Approach | 23 | 21 | 45 | 0.0 | | 0.018 | | | |
| West: Raconteur Dr | | | | | | | | | |
| Mov. From W To Exit: | L2 N | T1 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 2 | - | 2 | 0.0 | 1838 | 0.001 | 100 | 0.0 | 2 |
| Lane 2 | - | 314 | 314 | 2.5 | 1883 | 0.167 | 100 | NA | NA |
| Approach | 2 | 314 | 316 | 2.5 | | 0.167 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | |
| All Vehicles | 365 | 2.1 | 0.167 | | | | | | |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate sec | Capacity veh/h | Deg. Satn veh/h | Min. Delay v/c | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| South: Median | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| North: Racecourse | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Raconteur Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |

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## LANE SUMMARY

**Site: 103b [Leg 2 PM - No Dev (Site Folder: Raconteur T)]**

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

**Network: N101 [Raconteur Current PM (Network Folder: AM)]**

New Site
Site Category: Existing Design
Give-Way (Two-Way)
Design Life Analysis: Constant Number of Years = 12

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| East: Raconteur Dr | | | | | | | | | | | | | | | |
| Lane 1 | 417 | 3.8 | 417 | 3.8 | 1860 | 0.224 | 100 | 0.1 | LOS A | 0.0 | 0.0 | Full | 780 | 0.0 | 0.0 |
| Lane 2 | 4 | 0.0 | 4 | 0.0 | 1838 | 0.002 | 100 | 5.7 | LOS A | 0.0 | 0.0 | Short | 85 | 0.0 | NA |
| Approach | 421 | 3.7 | 421 | 3.7 | | 0.224 | | 0.2 | NA | 0.0 | 0.0 | | | | |
| North: Median | | | | | | | | | | | | | | | |
| Lane 1 | 21 | 0.0 | 21 | 0.0 | 850 | 0.025 | 100 | 2.5 | LOS A | 0.1 | 0.6 | Full | 6 | 0.0 | 0.0 |
| Approach | 21 | 0.0 | 21 | 0.0 | | 0.025 | | 2.5 | LOS A | 0.1 | 0.6 | | | | |
| All Vehicles | 443 | 3.5 | 443 | 3.5 | | 0.224 | | 0.3 | NA | 0.1 | 0.6 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Approach Lane Flows (veh/h)**

East: Raconteur Dr

| Mov. From E To Exit: | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 417 | - | 417 | 3.8 | 1860 | 0.224 | 100 | NA | NA |
| Lane 2 | - | 4 | 4 | 0.0 | 1838 | 0.002 | 100 | 0.0 | 1 |
| Approach | 417 | 4 | 421 | 3.7 | | 0.224 | | | |

North: Median

| Mov. From N To Exit: | R2 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|
| Lane 1 | 21 | 21 | 0.0 | 850 | 0.025 | 100 | NA | NA |
| Approach | 21 | 21 | 0.0 | | 0.025 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 443 | 3.5 | 0.224 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| East: Raconteur Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| North: Median | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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Attachment 12.1.5 Transport Impact Assessment

## LANE SUMMARY

**Site: 101 [Grandstand/Garratt/Waterway 2041 PM - with GG/ Dev (Site Folder: Grandstand/Garratt/Waterway)]**

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Roundabout
Design Life Analysis: Constant Number of Years = 12

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Grandstand Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 917 | 0.9 | 917 | 0.9 | 1695 | 0.541 | 100 | 4.3 | LOS A | 5.1 | 38.1 | Full | 300 | 0.0 | 0.0 |
| Lane 2 | 772 | 0.9 | 772 | 0.9 | 1427 | 0.541 | 100 | 4.8 | LOS A | 5.0 | 36.9 | Full | 300 | 0.0 | 0.0 |
| Approach | 1689 | 0.9 | 1689 | 0.9 | | 0.541 | | 4.6 | LOS A | 5.1 | 38.1 | | | | |
| NorthEast: Racecourse | | | | | | | | | | | | | | | |
| Lane 1[d] | 74 | 1.4 | 74 | 1.4 | 710 | 0.104 | 100 | 8.0 | LOS A | 0.4 | 3.3 | Full | 500 | 0.0 | 0.0 |
| Approach | 74 | 1.4 | 74 | 1.4 | | 0.104 | | 8.0 | LOS A | 0.4 | 3.3 | | | | |
| NorthWest: Garratt Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 472 | 1.3 | 472 | 1.3 | 1686 | 0.280 | 100 | 4.2 | LOS A | 2.2 | 16.1 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 400 | 1.3 | 400 | 1.3 | 1429 | 0.280 | 100 | 4.7 | LOS A | 2.1 | 15.8 | Full | 500 | 0.0 | 0.0 |
| Approach | 872 | 1.3 | 872 | 1.3 | | 0.280 | | 4.4 | LOS A | 2.2 | 16.1 | | | | |
| SouthWest: Waterway Cres | | | | | | | | | | | | | | | |
| Lane 1[d] | 35 | 0.0 | 35 | 0.0 | 588 | 0.059 | 100 | 11.7 | LOS B | 0.4 | 2.8 | Full | 500 | 0.0 | 0.0 |
| Approach | 35 | 0.0 | 35 | 0.0 | | 0.059 | | 11.7 | LOS B | 0.4 | 2.8 | | | | |
| All Vehicles | 2669 | 1.0 | 2669 | 1.0 | | 0.541 | | 4.7 | LOS A | 5.1 | 38.1 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

SouthEast: Grandstand Road

| Mov. From SE To Exit: | L2 SW | T1 NW | R2 NE | U SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 15 | 902 | - | - | 917 | 0.9 | 1695 | 0.541 | 100 | NA | NA |
| Lane 2 | - | 722 | 48 | 1 | 772 | 0.9 | 1427 | 0.541 | 100 | NA | NA |
| Approach | 15 | 1624 | 48 | 1 | 1689 | 0.9 | | 0.541 | | | |

NorthEast: Racecourse

| Mov. From NE To Exit: | L2 SE | T1 SW | R2 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 41 | 1 | 32 | 74 | 1.4 | | 710 | 0.104 | 100 | NA | NA |
| Approach | 41 | 1 | 32 | 74 | 1.4 | | | 0.104 | | | |
| NorthWest: Garratt Road | | | | | | | | | | | |
| Mov. From NW To Exit: | L2 NE | T1 SE | R2 SW | U NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 47 | 424 | - | - | 472 | 1.3 | 1686 | 0.280 | 100 | NA | NA |
| Lane 2 | - | 365 | 32 | 3 | 400 | 1.3 | 1429 | 0.280 | 100 | NA | NA |
| Approach | 47 | 789 | 32 | 3 | 872 | 1.3 | | 0.280 | | | |
| SouthWest: Waterway Cres | | | | | | | | | | | |
| Mov. From SW To Exit: | L2 NW | T1 NE | R2 SE | Total | %HV | | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 19 | 1 | 15 | 35 | 0.0 | | 588 | 0.059 | 100 | NA | NA |
| Approach | 19 | 1 | 15 | 35 | 0.0 | | | 0.059 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | | | |
| All Vehicles | 2669 | 1.0 | 0.541 | | | | | | | | |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate sec | Capacity veh/h | Deg. Satn veh/h | Min. Delay v/c | Merge Delay sec | sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| SouthEast: Grandstand Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: Racecourse | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthWest: Garratt Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| SouthWest: Waterway Cres | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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# LANE SUMMARY

**Site: 101 [Grandstand/Garratt/Waterway Current AM (Site Folder: Grandstand/Garratt/Waterway)]**

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Roundabout

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Grandstand Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 342 | 2.8 | 342 | 2.8 | 1747 | 0.196 | 100 | 4.0 | LOS A | 1.1 | 8.4 | Full | 300 | 0.0 | 0.0 |
| Lane 2 | 290 | 2.9 | 290 | 2.9 | 1483 | 0.196 | 100 | 4.2 | LOS A | 1.1 | 8.3 | Full | 300 | 0.0 | 0.0 |
| Approach | 633 | 2.8 | 633 | 2.8 | | 0.196 | | 4.1 | LOS A | 1.1 | 8.4 | | | | |
| NorthEast: Racecourse | | | | | | | | | | | | | | | |
| Lane 1[d] | 18 | 29.1 | 18 | 29.1 | 455 | 0.039 | 100 | 11.0 | LOS B | 0.1 | 1.5 | Full | 500 | 0.0 | 0.0 |
| Approach | 18 | 29.1 | 18 | 29.1 | | 0.039 | | 11.0 | LOS B | 0.1 | 1.5 | | | | |
| NorthWest: Garratt Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 589 | 1.4 | 589 | 1.4 | 1747 | 0.337 | 100 | 4.1 | LOS A | 2.8 | 20.9 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 498 | 1.4 | 498 | 1.4 | 1476 | 0.337 | 100 | 4.3 | LOS A | 2.8 | 20.6 | Full | 500 | 0.0 | 0.0 |
| Approach | 1086 | 1.4 | 1086 | 1.4 | | 0.337 | | 4.2 | LOS A | 2.8 | 20.9 | | | | |
| SouthWest: Waterway Cres | | | | | | | | | | | | | | | |
| Lane 1[d] | 53 | 4.0 | 53 | 4.0 | 866 | 0.061 | 100 | 7.4 | LOS A | 0.3 | 2.2 | Full | 500 | 0.0 | 0.0 |
| Approach | 53 | 4.0 | 53 | 4.0 | | 0.061 | | 7.4 | LOS A | 0.3 | 2.2 | | | | |
| All Vehicles | 1789 | 2.2 | 1789 | 2.2 | | 0.337 | | 4.3 | LOS A | 2.8 | 20.9 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

SouthEast: Grandstand Road

| Mov. From SE To Exit: | L2 SW | T1 NW | R2 NE | U SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 14 | 328 | - | - | 342 | 2.8 | 1747 | 0.196 | 100 | NA | NA |
| Lane 2 | - | 280 | 9 | 1 | 290 | 2.9 | 1483 | 0.196 | 100 | NA | NA |
| Approach | 14 | 608 | 9 | 1 | 633 | 2.8 | | 0.196 | | | |

NorthEast: Racecourse

| Mov. From NE To Exit: | L2 SE | T1 SW | R2 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 9 | 1 | 7 | 18 | 29.1 | 455 | 0.039 | 100 | NA | NA |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | 9 | 1 | 7 | 18 | 29.1 | | | 0.039 | | | |
| NorthWest: Garratt Road | | | | | | | | | | | |
| Mov. From NW To Exit: | L2 NE | T1 SE | R2 SW | U NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 8 | 580 | - | - | 589 | 1.4 | 1747 | 0.337 | 100 | NA | NA |
| Lane 2 | - | 481 | 16 | 1 | 498 | 1.4 | 1476 | 0.337 | 100 | NA | NA |
| Approach | 8 | 1061 | 16 | 1 | 1086 | 1.4 | | 0.337 | | | |
| SouthWest: Waterway Cres | | | | | | | | | | | |
| Mov. From SW To Exit: | L2 NW | T1 NE | R2 SE | Total | %HV | | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 25 | 1 | 26 | 53 | 4.0 | | 866 | 0.061 | 100 | NA | NA |
| Approach | 25 | 1 | 26 | 53 | 4.0 | | | 0.061 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | | | |
| All Vehicles | 1789 | 2.2 | 0.337 | | | | | | | | |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate sec | Capacity veh/h | Deg. Satn veh/h | Min. Delay v/c | Merge Delay sec | sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| SouthEast: Grandstand Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: Racecourse | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthWest: Garratt Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| SouthWest: Waterway Cres | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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# LANE SUMMARY

**Site: 101 [Grandstand/Garratt/Waterway Current PM (Site Folder: Grandstand/Garratt/Waterway)]**

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Roundabout
Design Life Analysis: Constant Number of Years = 12

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Grandstand Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 956 | 1.0 | 956 | 1.0 | 1758 | 0.544 | 100 | 4.2 | LOS A | 5.1 | 37.6 | Full | 300 | 0.0 | 0.0 |
| Lane 2 | 804 | 1.0 | 804 | 1.0 | 1480 | 0.544 | 100 | 4.3 | LOS A | 5.0 | 36.9 | Full | 300 | 0.0 | 0.0 |
| Approach | 1760 | 1.0 | 1760 | 1.0 | | 0.544 | | 4.2 | LOS A | 5.1 | 37.6 | | | | |
| NorthEast: Racecourse | | | | | | | | | | | | | | | |
| Lane 1[d] | 21 | 5.0 | 21 | 5.0 | 706 | 0.030 | 100 | 7.1 | LOS A | 0.1 | 0.9 | Full | 500 | 0.0 | 0.0 |
| Approach | 21 | 5.0 | 21 | 5.0 | | 0.030 | | 7.1 | LOS A | 0.1 | 0.9 | | | | |
| NorthWest: Garratt Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 438 | 1.7 | 438 | 1.7 | 1781 | 0.246 | 100 | 4.0 | LOS A | 2.0 | 15.1 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 370 | 1.5 | 370 | 1.5 | 1506 | 0.246 | 100 | 4.5 | LOS A | 2.0 | 14.6 | Full | 500 | 0.0 | 0.0 |
| Approach | 808 | 1.6 | 808 | 1.6 | | 0.246 | | 4.2 | LOS A | 2.0 | 15.1 | | | | |
| SouthWest: Waterway Cres | | | | | | | | | | | | | | | |
| Lane 1[d] | 35 | 0.0 | 35 | 0.0 | 610 | 0.057 | 100 | 12.7 | LOS B | 0.4 | 3.1 | Full | 500 | 0.0 | 0.0 |
| Approach | 35 | 0.0 | 35 | 0.0 | | 0.057 | | 12.7 | LOS B | 0.4 | 3.1 | | | | |
| All Vehicles | 2624 | 1.2 | 2624 | 1.2 | | 0.544 | | 4.4 | LOS A | 5.1 | 37.6 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

SouthEast: Grandstand Road

| Mov. From SE To Exit: | L2 SW | T1 NW | R2 NE | U SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 15 | 941 | - | - | 956 | 1.0 | 1758 | 0.544 | 100 | NA | NA |
| Lane 2 | - | 799 | 4 | 1 | 804 | 1.0 | 1480 | 0.544 | 100 | NA | NA |
| Approach | 15 | 1740 | 4 | 1 | 1760 | 1.0 | | 0.544 | | | |

NorthEast: Racecourse

| Mov. From NE To Exit: | L2 SE | T1 SW | R2 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 15 | 1 | 5 | 21 | 5.0 | | 706 | 0.030 | 100 | NA | NA |
| Approach | 15 | 1 | 5 | 21 | 5.0 | | | 0.030 | | | |
| NorthWest: Garratt Road | | | | | | | | | | | |
| Mov. From NW To Exit: | L2 NE | T1 SE | R2 SW | U NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 3 | 435 | - | - | 438 | 1.7 | 1781 | 0.246 | 100 | NA | NA |
| Lane 2 | - | 335 | 32 | 4 | 370 | 1.5 | 1506 | 0.246 | 100 | NA | NA |
| Approach | 3 | 769 | 32 | 4 | 808 | 1.6 | | 0.246 | | | |
| SouthWest: Waterway Cres | | | | | | | | | | | |
| Mov. From SW To Exit: | L2 NW | T1 NE | R2 SE | Total | %HV | | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 19 | 1 | 15 | 35 | 0.0 | | 610 | 0.057 | 100 | NA | NA |
| Approach | 19 | 1 | 15 | 35 | 0.0 | | | 0.057 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 2624 | 1.2 | 0.544 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| SouthEast: Grandstand Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: Racecourse | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthWest: Garratt Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| SouthWest: Waterway Cres | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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Attachment 12.1.5 Transport Impact Assessment

# LANE SUMMARY

**Site: 101 [Grandstand/Garratt/Waterway 2041 AM (Site Folder: Grandstand/Garratt/Waterway)]**

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Roundabout
Design Life Analysis: Constant Number of Years = 24

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Grandstand Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 384 | 2.8 | 384 | 2.8 | 1751 | 0.220 | 100 | 4.0 | LOS A | 1.3 | 9.8 | Full | 300 | 0.0 | 0.0 |
| Lane 2 | 326 | 2.8 | 326 | 2.8 | 1484 | 0.220 | 100 | 4.2 | LOS A | 1.3 | 9.6 | Full | 300 | 0.0 | 0.0 |
| Approach | 710 | 2.8 | 710 | 2.8 | | 0.220 | | 4.1 | LOS A | 1.3 | 9.8 | | | | |
| NorthEast: Racecourse | | | | | | | | | | | | | | | |
| Lane 1[d] | 18 | 29.1 | 18 | 29.1 | 421 | 0.042 | 100 | 11.7 | LOS B | 0.2 | 1.6 | Full | 500 | 0.0 | 0.0 |
| Approach | 18 | 29.1 | 18 | 29.1 | | 0.042 | | 11.7 | LOS B | 0.2 | 1.6 | | | | |
| NorthWest: Garratt Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 662 | 1.4 | 662 | 1.4 | 1750 | 0.379 | 100 | 4.1 | LOS A | 3.3 | 24.8 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 559 | 1.4 | 559 | 1.4 | 1477 | 0.379 | 100 | 4.3 | LOS A | 3.3 | 24.5 | Full | 500 | 0.0 | 0.0 |
| Approach | 1221 | 1.4 | 1221 | 1.4 | | 0.379 | | 4.2 | LOS A | 3.3 | 24.8 | | | | |
| SouthWest: Waterway Cres | | | | | | | | | | | | | | | |
| Lane 1[d] | 53 | 4.0 | 53 | 4.0 | 839 | 0.063 | 100 | 7.6 | LOS A | 0.3 | 2.2 | Full | 500 | 0.0 | 0.0 |
| Approach | 53 | 4.0 | 53 | 4.0 | | 0.063 | | 7.6 | LOS A | 0.3 | 2.2 | | | | |
| All Vehicles | 2002 | 2.2 | 2002 | 2.2 | | 0.379 | | 4.3 | LOS A | 3.3 | 24.8 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

SouthEast: Grandstand Road

| Mov. From SE To Exit: | L2 SW | T1 NW | R2 NE | U SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 14 | 371 | - | - | 384 | 2.8 | 1751 | 0.220 | 100 | NA | NA |
| Lane 2 | - | 315 | 9 | 1 | 326 | 2.8 | 1484 | 0.220 | 100 | NA | NA |
| Approach | 14 | 686 | 9 | 1 | 710 | 2.8 | | 0.220 | | | |

NorthEast: Racecourse

| Mov. From NE To Exit: | L2 SE | T1 SW | R2 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 9 | 1 | 7 | 18 | 29.1 | | 421 | 0.042 | 100 | NA | NA |
| Approach | 9 | 1 | 7 | 18 | 29.1 | | | 0.042 | | | |
| NorthWest: Garratt Road | | | | | | | | | | | |
| Mov. From NW To Exit: | L2 NE | T1 SE | R2 SW | U NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 8 | 654 | - | - | 662 | 1.4 | 1750 | 0.379 | 100 | NA | NA |
| Lane 2 | - | 542 | 16 | 1 | 559 | 1.4 | 1477 | 0.379 | 100 | NA | NA |
| Approach | 8 | 1196 | 16 | 1 | 1221 | 1.4 | | 0.379 | | | |
| SouthWest: Waterway Cres | | | | | | | | | | | |
| Mov. From SW To Exit: | L2 NW | T1 NE | R2 SE | Total | %HV | | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 25 | 1 | 26 | 53 | 4.0 | | 839 | 0.063 | 100 | NA | NA |
| Approach | 25 | 1 | 26 | 53 | 4.0 | | | 0.063 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | | | |
| All Vehicles | 2002 | 2.2 | 0.379 | | | | | | | | |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate sec | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| SouthEast: Grandstand Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: Racecourse | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthWest: Garratt Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| SouthWest: Waterway Cres | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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# LANE SUMMARY

**Site: 101 [Grandstand/Garratt/Waterway 2041 PM (Site Folder: Grandstand/Garratt/Waterway)]**

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Roundabout
Design Life Analysis: Constant Number of Years = 24

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Grandstand Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 880 | 1.0 | 880 | 1.0 | 1756 | 0.501 | 100 | 4.1 | LOS A | 4.3 | 31.9 | Full | 300 | 0.0 | 0.0 |
| Lane 2 | 742 | 1.0 | 742 | 1.0 | 1479 | 0.501 | 100 | 4.3 | LOS A | 4.2 | 31.4 | Full | 300 | 0.0 | 0.0 |
| Approach | 1622 | 1.0 | 1622 | 1.0 | | 0.501 | | 4.2 | LOS A | 4.3 | 31.9 | | | | |
| NorthEast: Racecourse | | | | | | | | | | | | | | | |
| Lane 1[d] | 21 | 5.0 | 21 | 5.0 | 729 | 0.029 | 100 | 6.9 | LOS A | 0.1 | 0.9 | Full | 500 | 0.0 | 0.0 |
| Approach | 21 | 5.0 | 21 | 5.0 | | 0.029 | | 6.9 | LOS A | 0.1 | 0.9 | | | | |
| NorthWest: Garratt Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 404 | 1.7 | 404 | 1.7 | 1779 | 0.227 | 100 | 4.0 | LOS A | 1.8 | 13.5 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 342 | 1.5 | 342 | 1.5 | 1506 | 0.227 | 100 | 4.5 | LOS A | 1.8 | 13.1 | Full | 500 | 0.0 | 0.0 |
| Approach | 747 | 1.6 | 747 | 1.6 | | 0.227 | | 4.2 | LOS A | 1.8 | 13.5 | | | | |
| SouthWest: Waterway Cres | | | | | | | | | | | | | | | |
| Lane 1[d] | 35 | 0.0 | 35 | 0.0 | 643 | 0.054 | 100 | 11.3 | LOS B | 0.4 | 2.6 | Full | 500 | 0.0 | 0.0 |
| Approach | 35 | 0.0 | 35 | 0.0 | | 0.054 | | 11.3 | LOS B | 0.4 | 2.6 | | | | |
| All Vehicles | 2424 | 1.2 | 2424 | 1.2 | | 0.501 | | 4.3 | LOS A | 4.3 | 31.9 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

SouthEast: Grandstand Road

| Mov. From SE To Exit: | L2 SW | T1 NW | R2 NE | U SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 15 | 866 | - | - | 880 | 1.0 | 1756 | 0.501 | 100 | NA | NA |
| Lane 2 | - | 736 | 4 | 1 | 742 | 1.0 | 1479 | 0.501 | 100 | NA | NA |
| Approach | 15 | 1602 | 4 | 1 | 1622 | 1.0 | | 0.501 | | | |

NorthEast: Racecourse

| Mov. From NE To Exit: | L2 SE | T1 SW | R2 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 15 | 1 | 5 | 21 | 5.0 | | 729 | 0.029 | 100 | NA | NA |
| Approach | 15 | 1 | 5 | 21 | 5.0 | | | 0.029 | | | |
| NorthWest: Garratt Road | | | | | | | | | | | |
| Mov. From NW To Exit: | L2 NE | T1 SE | R2 SW | U NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 3 | 401 | - | - | 404 | 1.7 | 1779 | 0.227 | 100 | NA | NA |
| Lane 2 | - | 307 | 32 | 4 | 342 | 1.5 | 1506 | 0.227 | 100 | NA | NA |
| Approach | 3 | 708 | 32 | 4 | 747 | 1.6 | | 0.227 | | | |
| SouthWest: Waterway Cres | | | | | | | | | | | |
| Mov. From SW To Exit: | L2 NW | T1 NE | R2 SE | Total | %HV | | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 19 | 1 | 15 | 35 | 0.0 | | 643 | 0.054 | 100 | NA | NA |
| Approach | 19 | 1 | 15 | 35 | 0.0 | | | 0.054 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 2424 | 1.2 | 0.501 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| SouthEast: Grandstand Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: Racecourse | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthWest: Garratt Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| SouthWest: Waterway Cres | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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Project: C:\PJA\Phil Jones Associates\SharedData - 07575 Ascot Racecourse Local Structure Plan & Scheme Amendment\4. Technical\4.3 Analysis\4.3.1 Transport\07575_M_01_A_Ascot Racecourse LSP&SA.sip9

## LANE SUMMARY

**Site: 101 [Grandstand/Garratt/Waterway 2041 AM - with GG/ Dev (Site Folder: Grandstand/Garratt/Waterway)]**

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Roundabout
Design Life Analysis: Constant Number of Years = 24

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Grandstand Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 479 | 2.3 | 479 | 2.3 | 1626 | 0.295 | 100 | 4.3 | LOS A | 2.0 | 15.4 | Full | 300 | 0.0 | 0.0 |
| Lane 2 | 407 | 2.2 | 407 | 2.2 | 1379 | 0.295 | 100 | 4.8 | LOS A | 2.0 | 14.9 | Full | 300 | 0.0 | 0.0 |
| Approach | 886 | 2.2 | 886 | 2.2 | | 0.295 | | 4.5 | LOS A | 2.0 | 15.4 | | | | |
| NorthEast: Racecourse | | | | | | | | | | | | | | | |
| Lane 1[d] | 125 | 4.2 | 125 | 4.2 | 556 | 0.225 | 100 | 10.5 | LOS B | 1.0 | 7.6 | Full | 500 | 0.0 | 0.0 |
| Approach | 125 | 4.2 | 125 | 4.2 | | 0.225 | | 10.5 | LOS B | 1.0 | 7.6 | | | | |
| NorthWest: Garratt Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 683 | 1.3 | 683 | 1.3 | 1713 | 0.399 | 100 | 4.2 | LOS A | 3.5 | 26.4 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 577 | 1.3 | 577 | 1.3 | 1446 | 0.399 | 100 | 4.4 | LOS A | 3.5 | 26.0 | Full | 500 | 0.0 | 0.0 |
| Approach | 1260 | 1.3 | 1260 | 1.3 | | 0.399 | | 4.3 | LOS A | 3.5 | 26.4 | | | | |
| SouthWest: Waterway Cres | | | | | | | | | | | | | | | |
| Lane 1[d] | 53 | 4.0 | 53 | 4.0 | 741 | 0.071 | 100 | 8.4 | LOS A | 0.3 | 2.6 | Full | 500 | 0.0 | 0.0 |
| Approach | 53 | 4.0 | 53 | 4.0 | | 0.071 | | 8.4 | LOS A | 0.3 | 2.6 | | | | |
| All Vehicles | 2324 | 1.9 | 2324 | 1.9 | | 0.399 | | 4.8 | LOS A | 3.5 | 26.4 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

SouthEast: Grandstand Road

| Mov. From SE To Exit: | L2 SW | T1 NW | R2 NE | U SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 14 | 466 | - | - | 479 | 2.3 | 1626 | 0.295 | 100 | NA | NA |
| Lane 2 | - | 378 | 27 | 1 | 407 | 2.2 | 1379 | 0.295 | 100 | NA | NA |
| Approach | 14 | 844 | 27 | 1 | 886 | 2.2 | | 0.295 | | | |

NorthEast: Racecourse

| Mov. From NE To Exit: | L2 SE | T1 SW | R2 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 63 | 1 | 61 | 125 | 4.2 | | 556 | 0.225 | 100 | NA | NA |
| Approach | 63 | 1 | 61 | 125 | 4.2 | | | 0.225 | | | |
| NorthWest: Garratt Road | | | | | | | | | | | |
| Mov. From NW To Exit: | L2 NE | T1 SE | R2 SW | U NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 26 | 657 | - | - | 683 | 1.3 | 1713 | 0.399 | 100 | NA | NA |
| Lane 2 | - | 560 | 16 | 1 | 577 | 1.3 | 1446 | 0.399 | 100 | NA | NA |
| Approach | 26 | 1217 | 16 | 1 | 1260 | 1.3 | | 0.399 | | | |
| SouthWest: Waterway Cres | | | | | | | | | | | |
| Mov. From SW To Exit: | L2 NW | T1 NE | R2 SE | Total | %HV | | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 25 | 1 | 26 | 53 | 4.0 | | 741 | 0.071 | 100 | NA | NA |
| Approach | 25 | 1 | 26 | 53 | 4.0 | | | 0.071 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | | | |
| All Vehicles | 2324 | 1.9 | 0.399 | | | | | | | | |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate sec | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| SouthEast: Grandstand Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: Racecourse | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthWest: Garratt Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| SouthWest: Waterway Cres | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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## LANE SUMMARY

**Site: 101 [Grandstand/Resolution/Stoneham Current AM (Site Folder: Grandstand/Raconteur/Stoneham)]**

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Roundabout
Design Life Analysis: Constant Number of Years = 7

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Stoneham St | | | | | | | | | | | | | | | |
| Lane 1[d] | 234 | 2.8 | 234 | 2.8 | 1458 | 0.160 | 100 | 4.3 | LOS A | 1.0 | 7.3 | Full | 300 | 0.0 | 0.0 |
| Lane 2 | 187 | 3.0 | 187 | 3.0 | 1167 | 0.160 | 100 | 5.2 | LOS A | 0.9 | 6.9 | Full | 300 | 0.0 | 0.0 |
| Approach | 421 | 2.9 | 421 | 2.9 | | 0.160 | | 4.7 | LOS A | 1.0 | 7.3 | | | | |
| East: Resolution Dr | | | | | | | | | | | | | | | |
| Lane 1[d] | 271 | 2.9 | 271 | 2.9 | 773 | 0.351 | 100 | 10.2 | LOS B | 1.8 | 14.0 | Full | 500 | 0.0 | 0.0 |
| Approach | 271 | 2.9 | 271 | 2.9 | | 0.351 | | 10.2 | LOS B | 1.8 | 14.0 | | | | |
| North: Grandstand Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 580 | 3.0 | 580 | 3.0 | 1649 | 0.352 | 100 | 4.0 | LOS A | 2.9 | 22.1 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 479 | 3.0 | 479 | 3.0 | 1361 | 0.352 | 100 | 4.2 | LOS A | 2.8 | 21.5 | Full | 500 | 0.0 | 0.0 |
| Approach | 1059 | 3.0 | 1059 | 3.0 | | 0.352 | | 4.1 | LOS A | 2.9 | 22.1 | | | | |
| West: Resolution Dr | | | | | | | | | | | | | | | |
| Lane 1[d] | 99 | 1.0 | 99 | 1.0 | 864 | 0.115 | 100 | 7.3 | LOS A | 0.6 | 4.1 | Full | 500 | 0.0 | 0.0 |
| Approach | 99 | 1.0 | 99 | 1.0 | | 0.115 | | 7.3 | LOS A | 0.6 | 4.1 | | | | |
| All Vehicles | 1850 | 2.8 | 1850 | 2.8 | | 0.352 | | 5.3 | LOS A | 2.9 | 22.1 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

South: Stoneham St

| Mov. From S To Exit: | L2 W | T1 N | R2 E | U S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 28 | 205 | - | - | 234 | 2.8 | 1458 | 0.160 | 100 | NA | NA |
| Lane 2 | - | 172 | 13 | 2 | 187 | 3.0 | 1167 | 0.160 | 100 | NA | NA |
| Approach | 28 | 377 | 13 | 2 | 421 | 2.9 | | 0.160 | | | |

East: Resolution Dr

| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 38 | 16 | 217 | 271 | 2.9 | | 773 | 0.351 | 100 | NA | NA |
| Approach | 38 | 16 | 217 | 271 | 2.9 | | | 0.351 | | | |
| North: Grandstand Road | | | | | | | | | | | |
| Mov. From N To Exit: | L2 E | T1 S | R2 W | U N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 297 | 283 | - | - | 580 | 3.0 | 1649 | 0.352 | 100 | NA | NA |
| Lane 2 | - | 469 | 5 | 4 | 479 | 3.0 | 1361 | 0.352 | 100 | NA | NA |
| Approach | 297 | 752 | 5 | 4 | 1059 | 3.0 | | 0.352 | | | |
| West: Resolution Dr | | | | | | | | | | | |
| Mov. From W To Exit: | L2 N | T1 E | R2 S | Total | %HV | | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 5 | 42 | 51 | 99 | 1.0 | | 864 | 0.115 | 100 | NA | NA |
| Approach | 5 | 42 | 51 | 99 | 1.0 | | | 0.115 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | | | |
| All Vehicles | 1850 | 2.8 | 0.352 | | | | | | | | |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate sec | Capacity veh/h | Deg. Satn veh/h | Min. Delay v/c | Merge Delay sec | sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| South: Stoneham St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| East: Resolution Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| North: Grandstand Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Resolution Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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Attachment 12.1.5 Transport Impact Assessment

## LANE SUMMARY

**Site: 101 [Grandstand/Resolution/Stoneham Current PM (Site Folder: Grandstand/Raconteur/Stoneham)]**

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Roundabout
Design Life Analysis: Constant Number of Years = 19

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Stoneham St | | | | | | | | | | | | | | | |
| Lane 1[d] | 751 | 2.8 | 751 | 2.8 | 1084 | 0.693 | 100 | 9.7 | LOS A | 9.0 | 68.1 | Full | 300 | 0.0 | 0.0 |
| Lane 2 | 561 | 3.0 | 561 | 3.0 | 810 | 0.693 | 100 | 12.2 | LOS B | 8.0 | 60.7 | Full | 300 | 0.0 | 0.0 |
| Approach | 1312 | 2.9 | 1312 | 2.9 | | 0.693 | | 10.8 | LOS B | 9.0 | 68.1 | | | | |
| East: Resolution Dr | | | | | | | | | | | | | | | |
| Lane 1[d] | 618 | 2.9 | 618 | 2.9 | 763 | 0.810 | 100 | 17.2 | LOS B | 7.7 | 58.7 | Full | 500 | 0.0 | 0.0 |
| Approach | 618 | 2.9 | 618 | 2.9 | | 0.810 | | 17.2 | LOS B | 7.7 | 58.7 | | | | |
| North: Grandstand Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 581 | 3.0 | 581 | 3.0 | 1677 | 0.346 | 100 | 3.8 | LOS A | 3.0 | 23.1 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 481 | 3.0 | 481 | 3.0 | 1388 | 0.346 | 100 | 4.1 | LOS A | 2.9 | 22.3 | Full | 500 | 0.0 | 0.0 |
| Approach | 1062 | 3.0 | 1062 | 3.0 | | 0.346 | | 3.9 | LOS A | 3.0 | 23.1 | | | | |
| West: Resolution Dr | | | | | | | | | | | | | | | |
| Lane 1[d] | 75 | 1.0 | 75 | 1.0 | 404 | 0.186 | 100 | 13.9 | LOS B | 1.1 | 8.3 | Full | 500 | 0.0 | 0.0 |
| Approach | 75 | 1.0 | 75 | 1.0 | | 0.186 | | 13.9 | LOS B | 1.1 | 8.3 | | | | |
| All Vehicles | 3066 | 2.9 | 3066 | 2.9 | | 0.810 | | 9.8 | LOS A | 9.0 | 68.1 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

South: Stoneham St

| Mov. From S To Exit: | L2 W | T1 N | R2 E | U S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 71 | 680 | - | - | 751 | 2.8 | 1084 | 0.693 | 100 | NA | NA |
| Lane 2 | - | 543 | 16 | 1 | 561 | 3.0 | 810 | 0.693 | 100 | NA | NA |
| Approach | 71 | 1223 | 16 | 1 | 1312 | 2.9 | | 0.693 | | | |

East: Resolution Dr

| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 60 | 28 | 530 | 618 | 2.9 | | 763 | 0.810 | 100 | NA | NA |
| Approach | 60 | 28 | 530 | 618 | 2.9 | | | 0.810 | | | |
| North: Grandstand Road | | | | | | | | | | | |
| Mov. From N To Exit: | L2 E | T1 S | R2 W | U N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 255 | 326 | - | - | 581 | 3.0 | 1677 | 0.346 | 100 | NA | NA |
| Lane 2 | - | 469 | 6 | 6 | 481 | 3.0 | 1388 | 0.346 | 100 | NA | NA |
| Approach | 255 | 795 | 6 | 6 | 1062 | 3.0 | | 0.346 | | | |
| West: Resolution Dr | | | | | | | | | | | |
| Mov. From W To Exit: | L2 N | T1 E | R2 S | Total | %HV | | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 7 | 29 | 39 | 75 | 1.0 | | 404 | 0.186 | 100 | NA | NA |
| Approach | 7 | 29 | 39 | 75 | 1.0 | | | 0.186 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | | | |
| All Vehicles | 3066 | 2.9 | 0.810 | | | | | | | | |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate sec | Capacity veh/h | Deg. Satn veh/h | Min. Delay v/c | Merge Delay sec | sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| South: Stoneham St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| East: Resolution Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| North: Grandstand Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Resolution Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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## LANE SUMMARY

**Site: 101 [Grandstand/Resolution/Stoneham 2036 AM - No Change (Site Folder: Grandstand/Raconteur/Stoneham)]**

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Roundabout
Design Life Analysis: Constant Number of Years = 19

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Stoneham St | | | | | | | | | | | | | | | |
| Lane 1[d] | 247 | 2.8 | 247 | 2.8 | 1440 | 0.172 | 100 | 4.4 | LOS A | 1.1 | 8.0 | Full | 300 | 0.0 | 0.0 |
| Lane 2 | 197 | 3.0 | 197 | 3.0 | 1149 | 0.172 | 100 | 5.3 | LOS A | 1.0 | 7.5 | Full | 300 | 0.0 | 0.0 |
| Approach | 445 | 2.9 | 445 | 2.9 | | 0.172 | | 4.8 | LOS A | 1.1 | 8.0 | | | | |
| East: Resolution Dr | | | | | | | | | | | | | | | |
| Lane 1[d] | 287 | 2.9 | 287 | 2.9 | 751 | 0.382 | 100 | 10.7 | LOS B | 2.1 | 16.1 | Full | 500 | 0.0 | 0.0 |
| Approach | 287 | 2.9 | 287 | 2.9 | | 0.382 | | 10.7 | LOS B | 2.1 | 16.1 | | | | |
| North: Grandstand Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 614 | 3.0 | 614 | 3.0 | 1640 | 0.375 | 100 | 4.0 | LOS A | 3.2 | 24.2 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 506 | 3.0 | 506 | 3.0 | 1351 | 0.375 | 100 | 4.3 | LOS A | 3.1 | 23.4 | Full | 500 | 0.0 | 0.0 |
| Approach | 1120 | 3.0 | 1120 | 3.0 | | 0.375 | | 4.1 | LOS A | 3.2 | 24.2 | | | | |
| West: Resolution Dr | | | | | | | | | | | | | | | |
| Lane 1[d] | 105 | 1.0 | 105 | 1.0 | 846 | 0.124 | 100 | 7.5 | LOS A | 0.6 | 4.5 | Full | 500 | 0.0 | 0.0 |
| Approach | 105 | 1.0 | 105 | 1.0 | | 0.124 | | 7.5 | LOS A | 0.6 | 4.5 | | | | |
| All Vehicles | 1957 | 2.8 | 1957 | 2.8 | | 0.382 | | 5.4 | LOS A | 3.2 | 24.2 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

South: Stoneham St

| Mov. From S To Exit: | L2 W | T1 N | R2 E | U S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 30 | 218 | - | - | 247 | 2.8 | 1440 | 0.172 | 100 | NA | NA |
| Lane 2 | - | 181 | 14 | 2 | 197 | 3.0 | 1149 | 0.172 | 100 | NA | NA |
| Approach | 30 | 399 | 14 | 2 | 445 | 2.9 | | 0.172 | | | |

East: Resolution Dr

| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 40 | 17 | 229 | 287 | 2.9 | | 751 | 0.382 | 100 | NA | NA |
| Approach | 40 | 17 | 229 | 287 | 2.9 | | | 0.382 | | | |
| North: Grandstand Road | | | | | | | | | | | |
| Mov. From N To Exit: | L2 E | T1 S | R2 W | U N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 315 | 300 | - | - | 614 | 3.0 | 1640 | 0.375 | 100 | NA | NA |
| Lane 2 | - | 496 | 6 | 5 | 506 | 3.0 | 1351 | 0.375 | 100 | NA | NA |
| Approach | 315 | 795 | 6 | 5 | 1120 | 3.0 | | 0.375 | | | |
| West: Resolution Dr | | | | | | | | | | | |
| Mov. From W To Exit: | L2 N | T1 E | R2 S | Total | %HV | | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 6 | 45 | 54 | 105 | 1.0 | | 846 | 0.124 | 100 | NA | NA |
| Approach | 6 | 45 | 54 | 105 | 1.0 | | | 0.124 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | | | |
| All Vehicles | 1957 | 2.8 | 0.382 | | | | | | | | |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate sec | Capacity veh/h | Deg. Satn veh/h | Min. Delay v/c | Merge Delay sec | sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| South: Stoneham St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| East: Resolution Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| North: Grandstand Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Resolution Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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## LANE SUMMARY

**Site: 101 [Grandstand/Resolution/Stoneham 2036 PM - No Change (Site Folder: Grandstand/Raconteur/Stoneham)]**

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Roundabout
Design Life Analysis: Constant Number of Years = 24

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Stoneham St | | | | | | | | | | | | | | | |
| Lane 1[d] | 776 | 2.8 | 776 | 2.8 | 1037 | 0.749 | 100 | 11.2 | LOS B | 10.5 | 79.9 | Full | 300 | 0.0 | 0.0 |
| Lane 2 | 574 | 3.0 | 574 | 3.0 | 767 | 0.749 | 100 | 14.1 | LOS B | 9.2 | 70.1 | Full | 300 | 0.0 | 0.0 |
| Approach | 1350 | 2.9 | 1350 | 2.9 | | 0.749 | | 12.4 | LOS B | 10.5 | 79.9 | | | | |
| East: Resolution Dr | | | | | | | | | | | | | | | |
| Lane 1[d] | 636 | 2.9 | 636 | 2.9 | 752 | 0.846 | 100 | 20.7 | LOS C | 10.5 | 79.7 | Full | 500 | 0.0 | 0.0 |
| Approach | 636 | 2.9 | 636 | 2.9 | | 0.846 | | 20.7 | LOS C | 10.5 | 79.7 | | | | |
| North: Grandstand Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 598 | 3.0 | 598 | 3.0 | 1673 | 0.358 | 100 | 3.8 | LOS A | 3.2 | 24.1 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 495 | 3.0 | 495 | 3.0 | 1384 | 0.358 | 100 | 4.1 | LOS A | 3.1 | 23.2 | Full | 500 | 0.0 | 0.0 |
| Approach | 1093 | 3.0 | 1093 | 3.0 | | 0.358 | | 4.0 | LOS A | 3.2 | 24.1 | | | | |
| West: Resolution Dr | | | | | | | | | | | | | | | |
| Lane 1[d] | 77 | 1.0 | 77 | 1.0 | 371 | 0.208 | 100 | 14.3 | LOS B | 1.2 | 8.9 | Full | 500 | 0.0 | 0.0 |
| Approach | 77 | 1.0 | 77 | 1.0 | | 0.208 | | 14.3 | LOS B | 1.2 | 8.9 | | | | |
| All Vehicles | 3156 | 2.9 | 3156 | 2.9 | | 0.846 | | 11.2 | LOS B | 10.5 | 79.9 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

South: Stoneham St

| Mov. From S To Exit: | L2 W | T1 N | R2 E | U S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 74 | 703 | - | - | 776 | 2.8 | 1037 | 0.749 | 100 | NA | NA |
| Lane 2 | - | 556 | 17 | 1 | 574 | 3.0 | 767 | 0.749 | 100 | NA | NA |
| Approach | 74 | 1259 | 17 | 1 | 1350 | 2.9 | | 0.749 | | | |

East: Resolution Dr

| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 62 | 28 | 546 | 636 | 2.9 | | 752 | 0.846 | 100 | NA | NA |
| Approach | 62 | 28 | 546 | 636 | 2.9 | | | 0.846 | | | |
| North: Grandstand Road | | | | | | | | | | | |
| Mov. From N To Exit: | L2 E | T1 S | R2 W | U N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 262 | 336 | - | - | 598 | 3.0 | 1673 | 0.358 | 100 | NA | NA |
| Lane 2 | - | 483 | 6 | 6 | 495 | 3.0 | 1384 | 0.358 | 100 | NA | NA |
| Approach | 262 | 819 | 6 | 6 | 1093 | 3.0 | | 0.358 | | | |
| West: Resolution Dr | | | | | | | | | | | |
| Mov. From W To Exit: | L2 N | T1 E | R2 S | Total | %HV | | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 7 | 30 | 40 | 77 | 1.0 | | 371 | 0.208 | 100 | NA | NA |
| Approach | 7 | 30 | 40 | 77 | 1.0 | | | 0.208 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 3156 | 2.9 | 0.846 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate sec | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| South: Stoneham St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| East: Resolution Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| North: Grandstand Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Resolution Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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Attachment 12.1.5 Transport Impact Assessment

# LANE SUMMARY

**Site: 101 [Grandstand/Resolution/Stoneham 2036 PM - NO GG & Ascott (Site Folder: Grandstand/Raconteur/Stoneham)]**

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Roundabout
Design Life Analysis: Constant Number of Years = 19

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Stoneham St | | | | | | | | | | | | | | | |
| Lane 1[d] | 821 | 2.7 | 821 | 2.7 | 963 | 0.852 | 100 | 20.8 | LOS C | 17.9 | 135.6 | Full | 300 | 0.0 | 0.0 |
| Lane 2 | 590 | 2.7 | 590 | 2.7 | 692 | 0.852 | 100 | 26.1 | LOS C | 14.9 | 112.5 | Full | 300 | 0.0 | 0.0 |
| Approach | 1411 | 2.7 | 1411 | 2.7 | | 0.852 | | 23.0 | LOS C | 17.9 | 135.6 | | | | |
| East: Resolution Dr | | | | | | | | | | | | | | | |
| Lane 1[d] | 741 | 2.4 | 741 | 2.4 | 866 | 0.855 | 100 | 17.2 | LOS B | 10.5 | 79.1 | Full | 500 | 0.0 | 0.0 |
| Approach | 741 | 2.4 | 741 | 2.4 | | 0.855 | | 17.2 | LOS B | 10.5 | 79.1 | | | | |
| North: Grandstand Road | | | | | | | | | | | | | | | |
| Lane 1[d] | 444 | 3.0 | 444 | 3.0 | 1615 | 0.275 | 100 | 3.9 | LOS A | 2.1 | 15.9 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 363 | 2.3 | 363 | 2.3 | 1321 | 0.275 | 100 | 5.9 | LOS A | 2.0 | 15.2 | Full | 500 | 0.0 | 0.0 |
| Approach | 807 | 2.7 | 807 | 2.7 | | 0.275 | | 4.8 | LOS A | 2.1 | 15.9 | | | | |
| West: Resolution Dr | | | | | | | | | | | | | | | |
| Lane 1[d] | 85 | 0.9 | 85 | 0.9 | 306 | 0.277 | 100 | 18.2 | LOS B | 1.7 | 12.7 | Full | 500 | 0.0 | 0.0 |
| Approach | 85 | 0.9 | 85 | 0.9 | | 0.277 | | 18.2 | LOS B | 1.7 | 12.7 | | | | |
| All Vehicles | 3043 | 2.6 | 3043 | 2.6 | | 0.855 | | 16.6 | LOS B | 17.9 | 135.6 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

South: Stoneham St

| Mov. From S To Exit: | L2 W | T1 N | R2 E | U S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 72 | 749 | - | - | 821 | 2.7 | 963 | 0.852 | 100 | NA | NA |
| Lane 2 | - | 524 | 65 | 1 | 590 | 2.7 | 692 | 0.852 | 100 | NA | NA |
| Approach | 72 | 1273 | 65 | 1 | 1411 | 2.7 | | 0.852 | | | |

East: Resolution Dr

| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 95 | 28 | 618 | 741 | 2.4 | | 866 | 0.855 | 100 | NA | NA |
| Approach | 95 | 28 | 618 | 741 | 2.4 | | | 0.855 | | | |
| North: Grandstand Road | | | | | | | | | | | |
| Mov. From N To Exit: | L2 E | T1 S | R2 W | U N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 251 | 193 | - | - | 444 | 3.0 | 1615 | 0.275 | 100 | NA | NA |
| Lane 2 | - | 282 | 6 | 75 | 363 | 2.3 | 1321 | 0.275 | 100 | NA | NA |
| Approach | 251 | 474 | 6 | 75 | 807 | 2.7 | | 0.275 | | | |
| West: Resolution Dr | | | | | | | | | | | |
| Mov. From W To Exit: | L2 N | T1 E | R2 S | Total | %HV | | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 7 | 29 | 49 | 85 | 0.9 | | 306 | 0.277 | 100 | NA | NA |
| Approach | 7 | 29 | 49 | 85 | 0.9 | | | 0.277 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | | | |
| All Vehicles | 3043 | 2.6 | 0.855 | | | | | | | | |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate sec | Capacity veh/h | Deg. Satn veh/h | Min. Delay v/c | Merge Delay sec | sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| South: Stoneham St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| East: Resolution Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| North: Grandstand Road | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Resolution Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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# LANE SUMMARY

**Site: 103av [TCS PM - Current (Site Folder: GEH/Resolution)]**

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 180 seconds (Site Optimum Cycle Time - Minimum Delay)

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Hardey Rd | | | | | | | | | | | | | | | |
| Lane 1 | 121 | 5.8 | 121 | 5.8 | 307 | 0.393 | 87[6] | 75.6 | LOS E | 9.4 | 73.9 | Short | 60 | 0.0 | NA |
| Lane 2 | 144 | 5.8 | 144 | 5.8 | 319 | 0.452 | 100 | 72.1 | LOS E | 11.4 | 89.1 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 158 | 5.8 | 158 | 5.8 | 303 | 0.522 | 100 | 78.9 | LOS E | 12.7 | 99.1 | Short | 60 | 0.0 | NA |
| Approach | 423 | 5.8 | 423 | 5.8 | | 0.522 | | 75.6 | LOS E | 12.7 | 99.1 | | | | |
| NorthEast: GEH | | | | | | | | | | | | | | | |
| Lane 1 | 117 | 5.8 | 117 | 5.8 | 1329 | 0.088 | 12[5] | 18.9 | LOS B | 2.3 | 17.7 | Short | 120 | 0.0 | NA |
| Lane 2 | 579 | 6.3 | 579 | 6.3 | 771[1] | 0.750 | 100 | 39.1 | LOS D | 36.0 | 283.5 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 614 | 6.3 | 614 | 6.3 | 818 | 0.750 | 100 | 31.0 | LOS C | 38.8 | 305.7 | Full | 500 | 0.0 | 0.0 |
| Lane 4 | 561 | 6.3 | 561 | 6.3 | 748[1] | 0.750 | 100 | 36.3 | LOS D | 34.6 | 272.4 | Full | 500 | 0.0 | 0.0 |
| Lane 5 | 308 | 5.8 | 308 | 5.8 | 342 | 0.903 | 100 | 101.5 | LOS F | 29.6 | 231.4 | Short | 125 | 0.0 | NA |
| Approach | 2179 | 6.2 | 2179 | 6.2 | | 0.903 | | 43.8 | LOS D | 38.8 | 305.7 | | | | |
| NorthWest: Resolution Dr | | | | | | | | | | | | | | | |
| Lane 1 | 157 | 5.8 | 157 | 5.8 | 742 | 0.211 | 100 | 23.7 | LOS C | 6.4 | 50.1 | Short | 90 | 0.0 | NA |
| Lane 2 | 37 | 5.8 | 37 | 5.8 | 103 | 0.362 | 39[6] | 92.4 | LOS F | 3.3 | 25.7 | Full | 430 | 0.0 | 0.0 |
| Lane 3 | 95 | 5.8 | 95 | 5.8 | 103 | 0.926 | 100 | 109.3 | LOS F | 9.5 | 74.6 | Short | 140 | 0.0 | NA |
| Lane 4 | 32 | 5.8 | 32 | 5.8 | 98 | 0.323 | 100 | 97.3 | LOS F | 2.8 | 21.7 | Short | 58 | 0.0 | NA |
| Approach | 321 | 5.8 | 321 | 5.8 | | 0.926 | | 64.4 | LOS E | 9.5 | 74.6 | | | | |
| SouthWest: GEH | | | | | | | | | | | | | | | |
| Lane 1 | 57 | 5.8 | 57 | 5.8 | 781 | 0.073 | 9[5] | 52.7 | LOS D | 2.8 | 21.8 | Short | 75 | 0.0 | NA |
| Lane 2 | 610 | 11.7 | 610 | 11.7 | 731[1] | 0.834 | 100 | 36.4 | LOS D | 34.4 | 291.3 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 641 | 11.7 | 641 | 11.7 | 768 | 0.834 | 100 | 20.1 | LOS C | 37.6 | 319.0 | Full | 500 | 0.0 | 0.0 |
| Lane 4 | 641 | 11.7 | 641 | 11.7 | 768 | 0.834 | 100 | 20.1 | LOS C | 37.6 | 319.0 | Full | 500 | 0.0 | 0.0 |
| Lane 5 | 221 | 5.8 | 221 | 5.8 | 342 | 0.647 | 100 | 77.8 | LOS E | 17.9 | 140.2 | Short | 240 | 0.0 | NA |
| Approach | 2169 | 10.9 | 2169 | 10.9 | | 0.834 | | 31.4 | LOS C | 37.6 | 319.0 | | | | |
| All Vehicles | 5093 | 8.2 | 5093 | 8.2 | | 0.926 | | 42.5 | LOS D | 38.8 | 319.0 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.
5 Lane under-utilisation found by the program
6 Lane under-utilisation due to downstream effects

**Approach Lane Flows (veh/h)**

| SouthEast: Hardey Rd | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Mov. From SE To Exit: | L2 SW | T1 NW | R2 NE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 85 | 36 | - | 121 | 5.8 | 307 | 0.393 | 87[6] | 23.9 | 2 |
| Lane 2 | - | 144 | - | 144 | 5.8 | 319 | 0.452 | 100 | NA | NA |
| Lane 3 | - | - | 158 | 158 | 5.8 | 303 | 0.522 | 100 | 51.1 | 2 |
| Approach | 85 | 180 | 158 | 423 | 5.8 | | 0.522 | | | |
| NorthEast: GEH | | | | | | | | | | |
| Mov. From NE To Exit: | L2 SE | T1 SW | R2 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 117 | - | - | 117 | 5.8 | 1329 | 0.088 | 12[5] | 0.0 | 2 |
| Lane 2 | - | 579 | - | 579 | 6.3 | 771[1] | 0.750 | 100 | NA | NA |
| Lane 3 | - | 614 | - | 614 | 6.3 | 818 | 0.750 | 100 | NA | NA |
| Lane 4 | - | 561 | - | 561 | 6.3 | 748[1] | 0.750 | 100 | NA | NA |
| Lane 5 | - | - | 308 | 308 | 5.8 | 342 | 0.903 | 100 | 61.9 | 4 |
| Approach | 117 | 1754 | 308 | 2179 | 6.2 | | 0.903 | | | |
| NorthWest: Resolution Dr | | | | | | | | | | |
| Mov. From NW To Exit: | L2 NE | T1 SE | R2 SW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 157 | - | - | 157 | 5.8 | 742 | 0.211 | 100 | 0.0 | 2 |
| Lane 2 | - | 37 | - | 37 | 5.8 | 103 | 0.362 | 39[6] | NA | NA |
| Lane 3 | - | 95 | - | 95 | 5.8 | 103 | 0.926 | 100 | 0.0 | 2 |
| Lane 4 | - | - | 32 | 32 | 5.8 | 98 | 0.323 | 100 | 0.0 | 3 |
| Approach | 157 | 133 | 32 | 321 | 5.8 | | 0.926 | | | |
| SouthWest: GEH | | | | | | | | | | |
| Mov. From SW To Exit: | L2 NW | T1 NE | R2 SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 57 | - | - | 57 | 5.8 | 781 | 0.073 | 9[5] | 0.0 | 2 |
| Lane 2 | - | 610 | - | 610 | 11.7 | 731[1] | 0.834 | 100 | NA | NA |
| Lane 3 | - | 641 | - | 641 | 11.7 | 768 | 0.834 | 100 | NA | NA |
| Lane 4 | - | 641 | - | 641 | 11.7 | 768 | 0.834 | 100 | NA | NA |
| Lane 5 | - | - | 221 | 221 | 5.8 | 342 | 0.647 | 100 | 0.0 | 4 |
| Approach | 57 | 1892 | 221 | 2169 | 10.9 | | 0.834 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 5093 | 8.2 | 0.926 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.
5 Lane under-utilisation found by the program
6 Lane under-utilisation due to downstream effects

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast Exit: Hardey Rd Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 45 | 0.0 | 316 | 326 | 3.09 | 2.06 | 154 | 1413 | 0.109 | 0.5 | 0.7 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 316 | 1800 | 0.176 | 0.0 | 0.0 |
| NorthEast Exit: GEH | | | | | | | | | | | | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Merge Type: **Priority** | | | | | | | | | | | |
| Exit Short Lane | 1 | 120 | 0.0 | 610 | 642 | 3.09 | 2.06 | 157 | 1076 | 0.146 | 1.3 | 1.7 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 610 | 1800 | 0.339 | 0.0 | 0.0 |
| NorthWest Exit: Resolution Dr<br>Merge Type: **Priority** | | | | | | | | | | | |
| Exit Short Lane | 1 | 140 | 0.0 | 453 | 466 | 3.09 | 2.06 | 92 | 1265 | 0.073 | 0.8 | 1.0 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 453 | 1800 | 0.252 | 0.0 | 0.0 |

**Variable Demand Analysis**

| | Initial Queued Demand<br>veh | Residual Queued Demand<br>veh | Time for Residual Demand to Clear<br>sec | Duration of Oversatn<br>sec |
|---|---|---|---|---|
| SouthEast: Hardey Rd | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: GEH | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 5 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthWest: Resolution Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| SouthWest: GEH | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 5 | 0.0 | 0.0 | 0.0 | 0.0 |

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Project: C:\PJA\Phil Jones Associates\SharedData - 07575 Ascot Racecourse Local Structure Plan & Scheme Amendment\4. Technical\4.3 Analysis\4.3.1 Transport\07575_M_01_A_Ascot Racecourse LSP&SA.sip9

## LANE SUMMARY

**Site: 103av [TCS PM - 2036 (Site Folder: GEH/Resolution)]**

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 180 seconds (Site Optimum Cycle Time - Minimum Delay)
Design Life Analysis: Constant Number of Years = 14

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Hardey Rd | | | | | | | | | | | | | | | |
| Lane 1 | 141 | 5.8 | 141 | 5.8 | 318 | 0.442 | 87[6] | 75.2 | LOS E[11] | 11.0 | 86.3 | Short | 60 | 0.0 | NA |
| Lane 2 | 167 | 5.8 | 167 | 5.8 | 329 | 0.508 | 100 | 72.2 | LOS E[11] | 13.3 | 104.1 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 169 | 5.8 | 169 | 5.8 | 312[1] | 0.542 | 100 | 78.5 | LOS E[11] | 13.5 | 106.0 | Short | 60 | 0.0 | NA |
| Approach | 477 | 5.8 | 477 | 5.8 | | 0.542 | | 75.3 | LOS E[11] | 13.5 | 106.0 | | | | |
| NorthEast: GEH | | | | | | | | | | | | | | | |
| Lane 1 | 125 | 5.8 | 125 | 5.8 | 1341 | 0.093 | 13[5] | 16.1 | LOS B | 2.6 | 20.0 | Short | 120 | 0.0 | NA |
| Lane 2 | 619 | 6.3 | 619 | 6.3 | 866[1] | 0.714 | 100 | 28.6 | LOS C | 33.7 | 265.4 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 650 | 6.3 | 650 | 6.3 | 910 | 0.714 | 100 | 23.7 | LOS C | 36.0 | 283.4 | Full | 500 | 0.0 | 0.0 |
| Lane 4 | 608 | 6.3 | 608 | 6.3 | 852[1] | 0.714 | 100 | 29.4 | LOS C | 32.9 | 259.6 | Full | 500 | 0.0 | 0.0 |
| Lane 5 | 330 | 5.8 | 330 | 5.8 | 264 | 1.252 | 100 | 333.4 | LOS F[11] | 52.6 | 411.1 | Short | 125 | 0.0 | NA |
| Approach | 2331 | 6.2 | 2331 | 6.2 | | 1.252 | | 69.9 | LOS E[11] | 52.6 | 411.1 | | | | |
| NorthWest: Resolution Dr | | | | | | | | | | | | | | | |
| Lane 1 | 168 | 5.8 | 168 | 5.8 | 628 | 0.267 | 100 | 31.7 | LOS C | 8.4 | 65.5 | Short | 90 | 0.0 | NA |
| Lane 2 | 40 | 5.8 | 40 | 5.8 | 82 | 0.485 | 39[6] | 96.0 | LOS F[11] | 3.6 | 28.2 | Full | 430 | 0.0 | 0.0 |
| Lane 3 | 102 | 5.8 | 102 | 5.8 | 82 | 1.239 | 100 | 320.5 | LOS F[11] | 16.0 | 125.5 | Short | 140 | 0.0 | NA |
| Lane 4 | 34 | 5.8 | 34 | 5.8 | 78 | 0.433 | 100 | 100.9 | LOS F[11] | 3.1 | 23.9 | Short | 58 | 0.0 | NA |
| Approach | 344 | 5.8 | 344 | 5.8 | | 1.239 | | 131.7 | LOS F[11] | 16.0 | 125.5 | | | | |
| SouthWest: GEH | | | | | | | | | | | | | | | |
| Lane 1 | 61 | 5.8 | 61 | 5.8 | 869 | 0.070 | 8[5] | 44.9 | LOS D | 2.7 | 21.2 | Short | 75 | 0.0 | NA |
| Lane 2 | 735 | 11.7 | 735 | 11.7 | 813[1] | 0.903 | 100 | 31.6 | LOS C | 42.6 | 360.7 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 772 | 11.7 | 772 | 11.7 | 855 | 0.903 | 100 | 17.9 | LOS B | 48.4 | 410.3 | Full | 500 | 0.0 | 0.0 |
| Lane 4 | 772 | 11.7 | 772 | 11.7 | 855 | 0.903 | 100 | 17.9 | LOS B | 48.4 | 410.3 | Full | 500 | 0.0 | 0.0 |
| Lane 5 | 237 | 5.8 | 237 | 5.8 | 264 | 0.897 | 100 | 100.4 | LOS F[11] | 22.8 | 178.1 | Short | 240 | 0.0 | NA |
| Approach | 2576 | 11.0 | 2576 | 11.0 | | 0.903 | | 30.0 | LOS C | 48.4 | 410.3 | | | | |
| All Vehicles | 5728 | 8.3 | 5728 | 8.3 | | 1.252 | | 56.1 | LOS E[11] | 52.6 | 411.1 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.
5 Lane under-utilisation found by the program
6 Lane under-utilisation due to downstream effects
11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

Attachment 12.1.5 Transport Impact Assessment

**Approach Lane Flows (veh/h)**

SouthEast: Hardey Rd

| Mov. From SE To Exit: | L2 SW | T1 NW | R2 NE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 91 | 49 | - | 141 | 5.8 | 318 | 0.442 | 87[6] | 38.2 | 2 |
| Lane 2 | - | 167 | - | 167 | 5.8 | 329 | 0.508 | 100 | NA | NA |
| Lane 3 | - | - | 169 | 169 | 5.8 | 312[1] | 0.542 | 100 | 57.5 | 2 |
| Approach | 91 | 217 | 169 | 477 | 5.8 | | 0.542 | | | |

NorthEast: GEH

| Mov. From NE To Exit: | L2 SE | T1 SW | R2 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 125 | - | - | 125 | 5.8 | 1341 | 0.093 | 13[5] | 0.0 | 2 |
| Lane 2 | - | 619 | - | 619 | 6.3 | 866[1] | 0.714 | 100 | NA | NA |
| Lane 3 | - | 650 | - | 650 | 6.3 | 910 | 0.714 | 100 | NA | NA |
| Lane 4 | - | 608 | - | 608 | 6.3 | 852[1] | 0.714 | 100 | NA | NA |
| Lane 5 | - | - | 330 | 330 | 5.8 | 264 | 1.252 | 100 | 100.0 | 4 |
| Approach | 125 | 1876 | 330 | 2331 | 6.2 | | 1.252 | | | |

NorthWest: Resolution Dr

| Mov. From NW To Exit: | L2 NE | T1 SE | R2 SW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 168 | - | - | 168 | 5.8 | 628 | 0.267 | 100 | 0.0 | 2 |
| Lane 2 | - | 40 | - | 40 | 5.8 | 82 | 0.485 | 39[6] | NA | NA |
| Lane 3 | - | 102 | - | 102 | 5.8 | 82 | 1.239 | 100 | 0.0 | 2 |
| Lane 4 | - | - | 34 | 34 | 5.8 | 78 | 0.433 | 100 | 0.0 | 3 |
| Approach | 168 | 142 | 34 | 344 | 5.8 | | 1.239 | | | |

SouthWest: GEH

| Mov. From SW To Exit: | L2 NW | T1 NE | R2 SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 61 | - | - | 61 | 5.8 | 869 | 0.070 | 8[5] | 0.0 | 2 |
| Lane 2 | - | 735 | - | 735 | 11.7 | 813[1] | 0.903 | 100 | NA | NA |
| Lane 3 | - | 772 | - | 772 | 11.7 | 855 | 0.903 | 100 | NA | NA |
| Lane 4 | - | 772 | - | 772 | 11.7 | 855 | 0.903 | 100 | NA | NA |
| Lane 5 | - | - | 237 | 237 | 5.8 | 264 | 0.897 | 100 | 0.0 | 4 |
| Approach | 61 | 2278 | 237 | 2576 | 11.0 | | 0.903 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 5728 | 8.3 | 1.252 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.
5 Lane under-utilisation found by the program
6 Lane under-utilisation due to downstream effects

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast Exit: Hardey Rd Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 45 | 0.0 | 319 | 328 | 3.09 | 2.06 | 165 | 1411 | 0.117 | 0.5 | 0.7 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 319 | 1800 | 0.177 | 0.0 | 0.0 |

Attachment 12.1.5 Transport Impact Assessment

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NorthEast Exit: GEH<br>Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 120 | 0.0 | 735 | 773 | 3.09 | 2.06 | 168 | 935 | 0.179 | 1.8 | 2.3 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 735 | 1800 | 0.408 | 0.0 | 0.0 |
| NorthWest Exit: Resolution Dr<br>Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 140 | 0.0 | 431 | 443 | 3.09 | 2.06 | 110 | 1289 | 0.086 | 0.8 | 1.0 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 431 | 1800 | 0.239 | 0.0 | 0.0 |

**Variable Demand Analysis**

| | Initial Queued Demand<br>veh | Residual Queued Demand<br>veh | Time for Residual Demand to Clear<br>sec | Duration of Oversatn<br>sec |
|---|---|---|---|---|
| SouthEast: Hardey Rd | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: GEH | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 5 | 0.0 | 33.2 | 453.8 | NA |
| NorthWest: Resolution Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 9.8 | 429.8 | NA |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| SouthWest: GEH | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 5 | 0.0 | 0.0 | 0.0 | 0.0 |

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## LANE SUMMARY

**Site: 103av [TCS PM - 2036 - mod (Site Folder: GEH/ Resolution)]**

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 180 seconds (Site Optimum Cycle Time - Minimum Delay)
Design Life Analysis: Constant Number of Years = 14

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Hardey Rd | | | | | | | | | | | | | | | |
| Lane 1 | 148 | 5.8 | 148 | 5.8 | 351 | 0.422 | 87[6] | 54.2 | LOS D | 9.6 | 75.3 | Short | 60 | 0.0 | NA |
| Lane 2 | 160 | 5.8 | 160 | 5.8 | 329 | 0.486 | 100 | 71.9 | LOS E[11] | 12.7 | 99.0 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 169 | 5.8 | 169 | 5.8 | 312[1] | 0.542 | 100 | 78.5 | LOS E[11] | 13.5 | 106.0 | Short | 60 | 0.0 | NA |
| Approach | 477 | 5.8 | 477 | 5.8 | | 0.542 | | 68.8 | LOS E[11] | 13.5 | 106.0 | | | | |
| NorthEast: GEH | | | | | | | | | | | | | | | |
| Lane 1 | 125 | 5.8 | 125 | 5.8 | 1326 | 0.094 | 13[5] | 16.6 | LOS B | 2.7 | 21.5 | Short | 120 | 0.0 | NA |
| Lane 2 | 614 | 6.3 | 614 | 6.3 | 868[1] | 0.707 | 100 | 28.2 | LOS C | 33.2 | 261.5 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 644 | 6.3 | 644 | 6.3 | 910 | 0.707 | 100 | 23.6 | LOS C | 35.3 | 278.3 | Full | 500 | 0.0 | 0.0 |
| Lane 4 | 619 | 6.3 | 619 | 6.3 | 875[1] | 0.707 | 100 | 27.6 | LOS C | 33.5 | 264.2 | Full | 500 | 0.0 | 0.0 |
| Lane 5 | 149 | 5.8 | 149 | 5.8 | 239 | 0.624 | 83[6] | 90.3 | LOS F[11] | 12.5 | 98.0 | Short | 125 | 0.0 | NA |
| Lane 6 | 181 | 5.8 | 181 | 5.8 | 239 | 0.756 | 100 | 89.4 | LOS F[11] | 15.8 | 124.0 | Short | 125 | 0.0 | NA |
| Approach | 2331 | 6.2 | 2331 | 6.2 | | 0.756 | | 34.8 | LOS C | 35.3 | 278.3 | | | | |
| NorthWest: Resolution Dr | | | | | | | | | | | | | | | |
| Lane 1 | 168 | 5.8 | 168 | 5.8 | 628 | 0.267 | 100 | 31.7 | LOS C | 8.4 | 65.5 | Short | 90 | 0.0 | NA |
| Lane 2 | 40 | 5.8 | 40 | 5.8 | 103 | 0.387 | 39[6] | 92.6 | LOS F[11] | 3.5 | 27.5 | Full | 430 | 0.0 | 0.0 |
| Lane 3 | 102 | 5.8 | 102 | 5.8 | 103 | 0.991 | 100 | 128.6 | LOS F[11] | 11.1 | 87.1 | Short | 140 | 0.0 | NA |
| Lane 4 | 34 | 5.8 | 34 | 5.8 | 98 | 0.346 | 100 | 97.5 | LOS F[11] | 3.0 | 23.3 | Short | 58 | 0.0 | NA |
| Approach | 344 | 5.8 | 344 | 5.8 | | 0.991 | | 74.0 | LOS E[11] | 11.1 | 87.1 | | | | |
| SouthWest: GEH | | | | | | | | | | | | | | | |
| Lane 1 | 61 | 5.8 | 61 | 5.8 | 869 | 0.070 | 8[5] | 44.7 | LOS D | 2.7 | 21.2 | Short | 75 | 0.0 | NA |
| Lane 2 | 735 | 11.7 | 735 | 11.7 | 813[1] | 0.903 | 100 | 31.6 | LOS C | 42.6 | 360.7 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 772 | 11.7 | 772 | 11.7 | 855 | 0.903 | 100 | 17.9 | LOS B | 48.4 | 410.3 | Full | 500 | 0.0 | 0.0 |
| Lane 4 | 772 | 11.7 | 772 | 11.7 | 855 | 0.903 | 100 | 17.9 | LOS B | 48.4 | 410.3 | Full | 500 | 0.0 | 0.0 |
| Lane 5 | 237 | 5.8 | 237 | 5.8 | 244 | 0.969 | 100 | 120.5 | LOS F[11] | 25.2 | 197.2 | Short | 240 | 0.0 | NA |
| Approach | 2576 | 11.0 | 2576 | 11.0 | | 0.969 | | 31.9 | LOS C | 48.4 | 410.3 | | | | |
| All Vehicles | 5728 | 8.3 | 5728 | 8.3 | | 0.991 | | 38.7 | LOS D | 48.4 | 410.3 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.
5 Lane under-utilisation found by the program
6 Lane under-utilisation due to downstream effects

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

**Approach Lane Flows (veh/h)**

SouthEast: Hardey Rd

| Mov. From SE To Exit: | L2 SW | T1 NW | R2 NE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 91 | 57 | - | 148 | 5.8 | 351 | 0.422 | 87[6] | 25.6 | 2 |
| Lane 2 | - | 160 | - | 160 | 5.8 | 329 | 0.486 | 100 | NA | NA |
| Lane 3 | - | - | 169 | 169 | 5.8 | 312[1] | 0.542 | 100 | 57.5 | 2 |
| Approach | 91 | 217 | 169 | 477 | 5.8 | | 0.542 | | | |

NorthEast: GEH

| Mov. From NE To Exit: | L2 SE | T1 SW | R2 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 125 | - | - | 125 | 5.8 | 1326 | 0.094 | 13[5] | 0.0 | 2 |
| Lane 2 | - | 614 | - | 614 | 6.3 | 868[1] | 0.707 | 100 | NA | NA |
| Lane 3 | - | 644 | - | 644 | 6.3 | 910 | 0.707 | 100 | NA | NA |
| Lane 4 | - | 619 | - | 619 | 6.3 | 875[1] | 0.707 | 100 | NA | NA |
| Lane 5 | - | - | 149 | 149 | 5.8 | 239 | 0.624 | 83[6] | 4.2 | 4 |
| Lane 6 | - | - | 181 | 181 | 5.8 | 239 | 0.756 | 100 | 4.2 | 5 |
| Approach | 125 | 1876 | 330 | 2331 | 6.2 | | 0.756 | | | |

NorthWest: Resolution Dr

| Mov. From NW To Exit: | L2 NE | T1 SE | R2 SW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 168 | - | - | 168 | 5.8 | 628 | 0.267 | 100 | 0.0 | 2 |
| Lane 2 | - | 40 | - | 40 | 5.8 | 103 | 0.387 | 39[6] | NA | NA |
| Lane 3 | - | 102 | - | 102 | 5.8 | 103 | 0.991 | 100 | 0.0 | 2 |
| Lane 4 | - | - | 34 | 34 | 5.8 | 98 | 0.346 | 100 | 0.0 | 3 |
| Approach | 168 | 142 | 34 | 344 | 5.8 | | 0.991 | | | |

SouthWest: GEH

| Mov. From SW To Exit: | L2 NW | T1 NE | R2 SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 61 | - | - | 61 | 5.8 | 869 | 0.070 | 8[5] | 0.0 | 2 |
| Lane 2 | - | 735 | - | 735 | 11.7 | 813[1] | 0.903 | 100 | NA | NA |
| Lane 3 | - | 772 | - | 772 | 11.7 | 855 | 0.903 | 100 | NA | NA |
| Lane 4 | - | 772 | - | 772 | 11.7 | 855 | 0.903 | 100 | NA | NA |
| Lane 5 | - | - | 237 | 237 | 5.8 | 244 | 0.969 | 100 | 0.0 | 4 |
| Approach | 61 | 2278 | 237 | 2576 | 11.0 | | 0.969 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 5728 | 8.3 | 0.991 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.

5 Lane under-utilisation found by the program

6 Lane under-utilisation due to downstream effects

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate sec | Capacity veh/h | Deg. Satn veh/h | Min. Delay v/c | Merge Delay sec | sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast Exit: Hardey Rd | | | | | | | | | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 45 | 0.0 | 339 | 348 | 3.09 | 2.06 | 165 | 1389 | 0.119 | 0.6 | 0.7 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 339 | 1800 | 0.188 | 0.0 | 0.0 |
| NorthEast Exit: GEH<br>Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 120 | 0.0 | 735 | 773 | 3.09 | 2.06 | 168 | 935 | 0.179 | 1.8 | 2.3 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 735 | 1800 | 0.408 | 0.0 | 0.0 |
| NorthWest Exit: Resolution Dr<br>Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 140 | 0.0 | 341 | 351 | 3.09 | 2.06 | 267 | 1387 | 0.192 | 0.6 | 0.8 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 341 | 1800 | 0.189 | 0.0 | 0.0 |

**Variable Demand Analysis**

| | Initial Queued Demand<br>veh | Residual Queued Demand<br>veh | Time for Residual Demand to Clear<br>sec | Duration of Oversatn<br>sec |
|---|---|---|---|---|
| SouthEast: Hardey Rd | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: GEH | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 5 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 6 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthWest: Resolution Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| SouthWest: GEH | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 5 | 0.0 | 0.0 | 0.0 | 0.0 |

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Project: C:\PJA\Phil Jones Associates\SharedData - 07575 Ascot Racecourse Local Structure Plan & Scheme Amendment\4. Technical\4.3 Analysis\4.3.1 Transport\07575_M_01_A_Ascot Racecourse LSP&SA.sip9

# LANE SUMMARY

**Site: 103av [TCS PM - 2036 - with LSP (Site Folder: GEH/ Resolution)]**

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 180 seconds (Site Optimum Cycle Time - Minimum Delay)
Design Life Analysis: Constant Number of Years = 14

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Hardey Rd | | | | | | | | | | | | | | | |
| Lane 1 | 168 | 5.4 | 168 | 5.4 | 321 | 0.522 | 87[6] | 81.3 | LOS F[11] | 13.4 | 104.2 | Short | 60 | 0.0 | NA |
| Lane 2 | 184 | 4.8 | 184 | 4.8 | 307[1] | 0.600 | 100 | 78.8 | LOS E[11] | 14.9 | 115.6 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 169 | 5.8 | 169 | 5.8 | 312[1] | 0.542 | 100 | 83.8 | LOS F[11] | 13.5 | 106.0 | Short | 60 | 0.0 | NA |
| Approach | 521 | 5.3 | 521 | 5.3 | | 0.600 | | 81.2 | LOS F[11] | 14.9 | 115.6 | | | | |
| NorthEast: GEH | | | | | | | | | | | | | | | |
| Lane 1 | 125 | 5.8 | 125 | 5.8 | 1341 | 0.093 | 13[5] | 16.2 | LOS B | 2.6 | 20.0 | Short | 120 | 0.0 | NA |
| Lane 2 | 620 | 6.3 | 620 | 6.3 | 866[1] | 0.716 | 100 | 28.8 | LOS C | 33.9 | 266.7 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 652 | 6.3 | 652 | 6.3 | 910 | 0.716 | 100 | 23.7 | LOS C | 36.2 | 285.0 | Full | 500 | 0.0 | 0.0 |
| Lane 4 | 605 | 6.3 | 605 | 6.3 | 844[1] | 0.716 | 100 | 44.8 | LOS D | 32.7 | 257.9 | Full | 500 | 0.0 | 26.6[8] |
| Lane 5 | 405 | 4.7 | 405 | 4.7 | 265 | 1.529 | 100 | 593.6 | LOS F[11] | 81.9 | 633.9 | Short | 125 | 0.0 | NA |
| Approach | 2406 | 6.0 | 2406 | 6.0 | | 1.529 | | 125.8 | LOS F[11] | 81.9 | 633.9 | | | | |
| NorthWest: Resolution Dr | | | | | | | | | | | | | | | |
| Lane 1 | 207 | 4.7 | 207 | 4.7 | 631 | 0.328 | 100 | 33.4 | LOS C | 11.1 | 85.8 | Short | 90 | 0.0 | NA |
| Lane 2 | 49 | 4.7 | 49 | 4.7 | 83 | 0.590 | 39[6] | 96.8 | LOS F[11] | 4.5 | 34.6 | Full | 430 | 0.0 | 0.0 |
| Lane 3 | 125 | 4.7 | 125 | 4.7 | 83 | 1.508 | 100 | 559.7 | LOS F[11] | 25.2 | 194.9 | Short | 140 | 0.0 | NA |
| Lane 4 | 41 | 4.8 | 41 | 4.8 | 78 | 0.525 | 100 | 101.5 | LOS F[11] | 3.7 | 29.0 | Short | 58 | 0.0 | NA |
| Approach | 422 | 4.7 | 422 | 4.7 | | 1.508 | | 203.7 | LOS F[11] | 25.2 | 194.9 | | | | |
| SouthWest: GEH | | | | | | | | | | | | | | | |
| Lane 1 | 75 | 4.7 | 75 | 4.7 | 872 | 0.085 | 9[5] | 44.8 | LOS D | 3.4 | 25.9 | Short | 75 | 0.0 | NA |
| Lane 2 | 729 | 11.7 | 729 | 11.7 | 805[1] | 0.906 | 100 | 31.8 | LOS C | 42.2 | 357.5 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 774 | 11.7 | 774 | 11.7 | 855 | 0.906 | 100 | 18.3 | LOS B | 49.3 | 417.3 | Full | 500 | 0.0 | 0.0 |
| Lane 4 | 774 | 11.7 | 774 | 11.7 | 855 | 0.906 | 100 | 18.3 | LOS B | 49.3 | 417.3 | Full | 500 | 0.0 | 0.0 |
| Lane 5 | 237 | 5.8 | 237 | 5.8 | 264 | 0.897 | 100 | 100.4 | LOS F[11] | 22.8 | 178.1 | Short | 240 | 0.0 | NA |
| Approach | 2589 | 11.0 | 2589 | 11.0 | | 0.906 | | 30.4 | LOS C | 49.3 | 417.3 | | | | |
| All Vehicles | 5939 | 8.0 | 5939 | 8.0 | | 1.529 | | 85.8 | LOS F[11] | 81.9 | 633.9 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.
5 Lane under-utilisation found by the program
6 Lane under-utilisation due to downstream effects
8 Probability of Blockage has been set on the basis of a queue that overflows from a short lane.

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

**Approach Lane Flows (veh/h)**

SouthEast: Hardey Rd

| Mov. From SE To Exit: | L2 SW | T1 NW | R2 NE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 91 | 77 | - | 168 | 5.4 | 321 | 0.522 | 87[6] | 55.9 | 2 |
| Lane 2 | - | 184 | - | 184 | 4.8 | 307[1] | 0.600 | 100 | NA | NA |
| Lane 3 | - | - | 169 | 169 | 5.8 | 312[1] | 0.542 | 100 | 57.5 | 2 |
| Approach | 91 | 261 | 169 | 521 | 5.3 | | 0.600 | | | |

NorthEast: GEH

| Mov. From NE To Exit: | L2 SE | T1 SW | R2 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 125 | - | - | 125 | 5.8 | 1341 | 0.093 | 13[5] | 0.0 | 2 |
| Lane 2 | - | 620 | - | 620 | 6.3 | 866[1] | 0.716 | 100 | NA | NA |
| Lane 3 | - | 652 | - | 652 | 6.3 | 910 | 0.716 | 100 | NA | NA |
| Lane 4 | - | 605 | - | 605 | 6.3 | 844[1] | 0.716 | 100 | NA | NA |
| Lane 5 | - | - | 405 | 405 | 4.7 | 265 | 1.529 | 100 | 100.0 | 4 |
| Approach | 125 | 1876 | 405 | 2406 | 6.0 | | 1.529 | | | |

NorthWest: Resolution Dr

| Mov. From NW To Exit: | L2 NE | T1 SE | R2 SW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 207 | - | - | 207 | 4.7 | 631 | 0.328 | 100 | 0.7 | 2 |
| Lane 2 | - | 49 | - | 49 | 4.7 | 83 | 0.590 | 39[6] | NA | NA |
| Lane 3 | - | 125 | - | 125 | 4.7 | 83 | 1.508 | 100 | 35.2 | 2 |
| Lane 4 | - | - | 41 | 41 | 4.8 | 78 | 0.525 | 100 | 0.0 | 3 |
| Approach | 207 | 175 | 41 | 422 | 4.7 | | 1.508 | | | |

SouthWest: GEH

| Mov. From SW To Exit: | L2 NW | T1 NE | R2 SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 75 | - | - | 75 | 4.7 | 872 | 0.085 | 9[5] | 0.0 | 2 |
| Lane 2 | - | 729 | - | 729 | 11.7 | 805[1] | 0.906 | 100 | NA | NA |
| Lane 3 | - | 774 | - | 774 | 11.7 | 855 | 0.906 | 100 | NA | NA |
| Lane 4 | - | 774 | - | 774 | 11.7 | 855 | 0.906 | 100 | NA | NA |
| Lane 5 | - | - | 237 | 237 | 5.8 | 264 | 0.897 | 100 | 0.0 | 4 |
| Approach | 75 | 2278 | 237 | 2589 | 11.0 | | 0.906 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 5939 | 8.0 | 1.529 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.
5 Lane under-utilisation found by the program
6 Lane under-utilisation due to downstream effects

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast Exit: Hardey Rd<br>Merge Type: **Priority** | | | | | | | | | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Exit Short Lane | 1 | 45 | 0.0 | 320 | 329 | 3.08 | 2.05 | 174 | 1413 | 0.123 | 0.5 | 0.7 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 320 | 1800 | 0.178 | 0.0 | 0.0 |
| NorthEast Exit: GEH<br>Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 120 | 0.0 | 729 | 768 | 3.07 | 2.05 | 207 | 952 | 0.217 | 1.7 | 2.3 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 729 | 1800 | 0.405 | 0.0 | 0.0 |
| NorthWest Exit: Resolution Dr<br>Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 140 | 0.0 | 449 | 460 | 3.07 | 2.05 | 151 | 1281 | 0.118 | 0.8 | 1.0 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 449 | 1800 | 0.250 | 0.0 | 0.0 |

**Variable Demand Analysis**

| | Initial Queued Demand<br>veh | Residual Queued Demand<br>veh | Time for Residual Demand to Clear<br>sec | Duration of Oversatn<br>sec |
|---|---|---|---|---|
| SouthEast: Hardey Rd | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: GEH | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 5 | 0.0 | 70.0 | 952.5 | NA |
| NorthWest: Resolution Dr | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 21.1 | 914.4 | NA |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| SouthWest: GEH | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 5 | 0.0 | 0.0 | 0.0 | 0.0 |

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Project: C:\PJA\Phil Jones Associates\SharedData - 07575 Ascot Racecourse Local Structure Plan & Scheme Amendment\4. Technical\4.3 Analysis\4.3.1 Transport\07575_M_01_A_Ascot Racecourse LSP&SA.sip9

## LANE SUMMARY

**Site: 103av [TCS PM - Current (Site Folder: GEH/Stoneham)]**

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 150 seconds (Site Optimum Cycle Time - Minimum Delay)

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Belgravia St | | | | | | | | | | | | | | | |
| Lane 1 | 268 | 13.0 | 268 | 13.0 | 332 | 0.806 | 100 | 69.0 | LOS E | 19.9 | 172.3 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 247 | 13.0 | 247 | 13.0 | 306[1] | 0.806 | 100 | 74.3 | LOS E | 18.4 | 159.3 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 173 | 13.0 | 173 | 13.0 | 320 | 0.540 | 67[5] | 71.6 | LOS E | 11.5 | 99.3 | Short | 73 | 0.0 | NA |
| Approach | 687 | 13.0 | 687 | 13.0 | | 0.806 | | 71.5 | LOS E | 19.9 | 172.3 | | | | |
| NorthEast: GEH | | | | | | | | | | | | | | | |
| Lane 1 | 136 | 4.6 | 136 | 4.6 | 1226 | 0.111 | 16[5] | 13.6 | LOS B | 3.2 | 24.9 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 587 | 6.2 | 587 | 6.2 | 835 | 0.702 | 100 | 13.8 | LOS B | 22.0 | 173.4 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 587 | 6.2 | 587 | 6.2 | 835 | 0.702 | 100 | 13.8 | LOS B | 22.0 | 173.4 | Full | 500 | 0.0 | 0.0 |
| Lane 4 | 587 | 6.2 | 587 | 6.2 | 835 | 0.702 | 100 | 13.8 | LOS B | 22.0 | 173.4 | Full | 500 | 0.0 | 0.0 |
| Lane 5 | 82 | 5.8 | 82 | 5.8 | 129 | 0.637 | 100 | 82.4 | LOS F | 6.2 | 48.2 | Short | 180 | 0.0 | NA |
| Approach | 1978 | 6.1 | 1978 | 6.1 | | 0.702 | | 16.7 | LOS B | 22.0 | 173.4 | | | | |
| NorthWest: Stoneham St | | | | | | | | | | | | | | | |
| Lane 1 | 11 | 5.8 | 11 | 5.8 | 199 | 0.053 | 100 | 71.4 | LOS E | 0.7 | 5.4 | Short | 75 | 0.0 | NA |
| Lane 2 | 194 | 5.8 | 194 | 5.8 | 210 | 0.926 | 100 | 88.9 | LOS F | 16.5 | 128.7 | Full | 300 | 0.0 | 0.0 |
| Lane 3 | 188 | 5.8 | 188 | 5.8 | 203[1] | 0.926 | 100 | 92.5 | LOS F | 15.9 | 124.6 | Full | 300 | 0.0 | 0.0 |
| Lane 4 | 184 | 5.8 | 184 | 5.8 | 199 | 0.926 | 100 | 95.8 | LOS F | 15.7 | 122.6 | Short | 60 | 0.0 | NA |
| Approach | 577 | 5.8 | 577 | 5.8 | | 0.926 | | 91.9 | LOS F | 16.5 | 128.7 | | | | |
| SouthWest: GEH | | | | | | | | | | | | | | | |
| Lane 1 | 712 | 5.8 | 712 | 5.8 | 1261 | 0.564 | 70[5] | 13.5 | LOS B | 21.0 | 164.6 | Short | 145 | 0.0 | NA |
| Lane 2 | 646 | 6.8 | 646 | 6.8 | 804 | 0.803 | 100 | 25.6 | LOS C | 34.9 | 277.3 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 665 | 6.8 | 665 | 6.8 | 828 | 0.803 | 100 | 26.0 | LOS C | 36.9 | 293.5 | Full | 500 | 0.0 | 0.0 |
| Lane 4 | 665 | 6.8 | 665 | 6.8 | 828 | 0.803 | 100 | 26.0 | LOS C | 36.9 | 293.5 | Full | 500 | 0.0 | 0.0 |
| Lane 5 | 114 | 4.6 | 114 | 4.6 | 130 | 0.877 | 100 | 91.6 | LOS F | 9.3 | 72.0 | Short | 210 | 0.0 | NA |
| Approach | 2802 | 6.5 | 2802 | 6.5 | | 0.877 | | 25.4 | LOS C | 36.9 | 293.5 | | | | |
| All Vehicles | 6044 | 7.0 | 6044 | 7.0 | | 0.926 | | 34.1 | LOS C | 36.9 | 293.5 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.
5 Lane under-utilisation found by the program

**Approach Lane Flows (veh/h)**

SouthEast: Belgravia St

Attachment 12.1.5 Transport Impact Assessment

| Mov. | L2 | T1 | R2 | Total | %HV | Cap. | Deg. Satn | Lane Util. | Prob. SL Ov. | Ov. Lane |
|---|---|---|---|---|---|---|---|---|---|---|
| From SE To Exit: | SW | NW | NE | | | veh/h | v/c | % | % | No. |
| Lane 1 | 84 | 184 | - | 268 | 13.0 | 332 | 0.806 | 100 | NA | NA |
| Lane 2 | - | 247 | - | 247 | 13.0 | 306[1] | 0.806 | 100 | NA | NA |
| Lane 3 | - | - | 173 | 173 | 13.0 | 320 | 0.540 | 67[5] | 33.0 | 2 |
| Approach | 84 | 431 | 173 | 687 | 13.0 | | 0.806 | | | |
| NorthEast: GEH | | | | | | | | | | |
| Mov. | L2 | T1 | R2 | Total | %HV | Cap. | Deg. Satn | Lane Util. | Prob. SL Ov. | Ov. Lane |
| From NE To Exit: | SE | SW | NW | | | veh/h | v/c | % | % | No. |
| Lane 1 | 136 | - | - | 136 | 4.6 | 1226 | 0.111 | 16[5] | NA | NA |
| Lane 2 | - | 587 | - | 587 | 6.2 | 835 | 0.702 | 100 | NA | NA |
| Lane 3 | - | 587 | - | 587 | 6.2 | 835 | 0.702 | 100 | NA | NA |
| Lane 4 | - | 587 | - | 587 | 6.2 | 835 | 0.702 | 100 | NA | NA |
| Lane 5 | - | - | 82 | 82 | 5.8 | 129 | 0.637 | 100 | 0.0 | 4 |
| Approach | 136 | 1760 | 82 | 1978 | 6.1 | | 0.702 | | | |
| NorthWest: Stoneham St | | | | | | | | | | |
| Mov. | L2 | T1 | R2 | Total | %HV | Cap. | Deg. Satn | Lane Util. | Prob. SL Ov. | Ov. Lane |
| From NW To Exit: | NE | SE | SW | | | veh/h | v/c | % | % | No. |
| Lane 1 | 11 | - | - | 11 | 5.8 | 199 | 0.053 | 100 | 0.0 | 2 |
| Lane 2 | - | 194 | - | 194 | 5.8 | 210 | 0.926 | 100 | NA | NA |
| Lane 3 | - | 100 | 87 | 188 | 5.8 | 203[1] | 0.926 | 100 | NA | NA |
| Lane 4 | - | - | 184 | 184 | 5.8 | 199 | 0.926 | 100 | 71.4 | 3 |
| Approach | 11 | 295 | 272 | 577 | 5.8 | | 0.926 | | | |
| SouthWest: GEH | | | | | | | | | | |
| Mov. | L2 | T1 | R2 | Total | %HV | Cap. | Deg. Satn | Lane Util. | Prob. SL Ov. | Ov. Lane |
| From SW To Exit: | NW | NE | SE | | | veh/h | v/c | % | % | No. |
| Lane 1 | 712 | - | - | 712 | 5.8 | 1261 | 0.564 | 70[5] | 16.5 | 2 |
| Lane 2 | - | 646 | - | 646 | 6.8 | 804 | 0.803 | 100 | NA | NA |
| Lane 3 | - | 665 | - | 665 | 6.8 | 828 | 0.803 | 100 | NA | NA |
| Lane 4 | - | 665 | - | 665 | 6.8 | 828 | 0.803 | 100 | NA | NA |
| Lane 5 | - | - | 114 | 114 | 4.6 | 130 | 0.877 | 100 | 0.0 | 4 |
| Approach | 712 | 1977 | 114 | 2802 | 6.5 | | 0.877 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 6044 | 7.0 | 0.926 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.

5 Lane under-utilisation found by the program

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NorthEast Exit: GEH Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 100 | 0.0 | 646 | 667 | 3.09 | 2.06 | 11 | 1049 | 0.010 | 1.4 | 1.5 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 646 | 1800 | 0.359 | 0.0 | 0.0 |
| SouthWest Exit: GEH Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 100 | 0.0 | 587 | 604 | 3.16 | 2.11 | 84 | 1069 | 0.079 | 1.3 | 1.6 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | 587 | 1800 | 0.326 | 0.0 | 0.0 |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| SouthEast: Belgravia St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: GEH | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 5 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthWest: Stoneham St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| SouthWest: GEH | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 5 | 0.0 | 0.0 | 0.0 | 0.0 |

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Project: C:\PJA\Phil Jones Associates\SharedData - 07575 Ascot Racecourse Local Structure Plan & Scheme Amendment\4. Technical\4.3 Analysis\4.3.1 Transport\07575_M_01_A_Ascot Racecourse LSP&SA.sip9

## LANE SUMMARY

**Site: 103av [TCS PM - 2036 (Site Folder: GEH/Stoneham)]**

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 180 seconds (Site Optimum Cycle Time - Minimum Delay)
Design Life Analysis: Constant Number of Years = 14

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Belgravia St | | | | | | | | | | | | | | | |
| Lane 1 | 333 | 13.0 | 333 | 13.0 | 296 | 1.123 | 100 | 213.6 | LOS F[11] | 44.9 | 389.1 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 276 | 13.0 | 276 | 13.0 | 246[1] | 1.123 | 100 | 241.7 | LOS F[11] | 37.5 | 324.9 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 185 | 13.0 | 185 | 13.0 | 275[1] | 0.672 | 60[5] | 108.9 | LOS F[11] | 15.3 | 132.5 | Short | 73 | 0.0 | NA |
| Approach | 793 | 13.0 | 793 | 13.0 | | 1.123 | | 199.0 | LOS F[11] | 44.9 | 389.1 | | | | |
| NorthEast: GEH | | | | | | | | | | | | | | | |
| Lane 1 | 145 | 4.6 | 145 | 4.6 | 1296 | 0.112 | 17[5] | 12.9 | LOS B | 3.6 | 27.8 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 628 | 6.2 | 628 | 6.2 | 962 | 0.652 | 100 | 7.1 | LOS A | 16.1 | 127.1 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 628 | 6.2 | 628 | 6.2 | 962 | 0.652 | 100 | 7.1 | LOS A | 16.1 | 127.1 | Full | 500 | 0.0 | 0.0 |
| Lane 4 | 628 | 6.2 | 628 | 6.2 | 962 | 0.652 | 100 | 7.1 | LOS A | 16.1 | 127.1 | Full | 500 | 0.0 | 0.0 |
| Lane 5 | 88 | 5.8 | 88 | 5.8 | 107 | 0.818 | 100 | 104.3 | LOS F[11] | 8.3 | 64.6 | Short | 180 | 0.0 | NA |
| Approach | 2116 | 6.1 | 2116 | 6.1 | | 0.818 | | 11.5 | LOS B | 16.1 | 127.1 | | | | |
| NorthWest: Stoneham St | | | | | | | | | | | | | | | |
| Lane 1 | 11 | 5.8 | 11 | 5.8 | 185 | 0.061 | 100 | 97.0 | LOS F[11] | 0.9 | 7.0 | Short | 75 | 0.0 | NA |
| Lane 2 | 221 | 5.8 | 221 | 5.8 | 195[1] | 1.129 | 100 | 232.6 | LOS F[11] | 29.7 | 232.7 | Full | 300 | 0.0 | 0.0 |
| Lane 3 | 194 | 5.8 | 194 | 5.8 | 172[1] | 1.129 | 100 | 241.9 | LOS F[11] | 26.2 | 205.2 | Full | 300 | 0.0 | 0.0 |
| Lane 4 | 191 | 5.8 | 191 | 5.8 | 170[1] | 1.129 | 100 | 245.0 | LOS F[11] | 25.9 | 202.8 | Short | 60 | 0.0 | NA |
| Approach | 617 | 5.8 | 617 | 5.8 | | 1.129 | | 236.9 | LOS F[11] | 29.7 | 232.7 | | | | |
| SouthWest: GEH | | | | | | | | | | | | | | | |
| Lane 1 | 761 | 5.8 | 761 | 5.8 | 1254 | 0.607 | 67[5] | 18.4 | LOS B | 30.1 | 235.3 | Short | 145 | 0.0 | NA |
| Lane 2 | 665 | 6.8 | 665 | 6.8 | 729[1] | 0.912 | 100 | 36.5 | LOS D | 46.1 | 366.3 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 870 | 6.8 | 870 | 6.8 | 954 | 0.912 | 100 | 30.8 | LOS C | 66.1 | 525.0 | Full | 500 | 0.0 | 9.4 |
| Lane 4 | 846 | 6.8 | 846 | 6.8 | 928[1] | 0.912 | 100 | 36.9 | LOS D | 63.4 | 503.5 | Full | 500 | 0.0 | 5.6 |
| Lane 5 | 122 | 4.6 | 122 | 4.6 | 108 | 1.126 | 100 | 233.7 | LOS F[11] | 16.3 | 127.0 | Short | 210 | 0.0 | NA |
| Approach | 3264 | 6.5 | 3264 | 6.5 | | 1.126 | | 38.2 | LOS D | 66.1 | 525.0 | | | | |
| All Vehicles | 6791 | 7.1 | 6791 | 7.1 | | 1.129 | | 66.7 | LOS E[11] | 66.1 | 525.0 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.
5 Lane under-utilisation found by the program
11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

Attachment 12.1.5 Transport Impact Assessment

**Approach Lane Flows (veh/h)**

SouthEast: Belgravia St

| Mov. From SE To Exit: | L2 SW | T1 NW | R2 NE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 90 | 242 | - | 333 | 13.0 | 296 | 1.123 | 100 | NA | NA |
| Lane 2 | - | 276 | - | 276 | 13.0 | 246[1] | 1.123 | 100 | NA | NA |
| Lane 3 | - | - | 185 | 185 | 13.0 | 275[1] | 0.672 | 60[5] | 60.0 | 2 |
| Approach | 90 | 519 | 185 | 793 | 13.0 | | 1.123 | | | |

NorthEast: GEH

| Mov. From NE To Exit: | L2 SE | T1 SW | R2 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 145 | - | - | 145 | 4.6 | 1296 | 0.112 | 17[5] | NA | NA |
| Lane 2 | - | 628 | - | 628 | 6.2 | 962 | 0.652 | 100 | NA | NA |
| Lane 3 | - | 628 | - | 628 | 6.2 | 962 | 0.652 | 100 | NA | NA |
| Lane 4 | - | 628 | - | 628 | 6.2 | 962 | 0.652 | 100 | NA | NA |
| Lane 5 | - | - | 88 | 88 | 5.8 | 107 | 0.818 | 100 | 0.0 | 4 |
| Approach | 145 | 1883 | 88 | 2116 | 6.1 | | 0.818 | | | |

NorthWest: Stoneham St

| Mov. From NW To Exit: | L2 NE | T1 SE | R2 SW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 11 | - | - | 11 | 5.8 | 185 | 0.061 | 100 | 0.0 | 2 |
| Lane 2 | - | 221 | - | 221 | 5.8 | 195[1] | 1.129 | 100 | NA | NA |
| Lane 3 | - | 95 | 99 | 194 | 5.8 | 172[1] | 1.129 | 100 | NA | NA |
| Lane 4 | - | - | 191 | 191 | 5.8 | 170[1] | 1.129 | 100 | 100.0 | 3 |
| Approach | 11 | 315 | 291 | 617 | 5.8 | | 1.129 | | | |

SouthWest: GEH

| Mov. From SW To Exit: | L2 NW | T1 NE | R2 SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 761 | - | - | 761 | 5.8 | 1254 | 0.607 | 67[5] | 49.5 | 2 |
| Lane 2 | - | 665 | - | 665 | 6.8 | 729[1] | 0.912 | 100 | NA | NA |
| Lane 3 | - | 870 | - | 870 | 6.8 | 954 | 0.912 | 100 | NA | NA |
| Lane 4 | - | 846 | - | 846 | 6.8 | 928[1] | 0.912 | 100 | NA | NA |
| Lane 5 | - | - | 122 | 122 | 4.6 | 108 | 1.126 | 100 | 0.0 | 4 |
| Approach | 761 | 2381 | 122 | 3264 | 6.5 | | 1.126 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 6791 | 7.1 | 1.129 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.

5 Lane under-utilisation found by the program

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NorthEast Exit: GEH Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 100 | 0.0 | 665 | 686 | 3.09 | 2.06 | 11 | 1029 | 0.011 | 1.4 | 1.6 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 665 | 1800 | 0.369 | 0.0 | 0.0 |
| SouthWest Exit: GEH | | | | | | | | | | | | |

| Merge Type: **Priority** | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Exit Short Lane | 1 | 100 | 0.0 | 628 | 647 | 3.16 | 2.11 | 80 | 1024 | 0.078 | 1.4 | 1.7 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 628 | 1800 | 0.349 | 0.0 | 0.0 |

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| SouthEast: Belgravia St | | | | |
| Lane 1 | 0.0 | 18.2 | 221.7 | NA |
| Lane 2 | 0.0 | 15.1 | 221.7 | NA |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: GEH | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 5 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthWest: Stoneham St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 12.6 | 232.6 | NA |
| Lane 3 | 0.0 | 11.1 | 232.6 | NA |
| Lane 4 | 0.0 | 11.0 | 232.6 | NA |
| SouthWest: GEH | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 5 | 0.0 | 6.8 | 226.7 | NA |

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Project: C:\PJA\Phil Jones Associates\SharedData - 07575 Ascot Racecourse Local Structure Plan & Scheme Amendment\4. Technical\4.3 Analysis\4.3.1 Transport\07575_M_01_A_Ascot Racecourse LSP&SA.sip9

# LANE SUMMARY

**Site: 103av [TCS PM - 2036 - mod (Site Folder: GEH/ Stoneham)]**

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 180 seconds (Site Optimum Cycle Time - Minimum Delay)
Design Life Analysis: Constant Number of Years = 14

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Belgravia St | | | | | | | | | | | | | | | |
| Lane 1 | 336 | 13.0 | 336 | 13.0 | 303 | 1.109 | 100 | 184.7 | LOS F[11] | 43.9 | 380.6 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 272 | 13.0 | 272 | 13.0 | 245[1] | 1.109 | 100 | 229.8 | LOS F[11] | 36.2 | 313.9 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 185 | 13.0 | 185 | 13.0 | 275[1] | 0.671 | 61[5] | 108.1 | LOS F[11] | 15.3 | 132.5 | Short | 73 | 0.0 | NA |
| Approach | 793 | 13.0 | 793 | 13.0 | | 1.109 | | 182.4 | LOS F[11] | 43.9 | 380.6 | | | | |
| NorthEast: GEH | | | | | | | | | | | | | | | |
| Lane 1 | 145 | 4.6 | 145 | 4.6 | 1336 | 0.109 | 17[5] | 11.7 | LOS B | 3.3 | 25.5 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 628 | 6.2 | 628 | 6.2 | 1003 | 0.626 | 100 | 4.6 | LOS A | 11.5 | 90.6 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 628 | 6.2 | 628 | 6.2 | 1003 | 0.626 | 100 | 4.6 | LOS A | 11.5 | 90.6 | Full | 500 | 0.0 | 0.0 |
| Lane 4 | 628 | 6.2 | 628 | 6.2 | 1003 | 0.626 | 100 | 4.6 | LOS A | 11.5 | 90.6 | Full | 500 | 0.0 | 0.0 |
| Lane 5 | 88 | 5.8 | 88 | 5.8 | 78 | 1.125 | 100 | 228.7 | LOS F[11] | 11.8 | 92.3 | Short | 180 | 0.0 | NA |
| Approach | 2116 | 6.1 | 2116 | 6.1 | | 1.125 | | 14.4 | LOS B | 11.8 | 92.3 | | | | |
| NorthWest: Stoneham St | | | | | | | | | | | | | | | |
| Lane 1 | 11 | 5.8 | 11 | 5.8 | 312 | 0.036 | 100 | 83.0 | LOS F[11] | 0.8 | 6.3 | Short | 75 | 0.0 | NA |
| Lane 2 | 217 | 5.8 | 217 | 5.8 | 185 | 1.173 | 100 | 268.7 | LOS F[11] | 31.2 | 244.1 | Full | 300 | 0.0 | 0.0 |
| Lane 3 | 196 | 5.8 | 196 | 5.8 | 167[1] | 1.173 | 100 | 279.5 | LOS F[11] | 28.2 | 220.2 | Full | 300 | 0.0 | 0.0 |
| Lane 4 | 193 | 5.8 | 193 | 5.8 | 165[1] | 1.173 | 100 | 282.6 | LOS F[11] | 27.8 | 217.6 | Short | 60 | 0.0 | NA |
| Approach | 617 | 5.8 | 617 | 5.8 | | 1.173 | | 273.1 | LOS F[11] | 31.2 | 244.1 | | | | |
| SouthWest: GEH | | | | | | | | | | | | | | | |
| Lane 1 | 761 | 5.8 | 761 | 5.8 | 1276 | 0.597 | 68[5] | 20.2 | LOS C | 28.6 | 224.0 | Short | 145 | 0.0 | NA |
| Lane 2 | 635 | 6.8 | 635 | 6.8 | 722[1] | 0.880 | 100 | 32.6 | LOS C | 41.0 | 325.4 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 875 | 6.8 | 875 | 6.8 | 995 | 0.880 | 100 | 21.9 | LOS C | 57.4 | 456.4 | Full | 500 | 0.0 | 0.0 |
| Lane 4 | 870 | 6.8 | 870 | 6.8 | 990[1] | 0.880 | 100 | 22.9 | LOS C | 56.9 | 452.1 | Full | 500 | 0.0 | 0.0 |
| Lane 5 | 61 | 4.6 | 61 | 4.6 | 77 | 0.790 | 100 | 107.4 | LOS F[11] | 5.8 | 44.8 | Short | 210 | 0.0 | NA |
| Lane 6 | 61 | 4.6 | 61 | 4.6 | 77 | 0.790 | 100 | 106.3 | LOS F[11] | 5.8 | 44.8 | Short | 210 | 0.0 | NA |
| Approach | 3264 | 6.5 | 3264 | 6.5 | | 0.880 | | 27.0 | LOS C | 57.4 | 456.4 | | | | |
| All Vehicles | 6791 | 7.1 | 6791 | 7.1 | | 1.173 | | 63.6 | LOS E[11] | 57.4 | 456.4 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.
5 Lane under-utilisation found by the program
11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

Attachment 12.1.5 Transport Impact Assessment

**Approach Lane Flows (veh/h)**

SouthEast: Belgravia St

| Mov. From SE To Exit: | L2 SW | T1 NW | R2 NE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 90 | 246 | - | 336 | 13.0 | 303 | 1.109 | 100 | NA | NA |
| Lane 2 | - | 272 | - | 272 | 13.0 | 245[1] | 1.109 | 100 | NA | NA |
| Lane 3 | - | - | 185 | 185 | 13.0 | 275[1] | 0.671 | 61[5] | 60.0 | 2 |
| Approach | 90 | 519 | 185 | 793 | 13.0 | | 1.109 | | | |

NorthEast: GEH

| Mov. From NE To Exit: | L2 SE | T1 SW | R2 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 145 | - | - | 145 | 4.6 | 1336 | 0.109 | 17[5] | NA | NA |
| Lane 2 | - | 628 | - | 628 | 6.2 | 1003 | 0.626 | 100 | NA | NA |
| Lane 3 | - | 628 | - | 628 | 6.2 | 1003 | 0.626 | 100 | NA | NA |
| Lane 4 | - | 628 | - | 628 | 6.2 | 1003 | 0.626 | 100 | NA | NA |
| Lane 5 | - | - | 88 | 88 | 5.8 | 78 | 1.125 | 100 | 0.0 | 4 |
| Approach | 145 | 1883 | 88 | 2116 | 6.1 | | 1.125 | | | |

NorthWest: Stoneham St

| Mov. From NW To Exit: | L2 NE | T1 SE | R2 SW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 11 | - | - | 11 | 5.8 | 312 | 0.036 | 100 | 0.0 | 2 |
| Lane 2 | - | 217 | - | 217 | 5.8 | 185 | 1.173 | 100 | NA | NA |
| Lane 3 | - | 98 | 98 | 196 | 5.8 | 167[1] | 1.173 | 100 | NA | NA |
| Lane 4 | - | - | 193 | 193 | 5.8 | 165[1] | 1.173 | 100 | 100.0 | 3 |
| Approach | 11 | 315 | 291 | 617 | 5.8 | | 1.173 | | | |

SouthWest: GEH

| Mov. From SW To Exit: | L2 NW | T1 NE | R2 SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 761 | - | - | 761 | 5.8 | 1276 | 0.597 | 68[5] | 44.9 | 2 |
| Lane 2 | - | 635 | - | 635 | 6.8 | 722[1] | 0.880 | 100 | NA | NA |
| Lane 3 | - | 875 | - | 875 | 6.8 | 995 | 0.880 | 100 | NA | NA |
| Lane 4 | - | 870 | - | 870 | 6.8 | 990[1] | 0.880 | 100 | NA | NA |
| Lane 5 | - | - | 61 | 61 | 4.6 | 77 | 0.790 | 100 | 0.0 | 4 |
| Lane 6 | - | - | 61 | 61 | 4.6 | 77 | 0.790 | 100 | 0.0 | 5 |
| Approach | 761 | 2381 | 122 | 3264 | 6.5 | | 0.880 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 6791 | 7.1 | 1.173 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.

5 Lane under-utilisation found by the program

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NorthEast Exit: GEH<br>Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 100 | 0.0 | 635 | 656 | 3.09 | 2.06 | 11 | 1061 | 0.011 | 1.3 | 1.5 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 635 | 1800 | 0.353 | 0.0 | 0.0 |
| SouthWest Exit: GEH<br>Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 100 | 0.0 | 628 | 647 | 3.16 | 2.11 | 81 | 1024 | 0.079 | 1.4 | 1.7 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 628 | 1800 | 0.349 | 0.0 | 0.0 |

**Variable Demand Analysis**

| | Initial Queued Demand<br>veh | Residual Queued Demand<br>veh | Time for Residual Demand to Clear<br>sec | Duration of Oversatn<br>sec |
|---|---|---|---|---|
| SouthEast: Belgravia St | | | | |
| Lane 1 | 0.0 | 16.6 | 196.5 | NA |
| Lane 2 | 0.0 | 13.4 | 196.5 | NA |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: GEH | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 5 | 0.0 | 4.9 | 224.9 | NA |
| NorthWest: Stoneham St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 16.0 | 311.0 | NA |
| Lane 3 | 0.0 | 14.4 | 311.0 | NA |
| Lane 4 | 0.0 | 14.2 | 311.0 | NA |
| SouthWest: GEH | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 5 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 6 | 0.0 | 0.0 | 0.0 | 0.0 |

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Project: C:\PJA\Phil Jones Associates\SharedData - 07575 Ascot Racecourse Local Structure Plan & Scheme Amendment\4. Technical\4.3 Analysis\4.3.1 Transport\07575_M_01_A_Ascot Racecourse LSP&SA.sip9

# LANE SUMMARY

## Site: 103av [TCS PM - 2036 - with LSP (Site Folder: GEH/ Stoneham)]

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 180 seconds (Site Optimum Cycle Time - Minimum Delay)
Design Life Analysis: Constant Number of Years = 14

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Belgravia St | | | | | | | | | | | | | | | |
| Lane 1 | 359 | 12.1 | 359 | 12.1 | 299 | 1.199 | 100 | 276.3 | LOS F[11] | 53.7 | 460.6 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 302 | 11.8 | 302 | 11.8 | 251[1] | 1.199 | 100 | 307.9 | LOS F[11] | 45.3 | 387.2 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 185 | 13.0 | 185 | 13.0 | 274[1] | 0.674 | 56[5] | 112.9 | LOS F[11] | 15.3 | 132.5 | Short | 73 | 0.0 | NA |
| Approach | 845 | 12.2 | 845 | 12.2 | | 1.199 | | 251.8 | LOS F[11] | 53.7 | 460.6 | | | | |
| NorthEast: GEH | | | | | | | | | | | | | | | |
| Lane 1 | 145 | 4.6 | 145 | 4.6 | 1336 | 0.109 | 17[5] | 11.7 | LOS B | 3.3 | 25.5 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 628 | 6.2 | 628 | 6.2 | 1003 | 0.626 | 100 | 4.6 | LOS A | 11.5 | 90.6 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 628 | 6.2 | 628 | 6.2 | 1003 | 0.626 | 100 | 4.6 | LOS A | 11.5 | 90.6 | Full | 500 | 0.0 | 0.0 |
| Lane 4 | 628 | 6.2 | 628 | 6.2 | 1003 | 0.626 | 100 | 4.6 | LOS A | 11.5 | 90.6 | Full | 500 | 0.0 | 0.0 |
| Lane 5 | 97 | 5.2 | 97 | 5.2 | 88 | 1.105 | 100 | 212.0 | LOS F[11] | 12.7 | 98.4 | Short | 180 | 0.0 | NA |
| Approach | 2126 | 6.0 | 2126 | 6.0 | | 1.105 | | 14.6 | LOS B | 12.7 | 98.4 | | | | |
| NorthWest: Stoneham St | | | | | | | | | | | | | | | |
| Lane 1 | 13 | 4.9 | 13 | 4.9 | 167 | 0.080 | 100 | 108.2 | LOS F[11] | 1.1 | 8.4 | Short | 75 | 0.0 | NA |
| Lane 2 | 247 | 5.0 | 247 | 5.0 | 176 | 1.402 | 100 | 479.2 | LOS F[11] | 45.6 | 353.6 | Full | 300 | 0.0 | 19.9 |
| Lane 3 | 228 | 5.0 | 228 | 5.0 | 163[1] | 1.402 | 100 | 490.1 | LOS F[11] | 42.2 | 327.1 | Full | 300 | 0.0 | 12.8 |
| Lane 4 | 225 | 5.0 | 225 | 5.0 | 161[1] | 1.402 | 100 | 493.2 | LOS F[11] | 41.6 | 322.6 | Short | 60 | 0.0 | NA |
| Approach | 714 | 5.0 | 714 | 5.0 | | 1.402 | | 480.2 | LOS F[11] | 45.6 | 353.6 | | | | |
| SouthWest: GEH | | | | | | | | | | | | | | | |
| Lane 1 | 846 | 5.2 | 846 | 5.2 | 1264 | 0.669 | 76[5] | 22.6 | LOS C | 31.9 | 247.9 | Short | 145 | 0.0 | NA |
| Lane 2 | 627 | 6.8 | 627 | 6.8 | 709[1] | 0.885 | 100 | 34.1 | LOS C | 41.4 | 328.6 | Full | 500 | 0.0 | 0.0 |
| Lane 3 | 881 | 6.8 | 881 | 6.8 | 995 | 0.885 | 100 | 22.6 | LOS C | 58.9 | 468.1 | Full | 500 | 0.0 | 0.0 |
| Lane 4 | 873 | 6.8 | 873 | 6.8 | 986[1] | 0.885 | 100 | 23.6 | LOS C | 58.0 | 460.5 | Full | 500 | 0.0 | 0.0 |
| Lane 5 | 122 | 4.6 | 122 | 4.6 | 88 | 1.376 | 100 | 448.3 | LOS F[11] | 22.1 | 171.7 | Short | 210 | 0.0 | NA |
| Approach | 3348 | 6.3 | 3348 | 6.3 | | 1.376 | | 40.5 | LOS D | 58.9 | 468.1 | | | | |
| All Vehicles | 7033 | 6.8 | 7033 | 6.8 | | 1.402 | | 102.7 | LOS F[11] | 58.9 | 468.1 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.
5 Lane under-utilisation found by the program
11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

Attachment 12.1.5 Transport Impact Assessment

**Approach Lane Flows (veh/h)**

SouthEast: Belgravia St

| Mov. From SE To Exit: | L2 SW | T1 NW | R2 NE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 90 | 269 | - | 359 | 12.1 | 299 | 1.199 | 100 | NA | NA |
| Lane 2 | - | 302 | - | 302 | 11.8 | 251[1] | 1.199 | 100 | NA | NA |
| Lane 3 | - | - | 185 | 185 | 13.0 | 274[1] | 0.674 | 56[5] | 60.1 | 2 |
| Approach | 90 | 570 | 185 | 845 | 12.2 | | 1.199 | | | |

NorthEast: GEH

| Mov. From NE To Exit: | L2 SE | T1 SW | R2 NW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 145 | - | - | 145 | 4.6 | 1336 | 0.109 | 17[5] | NA | NA |
| Lane 2 | - | 628 | - | 628 | 6.2 | 1003 | 0.626 | 100 | NA | NA |
| Lane 3 | - | 628 | - | 628 | 6.2 | 1003 | 0.626 | 100 | NA | NA |
| Lane 4 | - | 628 | - | 628 | 6.2 | 1003 | 0.626 | 100 | NA | NA |
| Lane 5 | - | - | 97 | 97 | 5.2 | 88 | 1.105 | 100 | 0.0 | 4 |
| Approach | 145 | 1883 | 97 | 2126 | 6.0 | | 1.105 | | | |

NorthWest: Stoneham St

| Mov. From NW To Exit: | L2 NE | T1 SE | R2 SW | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 13 | - | - | 13 | 4.9 | 167 | 0.080 | 100 | 0.0 | 2 |
| Lane 2 | - | 247 | - | 247 | 5.0 | 176 | 1.402 | 100 | NA | NA |
| Lane 3 | - | 118 | 111 | 228 | 5.0 | 163[1] | 1.402 | 100 | NA | NA |
| Lane 4 | - | - | 225 | 225 | 5.0 | 161[1] | 1.402 | 100 | 100.0 | 3 |
| Approach | 13 | 365 | 336 | 714 | 5.0 | | 1.402 | | | |

SouthWest: GEH

| Mov. From SW To Exit: | L2 NW | T1 NE | R2 SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 846 | - | - | 846 | 5.2 | 1264 | 0.669 | 76[5] | 54.4 | 2 |
| Lane 2 | - | 627 | - | 627 | 6.8 | 709[1] | 0.885 | 100 | NA | NA |
| Lane 3 | - | 881 | - | 881 | 6.8 | 995 | 0.885 | 100 | NA | NA |
| Lane 4 | - | 873 | - | 873 | 6.8 | 986[1] | 0.885 | 100 | NA | NA |
| Lane 5 | - | - | 122 | 122 | 4.6 | 88 | 1.376 | 100 | 0.0 | 4 |
| Approach | 846 | 2381 | 122 | 3348 | 6.3 | | 1.376 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 7033 | 6.8 | 1.402 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.

5 Lane under-utilisation found by the program

**Merge Analysis**

| | Exit Lane Number | Short Lane Length m | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NorthEast Exit: GEH Merge Type: **Priority** | | | | | | | | | | | | |
| Exit Short Lane | 1 | 100 | 0.0 | 627 | 648 | 3.07 | 2.05 | 13 | 1079 | 0.012 | 1.3 | 1.5 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 627 | 1800 | 0.349 | 0.0 | 0.0 |
| SouthWest Exit: GEH | | | | | | | | | | | | |

| Merge Type: **Priority** | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Exit Short Lane | 1 | 100 | 0.0 | 628 | 647 | 3.16 | 2.11 | 75 | 1024 | 0.073 | 1.4 | 1.7 |
| Merge Lane | 2 | - | 100.0 | Merge Lane is not Opposed | | | | 628 | 1800 | 0.349 | 0.0 | 0.0 |

| **Variable Demand Analysis** | | | | |
|---|---|---|---|---|
| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
| SouthEast: Belgravia St | | | | |
| Lane 1 | 0.0 | 29.8 | 358.4 | NA |
| Lane 2 | 0.0 | 25.0 | 358.4 | NA |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: GEH | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 5 | 0.0 | 4.6 | 189.6 | NA |
| NorthWest: Stoneham St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 35.4 | 723.2 | NA |
| Lane 3 | 0.0 | 32.7 | 723.2 | NA |
| Lane 4 | 0.0 | 32.3 | 723.2 | NA |
| SouthWest: GEH | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 5 | 0.0 | 16.6 | 677.1 | NA |

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Project: C:\PJA\Phil Jones Associates\SharedData - 07575 Ascot Racecourse Local Structure Plan & Scheme Amendment\4. Technical\4.3 Analysis\4.3.1 Transport\07575_M_01_A_Ascot Racecourse LSP&SA.sip9

Attachment 12.1.6 Retail Assessment

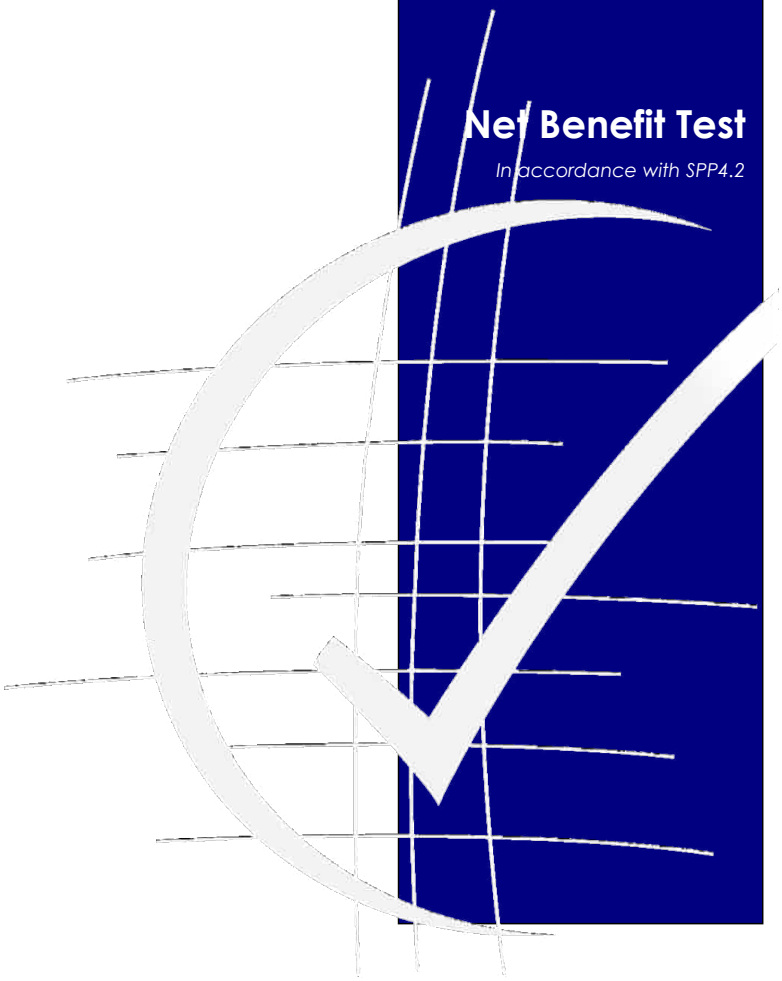
Taktics4

Proposed Activity

Ascot, City of Belmont

# Net Benefit Test

*In accordance with SPP4.2*



Attachment 12.1.6 Retail Assessment



**Project**

| | |
|---|---|
| Project name | **Ascot Centre** |
| Project number | **2360** |
| Prepared for | **Perth Racing / Rowe Group** |

**Contact**

| | |
|---|---|
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**Version**

| Document Name | Date | Description | Prepared |
|---|---|---|---|
| 2360-Ascot-NBT-T4-Draft-02 | May 2024 | Draft for Consideration | GRD |
| 2360-Ascot-NBT-T4-Draft-03 | June 2024 | Draft for Consideration | GRD |
| **2360-Ascot-NBT-T4-Final-01.docx** | **Aug 2024** | **Draft for Consideration** | **GRD** |
| | | | |

**Distribution**

| Document Name | Date | Distribution | Format | Delivery |
|---|---|---|---|---|
| 2360-Ascot-NBT-T4-Draft-02 | May 2024 | LL-RG | PDF | email |
| 2360-Ascot-NBT-T4-Draft-03 | June 2024 | LL-RG | PDF | email |
| **2360-Ascot-NBT-T4-Final-01.docx** | **Aug 2024** | **LL-RG** | **PDF** | **email** |
| | | | | |

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**Acknowledgement of Country**

Taktics4 acknowledges the First Nations people as the custodians of the land which is the subject of this assessment. Taktics4 recognise and respect their continuing culture, and Elders past, present, and emerging.

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## 1. EXECUTIVE SUMMARY

This assessment considers the net benefit of two proposed activity categories proposed in Ascot, in the City of Belmont. The assessment has been prepared in response to the policy requirements established by State Planning Policy 4.2. This Net Benefit Test assesses:

1. Proposed local centre of 3,400 sqm NLA (PLUC 5 – 'SHOP')
2. Proposed bulky goods precinct of 9,600 sqm (PLUC 6 – 'OTHER RETAIL')

**Proposed Local Centre**

The assessment reveals that the proposed local centre activity will generate a Net Benefit by:

- being sustainable from 2026 – satisfying an existing resident trade area and filling an existing demand/gap/need in the market
- having low – insignificant impacts on surrounding activity network – with any impacts likely to be offset by potential sales growth generated by additional resident population and spending over the next 15 years.
- creating up to 85 full time equivalent jobs,
- reducing the number of vehicle km required to be travelled by residents in the immediate trade area.

Residents in Ascot and Belmont:

- are the communities most likely to experience the benefit from the proposed activity.
- are estimated to account for 40% of total sales / trips at the proposed activity.
- do not currently have access to a full line supermarket-based centre within 2.5 km.
- travel up to 2.5 km each way (5 km round trip) every time they access their full line supermarket needs.

**Proposed Bulky Goods**

The assessment reveals that the proposed activity will generate a Net Benefit by:

- complementing the existing offer in the vicinity
- being accessible through strong north south and east west connections.
- creating up to 120 jobs.
- having low/insignificant impacts on existing and planned activity precincts – which will subsequently be offset by planned population and retail spending growth in the trade area.

**Net Benefit**

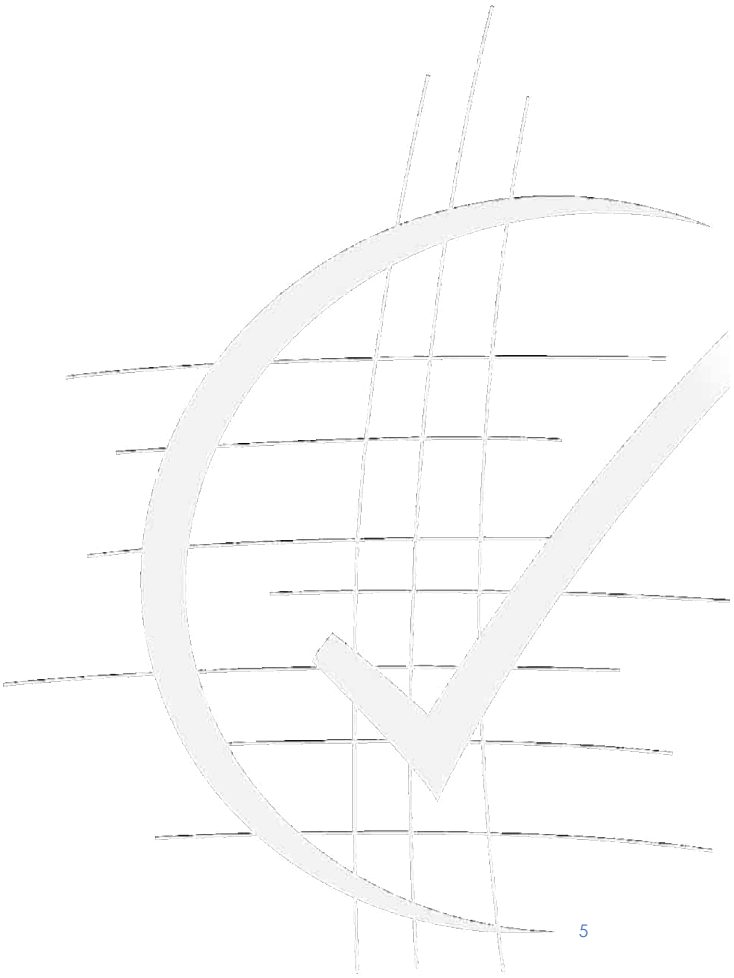
Subsequently, the proposed activity:

- will not impact the integrity of the surrounding activity centre network – and as such will not have any negative impact on existing or planned public or private investment in the trade area.
- will reduce the amount of trip kilometres that Ascot and Belmont residents must travel each year to satisfy their daily/weekly and bulky goods shopping needs.
- will save over 530,000 to 700,000 trips p.a. to centres outside their trade area
- will save between 40 and 50 trips per person per annum.

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- will save between 2.7 M km p.a. and 3.5 M km p.a. of vehicular travel per annum
- is consistent with the objectives and outcomes of SPP 4.2.
- is aligned with local planning strategies.



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## 2. INTRODUCTION

This assessment represents a 'Net Benefit Test' for two activity categories proposed in Ascot, City of Belmont. The Net Benefit Test has been prepared in response to the policy requirements established by State Planning Policy 4.2 – Activity Centres. The Net Benefit Test assesses:

1. a proposed local centre of 3,400 sqm NLA (PLUC 5 – 'SHOP')
2. a proposed bulky goods precinct of 9,600 sqm (PLUC 6 – 'OTHER RETAIL')

This assessment has been prepared in three distinct parts and should be read in conjunction with the proposed Local Structure Plan and Scheme Amendment documents.

| | | |
|---|---|---|
| **Part 1** | Relevant market variables appropriate to the assessment of both activity types | Activity Centre Network<br>Trade Area Definition<br>Population<br>Retail Spending Profile<br>Retail Spending capacity |
| **Part 2** | Proposed Local Centre (PLUC 5) | Market Demand/Need<br>Impact Test<br>Net Benefit Test |
| **Part 3** | Proposed Bulky Goods (PLUC 6) | Market Demand/Need<br>Impact Test<br>Net Benefit Test |

### 2.1 Purpose

A net benefit occurs when the benefits (pros) to the community arising from a proposal outweigh any identified impacts (cons) to the community arising from a proposal. The Net Benefit Test assesses the potential impacts and benefits of a proposal to the community and on existing and planned activity centres and is expected to answer the following questions.

- Is there a demand for additional floorspace, and if so, how does the proposal meet this demand?
- How will the proposed development impact on the role of the activity centre?
- How will the proposal impact the viability and vibrancy of other activity centres in the hierarchy?
- Are any potential impacts reduced or mitigated over the longer term?
- What is the anticipated loss and/or gain of services to the community?
- What is the anticipated impact on access (distance, time, mode of travel) to services by the community?
- Will the proposal contribute to a net increase in employment?
- Does the proposal align with the objectives and outcomes of this policy and the planning framework?

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A Net Benefit Test is to be prepared when:

- A proposal introduces floorspace in an existing or planned activity centre which exceeds the floorspace identified for that centre in a current 'Needs Assessment'.
- A proposal introduces new land or rezones land to facilitate major development or out-of-centre development.

### 2.2 Out-of-Centre Development

An Out of Centre Development is defined by SPP4.2 as a proposal which introduces:

- Category A or B activity centre (see table) uses outside of an existing or planned activity centre as identified by a Needs Assessment (regardless of land size).
- More than 500 sqm NLA of Category A uses outside an existing or planned activity centre as identified by a Needs Assessment.

Exemptions to Out of Centre Development includes:

- Development applications for Category B activity centre uses where the existing zoning contemplates (P, D, A) land uses.
- Development applications for Category A activity centre uses up to 1,500 sqm NLA where they are located substantially within the 400m walkable catchment of a rail station.

Out of Centre Development may only be appropriate where a proposal:

- is sufficiently separated from nearby activity centres to minimise negative impacts to those activity centres (as demonstrated through the Net Benefit Test).
- is in proximity to existing housing at an average dwelling density of at least 25 dwellings per gross Urban Zone (Region Schemes) hectare within a 400 m walkable catchment of the development; and
- accessible to its catchment community by walking and cycling, minimising the need for additional private vehicle trips.

### 2.3 Major Development

A major development is defined by SPP4.2 as a proposal which introduces additional Category A activity floor space which exceeds the threshold for the activity centre hierarchy in the table below.

*FIGURE 1 - MAJOR DEVELOPMENT FLOORSPACE THRESHOLDS by CENTRE TYPE*

| Existing Activity Centre Hierarchy | Additional Floor space threshold (sqm NLA) |
|---|---|
| Strategic | 10,000 |
| Specialised | 3,000 |
| Secondary | 10,000 |
| District | 5,000 |
| Neighbourhood | 3,000 |
| Local | 1,500 |
| **Proposed Activity Centre Hierarchy** | any development in a proposed / planned centre is a major development regardless of floor space amount |

### 2.4 Activity Centre Uses

Assessments are only required to be undertaken for the following activity types.

*FIGURE 2 – PLANNING CATEGORY*

| Planning Land Use Code (PLUC) | Category A<br>Activity Centre Uses | Category B<br>Activity Centre Uses |
|---|---|---|
| **5 – 'SHOP'** | Shop<br>Liquor Store - Large<br>Fast Food Outlet<br>Lunch Bar<br>Restaurant & Café | Convenience store<br>Liquor store - small<br>Restricted premises<br>Service station |
| **6 – 'OTHER RETAIL'** | | Bulky goods showroom<br>Motor vehicle, boat, or caravan sales |

### 2.5 Scope and Methodology

The Net Benefit Test is to be based on:

- The contextual description of the proposal and location with supporting maps, identifying if out-of-centre, within-centre or new activity centre.
- The change in net lettable area (NLA) of the shop/ retail (PLUC 5 - SHP) and/or other retail (PLUC 6 - RET) floor space.
- The defined trade area (including primary trade area and any secondary and tertiary trade areas).
- The estimated existing and forecast population of the trade area.
- The trade area resident attributes and implications for floorspace need and spending estimates.
- The estimated existing and forecast expenditure of the trade area using latest ABS Household Expenditure Survey or other reliable source.
- The estimated average annual sales (aggregate and per sqm NLA) for the proposed development and/or activity centre pre-and post-development proposal.

### 2.6 Modelling Method

The retail model is designed to assess the likely propensity for a resident in a particular area to visit/spend at each centre in the network. Based on the proximity of the resident to each centre, the role and function of each centre, the size of the retail offer at each centre, relative to other centres. The sales potential for the proposed centre will be based on the extent to which it may capture retail sales from each trade area. The results of the retail modelling shows:

- The expected market share that each centre may expect to capture from each trade area.
- The retail sales that may therefore be expected to be captured by each centre in the network from the designated trade areas.
- The relative contribution of each trade area to the overall sales at each centre.

The model results are focused primarily on the centres which can be expected to generate most of their sales from within the modelled trade areas. Centres located on the fringe of, or outside the trade areas will only show that proportion of sales captured from the trade areas. Subsequently, centres on the fringe of, or outside will not show a true sales figure, but rather

that part of the sales captured solely from within the trade area modelled. The impact assessment typically focuses primarily on the existing and planned centres closest to the proposed centre.

### 2.7 Measuring Impact

The potential sales generated by the development of the proposed centre will be drawn from centres in the network that would have reasonably expected to capture those sales had the proposed centre not been developed. The impact of the proposal on existing and planned activity centres is defined as an estimate of the retail turnover for each relevant activity centre identified for the following scenarios:

- without the proposed activity centre and
- with the new activity centre(s) assumed to be developed (or expanded).
- The differences between the 'without' and 'with' scenario is the potential turnover impact for each activity centre.

Competition between businesses in and of itself is not considered a relevant planning consideration. The impact of a proposal on an activity centre is defined as the potential loss of services and any associated detriment to the community caused by the proposed development. The following impact percentage and risk level for retail turnover is provided as a general guide and should not be used as the only indicator of acceptability of a proposal.

*FIGURE 3 - SPP4.2 IMPACT and RISK GUIDE*

| Impact Percentage | Potential Impact | Risk Level | Description |
|---|---|---|---|
| **0-5%** | Insignificant | Low | Any impacts are likely to be temporary and have no long-term effects on the viability of individual activity centres. |
| **5-10%** | Moderate | Medium | Impacts are likely to be more significant for individual centres, but overall network sustainability is unlikely to be undermined in the long term. |
| **10% +** | Significant | High | Impacts are likely to be very significant for individual centres and are likely to undermine the long-term network sustainability. |

Where the short-term impact is initially high before falling to a medium or low level in the long term, consideration should be given to how the development can be staged or if there needs to be any additional short-term benefits to ensure that level of service is always maintained. However, the overall impact of the proposal may be lessened or offset by the potential growth in sales each activity centre may generate from the introduction of additional residents and spending in the trade area over time.

## 3. ACTIVITY CENTRE NETWORK

The existing and planned activity centres in the immediate network of a proposed activity centre represents a key determinant for assessing the demand for a proposed activity centre. The following activity centres are considered most likely to influence and be influenced by the proposed activity.

### 3.1 Strategic / Secondary Activity Centres

A Strategic Centre and two Secondary Centres are estimated to influence the potential demand and sustainability of the proposed activity.

***Morley Strategic Centre***

| | | |
|---|---|---|
| Designated / Classified | Strategic Centre | SPP4.2 |
| Performs the role of a | Strategic Centre | |
| Location from proposed activity | 4.5 km north | |
| Estimated current 'Shop' floor space (PLUC 5) | 99,000 sqm NLA | (LUS 2015/17) |
| Majors / Anchor Tenants | C, W, A, S, K, T | |
| Estimated current 'Other Retail' floor space (PLUC 6) | 22,500 sqm NLA | (LUS 2015/17) |
| Development potential | Medium | |

***Belmont***

| | | |
|---|---|---|
| Designated / Classified | Secondary Centre | SPP4.2 |
| Performs the role of a | Secondary Centre | |
| Location from proposed activity | 3.0 km south | |
| Estimated current 'Shop' floor space (PLUC 5) | 63,000 sqm NLA | (LUS 2015/17) |
| Majors / Anchor Tenants | C, W, A, K, BW | |
| Estimated current 'Other Retail' floor space (PLUC 6) | 30,000 sqm NLA | (LUS 2015/17) |
| Development potential | Medium | |

***Victoria Park***

| | | |
|---|---|---|
| Designated / Classified | Secondary Centre | SPP4.2 |
| Performs the role of a | Neighbourhood | |
| Location from proposed activity | 4.5 km southwest | |
| Estimated current 'Shop' floor space (PLUC 5) | 22,000 sqm NLA | (LUS 2015/17) |
| Majors / Anchor Tenants | W | |
| Estimated current 'Other Retail' floor space (PLUC 6) | 25,000 sqm NLA | (LUS 2015/17) |
| Development potential | Low | |

### 3.2 District Centres

Four district centres are estimated to influence the potential demand and sustainability of proposed the activity.

***Inglewood***

| | | |
|---|---|---|
| Designated / Classified | District Centre | SPP4.2 |
| Performs the role of a | Neighbourhood | |
| Location from proposed activity | 4 km north | |
| Estimated current 'Shop' floor space (PLUC 5) | 10,000 sqm NLA | (LUS 2015/17) |
| Majors / Anchor Tenants | C, W, A | |
| Estimated current 'Other Retail' floor space (PLUC 6) | 2,700 sqm NLA | (LUS 2015/17) |
| Development potential | Low | |

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***Bayswater***

| | | |
|---|---|---|
| Designated / Classified | District Centre | SPP4.2 |
| Performs the role of a | Local | |
| Location from proposed activity | 2.5 km north | |
| Estimated current 'Shop' floor space (PLUC 5) | 3,800 sqm NLA | (LUS 2015/17) |
| Majors / Anchor Tenants | IGA | |
| Estimated current 'Other Retail' floor space (PLUC 6) | 0 sqm NLA | (LUS 2015/17) |
| Development potential | Low | |

***Maylands***

| | | |
|---|---|---|
| Designated / Classified | District Centre | SPP4.2 |
| Performs the role of a | Neighbourhood | |
| Location from proposed activity | 3 km northwest | |
| Estimated current 'Shop' floor space (PLUC 5) | 12,000 sqm NLA | (LUS 2015/17) |
| Majors / Anchor Tenants | C, 2 x IGA | |
| Estimated current 'Other Retail' floor space (PLUC 6) | 0 sqm NLA | (LUS 2015/17) |
| Development potential | Low | |

***Ashfield***

| | | |
|---|---|---|
| Designated / Classified | District Centre | SPP4.2 |
| Performs the role of a | Local | |
| Location from proposed activity | 3 km northeast | |
| Estimated current 'Shop' floor space (PLUC 5) | 750 sqm NLA | (LUS 2015/17) |
| Majors / Anchor Tenants | IGA | |
| Estimated current 'Other Retail' floor space (PLUC 6) | 0 sqm NLA | (LUS 2015/17) |
| Development potential | Medium | |

### 3.3 Neighbourhood/Local

Four neighbourhood/local centres are estimated to influence the potential demand and sustainability of the proposed activity.

***Rivervale***

| | | |
|---|---|---|
| Designated / Classified | Neighbourhood Centre | |
| Performs the role of a | Local | |
| Location from proposed activity | 2.5 km southwest | |
| Estimated current 'Shop' floor space (PLUC 5) | 3,000 sqm NLA | (LUS 2015/17) |
| Majors / Anchor Tenants | IGA | |
| Estimated current 'Other Retail' floor space (PLUC 6) | 0 sqm NLA | (LUS 2015/17) |
| Development potential | Low | |

***Kooyong***

| | | |
|---|---|---|
| Designated / Classified | Neighbourhood Centre | |
| Performs the role of a | Local | |
| Location from proposed activity | 3 km southwest | |
| Estimated current 'Shop' floor space (PLUC 5) | 2,250 sqm NLA | (LUS 2015/17) |
| Majors / Anchor Tenants | IGA | |
| Estimated current 'Other Retail' floor space (PLUC 6) | 0 sqm NLA | (LUS 2015/17) |
| Development potential | Low | |

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***Belvidere***

| | | |
|---|---|---|
| Designated / Classified | Neighbourhood Centre | |
| Performs the role of a | Local | |
| Location from proposed activity | 1.5 km east | |
| Estimated current 'Shop' floor space (PLUC 5) | 6,200 sqm NLA | (LUS 2015/17) |
| Majors / Anchor Tenants | IGA | |
| Estimated current 'Other Retail' floor space (PLUC 6) | 0 sqm NLA | (LUS 2015/17) |
| Development potential | Low | |

***Epsom***

| | | |
|---|---|---|
| Designated / Classified | Local Centre | |
| Performs the role of a | Local | |
| Location from proposed activity | 1.5 km east | |
| Estimated current 'Shop' floor space (PLUC 5) | 6,200 sqm NLA | (LUS 2015/17) |
| Majors / Anchor Tenants | IGA | |
| Estimated current 'Other Retail' floor space (PLUC 6) | 0 sqm NLA | (LUS 2015/17) |
| Development potential | Low | |

### 3.4 Service Commercial Precincts / Other Centres

***Airport***

| | | |
|---|---|---|
| Designated / Classified | Specialised Centre | |
| Performs the role of a | Neighbourhood | |
| Location from proposed activity | 2.5 km east | |
| Estimated current 'Shop' floor space (PLUC 5) | 5,000 sqm NLA | |
| Majors / Anchor Tenants | W | |
| Estimated current 'Other Retail' floor space (PLUC 6) | 25,000 sqm NLA | |
| Development potential | High | |

***Great Eastern Highway***

| | | |
|---|---|---|
| Designated / Classified | N/a | |
| Performs the role of a | Service Commercial | |
| Location from proposed activity | 1.5 km east | |
| Estimated current 'Shop' floor space (PLUC 5) | 8,600 sqm NLA | (LUS 2015/17) |
| Majors / Anchor Tenants | - | |
| Estimated current 'Other Retail' floor space (PLUC 6) | 4,700 sqm NLA | (LUS 2015/17) |
| Development potential | Medium | |

### 3.5 Summary

Analysis of the activity centre network reveals that:

- Residents in the trade area have access to approximately 70,500 sqm NLA of total convenience-based retail floor space.
- There are no full line supermarkets within 1.5 km of the proposed activity.
- There are only two full line supermarkets (Coles at Maylands and Woolworths at Airport) within 3km of the proposed activity.
- There are four small, limited line IGA supermarkets located between 1.5 km and 3 km of the proposed activity.
- The closest 'clusters' of multiple supermarket operators are located at Belmont (3 km) and Inglewood (4 km)

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- There are three classified district activity centres north of the proposed activity (Maylands, Bayswater, Ashfield), yet none of these activity centres perform the role of a district centre and function more as neighbourhood or local centres due to their limited retail offer.
- Residents in the trade area have access to nearly 105,000 sqm NLA of bulky goods retail activity across six precincts.

*FIGURE 4*
*EXISTING & PLANNED ACTIVITY CENTRES FRAMEWORK*
*By Centre Name, by Centre Type, by Floorspace /Year*

| Total Convenience | | Estimated NLA Floorspace (sqm) by Year | | | | |
|---|---|---|---|---|---|---|
| **Centre Name** | **Centre Type** | **2023** | **2026** | **2031** | **2036** | **2041** |
| Morley | Strategic | 13,100 | 13,100 | 13,100 | 13,100 | 13,100 |
| Belmont | Secondary | 11,250 | 11,250 | 11,250 | 11,250 | 11,250 |
| East Vic Park | District | 5,400 | 5,400 | 5,400 | 5,400 | 5,400 |
| Victoria Park | Secondary | 3,750 | 3,750 | 3,750 | 3,750 | 3,750 |
| Inglewood | District | 8,750 | 8,750 | 8,750 | 8,750 | 8,750 |
| Bassendean | District | 4,400 | 4,400 | 4,400 | 4,400 | 4,400 |
| Maylands | District | 4,600 | 4,600 | 4,600 | 4,600 | 4,600 |
| GEH (west) | Local | 1,500 | 1,500 | 1,500 | 1,500 | 1,500 |
| Airport | Special | 4,400 | 4,400 | 4,400 | 4,400 | 4,400 |
| Bayswater | District | 500 | 500 | 500 | 500 | 500 |
| Belvidere | Local | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 |
| Rivervale (Kooyong) | Local | 1,250 | 1,250 | 1,250 | 1,250 | 1,250 |
| Ashfield | District | 550 | 550 | 550 | 550 | 550 |
| GEH (east) | District | 6,900 | 6,900 | 6,900 | 6,900 | 6,900 |
| Epsom | Local | 1,200 | 1,200 | 1,200 | 1,200 | 1,200 |
| **All Existing and Planned Centres** | | **70,550** | **70,550** | **70,550** | **70,550** | **70,550** |
| Ascot | | - | 3,400 | 3,400 | 3,400 | 3,400 |
| **All Centres** | | **70,550** | **73,950** | **73,950** | **73,950** | **73,950** |

*Land Use Employment Survey (WAPC 2015) / Taktics4*

*FIGURE 5*
*EXISTING & PLANNED ACTIVITY CENTRES FRAMEWORK*
*By Centre Name, by Centre Type, by Floorspace /Year*

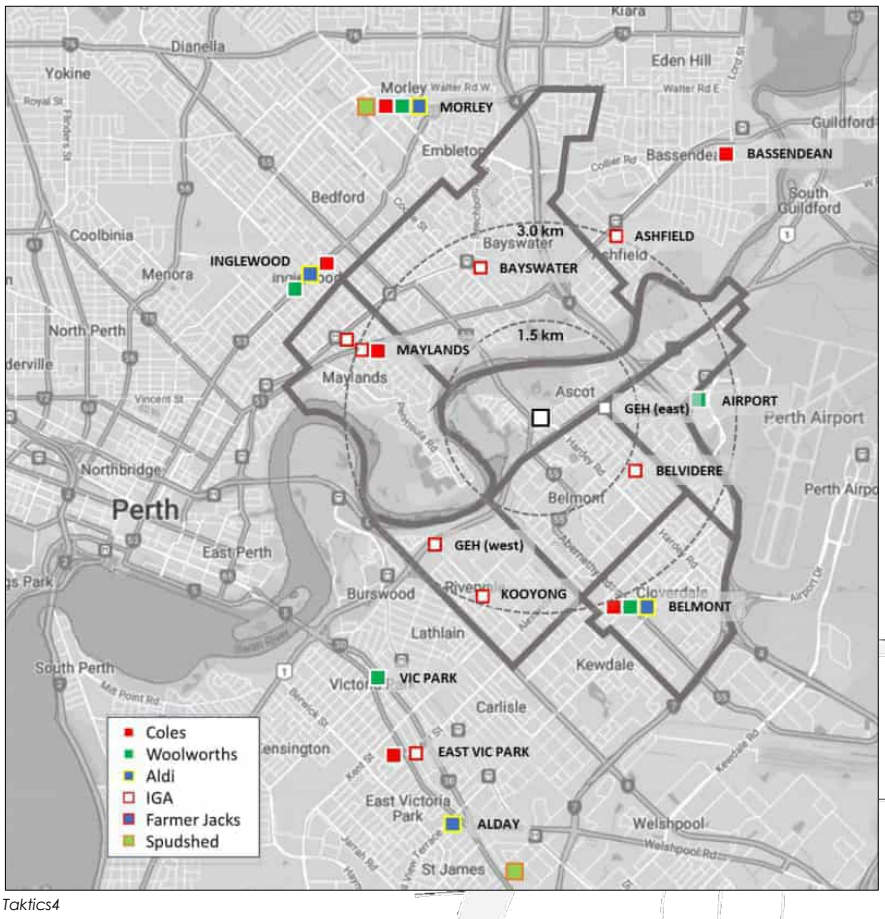
| Bulky Goods/LFR | | Estimated NLA Floorspace (sqm) by Year | | | | |
|---|---|---|---|---|---|---|
| **Centre Name** | **Centre Type** | **2023** | **2026** | **2031** | **2036** | **2041** |
| Morley | Strategic | 22,500 | 22,500 | 22,500 | 22,500 | 22,500 |
| Belmont | Secondary | 30,000 | 30,000 | 30,000 | 30,000 | 30,000 |
| East Vic Park | District | 0 | 0 | 0 | 0 | 0 |
| Victoria Park | Secondary | 25,000 | 25,000 | 25,000 | 25,000 | 25,000 |
| Inglewood | District | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| Bassendean | District | 0 | 0 | 0 | 0 | 0 |
| Maylands | District | 0 | 0 | 0 | 0 | 0 |
| GEH (west) | Local | 0 | 0 | 0 | 0 | 0 |
| Airport | Special | 20,000 | 20,000 | 20,000 | 20,000 | 20,000 |
| Bayswater | District | 0 | 0 | 0 | 0 | 0 |
| Belvidere | Local | 0 | 0 | 0 | 0 | 0 |
| Rivervale (Kooyong) | Local | 0 | 0 | 0 | 0 | 0 |
| Ashfield | District | 0 | 0 | 0 | 0 | 0 |
| Eastgate/GE Hwy | District | 4,700 | 4,700 | 4,700 | 4,700 | 4,700 |
| Epsom | District | 0 | 0 | 0 | 0 | 0 |
| **All Existing and Planned Centres** | | **104,900** | **104,900** | **104,900** | **104,900** | **104,900** |
| Ascot | | | 9,600 | 9,600 | 9,600 | 9,600 |
| **All Centres** | | **104,900** | **114,500** | **114,500** | **114,500** | **114,500** |

*Land Use Employment Survey (WAPC 2015) / Taktics4*

Attachment 12.1.6 Retail Assessment



*FIGURE 6 - SUPERMARKET BASED ACTIVITY CENTRES*




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## 4. TRADE AREA

The trade area for retail activity is largely determined by a range of industry, market and consumer-based principles. Consumer dynamics vary significantly between different retail categories and is influenced by the frequency in which consumers require access to certain retail goods and services. Retailers, shopping centre developers, and urban planners acknowledge this variation in dynamics through the establishment of a clearly defined hierarchy of activity centres which reflect different shopping trips and expectations for consumers/residents.

### 4.1 Market Behaviour

Convenience retail

Convenience retail trips include visits to supermarkets, other food and grocery stores, newsagencies, and cafes/takeaway stores. These trips are typically daily or weekly trips and are generally made to activity centres closest to the resident/consumer. Activity centres serving this category are typically anchored by a supermarket, or small grocery store and classified as Neighbourhood and/or Local Centres.

Comparative retail

Comparative retail trips include visits to department stores, discount department stores, fashion, and household goods stores. These are typically less frequent trips than convenience-based trips and consumers are more likely to target specific items, brands, products, and prices on these trips. They are therefore more likely to travel further to access these goods and services. Centres serving this category are typically anchored by a Department Store or DDS and classified as Strategic, Secondary, or District Centres. These centres invariably also serve a convenience-based role.

Large Format/Bulky Goods

Homewares, furnishing, and recreation goods are more likely to reflect infrequent trips for targeted goods/purchases. Consumers are prepared to travel further for these goods and services. These centres are less likely to include a convenience-based role beyond access to cafes/takeaway facilities as part of the shopping experience.

Behaviour Philosophy

The fundamental retail consumer principles adopted by modelling techniques in this assessment are that residents are generally:

- Less likely to travel beyond the nearest Strategic Centre and or Secondary Centre to visit another centre with the same role/function/offer.
- Less likely to travel beyond the nearest District Centre to visit another District Centre with the same role/function/offer.
- Just as likely to travel beyond one supermarket-based neighbourhood centre to visit another supermarket-based centre with another operator (i.e., to shop at a Coles instead of a Woolworths or vice versa).
- Less likely to travel beyond the nearest local centre to visit another local centre with the same role/function/offer (i.e., to drive past one IGA to shop at another IGA).

That is not to say that residents will not visit other centres, but that they will not visit these centres frequently enough to establish a pattern of behaviour.

Attachment 12.1.6 Retail Assessment



### 4.2 Delineation of Trade Area

The trade area for proposed activity represents the area likely to generate most of the sales for a proposed activity centre. A trade area can be defined by applying these market behaviour principles, collating proximity of existing and planned urban areas with their accessibility to existing and planned centres, based on road networks, and physical barriers.

The trade area for the proposed activity may be delineated by residents in**:**

| | |
|---|---|
| ***Ascot, Belmont*** | Mainly within 1.5 km of the proposed activity. |
| ***Redcliffe, Rivervale, Bayswater, Maylands, Cloverdale*** | All or partly within 1.5 km-3.0 km of the proposed activity. |

This trade area comprises residents which are likely to generate most of the sales for the proposed activity. The trade area is divided north and south by the Swan River. However, the proposed activity is located on a road with access across the river, which therefore creates direct access to residents in the trade areas to the north and the south. The trade area incorporates residents across three Local Government Areas – City of Belmont, City of Bayswater, and Town of Victoria Park.

### 4.3 Population

The existing and forecast resident population in the trade area represents the first variable for determining the demand for retail activity in a trade area. According to adopted population forecasts for the three local government areas the total trade area is:

- Estimated to contain nearly 78,000 residents in 2026.
- Forecast to increase to 93,500 residents by 2041.
- Therefore, estimated to grow by 15,800 additional residents over the 15-year period at an average of over 1,050 additional residents p.a.

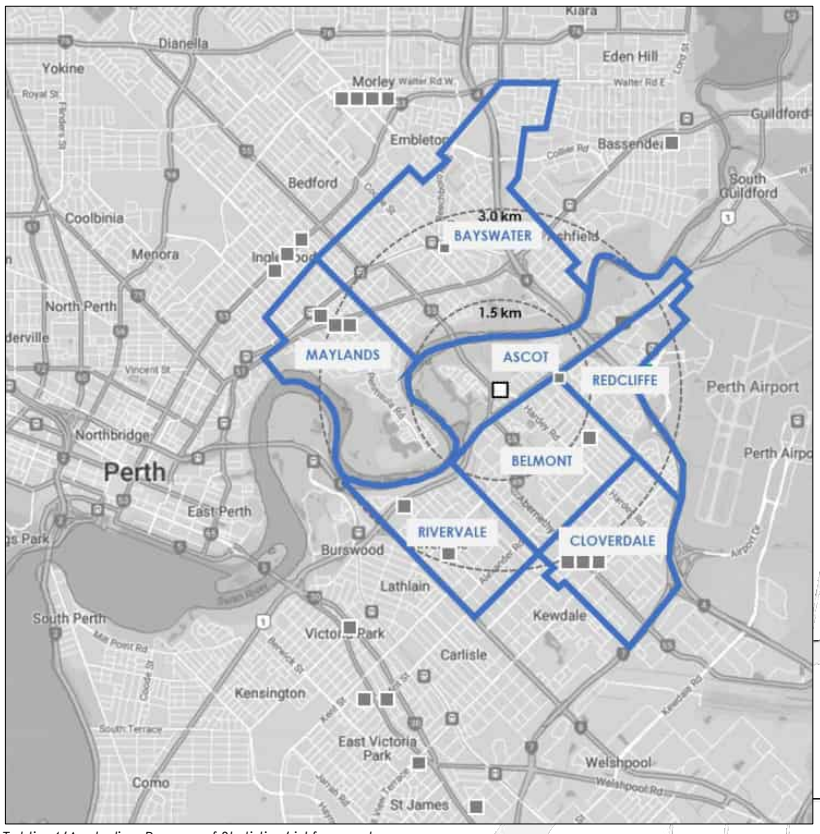
Ascot and Belmont trade areas are:

- Estimated to contain a resident population of 11,000 residents in 2026.
- Forecast to increase to 16,400 residents by 2041.
- Therefore, estimated to grow by an additional 5,400 over a 15-year period at an average of 300 additional residents per annum.
- Expected to be the trade areas with the largest proportional growth over the next 15 years.

Attachment 12.1.6 Retail Assessment



*FIGURE 7 - TRADE AREA MAP*




*Taktics4/Australian Bureau of Statistics/ id forecast*

*FIGURE 8*

*CURRENT and FORECAST POPULATION*
*By Trade Area by Year*

| Catchment | 2023 | 2026 | 2031 | 2036 | 2041 | 2023-2041 | % |
|---|---|---|---|---|---|---|---|
| Bayswater | 25,050 | 25,600 | 26,800 | 28,000 | 29,200 | 4,150 | 17% |
| Maylands | 13,350 | 13,400 | 13,900 | 14,400 | 14,900 | 1,550 | 12% |
| Ascot | 3,300 | 3,400 | 3,700 | 4,600 | 5,200 | 1,900 | 58% |
| Belmont | 7,400 | 7,600 | 9,000 | 10,300 | 11,200 | 3,800 | 51% |
| Rivervale | 11,850 | 12,400 | 13,400 | 14,200 | 15,000 | 3,150 | 27% |
| Redcliffe | 5,400 | 5,500 | 5,700 | 5,800 | 7,000 | 1,600 | 30% |
| Cloverdale | 9,500 | 9,800 | 10,200 | 10,500 | 11,000 | 1,500 | 16% |
| **Total Trade Area** | **75,850** | **77,700** | **82,700** | **87,800** | **93,500** | 17,650 | 23% |
| Average growth per census | | 1,850 | 5,000 | 5,100 | 5,700 | | |
| Average growth p.a. | - | 617 | 1,000 | 1,020 | 1,140 | | |
| Average growth p.a. (%) | | 0.8% | 1.3% | 1.2% | 1.3% | | |

*id forecast - LGA Bayswater, Belmont Victoria Park*

*Taktics4/Australian Bureau of Statistics/ id forecast*

Attachment 12.1.6 Retail Assessment



### 4.4 Resident Demographic Profiles

The demographic profile of the resident population in a trade area represents a second level of demand for retail activity in a trade area. Consumer spending surveys confirm that residents with different personal, household and economic characteristics are likely to exhibit different spending behaviour regarding the amount they buy and the type of goods they buy. The demographic characteristics of the resident population in the trade area will determine the retail spending profile and retail spending capacity available to retailers/centres in the trade areas. Key demographic characteristics include household composition, dwelling tenure, and income potential. Relevant socio-economic characteristics for residents in the trade area are highlighted below.

Person and Household Profile

The resident population in the Ascot, Belmont, Bayswater trade area is characterised by:

- an average age of 40 years which is 3.8% above the Perth average.
- an average household size of 2.3 persons per dwelling which is 9% smaller than the Perth average.
- a higher representation of one person households.
- a predominantly Australian born population.
- an ethnic/cultural balance consistent with Perth averages.
- a stable resident base with longevity in the trade area.

Employment, Income, Economic Profile

The resident labour force in the Ascot, Belmont, Bayswater trade area is characterised by:

- a labour force participation rate consistent with Perth averages.
- a higher representation of professionals.
- a higher representation of labour force employed in the retail, accommodation, and F&B sector and professional services sector.
- an average personal income that is 6% above Perth averages.
- an average of 2 incomes per dwelling which is 5% below Perth averages.
- an average household income that is 1% higher than Perth averages.
- an average mortgage that is 1% higher than Perth averages.
- an average rent that is 6% lower than Perth averages.
- a higher representation of rental dwellings.
- a slightly lower representation of dwellings with a mortgage.

Dwelling Profile

The dwelling stock in the Ascot, Belmont, Bayswater trade area is characterised by:

- slightly higher representation of townhouses and semi-detached dwellings.
- an average of 3 bedrooms per dwellings which is 9% smaller than the average Perth dwelling.

Attachment 12.1.6 Retail Assessment



### 4.5 Resident Retail Spending Profile

Resident retail spending profiles for the trade area are derived by extrapolating data from a range of sources including:

- Household Expenditure Survey by socio economic characteristics (ABS 2015)
- Population and Household Census by socio economic characteristics (ABS 2021)
- Retail Sales by store categories (ABS 2024)

Correlation of data from these sources relative to the demographic profiles of an area produces an estimate of the average retail spending potential of residents within that area. Some of the trade areas may not currently have sufficient population bases to extract valid demographic profiles. Where trade areas do not have sufficient population base the retail spending profiles have been adopted from neighbouring/adjoining trade areas. Correlation of demographic profiles to retail spending profiles for residents in the trade area reveal that:

- Ascot and Bayswater residents are estimated to have an average total retail spending profile of between $19,550 and $21,900 per resident p.a. which is higher than Perth averages.
- Maylands, Belmont, Rivervale, Redcliffe, and Cloverdale residents have an average total retail spending profile of between $15,200 and $16,600 per resident p.a. which is lower than Perth averages.

*FIGURE 9*

*ESTIMATED AVERAGE RETAIL SPENDING PER CAPITA*
*By Retail Category by Trade Area*
*Dec-23*

| Retail Store Category | Total Convenience Retail | Total Comparison Retail | Total Shop | Bulky Goods/LFR | Total 'Shop' & 'Other Retail' |
|---|---|---|---|---|---|
| Bayswater | $11,143 | $5,367 | $16,510 | $3,046 | $19,556 |
| Maylands | $9,464 | $4,446 | $13,910 | $2,605 | $16,515 |
| Ascot | $12,289 | $6,240 | $18,529 | $3,363 | $21,891 |
| Belmont | $8,933 | $4,198 | $13,130 | $2,468 | $15,598 |
| Rivervale | $9,495 | $4,461 | $13,956 | $2,613 | $16,568 |
| Redcliffe | $8,829 | $4,149 | $12,977 | $2,441 | $15,418 |
| Cloverdale | $8,741 | $4,108 | $12,848 | $2,418 | $15,267 |
| ***Perth Average*** | ***$10,374*** | ***$4,872*** | ***$15,246*** | ***$2,839*** | ***$18,086*** |

*8501.0 Retail Trade, Australia*
*Retail Turnover, State by Industry Subgroup*

Attachment 12.1.6 Retail Assessment



### 4.6 Resident Retail Spending Capacity

The resident retail spending capacity represents the total retail spending that is generated by residents in a trade area that is available to be capture by existing and planned centres in the trade area (and beyond). It is measured by multiplying the average potential resident retail spending profile for each area by the forecast resident population in each area to determine the forecast resident retail spending capacity of each trade area over time. Based on the average potential resident retail spending profiles for supermarkets, residents in the trade area are estimated to generate:

*FIGURE 10*

*ESTIMATED ANNUAL RESIDENT RETAIL SPENDING CAPACITY in TRADE AREA ($M p.a.)*
*By Retail Category by Year*

| | 2023 | 2026 | 2031 | 2036 | 2041 |
|---|---|---|---|---|---|
| Total Convenience Retail | $755 | $774 | $823 | $875 | $931 |
| Total Comparison Retail | $360 | $368 | $392 | $417 | $444 |
| Total Shop | $1,115 | $1,142 | $1,215 | $1,291 | $1,374 |
| Bulky Goods/LFR | $208 | $213 | $226 | $240 | $256 |
| Total 'Shop & Other' Retail | $1,323 | $1,355 | $1,441 | $1,532 | $1,630 |

*8501.0 Retail Trade, Australia*
*Retail Turnover, State by industry Subgroup*

Convenience based retail spending

Residents across the total trade area are estimated to spend:

- $774 M p.a. in convenience-based shops/centres in 2026.
- $931 M p.a. in convenience-based shops/centres by 2041.

Residents in Ascot and Belmont trade areas are estimated to:

- spend $106 M p.a. in convenience-based shops/centres in 2026.
- spend $164 M p.a. in convenience-based shops/centres by 2041.

Other Retail (Bulky Goods/Showroom)

Residents across the total trade area are estimated to spend:

- spend $213 M p.a. in total bulky goods/LFR outlets in 2026.
- spend $256 M p.a. in total bulky goods/LFR outlets by 2041.

Attachment 12.1.6 Retail Assessment



## 5. PART A – LOCAL CENTRE

This section assesses the potential market demand for, and potential sustainability of a proposed local centre at Ascot. This assessment subsequently informs the assessment of potential impacts at existing and planned activity centres. The proposed local centre is:

- Included as part of the planning for the City of Belmont Golden Gateway Precinct.
- Located 3 km from the nearest supermarket-based activity centre.
- Classified as a planned activity centre.
- Not classified as an out of centre development.
- Considered a major development because it proposes 3,400 sqm NLA of PLUC 5 activity.

Eligibility for Exemption from a Net Benefit Test

The proposed local centre activity:

- is accessible to an existing walkable trade area.
- includes more than 1,500 sqm NLA of PLUC 5 activity
- is not located within 400 metres of a railway station.
- is therefore not eligible for exemption from a Net Benefit Test under the provisions of SPP4.2.

### 5.1 Market Share

Market share represents the proportion of resident spending generated from a trade area to a proposed activity centre. Market share is a measure of influence that a centre will have over customers in an area.

*Example:*

*Total annual retail spending generated by residents in a trade area is $100M p.a.*

*A centre is capturing a market share of 20% of that retail spending*

*The centre therefore captures $20M p.a. in sales from the trade area*

The proposed local centre if developed by 2026, is estimated to capture:

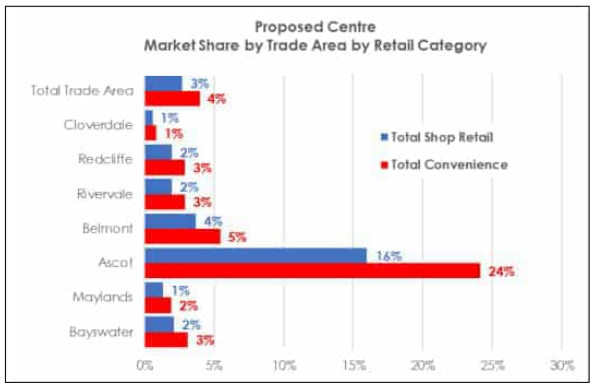
Convenience Spending

- 24% of all convenience/food/grocery/local spending generated by residents in Ascot.
- 5% of all convenience/food/grocery/local spending generated by residents in Belmont.
- A combined total of 4% of all convenience/food/grocery/local spending generated by residents across the total trade area.

Total Retail Spending

- 16% of all retail spending generated by residents in Ascot.
- 4% of all retail spending generated by residents in Belmont.
- A combined total of 3% of all retail spending generated by residents in the total trade area.

*FIGURE 11*




*Taktics4 Retail Model*

### 5.2 Sales Contribution

Sales contribution represents the proportion of a centres annual sales that is captured from a trade area. Sales contribution is a measure of the reliance / exposure that an activity centre has to a trade area.

*Example:*

*A centre is capturing total retail sales of $20M p.a.*

*$15M p.a. of those sales are being captured from one trade area.*

*Therefore 75% of the centre sales are being contributed from that trade area.*

The proposed local centre is ultimately estimated to generate:

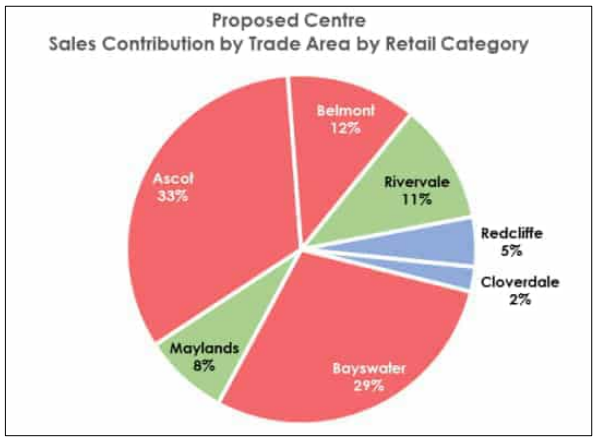
- 62% of its forecast annual retail sales from residents in the immediate suburbs of Ascot (33%), and Bayswater (29%).
- 31% of its forecast annual retail sales from residents in Maylands, Belmont, and Rivervale.
- A combined total of 74% of its forecast annual retail sales will be derived from residents in the immediate local catchment it is intended to serve.

This sales contribution level is consistent with industry expectations.

Attachment 12.1.6 Retail Assessment



*FIGURE 12*




*Taktics4 Retail Model*

### 5.3 Sales Potential

The Sales Potential represents the total sales that a centre may be expected to capture based on achieving the estimated market share from each trade area. It is a measure of a centre's viability and sustainability. Sales potential is measured by either annual sales and/or by sales productivity. Sales productivity is the total annual sales of centre divided by the total retail floor space NLA of the centre.

*Example:*

*A centre captures total annual retail sales of $20M p.a.*

*The centre has a retail floor space of 4,000 sqm NLA.*

*The centre has a sales productivity of $20M p.a. divided by 4,000 sqm NLA = $5,000/sqm p.a.*

The proposed local centre if developed in 2026 is estimated to have the potential to generate:

- $30.6M p.a. at $9,000/sqm p.a. by 2026
- $33.0M p.a. at $9,700/sqm p.a. by 2031
- $37.1M p.a. at $10,900/sqm p.a. by 2036
- $40.3M p.a. at $11800/sqm p.a. by 2041

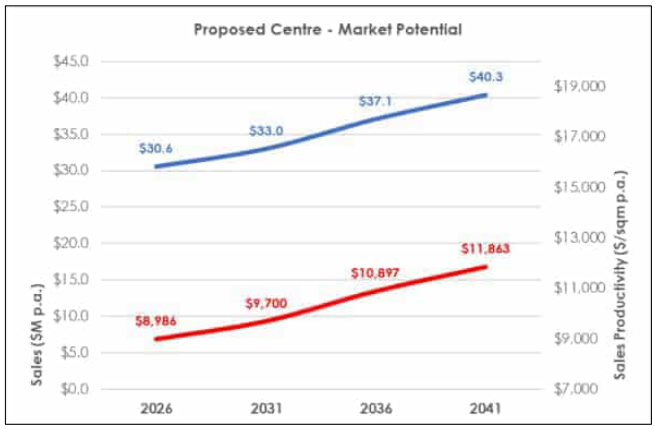
The proposed local centre at Ascot:

- Has the potential to generate sufficient sales to be sustainable by 2026, satisfying industry measures conducive to a sustainable supermarket based local centre.
- Serve an immediate role in meeting the day-to-day convenience needs of residents in the immediate walkable catchment of the proposed local centre.
- Rely predominantly on sales being captured from the immediate suburbs of Ascot, Maylands and Belmont.
- Be sustainable despite a potential market capture of only 16% of total retail sales from resident spending in Ascot, leaving 84% of retail spending to be captured by existing and planned centres.

Attachment 12.1.6 Retail Assessment



*FIGURE 13*




*Taktics4 Retail Model*

### 5.4 Sales Impact

Sales impact represents the potential loss of sales at a centre due to the development of another centre. Sales impact is measured by comparing the potential sales of a centre at a particular year/period with the other centre included and excluded from the equation/modelling. Sales impact may be measured by potential actual annual sales or a percentage of potential annual sales.

*Example*

*A centre is forecast to generate annual sales of $20M p.a. in 2026 without the proposed centre being developed by 2026.*

*The centre is forecast to generate annual sales of $18M p.a. in 2026 if the proposed centre is developed by 2026.*

*The centre is therefore estimated to experience a potential sales impact of $2M p.a. in 2026.*

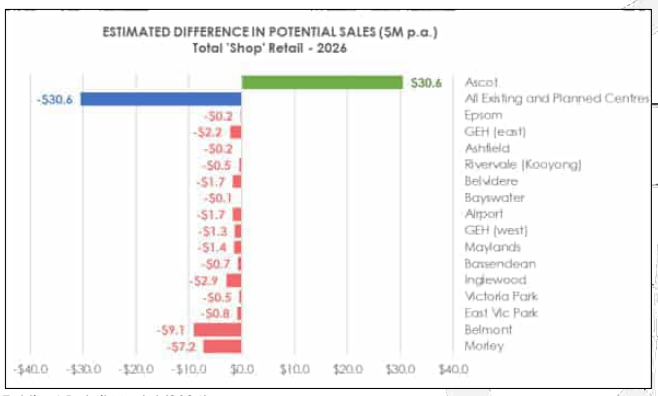
*The centre is estimated to subsequently experience a potential sales impact of 10% of its sales ($2M p.a. loss from its $20M p.a.)*

***Actual Sales***

Modelling the activity centres network with and without the proposed activity reveals that the development of the proposed activity by 2026 would have the potential to capture $30.6M p.a. in retail sales that might otherwise be captured from existing or planned centres.

Over 68% of all retail sales generated by the proposed local centre would be captured from four centres including Belmont Centre (-$9.1M p.a.), Morley Centre (-$7.2M p.a.), Inglewood (-$2.9M p.a.), and Maylands ($1.4M p.a.). This is because these centres currently contain the retail offer that a proposed local centre is likely to provide at Ascot.

*FIGURE 14*
*ESTIMATED ACTUAL ANNUAL SALES CAPTURED from OTHER ACTIVITY CENTRES by SHOP SALES by FIRST YEAR TRADE of PROPOSED ACTIVITY (2026)*




*Taktics4 Retail Model (2024)*

***Percentage of Sales***

The modelling shows that upon trading in 2026, the retail sales captured by a proposed local centre has the potential to impact the overall retail sales generated by residents in the trade area at:

Belmont

The public and private investment at Belmont Centre will not be impacted by the proposed local centre. The potential sales impact is forecast to be less than 3.0% which is classified as insignificant impact/risk. The potential sales impact at Belmont is in effect considerably less than 3.0% as the model only shows the potential loss in sales at Belmont from residents in the modelled trade area. The Belmont Centre generates sales from a more extensive trade area than the trade area for the proposed local centre.

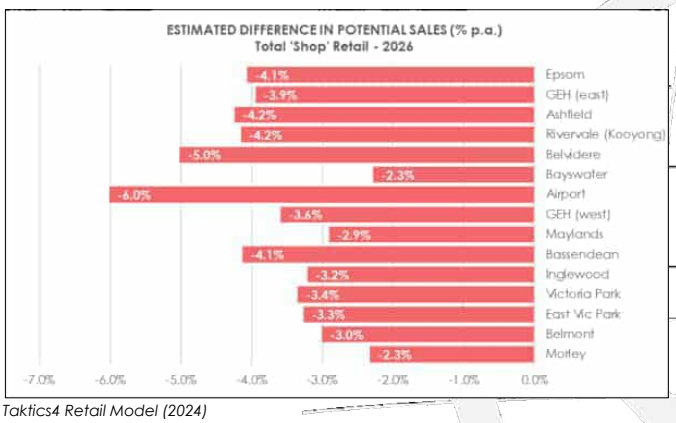
Morley

The public and private investment at Morley Centre will not be impacted by the proposed local centre. The potential sales impact is forecast to be less than 2.3% which is classified as insignificant impact/risk. The potential sales impact is in effect considerably less than 2.3% as the model only shows the potential loss in sales at Morley from residents in the modelled trade area. The Morley Centre generates sales from a more extensive trade area than the trade area for the proposed local centre.

Bayswater

The public and private investment at Bayswater will not be impacted by the proposed local centre. The potential sales impact at Bayswater is less than 2.3% which is classified as low impact/low risk. The low impact is because the Bayswater Centre does not provide the offer intended at the proposed local centre. Therefore, the Bayswater Centre is not capturing the sales that will be captured by the proposed local centre.

*FIGURE 15*
*ESTIMATED IMPACT of PROPOSED ACTIVITY on ANNUAL SALES at OTHER ACTIVITY CENTRES by SHOP SALES by FIRST YEAR TRADE of PROPOSED ACTIVITY (2026)*




*Taktics4 Retail Model (2024)*

Local Centres

Centres at Epsom (4.1%), Ashfield (4.2%), Rivervale/Kooyong (4.2%) and Belvidere (5.0%) are all estimated to be impacted by between 4% and 5%. These impacts are classified as insignificant impact65/ low risk. There is not expected to be an impact to private or public investment. This is because these centres do not currently offer the extent of the retail offer intended to be provided by the proposed local centre.

Attachment 12.1.6 Retail Assessment



Airport

The convenience-based centre anchored by Woolworths at the Airport, is the only centre which is estimated to experience a moderate impact (6%). The potential sales impact is in effect considerably less than 6.0% as the model only shows the potential loss in sales at the Airport from resident spending generated from within the modelled trade area. The Airport Centre generates sales from a far more extensive trade area than the trade area for the proposed local centre.

### 5.5 Sales Growth

Sales Growth represents the increase in retail sales that may be expected from a centre because of an increase in population growth in the trade area.

*For example:*

*A centre is currently capturing total retail sales of $20M p.a.*

*It achieves these sales by capturing 20% market share of all resident spending in the trade area.*

*Therefore, the trade area has a current resident retail spending capacity of $100M p.a.*

*Residential development occurs in the trade area at 10% growth over a five-year period.*

*In five years, the resident retail spending capacity in the trade area has increased to $110M p.a.*

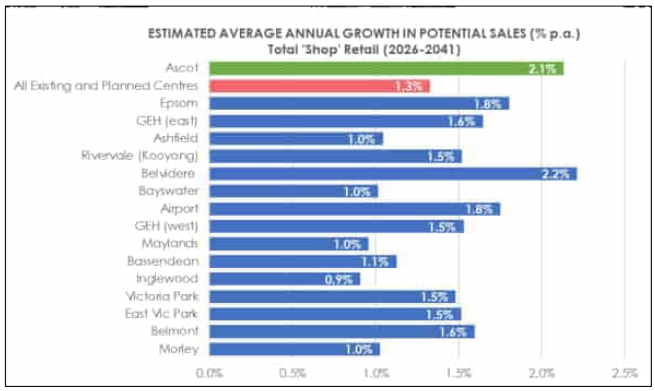
*The sales potential for the centre is forecast to increase to $22M p.a. (in constant dollars) despite maintain the same market share within the trade area.*

*This potential sales growth across centres has the potential to offset any initial sales impact generated by the development of a proposed local centre.*

The population in the total trade area is expected to increase from 77,700 in 2026 to 93,500 in 2041. This population growth will result in an increase in resident retail spending capacity in the total trade area from $1,142M p.a. in 2026 to $1,374M p.a. in 2041. That represents an additional $232M p.a. in the total trade area for all centres to capture.

The graph shows that beyond the development of the proposed local centre in 2026, all centres in the trade area, or area of influence by the proposed local centre is forecast to have the potential to experience an average annual growth in sales of between 1% and 2.0% p.a. over the subsequent 15 years.

*FIGURE 16*
*ESTIMATED AVERAGE ANNUAL SALES GROWTH at ACTIVITY CENTRES SHOP SALES Between 2026 and 2041*




*Taktics4 Retail Model (2024)*

### 5.6 Summary

The findings in this Net Benefit Test confirm that a proposed local centre at Ascot will result in insignificant/low risk impacts on the surrounding existing and planned activity centres network. With any potential sales impact offset by the potential for substantial average sales growth in the trade area over the next 15 years.

Overall, the development of the proposed local centre at Ascot is not expected to generate significant impacts for the surrounding centres network. The centres network is currently bereft of full line supermarket-based centres. This means that residents in the trade area are already bypassing the smaller local centres to access their convenience retail needs at centres further afield than they should have to travel.

Attachment 12.1.6 Retail Assessment



## 6. PART B - BULKY GOODS

This section assesses the potential market demand for, and potential sustainability of proposed 'Other' Retail Bulky Goods Precinct at Ascot. This assessment is necessary to subsequently inform the assessment of potential impacts at existing and planned activity centres. The proposed bulky goods activity is considered an 'out of centre' development.

### 6.1 Market Share

Market share represents the proportion of resident spending generated from a trade area to the proposed centre. Market share is a measure of influence that a centre will have over customers in an area.

*Example:*

*Total annual retail spending generated by residents in a trade area is $100M p.a.*

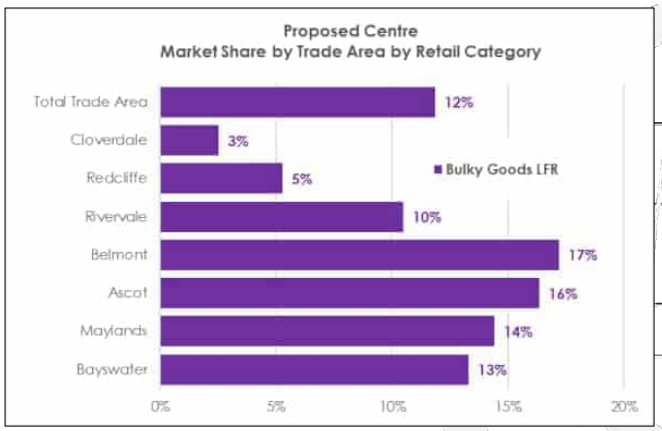
*A centre is capturing a market share of 20% of that retail spending*

*The centre therefore captures $20M p.a. in sales from the trade area*

The proposed bulky goods activity if developed by 2026, is estimated to capture:

- 12% of all bulky goods spending generated by residents across the total trade area.
- relatively consistent market capture between 13%-17% of all bulky goods retail spending from residents in Ascot, Belmont, Maylands, Bayswater and Rivervale.5% of all convenience/food/grocery/local spending generated by residents in Belmont, reflecting the propensity for residents to travel further to access this type of retail category.

FIGURE 17




*Taktics4 Retail Model*

### 6.2 Sales Potential

The Sales potential represents the total sales that a centre may be expected to capture based on achieving the estimated market share from each trade area. It is a measure of a centre's viability and sustainability. Sales potential is measured by either annual sales and/or by sales productivity. Sales productivity is the total annual sales of centre divided by the total retail floor space NLA of the centre.

*Example:*

*A centre captures total annual retail sales of $20M p.a.*

*The centre has a retail floor space of 4,000 sqm NLA.*

*The centre has a sales productivity of $20M p.a. divided by 4,000 sqm NLA = $5,000/sqm p.a.*

The proposed local centre if developed in 2026 is estimated to have the potential to generate:

$25.2M p.a. at $2,600/sqm p.a. by 2026

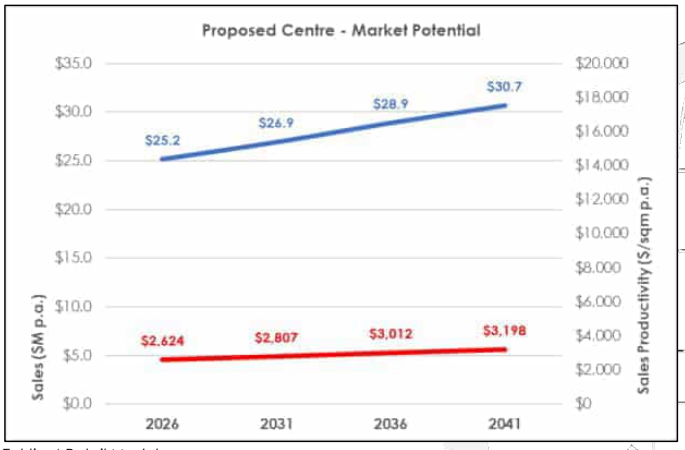
$26.9M p.a. at $2,800/m p.a. by 2031

$28.9M p.a. at $3,000/sqm p.a. by 2036

$30.7M p.a. at $3,200/sqm p.a. by 2041

The proposed bulky goods activity at Ascot has the potential to generate sufficient sales to be sustainable by 2026, satisfying industry measures conducive to a sustainable bulky goods activity. Be sustainable despite a potential market capture of only 12% of total bulky goods sales from resident spending in the total trade area, leaving 88% of bulky goods retail spending to be captured by existing and planned centres.

*FIGURE 18*




*Taktics4 Retail Model*

### 6.3 Sales Impact

Sales impact represents the potential loss of sales at a centre due to the development of another centre. Sales impact is measured by comparing the potential sales of a centre at a particular year/period with the other centre included and excluded from the equation/modelling. Sales impact may be measured by potential actual annual sales or a percentage of potential annual sales.

*Example*

*A centre is forecast to generate annual sales of $20M p.a. in 2026 without the proposed centre being developed by 2026.*

*The centre is forecast to generate annual sales of $18M p.a. in 2026 if the proposed centre is developed by 2026.*

*The centre is therefore estimated to experience a potential sales impact of $2M p.a. in 2026.*

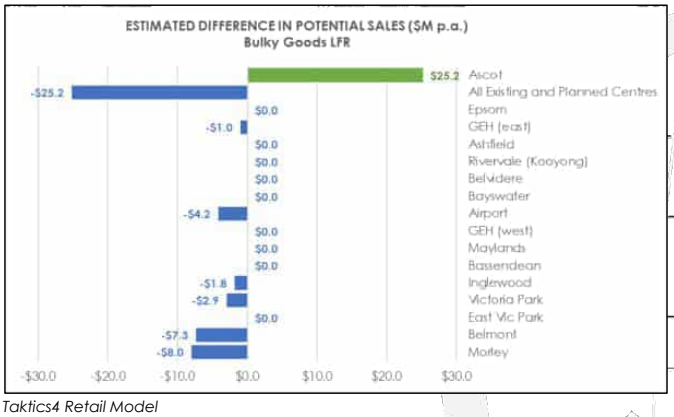
*The centre is estimated to subsequently experience a potential sales impact of 10% of its sales ($2M p.a. loss from its $20M p.a.)*

**Actual Sales**

The development/introduction of the proposed bulky goods activity in Ascot by 2026 will have the potential to capture $25.2M p.a. in retail sales that might otherwise be captured from existing or planned centres.

Over 81% of all retail sales generated by the proposed bulky goods activity to be captured from four centres including Belmont Centre (-$7.3M p.a.), Morley Centre (-$8.0M p.a.), Airport (-$-4.2M p.a.), and Victoria Park ($-2.9M p.a.).

*FIGURE 19*




*Taktics4 Retail Model*

Attachment 12.1.6 Retail Assessment



**Percentage of Sales**

The modelling shows that upon trading in 2026, the retail sales captured by proposed bulky goods activity centre has the potential to impact the overall retail sales generated by residents in the trade area at:

Belmont

The public and private investment at Belmont Centre will not be impacted by the proposed local centre. The potential sales impact is forecast to be less than 4.2% which is classified as insignificant impact/risk. The potential sales impact at Belmont is in effect considerably less than 4.2% as the model only shows the potential loss in sales at Belmont from residents in the modelled trade area. The Belmont Centre generates sales from a more extensive trade area than the trade area for the proposed bulky goods activity at Ascot.

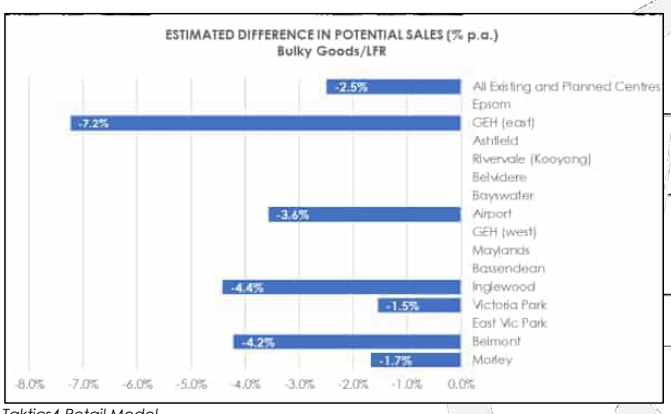
Morley

The public and private investment at Morley Centre will not be impacted by the proposed bulky goods activity. The potential sales impact is forecast to be less than 1.7% which is classified as insignificant impact/risk. The potential sales impact is in effect considerably less than 1.7% as the model only shows the potential loss in sales at Morley from residents in the modelled trade area. The Morley Centre generates sales from a more extensive trade area than the trade area for the proposed bulky goods activity at Ascot.

Airport

The public and private investment at the Airport will not be impacted by the proposed bulky goods activity. The potential sales impact is forecast to be less than 3.6% which is classified as insignificant impact/risk. The potential sales impact is in effect considerably less than 3.6% as the model only shows the potential loss in sales at the Airport from residents in the modelled trade area. The Airport generates sales from a more extensive trade area than the trade area for the proposed bulky goods activity at Ascot.

*FIGURE 20*




*Taktics4 Retail Model*

### 6.4 Sales Growth

Sales Growth represents the increase in retail sales that may be expected from a centre because of an increase in population growth in the trade area.

*For example:*

*A centre is currently capturing total retail sales of $20M p.a.*

*It achieves these sales by capturing 20% market share of all resident spending in the trade area.*

*Therefore, the trade area has a current resident retail spending capacity of $100M p.a.*

*Residential development occurs in the trade area at 10% growth over a five-year period.*

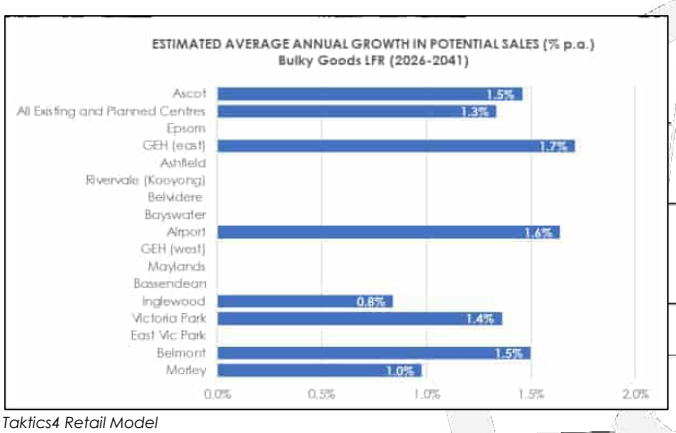
*In five years, the resident retail spending capacity in the trade area has increased to $110M p.a.*

*The sales potential for the centre is forecast to increase to $22M p.a. (in constant dollars) despite maintain the same market share within the trade area.*

*This potential sales growth across centres has the potential to offset any initial sales impact generated by the development of a proposed local centre.*

The population in the total trade area is expected to increase from 77,700 in 2026 to 93,500 in 2041. This population growth will result in an increase in resident retail spending capacity in the total trade area from $1,142M p.a. in 2026 to $1,374M p.a. in 2041. That represents an additional $232M p.a. in the total trade area for all centres to capture. The graph shows that beyond the development of the proposed bulky goods in 2026, all relevant centres in the trade area, or area of influence by the proposed bulky goods activity at Ascot is forecast to have the potential to experience an average annual growth in sales of between 1.0% and 2.0% p.a. over the subsequent 15 years.

*FIGURE 21*




*Taktics4 Retail Model*

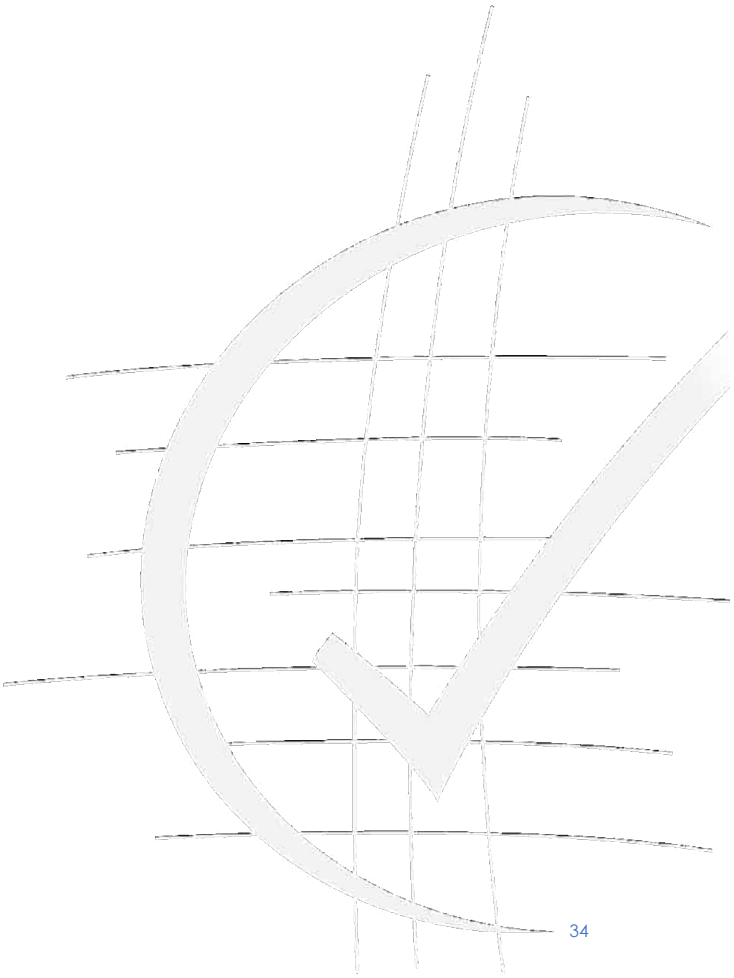
Attachment 12.1.6 Retail Assessment



### 6.5 Summary

The findings in this Net Benefit Test confirm that proposed bulky goods activity at Ascot will.

- Result in insignificant/low risk impacts on the surrounding existing and planned activity centres network. With any potential sales impact offset by the potential for substantial average sales growth in the trade area over the next 15 years.
- Subsequently not have an unreasonable impact on the delivery and sustainability of private and public infrastructure at other activity centres.



Attachment 12.1.6 Retail Assessment



## 7. NET BENEFIT TEST

When estimating benefits to the community, the Net Benefit Test should:

- Detail what benefit will occur due to the proposed development.
- Use existing data and standards to measure the size of the benefit and how important it will be to the community.
- Identify those in the community who will be likely to experience the benefit.
- Estimate how many individuals are expected to experience the benefit.
- Describe the degree of change expected due to the benefit.
- Determine the expected duration for which stakeholders are expected to experience the benefit.

SPP4.2 provides a guide to estimating/measuring the net benefit to the community including:

### 7.1 Employment

*Will the proposal provide new jobs in addition to any that may be lost elsewhere – net additional jobs?*

The proposed activity has the potential to create up to 205 Full Time Equivalent jobs including 85 in the shopping precinct and 120 in the bulky goods showroom precinct.

*FIGURE 22*

*TOTAL EMPLOYMENT OPPORTUNITIES*

| PLUC | Activity Type | Floor space (sqm NLA) | Ratio (FTE jobs/sqm) | FTE Jobs |
|---|---|---|---|---|
| PLUC 5 | Shops | 3,400 | 40 | 85 |
| PLUC 6 | Bulky Goods/Showroom | 9,600 | 80 | 120 |
| **Combined** | | **13,000** | **63** | **205** |

*Land Use and Employment Survey (WAPC 2017)*

*Will the proposed activity contribute to diversifying local jobs – creating more strategic employment versus population-driven employment?*

*Will the proposal have the potential to improve access to economic opportunity for minority and vulnerable groups?*

Employment in shop and bulky goods activity typically attracts residents which fit the following:

- Female labour force
- Part time labour force
- Young adult labour force
- Local labour force
- Labour force without access to a motor vehicle

Attachment 12.1.6 Retail Assessment



| Gender | Employment Sector | |
|---|---|---|
| | Total Retailing | All Sectors |
| Male Employees | 34% | 43% |
| Female Employees | 66% | 57% |
| All Employees | 100% | 100% |

The proposed activity is conducive to the female employment labour force. Females on average represent 66% of all retail related jobs compared to 57% for all job sectors.

| Employment Status | Employment Sector | |
|---|---|---|
| | Total Retailing | All Sectors |
| Full Time Employment | 38% | 54% |
| Part time Employment | 62% | 46% |
| All Employment | 100% | 100% |

The proposed activity is conducive to the part time employment labour force. Part time employees represent 62% of all retail related jobs compared to 46% for all job sectors.

| Age of Employee | Employment Sector | |
|---|---|---|
| | Total Retailing | All Sectors |
| 15-19 years | 19% | 9% |
| All Ages | 100% | 100% |

The proposed activity is conducive to young adults in the labour force. Young adults represent 19% of all retail related jobs compared to 9% for all job sectors.

| Distance Travelled | Employment Sector | |
|---|---|---|
| | Total Retailing | All Sectors |
| less than 2.5 km | 15% | 10% |
| 2.5 km - 10 km | 42% | 32% |
| All Distances | 100% | 100% |

The proposed activity is conducive to residents who live within 2.5 km of the proposed activity. 15% of all residents in retail related jobs on average travel up to 2.5km from their home compared to 10% for all job sectors.

| Travel Mode | Employment Sector | |
|---|---|---|
| | Total Retailing | All Sectors |
| Car, as passenger | 9% | 6% |
| Bicycle | 1% | 0% |
| Walked only | 2% | 2% |
| Walked, Cycled, Passenger | 11% | 8% |
| All Modes | 100% | 100% |

The proposed activity is conducive to residents who do not have ready access to motor vehicle for travel to work. 11% of residents working in the retail sector cycle, walk or travel by passenger to work compared to 8% for all job sectors.

The impact assessment shows that all activity centres in the network have the potential to increase sales and subsequently not need to reduce employment levels. The proposed local centre is therefore expected to provide new local jobs for residents.

Attachment 12.1.6 Retail Assessment



### 7.2 Impact

*How is the proposal expected to impact upon the current and expected turnover and role of relevant activity centres?*

The proposed activity is estimated to have an initial low / insignificant risk to activity centres in the network. Any impacts on these activity centres are likely to be temporary and have no long-term effects on the viability of individual activity centres. The initial impacts to activity centres are expected to be offset by future growth in sales from resident and spending growth.

*Will the proposal increase the choice and availability of goods and services in the area?*

Retail modelling confirms that the residents in Ascot and Belmont are the communities most likely to experience the benefit from the proposed activity. Residents in Ascot and Belmont are estimated to account for 60% of total sales / trips at the proposed activity confirming the importance of the proposed activity to these residents.

Ascot and Belmont trade area currently comprise 11,000 residents. Ascot and Belmont trade area resident population base will grow to 16,400 residents by 2041. Despite this population profile, residents in Ascot do not currently have access to a full line supermarket-based centre within 2.5 km. Ascot residents must therefore travel up to 2.5 km each way (5 km round trip) every time they access their full line supermarket needs.

The introduction of the proposed activity will fill an identified gap in the supply and demand of convenience-based activity in the Ascot and Belmont area.

### 7.3 Impact on Activity Centre Hierarchy

Retail modelling confirm that the proposed activity centre is sufficiently sized, located and configured to satisfy the local trade area needs without impinging on the trading potential of other centres. And that the proposed centre will not have a significant or long-term impact on any of the individual activity centres modelled as part of the centres network.

It therefore follows that the proposed activity centre will not create any unreasonable or detrimental impact on the role and function of the activity centre hierarchy and framework in the trade area.

All centres will have the opportunity to compete for the additional retails sales available through the increased retail spending capacity planned in the trade area. It will be up to each of the centres and their respective operators in the existing and planned network to establish plans and strategies to target that additional retail spending capacity.

The forecast population growth in the trade area will ultimately create the potential for all centres in the network to achieve an average increase in sales of between 1% and 3% per annum over the period between 2026 and 2041. This average sales growth will further offset the immediate impact experienced from the introduction of the proposed activity.

### 7.4 Compatibility

*Is the proposal compatible with surrounding land uses?*

The proposed activity will introduce proposed activity in the middle of a trade area which contains 11,000 – 16,400 residents within a 1.5 km radius of the proposed activity. This resident population is a significant base for a supermarket-based centre.

### 7.5 Environment

*Will there be an improvement in the level of amenity and vibrancy that benefits the wider community? Will the proposal include land uses such as healthcare, education, and community facilities? Will the proposal have an impact on overall vehicle trips? Will car-based net trips (by distance) increase or reduce because of the proposal?*

The proposed activity has the potential to create a community hub for the Ascot and Belmont communities. increasing a sense of place for residents. The proposed activity does not in itself create these facilities. However, some of these facilities will likely be attracted to the area because of the introduction of the proposed activity.

The proposed activity has the potential to reduce the amount of trip kilometres that Ascot and Belmont residents must travel each year to satisfy their daily/weekly shopping needs. As stated, the Ascot and Belmont resident population base represents 11,000 growing to 16,400 residents who will benefit directly from the proposed activity. Ascot and Belmont residents therefore have the potential to:

- reduce the amount of trip kilometres that Ascot and Belmont residents must travel each year to satisfy their daily/weekly shopping needs.
- save over 530,000 to 700,000 trips p.a. to centres outside their trade area
- save between 40 and 50 trips per person per annum.
- save between 2.7 M km p.a. and 3.5 M km p.a. of vehicular travel per annum

### 7.6 Infrastructure

*Is there significant government investment in services, infrastructure or development in the area or nearby centres that may be affected by the proposal? Will the proposal impact patronage/viability of the investment and what is the expected impact? Will the proposal include new, or improvements to existing transport infrastructure, particularly walking, cycling and public transport, that increases access and helps manage congestion? Will the proposal include enhancements to utilities that benefit the local area?*

As previously stated, the proposed activity has the potential to significantly reduce the number of trips/trip km by residents especially for residents in Ascot and Belmont. Residents in these areas will be far more likely to walk to the proposed activity than their current trip patterns to supermarket-based centres over 2 km from the proposed activity. The proposed activity has the potential to generate demand for enhancements to community and non-retail related to services in the local area.

### 7.7 Strategic Alignment

*Is the proposal consistent with the strategic planning for the area? Is it aligned with the relevant regional strategy and approved local planning strategy? Is the size and scale of the proposal consistent with the level of the hierarchy? What are the potential impacts on the activity centre hierarchy? Is the proposal consistent with the objectives and outcomes of SPP 4.2?*

The proposed activity is classified as a planned centre in an adopted planning instrument. The proposed activity is a size, scale, function, and role that is consistent with and complements the overall activity centre hierarchy. The proposed local centre activity is consistent with the City of Belmont's Activity Centre Planning strategy.

The proposed activity will not have a significant impact on any of the activity centres in the network. The proposed activity does not have the potential to result in the loss of or change the role and function of any activity centre in the network. As such the proposed activity is not have the potential to have any impact or change to the activity centre hierarchy.

The Net Benefit Test confirms that the proposed activity satisfies the criteria for assessing the benefits to the community and is therefore consistent with the objectives and outcomes of SPP4.2.

Attachment 12.1.7 Transportation Noise Assessment

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# Transportation Noise Assessment

## Ascot Racecourse Structure Plan

**Reference: 23118540-01**

Prepared for:
Perth Racing C/- Davison Advisory Services

Attachment 12.1.7 Transportation Noise Assessment

**Reference: 23118540-01**


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| Date | Rev | Description | Author | Verified |
|---|---|---|---|---|
| 16-Nov-23 | 0 | Issued to Client | Terry George | - |
| | | | | |

Attachment 12.1.7 Transportation Noise Assessment



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## 1. INTRODUCTION

A Local Structure Plan (LSP) and Scheme Amendment are being prepared for landholdings in Ascot, referred to as the Ascot Racecourse Structure Plan (refer *Figure 1-1*). Parts of the site will be potentially impacted by road traffic noise, being the subject of this report, with consideration given to *State Planning Policy No. 5.4 Road and Rail Noise*, being the subject of this report.

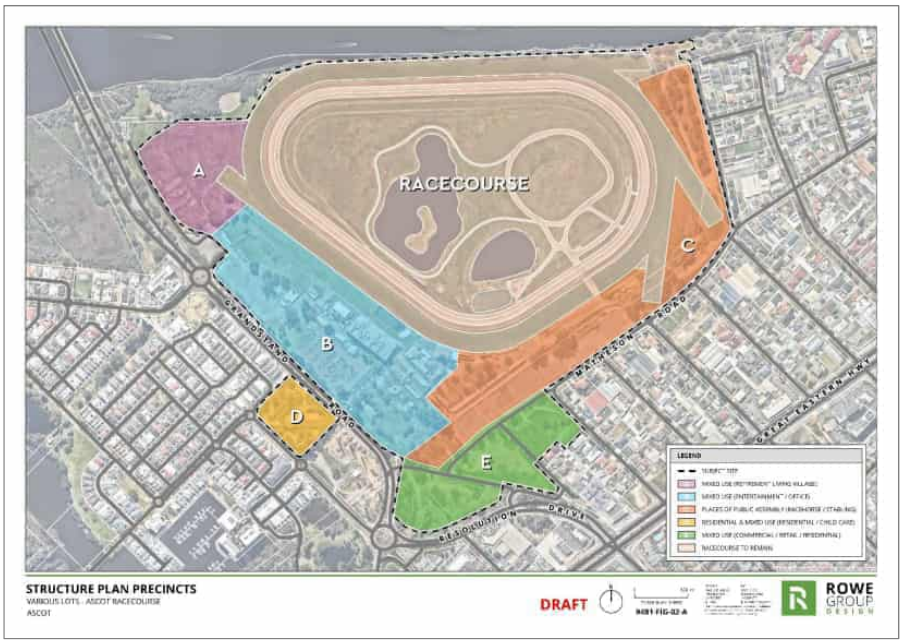



***Figure 1-1: Structure Plan Precincts***

*Appendix B* contains a description of some of the terminology used throughout this report.

## 2. CRITERIA

The criteria relevant to this project is provided in *State Planning Policy No. 5.4 Road and Rail Noise* (hereafter referred to as SPP 5.4) produced by the Western Australian Planning Commission (WAPC). SPP 5.4 is supported by the *Road and Rail Noise Guidelines* (the Guidelines) and the Department of Planning, Lands and Heritage mapping. The objectives of SPP 5.4 are to:

- Protect the community from unreasonable levels of transport noise;
- Protect strategic and other significant freight transport corridors from incompatible urban encroachment;
- Ensure transport infrastructure and land-use can mutually exist within urban corridors;
- Ensure that noise impacts are addressed as early as possible in the planning process; and
- Encourage best practice noise mitigation design and construction standards.

*Table 2-1* sets out noise targets that are to be achieved by proposals under which SPP 5.4 applies. Where the targets are exceeded, an assessment is required to determine the likely level of transport noise and management/mitigation required.

***Table 2-1: Noise Targets for Noise Sensitive Land-Use***

| Scenario | Outdoor Noise Target | | Indoor Noise Target | |
|---|---|---|---|---|
| Noise-sensitive land-use and/or development | 55 dB $L_{Aeq(Day)}$ | 50 dB $L_{Aeq(Night)}$ | 40 dB $L_{Aeq(Day)}$ (Living and Work Areas) | 35 dB $L_{Aeq(Night)}$ (Bedrooms) |

Notes:

- Day period is from 6am to 10pm and night period from 10pm to 6am.
- The outdoor noise target is to be measured at 1-metre from the most exposed, habitable[1] facade of a noise sensitive building.
- For all noise-sensitive land-use and/or development, indoor noise targets for other room usages may be reasonably drawn from Table 1 of Australian Standard/New Zealand Standard AS/NZS 2107:2016 *Acoustics – Recommended Design Sound Levels and Reverberation Times for Building Interiors* (as amended) for each relevant time period.
- Outdoor targets are to be met at all outdoor areas as far as is reasonable and practicable to do so using the various noise mitigation measures outlined in the Guidelines.

The application of SPP 5.4 is to consider anticipated traffic volumes for the next 20 years from when the noise assessment has been undertaken.

[1] *A habitable room is defined in State Planning Policy 3.1 as a room used for normal domestic activities that includes a bedroom, living room, lounge room, music room, sitting room, television room, kitchen, dining room, sewing room, study, playroom, sunroom, gymnasium, fully enclosed swimming pool or patio.*

## 3. METHODOLOGY

The site is within the trigger distance of Great Eastern Highway, considered to be a 'Strategic Freight/Major Traffic Route' as shown on the PlanWA Maps (refer *Table 1-1* and *Figure 3-1*).

***Table 3-1: Transport Corridor Classification and Trigger Distances***

| Transport Road Classification | Trigger Distance | Distance Measured From |
|---|---|---|
| **Strategic Freight and Major Traffic Routes**<br>Roads as defined by Perth and Peel Planning Frameworks and/or roads with either 500 or more Class 7 to 12 Austroads vehicles per day, and/or 50,000 per day traffic volume | 300 metres | Road carriageway edge |
| **Other Significant Freight/Traffic Routes**<br>These are generally any State administered road and/or local government road identified as being a future State administered road (red road) and other roads that meets the criteria of either ≥ 100 Class 7 to 12 Austroads vehicles daily or ≥ 23,000 daily traffic count (averaged equivalent to 25,000 vehicles passenger car units under region schemes) | 200 metres | Road carriageway edge |




***Figure 3-1: Subject Site Locality in Relation to Road (Source: DPLH PlanWA)***

The methodology used in this assessment is to follow the screening assessment procedure provided in the Guidelines. From *Table* 2 of the Guidelines (refer *Figure 3-2*), noise levels at the proposed site are up to 58 dB $L_{Aeq(Day)}$, with Great Eastern Highway being a total of 6 lanes and at its closest point at a distance of 130 metres.

The forecast levels provided in the Guidelines assume open and level ground. The Guidelines allow a 4 dB reduction in noise level where:

- an existing building or structure screens more than 50% of the most exposed part of the noise-sensitive land-use; or
- where a solid continuous minimum 1.8 metre noise wall/fence exists or is proposed; or
- through a combination of permanent structures and terrain so there is no direct line of sight.

In this project, the 4 dB reduction is applicable to the ground floor due to other buildings located between the subject site and road corridor.

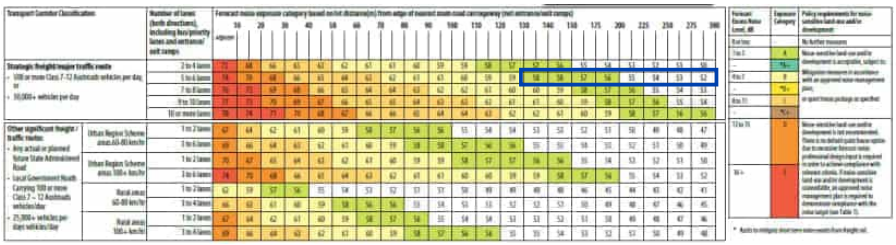


***Figure 3-2: Noise Exposure Forecast Table from Guidelines***

## 4. RESULTS

The results of the screening assessment are summarised as follows:

- Zone E is within 200 metres of Great Eastern Highway;
- Zone E is mixed use and therefore may have some noise sensitive (residential) uses subject to compliance with SPP 5.4;
- Zone E is no closer than 130 metres to Great Eastern Highway placing parts within Exposure A:
  - Due to the screening effect of existing buildings, any ground floor noise sensitive uses would be compliant with the outdoor noise target; and
  - Noise sensitive uses above ground floor and within 200 metres of Great Eastern Highway would be subject to Package A (refer *Appendix A*), including a notification on title. Alternatives to the Deemed to Comply Package A can be accepted if supported by a report from a suitably qualified acoustical consultant (member firm of the Association of Australasian Acoustical Consultants (AAAC)) once the specific plans are available.




***Figure 4-1: Exposure Levels to Upper Floors of Noise Sensitive Buildings***

## 5. CONCLUSION

The objectives of SPP 5.4 are to achieve:

- Indoor noise levels specified in *Table 2-1* in noise-sensitive areas (e.g. bedrooms and living rooms of houses); and
- A reasonable degree of acoustic amenity for outdoor living areas on each residential lot.

Where the outdoor noise targets of *Table 2-1* are achieved, no further noise controls are necessary. Based on the SPP 5.4 screening assessment procedure, any part of the development outside of 200 metres is compliant. Any ground floor noise sensitive development within 200 metres is also compliant.

The only area of potential exceedance, based on the screening assessment procedure of SPP 5.4 are upper residential floors within Zone E where a small area is shown to be in Exposure A. As the Structure Plan develops further, measurements could be undertaken to quantify actual noise levels from Great Eastern Highway, rather than using the screening assessment procedure. Alternatively given the relatively low impact, the screening assessment procedure can be adopted, applying Quiet House Package A to upper floors of noise sensitive dwellings within the marked area on *Figure 4-1*. Alternatives to the Deemed to Comply Package A can be accepted if supported by a report from a suitably qualified acoustical consultant (member firm of the Association of Australasian Acoustical Consultants (AAAC)) once the specific plans are available

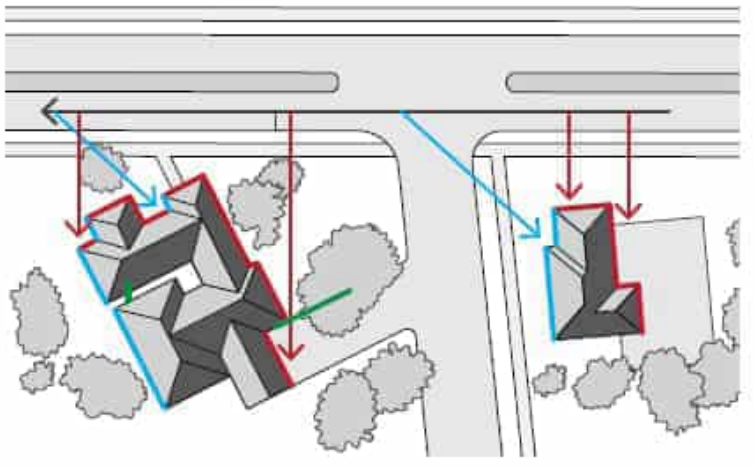
## Appendix A – Quiet House Packages

The packages and information provided on the following pages are taken from *Road and Rail Noise Guidelines* (September 2019).

Where outdoor and indoor noise levels received by a noise-sensitive land-use and/or development exceed the policy's noise target, implementation of quiet house requirements is an acceptable solution.

With regards to the packages, the following definitions are provided:

- **Facing** the transport corridor (red): Any part of a building façade is 'facing' the transport corridor if any straight line drawn perpendicular (at a 90 degree angle) to its nearest road lane or railway line intersects that part of the façade without obstruction (ignoring any fence).
- **Side-on** to transport corridor (blue): Any part of a building façade that is not 'facing' is 'side-on' to the transport corridor if any straight line, at any angle, can be drawn from it to intersect the nearest road lane or railway line without obstruction (ignoring any fence).
- **Opposite** to transport corridor (green): Neither 'side on' nor 'facing', as defined above.



## Quiet House Package A

**56-58 dB $L_{Aeq(Day)}$ & 51-53 dB $L_{Aeq(Night)}$**

| Element | Orientation | Room | |
|---|---|---|---|
| | | Bedroom | Indoor Living and Work Areas |
| External Windows | Facing | • Up to 40% floor area ($R_w + C_{tr} \geq 28$):<br>– Sliding or double hung with minimum 10mm single or 6mm-12mm-10mm double insulated glazing;<br>– Sealed awning or casement windows with minimum 6mm glass.<br>• Up to 60% floor area ($R_w + C_{tr} \geq 31$):<br>– Sealed awning or casement windows with minimum 6mm glass. | • Up to 40% floor area ($R_w + C_{tr} \geq 25$):<br>– Sliding or double hung with minimum 6mm single or 6mm-12mm-6mm double insulated glazing;<br>• Up to 60% floor area ($R_w + C_{tr} \geq 28$);<br>• Up to 80% floor area ($R_w + C_{tr} \geq 31$). |
| | Side On | As above, except $R_w + C_{tr}$ values may be 3 dB less or max % area increased by 20%. | |
| | Opposite | No specific requirements | |
| External Doors | Facing | • Fully glazed hinged door with certified $R_w + C_{tr} \geq 28$ rated door and frame including seals and 6mm glass. | • Doors to achieve $R_w + C_{tr} \geq 25$:<br>– 35mm Solid timber core hinged door and frame system certified to $R_w$ 28 including seals;<br>– Glazed sliding door with 10mm glass and weather seals. |
| | Side On | As above, except $R_w + C_{tr}$ values may be 3 dB less. | |
| | Opposite | No specific requirements | |
| External Walls | All | • $R_w + C_{tr} \geq 45$:<br>– Two leaves of 90mm thick clay brick masonry with minimum 20mm cavity; or<br>– Single leaf of 150mm brick masonry with 13mm cement render on each face; or<br>– One row of 92mm studs at 600mm centres with:<br>▪ Resilient steel channels fixed to the outside of the studs; and<br>▪ 9.5mm hardboard or fibre cement sheeting or 11mm fibre cement weatherboards fixed to the outside;<br>▪ 75mm thick mineral wool insulation with a density of at least 11kg/m$^3$; and<br>▪ 2 x 16mm fire-rated plasterboard to inside. | |
| Roofs and Ceilings | All | • $R_w + C_{tr} \geq 35$:<br>• Concrete or terracotta tile or metal sheet roof with sarking and at least 10mm plasterboard. | |
| Outdoor Living Areas | | At least one outdoor living area located on the opposite side of the building from the transport corridor or at least one ground level outdoor living area screened using a solid continuous fence or other structure of minimum 2 metres height above ground level. | |

**Mechanical Ventilation requirements**

In implementing the acceptable treatment packages, fresh air requirements of the National Construction Code must be satisfied on the basis of windows closed. Whilst not the only solution, the most common is mechanical ventilation / air-conditioning is installed with the following considerations:

- Acoustically rated openings and ductwork to provide a minimum sound reduction performance of $R_w$ 40 dB into sensitive spaces;
- Evaporative systems require attenuated ceiling air vents to allow closed windows;
- Refrigerant based systems need to be designed to achieve National Construction Code fresh air ventilation requirements;
- Openings such as eaves, vents and air inlets must be acoustically treated, closed or relocated to building sides facing away from the corridor where practicable.

**Notification**

Notifications on title advise prospective purchasers of the potential for noise impacts from major transport corridors and help with managing expectations.

The Notification is to state as follows:

*This lot is in the vicinity of a transport corridor and is affected, or may in the future be affected, by road and rail transport noise. Road and rail transport noise levels may rise or fall over time depending on the type and volume of traffic.*

## Appendix B – Terminology

The following is an explanation of the terminology used throughout this report:

- **Decibel (dB)**

The decibel is the unit that describes the sound pressure levels of a noise source. It is a logarithmic scale referenced to the threshold of hearing.

- **A-Weighting**

An A-weighted noise level has been filtered in such a way as to represent the way in which the human ear perceives sound. This weighting reflects the fact that the human ear is not as sensitive to lower frequencies as it is to higher frequencies. An A-weighted sound level is described as $L_A$, dB.

- **$L_{eq}$**

The $L_{eq}$ level represents the average noise energy during a measurement period.

- **$L_1$**

The $L_1$ level represents the noise level exceeded for 1 percent of the measurement period and is considered to represent the average of the maximum noise levels measured.

- **$L_{10}$**

The $L_{10}$ level represents the noise level exceeded for 10 percent of the measurement period and is considered to represent the "intrusive" noise level.

- **$L_{90}$**

The $L_{90}$ level represents the noise level exceeded for 90 percent of the measurement period and is considered to represent the "background" noise level.

- **$L_{Aeq(Day)}$**

The $L_{Aeq(Day)}$ level is the logarithmic average of the $L_{Aeq}$ levels from 6.00am to 10.00pm.

- **$L_{Aeq(Night)}$**

The $L_{Aeq(Night)}$ level is the logarithmic average of the $L_{Aeq}$ levels from 10.00pm to 6.00am.

- **$L_{A10,18hour}$**

The $L_{A10,18hour}$ level is the arithmetic average of the hourly $L_{A10}$ levels between 6.00am and midnight.

- **$L_{Aeq,24hour}$**

The $L_{Aeq,24hour}$ level is the logarithmic average of the $L_{Aeq}$ levels from over an entire day.

- **Noise-sensitive land use and/or development**

Land-uses or development occupied or designed for occupation or use for residential purposes (including dwellings, residential buildings or short-stay accommodation), caravan park, camping ground, educational establishment, child care premises, hospital, nursing home, corrective institution or place of worship.

- **$R_w$**

This is the weighted sound reduction index. It is a single number rating determined by moving a grading curve in integral steps against the laboratory measured transmission loss until the sum of the deficiencies at each one-third-octave band, between 100 Hz and 3.15 kHz, does not exceed 32 dB. The higher the $R_w$ value, the better the acoustic performance.

- **$C_{tr}$**

This is a spectrum adaptation term for airborne noise and provides a correction to the $R_w$ value to suit source sounds with significant low frequency content such as road traffic or home theatre systems. A wall that provides a relatively high level of low frequency attenuation (i.e. masonry) may have a value in the order of – 4 dB, whilst a wall with relatively poor attenuation at low frequencies (i.e. stud wall) may have a value in the order of -12 dB.

- **About the Term 'Reasonable'**

An assessment of reasonableness should demonstrate that efforts have been made to resolve conflicts without comprising on the need to protect noise-sensitive land-use activities. For example, have reasonable efforts been made to design, relocate or vegetate a proposed noise barrier to address community concerns about the noise barrier height? Whether a noise mitigation measure is reasonable might include consideration of:

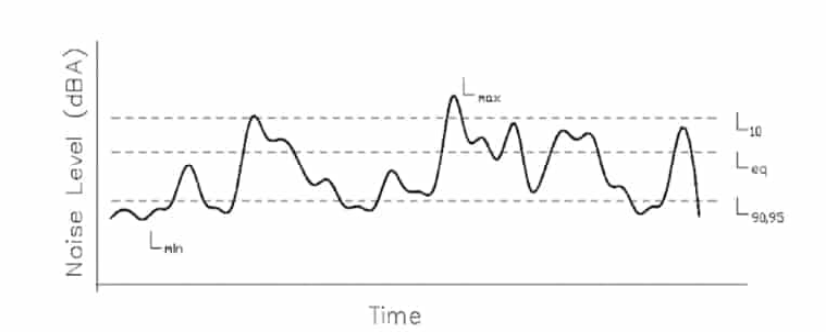
- The noise reduction benefit provided;
- The number of people protected;
- The relative cost vs benefit of mitigation;
- Road conditions (speed and road surface) significantly differ from noise forecast table assumptions;
- Existing and future noise levels, including changes in noise levels;
- Aesthetic amenity and visual impacts;
- Compatibility with other planning policies;
- Differences between metropolitan and regional situations and whether noise modelling requirements reflect the true nature of transport movements;
- Ability and cost for mobilisation and retrieval of noise monitoring equipment in regional areas;
- Differences between Greenfield and infill development;
- Differences between freight routes and public transport routes and urban corridors;
- The impact on the operational capacity of freight routes;
- The benefits arising from the proposed development;
- Existing or planned strategies to mitigate the noise at source.

- **About the Term 'Practicable'**

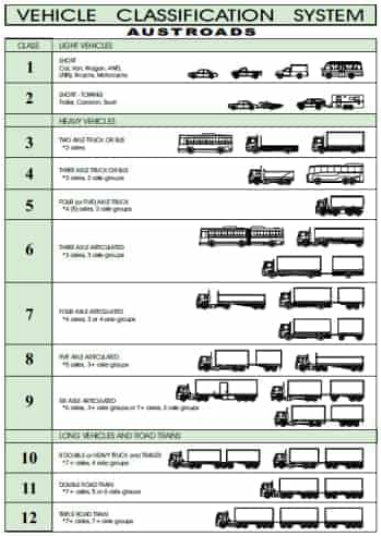
'Practicable' considerations for the purposes of the policy normally relate to the engineering aspects of the noise mitigation measures under evaluation. It is defined as "reasonably practicable having regard to, among other things, local conditions and circumstances (including costs) and to the current state of technical knowledge" (*Environmental Protection Act 1986*). These may include:

- Limitations of the different mitigation measures to reduce transport noise;
- Competing planning policies and strategies;
- Safety issues (such as impact on crash zones or restrictions on road vision);
- Topography and site constraints (such as space limitations);
- Engineering and drainage requirements;
- Access requirements (for driveways, pedestrian access and the like);
- Maintenance requirements;
- Bushfire resistance or BAL ratings;
- Suitability of the building for acoustic treatments.

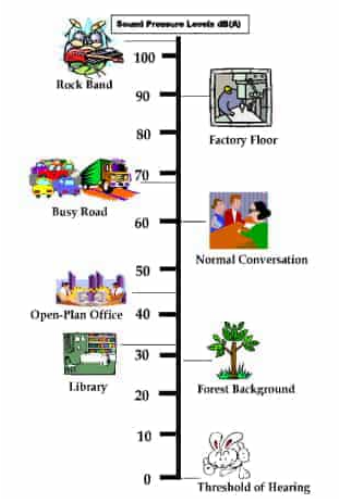
- **Chart of Noise Level Descriptors**



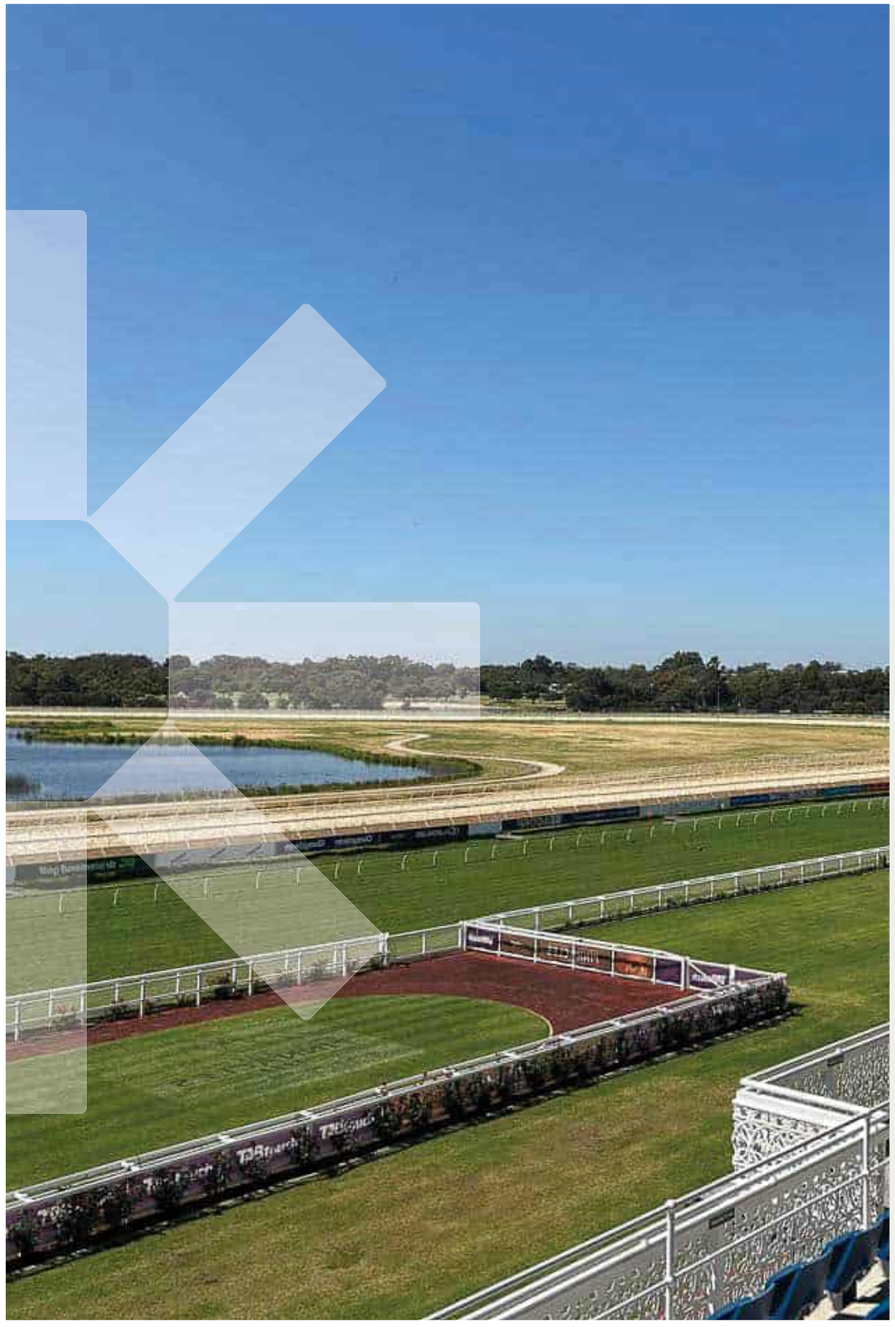
- **Austroads Vehicle Class**




- **Typical Noise Levels**



Attachment 12.1.8 Landscape Master Plan



# Ascot Racecourse Local Structure Plan

## Landscape Master Plan

FOR: Davison Advisory Services

SLR PROJECT No: 675.072227.00001

ISSUE 0.2 7th August 2024

SLR

Attachment 12.1.8 Landscape Master Plan

**Document No.**

675.072227.00001 Ascot Racecourse Structure Plan

**Revision History**

| Revision | Revision Date | Details | Drawn By | Authorised by |
|---|---|---|---|---|
| 0.1 | June 2024 | Draft for Review | Dallas Ellis | Dean Butcher |
| 0.2 | August 2024 | Submission | Dallas Ellis | Dean Butcher |




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*Front Cover Image: © SLR Consulting*

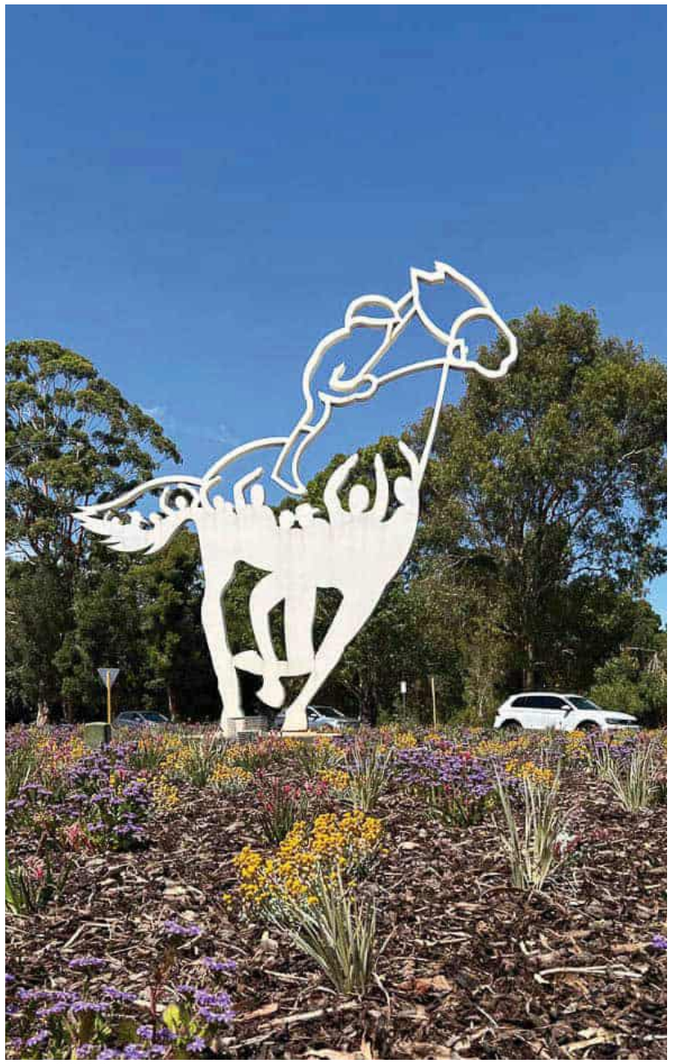


*Image: © SLR Consulting*

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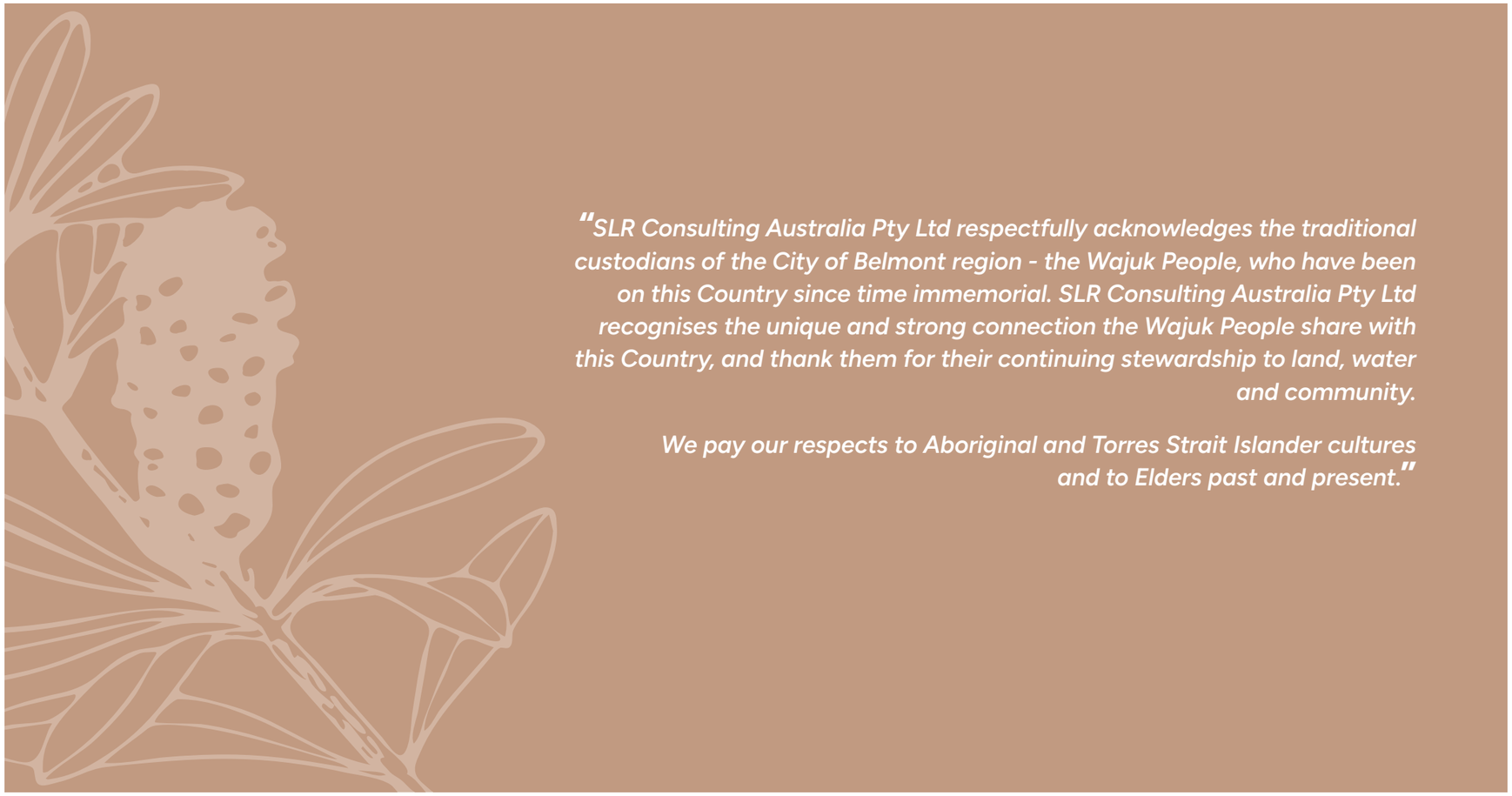
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# Acknowledgment of Country



*"SLR Consulting Australia Pty Ltd respectfully acknowledges the traditional custodians of the City of Belmont region - the Wajuk People, who have been on this Country since time immemorial. SLR Consulting Australia Pty Ltd recognises the unique and strong connection the Wajuk People share with this Country, and thank them for their continuing stewardship to land, water and community.*

*We pay our respects to Aboriginal and Torres Strait Islander cultures and to Elders past and present."*

# 1. Background

**SLR Consulting Australia Pty Ltd (SLR) has been commissioned on behalf of Perth Racing to prepare a Landscape Master Plan for Perth Racing's landholdings in Ascot, including and surrounding the existing Ascot Racecourse.**

Perth Racing's landholdings encompass the area bound by the Swan River to the north, the Ascot Stables area and Matheson Road to the east and south-east, Resolution Drive to the south and south-west, and Grandstand Road to the west.

The Landscape Master Plan supports the Ascot Racecourse Structure Plan prepared to guide the future use and development of Perth Racing's landholdings. The plan establishes a vision and objectives for the Precinct, and identifies design response opportunities to achieve the intended landscape outcomes for the site.




**LEGEND**

1. Riverside Gardens
2. Garratt Road Bridge park
3. Garratt Road Bridge
4. Ascot Racecourse Entry
5. Heritage Listed Ascot Brickworks
6. Ascot Waters Park, Memorial Drive
7. Member's Carpark Entry

# 2. Process



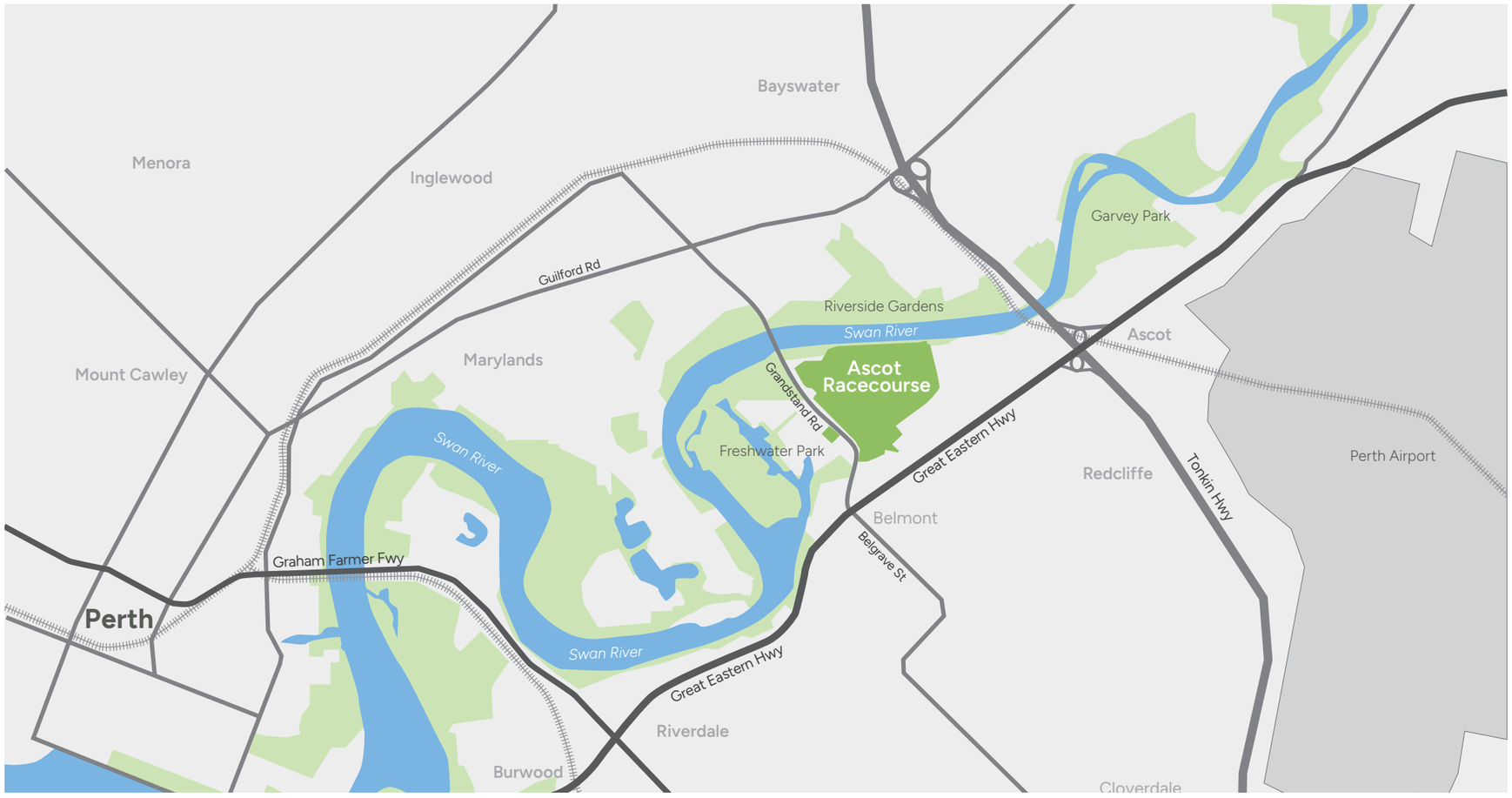

*Image: © SLR Consulting*

Attachment 12.1.8 Landscape Master Plan



*Image: © SLR Consulting*

# 3. Location & Context



# 4. Existing Situation

**The existing elements within the site and its immediate surrounds define the local Visual Environment. This includes natural elements such as vegetation, built form elements including:**

## Legibility

- Prominent areas of the site feel detached from its surrounds both visually and physically as a result of fencing and vegetation
- Entry points generally have a low level of visibility and legibility
- 'Ascot Racecourse' sign and views into the site are not clearly visible from the roundabout on Grandstand Road which results in reduced legibility
- Broader racecourse land especially to the east feel detached from the site
- Entry points are marked by piers and structures, reflecting traditional elements and materials used through the site in built form
- The well-defined vegetated edge along Grandstand Road enhances the site's legibility and character
- A variety of fencing styles and hoarding along Grandstand Road detract from the character of the racecourse

## Visibility

- Views into the Racecourse and the open areas are obscured by low-level hedging and hoarding signs.
- Views and visibility of main corner from the roundabout is poor
- The corner 'Ascot Racecourse' sign is obscured by shrubs












*Images: © SLR Consulting*

## Character

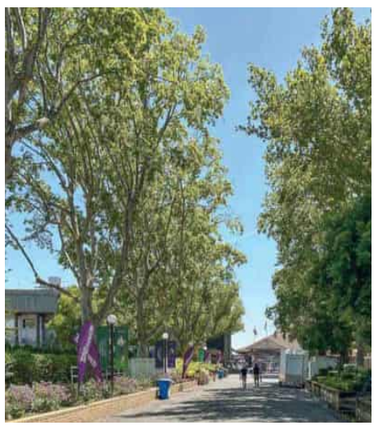
- General
  - Natural forms such as the existing vegetation is juxtaposed against the 'historical racecourse design'
  - Mix of built form styles and materials
  - High quality features such as open space areas, feature trees and historical structures create a strong identity within the racecourse however this character is less evident around it's edges and at entry points.
  - The racecourse has a 'village' feel around the open bar areas created by the shade and laneways
  - Large areas of open pavement car parks visible from Grandstand Road and Matheson Road are hot and uninteresting
  - The combination of 'equine' character elements such as post and rail fencing, grass areas and formal planting promote a racecourse feel within the site
- Materials
  - The red bricks and brickwork used throughout the site is a prominent element used within the site and which is reinforced by the materiality across Granstand Road at the Ascot Kilns site
  - Terra cotta tiles gable roofs complement the brick elements around the site
  - Brick piers with stone capping are traditional elements used along boundaries and within the site
  - Brick patterning in pavements – checker board pattern
  - Entry structures/ admission points utilise traditional built form theming
  - Open/ permeable fencing varies in materiality around the site
  - Timber lattice work and wrought iron balustrading are detailed features elements used on the entry structures and within the built form
  - Broader areas of pavement can vary in appearance, quality and finish such as larger areas of bitumen outside of feature paving
  - Steel and brickwork reminiscent of historical periods in history

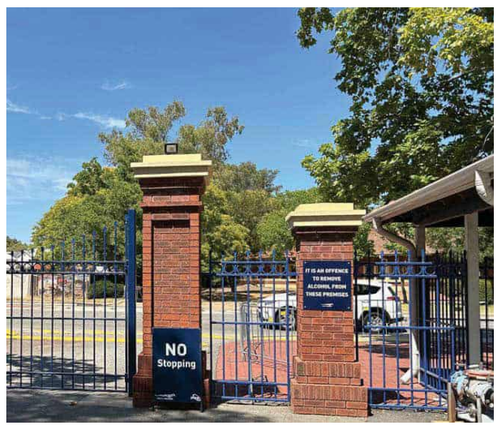













*Images: © SLR Consulting*

Attachment 12.1.8 Landscape Master Plan

- Structures
  - Red brick with cream coloured plinths, lintels and capping
  - Pitched terra cotta tiled roofing
  - Detailing, façade colours and treatments, arches and architectural features are of high quality
- Vegetation
  - Large feature trees both native and exotic are scattered throughout the site
  - Large shade trees provide shade in public areas to complement the structures especially around the open grassed areas
  - Detailed low-level shrub and groundcover planting is a feature around key congregation areas and at entry points and which include a combination of native and exotic species







*Images: © SLR Consulting*

ASCOT RACECOURSE 9

# 5. Key Character Elements

**Key character elements are those elements that typically characterise the identity of the Ascot Racecourse and strengthen its sense of place.**

Key character elements can be materials, patterns, vegetation, built form or symbols and should be and their use should be encouraged where appropriate to further reinforce the identity and character of the racecourse.

- Red Bricks used for pedestrian pavements, walls, piers and building elements
- Checkerboard patterning used in feature pedestrian areas
- Large feature trees planted in avenues at entry points
- Large shade and feature trees used in open park areas and open equine display areas
- Open fencing that reflects an rural-style or equine character, usually painted white










*Images: © SLR Consulting*

# 6. Ascot Racecourse Identity

**All future works within the Ascot Racecourse should reflect character elements as outlined in section 5 to strengthen its identity and character.**

Whilst development will occur on the racecourse the ability to reflect the key character elements within the context of its equine and racing use and history, will act to positively reinforce its character and setting.

The identity of Ascot Racecourse is reflected in both spatial, physical and thematic elements.

## Spatial

Open grassed areas - these primarily reflect the character of the racetrack and key outdoor function areas. Open function areas are further improved by feature specimen trees that provide shade and established character within the context of its open character.

## Views and Visibility

Views of the feature open areas and significant structures from internal areas and areas external to the site.

Views of the racetrack along key pedestrian and vehicular axis.

## Materiality

Materials characteristic of the racetrack are embodied in the red bricks of the area. The red bricks are a key element in the built form, pedestrian paved areas, landscaped walls and other external elements. The red bricks/ pavers and the distinct checkerboard patterning is evident at entry points and key external spaces.

## Colours

Whilst the red colouration of the bricks stands out as the key colour element at and near ground level, this is also offset by the cream bricks and finishes. This light colour is a counterpoint to the red finish that is also reflected in the brick piers and capping along the perimeter and internal walls as well as on the colouration of the built form.

## Planting

Planting takes a number of forms within the racecourse, but that which helps to define its identity is mainly around the feature specimens. This takes the forms of native Eucalypt species reflecting the native/ endemic character of the area, large non endemic feature trees and palms that reference the history of the use. Whilst the informality of planting within open spaces and plazas has a defined character, formal avenue planting with large specimens along entry paths, entrances and concourse areas also helps to define its character.

At a detailed level, formal shrubs, feature plants and annual gardens reflect the European history of the racecourse mainly around entry points.

# 7. Opportunities & Challenges

## Opportunities

- Use the materials and patterning in the wider open space and landscape areas
- Create greater visibility or visual permeability into the site at key locations such as entry points
- Screen or reduce visibility into the site to areas such as car parks where visibility is currently very high
- Create a greater degree of legibility around entry points
- Strengthen feature vegetation at entry points
- Improve internal pedestrian legality throughout the site
- Use key character elements through all areas of the broader site to strengthen the identity and character instead of limiting it to around the main racing and grandstand area

## Challenges

- Screening and limiting access to service areas and facilities
- Large areas of parking highly visible from Grandstand Road
- Creating visible linkages to racecourse from Grandstand Road
- Integrating future service and back-of-house uses









*Images: © SLR Consulting*

Attachment 12.1.8 Landscape Master Plan




*Image: © SLR Consulting*

# 8. Landscape & Open Space Vision Statement




*Image: © SLR Consulting*

# 9. Landscape & Open Space Principles

**The following Landscape Principles provide high level guidance around future development of Landscape and Open Space elements at the Ascot Racecourse. These are grouped under key topics relevant to the site, its uses and landscape outcomes.**

## Community

Create a safe and welcoming place where the comminty can use a range of facilities focused around the equine uses of the racecourse.

## History and Culture

Recognise, and utilise the key historical, cultural and character elements within the design to strengthen its meaning and sense of place.

## Sustainability

Utilise sustainable principles in the planning, design and implemetation of landscapes and open spaces.

## Environment

Recognise inherent environmental and ecological values of the broader context of the site in strengthening the linkages and relationship of the racecourse to its surrounds.

## Context and Linkages

Improve the legibility of the site by providing safe and functional connectivity to the site and within the site.

## Open Space

Provide a range of open spaces within the site that cater for a diverse range of users and activities with a focus around the equine uses of the racecourse.

## Economics

A place that provides a wide range of open spaces and outdoor uses in attracting the local community.

# 10. Landscape & Open Space Objectives

**Landscape and Open Space Objectives provide further direction on how the Landscape Principles can be achieved through incorporating identified landscape elements into future works on site.**

## Community

- Incorporate programmable open spaces and recreational uses within the development to attract community users and to complement the existing racecourse uses.

## Environment

- Utilise riparian plant species endemic to the Swan River within the Precincts, to reinforce the visual and landscape linkages to between the racecourse and the river.
- Where possible integrate sustainable practices into the racecourse planning and design of landscapes and open spaces.

## Open Space

- Provide a feature recreation and open space area adjoining the racecourse that incorporates a range of recreational, play and community facilities.
- Provide programmable open space areas that integrate with the formal play and recreational elements and respond to annual/ season events.
- Utilise natural shade in open spaces and recreation areas to improve the amenity of the open spaces.

## History and Culture

- Make reference within open spaces to historical and cultural values of the site and broader locality through the use of artwork and sculpture, plant species, and materials and finishes.
- Reinforce historical and cultural values of the site and its uses through signage and wayfinding that informs the community and provides a finer layer of detail and interest within the landscapes and open spaces.

## Context and Linkages

- Provide safe and efficient linkages between the racecourse site and open space areas along the Swan River.
- Provide safe and legible pedestrian paths and vehicular access through the site that reinforces the pedestrian dual use areas.
- Provide shaded pathways throughout the site that reinforce the vegetated character of the site.

## Economics

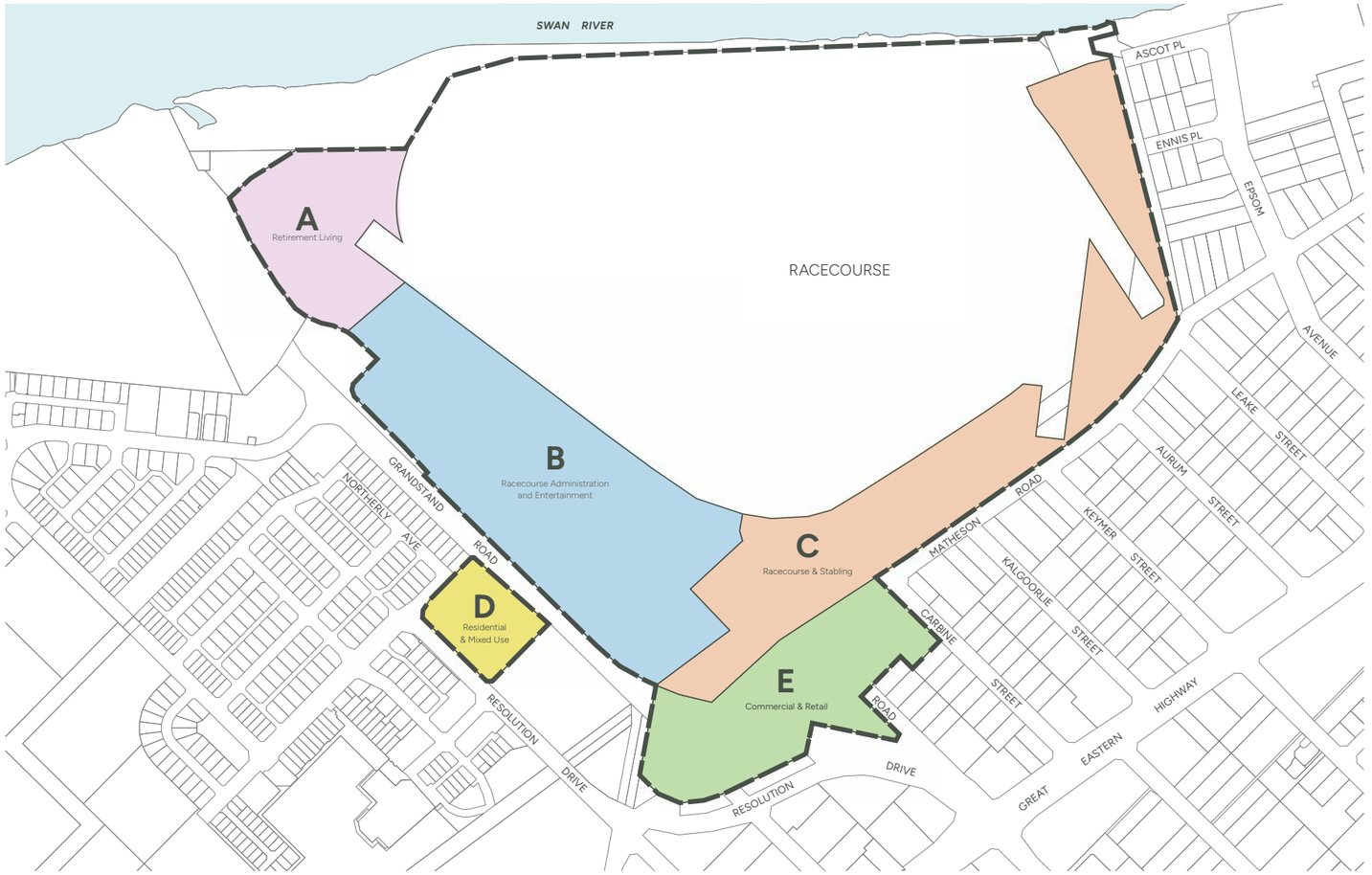
- Open space uses are to respond to the community needs and annual events of the racecourse.
- Landscapes are to be designed to to maximise efficiencies in maintenance and ongoing management, and utilise principles around water efficiency, efficient replacement and management.
- Design for landscapes and open spaces that can be efficiently maintained and managed in line with the current racecourse landscaped areas.

Attachment 12.1.8 Landscape Master Plan




*Image: © SLR Consulting*

# 11. Precincts



Attachment 12.1.8 Landscape Master Plan



# 11.1 Precinct A

## Retirement Living

Precinct A is a highly visible area and arrival point into the City of Belmont when crossing the Garratt Road Bridge. It provides a visual link between the edges of the Swan River and the Ascot Racecourse. Its elevated location above the Swan River provides potential outlook opportunities to both this environment and the Ascot Racecourse.

- Interface with Swan River, Racecourse and Grandstand Road
- Flat open space with clear views of the race track
- No existing vegetation
- Separated from Grandstand Road by informal tree planting outside of the subject site boundary
- The precinct is very visible from Grandstand Road
- Separated from Swan River by Riparian edge vegetation, recreational path
- Limited views to river from ground level but potential for physical path links. Views from higher points in future development
- Limited views through from Grandstand Road and pedestrian path

## Potentials

- Allow glimpses through future site development to the racecourse
- Glimpses through street trees to development
- Landscape to borrow from riparian vegetation along Swan River (species and character)
- Reinforce the character of the informal natural edge along Grandstand Road through planting design
- Retain glimpses to the Swan River from Grandstand Road
- Create links to other precincts by including key landmark species in planting palette that are used in Precinct B
- Create links to public walkways along Swan River
- Create outlooks to new public playgrounds in Precinct B - clear wayfinding from Waterway Crescent roundabout
- Create a "northern bookend" to the racecourse site
- Consideration of the Precinct A interface with the Swan River and foreshore areas given its proposed elevated location.
- Consideration of built form, scale and appearance and will require further material, vegetative screening and setback considerations to integrate with the appearance of the Swan River and minimise visual impacts.





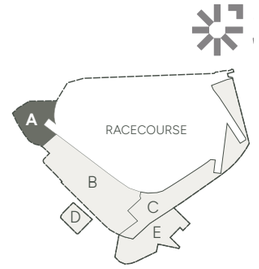


*Images: © SLR Consulting*

Attachment 12.1.8 Landscape Master Plan




PRECINCT A ARRANGEMENT PLAN
1:2500 @ A3




**LEGEND**

- Site boundary
- Precinct boundary
- Entry sign focal point
- Enhanced entry point - vehicle / pedestrian
- Enhanced entry point - pedestrian
- Existing shaded pedestrian path along Swan River
- Enhanced vehicle / pedestrian link
- Key view lines
- Pedestrian links

1. Landscape to reflect / complement the riparian species of the Swan River foreshore
2. Grandstand Road interface planting. Informal tree and shrub planting along the edge to complement the existing public realm edge
3. Open space area that complements the character of the proposed parkland areas in Precinct B
4. Open landscapes allowing views to the racecourse and Swan River edge
5. Central communal space

NORTH

Attachment 12.1.8 Landscape Master Plan




PRECINCT A INDICATIVE LAYOUT PLAN

# 11.2 Precinct B

## Racecourse Administration & Entertainment

- Large precinct with existing established infrastructure
- Strong visitor focus
- 1 main vehicular entry point
- 1 major pedestrian entry point
- Limited views through from Grandstand Road to racecourse
- Grandstand and other structures highly visible from Grandstand Road
- Parking areas very visible and prominent from Grandstand Road
- Landmark/ feature vegetation very visible from Grandstand Road but does not maximise opportunities to either allow or screen views at appropriate points
- Carparks are open and not screened
- Fencing, planting and hoarding along southern part of Grandstand Road block views into key public areas of the racecourse from pedestrian paths and road
- Key views to the racecourse from Grandstand Road are obscured containers and 'back of house' elements
- Legibility generally poor along Grandstand Road

## Potentials

- Create views through to key areas such as racecourse and open spaces from key entry points along Grandstand Road
- Limit views to car parks and 'back of house' areas through screening vegetation and quality fencing
- Promote shade in open areas such as car parks and future open space and community park areas
- Upgrade entry points to improve legibility and access to key areas in racecourse -pavement changes, vegetation, improved signage
- Upgrade interface/ presentation with Grandstand Road – high quality fencing
- Create a shaded, safe and legible pedestrian access system through a series of interconnected paths that complement the racecourse theming and promote movement through the site
- Provide a clear signage and wayfinding system throughout the site that complements the branding and character of the racecourse
- Provide a new Play and Recreation Hub
  - Playground – accessible to car park and pedestrian connections, shaded areas, themed, multi-age play equipment
  - Picnic Spaces – adjoining the playground feature, shaded picnic spaces in close proximity to the racecourse
- Minimise water usage in new landscape and open space use areas through
  - Minimising bore water usage (especially for ongoing grass maintenance),
  - Use of hardy drought tolerant species
  - Mulching to garden areas
  - Use of hard surface finishes where appropriate
  - Increased areas of planting



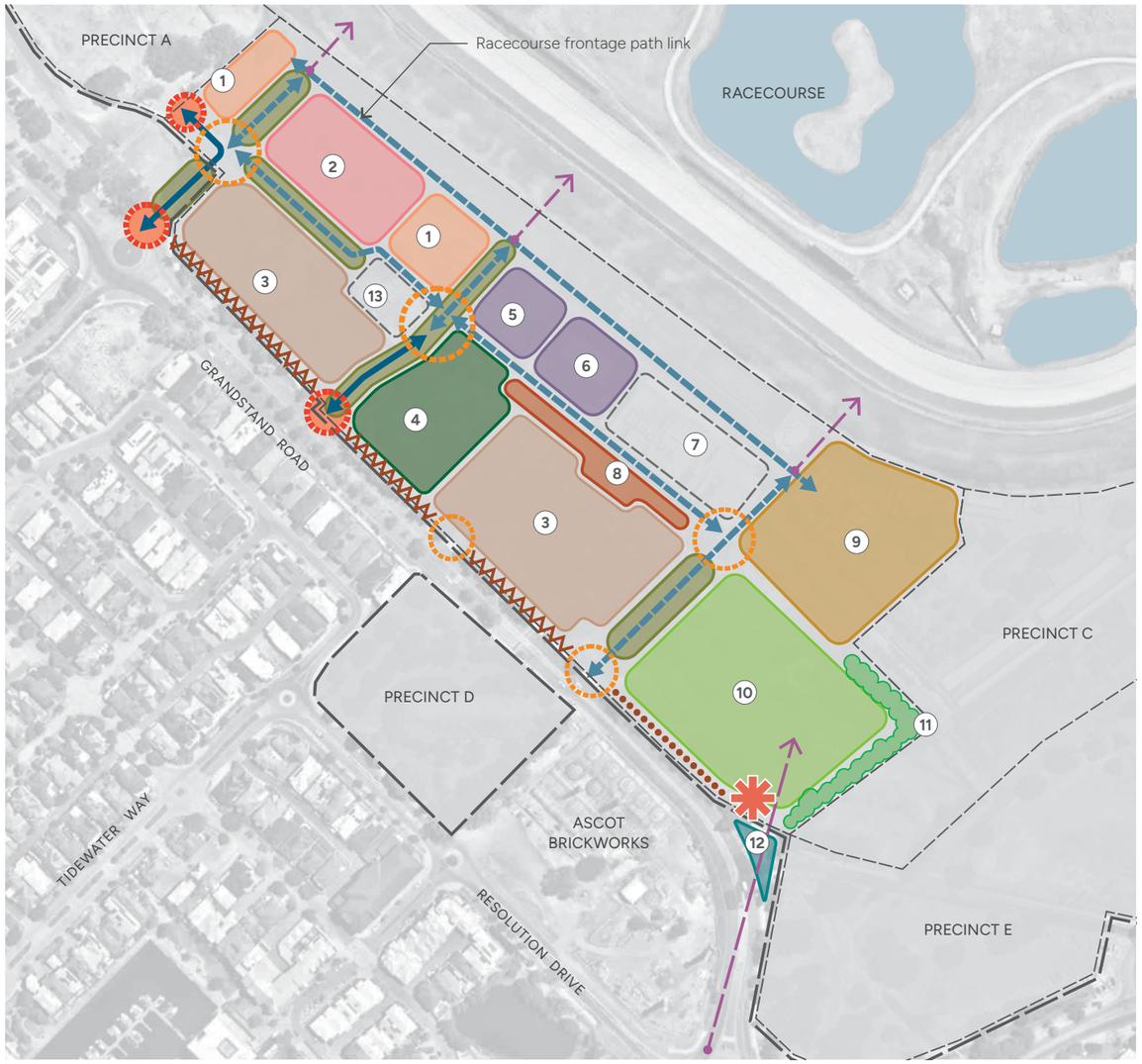


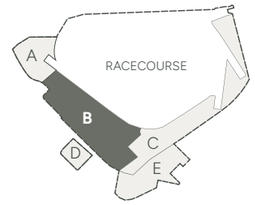




*Images: © SLR Consulting*

Attachment 12.1.8 Landscape Master Plan




**LEGEND**

- Site boundary
- Precinct boundary
- Entry sign focal point
- Enhanced entry point - vehicle / pedestrian
- Enhanced entry point - pedestrian
- Shaded pedestrian priority link
- Enhanced vehicle / pedestrian link
- Key view lines
- Grandstand Road edge upgrade - high quality fencing and planting to screen carparking but allow views to buildings
- High quality permeable fencing that allows views to the open space
- Shaded Pedestrian Avenue
- (1) Picnic space within new recreation hub
- (2) Playground within new recreational hub
- (3) Carpark edges adjusted and tree planting added
- (4) Upgraded park space
- (5) Relocated existing building
- (6) New offices / hospitality
- (7) Existing grandstand retained
- (8) Service area
- (9) Existing plaza uses and covered spaces
- (10) Open grassed function and recreational space to be retained
- (11) Buffer planting to screen horse float parking
- (12) Lower planting to allow views to entry sign and enhance vista into racecourse
- (13) Existing service area to be retained

NORTH

**PRECINCT B ARRANGEMENT PLAN**

Attachment 12.1.8 Landscape Master Plan




PRECINCT B INDICATIVE LAYOUT PLAN

ASCOT RACECOURSE 25

# 11.3 Precinct C

## Racecourse & Stabling

- Primarily for Permanent Stabling purposes and horse float and jockey on race days
- Facilities around the stabling uses that interface with the 'entertainment' and 'racing' uses
- Interface with Matheson Road important to reinforce the character of the precinct rather than to turn its back on the surrounding residential uses

## Potentials

- Screen the horse float area from surrounding uses
- Reinforce the pedestrian entry and arrival point along Matheson Road and Raconteur Drive
- Avenue of street tree planting along Matheson Road to integrate with the surrounding residential area and define the edge and enhance the character of the racecourse
- Where possible facilitate views into the racecourse from nearby roads
- New stables and structures to reference and reinforce the built form character of the existing racecourse buildings.
- Enhance the character of Precinct C and the southern and eastern extents of the site along Matheson Road and Ennis Place respectively through landscape elements. These would reference existing landscape character elements within the racecourse and integrate with the surrounding residential uses through appropriate streetscape planting and landscaping around buildings
- Promote shade in open areas such as car park areas, open space and community spaces
- Shade tree planting within new car parking areas







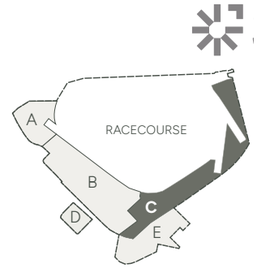


*Images: © SLR Consulting*

Attachment 12.1.8 Landscape Master Plan




PRECINCT C ARRANGEMENT PLAN




**LEGEND**

- Site boundary
- Precinct boundary
- Staff access
- Pedestrian link
- Key view lines
- (1) Day stalls
- (2) Visitors, trainers and jockeys carpark
- (3) Buffer planting to screen horse float parking
- (4) Horse float parking
- (5) Oncourse stables
- (6) Avenue planting to enhance streetscape appearance
- (7) Interface with racetrack
- (8) Interface with Swan River

The location close to the Swan River and foreshore requires consideration of built form, scale and appearance and will require further material, vegetative screening and setback considerations to integrate with the appearance of the Swan River and minimise visual impacts.

General Note:
Landscape treatment around proposed buildings in proximity to the Swan River Foreshore (within Precinct C) will help to create shade, support habitat and complement the character of the Swan River foreshore areas.

NORTH

Attachment 12.1.8 Landscape Master Plan




PRECINCT C INDICATIVE LAYOUT PLAN

# 11.4 Precinct D

## Residential & Mixed Use

- Current site for administration building
- Isolated from main racecourse site by Grandstand Road
- Adjoins existing low and medium density residential uses
- Existing mature trees on site
- No visible connection to Racecourse uses except for red bricks on admin building

## Potentials

- Create similar interface with Grandstand Road
- Interface with Ascot Kilns where possible through the use of materials, visual links and signage
- Retain existing established trees along Grandstand Road and existing feature trees within the site where possible
- Align the character and appearance to complement the existing Ascot Waters Estate
- Minimum 1 shade tree for every 4 open air parking bays for non-residential development





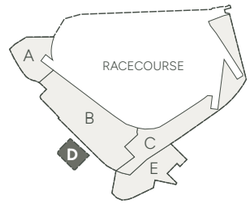




*Images: © SLR Consulting*

Attachment 12.1.8 Landscape Master Plan




**LEGEND**

- Site boundary
- Precinct boundary
- Existing pedestrian link

1. Childcare centre
2. Residential lots
3. Internal tree-lined streets
4. Entry points to Resolution Drive
5. Existing pedestrian path linkage to be retained

NORTH

**PRECINCT D ARRANGEMENT PLAN**
1:2500 @ A3

Attachment 12.1.8 Landscape Master Plan




PRECINCT D INDICATIVE LAYOUT PLAN

ASCOT RACECOURSE 31

# 11.5 Precinct E

## Commercial & Retail

- Current existing open grassed areas used for overflow car parking
- Scattered existing vegetation along drainage lines and roads
- Low level of visual amenity
- No visible connection to Racecourse uses

## Potentials

- Create edges to proposed development that focus towards key entry points and vistas toward the racecourse buildings
- Street tree theming to strongly define racecourse edge and enhance the character of the site
- Create links to the Historic Ascot Kilns through the use of strategic viewpoints along roads and between buildings. Use of kiln-related materials and colours in built form and pavements to reinforce the connections to the Ascot Kilns
- Building forms and styles to complement the existing feature buildings visible on site
- Activation of Matheson Road and Raconteur Drive to complement the proposed uses such as the food markets
- Integrate with the residential context with street tree planting that reflects the character of the site
- Creation of 'sleeve' uses around the racecourse that enhance its presentation, character and identity, especially along Resolution Drive, Grandstand Road
- Improve the appearance of the open drain along the eastern edge of Precinct E as it adjoins Resolution Drive. This could be achieved through additional planting to naturalise its appearance
- 1 shade tree for every 4 open air parking bays
- Minimum 3m wide landscaping to Grandstand Road frontage







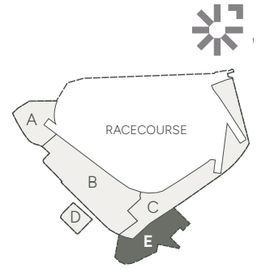


*Images: © SLR Consulting*

Attachment 12.1.8 Landscape Master Plan




**PRECINCT E ARRANGEMENT PLAN**
1:2500 @ A3




**LEGEND**

- Site boundary
- Precinct boundary
- Entry sign focal point
- Enhanced entry point - vehicle / pedestrian
- Enhanced vehicle / pedestrian link
- Key view lines
- Shaded pedestrian Avenue

1. Future research facilities
2. Commercial uses
3. Vegetated buffers
4. Service area
5. Retail/ Commercial uses
6. Carparking
7. Jockey accommodation
8. Upgrade appearance of drainage corridor

NORTH

Attachment 12.1.8 Landscape Master Plan




PRECINCT E INDICATIVE LAYOUT PLAN

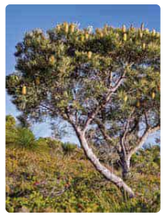
# Planting Palette

## PLANT SCHEDULE

| SPECIES | COMMON NAME |
|---|---|
| TREES | |
| *Agonis flexuosa* | Weeping peppermint |
| *Allocasuarina fraseriana* | Western sheoak |
| *Banksia attenuata* | Candlestick banksia |
| *Banksia grandis* | Bull banksia |
| *Banksia menziesii* | Firewood banksia |
| *Brachychiton discolour* | Lacebark tree |
| *Casuarina glauca* | Swamp she-oak |
| *Casuarina obesa* | Western swamp oak |
| *Corymbia calophylla* | Marri |
| *Corymbia ficifolia* | Red flowering gum |
| *Corymbia maculata* | Spotted gum |
| *Cupaniopsis anacardioides* | Tuckeroo |
| *Eucalyptus gomphocephala* | Tuart |
| *Eucalyptus lane-poolei* | Salmon white gum |
| *Eucalyptus marginata* | Jarrah |
| *Eucalyptus rudis* | Flooded gum |
| *Eucalyptus todtiana* | Coastal blackbutt |
| *Eucalyptus wandoo* | Wandoo |
| *Lophostemon confertus* | Queensland brush box |
| *Melaleuca quinquenervia* | Broad-leaved paperbark |
| *Melaleuca rhaphiophylla* | Swamp paperbark |
| *Melaleuca viminalis* | Weeping bottlebrush |
| *Platanus x acerifolia* | London Plane |
| *Quercus palustris* | Pin Oak |


*Agonis flexuosa*


*Allocasuarina fraseriana*


*Banksia attenuata*

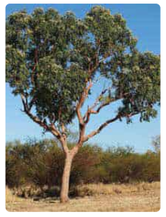

*Banksia grandis*


*Banksia menziesii*


*Brachychiton discolour*


*Casuarina glauca*

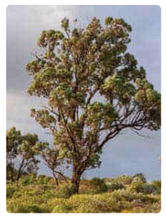

*Casuarina obesa*


*Corymbia calophylla*


*Corymbia ficifolia*


*Corymbia maculata*


*Cupaniopsis anacardioides*


*Eucalyptus gomphocephala*

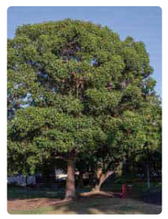

*Eucalyptus lane-poolei*


*Eucalyptus marginata*


*Eucalyptus rudis*


*Eucalyptus todtiana*


*Eucalyptus wandoo*


*Lophostemon confertus*


*Melaleuca quinquenervia*


*Melaleuca rhaphiophylla*


*Melaleuca viminalis*


*Platanus x acerifolia*


*Quercus palustris*

Attachment 12.1.8 Landscape Master Plan

## PLANT SCHEDULE

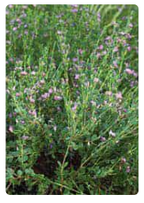
| SPECIES | COMMON NAME |
|---|---|
| SHRUBS | |
| *Adenanthos cunninghamii* | Wollybush |
| *Adenanthos cygnorum* | Common Woollybush |
| *Adenanthos obovatus* | Basket Flower |
| *Beaufortia squarrosa* | Sandplains Brush Myrtle |
| *Boronia crenulata* | Aniseed Boronia |
| *Calothamnus sanguineus* | Silky-leaved Blood Flower |
| *Callitris pyramidalis* | Swamp Cypress |
| *Darwinia citriodora* | Lemon Scented Myrtle |
| *Eremophila glabra* | Tarbush |
| *Grevillea 'Bonfire'* | Grevillea |
| *Hakea lissocarpha* | Hakea lissocarpha |
| *Hypocalymma angustifolium* | White Myrtle |
| *Melaleuca nesophila* | Western Tea Myrtle |
| *Melaleuca radula* | Graceful Honey-myrtle |
| *Verticordia plumosa* | Plumed Featherflower |
| GROUNDCOVERS | |
| *Anigozanthos manglesii* | Kangaroo Paw |
| *Carex appressa* | Tall Sedge |
| *Conostylis candicans* | Grey Cottonheads |
| *Dampiera linearis* | Common Dampiera |
| *Darwinia citriodora 'Seaspray'* | Lemon Scented Myrtle |
| *Dianella revoluta* | Blueberry Lily |
| *Ficinia nodosa* | Knotted Club Rush |
| *Gahnia trifida* | Coast Saw-sedge |
| *Hemiandra pungens* | Snakebush |
| *Kennedia prostrata* | Running Postman |
| *Patersonia occidentalis* | Purple Flag |
| *Poa poiformis* | Coastal Poa |
| *Themeda triandra* | Kangaroo Grass |


*Adenanthos cunninghamii*


*Adenanthos cygnorum*


*Adenanthos obovatus*


*Beaufortia squarrosa*


*Boronia crenulata*


*Calothamnus sanguineus*


*Callitris pyramidalis*


*Darwinia citriodora*

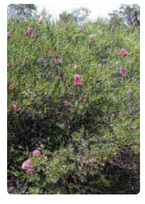

*Eremophila glabra*


*Grevillea 'Bonfire'*


*Hakea lissocarpha*


*Hypocalymma angustifolium*


*Melaleuca nesophila*


*Melaleuca radula*


*Verticordia plumosa*


*Anigozanthos manglesii*


*Carex appressa*


*Conostylis candicans*


*Dampiera linearis*

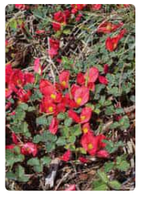

*Darwinia citriodora 'Seaspray'*


*Dianella revoluta*


*Ficinia nodosa*


*Gahnia trifida*


*Hemiandra pungens*


*Kennedia prostrata*


*Patersonia occidentalis*


*Poa poiformis*


*Themeda triandra*

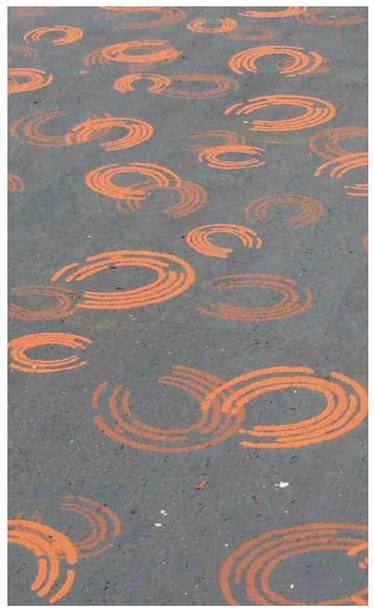
# Materials Palette

















Attachment 12.1.8 Landscape Master Plan

Attachment 12.1.8 Landscape Master Plan



Attachment 12.1.9 Schedule of Modifications

**Schedule of Modifications**

| Document | Modification No. | Section/Page | Change |
|---|---|---|---|
| Structure Plan Report | 1 | Throughout | Refer to the current version of the draft Golden Gateway Local Structure Plan. Council endorsed the updated version at the 25 February 2025 Ordinary Council Meeting. |
| Structure Plan Report | 2 | 2.1 Precinct Objectives Precinct D (Residential & Mixed Use) – Page 18 | Update Point B to "Support small-scale non-residential uses along Grandstand Road that is compatible with nearby residential development." |
| Structure Plan Report | 3 | Table 1 – Indicative Development Staging – Page 19 | Include specific staging details with reference to infrastructure considerations. Include reference to small scale food and beverage uses within Precinct A. |
| Structure Plan Report | 4 | 4.1.2 Land Use Permissibility – Page 20 | Update the wording of the Table so that it lists the restricted uses. It should be noted that a restricted use is the only use or uses that is permitted on a specific portion of land and other uses that would otherwise be permissible in the zone are not permitted. |
| Structure Plan Report | 5 | 4.1.2 Land Use Permissibility – Page 20 | Ensure that 'Restricted Uses' for Precincts D and E listed in Table 2 do not include 'Fast Food Outlet/Lunch Bar', 'Funeral Parlour', 'Garden Centre', 'Pet Day Care' 'Night Club', 'Radio or TV Installation', 'Restricted Premises', 'Service Station', 'Vet Hospital' and 'Showroom'. |
| Structure Plan Report | 6 | 4.1.2 Land Use Permissibility – Page 20 | Update Table 2 with 'Restricted Uses' specifically applicable to Precinct A. These should be 'Nursing Home', 'Multiple Dwelling' and 'Restaurant/Café'. |
| Structure Plan Report | 7 | 4.1.2 Land Use Permissibility – Page 21 | Delete 'Animal Establishment' from Table 3. |
| Structure Plan Report | 8 | 4.1.3 – Road Reserves – Page 21 | Include information about the options for this road reserve i.e remain in private ownership or be ceded. |
| Structure Plan Report | 9 | 4.1.4 – Public Open Space – Page 21 | Include text that:<br>• states public open space for 'Residential' zoned land will need to be considered as part of future applications for subdivision or development approval over the land.<br>• Reflects existing public open space within 300m of the 'Commercial' and 'Mixed Use' zoned land in accordance with liveable neighbourhoods. |
| Structure Plan Report | 10 | 4.2.2 - Development Provisions – Page 22 | Precinct A - Include justification for the proposed plot ratio within the PSP or investigate and apply a more appropriate plot ratio for Precinct A. |
| Structure Plan Report | 11 | 4.2.2 – Development Provisions – Page 22 | Precinct C - Include a 3m wide landscaping requirement for stables fronting Matheson Road and along the eastern boundary of the precinct. |
| Structure Plan Report | 12 | 4.2.2 – Development Provisions – Page 22 | Precinct D - Delete "Non-residential development adjoining land used for residential purposes shall confirm with the setback requirements under Volume 1 of the Residential Design Codes" and replace with a minimum setback requirement of 3m to adjoining residential development and a requirement that this area be landscaped. |
| Structure Plan Report | 13 | 4.2.2 – Development Provisions – Page 23 | Precinct E - Specify that heights above two storeys are only applicable to residential and office development. |
| Structure Plan Report | 14 | 4.2.2 – Development | Precinct E - Include development provisions that require activation of all street frontages. |

Attachment 12.1.9 Schedule of Modifications

| | | | |
|---|---|---|---|
| | | Provisions – Page 23 | |
| Structure Plan Report | 15 | 4.2.2 – Development Provisions – Page 24 | Precinct E - Include development provisions that address the interface to the Belmont Main Drain. |
| Structure Plan Report | 16 | 4.3.3 – Land Assembly – Page 24 | With reference to Precinct E, include additional details regarding land assembly having regard to comments provided by Water Corporation and the Land Use Management team at the Department of Planning Lands and Heritage. |
| Structure Plan Report | 17 | 4.3 – Other Requirements | Include reference to the need for a local planning scheme amendment. |
| Structure Plan Report | 18 | 4.3 – Other Requirements | Include reference to additional documents as follows:<br>• Geotechnical report<br>• Foreshore Management Plan (Applicable to Precincts A and C)<br>• Acoustic Report<br>• Environmental Impact Assessment<br>• Aboriginal Heritage Management Plan |
| Structure Plan Report | 19 | 4.3.2 – Heritage – Page 24 | Include Aboriginal Heritage details consistent with section 2.2.2.1. |
| Structure Plan Report | 20 | 4.3.2 – Heritage – Page 24 | Insert "The Master Plan does not propose any development within the boundaries of the identified Aboriginal heritage places. Notwithstanding, should development occur within Precinct B that intersects the boundary of Site 3753, a DPLH file search should be undertaken to accurately determine the extent of the site, prior to any works commencing and an Aboriginal Heritage Management Plan may be required." |
| Structure Plan Report | 21 | 4.3.2 – Heritage – Page 24 | Insert a requirement that prior to demolition of Lee-Steere House, the site should be photographically recorded, as per the recommendations of the City's Local Heritage Survey. |
| Structure Plan Report | 22 | 4.3.2 – Heritage – Page 24 | Include reference to Matheson Rail Line. |
| Structure Plan Report | 23 | 4.3.7 – Acid Sulphate Soils – Page 25 | Insert "should ASS be encountered within a 'moderate to low' risk area, an ASS Management Plan will be prepared and implemented at subdivision and/or development stage". |
| Structure Plan Report | 24 | 4.3.8 - Environmental Protection & Management – Page 25 | Include a discussion on opportunities for tree retention. |
| Structure Plan Report | 25 | 2.1.4.2 – Acid Sulphate Soils – Page 39 | Replace text with "The Department of Water and Environmental Regulation Acid Sulphate Soils ('ASS') risk mapping indicates that the majority of the site is considered to have a 'high to moderate' risk of ASS occurrence within 3 m of the natural surface. Subdivision and development within this area will be required to undertake an ASS assessment and may require the preparation of an ASS management plan and dewatering plan as a condition of approval. A portion of the site, including parts of Precinct B, Precinct C and the Racecourse are mapped as having a 'moderate to low' risk of ASS occurring within the 3m of the natural surface. Should ASS be encountered within this area, an ASS Management Plan will be prepared and implemented at subdivision and/or development stage." |
| Structure Plan Report | 26 | 2.1.4.3 Site Contamination Page 39 | Update site contamination details with details included in the site investigation report and discuss implications of this for future development. |
| Structure Plan Report | 27 | 2.1.6 – People Movement – Page 45 | Delete "connectivity through central Perth and Bayswater Train Station" and replace with "north to destinations including Bayswater Station, Morley Bus Station/Shopping Centre and south to destinations including Belmont Forum Shopping Centre, Oats Street Station and Curtin University." |

Attachment 12.1.9 Schedule of Modifications

| | | | |
|---|---|---|---|
| Structure Plan Report | 28 | 2.2.2.2.3 – Local Heritage Survey and Heritage List – Page 49 | Describe the Ascot Residential and Stables Area as being partly within the precinct. |
| Structure Plan Report | 29 | 2.3.1.3 – City of Belmont Activity Centre Planning Strategy – Page 52 | Update this section to accurately describe what the Activity Centre Planning Strategy says about retail floorspace having regard to the following:<br><br>*"The WAPC's Land Use and Employment Survey indicates that the Golden Gateway precinct and the southern side of Great Eastern Highway accommodated 4,286sqm of retail floor space in 2016. This is currently comprised of car/highway orientated retail (fast food outlets, service stations, showrooms) rather than serving the daily/weekly needs of the local residential population.*<br><br>*The Retail Needs Assessment prepared to inform this Strategy anticipates a gradual increase in retail floorspace within this area (Golden Gateway precinct and southern side of Great Eastern Highway, between Belgravia Street and Hardey Road) from 4,286 in 2016 and 5,500 in 2031 to approximately 7,000sqm by 2036. This estimate provides for the establishment of a neighbourhood centre to a size of approximately 2,700sqm-3,000sqm within the Golden Gateway precinct.*<br><br>*It is anticipated that redevelopment of the Golden Gateway precinct will occur over an extended period of time. It is also noted that the RNA covered land on the southern side of Great Eastern Highway, outside the Golden Gateway precinct which has capacity to accommodate additional retail floorspace. In light of this, it is considered appropriate for a 1,200sqm local centre to be developed within the Golden Gateway precinct in the first instance, without specific control on floorspace and supporting residential development.*<br><br>*Following further residential development within the Golden Gateway precinct, it may be appropriate for this figure to be reviewed through a Needs Assessment or Net Benefit Test to determine where additional retail floorspace is required . This may also determine whether it is appropriate for the centre to be classified as a neighbourhood centre, using the City's RNA prepared to inform this Strategy as a guide."* |
| Structure Plan Report | 30 | 2.3.3 Draft Golden Gateway Local Structure Plan – Page 56 | Delete "in response to the above and of relevance to the Precinct Structure Plan area, Council resolved to:" and replace with "in response to the above and of relevance to the Precinct Structure Plan area, Council's resolution included:" |
| Structure Plan Report | 31 | 2.3.3 Draft Golden Gateway Local Structure Plan – Page 56 | Delete "Council also noted their desire to see the Ascot Kiln site developed into a park to allow for the wider community to access and interact with the heritage structures" and replace with "Council also resolved to require a Local Development Plan to be prepared for the Ascot Kilns site and for 10% of its area to be designated as Public Open Space." |
| Structure Plan Report | 32 | 2.3.3 Draft Golden Gateway Local Structure Plan – Page 56 | Update text to reflect the current status of the Draft Golden Gateway Local Structure Plan. |
| Structure Plan Report | 33 | 2.3.3 Draft Golden Gateway Local Structure Plan – Page 57 | Replace Figure 6 with an up to date version of the Draft Golden Gateway Local Structure Plan map. |
| Structure Plan Report | 34 | 3.3 – Concept Development – Figure 7 – Page 67 | Outline the Golden Gateway precinct consistent with the draft Golden Gateway Local Structure Plan |
| Structure Plan Report | 35 | 3.3 – Concept Development – Figure 8 – Page 68 | Remove proposed new crossover locations from the plan. |
| Structure Plan Report | 36 | 4.1.1 – City of Belmont – Page 69 | Delete "It is understood that the City of Belmont are supportive of this approach and would look to excise Perth Racing's landholdings from the draft Golden Gateway Structure Plan." |

Attachment 12.1.9 Schedule of Modifications

| | | | |
|---|---|---|---|
| Structure Plan Report | 37 | 4.1.1 – City of Belmont – Page 70 | Delete "the above feedback has been considered and addressed in the preparation of this Structure Plan" and replace with "the above feedback was considered in the preparation of this Structure Plan." |
| Structure Plan Report | 38 | 4.1.4 – Community Engagement | Update this section to address the current version of the Golden Gateway Local Structure Plan. |
| Structure Plan Report | 39 | 5.1 – Vision and Objectives – Page 74 | Update the second objective for Precinct D to reference "that is compatible with surrounding residential development." |
| Structure Plan Report | 40 | 5.2 – Urban Ecology – Page 77 | Under O1.1 Include reference to the Belmont Main Drain. |
| Structure Plan Report | 41 | 5.2 – Urban Ecology – Page 77 | Under O1.3 Include reference to opportunities for tree retention and other sustainability initiatives/criteria. |
| Structure Plan Report | 42 | 5.2.5 – Green Network – Page 81 | With reference to "to support this linkage, treatments along Ascot Racecourse's existing interface to Grandstand Road are relevant and have been addressed in the supporting Landscape Master Plan" include further details on this within this section and within Part One of the Structure Plan. |
| Structure Plan Map | 43 | 5.2.6 – Heritage – Page 82 | Identify the 'Ascot Residential and Stables Area' site as being partly within the Precinct and included on the City's Heritage List as a Category 2 site. |
| Structure Plan Report | 44 | 5.2.6 – Heritage – Page 82 | Include reference to the Matheson Rail Line. |
| Structure Plan Report | 45 | Figure 83 - Page 83 | Identify the Matheson Rail Line and Aboriginal Heritage Sites 3756 and 3753. |
| Structure Plan Report | 46 | 5.3.1 – Northern Gateway – Page 85 | Delete reference to Precinct A being within the walkable catchment of the future Golden Gateway activity centre. |
| Structure Plan Report | 47 | 5.3.4 – Commercial Precinct – Page 86 | Update this section to reflect advice received by the applicant from Water Corporation and the Department of Planning Lands and Heritage summarised by the applicant as follows:<br><br>*"We have received advice from the Department of Lands that indicates the land is capable of accommodating car parking above it (it was previously a road) and thus the intention is that the land will be utilised and leased to provide parking of the future commercial. Water Corporation have confirmed the requirements for building parking above the mains in the old road reserve which can be accommodated."* |
| Structure Plan Report | 48 | Figure 11 – Urban Structure – Page 87 | Update this plan to show walkable catchments and the Belmont Main Drain. |
| Structure Plan Report | 49 | 5.4 – Public Realm – Page 89 | Update O3.3 to talk about the relationship of the land to the Belmont Main Drain. |
| Structure Plan Report | 50 | 5.5 – Movement – Page 97 | Update the Design Element Response for O4.2 to clearly explain how the Precinct Structure Plan promotes sustainable and healthy modes of transport, reducing reliance on the private motor vehicle. |
| Structure Plan Report | 51 | 5.5 – Movement – Page 97 | Update the Design Element Response for O4.3 to clearly explain specific measures proposed by the Precinct Structure Plan. |
| Structure Plan Report | 52 | 5.5.1 – Proposed Vehicle Access & Intersection Upgrades – Page 98 | Include details about the existing gates at the intersection of Raconteur Drive and Grandstand Road and the gates along Hardey Road and Matheson Road. The impact of opening these gates on traffic within the residential and stables area must be detailed within the PSP and Transport Impact Assessment. |
| Structure Plan Report | 53 | 5.5.1 – Proposed Vehicle Access & Intersection Upgrades – Page 98 | Include additional details regarding the appropriateness of the proposed vehicle access arrangements. Particular attention should be paid to the impact on roads within the residential and stables precinct (e.g. Matheson Road and Ennis Place).<br><br>Access from Ennis Place should be referenced within the draft PSP and TIA. There may need to be restrictions on vehicle types and access hours. Additionally, this would require access through Lot 10194 which is owned by the State of WA. Therefore, permission may also be required for access through this lot. These matters shall be referenced in the draft PSP. |

Attachment 12.1.9 Schedule of Modifications

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| Structure Plan Report | 54 | 5.5.2 – Proposed Pedestrian Network – Page 98 | Update this section to include additional information about proposed pedestrian network improvements with a particular focus on enhancing pedestrian safety across Grandstand Road. This section should also be updated to specify who is responsible for delivering this infrastructure. |
| Structure Plan Report | 55 | 5.5.3 – Parking Improvements – Page 99 | Include additional details about the contents of the Travel Demand Plan and a requirement for its preparation within Part One of the Precinct Structure Plan. |
| Structure Plan Report | 56 | 5.5.3 – Parking Improvements – Page 99 | Update this section with a more comprehensive assessment of parking supply/demand. |
| Structure Plan Report | 57 | 5.5.4 – Public Transport – Page 100 | Delete "providing connectivity to the central Perth and Bayswater Train Stations" and replace with "providing connections north to destinations including Bayswater Station, Morley Bus Station/Shopping Centre and south to destinations including Belmont Forum Shopping Centre, Oats Street Station and Curtin University." |
| Structure Plan Report | 58 | Figure 14 – Movement Network – Page 101 | Update this figure to clarify what 4 – Potential left in/left out relates to. |
| Structure Plan Report | 59 | 5.6 – Land Use – Page 103 | Under 05.1 delete "The Precinct Structure Plan facilitates a residential interface to Ascot Waters Estate" and replace with "Except for one 'Mixed Use' lot, the Structure Plan facilitates a residential interface to Ascot Waters". |
| Structure Plan Report | 60 | 5.6.1.4 – Precinct E – Page 105 | Delete reference within this section and throughout the document to bulky goods showrooms. |
| Structure Plan Report | 61 | 5.6.2.1 – Activity Centre Considerations | Update all text references within this section and throughout the document to clarify that the future activity centre is the portion of land bound by Resolution Drive, Grandstand Road and Raconteur Drive noting that the Activity Centre Planning Strategy doesn't designate a specific location for the activity centre within the precinct. |
| Structure Plan Report | 62 | 5.6.2.2 – Retail Needs Assessment – Page 107 | Update this section to accurately describe what the Activity Centre Planning Strategy says about retail floorspace having regard to the following:<br><br>*"The WAPC's Land Use and Employment Survey indicates that the Golden Gateway precinct and the southern side of Great Eastern Highway accommodated 4,286sqm of retail floor space in 2016. This is currently comprised of car/highway orientated retail (fast food outlets, service stations, showrooms) rather than serving the daily/weekly needs of the local residential population.*<br><br>*The Retail Needs Assessment prepared to inform this Strategy anticipates a gradual increase in retail floorspace within this area (Golden Gateway precinct and southern side of Great Eastern Highway, between Belgravia Street and Hardey Road) from 4,286 in 2016 and 5,500 in 2031 to approximately 7,000sqm by 2036. This estimate provides for the establishment of a neighbourhood centre to a size of approximately 2,700sqm-3,000sqm within the Golden Gateway precinct.*<br><br>*It is anticipated that redevelopment of the Golden Gateway precinct will occur over an extended period of time. It is also noted that the RNA covered land on the southern side of Great Eastern Highway, outside the Golden Gateway precinct which has capacity to accommodate additional retail floorspace. In light of this, it is considered appropriate for a 1,200sqm local centre to be developed within the Golden Gateway precinct in the first instance, without specific control on floorspace and supporting residential development.*<br><br>*Following further residential development within the Golden Gateway precinct, it may be appropriate for this figure to be reviewed through a Needs Assessment or Net Benefit Test to determine where additional retail floorspace is required . This may also determine whether it is appropriate for the centre to be classified as a neighbourhood centre, using the City's RNA prepared to inform this Strategy as a guide."* |
| Structure Plan Report | 63 | Figure 16 – Golden Gateway Activity Centre – Page 110 | Update Figure 16 and associated text by removing the access arrows, deleting the "Activity Centre Frame" and clarifying what the "Verge" relates to. |

Attachment 12.1.9 Schedule of Modifications

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| Structure Plan Report | 64 | 5.7.1 – Commercial Precinct – Page 112 | Update building heights referred to for the draft Golden Gateway Local Structure Plan as per the current version of the structure plan. |
| Structure Plan Report | 65 | 5.7.3 – Ascot Waters & Bristile Kilns Interface – Page 114 | Include additional information addressing the interface of the 'Mixed Use' portion of Precinct D to Ascot Waters, as per modification 10. |
| Structure Plan Report | 66 | Figure 17 – Built Form – Page 115 | Identify existing buildings to be retained on the Plan and update building heights to be consistent with the current version of the Golden Gateway Local Structure Plan. |
| Structure Plan Report | 67 | Cross Section A – Resolution Drive – Page 116 | Update the cross section to show building heights consistent with the current version of the Golden Gateway Local Structure Plan. |
| Structure Plan Report | 68 | Throughout | Amend all text references and plans relating to Precinct A to make it clear that no development will occur within the Crown Grant in Trust land. |
| Structure Plan Report | 69 | Throughout | Update all plans to show the Belmont Main Drain as being located within the subject land. |
| Local Water Management Strategy | 70 | Throughout | Remove all references to subsurface drainage beneath road reserves and verges. |
| Environmental Assessment Report | 71 | Throughout | Update the entire report to address and identify trees on the site worthy of protection at development and subdivision stage. |
| Engineering Servicing Report | 72 | Figure 16 – Page 24 | Update Figure 16 to show power lines running through a portion of Lot 100 Raconteur Drive. |
| Transport Impact Assessment | 73 | Transport Impact Assessment - 1.2 – Summary of TIA | Delete "and it is understood that through a later iteration of the concurrent Golden Gateway LSP, the City of Belmont will look to remove the Applicant's landholdings from the GGLSP." |
| Transport Impact Assessment | 74 | 1.3.4 - Recent Movement Network Upgrades in Ascot – Page 2-3 | Remove all information in this section that does not relate to Ascot. |
| Transport Impact Assessment | 75 | 1.3.4 - Recent Movement Network Upgrades in Ascot – Page 2-3 | Delete "Increase in residential development from The Springs development. City is planning to restrict one car bay per unit, allowing all other on street bays to be for visitors and people visiting the commercial shops and local businesses. The City has installed 'P' signs which have encouraged Fly-in/Fly-out (FIFO) workers and ALL DAY motorists heading to the Perth CBD." |
| Transport Impact Assessment | 76 | 3.3 – Parking Impacts – Page 13-15 | Review and restructure this section to provide clarity about current and future parking availability. |
| Transport Impact Assessment | 77 | 6.3 – Traffic Generation | Include trip generation rates for Precinct B and Precinct C. |
| Transport Impact Assessment | 78 | 3.6 – Pedestrian and Cyclist Access – Page 15, 5.4 – Pedestrian and Cyclist Accessibility – Page 17, 7.3 – Pedestrian and Cycle Accessibility – Page 25 | Assess and determine necessary upgrades to pedestrian facilities surrounding Ascot Racecourse and model treatments within SIDRA to evaluate their viability. |
| Transport Impact Assessment | 79 | 3.6 – Pedestrian and Cyclist Access | Detail mechanisms for future delivery of pedestrian facilities. |

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| | | – Page 15, 5.4 – Pedestrian and Cyclist Accessibility – Page 17, 7.3 – Pedestrian and Cycle Accessibility – Page 25 | |
| Transport Impact Assessment | 80 | 7.5 – Analysis of the Transport Network – Page 26 | Delete "It is important to note that at the time of preparing this report, the details of the Golden Gateway Local Structure Plan were still under revision. Whilst every endeavour was made to interrogate the previous traffic modelling and road network proposals in the draft reports and liaise with key project members for updates, the details were still unfinished and presented too many unknowns to be adequately and accurately incorporated into this traffic modelling intersection analyses." |
| Transport Impact Assessment | 81 | Throughout | Update the Transport Impact Assessment to adequately address increased traffic movements within the residential and stables area noting that the report recommends the intersection of Grandstand Road and Raconteur Drive be opened permanently. It is also presumed that the gates along Hardey Road and Matheson Road will also be opened. As well as include reference to traffic calming measures to deter vehicle movements through this area. |
| Transport Impact Assessment | 82 | Throughout | Update modelling and details within the report to reflect the latest version of the Golden Gateway Local Structure Plan. |
| Retail Assessment (Net Benefit Test) | 83 | 7 – Net Benefit Test – Page 35 | Include clear answers to the questions raised within Section 2.1 within the conclusions of the report. |
| Retail Assessment (Net Benefit Test) | 84 | 7.7 – Strategic Alignment – Page 38 | Delete "the proposed local centre activity is consistent with the City of Belmont's Activity Centre Plan Strategy" and include further commentary about why the proposal is not consistent with what the City's Activity Centre Planning Strategy says about retail floor area and incremental expansion. |
| Retail Assessment (Net Benefit Test) | 85 | Throughout | Include additional justification why the activity centre will be sustainable from 2026 and engage with what the Activity Centre Planning Strategy says about incremental expansion. |
| Retail Assessment (Net Benefit Test) | 86 | Throughout | Remove reference to Bulky Goods Showrooms. |

Attachment 12.1.10 Schedule of Submissions

**Schedule of Submissions**

| No. | Submitter | Summary of Submission | Officer Comment |
|---|---|---|---|
| 1 | Public Submitter | **Raises concerns**<br><br>States that the area proposed to be used for stables is crucial for the endangered black cockatoos survival in the urban environment. Is concerned that there has been too much loss of habitat.<br><br>States that it would be incredible if another option is found. | Refer to Environment section of the report. |
| 2 | Public Submitter | **Raises concerns**<br><br>States that the natural food source for red and Baudin black cockatoos is diminishing on the Swan Coastal Plain. Concerned that these species are being driven to the point of extinction as suburbia encroaches and destroys their remaining feeding grounds.<br><br>Highlights being a volunteer at Karrakin Black Cockatoo Conservation Centre located in Martin and sees firsthand the results of the loss of their habitat and food source.<br><br>Estimates that the black cockatoo will be extinct within the next fifty years and states this is not the legacy we should be leaving for our future generations.<br><br>Asks the City to reconsider the plans. | Refer to Environment section of the report. |
| 3 | Public Submitter | **Supports subject to modifications and raises concerns**<br><br>Considers there is currently chaos along Grandstand Road whenever there is an event at the Racecourse. Notes that cars are banked up waiting for access, pedestrians crossing haphazardly, and through traffic at a standstill.<br><br>Notes that no part of the precinct area appears to be designated for vehicle parking. Considers that Precinct B, which currently contains extensive gardens and small entertainment buildings, as well as parking, is under-utilised. Suggests that the City should require a greater part of that area to be used for parking, with Raconteur Drive continuing as the southern feeder road to divert traffic off Grandstand Road and Resolution Drive to the parking entry, with enhanced turn lanes.<br><br>Considers that access from the north should be via a feeder road off Grandstand Road before the roundabout, with the gate at the roundabout closed. If this is not feasible due to the steep slope, suggests preventing a right turn from the south at the roundabout.<br><br>To improve pedestrian safety across Grandstand Road, suggests installing pedestrian crossing lights (or other control measures) at each end of the area near bus stops, with railings along the road to prevent crossing at other points.<br><br>Supports using part of the land in Precinct C for stabling and prefers this to be the only area in Belmont permitted for horse stabling. Following the development, proposes that the 'enclave' of racing stables between Matheson Road and Great Eastern Highway be discontinued and the land rezoned to make better use of the large blocks. | Refer to Movement section of the report.<br><br>The draft PSP includes details of parking availability and access. As detailed within the Movement section of the report, a modification is proposed that clarity around the parking calculations is provided within the draft PSP and Transport Impact Assessment.<br><br>The existing arrangement at the roundabout provides for safe access/egress from all directions. A separate intersection is not considered necessary or appropriate.<br><br>Refer to Movement Section of the report.<br><br>Noted. The future zoning and land use permissibility of properties within the residential and stables area will be further considered through the preparation of a new local planning scheme. |

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| | | Criticises the proposal for elderly housing in Precinct A, noting that the area near the river would leave residents exposed to mosquitoes, event noise, and traffic, while being outside walking distance to shops. | These matters can be mitigated and where relevant will be further considered at development application stage. |
| 4 | Public Submitter | **Raises concerns**<br><br>Notes being deeply concerned and considers that the Ascot Racecourse Precinct Structure Plan will destroy crucial habitat and food sources for the endangered Black Cockatoo. Notes that this area currently provides many hollows used for nesting, as well as an important food source for this endangered species.<br><br>Observes that these birds are struggling with so much of their habitat being cleared, pushing them to the brink of extinction. Emphasises that, as a community, it is essential to support these birds so that future generations can also experience these majestic birds in the wild. | Refer to Environment section of the report. |
| 5 | Public Submitter | **Raises concerns**<br><br>States that the clearing of remaining green space around the racecourse for stables and other structures in areas C and E on the map will remove vital tree canopy and green space.<br><br>Notes that these established trees are essential for native species, including the endangered Carnaby's Black Cockatoos, as they provide resting, nesting, and food sources. Emphasises the importance of preserving a green corridor to allow wildlife to traverse the urban landscape, with established trees being crucial for nesting. Considers that offsetting tree clearing by replanting does not account for the time required for trees to mature enough to serve as food sources or provide nesting hollows.<br><br>States that replacing green space with more concrete structures will increase heat in the area. | Refer to Environment section of the report.<br><br>Noted. |
| 6 | Public Submitter | **Raises concerns**<br><br>Strongly opposes the plan of clearing critical habitat. | Refer to Environment section of the report. |
| 7 | Public Submitter | **Raises concerns**<br><br>States that, as a racing patron with an interest in the welfare of Carnaby’s Cockatoos, there is concern about the increasing pressure on these birds due to land clearing.<br><br>Notes that the area proposed for development serves as an important remnant native stopping point for Carnabys, where they feed and water, and that destroying this area will negatively impact their survival.<br><br>Emphasises that councils have a responsibility to conservation and must uphold this duty by resisting development pressures. Suggests that there are other suitable areas available for the proposed development. | Refer to Environment section of the report. |

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| 8 | Public Submitter | **Raises concerns**<br><br>States that the City of Belmont must not clear 1.27 hectares of Black Cockatoo habitat.<br><br>Emphasises that these birds are endangered and currently face starvation due to habitat destruction. Notes that, in addition to this issue, the community—including non-human species—faces challenges from climate change, the heat island effect, and other ecological impacts. Considers the current structure plan to reflect corporate and LGA irresponsibility. Asserts that this habitat must be preserved to protect the City's reputation. | The Precinct Structure Plan is not the City of Belmont's plan.<br><br>Refer to Environment section of the report. |
| 9 | Public Submitter | **Raises concerns**<br><br>States that there are vital areas frequently visited by Black Cockatoos for foraging, and that these areas are critical for their survival. Requests that these areas be left untouched. | Refer to Environment section of the report. |
| 10 | Public Submitter | **Raises concerns**<br><br>States that the plans should be amended to prevent the clearing of mature trees in areas designated for horse stables. Notes that these trees provide valuable habitat for endangered Carnaby's Cockatoos and other wildlife. Highlights that Belmont has a limited tree canopy and expresses disappointment that the development proposal plans to destroy mature trees instead of valuing and incorporating them into the design. | Refer to Environment section of the report. |
| 11 | Public Submitter | **Supports**<br><br>Happy with the plan proposed. | Noted |
| 12 | Public Submitter | **Raises concerns**<br><br>States that horse racing is diminishing as an industry as the public becomes more aware of animal cruelty. Considers that demolishing pristine habitat for threatened species, such as Black Cockatoos, is unconscionable, as is reducing canopy that is already under threat from climate change. Requests that this destruction be halted. | Refer to Environment section of the report. |
| 13 | Public Submitter | **Raises concerns**<br><br>States that cockatoo habitat and food sources should not be destroyed. | Refer to Environment section of the report. |
| 14 | Public Submitter | **Raises concerns**<br><br>States that vegetation and trees supporting endangered Black Cockatoos should not be cleared. | Refer to Environment section of the report. |
| 15 | Public Submitter | **Raises concerns**<br><br>States that Black Cockatoo habitat should not be destroyed, as there is so little left for them, and clearing it will hasten their demise. Urges developers to act responsibly and care for native wildlife. | Refer to Environment section of the report. |
| 16 | Public Submitter | **Raises concerns** | |

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| | | Understands that the development will impact the environment and natural habitat for local wildlife. Opposes the decision and hopes an alternative solution to the development can be found. | Refer to Environment section of the report. |
| 17 | Public Submitter | **Raises concerns**<br><br>States that they drive through the precinct most days and do not support horse and dog racing, as they believe it promotes gambling, excessive drinking, and provides opportunities for organised crime. Criticises the claim that animal welfare is a priority, asserting that making money is the true focus.<br><br>Expresses strong opposition to the proposed development, noting that it threatens critical wildlife corridors that support native species like Black Cockatoos. States frustration with the proposal and warns that, when racing is eventually recognised as unethical, the city will suffer from the loss of trees and wildlife, holding the government and councils responsible. | Noted.<br><br>Refer to Environment section of the report. |
| 18 | Public Submitter | **Raises concerns**<br><br>Opposes the proposal to clear excess area for Ascot stables, as vegetation for the Carnaby's Cockatoos is not only vital but critical. Requests research into recent findings regarding the lack of food for Cockatoos due to the destruction of their native habitats and food sources. Appeals to consider the health and well-being of the Earth and urges looking beyond financial interests to recognise what is truly important. | Refer to Environment section of the report. |
| 19 | Public Submitter | **Raises concerns**<br><br>Concerned about the clearing of 1.27 hectares of Cockatoo foraging and feeding habitat, as the birds are now at risk of starving. Urges that no further clearing take place and requests that an alternative solution be found. | Refer to Environment section of the report. |
| 20 | Public Submitter | **Raises concerns**<br><br>States being stunned that endangered Cockatoo habitat could be destroyed for the expansion of horse racing facilities. Highlights the climate crisis and WA's poor record on habitat destruction, expressing disbelief that this proposal is even being considered. Urges that the woodland and its animals be left alone, noting that their world is shrinking quickly and extinction is a very real threat. Calls for taking a stand against this environmental travesty. | Refer to Environment section of the report. |
| 21 | Public Submitter | **Raises concerns**<br><br>States that any development which destroys Black Cockatoo habitat and food sources is environmentally irresponsible. Emphasises the need to support these birds for their survival, noting that every area on the river is important. Strongly disagrees with the development. | Refer to Environment section of the report. |
| 22 | Public Submitter | **Raises concerns**<br><br>States opposition to the clearing of Black Cockatoo habitat, highlighting that the birds are starving and that all existing bushland must be preserved to prevent their extinction. | Refer to Environment section of the report. |
| 23 | Public Submitter | **Raises concerns**<br><br>States that mature, established trees should not be cleared. | Refer to Environment section of the report. |

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| 24 | Public Submitter | **Raises concerns**<br><br>States that the area proposed for clearance is a vital source of food and shelter for various Australian birds, fauna, and flora. Notes that the area has been extensively developed, impacting native plants, birds, and fauna.<br><br>Highlights the suffering of the endangered and fragile Black Cockatoo population due to land clearing and building, with green corridors disappearing. Points out that the extreme summer last year led to the death of many adult shrubs and trees, further limiting nesting and feeding options. Expresses concern over the increasing number of sick and injured birds being cared for at Perth Zoo, noting that they are literally starving.<br><br>Emphasises that the Black Cockatoos cannot relocate, be driven to food sources, or simply leave for other areas, as all regions with these birds are under pressure from land clearance. Notes that breeding pair numbers are down this year due to hunger and that the birds are eating non-nutritional items like bottlebrush shoots. Requests reconsideration of the development, arguing that horses do not depend on nature and bushland to survive. Urges careful thought on the decision, warning that such action could lead to regret in 30 years, as the land and resources cannot be replaced. | Refer to Environment section of the report. |
| 25 | Public Submitter | **Raises concerns**<br><br>States that essential habitat for endangered Carnaby's Black-Cockatoos should be protected and prioritised over racing developments. | Refer to Environment section of the report. |
| 26 | Public Submitter | **Raises concerns**<br><br>States that horse racing is a business and should not be allowed to destroy native vegetation surrounding Ascot Racecourse to enable a private entity to profit further.<br><br>Requests that this application be refused permission. Highlights that Black Cockatoos depend on a dwindling food source and are federally protected, though this protection seems to be ignored. Suggests that this and similar applications should be rejected. | Refer to Environment section of the report. |
| 27 | Public Submitter | **Raises concerns**<br><br>States that for the best long-term community outcomes and a sustainable future, the total environmental impact must be considered. Urges consideration of the ongoing impacts of native tree canopy removal for short-term financial gain. Suggests that any activity requiring gambling as its business model should offset its negative community impact. | Refer to Environment section of the report. |
| 28 | Public Submitter | **Raises concerns**<br><br>States a strong request to reconsider the plans to destroy this precious habitat, emphasising that once it's gone, it cannot be replaced. Highlights that it is the responsibility of all Western Australians to protect these areas, not destroy them for commercial gain. | Refer to Environment section of the report. |
| 29 | Public Submitter | **Supports subject to modifications**<br><br>States that it is great to see a plan in place for the suburb, noting that Ascot is a good location close to the City and river, but is underused and disconnected from the river. | Noted. The Golden Gateway Local Structure and Draft Ascot Racecourse Precinct Structure Plan propose to apply zones to land to facilitate the development of shops, cafes and restaurants. |

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| | | Observes that despite its proximity to the river, the area lacks a strong lifestyle offering, with no cafes or shops within walking distance. Suggests the addition of a coffee shop, retail shops, or a small supermarket, such as an IGA, nearby. | |
| 30 | Public Submitter | **Raises concerns**<br><br>States opposition to the development, as it will clear over 700 hectares of prime foraging land for the Black Cockatoo. Highlights that these birds are facing severe food shortages due to widespread land clearing for developments, with their numbers now at critically low levels and extinction being a significant threat. | Refer to Environment section of the report. |
| 31 | Public Submitter | **Raises concerns**<br><br>States that the parcel of land should not be allowed to be cleared, as Carnaby's and Red-Tailed Cockatoos are desperate for food and this area provides a vital food source. Urges the need to keep this habitat and vegetation safe for the birds and their future, requesting that no land clearance take place. | Refer to Environment section of the report. |
| 32 | Public Submitter | **Raises concerns**<br><br>States objection to the proposed clearing of 1.27 hectares of Black Cockatoo foraging habitat for stables in Ascot. Notes that the population of Cockatoos has already declined due to habitat degradation and that these endangered birds are facing imminent starvation because of a decline in food resources. Highlights that the proposed development would worsen the current crisis. | Refer to Environment section of the report. |
| 33 | Public Submitter | **Raises concerns**<br><br>States that the clearing of feeding and foraging areas for the threatened Black Cockatoo should not be allowed, particularly for the creation of new stables. Highlights that these birds are threatened with extinction due to the lack of feeding areas, especially along the river. | Refer to Environment section of the report. |
| 34 | Public Submitter | **Raises concerns**<br><br>States that the expansion would result in the removal of over 1 hectare of bushland used by endangered Cockatoos for food. Highlights the struggle these birds are already facing, referencing Perth Zoo's reports on the increasing number of starving Cockatoos being cared for. Questions the need for expansion, noting that racing is not becoming more popular, and argues against encroaching on dwindling bush reserves. States opposition to the proposal. | Refer to Environment section of the report. |
| 35 | Public Submitter | **Supports**<br><br>States that the plan has been well thought out by Perth Racing and serves the best interests of racing in WA and the City of Belmont. Considers the Plan will provide a safer environment for horses and staff, and offer an opportunity for new trainers to use the best facilities in WA, which is currently limited by the availability of houses and stables in Ascot.<br><br>Considers that the plan may also allow Council to potentially rezone parts of Ascot for more housing, which could increase rates and benefit the City. Expresses full support for the plan from Perth Racing, considering it a great initiative. | Noted.<br><br>The future zoning and density of properties within the residential and stables area will be further considered through the preparation of a new local planning scheme. |

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| 36 | Public Submitter | **Raises concerns**<br><br>States that the racing industry represents only a small portion of the community. Considers that clearing vital Cockatoo foraging habitat will contribute to the State's legacy of extinctions and exacerbate the heat island effect in the local area. | Refer to Environment section of the report. |
| 37 | Public Submitter | **Raises concerns**<br><br>States concern about the clearing of trees, particularly those used by Carnaby's and Black Cockatoos. Emphasises the importance of preserving tree canopy and building around existing trees, as they hold significant value for biodiversity and are crucial for the life and health of the Black Cockatoo population. | Refer to Environment section of the report. |
| 38 | Public Submitter | **Raises concerns**<br><br>States strong opposition to the removal of 1.27 hectares of vegetation used as a food source for Black Cockatoos and other fauna, particularly for the creation of a stable that is not needed in the area. Argues that remnant bushland should be preserved, as Black Cockatoos are in crisis due to the loss of their food sources from development. | Refer to Environment section of the report. |
| 39 | Public Submitter | **Raises concerns**<br><br>States concerns about turning Precinct E into commercial and retail space with parking, which would likely be used by commercial operations instead of the racecourse overflow, potentially pushing racecourse patrons into nearby residential areas.<br><br>Highlights that the existing Golden Gateway activity centre is underutilised, questioning the need for further commercial and retail expansion.<br><br>Raises concerns about the lack of accommodation for safe taxi and Uber pickups near the racecourse, which currently poses safety risks due to drunken pedestrians.<br><br>Notes that the plan does not address traffic disruptions for events, particularly for users of Garratt Road Bridge.<br><br>Suggests that the parkland with a playground needs adjustment to improve walking connectivity to the surrounding residential areas.<br><br>Points out that the proposed retirement apartments may not have enough parking for the number of units and questions whether the demand for an industry-specific retirement living facility has been established.<br><br>Expresses concerns about the proximity of residential areas to flood-prone zones and suggests Precinct E could be a better location for development, provided it includes sufficient parking and improves connectivity to surrounding areas and racecourse facilities. | Refer to Movement section of the report.<br><br>There is currently no local centre within the Golden Gateway precinct. The City's Activity Centre Planning Strategy and Golden Gateway Local Structure Plan identify a future local centre within the area.<br><br>The Transport Impact Assessment recommends the implementation of a Travel Demand Plan which could identify appropriate pickup or set down areas for taxis and ubers.<br><br>Refer to Movement section of the report.<br><br>Pedestrian crossing points are addressed within the Movement section of the report.<br><br>The draft Precinct Structure Plan requires parking to be provided in accordance with Volume 2 of the R-Codes for residential development. The adequacy of future parking will be further considered through the development application process. While demand is not a relevant planning consideration, Perth Racing have advised that there is a strong demand for racecourse living both nationally and globally.<br><br>The Structure Plan has been referred to the Department of Water and Environmental Regulation (DWER) for comment. DWER has advised that a small portion of Precinct A is located within the floodway and as such any future development would have to comply with floodplain management and meet minimum habitable floor levels. A minimum habitable floor level of 0.5m above the adjacent 1% AEP flood level is recommended to ensure adequate flood protection. The Structure Plan complies with this and requires that all structures are built 0.5m above the flood level. |

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| 40 | Public Submitter | **Raises concerns**<br><br>Concerned about Area D, designated for residential use, and whether the construction and new residential development could impact existing households. Requests further details on the type of residential buildings planned for this area. | The draft Precinct Structure Plan proposes to allow three-storey dwellings within Precinct D which is no higher than existing buildings within Ascot Waters. There are currently no detailed plans for this land. Future development will be assessed in accordance with the draft Precinct Structure Plan and other relevant and applicable planning documents. |
| 41 | Public Submitter | **Supports**<br><br>Supports the forward-thinking idea and considers that each precinct benefits someone. | Noted |
| 42 | Public Submitter | **Supports**<br><br>Considers the plans put forward by Perth Racing and the Belmont Council as a positive step towards prioritising both the safety of horses and the public. States the current situation, with a six-lane highway carrying 55,000 vehicles a day and access to unpredictable 500kg animals, is concerning. The proposed plans are seen as a valuable initiative that will benefit both the racing industry (based in Belmont) and the wider precinct. | Noted. The Structure Plan is a private led Precinct Structure Plan. The City's role is to advertise the document, consider the submissions received and provide a recommendation to the Western Australian Planning Commission. |
| 43 | Public Submitter | **Supports subject to modifications**<br><br>Considers the development plans to be a positive and long-overdue opportunity to revitalise an underutilised asset. Considers the area is in need of improved facilities and community infrastructure.<br><br>Urges Perth Racing to demonstrate the necessary leadership to build for the future and implement required changes to the existing road infrastructure. Retaining the current roundabout is seen as an inadequate compromise. It is suggested to relocate the roundabout connecting Grandstand Road and Resolution Drive closer to the Grandstand, allowing a left turn to Matheson and a direct exit to Resolution Drive, to improve access to Great Eastern Highway. The provision of adequate public parking in Section C would support this change, helping to manage traffic on event days.<br><br>The need for Section E (commercial and retail) is questioned, given the current development along Great Eastern Highway.<br><br>Also suggests rethinking Section D as Residential and Mixed Use to align with State housing goals, potentially allowing for quality high-rise developments with commercial and retail components at the base. | Noted<br><br>Refer to Movement section of the Council report.<br><br>The City's Activity Centre Planning Strategy and Golden Gateway Local Structure Plan support a local centre within the precinct, including Precinct E. The intent is to accommodate small retail shops, cafés, and restaurants, distinct from the existing commercial development along Great Eastern Highway. The centre is considered appropriate within Precinct E as it will also serve future residents of Golden Gateway.<br><br>Land within Precinct D is proposed to be zoned 'Residential' and 'Mixed Use' with a maximum building height of three storeys. Higher rise buildings are proposed within the Golden Gateway precinct due to its separation and distance to lower scale residential development. |
| 44 | Public Submitter | **Supports**<br><br>Highlights being in favour of the plan. | Noted. |
| 45 | Public Submitter | **Raises concerns**<br><br>Opposes the proposed stables area being directly opposite their house. Outlines that stables are currently spread apart, allowing odours and noise to be broken up. | Refer to responses to specific concerns below: |

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| | | Considers that compressing it all into one location is going to directly affect living and property value.<br><br><u>Noise of trainers</u><br>Notes that the noise of trainers early in the morning is already quite noticeable as they are very loud vocally, as well their transport for those who aren't in walking distance.<br><br>Also notes that trainers will be spending more time in one location with greater population instead of one or two trainers here and there, which are broken up by buildings.<br><br><u>Noise of horses</u><br>States that having all these stables so close together is going to dramatically increase the noise of the horses, as more horses together will communicate with each other.<br><br><u>Noise from trucks</u><br>Considers that instead of having deliveries spread out over the suburb, deliveries will be compressed into one area, still receiving the same amount of deliveries.<br><br><u>Acoustics</u><br>States that currently, it's an open area where trainers operate, which helps break up the sound. However, with walls and barriers, noises from the horses in the stables, along with traffic, will reverberate and become amplified.<br><br><u>Odours</u><br>Outlines that currently, odours are spread out over the suburb, which reduces them due to the environment and wind. With all the horses and their waste in one area, the odours will be much more noticeable.<br><br><u>Neighbourhood views</u><br>States that their neighbourhood currently has nice views of the grass all the way down to the river. Having stables will block these views and make them less appealing.<br><br>Mentions that many racetracks around the world have their onsite stables based in the centre of the racetrack, giving more clearance for residents to prevent or reduce the impacts stated above. Questions why this hasn't been considered in the plans, as there is significant unused space in the centre of the track that could be used. | Stables can already be established on the site, and the land has always been able to support more intensive horse-related activities. Notwithstanding, noise has been/will be further considered through the development application process. The acoustic study prepared in support of the recently approved stables development find that any noise associated with the proposed stables development is compliant with the Environmental (Noise) Regulations 1997 with mitigation or operational management measures proposed to address specific use of the development.<br><br>Future stables will need to be managed in accordance with the City's Consolidated Local Law which requires stables to be kept in a clean and sanitary condition and as far as practicable, free from flies, rats, other vectors of disease and offensive odours.<br><br>It should be noted that stables can currently be developed on the subject land irrespective of this structure plan. Notwithstanding, it is not considered that views to the river are a relevant planning consideration.<br><br>The applicant has advised that a tunnel would be required to access the infield and that this would be cost prohibitive (approximately $45 million). The infield is also noted to be required for stormwater retention purposes. |
| 46 | Public Submitter | **Raises concerns**<br><br>Considers any development will directly impact them as they live across the road from Precinct D. Raises major concerns regarding the height of the development, parking, and traffic noise and flow.<br><br>States they can rarely park outside their house due to their neighbours not having enough car parking and taking all the street parking, leaving their visitors with | The maximum height proposed within Precinct D is three storeys which is consistent with the height of buildings within the Ascot Waters Estate.<br><br>Parking requirements for future development within Precinct D will be assessed against the R-Codes and Local Planning Scheme No. 15. |

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| | | nowhere to park. Considers this will only become worse with further development unless the Council insists that as part of the approvals each property has two parking bays, which is still not enough. | Regarding traffic, refer to the Movement section of the report. |
| 47 | Public Submitter | **Raises concerns**<br><br>Raises concerns about the proposed clearing of land near the Swan River, as it includes important foraging space for Black Cockatoos. Considers that at the rate trees and habitat are being cleared in and around Perth, these birds are being driven to extinction. Requests the development be reconsidered. | Refer to Environment section of the report. |
| 48 | Public Submitter | **Raises concerns**<br><br>Understands that the plan involves clearing more precious city bushland to build horse stables. Notes that following last summer's loss of many food and habitat trees, the endangered and rapidly diminishing populations of Carnaby's and Red-tailed Black Cockatoos are now starving. Urges that the bushland along the Swan River be preserved. Highlights that it is well-established that the rapid clearing of bushland is threatening the natural environment. | Refer to Environment section of the report. |
| 49 | Public Submitter | **Raises concerns**<br><br>States section A is in a flood plain and understands that property on Bayswater side has been resumed because of the inability to build on such an area. Questions why an exemption applies here. | The Structure Plan has been referred to the Department of Water and Environmental Regulation (DWER) for comment. DWER has advised that a small portion of Precinct A is located within the floodway and as such any future development would have to comply with floodplain management and meet minimum habitable floor levels. A minimum habitable floor level of 0.5m above the adjacent 1% AEP flood level is recommended to ensure adequate flood protection. The Structure Plan complies with this and requires that all structures are built 0.5m above the flood level. |
| 50 | Public Submitter | **Raises concerns**<br><br>Concerned about the proposal to clear 1.27 hectares of black cockatoo foraging habitat in Ascot for stables. States this area is a crucial part of the Swan River ecosystem, supporting not only endangered black cockatoos but also a range of other wildlife that relies on these green spaces.<br><br>Notes that with their habitats increasingly threatened by urban development, these cockatoos are struggling to find adequate food sources along the river. Considers that clearing their foraging habitat for profit disregards the long-term environmental impacts, particularly for endangered species like the black cockatoo. Believes we need to prioritise conservation and look for alternative solutions that do not further compromise these sensitive ecosystems. | Refer to Environment section of the report. |
| 51 | Public Submitter | **Raises concerns**<br><br>Expresses concerns regarding the proposed clearing of 1.27 hectares of critical foraging habitat for Carnaby Black Cockatoos and Red-tailed Black Cockatoos in Ascot. States these endangered species are already facing significant threats to their survival, and the loss of this vital habitat would further jeopardise their existence.<br><br>Outlines that the Swan River corridor is a crucial refuge for these birds, providing essential food sources and resting sites. Considers removing these trees, we are directly impacting their ability to survive. Notes these majestic creatures are an integral part of our local ecosystem and we have a responsibility to protect them. | Refer to Environment section of the report. |

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| | | Urges the City of Belmont to reconsider this proposal and prioritise the preservation of this valuable habitat. | |
| 52 | Public Submitter | **Supports**<br><br>States that the project is a fantastic initiative, and the new facilities will support a vital industry and provide much needed real estate opportunities covering multiple sectors. | Noted |
| 53 | Public Submitter | **Raises concerns**<br><br>Concerned about the parking for stable staff relating to on course stable and whether the side streets of Kalgoorlie Street, Keymer Street, Leake Street and Aurum Street are going to be parking lots similar to what is currently being experienced in Leake and Aurum Streets.<br><br>Questions if the manure bins for on course stabling will be situated inside the race course. States that the smell of bins would be offensive if not monitored and desired particularly in the hotter months. | This level of detail has been/will be addressed through the development application process. A copy of the Development Assessment Panel minutes for the recently approved stables can be found via the below link:<br><br>Minute - No 65 - City of Belmont - City of South Perth<br><br>This level of detail has been/will be addressed through the development application process. A copy of the Development Assessment Panel minutes for the recently approved stables can be found via the below link:<br><br>Minute - No 65 - City of Belmont - City of South Perth<br><br>Future stables will need to be managed in accordance with the City's Consolidated Local Law which requires stables to be kept in a clean and sanitary condition and as far as practicable, free from flies, rats, other vectors of disease and offensive odours. |
| 54 | Public Submitter | **Raises concerns**<br><br>Raises concerns about increased traffic on Matheson Road and adjacent feeder roads and an increase in noise and movements through the day, evening and night associated with the on-course stabling.<br><br>Questions what the aesthetics of the stables will be.<br><br>Notes having stables and raises concerns about the potential loss of income and loss of value of the property.<br><br>Considers a rezoning to a much higher density for the precinct is the only way stable/property owners will accept on course stabling and changes to Ascot Racecourse. | Refer to Movement section of the Council report.<br><br>This level of detail has been/will be addressed through the development application process. A copy of the Development Assessment Panel minutes for the recently approved stables can be found via the below link:<br><br>Minute - No 65 - City of Belmont - City of South Perth<br><br>Potential loss of income is not a relevant planning consideration. It should be noted that stables can currently be developed without the precinct structure plan.<br><br>Officers will further consider the future planning of this area through the preparation of the City's Local Housing Strategy, Local Planning Strategy and Local Planning Scheme. |
| 55 | Public Submitter | **Supports subject to modifications and raises concerns**<br><br>States that heights within Precinct D need to be height restricted to fit with other properties in Ascot Vale and Ascot Waters. | A maximum building height of three storeys is proposed within Precinct D. This height is considered to integrate well with neighbouring building heights. Further comment about the interface of the 'Mixed Use' portion of Precinct D to Ascot Waters is included within the report.<br><br>Noted |

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| | | Considers a Childcare Centre is a good fit for this location.<br><br>Concerned about how the impact of the increased volume of traffic on Grandstand Road will be managed. States it is already difficult to cross Grandstand Road as a pedestrian or cyclist and difficult to access and leave the roundabout at Waterway Crescent by vehicle.<br><br>States that while the roundabouts on Grandstand Road look great they are becoming increasingly difficult to enter and exit from Ascot Waters. Believes they need to be fitted with traffic lights. | <br><br>Refer to Movement section of the report.<br><br>Traffic lights were previously considered at the intersection of Resolution Drive, Stoneham Street and Grandstand Road. These were not supported by Main Roads Western Australia due to the proximity to the Stoneham Street and Great Eastern Highway intersection. |
| 56 | Public Submitter | **Raises concerns**<br><br>Concerned that the Structure Plan would no longer allow pedestrians or cyclists to walk along the river at the point where the racecourse intends to increase their boundary line. States that it appears there will no longer be pedestrian or cyclist access or footpaths along the river edge.<br><br>Requests Council not support the proposal. | <br><br>There is no change proposed to the lot boundary or pedestrian and cyclist infrastructure in this location.<br><br>Noted. |
| 57 | Public Submitter | **Supports and raises questions**<br><br>States that generally the plan is excellent.<br><br>Wishes to know more about the development plans for Precinct D as this area is opposite the submitters home. In particular wishes to know:<br>• Maximum height of dwellings – will they be 3 storeys?<br>• Will there be adequate parking particularly street parking?<br>• Will the setback from Northerly Avenue contain landscaping including trees?<br>• How many dwellings are proposed?<br>• What plans exist for the Kilns land e.g. public parklands? | <br><br>Noted<br><br><br>A maximum building height of three storeys is proposed for Precinct D.<br><br>Parking will need to be provided on-site in accordance with the R-Codes and the parking standards included in the Structure Plan.<br><br>Landscaping of private residential development sites will need to comply with the R-Codes. A modification to the draft Structure Plan is proposed to include a provision requiring landscaping adjacent to Northerly Avenue within the 'Mixed Use' zoned portion of the lot.<br><br>The structure plan applies an R60 density code to the area. While the exact number of dwellings will be subject to a subsequent development application and/or subdivision application, the indicative plan prepared by Perth Racing identifies 41 lots.<br><br>The Ascot Kilns land is owned by the State and is not subject to this structure plan. The draft Golden Gateway Local Structure Plan identifies this land as subject to a separate planning process and requires the preparation of a local development plan with 10% of this area set aside as public open space. |
| 58 | Public Submitter | **Raises concerns** | |

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| | | Questions when humans will learn that decimating native fauna habitat is not the way? Points out that Carnaby cockatoos are at a dangerously low population and that the proposal will wipe out further habitat. | Refer to Environment section of the report. |
| 59 | Public Submitter | **Raises concerns**<br><br>Does not believe the expansion to the racecourse is beneficial to the residents of the surrounding areas.<br><br>States the destruction of the vital naturals areas that support native animal life and human well-being is the most important thing. States that the destruction of natural areas to support gambling is not how we should be planning our future. | Noted.<br><br>Refer to Environment section of the report. |
| 60 | Public Submitter | **Raises concerns**<br><br>Considers that stabling on the racecourse is an excellent idea but there is inadequate parking for high usage days such as race meetings and public events. Additionally, details on traffic flow are vague.<br><br>Questions if the proposal to build stables will change some of the restrictions on building in the original stables area. Considers that the requirement to allow for stables even if landowners aren't involved in the industry is a nightmare. | Parking for residential and commercial developments within the precinct will need to comply with the Structure Plan requirements and the Residential Design Codes. Regarding parking availability of patrons of the racecourse and traffic, refer to Movement section of the report.<br><br>The Ascot Racecourse Precinct Structure Plan does not propose changes to the use and development of properties within the 'Residential and Stables' zone. Officers will further consider the future planning of this area through the preparation of the City's Local Housing Strategy, Local Planning Strategy and Local Planning Scheme. |
| 61 | Public Submitter | **Raises concerns**<br><br>Has attended a meeting hosted by Perth Racing and raises the following concerns:<br><br>Traffic management on Matheson Road and connecting roads once the oncourse stabling is completed. States that if a licensed venue were to be built, sufficient parking and access arrangements would need to be demonstrated. Mentions that Perth Racing has lost parking bays.<br><br>On race days, the streets connecting to Matheson Road have cars parked on both sides of the streets. Raises safety concerns with this and believes a disaster will happen.<br><br>Mentions that there was talk at the meeting about getting media and politicians involved. Believes this is not necessary if the City of Belmont looks at the impact of the proposed development. | Refer to Movement section of the report.<br><br>Refer to Movement section of the report.<br><br>Submissions will be reviewed and considered by Officers, Council and the Western Australian Planning Commission. The Western Australian Planning Commission will ultimately be responsible for determining the draft Precinct Structure Plan. |
| 62 | Public Submitter | **Raises concerns**<br><br>States that the main concerns is the potential to construct a 'landmark' building as part of a vertical retirement village for retirees of the horse-racing industry. Does not accept it practical for retirees who in the event of an emergency would need to use staircases. Requests that building heights are kept to practical levels for retirees to manage.<br><br>Notes that there is reference to "A site responsive design that integrates the aspirations of Perth Racing with the characteristics of the local area". States that buildings in the area are not 20 storeys high but considerably lower. Mentions that | All buildings will need to comply with the Building Code of Australia, which includes fire safety and accessibility requirements. Suitable emergency evacuation procedures would need to be established to ensures safety for residents.<br><br>Refer to Precinct A section of the report. |

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| | | more housing options for retirees and others should be provided but that the area shouldn't be ruined by building too high.<br><br>Believes landmark buildings are the vision and objective of Council who want to pack more ratepayers into a very small part of its community and hoping that its 'northern gateway' will be the site of some building that will demonstrate Belmont as the City of Opportunity it claims to be.<br><br>States fill may be required to achieve minimum groundwater clearance and that a 20 storey building may become an unsightly blot on an otherwise attractively and to date thoughtfully managed environment the Council can be proud of. | Ratepayer income is not a consideration when assessing planning frameworks.<br><br>Noted. |
| 63 | Public Submitter | **Raises concerns**<br><br>Writes to provide feedback on the proposed Structure Plan, particularly the oncourse stabling adjacent to their property and its implications for residents within the 'Residential and Stables' area.<br><br>Notes that under the current zoning, stables are located within the 'Residential and Stables' are interspersed among residential properties. Considers that the Structure Plan's proposal to consolidate stables into "on-track" stabling introduces several significant concerns for residents whose properties are adjacent to this new development.<br><br>Raises the following concerns:<br><br>1. Odour Management: Considers the relocation and consolidation of a large number of stables directly adjacent to their property significantly heightens the risk of odour issues, particularly during warmer months when stable waste becomes more challenging to manage. Highlights that this would adversely affect the quality of life for them and residents in the immediate vicinity.<br><br>2. Noise Pollution: Outlines that on-track stabling, while operationally necessary for the racecourse, creates noise associated with horses, stable operations, and transport activities. Considers that relocating this activity to an area directly adjacent to residential properties, including theirs, would intensify the level of disruption, particularly during pre-dawn hours when horse training occurs.<br><br>3. Light Pollution: States that pre-dawn stable operations require lighting, which introduces artificial light into an area traditionally residential in nature. This would further disrupt the sleep and well-being of residents living nearby. | Noted<br><br>Noted.<br><br>It should be noted that stables can be constructed on the subject land irrespective of the structure plan. However, Future stables will need to be managed in accordance with the City's Consolidated Local Law which requires stables to be kept in a clean and sanitary condition and as far as practicable, free from flies, rats, other vectors of disease and offensive odours.<br><br>Stables can already be established on the site, and the land has always been able to support more intensive horse-related activities. Notwithstanding, noise has been/will be further considered through the development application process. The acoustic study prepared in support of the recently approved stables development find that any noise associated with the proposed stables development is compliant with the Environmental (Noise) Regulations 1997 with mitigation or operational management measures proposed to address specific use of the development.<br><br>It should be noted that stables can be constructed on the subject land irrespective of the structure plan. However, Lighting has been/will be further considered through the development application process. The recently approved stables development includes a condition requiring a lighting plan to be submitted for approval prior to commencement of works. The plan must show all proposed lighting for the public spaces, landscaped areas, buildings, and carparking areas onsite<br><br>The distribution of stables and future planning of the 'Residential and Stables' area will be further considered by Council through the preparation |

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| | | Urges Council to reconsider the zoning and management of the Residential and Stables area to mitigate these impacts. Specifically, requests:<br><br>1. Reduction of stables Within the Residential Area: To counter the addition of a large number of stables in this location, considers it appropriate to revisit the distribution of stables within the area with an eye toward reducing or removing them entirely. States that this would alleviate existing land use conflict and allow for a more cohesive and sustainable residential community.<br><br>2. Rezoning to support subdivision: Considers that rezoning the area to allow for subdivision would facilitate the gradual removal of stables. States this would reduce the cumulative impacts of the new on-course stabling arrangements while creating opportunities for residential redevelopment.<br><br>Considers the above approach strikes a balance by addressing the operation needs of the racecourse while safeguarding the quality of life for residents in the area. Believes it aligns with broader goals of urban liveability and sustainable development, ensuring that residents are not disproportionately affected by these changes. | of the City's Local Housing Strategy, Local Planning Strategy and new Local Planning Scheme having regard to the amenity and sensitivity of the area. |
| 64 | Public Submitter | **Raises concerns**<br><br>States having lived on Ennis Place for 24 years and opposes the development of the stables complex.<br><br>States that Ennis Place, a cul-de-sac with eight houses, will be the principal access to the complex which means that stable hands, strappers, riders and others will arrive from 4am until about 10am and again in the afternoon for several hours. Mentions that there will be feed truck deliveries, manure collections, horse boxes, trucks and floats using the road continually and that on race days semi trailer trucks, four wheel drives and the like will be loading horses especially when racing is at Kalgoorlie, Belmont Park, Bunbury, Northam and Pinjarra. Notes there will also be return trips from these venues late in the evening.<br><br>Mentions that horses require a lot of care and this will result in 24/7 use of Ennis Place representing major traffic and noise disruptions and a hazard and nuisance for residents, particularly children, the elderly and residents' pets.<br><br>States that Ennis Place is not mentioned in the documentation and that it appears the Turf Club has knowingly and callously disregarded the residents of this road. States residents were not in the loop of the implications of on course stabling with the bulldozing of the back track and the 70 or more mature trees to build three storey high stables for 480 racehorses.<br><br>States they purchased the property because of the magnificent tree line, the tranquillity, the views and openness of the location. Mentions that it now appears the trees will be gone and that they will be confronted by a mass of three storey stables built directly in line of sight just 10 metres from their living room, veranda and bedrooms. States that there was never any mention of this when they bought the property and that the little sandown back track training circuit has been in continuous | Noted<br><br>Access of Ennis Place was considered through the assessment of the recently approved stables complex. A copy of the Development Assessment Panel minutes for the recently approved stables can be found via the below link:<br><br>Minute - No 65 - City of Belmont - City of South Perth<br><br>A modification is proposed to the Transport Impact Assessment to identify the possibility of access from this road.<br><br>Noted.<br><br>It should be noted that stables could always have been developed on the subject land without the structure plan. |

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| | | use for at least 60 years, possibly longer and so it was understood this was a permanent fixture.<br><br>Notes that the City of Bemont has been committed to cultivating a vibrant and sustainable ecosystem and spends tens of thousands of taxpayers dollars on a tree planting program each year. Also notes that City trees located on verges, in parks or reserves are managed by the City of Belmont and that it is an offence to prune, damage or remove any of the City's trees without approval. Questions whether the Trub Club of WA need permission to remove trees. Objectives to this and labels it "environmental vandalism".<br><br>Mentions that CSIRO research scientist Peter Caccetta, was part of a team that mapped canopy cover above three metres using aerial photography who said:<br><br>*"we found that for every increase of 10% tree canopy cover, you get 0.62 degree decrease in land surface temperature."*<br><br>*"Local government authorities with low tree canopy cover tend to have higher land surface temperatures."*<br><br>*"On average they can be up to five degrees hotter in land surface temperature than the suburbs that have greater canopy covers."*<br><br>States the proposed stables complex with the removal of over 70 matures trees, not including the self sown saplings, will make the situation worse and be counter productive to the City of Belmont's initiative to plant more trees. Considers that the loss will significantly impact on neighbourhood character, landscape and wildlife.<br><br>Quotes what the Structure Plan records about vegetation and black cockatoos foraging habitat and considers this should be of concern to Perth Racing and the City of Belmont.<br><br>States it is already established that Belmont and suburbs close to the airport are regularly the hottest in Perth in summer. This is presumably due to the expanse of bitumen and concrete used for runaways and roads.<br><br>Considers that not only will the proposed development devalue their property, but there will be nuisance created by the smells and flies. States that the proposed height of three storeys would block the afternoon sea breeze. Believes their rights are being infringed upon and that their home is sacred and that losing their serene rural outlook to a 450 stable monstrosity is insane in the context. Has made a lifetime commitment to live in the Belmont community and that as a ratepayer they expect far better. States that they are standing up for their rights to not have their lifestyle ruined.<br><br>References the objective of precinct C to mitigate potential land use conflict through appropriate design and management practices, and states that there is a case for mitigation having regard to the above comments.<br><br>Questions how the Structure Plan can say that road reserves will be maintained in their current configuration, when an extension to Ennis Place would require a crossover at the end to connect to the stables. | Refer to Environment section of the Council report.<br><br>It should be noted that stables can be developed on the subject land without the structure plan. As detailed in previous responses to submitter comments, amenity impacts have been considered during the assessment of the recently approved application. If Perth Racing do not act on this approval, amenity impacts will also be considered as part of other applications.<br><br>A modification is proposed to the structure plan for the Transport Impact Assessment to identify the possibility of access from Ennis Place. |

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| | | References "the management of transport noise will ultimately be considered as part of future application to subdivide or develop land within the structure plan area" and points out that the volume of traffic which will use Ennis Place night and day can only be described as unprecedented and very dangerous. | Refer to Movement section of the report. |
| 65 | Public Submitter | **Raises concerns**<br><br>Outlines owning a property adjacent to the area identified as 'Precinct D' and notes that this precinct is proposed to be 'Residential' and 'Mixed Use' and that the 'Mixed Use' portion could be used for a small-scale non residential use fronting Grandstand Road, including but not limited to a 'Child Care Premises.'<br><br>Notes that the area adjacent to Precinct D is currently a residential area with single or 2 storey houses, and considers it ideal to either develop this area only as a residential use area by changing the zoning to 'residential' or to leave its current zoning 'place of public assembly'. States that changing the zoning to 'Mixed Use' carries the risk that this area may be used at a later date for the opening of shops, small offices, retail outlets, showrooms and other uses. Considers this will not be an ideal outcome as the adjoining area is residential and development will increase noise and create more traffic issues.<br><br>Regarding the development of a childcare premises, the submitter states that the demographics of Ascot Waters and neighbouring area shows that its population mostly consists of elderly and retirees not young families who would benefit from the childcare premises. Believes this will result in additional traffic and noise along Grandstand Road as young families from distant areas come to the area for dop off and pick up. States race days will impact young couples as traffic moves very slowly on Grandstand Road on those days.<br><br>Considers Precinct E is a better area for a 'mixed use' zoning instead of 'Precinct D'.<br><br>Notes that Precinct D is proposed to have a height of 3 storeys, could accommodate 40+ houses and traffic movements will occur on Resolution Drive. States that residents of Ascot Waters face traffic issues at the roundabout of Grandstand Road, Resolution Drive and Stoneham Street. Questions if the impact of adding additional households or an emergency evacuation plan has been looked into. States that there are only three exist points for Ascot Waters residents and that in the case of flooding, there may be difficulty for emergency vehicle to reach the area in a timely manner.<br><br>Notes that adjacent to Precinct D is the Ascot Kilns site for which a development plan has not been prepared. States that the City of Belmont should wait to see what development is planned for that land so that there is synergy between it and the entire area stretching from the Ascot Kilns site to Ascot Waters. | Noted<br><br>Refer to Precinct D and Restricted Uses sections of the Report.<br><br>It should be noted that child care premises can currently be proposed under the existing zoning. While the Structure Plan indicates the 'Mixed Use' portion of Precinct D may be developed as a childcare centre, access arrangements for the specific use will be further considered through the development application process. Proponents will be required to provide a Traffic Impact Assessment or Traffic Impact Statement as part of their application and consistent with the City's Local Planning Policy No. 9, will need to submit a traffic safety assessment.<br><br>Refer to Precinct D and Restricted Uses sections of the Report.<br><br>Properties within Ascot Waters were required to have Finished Floor Levels 0.5m above the 1% AEP flood level and so flooding is not anticipated within this precinct. Regarding traffic movements, a Transport Impact Assessment has been prepared in support of the structure plan. The assessment concludes that all intersections into Ascot Waters will have an appropriate level of service.<br><br>A draft Local Development Plan has been prepared by Department of Planning, Lands and Heritage (DPLH). The future planning of this site is ultimately at the discretion of the DPLH. It is not considered necessary for the planning of this site to progress before the Precinct Structure Plan is progressed. |
| 66 | Public Submitter | **Raises concerns**<br><br>Notes being excited to see movement in developing the area and the surrounding precinct. States that Ascot has always been seen as a sleeping giant. Looks forward to see the area built and used to its potential. | Noted. |

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| | | Welcomes the structure plan and looks forward to bringing life and entertainment to the area along with safer on course stabling options. Hopes the structure plan lowers entry constraints to new trainers and boosts the industry, suburb and Council as a whole. | |
| 67 | Public Submitter | **Raises concerns**<br><br>States that despite raising the issue with the City of Belmont on many occasions, traffic in the area is continually ignored. Notes on one occasion, traffic counters were placed on Carbine Street to track traffic but between the Christmas and new years break. Considers this provided inaccurate information about traffic volumes and seemed deliberate to avoid data which would reveal a genuine issue. States that occurred at least 2 years ago and since, Carbine Street and Matheson Road has become a rat race for cars wanting to avoid traffic queues on Great Eastern Highway. States that cars speed down the street which has more than 15 children under 11 years of age as residents, whirl around the bend onto Matheson Road and accelerate past horses who are coming back from their afternoon walk.<br><br>States there have been multiple ducks killed on the road and complaints made but the issue is ignored.<br><br>Considers that any plan to change development in the area cannot reasonably occur until detailed and proper road management consultation and investigation occurs. In their view, Carbine Street should be closed off to traffic entering from Great Eastern Highway, leaving only exiting the street possible at the Great Eastern Highway end. The submitter believes this would stop the rat race and dangerous driving and that perhaps this should occur to all streets between Matheson Road and Great Eastern Highway to prevent the issue being moved up one street.<br><br>Is concerned that mixed use and commercial development at the end of Carbine Street will generate more traffic in the area. Questions whether a horse or child need to be killed before the City will take the matter seriously. Submitter does not understand why feedback from local residents is not being taken seriously.<br><br>States that the area already looks abandoned and poorly maintained. The verges are rarely mowed, there are weeds waist height in the median strips on Matheson Road but nothing is done. Submitter believes it is at odds to develop the area when it is already not being maintained.<br><br>Believes allowing commercial and retail uses on Carbine Street will de-value properties and cause parking chaos. States the street already has one abandoned car which has been there for months and on race days, the street is packed with cars parked. States that in the submitters five years of living in the area, a ranger has never been seen patrolling on race days.<br><br>Considers the whole plan is shortsighted taking into account the current traffic issues and lack of management by the City of Belmont. States increased traffic in the area is the last thing that is needed and if anything occurs, traffic calming measures should be considered, blocking off the entry from Great Eastern Highway, and installing speedhumps and S bends in the road. | Traffic counts along Carbine Street were conducted over a three-day period from 29 December 2020. The counts did not show any abnormal patterns, and it is unlikely that conducting them at a different time would have revealed significant differences.<br><br>A modification is proposed for the draft Precinct Structure Plan and Transport Impact Assessment to be updated to include further details about vehicle movements within the residential and stables area. Regarding the closure of Carbine Street, officers are not supportive at this stage as this would likely result in traffic impacts on other roads within the residential and stables area.<br><br>This matter is not relevant to the precinct structure planning process. The submitter is welcome to further liaise with officers about this.<br><br>Future development proposals will need to comply with the parking requirements of the Structure Plan. Regarding parking on race days, refer to the Movement section of the Council report.<br><br>Refer to Movement section of the report. |

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| | | Deeply concerned about the way the changes will impact their lifestyle and urges better consultation with Carbine Street residents who will be disproportionately affected by the proposal.<br><br>Notes being happy to attend the Civic Centre and speak to representatives of the City about the issues. | The Structure Plan is not a City led plan. The City's role is to advertise the structure plan in accordance with the Planning and Development (Local Planning Schemes) Regulations 2015, consider the submissions and make a recommendation to the Western Australian Planning Commission.<br><br>The submitter is welcome to request a meeting with the City. |
| 68 | Public Submitter | **Raises concerns**<br><br>Notes that the plan proposes the removal of 70 mature trees and many of these trees are used by both Carnaby and Red Tail Cockatoos for feeding and nesting and that section 2.1.4.8 says:<br><br>"The two conservation significant species recorded at the time of survey include one threatened species, being the Forest Red-Tailed Black Cockatoo (Zanda banksia naso) and one Priority 4 species (blue-billed duck (Oxyura australis).<br><br>A total of 1.27ha of Carnaby's Black Cockatoo foraging habitat was recorded on the site, of which 0.35ha comprised primary foraging habitat and 0.92ha of secondary foraging habitat. A total of 0.84ha of Forest Red-Tailed Black Cockatoo foraging habit was recorded on the site, comprising 0.28ha of primary native habitat, 0.56ha of secondary foraging habitat. A total of 32 Black Cockatoo habitat trees were recorded during the survey, of which 29 were located within the subject site. Of the trees located on the site, four (4) trees contained hollows potentially suitable for Black Cockatoo breeding."<br><br>Notes section 5.2.4 indicates that most of these trees will be removed:<br><br>'"Emerge Associates also found that the site contains 1.27ha of Black Cockatoo foraging habitat and 29 habitat trees, of which four (4) trees contained hollows potentially suitable for Black Cockatoo breeding. These areas are primarily located within the eastern and southern portions of Precinct C, with a small area also located in the north-eastern corner of Precinct E. These areas generally conflict with plans for the on-course stabling and the equine welfare centre, however there may be opportunities to retain some limited areas. This will be considered further through detailed design, however in any event, a referral under the EPBC Act may be warranted prior to works being undertaken."<br><br>States that whereas other local authorities are doing everything to conserve and protect cockatoos, this structure plan will remove their habitat with the proviso that more trees will be planted. Asks the City to let the cockatoos know to come back in 50 or 70 years when the trees have reached maturity.<br><br>Considers it is time for Belmont Council to protect endangered species. States that the tree canopy around Belmont has been significantly impacted by the Tonkin Gap project where hundreds of mature trees were removed. | Refer to Environment section of the Council report. |
| 69 | Public Submitter | **Raises concerns**<br><br>States it is striking that the current track will be maintained and presumably used for racing and that all of the area now used for parking during races will be developed and no longer used for parking. | Refer to Movement section of the Council report. |

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| | | Questions how parking issues will be addressed.<br><br>States another issue is the construction and use of stables for 400+ horses and that the support needed for such an endeavour is exceedingly limited. The submitter states that they are not a horse person and don't know how much one eats per day but just 10kg per horse means about three tonne of manure would be produced per week (likely more). States this requires large amounts of feed and "bi-products" moving through the neighbourhood streets daily. States that when the movements of horses is added, it will be devastating for the area, turning it from a relaxed residential area into an industrial zone focused on a critter that is pretty much anachronistic to the current trajectory of Belmont and Perth general.<br><br>Mentions that the area has a very distinctive aroma (especially in the heat of summer). States the massive barns will make this into a daily and all year round noxious neighbourhood enhanced by the reduced tree cover increasing temperatures even more.<br><br>Requests that we move beyond horse racing and see this area redeveloped completely without racing, in a responsible way. | It should be noted that stables can be constructed on the subject land irrespective of the structure plan. However, Future stables will need to be managed in accordance with the City's Consolidated Local Law which requires stables to be kept in a clean and sanitary condition and as far as practicable, free from flies, rats, other vectors of disease and offensive odours. A Waste Management Plan was submitted in support of the development application for the on-course stables.<br><br>Noting that the area is used for horse related activities a level of odour within the area can be expected.<br><br>Perth Racing as a private landowner are able to continue their horse racing activities. Regarding stabling within the broader area, the City of Belmont will further consider the future planning of this area through the scheme review process. |
| 70 | Public Submitter | **Supports**<br><br>Believes it is a great idea. States that the property market is out of control and young and up and coming trainers will be able to stable their horse on course like the other Australian racecourses. | Noted. |
| 71 | Public Submitter | **Supports**<br><br>Submitter provided a purple tick symbol. | Noted. |
| 72 | Public Submitter | **Supports**<br><br>Supports the structure plan and is happy that horse racing activities will remain a part of the suburb. | Noted. |
| 73 | Public Submitter | **Raises concerns**<br><br>States that traffic on the street has already increased and the speed limit is rarely adhered to. Would like to know how shops directly next door would impact traffic, what kind of demographic it would attract and how it would impact the value of the submitters home. | Shops are not proposed along Carbine Street.<br><br>Regarding traffic within the area, refer to the Movement section of the Council report.<br><br>Property values are not a relevant planning consideration. |
| 74 | Public Submitter | **Raises concerns**<br><br>States that changing the zoning of Precinct D will increase traffic which will not be beneficial for Ascot Waters residents. On this basis, does not agree with the proposed plan. | Refer to Movement Section of the Council report. |
| 75 | Public Submitter | **Raises concerns** | |

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| | | Notes that the area next to Ascot Waters accommodates the Ascot Racecourse office in Lee-Steere House, which is designated as Precinct D and proposed to be rezoned to Residential and Mixed Use. States that this proposal raises several concerns that warrant consideration.<br><br>Notes that the area surrounding Precinct D primarily consists of single- and two-storey residential homes. Considers that, given this context, it would be more appropriate to either rezone Precinct D exclusively for residential use or retain its existing designation as a "Place of Public Assembly." States that rezoning the precinct for "Mixed Use" introduces the possibility of developments such as shops, offices, or retail outlets, which would be incompatible with the predominantly residential character of the area. Considers that such developments are likely to result in increased noise and heightened traffic congestion.<br><br>Notes that the current plan includes provisions for a "Child Care Premises" within the proposed mixed-use zone. Highlights that, according to the Australian Bureau of Statistics, the area's average age is 46 years, with only about 4% of the population being under five years old. States that this demographic profile indicates limited local demand for childcare services. Considers that families from outside the area would need to drive in for drop-offs and pick-ups, further increasing traffic congestion and noise, particularly along Grandstand Road. Highlights that such impacts would negatively affect nearby properties, especially on race days when Grandstand Road is completely blocked, exacerbating congestion and delays.<br><br>Notes that the portion of Precinct D proposed to be zoned for residential use, with a three-storey building height, is expected to accommodate approximately 40 houses. Considers that the traffic generated by these households would primarily use Resolution Drive, which already experiences congestion. States that residents of Ascot Waters currently face challenges navigating the roundabout at Grandstand Road, Resolution Drive, and Stoneham Street, and additional households would likely worsen these issues. Highlights that the impact of increased housing on the area's emergency evacuation plans has not been adequately addressed. Notes that the area, located within a 100-year floodplain, has only three exit points, which could hinder timely evacuation or emergency access during flooding.<br><br>The submitter notes that the adjacent Ascot Kilns area lacks a finalised development plan. Considers that the City of Belmont should delay decisions on Precinct D until a cohesive plan is developed for the entire area. States that such an approach would promote synergy between Ascot Waters, Precinct D, and the Ascot Kilns area, ensuring a more harmonious and practical development strategy for the region. | Noted.<br><br>Refer to Precinct D and Restricted Uses sections of the Report.<br><br>It should be noted that child care premises can currently be proposed under the existing zoning.<br><br>While the Structure Plan indicates the 'Mixed Use' portion of Precinct D may be developed as a childcare centre, access arrangements for the specific use will be further considered through the development application process. Proponents will be required to provide a Traffic Impact Assessment or Traffic Impact Statement as part of their application and consistent with the City's Local Planning Policy No. 9, will need to submit a traffic safety assessment.<br><br>Refer to Movement section of the Council report.<br><br>Properties within Ascot Waters were required to have Finished Floor Levels 0.5m above the 1% AEP flood level and so flooding is not anticipated within this precinct.<br><br>A draft Local Development Plan has been prepared by DPLH. The future planning of this site is ultimately at the discretion of the DPLH. It is not considered necessary for the planning of this site to progress before the Precinct Structure Plan is progressed. |
| 76 | Public Submitter | **Raises concerns**<br><br>States that changing the zoning does not align well with the existing character of the area. Notes that Ascot Waters would be the main area affected by the proposed rezoning. Highlights that Ascot Waters is primarily comprised of older or retired residents, with very few families with children.<br><br>The submitter questions the appropriateness of a childcare facility at the location of the old Racecourse offices. Considers that such a facility would encourage increased | Refer to Precinct D and Restricted Uses sections of the Report.<br><br>It should be noted that child care premises can currently be proposed under the existing zoning. |

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| | | traffic in and out of the area as parents drop off and pick up children who do not reside nearby. Questions the suitability of mixed-use zoning, noting that it would bring additional traffic and people to the area.<br><br>The submitter suggests building houses that are consistent with the scale and character of those surrounding the site on Grandstand Road and Tidewater Way. States that high-rise buildings would add another layer of congestion and would be better suited to Great Eastern Highway, where there is more suitable land and access to major bus routes and roadways.<br><br>The submitter highlights that the races across the road already cause congestion, which would become significantly worse on race days under the proposed rezoning. Considers that only normal residential housing would be appropriate for this area. | While the Structure Plan indicates the 'Mixed Use' portion of Precinct D may be developed as a childcare centre, access arrangements for the specific use will be further considered through the development application process. Proponents will be required to provide a Traffic Impact Assessment or Traffic Impact Statement as part of their application and consistent with the City's Local Planning Policy No. 9, will need to submit a traffic safety assessment.<br><br>A maximum building height of three storeys is proposed for Precinct D. It is considered that this height integrates well with existing heights within Ascot Waters.<br><br>Regarding traffic, refer to Movement section of the Council Report. Regarding dwelling typology, a maximum building height of three storeys is proposed. This height is considered to integrate well with the dwelling typology and scale of residential development within Ascot Waters. |
| 77 | Public Submitter | **Raises concerns**<br><br>Hopes the structure plan can stay as residential use only, to keep the natural beauty and quiet of the area. | The appropriateness of zones, density codes and land use permissibility is further detailed for each precinct within the report.<br><br>A modification is proposed to the Structure Plan to address the interface of the 'Mixed Use' portion with residential development within Ascot Waters. |
| 78 | Public Submitter | **Raises concerns**<br><br>Concerned about the planned construction near the neighbourhood, notes that it may disrupt daily life. Highlights the potential for noise, dust, and increased traffic to negatively impact the peaceful environment. Considers that these changes could affect the well-being of residents, including children and the elderly.<br><br>Hopes that the construction team will consider measures to minimise its impact on the community. Emphasises the importance of maintaining a quiet and healthy living space and requests understanding and support in this matter. | A construction management plan will be required to accompany future building applications to ensure construction does not adversely affect health and safety.<br><br>Noted. |
| 79 | Public Submitter | **Raises concerns**<br><br>Notes that the adjacent area is residential and considers that this pocket should remain residential or community space. Highlights that there are sufficient opportunities for business premises along the highway and in the future planned Golden Gate project.<br><br>States that the proposed plans fail to address the impact on traffic and parking, which are already problematic. Highlights that safety issues regarding emergency services access have also not been addressed. | The appropriateness of zones, density codes and land use permissibility is further detailed for each precinct within the report.<br><br>Parking and traffic details are included within the Transport Impact Assessment attached to the structure plan. Further discussion on this document is contained within the Movement section of the Council report. Regarding emergency services, there is no requirement for this to be specifically addressed in the structure plan documentation. |
| 80 | Public Submitter | **Supports subject to modifications and raises concerns** | |

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| | | Notes reviewing the draft Precinct Structure Plan including the applicants Retail Assessment (Net Benefit Test). Is concerned that the draft PSP is inconsistent with key contemporary aspects of the City of Belmont Local Planning Framework and as such has the potential to jeopardise the planning and future development of the Golden Gateway Activity Centre, as well as undermining and disrupting the City's established activity centre hierarchy.<br><br>Supports the intent of the draft PSP and acknowledges that it may facilitate the development of a local centre scale activity centre as per the City's planning framework at the intersection of Grandstand Road and Resolution Drive.<br><br>Requests an amendment to the amount of shop/retail floorspace proposed within the draft PSP to ensure consistency with the City's established planning framework.<br><br>**Background**<br>Understands that the draft PSP has been prepared to guide the future use and development of Perth Racing's landholdings in Ascot, including and surrounding the existing Ascot Racecourse. The PSP applies to Lots 1 (No. 88), 3 (No. 96), 13, 50, and 9002 (Nos. 71), and Lot 452 (No. 70) Grandstand Road, Lot 7005 (No. 71) Matheson Road, and Lots 51 (No. 2) and Lots 51 (No. 2) and 100 (No. 1) Raconteur Drive, Ascot. The PSP area comprises nine (9) lots with a total area 61.3294ha, all of which are owned by Perth Racing, except for one (1) lot which is owned by the WAPC.<br><br>Notes that the Structure Plan designates five (5) precinct areas subject to different objectives and planning requirements:<br><br>• Precinct A (Retirement Living)<br>• Precinct B (Racecourse Administration & Entertainment)<br>• Precinct C (Racecourse & Stabling)<br>• Precinct D (Residential & Mixed Use)<br>• Precinct E (Commercial)<br><br>Notes that Part One – Implementation, Section 4.3.1 Activity Centre of the PSP Report states that:<br><br>*'This Precinct Structure Plan includes a portion of the Golden Gateway Activity Centre (within Precinct E) and is supported by a Net Benefit Test to assess the economic demand and implications for potential retail and commercial development in this area. Refer Appendix 6 – Retail Assessment (Net Benefit Test).*<br><br>*Development within the Golden Gateway Activity Centre shall be in accordance with the provisions of this Precinct Structure Plan and the requirements of State Planning Policy 4.2 – Activity Centres ('SPP 4.2').*<br><br>*Development of Shop/Retail floorspace up to 3,400m² NLA is permitted within the Golden Gateway Activity Centre without requiring further assessment. Any development proposal involving net additional Shop/Retail floorspace above 3,400m² NLA within the Golden Gateway Activity Centre constitutes 'major development' and shall be supported by a further Net Benefit Test prepared in accordance with SPP 4.2'.*<br><br>**Matters for Consideration** | Noted.<br><br>Refer to the Precinct E section of the report. |

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| | | Is of the opinion that shop/retail floorspace allowance within the draft PSP should be amended to comply with the City's current planning framework.<br><br>Notes that the City of Belmont Activity Centre Planning Strategy (ACPS) which was adopted by Council at its meeting on 27 February 2024, identifies a new future local centre with 1,200m$^2$ of retail floor space within the Golden Gateway precinct and that its location will be guided by future detailed planning.<br><br>Understands the updated draft Golden Gateway Local Structure Plan (LSP) which was advertised by the City during October 2024, supports the development of a 1,200m$^2$ local centre within the Golden Gateway precinct, with no specific site designated within the Plan.<br><br>Notes Section 2.3.4.3 of the PSP Report states that, 'SPP 4.2 applies to the Precinct Structure Plan as Precinct E is intended to facilitate the development of an activity centre at the intersection of Grandstand Road and Resolution Drive, forming part of the wider Golden Gateway activity centre. The size and scale of the proposed Golden Gateway activity centre would be akin to a 'Local Centre' or a 'Neighbourhood Centre' under SPP 4.2'.<br><br>Notes that both the City's ACPS and the updated draft Golden Gateway LSP support the development of a 1,200m$^2$ local centre within the Golden Gateway precinct. States it is also clear that neither of these planning documents support the development of a neighbourhood scale activity centre with the proposed extent of shop/retail floorspace being sought in the draft PSP. Believes it is likely that the objective of the increased floorspace is to accommodate a full line supermarket which is a use not contemplated in this location under the City's current planning framework.<br><br>**Conclusion**<br>Based on a review of the draft Ascot Racecourse PSP including the supporting Net Benefit Test, states that it appears the amount of shop/retail floorspace proposed within the PSP area significantly exceeds that specified in the ACPS and recently advertised updated draft Golden Gateway LSP.<br><br>States that both the City's ACPS and updated draft Golden Gateway LSP support development of a new/future local centre with 1,200m$^2$ of retail floor space within the Golden Gateway precinct. Notes that although no specific site has been designated within the LSP, it does mention that the local centre may be located on Western Australian Turf Club land.<br><br>States that despite this, Part One – Implementation, Section 4.3.1 Activity Centre of the draft Ascot Racecourse PSP Report states that, *'Development of Shop/Retail floorspace up to 3,400m$^2$ NLA is permitted within the Golden Gateway Activity Centre without requiring further assessment'.*<br><br>Considers the amount of shop/retail floorspace proposed within the PSP does not comply with and is fundamentally inconsistent with the City's current planning framework, including the Retail Needs Assessment (RNA) prepared to inform the City's ACPS. In this respect, considers the PSP Report is incorrect, as development of shop/retail floorspace up to 3,400m$^2$ NLA is not permitted within the Golden Gateway Activity Centre without requiring further assessment. On this basis, requests an amendment to Part One – Implementation, Section 4.3.1 Activity Centre of the draft | |

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| | | PSP, such that the development of a new/future local centre is limited to 1,200m$^2$ NLA of retail floor space not 3,400m$^2$ NLA. This amendment would ensure that the scale and composition of the future local centre is consistent with the intent of the City's planning framework and does not undermine the City's established activity centre hierarchy. | |
| 81 | Public Submitter | **Neither Supports or raises concerns**<br><br>Notes that the Belmont Men's Shed Inc. is a registered charitable community service organisation serving men in the City of Belmont and surrounding areas. Highlights its range of activities and services benefiting local residents and community groups, leveraging the skills of its members.<br><br>States that the organisation operates under a Board of Management, which oversees governance, ensures safety, and supports its members and visitors. Notes that membership is open to men over the age of 16 and caters to diverse ages, ethnicities, and skills, including woodworking, metalwork, and fostering fellowship.<br><br>Refers to the Australian Men's Shed Association's statement that Men's Sheds deliver programs fostering community spirit, connecting communities, and contributing to inclusivity in Australia. Considers that this ethos is reflected in the Belmont Men's Shed's focus on health, wellbeing, and community engagement.<br><br>Highlights the Shed's health education initiatives, including stroke education, medication advice, exercise programs, falls prevention, and first aid training. Notes that the Shed has received numerous accolades, including the Community Spirit Award at the 31st Belmont & Western Australian Small Business Awards, earning induction into the Hall of Fame for its sustained community contributions.<br><br>States that the Shed's vision aligns with the values of the Men's Shed movement, providing a safe, friendly environment for men to share knowledge, engage in community projects, and connect socially. Emphasises that its diversity of backgrounds and commitment to sustainability, such as recycling and promoting Australian timber, enhances its role in the multicultural community.<br><br>Considers that the proposed Ascot Racecourse Precinct Structure Plan provides an opportunity to integrate a community facility such as the Belmont Men's Shed in Precincts A and E. Suggests that Precinct A, envisioned for retirement living, could benefit from a Shed offering activities like gardening, fellowship, and skills-based projects. Notes that Precinct E, similar to the Shed's current location, could facilitate partnerships with local industries, as seen in their ongoing collaboration with Bunnings and other community initiatives.<br><br>Proposes consultation with the racing community and the City of Belmont to explore opportunities for a shared vision for Precincts A and E, ensuring alignment with the Racecourse's community-focused objectives. Highlights the Shed's extensive work with over 30 local organisations, providing services like park seating, school facilities, and youth programs.<br><br>Concludes that the Belmont Men's Shed Board seeks to engage in discussions regarding the Ascot Racecourse Precinct Structure Plan and considers its involvement as a valuable contribution to the wellbeing of Belmont residents and the broader community. | Noted.<br><br>Noted.<br><br>Noted.<br><br>Noted.<br><br>Noted.<br><br>Noted. This is a private matter that requires discussions with Perth Racing.<br><br>Given the Structure Plan is not a City led project, the Belmont Men's Shed will need to liaise with Perth Racing privately.<br><br>Refer to previous comments. |

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| 82 | Public Submitter | **Raises concerns**<br><br>Strongly objects to the Ascot Racecourse Precinct Structure Plan, specifically in relation to Zone C, due to concerns about the negative impacts on the character and amenity of Ennis Place. Describes Ennis Place as a quiet, no-through road with minimal traffic, providing a peaceful environment with views of the back track and surrounding trees. The location is said to foster a strong sense of community, with a low crime rate, supported by a neighbourhood watch, which ensures a safe and secure atmosphere.<br><br>Raises significant concerns regarding the proposed use of Ennis Place as an access road for Zone C. It states that this would result in increased traffic congestion, involving not only cars and bikes but also trucks, trailers, and service vehicles such as feed trucks and manure removal vehicles. Believes this increase in traffic would be incompatible with the residential nature of the area, resulting in safety risks for children and a loss of security due to the heightened activity and constant comings and goings. Further mentions that the proposed plans would lead to increased noise levels, particularly at all hours, further disrupting the peaceful environment of the area.<br><br>Requests that Ennis Place and the back track remain no-access zones, in order to protect the area's residential character, safety, and environmental values. Considers that the proposed plans would significantly and negatively alter the current peaceful and quiet nature of the area.<br><br>In addition to the concerns about traffic and safety, the submission highlights environmental issues. It is mentioned that the proposed plans include the clearing of trees, which currently provide habitat for birds and contribute to the area's natural character. The submitter states that this would contradict the City of Belmont's focus on tree planting and enhancing urban greenery. Furthermore, concerns are raised about potential increases in rodent activity, mosquitoes, and fly populations as a result of the stabling operations, which would negatively affect the local environment. | Noted.<br><br>It should be noted that stables can be developed on the subject land without the structure plan. As detailed in previous responses to submitter comments, amenity and traffic impacts have been considered during the assessment of the recently approved development application. If Perth Racing do not act on this approval, these impacts will also be considered as part of other applications.<br><br>Access of Ennis Place was considered through the assessment of the recently approved stables complex. A copy of the Development Assessment Panel minutes for the recently approved stables can be found via the below link:<br><br>Minute - No 65 - City of Belmont - City of South Perth<br>A modification is proposed to the Transport Impact Assessment to identify the possibility of access from this road.<br><br>Refer to Environment section of the Council report. |
| 83 | Public Submitter | **Raises concerns**<br><br>Mentions that despite the comprehensive documentation provided for the Ascot Racecourse Precinct Structure Plan, in conjunction with the Golden Gateway developments, all stakeholders, including government agencies, private sector third parties, and developers, should be required to declare any perceived or actual conflicts of interest in the interest of transparency and accountability.<br><br>Emphasises that the primary concern is to protect and preserve the amenity of the property, which was chosen as a 'forever home' almost 24 years ago. Invites others to consider the challenges faced by residents when density increases around infrastructure that was not designed to handle it, such as the difficulties of exiting the | Elected members will be required to declare any interests under the *Local Government Act 1995*.<br><br>Refer to Movement section of the Council report. |

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| | | Resolution Drive roundabout at peak times or navigating traffic after the realignment of Grandstand Road.<br><br>Expresses opposition to the introduction of mixed-use, commercial, and retail developments within Areas D and E, citing concerns about noise, waste, infrastructure load, and traffic, which would negatively affect nearby residential properties. Believes that if Area D is approved for residential use, it should remain consistent with the zoning of houses on Tidewater Way.<br><br>Opposes the proposed high-rise (>5 storey) retirement village in Area A, due to concerns over its impact on traffic, particularly on the Garratt Road Bridge, and its effect on local infrastructure.<br><br>Questions whether an Emergency Management Plan has been developed to address potential catastrophic events such as a Swan River storm surge and flooding, given the area's location on a 100-year floodplain. Requests assurance that the anticipated density, including humans and horses, can exit safely from the current locations within Ascot Waters and Ascot Vale Estates.<br><br>Requests clarification on any implications for nearby residents due to asbestos removal from structures within the Ascot Racecourse development.<br><br>States they are not opposed to development but have significant concerns regarding the potential loss of amenity, such as increased rates, decreased quality of life, and exacerbated issues with noise, traffic, and parking. Believes the current plans do not adequately address broader concerns related to labour and construction challenges, the lack of affordable housing, and the reliability of essential services.<br><br>Mentions that, as one of the many affected residents, they wish to retain the amenity that existed when they first chose to live in Ascot in 2001. Calls for the area's character to be preserved, under the hashtag #SaveOurSky. | Amenity impacts such as noise and waste will be further considered as part of future development applications. Regarding residential development within Precinct D, a maximum height of three storeys is proposed by the structure plan which is considered to integrate well with neighbouring development in Ascot Waters. The appropriateness of zones, density codes and land use permissibility is further detailed for each precinct within the report.<br><br>For details relating to traffic, refer to the Movement section of the report.<br><br>There is no requirement for an emergency management plan to be developed. Regarding flooding, the Structure Plan has been referred to the Department of Water and Environmental Regulation (DWER) for comment. DWER has advised that a small portion of Precinct A is located within the floodway and as such any future development would have to comply with floodplain management and meet minimum habitable floor levels. A minimum habitable floor level of 0.5m above the adjacent 1% AEP flood level is recommended to ensure adequate flood protection. The Structure Plan complies with this and requires that all structures are built 0.5m above the flood level.<br><br>Asbestos products will be required to be transported in accordance with Department of Health requirements.<br><br>Amenity considerations will be further considered through the development application process.<br><br>It is unclear why rates will increase.<br><br>Traffic and Parking details are further discussed within the Movement section of the Council report.<br><br>There is no requirement for this Structure Plan to address affordable housing and labour and construction challenges.<br><br>The Structure Plan adequately details the availability of services for future development.<br><br>Noted. |
| 84 | Public Submitter | **Raises concerns** | |

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| | | **Commercial Zones** – Questions why commercial and retail developments are proposed adjacent to the racecourse in the current plans, as these areas would be better suited for mixed-use developments, particularly apartments.<br><br>Highlights the aim of placing commercial and retail development along the GEH corridor in the area structure plan and suggests that a retail supermarket in Area AC3, as shown in Plan 1 or Figure 8 (Pages 68, areas 11, 12, and 13), would be better located as part of a residential development closer to the GEH corridor. Believes this would align with the intended retail and commercial use along the GEH corridor, as seen in examples such as Belmont Racecourse and Claremont Oval.<br><br>**Parking** – Inquires about parking provisions for race patrons, particularly whether multistorey parking facilities will be required. Notes that the current overflow car parks are heavily used on significant race days and seeks clarification on where parking will be located for retail developments.<br><br>**Traffic Flows** – Raises concerns about the proposed traffic flow in Figure 16, Page 110, which shows a right turn across traffic into Raconteur Drive, which would be problematic, especially on race days. Also questions the right turn indicated into Daly Street across traffic, suggesting this may be a drawing error as both Daly and Hargreaves Streets should be blocked for right-hand turning traffic. | A 'Mixed Use' zoning is proposed to be applied to several landholdings which would facilitate mixed use development outcomes. The 'Commercial' zoning is proposed to facilitate the development of a future local centre. Further commentary about the appropriateness of each zone is included within the report under the precinct subheadings.<br><br>Land fragmentation closer to Great Eastern Highway presents a challenge to develop a local centre in that location. Land availability within Precinct E provides an opportunity for a local centre to establish that will serve future residential development within the Golden Gateway precinct.<br><br>Refer to Movement section of the Council report.<br><br>Refer to Movement section of the Council report. |
| 85 | Public Submitter | **Raises concerns**<br><br>Concerned about the potential effects of the proposal on the community, particularly when combined with the Golden Gateway Local Structure Plan. Believes this could lead to overcrowding, traffic chaos, and congestion in an area that is already struggling.<br><br>Raises additional concerns regarding the lack of infrastructure, public transport, and parking, with the belief that these issues will be exacerbated on major racing days.<br><br>Suggests a solution involving the sale of the racetrack and the transfer of all racing to Belmont Park. This could allow for easier management of infrastructure, with funds from the sale potentially benefiting the broader Belmont community. | A modification is proposed that the Transport Impact Assessment be updated with details of traffic within the Golden Gateway precinct. Refer to Movement section of the report for further detail.<br><br>Regarding infrastructure, an Engineering Servicing Report has been prepared in support of the Precinct Structure Plan. It identifies that all required services can be made available for future development. Regarding public transport, the draft Precinct Structure plan identifies bus routes within and surrounding the precinct. These include the 998/999 Circle route operating along Grandstand Road and the 293 and 940 routes operating along Great Eastern Highway. For parking details, refer to the Movement section of the report.<br><br>This is not a relevant planning consideration of the draft Precinct Structure Plan. |
| 86 | Public Submitter | **Supports subject to modifications and raises concerns**<br><br>Generally supports R60 mixed-use development of Precinct D, limited to 3 storeys in height. States that whatever is built must respect the heritage nature of the adjoining Ascot Kilns site.<br><br>Generally supports the development of commercial businesses within Precinct E and considers this will provide positive amenities and services to the current residents of | Noted. The scale of residential development within this precinct (3 storeys) is consistent with building heights within Ascot Waters and will not undermine the heritage values of the Bristile Kilns.<br><br>Noted. |

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| | | Ascot, in addition to those who will occupy new residences in the proposed Golden Gateway development.<br><br>Is not opposed to aged care and residential developments in Precinct A. However, does not support development of Precinct A with buildings that are 15 storeys in height, and with an R-code of RAC0. Notes that residents of Ascot Waters previously made an effective argument against a 15-storey building on the Craig Care site at 52 Grandstand Road, successfully limiting the height to 5 storeys. States that, given this precedent, Precinct A should also be limited to 5 storeys for the same arguments used at the adjoining Craig Care site with an R-Code of R160.<br><br>Believes that further large-scale development in Precinct A will only exacerbate unaddressed safety issues in that area, placing additional pressure on the Grandstand Road/Waterway Crescent roundabout. Mentions that it is currently extremely difficult and sometimes unsafe to leave Ascot Waters by car at peak hour due to heavy commuter traffic at the roundabout at Waterway Crescent and Great Eastern Highway.<br><br>Also highlights the challenge of crossing Grandstand Road on foot to access bus stops for the 999/998 bus routes, given traffic at peak hour and the lack of pedestrian control. | Refer to the Precinct A section of the report.<br><br>Refer to Movement section of the Council report.<br><br>Refer to Movement section of the Council report. |
| 87 | Public Submitter | **Raises concerns**<br><br>Notes that the WA Horse Council has not been included in any of the planning structures, despite its relevance to the welfare of horses. States that this is a concern and provides contact details for the council (horsecouncilwa@gmail.com) and a link to their website (https://www.wahorsecouncil.com.au/).<br><br>Mentions having been a private equine veterinarian for 40 years in Western Australia and expresses concern about the lack of planning decisions that consider the social license for racing to continue in WA, including the Five Freedom Model of equine welfare. | There is no requirement for the draft Precinct Structure Plan to be referred to the WA Horse Council.<br><br>Noted. |
| 88 | Public Submitter | **Raises concerns**<br><br>Concerns about the potential development of the carpark areas (E), with the belief that this will result in significant parking in local residential streets. The street is currently very quiet and not particularly wide for regular traffic flow.<br><br>States that although the proposed entrance for patrons is on Grandstand Road, this road already struggles to cope with traffic on race days, often reducing to one lane. Any disruption to this traffic flow is believed to negatively impact traffic going north/south and into/out of Ascot Waters.<br><br>Raises concerns about how horses will travel to the track once Matheson Road is potentially opened up and commercial premises are established across the road, which is thought to be frightening for horses. Raises concerns about the busy nature of | Refer to Movement section of the report.<br><br>Refer to Movement section of the report.<br><br>Refer to Movement section of the report. |

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| | | Matheson Road in the mornings, with many horses travelling to the track from rural properties.<br><br>States that changing area E to commercial and retail will likely result in busier roads, increased rubbish (as observed with Hungry Jack's), and significantly increased noise from bins being emptied and patrons frequenting nearby businesses, which can be disruptive.<br><br>Concern is raised about security becoming an issue if E is changed to commercial/retail, as there are believed to be unsavoury individuals who frequently stay around properties along Great Eastern Highway.<br><br>States that E is not suitable for a shopping centre or supermarket due to the inadequate roads and the difficulty in managing increased traffic and cars.<br><br>States that there would be no issue with E becoming high-rise residential with basic retail below, as most properties along Hardey Road are placed at the front of the block and privacy is less of an issue. Residential/retail would be considered more appropriate due to the proximity to the track, views, and the location to the city via GE Highway.<br><br>Suggests an alternative of Precinct E to be utilised for the equine industry, such as additional stabling.<br><br>States that once E is no longer carparking and the float area is reduced, there is likely to be insufficient parking on race days, as most trainers with external properties will continue to drive their trucks and floats, which will not be on course. | Refer to Movement section of the report.<br><br>Regarding waste and noise considerations, these will be further considered through the development application process. It is likely that a waste management plan will be required for commercial developments.<br><br>The connection between commercial/retail development and security issues is unclear. Any antisocial behaviour should be reported to WA Police.<br><br>Refer to Movement section of the report.<br><br>Noted. Residential development could be proposed within the 'Mixed Use and 'Commercial' zoned portions of Precinct E.<br><br>A portion of Precinct E is intended to be used for equine related activities under the master plan.<br><br>Refer to Movement section of the report. |
| 89 | Public Submitter | **Neither supports or raises concerns**<br><br>No comment provided. | Noted |
| 90 | Public Submitter | **Raises concerns**<br><br>Requests the following for consideration:<br><br>• Retain the precious tree canopy cover that currently exists;<br>• The impact on local wildlife, however scarce they may be within and around the precinct, particularly with the potential increase in both human and vehicular traffic; and<br>• The aesthetics of having a tall structure next to the river. States there is no need for an "entry statement" into the City of Belmont, and contrary to opinions accepted in years past, the height and presence of the building will remain forever visible. | Refer to the Environment section of the Council report.<br><br>Refer to the Precinct A section of the Council report. |
| 91 | Public Submitter | **Raises concerns**<br><br>Expresses dissatisfaction with the plan due to the following:<br><br>• Inadequate consideration of race day people movement and parking. | Refer to Movement section of the Council report. |

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| | | • Inadequate consideration of what is the primary entry to the Ascot Racecourse.<br><br>• The suggestion of a big box retail west of Great Eastern Highway is absurd considering the current traffic load.<br><br>• Single storey stables along the east side of the racecourse will restrict view lines.<br><br>• Reduced parking for trainers on the east side of the course.<br><br>• Use of Precinct A for retirement towers. | It is considered that the Precinct Structure Plan makes it clear that the primary entrance will be from Grandstand Road (refer to Figure 16 as an example).<br><br>A Transport Impact Assessment has been prepared in support of the structure plan. Refer to Movement section of the report for further detail.<br><br>Stables can currently be proposed and built irrespective of the Structure Plan. It is not considered that views to the river are a relevant planning consideration.<br><br>This level of detail has been/will be addressed through the development application process. A copy of the Development Assessment Panel minutes for the recently approved stables can be found via the below link:<br><br>Minute - No 65 - City of Belmont - City of South Perth<br><br>While specific concerns are not raised by the submitter, it should be noted that all buildings will need to comply with the Building Code of Australia, which includes fire safety and accessibility requirements. Suitable emergency evacuation procedures would need to be established to ensure safety for residents. |
| 92 | Public Submitter | **Raises concerns**<br><br>States that they moved to Perth after spending several years living on remote cattle stations in northern Australia. Ascot was chosen as the preferred location due to its unique position, proximity to schools and shops, access to the River, presence of gumtrees, and its quiet, private environment.<br><br>Strongly objects to the draft Ascot Racecourse Precinct Structure Plan, asserting that it would negatively impact the community. Is concerned about the proposed designation of Ennis Place as a stable access road, which is expected to generate significant traffic starting as early as 3:30am. This would include Trainers, Stable Staff, Trackwork Riders, and Jockeys accessing the area, followed by service providers such as Vets, Farriers, Horse Dentists, Horse Chiropractors, Feed Trucks, Manure Trucks, and Horse Floats. Indicates that this activity would continue late into the night, particularly when Horse Floats return from country race meetings, resulting in relentless traffic and constant noise.<br><br>Highlights environmental concerns, including the loss of mature trees that currently provide habitat for wildlife and contribute to the area's character. States that the | Noted.<br><br>Access off Ennis Place was considered through the assessment of the recently approved stables complex. A copy of the Development Assessment Panel minutes for the recently approved stables can be found via the below link:<br><br>Minute - No 65 - City of Belmont - City of South Perth<br><br>A modification is proposed to the Transport Impact Assessment to identify the possibility of access from this road.<br><br>Regarding noise, this has been/will be further considered through the development application process. The acoustic study prepared in support of the recently approved stables development find that any noise associated with the proposed stables development is compliant with the Environmental (Noise) Regulations 1997 with mitigation or operational management measures proposed to address specific use of the development.<br><br>Refer to Environment section of the Council report. |

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| | | removal of these trees would increase temperatures and diminish shade over their property.<br><br>Notes that daily westerly breezes would carry odours from the stables into the surrounding area, exacerbating impacts on local amenity. Additionally, is concerned about pests, including flies, rats, and mice, being attracted to the proposed stabling facilities.<br><br>Argues that the proposed development would alter the area's aesthetic, replacing greenery with a more industrial character, which is considered incompatible with the neighbourhood. Concludes by urging the City to oppose the plan, stating that the project is not appropriate for the community. | It should be noted that stables can be constructed on the subject land irrespective of the structure plan. However, Future stables will need to be managed in accordance with the City's Consolidated Local Law which requires stables to be kept in a clean and sanitary condition and as far as practicable, free from flies, rats, other vectors of disease and offensive odours.<br><br>Stables can currently be proposed and built irrespective of the Structure Plan. Aesthetics of any future development have been/will be further considered at development application stage. |
| 93 | Public Submitter | **Raises concerns**<br><br>Is nine years old and lives on Ennis Place in Ascot.<br><br>Likes to play soccer, handball, cricket and basketball on the street. States that they won't be able to play safely on the street anymore.<br><br>Uses the dirt road to walk to school and walk their dogs to the river.<br><br>Collects red cockatoo feathers and yellow ones from the trees near the backtrack.<br><br>Can sit on the way and watch fireworks and the sunset going down.<br><br>Doesn't want to live in Ascot if playing outside isn't possible. | Noted.<br><br>Access of Ennis Place was considered through the assessment of the recently approved stables complex. A copy of the Development Assessment Panel minutes for the recently approved stables can be found via the below link:<br><br>Minute - No 65 - City of Belmont - City of South Perth<br><br>A modification is proposed to the Transport Impact Assessment to identify the possibility of access from this road.<br><br>Noted. This land is privately owned by the State of Western Australia with no development proposed over it. Access will be from Ennis Place.<br><br>Noted.<br><br>Noted.<br><br>Draft PSP does not prohibit the ability for residents to continue to play outdoors. |
| 94 | Public Submitter | **Raises concerns**<br><br>Loves living in Ascot with family.<br><br>Has lots of friends in Ascot who love to come and play because of the open space. States it is so quiet, and cars very rarely come and disturb games.<br><br>Likes to play basketball, cricket, soccer and football next to the back track. Sates that this won't be possible when the stables are built.<br><br>Likes to visit friends houses and doesn't have to worry about traffic and so gets there safely. | Noted.<br><br>Noted.<br><br>Noted. This land is privately owned by the State of Western Australia with no development proposed over it. Access will be from Ennis Place.<br><br>Access of Ennis Place was considered through the assessment of the recently approved stables complex. A copy of the Development Assessment Panel minutes for the recently approved stables can be found via the below link: |

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| | | Loves to walk to school and ride bikes but will need to be driven to school soon because of the traffic. | Minute - No 65 - City of Belmont - City of South Perth<br><br>A modification is proposed to the Transport Impact Assessment to identify the possibility of access from this road.<br><br>The draft PSP does not prohibit the ability for residents to continue walking and cycling within the area. |
| 95 | Public Submitter | **Raises concerns**<br><br>Loves living in Ascot for the past two years and likes playing cricket, handball, basketball and football in the street and on the side of their house.<br><br>Asks that the stables are not built. Doesn't want to smell manure in the morning and is concerned that they won't be able to play sport in the street because of all the cars. | Noted.<br><br>It should be noted that stables can be constructed on the subject land irrespective of the structure plan. However, Future stables will need to be managed in accordance with the City's Consolidated Local Law which requires stables to be kept in a clean and sanitary condition and as far as practicable, free from flies, rats, other vectors of disease and offensive odours.<br><br>Access of Ennis Place was considered through the assessment of the recently approved stables complex. A copy of the Development Assessment Panel minutes for the recently approved stables can be found via the below link:<br><br>Minute - No 65 - City of Belmont - City of South Perth<br><br>A modification is proposed to the Transport Impact Assessment to identify the possibility of access from this road. |
| 96 | Public Submitter | **Raises concerns**<br><br>States Ennis Place is a beautifully quiet street in Ascot, with only a 30 second walk to the Swan River water edge. Considers this is a great location for family especially recently coming from the outback.<br><br>Is concerned about safety. Walks to the bus stop everyday on the dirt road and along Ennis Place and Epsom Avenue. Questions how they can take the bus.<br><br>States that the houses along Ennis Place aren't just houses but are homes that this plan will destroy. Would like her home to remain as it is with trees, the birds, the wildlife, the view, the quiet, the fresh smell, the easy access to the river, the dirt road, and to me the most important the serenity.<br><br>Submitter won't enjoy living on Ennis Place anymore. | Noted.<br><br>This land is privately owned by the State of Western Australia. The submitter can use the footpath that exists along Epsom Avenue.<br><br>Noted.<br><br>Noted. |
| 97 | Public Transport Authority | PTA is supportive of the proposal however have some details they wish to see amended in the final report.<br><br>1. The wording on pages 45 and 100 '*are served by the 998/999 circle route which has good frequency and provides connectivity through central Perth and* | Modifications are proposed to address. Refer to Schedule of modifications. |

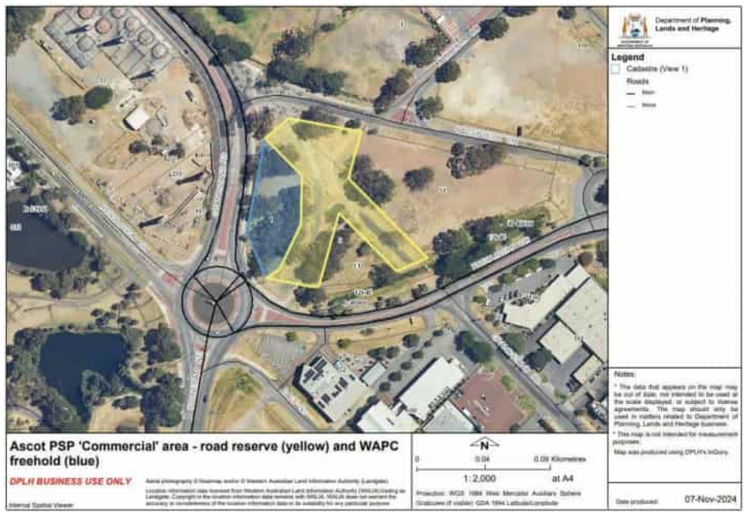
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| | PO Box 8125 Perth Business Centre, WA, 6849 | *Bayswater Train Station'* can be misleading as these bus routes travel to several nodes and destination attractors across Perth and does not travel directly via Central Perth.<br><br>2. The existing bus routes on Grandstand road need to remain as embayed bus stops for the 998/999 bus routes. There is potential to introduce additional bus stops on Grandstand Rd north of the roundabout within Precinct A (Retirement Village) subject to pedestrian amenity. Further potential exists along Resolution Dr around precinct E (Commercial and Retail Space). It is requested that Transperth Bus Stop and Infrastructure team be contact for involvement in future plans surrounding potential stop placements to align with the development. | Noted. |
| 98 | Water Corporation<br><br>PO Box 100, LEEDERVILLE WA 6902 | Major water and sewer upgrades will be required to service the proposed developments identified in the structure plan. These will be done at the developers cost. The proponent should get in contact with the Water Corporation early to discuss what is needed.<br><br>There are significant Water Corporation assets located in the "A3" R-AC3 Commercial reserved lot. This includes major water distribution mains that cannot be moved or built on top of and a number of open channel drains. These assets are essential and cannot be moved or built around. Water Corporation objects to the rezoning of this section of the structure plan to commercial.<br><br>The information provided above is subject to review and may change. If the proposal has not proceeded within the next 6 months, the applicant will need to contact Water Corporation to confirm that this information is still valid. | Noted<br><br>Refer to Precinct E section of the report.<br><br>Noted |
| 99 | Department of Education | The draft Structure Plan area spans across the student enrolment intake areas of Belmont Primary School and Belmay Primary School. However, amongst the five precincts within the Structure Plan area, Precinct D 'Residential & Mixed Use' which envisions to deliver, in part, approximately 41 residential lots of medium density, falls within the enrolment intake area of Belmont Primary School.<br><br>As previously highlighted in the Department's response letter on the draft Golden Gateway Local Structure Pan, Belmont Primary School is currently operating within the student accommodation capacity. However, the cumulative increase in dwelling yield in the locality would have an impact on the student enrolment demand and capacity of the subject primary school in the long term.<br><br>It is worth noting that every new residential development or intensification of residential density create demand for, or on, public schools, with this demand potentially extending beyond the boundaries of a structure plan. Whilst the Department acknowledges the planning merits of infill development, it is critical to balance the residential growth and resultant student population with public school provision in the locality. If there are insufficient provisions of public schools, this will result in significantly overcrowded school sites, insufficient parking for drop-offs and pick-ups, traffic management issues for the local community, and compromised education outcomes for students.<br><br>Preliminary analysis at this stage indicates that Belmont Primary School would be under student enrolment pressure in the long term. With the school site being restricted in size (1.46 hectares in lieu of a standard 4 ha standalone primary school | Noted<br><br>Noted<br><br>Noted<br><br>Noted |

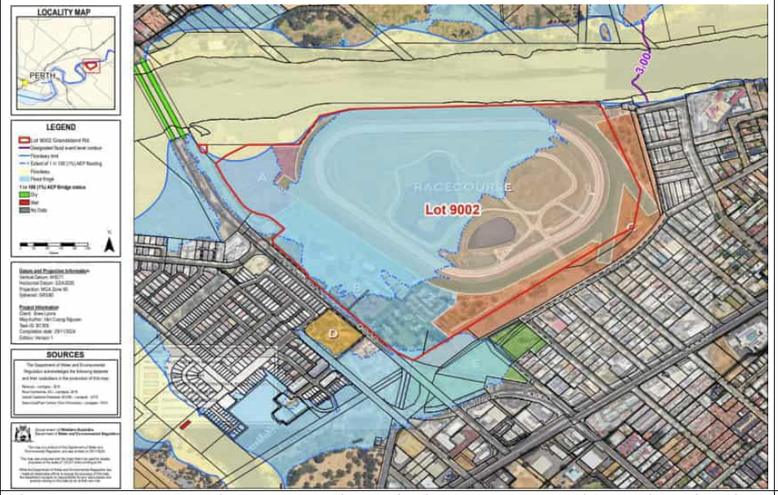
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| | | site), future expansion or augmentation of the school (e.g. off site early childhood facility) may be required in the future to ensure its capability of catering for the long-term student demand in the Ascot-Belmont area.<br><br>Notwithstanding this, the Department has no in-principle objections to the Structure Plan. The Department will continue to monitor the student enrolment demand as development progresses within the Structure Plan and ensure that the residential growth corresponds accordingly with the provision of public schools in the locality. It is essential that the Department and the City of Belmont collaborate on future school planning within the municipality to adequately provide for the educational needs of the Town in the future. | Noted. |
| 100 | Land Use Management – Metro and Peel at the Department of Planning Lands and Heritage<br><br>Locked Bag 2506, Perth WA 6001 | In relation to 'Precinct A' on the PSP, being Lot 9002 on DP 60342:<br><br>• Ascot Racecourse is held by the Western Australian Turf Club (WATC) as a conditional freehold tenure. It is a condition that the land is to be used solely for activities relating to the running of a public racecourse under the Land Administration Act 1997 (LAA). However, the land may be used or leased for another purpose with the written permission of the Commissioner of Crown Lands under section 10 of The Western Australian Turf Club Act 1892 (WATC Act).<br><br>• The WATC has the power to lease and deal with real and personal property for the purposes of the club and requires the consent of the Governor given on the recommendation of the Minister for Lands under section 4(2a) of the Western Australian Turf Club (Property) Act 1944 (Property Act).<br><br>• The WATC is also to obtain the Minister for Lands' consent to grant any lease, licence, mortgage, charge, security or other encumbrance under section 75(6) of the LAA.<br><br>• Further investigation and possibly legal advice would be required regarding whether the proposed retirement living/aged care is suitable on the racecourse land that is held in conditional freehold tenure. This would also require consultation with the Department of Local Government, Sport and Cultural Industries, noting that the WATC Act and the Property Act fall under the Racing and Gaming portfolio.<br><br>In relation to 'Precinct E' on the PSP:<br>• Portions of 'Precinct E' under a proposed 'Commercial' zoning are currently road reserve (redundant residual alignments of Grandstand Road and Matheson Road) and WAPC freehold Lot 1 on Diagram 55346, as described on the attached map.<br><br>• Notes that Figure 12 on page 88 of the draft PSP flags these different land tenures, in doing so describing the road reserve area as 'proposed road lease' - it would be worth further consideration from Perth Racing on this front, as leases of Crown land can only be considered where the proposed use of the land/purpose of the lease is consistent with that land's purpose (ie. use of road by the public), which would not be the case with the proposed commercial activity. | Refer to Precinct A section of the report.<br><br>Refer to Precinct A section of the report.<br><br>Refer to Precinct A section of the report.<br><br>Refer to Precinct A section of the report.<br><br>Noted.<br><br>Refer to Precinct E section of the report. |

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| | | • The WAPC freehold would also need to be resolved in some capacity, however this is outside our remit in Crown Land Management.<br>  <br><br>Notes flagging this invitation for comment with the Department's Land Use Planning division, who have deferred comment until later formal assessment of the PSP for WAPC determination. | Refer to Precinct E section of the report.<br><br>Noted. |
| 101 | Department of Water and Environmental Regulation<br><br>7 Ellam Street, Victoria Park WA 6100 | The Department has identified that the proposal has the potential for impact on water values and management. While the Department does not object to the proposal, key issues and recommendations are provided below and these matters should be addressed:<br><br><u>Local Water Management Strategy</u><br>The Department has assessed the Local Water Management strategy (LWMS) dated July 2024 prepared by Emerge Associates. The Department is satisfied that the document is acceptable for this proposal to proceed to the next stage of planning approval.<br><br><u>Floodplain Management Advice</u><br>The Department of Water and Environmental Regulation provides advice and recommends guidelines for development on floodplains with the object of minimising flood risk and damage.<br><br>The Swan and Helena River Flood Study (2018) shows that the lot is affected during major flows with the 1 in 100 (1%) AEP flood level expected to vary from 2.9 m AHD to ~3.0 m AHD as shown in the attached map. | Noted.<br><br>Noted.<br><br>Noted. |

Attachment 12.1.10 Schedule of Submissions

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| | | Our floodplain management strategy for the area is:<br><br>• Proposed development (i.e. filling, building, etc.) that is located outside of the floodway is considered acceptable with respect to major flooding. However, a minimum habitable floor level of 0.5 m above the adjacent 1% AEP flood level is recommended to ensure adequate flood protection.<br><br>• Proposed development that is located within the floodway (yellow areas on attached plan) and is considered obstructive to major flows is not acceptable as it would increase flood levels upstream.<br><br>With regard to the proposal, it appears that a small portion of the retirement living (Precinct A) is located within the floodway, and as such any future development would have to comply with floodplain management and meet minimum habitable floor levels.<br><br>Please note that a failure to properly adhere to these recommendations will result in a greater exposure to risks of flood damage. This advice is related to major flooding only and other planning issues, such as environmental and ecological considerations, may also need to be addressed.<br><br>  | Part 1 of the precinct structure plan requires a minimum habitable floor level of 0.5m above the 1% AEP flood level.<br><br>Noted.<br><br>Noted.<br><br>Noted. |
| 102 | Department of Biodiversity, Conservation and Attractions | The Precinct Structure Plan area sits alongside the Swan River and is partly within the Swan River Trust Development Control Area (DCA). The Precinct Structure Plan includes the following six precincts:<br><br>• Precinct A – retirement living village<br>• Precinct B – additional car parking and new buildings for offices/hospitality<br>• Precinct C – proposed stables, horse float parking and car parking | Noted. |

Attachment 12.1.10 Schedule of Submissions

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| | 17 Dick Perry Avenue, Technology Park, Western Precinct, Kensington WA 6151 | • Precinct D – residential area and childcare centre<br>• Precinct E – equine and jockey services, car parking and potential retail and bulky goods<br>• Racecourse<br><br>DBCA has reviewed the Precinct Structure Plan Report prepared by Rowe Group, and the supporting documents and reports, including the Environmental Assessment Report (EAR) (Emerge, 2024), the Local Water Management Strategy (Emerge, 2024), and the Landscaping Masterplan Plan (SLR, 2024) and recommends the following matters be addressed prior to approval of the Precinct Structure Plan.<br><br>**Parks and Recreation foreshore areas**<br>State Planning Policy 2.10 – Swan Canning River System (Policy 2.10) states that land adjacent to the river should be available for public access, recreation and conservation of the river. River foreshore reserves should be planned with sufficient distance between the waters of the river and development to allow for conservation of the estuarine environment, including riparian vegetation, public access and recreational use of the foreshore and the river, and landscape protection and enhancement.<br><br>A stretch of foreshore land is currently reserved for parks and recreation (P&R) along the edge of the Swan River (approximately 25 to 40 metres wide), contiguous with the DCA boundary. However, most of the P&R is within Lot 9002 which is owned by Perth Racing and contains the outermost racetrack. The racetrack extends to within 4 to 5 metres of the waters of the Swan River and is delineated with a boundary fence. The result is a 600 metre long, very narrow (~4 metres wide) strip of Crown land which allows for public access, but is inadequate for providing for passive recreation, or for protecting water quality and environmental values. In addition, the limited space available for foreshore and riverbank management has necessitated the construction of a long rock revetment for erosion control, which has further reduced the amenity of the location.<br><br>The proposal involves a significant intensification of the use of the land surrounding the racecourse, which will result in future increase in population and pressure on local open space and foreshore areas. With the intensification of use, including the introduction of retail, commercial and residential activities, it appropriate for the P&R reservation to be vested transferred to the Crown. This would require rehabilitation of the foreshore to a naturalized, publicly accessible recreation area. Securing a sufficient Crown reserve for the long term is crucial now, as the proposed development of the surrounding land may eliminate the possibility of realigning the racetrack in the future.<br><br>As such, a Foreshore Management Plan should be prepared to guide the future management of the reserve and to provide for better public access, recreational opportunities and improve the amenity and the interface between the racecourse and the Swan River.<br><br>**Local Water Management Strategy**<br>DBCA is particularly interested in the proposed management of stormwater and groundwater associated with the structure plan area for the following reasons:<br>• The proximity of the proposed development to the Swan River.<br>• The lack of buffer between the racecourse and the river to assist with the improvement of water quality. | Refer to Racecourse section of the report.<br><br>Refer to Racecourse section of the report.<br><br>Officers are satisfied with the LWMS noting that the Department of Water and Environmental Regulation is the Agency responsible for approving these documents and has advised the following:<br><br>*"The Department has assessed the Local Water Management strategy (LWMS) dated July 2024 prepared by Emerge Associates. The Department* |

Attachment 12.1.10 Schedule of Submissions

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| | | • The classification of the racecourse as 'potentially contaminated – investigation required' (discussed in the Environmental Assessment Report) due to high levels of nutrients from the historic and ongoing horse stabling and runoff from animal storage areas on the site.<br>• Existing outflows from the site to the Swan River are not currently monitored for water quality or quantity.<br>• DBCA has received complaints in relation to poor water quality discharging from the site and poor environmental management in general.<br>• The presence of a synthetic racetrack which has the potential to contribute large amounts of microplastics to the groundwater and discharge to the Swan River.<br><br>The proposed stormwater management outlined in the LWMS relies heavily on the utilisation of the three lakes within the centre of the racecourse, particularly for development within Precincts A, B and C. However, the LWMS has not demonstrated that the existing management of ground and surface water at the site is appropriate. There is insufficient ground and surface water quality monitoring data and no monitoring of the quality, volumes or frequency of water flowing to the river.<br><br>Therefore, DBCA is not supportive of the proposal to utilise additional volume within the internal lakes unless the following the following can be demonstrated:<br>• Appropriate measures to guarantee that discharge to the River or to ground water from the lakes is of a quality consistent with the objectives of Corporate Policy Statement 49: Planning for Stormwater Management Affecting the Swan Canning Development Control Area and Australian and New Zealand Guidelines for Fresh Water Quality (ANZECC Guidelines) trigger values at 95% species protection.<br>• That the use of the lakes will not result in any increase in volume or frequency of overflow to the river.<br>• Monitoring of surface water is undertaken within the lakes for an expanded list of analytes including turbidity, heavy metals, PAHs, hydrocarbons, pesticides and herbicides and PFAS and the results used to inform an amended LWMS.<br>• A nutrient and irrigation management plan is prepared to demonstrate how the site is managed to minimise nutrient application to the land. | *is satisfied that the document is acceptable for this proposal to proceed to the next stage of planning approval."* |
| | | **Floodway protection**<br>The proposed retirement village development (Precinct A) is located partially within the floodway of the Swan River and will require a substantial amount of fill to achieve minimum habitable floor levels to comply with Department of Water and Environmental Regulation policies. DBCA recommends the proposed development be positioned outside of the floodway to reduce the amount of fill required. | The Structure Plan has been referred to the Department of Water and Environmental Regulation (DWER) for comment. DWER has advised that a small portion of Precinct A is located within the floodway and flood fringe. Any future development would have to comply with floodplain management and meet minimum habitable floor levels. A minimum habitable floor level of 0.5m above the adjacent 1% AEP flood level is recommended to ensure adequate flood protection. The Structure Plan complies with this and requires that all structures are built 0.5m above the flood level. |
| | | **Setbacks**<br>Future development within Precinct A and C will be required to comply with the setback provisions in DBCA Policy No. 48 – Planning for development setback requirements affecting the Swan Canning Development Control Area. Policy 48 indicates that any structures including retaining walls higher than 1 metre abutting the DCA require a minimum setback of 10 metres or 20 per cent of the average depth of the lot. However, where the height, bulk, scale or form, orientation or location of a development is likely to create significant visual impacts within the context of the | Noted. The draft PSP references that where necessary, setbacks shall be in accordance with DBCA's Policy. It is considered that future development is able to meet the setback requirements. This will be further considered through the development application process. |

Attachment 12.1.10 Schedule of Submissions

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| | | surrounding landscape, an increased setback may be required. In areas where fill is required to achieve compliance with minimal floor levels, DBCA encourages gradual topographic changes between foreshore reserves and adjacent development to preserve the visual amenity and enhance the community's enjoyment of the reserve. Additional information such as finished levels and location and height of any retaining or battering along the DCA will be required as part of a future development application.<br><br>In addition, in accordance with Liveable Neighbourhoods (WAPC, 2009) and DBCA Policy 42 DBCA recommends the inclusion of a public road, between the private land and the existing or proposed P&R reservation to enable proper access, separation of land uses, improve passive surveillance and public safety, and support appropriate bushfire protection.<br><br>**Protection of vegetation**<br>DBCA considers that opportunities for retaining mature vegetation throughout the development area should be further explored in line with the City of Belmont Urban Forest Strategy (City of Belmont, 2014) and Better Urban Forest Planning Guidelines (WAPC, 2023). It is noted that the site contains mature native vegetation including potential black cockatoo nesting trees. This important habitat is to be retained.<br><br>In its current form the Structure Plan is not supported, however DBCA officers are happy to assist with further information regarding the issues outlined above. | The creation of a public road to form a hard edge to the Parks and Recreation reserve is not considered necessary in this instance. However, the potential for a hard edge through a private road can be further considered at the development application stage for Precinct A.<br><br>Refer to Environment section of the Council report. |
| 103 | Main Roads Western Australia<br><br>PO Box 6202, East Perth WA 6892 | Main Roads provides the following comments regarding the draft precinct structure plan:<br><br>**Vehicle Access Strategy Current**<br>"Vehicle Access Strategy" for Great Eastern Highway (GEH) close to the proposed Ascot Racecourse Precinct Structure Plan (PSP) site is to be maintained as per the Plan no. 16339-13 (attached).<br><br>**Bus Priority Lane**<br>It is recommended to investigate the feasibility for continuous east-bound bus priority lane along the Great Eastern Highway between Stoneham Street and Resolution Drive as part of the mitigation measures to reduce impacts on bus queue jump lane and existing intersections performance to accommodate future combined growth from the draft Ascot Racecourse PSP and Golden Gateway LSP.<br><br>**Transport Impact Assessment – Further Information Required**<br>'Transport Impact Assessment' prepared by PJA Australia Pty Ltd (version B, dated 8 May 2024) is recommended to be revised addressing the followings:<br><br>Pedestrian Connectivity<br>• Section 7.3 of the TIA provided recommendations to improve pedestrian connectivity, however no detailed assessment has been undertaken. Assess and determine necessary upgrades to pedestrian facilities surrounding the Ascot Racecourse and along the Great Eastern Highway (such as Staged Pedestrian Crossings at the signalised intersections which may assist with more efficient green times utilisation to reduce the performance impacts for the GEH intersections).<br>• Model alternate pedestrian treatments within SIDRA to evaluate their viability. | Noted. The Precinct Structure Plan area doesn't impact on the vehicle access strategy.<br><br>Given Great Eastern Highway is under the care and control of Main Roads Western Australia, it is appropriate for them to undertake these investigations.<br><br>Refer to Movement section of the report. |

Attachment 12.1.10 Schedule of Submissions

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| | | • Assess geometric requirements, land boundaries, and potential signal modifications.<br>• Detail mechanisms for future delivery of pedestrian facilities is required to inform costings for a development contribution plan.<br><br>SIDRA Assessment<br>• Coordinated SIDRA network model is required for the signalised intersections replicating the existing coordinated operation on GEH and to observe any impacts due to scenarios as proposed in the draft Ascot Racecourse PSP and Golden Gateway LSP.<br><br>• Existing cycle lengths for the GEH signalised intersections is required to be utilised in the SIDRA modelling existing scenarios.<br>• Similar cycle lengths should be used to the Stoneham Street and Resolution Drive intersections with GEH in a coordinated network.<br><br>It is further advised that Main Roads will require a 30 day review period to assess any revised documentation. | This matter has been addressed in response to MRWA comments on the Golden Gateway Local Structure Plan. In that case, coordination between the two signalised intersection was not done because it makes the models unstable.<br><br>The PSP does not extend towards Great Eastern Highway and as such, improvements to pedestrian connectivity along Great Eastern Highway are not considered relevant. |

Cr Sessions disclosed at Item 3 of the Agenda "Disclosure of Interest" an Impartiality Interest in the following item in accordance with Regulation 22 of the *Local Government (Model Code of Conduct) Regulations 2021 (WA)*.

# 12.3 Local Planning Policy No. 20 - Great Eastern Highway Urban Corridor

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|---|---|---|
| Voting Requirement | : | Simple Majority |
| Subject Index | : | LPP15/020 |
| Location/Property Index | : | Various |
| Application Index | : | N/A |
| Disclosure of any Interest | : | Nil |
| Previous Items | : | • Draft Local Planning Policy No. 20 – Great Eastern Highway Urban Corridor:<br>– 22 July 2025 Ordinary Council Meeting Item 12.1<br>• Great Eastern Highway Urban Corridor Strategy:<br>– 22 October 2024 Ordinary Council Meeting Item 12.3.<br>– 26 September 2023 Ordinary Council Meeting Item 12.2.<br>– 22 May 2018 Ordinary Council Meeting Item 12.2. |
| Applicant | : | N/A |
| Owner | : | Various |
| Responsible Division | : | Development and Communities |

## Council role

| | |
|---|---|
| **Legislative** | The making and adopting of local laws, local town planning schemes and Council policies. |

## Purpose of report

For Council to consider draft Local Planning Policy No. 20 – Great Eastern Highway Urban Corridor (LPP 20) for final adoption following public advertising.

## Summary and key issues

- At the 22 October 2024 Ordinary Council Meeting (OCM), Council resolved to adopt the Great Eastern Highway Urban Corridor Strategy (the Strategy).

- The Strategy was prepared to establish a vision and coordinate future development adjacent to Great Eastern Highway. As a strategic document, the Strategy will inform future planning instruments, including the new Local Planning Scheme.
- To support its implementation in the interim, key elements of the Strategy relating to public spaces, landscape zones, connections, access, parking, building height and plot ratio, setbacks and built form transitions have been incorporated into a draft Local Planning Policy.
- This approach ensures the Strategy's key principles are applied to development assessment prior to the introduction of the new Local Planning Scheme. While some provisions are likely to remain in the Local Planning Policy, it may be appropriate for certain elements to be incorporated into the new Local Planning Scheme.
- Council adopted draft LPP 20 for public advertising at the 22 July 2025 OCM.
- Advertising occurred between 14 August 2025 and 4 September 2025 (22 days). A total of five submissions were received.
- The submissions have been reviewed and four minor changes to the Policy are recommended as detailed within the Report section.
- It is recommended that Council adopts draft modified LPP 20 contained as Attachment 12.3.1.

**Officer Recommendation**

That Council:

1. Adopts draft modified Local Planning Policy No 20 – Great Eastern Highway Urban Corridor contained as Attachment 12.3.1 in accordance with Schedule 2, Part 2, Clause 4 of the *Planning and Development (Local Planning Schemes) Regulations 2015 (WA).*
2. Directs the Chief Executive Officer to:
    a. Notify those who made a submission of Council's resolution.
    b. Publish the adopted Local Planning Policy No. 20 on the City's website.

**Note:**

**Mayor Rossi put forward the following Alternative Motion.**

**Alternative Mayoral Motion**

**Mayor Rossi moved, Sessions seconded**

That Council:

1. Adopts draft modified Local Planning Policy No 20 – Great Eastern Highway Urban Corridor contained as Attachment 12.3.1 in accordance with Schedule 2, Part 2, Clause 4 of the *Planning and Development (Local Planning Schemes) Regulations 2015 (WA).*
2. Directs the Chief Executive Officer to:
    a. Notify those who made a submission of Council's resolution.
    b. Publish the adopted Local Planning Policy No. 20 on the City's website.
    c. Conduct traffic studies to investigate appropriate controls such as cul-de-sacs for streets adjoining Great Eastern Highway, and allocate the required funds and resources for these traffic studies to be conducted at the appropriate time.

**Reason(s)**

To ensure that residential properties in the locality are not unduly impacted by traffic generated from future high density development along Great Eastern Highway.

**Carried 8 votes to 1**

For: Abedin, Davis, Harris, Kulczycki, Marks, Ryan, Rossi and Sessions

Against: Sekulla

## Location

Draft LPP 20 relates to lots adjacent to Great Eastern Highway, between Graham Farmer Freeway in Rivervale to land east of Ivy Street in Ascot, Redcliffe and South Guildford. The extent of the Great Eastern Highway Corridor is shown in Figure 1.




Figure 1: Extent of Great Eastern Highway Urban Corridor (marked in red)

## Consultation

Draft LPP 20 was advertised from 14 August 2025 to 4 September 2025 by way of:

- A public notice being displayed in the PerthNow newspaper on 14 August 2025.
- Displaying a public notice and information on the City's website and at the Civic Centre.
- Sending letters to those who previously lodged a submission on the Strategy.

The City received five submissions during the advertising period, comprising three from agencies and two from landowners. Two of the agency submissions

provided technical advice that does not require any modifications to the Policy. The third agency submission noted that the access points to Great Eastern Highway shown in Figure 5 of the draft Policy are not supported at this time, and a minor modification is recommended to address this. Of the landowner submissions, one provided general commentary and the other suggested specific modifications. In response, a minor amendment is recommended regarding the amalgamation of adjoining sites. Further details are provided in the Report section.

A summary of the submissions is contained as Attachment 12.3.2 and Confidential Attachment 12.3.3.

## Strategic Community Plan implications

In accordance with the 2024–2034 Strategic Community Plan:

**Key Performance Area: Place**

**Outcome:** 6. Sustainable population growth with responsible urban planning.

**Outcome:** 7. Attractive and welcoming places.

**Outcome:** 8. A city that is easy to get around safely and sustainably.

## Policy implications

Should Council adopt LPP 20, this Policy will guide the assessment of future applications for development adjacent to Great Eastern Highway.

## Statutory environment

### Strategic Planning Framework

Perth and Peel @ 3.5 Million

The State strategic framework documented under the Western Australian Planning Commission (WAPC) 'Perth and Peel @ 3.5 million' impacts upon the statutory direction for the City.

The Perth and Peel region will need to accommodate significant population growth by 2050 with an additional 1.5 million people requiring approximately 800,000 new homes. The 'Perth and Peel @ 3.5 million' strategic planning framework requires that a substantial amount of this growth (i.e. 47%) be delivered through infill developments. It forecasts that the City of Belmont population will increase to 60,260 people by 2050 and to accommodate that increase, an additional 10,410 dwellings will be required.

Perth and Peel @ 3.5 Million promotes the concept of 'Urban Corridors' as a way of achieving integrated land use and transport outcomes. Great Eastern Highway is identified as an 'Urban Corridor' because it provides a connection between the Burswood and Perth Airport Activity Centres.

The framework suggests that focus should be given to investigating increased residential densities and mixed land uses along 'Urban Corridors'. In doing so, an understanding of the existing and future function of the urban corridor from both a transport and land use perspective is needed to determine future growth opportunities. When considering areas for intensification, emphasis should be given to maintaining the operational efficiency of the transport network, enhancing urban amenity and ensuring minimal impact on the surrounding urban fabric.

**Statutory Planning Framework**

*Planning and Development (Local Planning Schemes) Regulations 2015 (WA)*

The procedure for making and amending a local planning policy is outlined under Schedule 2, Part 2, Clauses 3 to 6 of the *Planning and Development (Local Planning Schemes) Regulations 2015 (WA)*.

In terms of consultation, Clause 4(1)(a) of the Deemed Provisions requires the draft Policy and a notice to be published on the City's website. If the local government considers it appropriate, a notice shall also be published in a local newspaper circulating within the Scheme area, and the Policy made available for viewing at a location within the district.

The notice is to advise the public as to the location where the draft Policy may be inspected, the subject and nature of the Policy and in what form and during what period (being not less than 21 days) submissions may be made.

Following conclusion of the consultation period Council shall review the draft Policy in the light of any submissions made and shall then resolve either to adopt the draft Policy with or without modification, or not to proceed with the draft Policy.

Clause 67 of the Deemed Provisions outlines the matters which the local government is to have due regard to when considering a development application.

## Background

At the 22 October 2024 OCM, Council adopted the Great Eastern Highway Urban Corridor Strategy. The Strategy was prepared to establish a clear vision and guide coordinated future development adjacent to Great Eastern Highway. As a high-level strategic document, it is intended to inform future planning instruments, including the preparation of the new Local Planning Scheme.

To support the implementation of the Strategy in the interim, a draft Local Planning Policy has been prepared. This Policy incorporates key elements of the Strategy relating to public spaces, landscape zones, connections, access and parking, building height and plot ratio, setbacks and built form transitions. Embedding these elements within a statutory planning framework gives them greater weight in the assessment of development proposals than would be afforded under the Strategy alone. While some provisions are likely to remain in the Policy, it may also be appropriate for certain elements to be incorporated into the new Local Planning Scheme.

## Report

Draft LPP 20 was advertised between 14 August 2025 and 4 September 2025. At the close of the advertising period, five submissions were received, with three from agencies including the Department of Transport and Major Infrastructure, Water Corporation and Main Roads Western Australia (MRWA), and two from landowners.

Four amendments are recommended to the Policy as detailed below.

### Access to Great Eastern Highway

The first amendment is recommended in response to comments from MRWA, who advised that they do not support any new access points onto Great Eastern Highway as shown in Figure 5 at this point in time. The front access and parking arrangements shown in Figure 5 reflect the existing situation, as these properties already have established access onto Great Eastern Highway. Any changes to access would be referred to MRWA for comment.

To reflect this arrangement, it is recommended that Clause 5.5.1 be modified to clarify that in considering any changes to access points on Great Eastern Highway, the City of Belmont will have regard to advice provided by MRWA. The updated clause reads as follows:

5.5.1 ”Access and parking associated with lots shall be provided in accordance with Figure 5 contained within Attachment A. Notwithstanding, in considering changes to access points to Great Eastern Highway, the City of Belmont will have regard to advice from Main Roads Western Australia.”

### Amalgamation of Adjacent Land

The second amendment is recommended in response to a landowner submission. The submitter noted that the Great Eastern Highway Urban Corridor Strategy included a recommendation to introduce a provision clarifying the treatment of amalgamating adjacent lots not included in the Strategy area. The submitter

requested that this clarification be incorporated into the draft Policy. Specifically, the Strategy sought to ensure that amalgamating land with 'Residential' zoned lots, or with lots adjacent to, abutting, or across the road from 'Residential' zoned land, would not allow those lots to benefit from

higher-scale development under the Strategy.

Including such a provision in the Policy is considered appropriate to provide clarity and certainty for both landowners and the City. It ensures the intent of the Strategy is implemented consistently, protects residential amenity, and provides guidance on how non-residential amalgamations could be considered.

Accordingly, Clause 5.9 Amalgamation of Adjacent Land has been included in the draft Policy. The sub-clauses read as follows:

"5.9.1 The amalgamation of land within the Strategy area with land zoned 'Residential,' or with lots adjacent to, abutting or across the road from land zoned 'Residential,' will not result in the residential land benefiting from higher development potential under this Policy.

5.9.2 Where amalgamation is proposed with non-residential zoned land, and the amalgamated lots are not adjacent to, abutting or across the road from land zoned 'Residential,' the provisions of this Policy may also be applied to the portion of land proposed to be amalgamated, treating the combined lots as a single site. However, such amalgamation must demonstrate improved built form, access and site planning outcomes without adversely impacting nearby residential areas."

**Building Height and Plot Ratio**

The third amendment is recommended as officers noted that the draft Policy sought to apply plot ratio and building heights consistent with the City's Local Planning Scheme or other relevant planning instruments for certain sites. Clause 4.2.3 of Local Planning Scheme No. 15 (LPS 15) states that the density (and therefore building height and plot ratio) of uncoded sites shall be determined having regard to the density code of adjoining properties.

For the Eastgate Neighbourhood Centre and Ascot Local Centre, these adjoining densities may be too low as they would only provide for two storey development while other sites such as those fronting Great Eastern Highway on either side of the Eastgate Neighbourhood Centre could accommodate heights of up to 10 storeys. It is also noted that not all centres require further detailed planning, and as such, there may be no other relevant planning instrument in place to guide plot ratio and building heights.

Given this, it is considered appropriate to provide a level of flexibility so that heights exceeding those prescribed by LPS 15 may be proposed where the matters listed in Clause 67 of the Regulations are considered and the

non-compliance will have no adverse effect upon occupiers or users of the development, the inhabitants of the locality, or the likely future development of the locality. Accordingly, Clause 5.6.2 has been revised and a new Clause 5.6.3 added as follows:

5.6.2 "Building heights and plot ratio for 'Activity Centres' shall be determined having regard to the density code imposed on adjacent land but may be varied if:

a) Approval of the proposed development would be appropriate having regard to the criteria set out in Clause 67 of the Planning and Development (Local Planning Schemes) Regulations 2015 Schedule 2; and

b) The non-compliance will not have an adverse effect upon the occupiers or users of the development, the inhabitants of the locality or the likely future development of the locality."

5.6.3 Building heights and plot ratio for 'Industrial' designated sites will be subject to the building height limits contained within the City's Local Planning Scheme.

In addition, a fourth amendment is proposed to outline that building height and plot ratio guidance for lots within the Development Area 6 and Golden Gateway precincts is provided within the respective draft planning instruments. Accordingly, Clause 5.6.4 and Clause 5.6.5 are proposed to be added to the policy as follows:

5.6.4 Building heights and plot ratio for lots within Development Area 6 shall be in accordance with the Improvement Plan and draft Improvement Scheme – Redcliffe Station Precinct.

5.6.5 Building heights and plot ratio for lots within the Golden Gateway Precinct shall be in accordance with the draft Golden Gateway Structure Plan.

**Conclusion**

Advertising of draft Local Planning Policy No. 20 – Great Eastern Highway Urban Corridor has been undertaken in accordance with the *Planning and Development (Local Planning Schemes) Regulations 2015 (WA)*. Five submissions were received, comprising three from Government agencies and two from landowners. The draft Policy has been modified to state that in considering changes to access to Great Eastern Highway, the City will have regard to advice from MRWA, to clarify the amalgamation of adjacent land, to provide flexibility for plot ratio and building heights for activity centres, and to state that building heights and plot ratio for lots within Development Area 6 and the Golden Gateway Precinct shall be in accordance with the draft planning instruments for those areas. It is

recommended that Council endorse the draft modified Local Planning Policy No. 20.

## Financial implications

There are no financial implications associated with this report.

## Environmental implications

There are no environmental implications associated with this report.

## Social implications

Draft LPP 20 seeks to improve liveability along the Corridor through improvements to amenity, an enhanced public realm, connectivity and activation.

## Attachment details

| Attachment No and title |
|---|
| 1. Draft Revised Local Planning Policy No. 20 - Great Eastern Highway Urban Corridor [**12.3.1** - 11 pages] |
| 2. Schedule of Submissions [**12.3.2** - 8 pages] |
| 3. CONFIDENTIAL - Confidential Redacted - Schedule of Submissions (Confidential matter in accordance with Local Government Act 1995 (WA) Section 5.23(2)(b)) [**12.3.3** - 8 pages] |

City of Belmont

# Local Planning Policy No. 20

## Great Eastern Highway Urban Corridor



Publication date: [00/00/00]

# Local Planning Policy No. 20

This is a Local Planning Policy prepared under Schedule 2 of the *Planning and Development (Local Planning Schemes) Regulations 2015*.

## 1. Policy Basis

This Policy sets out the standards and objectives the City will use to assess development applications for land adjacent to Great Eastern Highway.

These standards align with the Great Eastern Highway Urban Corridor Strategy.

## 2. Policy Application

The Policy applies to lots adjacent to Great Eastern Highway between Graham Farmer Freeway in Rivervale to east of Ivy Street in Ascot, Redcliffe and South Guilford (refer to Figure 1 contained within Attachment A).

## 3. Policy Objectives

3.1 To implement elements of the Great Eastern Highway Urban Corridor Strategy.

3.2 To facilitate high-quality development with active frontages and landscaping along Great Eastern Highway.

3.3 To facilitate an appropriate scale and transition of built form to nearby residential areas and preserving residential amenity.

3.4 To facilitate safe and efficient vehicle movements by minimising direct vehicular access to Great Eastern Highway.

3.5 To improve the amenity of the corridor through improvements to pedestrian and cyclist infrastructure and the creation of public spaces.

3.6 To encourage public infrastructure and public spaces which enhance safety, social interaction and well-being.

## 4. Policy Definitions

**Active Land Use**

Land uses that engage with the public realm, contributing to the activation of the street.

**Public realm**

The public realm encompasses all spaces that are accessible to the public. This includes streets, parks, plazas, sidewalks and other public infrastructure.

DRAFT

**Private realm**

The private realm refers to spaces which are privately owned and maintained, typically including properties, buildings and other privately managed areas. Access is generally restricted to the owner, tenants, or invited guests, and they are not open for public use.

**Urban Plaza**

An urban plaza is a publicly accessible space featuring hard landscaping complemented by trees for shade, integrated street furniture, and public art to foster community activity. These spaces are often used in conjunction with adjacent land uses to create vibrant, activated areas. These areas also have the potential to host small-scale cultural and community events outside of general business hours.

**Pocket Park**

A pocket park is a small green space that includes soft landscaping, recreational opportunities like children's play equipment, community gardens, and sports areas.

**Urban Garden**

An urban garden is a green space, featuring a mix of turf, paving, and swales, along with new tree planting or the retention of existing trees.

**Rear access, rear parking**

This access and parking arrangement requires crossovers and vehicle access to be from side streets or the rear of the lot. Parking is provided along the rear boundary of the lot.

**Rear access, front parking**

This access and parking arrangement requires crossovers and vehicle access from side streets or the rear of the lot, however parking can be located at the front of the lot.

**Front access, front parking**

This access and parking arrangement allows crossovers and vehicle access from Great Eastern Highway (left in, left out only). Parking can be located at the front of the lot.

# 5. Development Requirements

## 5.1 Land Use and Activation

The Policy area consists of activity nodes, activity corridors and a mixed employment space as shown in Figure 2 contained within Attachment A.

5.1.1 Within activity nodes, an active land use should be located on the ground floor of a development. On upper floors, residential, commercial and office land uses are encouraged.

5.1.2 Within activity corridors, active commercial uses such as showrooms and offices should be located on the ground floor of a development. On upper floors, residential, commercial and office land uses are encouraged.

5.1.3 In mixed employment areas, industrial uses may be proposed; however, land uses such as offices and small-scale showrooms are encouraged west of Fauntleroy Avenue and should be compatible with surrounding uses.

5.1.4 Windows facing the public realm must remain unobstructed to maintain visual connection between the building interior and the street. Windows shall not be covered with opaque materials such as films, signage, or permanent fixtures. Internal layouts, including the placement of walls, shelving, or furniture, must not impede views from the building to the street or from the street into the building.

## 5.2 Spaces

5.2.1 Spaces identified in Figure 3 contained within Attachment A are encouraged to be integrated into future development.

5.2.2 The City may give weight to the provision of a space provided in accordance with Figure 3 when considering the application of discretion in relation to development standards.

## 5.3 Landscape Zones

5.3.1 A landscaping strip of 4m shall be provided at the front of lots within activity nodes in accordance with Figure 4.

5.3.2 A landscaping strip of 6m shall be provided at the front of lots within activity corridors in accordance with Figure 4.

5.3.3 Landscaping should include substantial tree planting and other vegetation to provide shade to adjacent paths and buildings.

5.3.4 Where parking and access requirements limit the implementation of a landscaping strip at the front of lots, a landscaping area of similar size shall be provided elsewhere on the lot.

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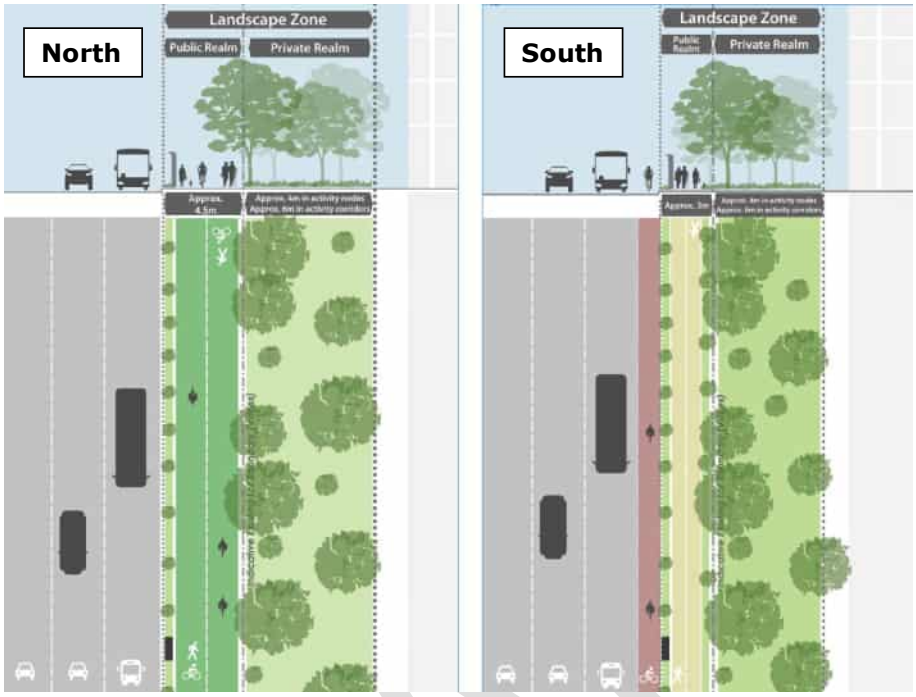



*Figure 4: North and South landscape zone typologies*

## 5.4 Connections

5.4.1 New pedestrian and cyclist connections identified in Figure 5 within Attachment A are encouraged to be integrated into future development.

5.4.2 The City may give weight to the provision of a pedestrian/cyclist connection provided in accordance with Figure 5 when considering the application of discretion in relation to development standards.

## 5.5 Access and Parking

5.5.1 Access and parking associated with lots shall be provided in accordance with Figure 5 contained within Attachment A. Notwithstanding, in considering changes to access points to Great Eastern Highway, the City of Belmont will have regard to advice from Main Roads Western Australia.

5.5.2 As a condition of development approval, Council may require that a public easement in gross be provided to facilitate shared vehicular access between lots.

5.5.3 While temporary crossovers will be permitted, the number of crossovers on a street block shall be minimised having regard for access via easements on adjoining lots.

## 5.6 Building Height and Plot Ratio

5.6.1 Building heights and plot ratio are to be in accordance with Figure 6 contained within Attachment A.

5.6.2 Building heights and plot ratio for 'Activity Centres' shall be determined having regard to the density code imposed on adjacent land but may be varied if:

a) Approval of the proposed development would be appropriate having regard to the criteria set out in Clause 67 of the Planning and Development (Local Planning Schemes) Regulations 2015 Schedule 2; and
b) The non-compliance will not have an adverse effect upon the occupiers or users of the development, the inhabitants of the locality or the likely future development of the locality.

5.6.3 Building heights and plot ratio for 'Industrial' designated sites will be subject to the building height limits contained within the City's Local Planning Scheme.

5.6.4 Building heights and plot ratio for lots within Development Area 6 shall be in accordance with the Improvement Plan and draft Improvement Scheme – Redcliffe Station Precinct.

5.6.5 Building heights and plot ratio for lots within the Golden Gateway Precinct shall be in accordance with the draft Golden Gateway Structure Plan.

## 5.7 Building Setback

5.7.1 Building setbacks are to be in accordance with Figure 7 contained within Attachment A.

5.7.2 Lots reflected as a 'minimal typology' are to be setback a distance between 0m-1m from the landscaping strip located within private property.

5.7.3 Lots reflected as a 'moderate typology' are to be setback a distance of 2m or more from the landscaping strip located within private property.

5.7.4 Lots reflected as a 'parking typology' will be assessed on a case-by-case basis, with consideration to increased setbacks to accommodate site constraints, parking and landscaping in the front setback area.

## 5.8 Transition

5.8.1 Transitions are to be in accordance with Figure 8 contained within Attachment A.

5.8.2 Lots subject to a 'low transition typology' are to be designed to minimise their impact on existing dwellings by ensuring appropriate transitions in building height, bulk and scale. Developments shall incorporate the following features to achieve this:

a) Architectural articulations to reduce visual intrusion and help mitigate the effects of taller structures on neighbouring properties.

b) Landscaping along the rear boundary.

c) Side and rear accessways and parking to further lessen the built form impacts on adjacent residential areas.

d) Stepping in of buildings from the boundary to achieve a greater setback and preserve visual privacy and solar access. This includes:

i. Podium height being one third of the total building height.
ii. Development above 2 storeys within 18m of the rear boundary contained within a 45-degree envelope.

An example of these provisions is shown in Figure 9.




*Figure 9: Example of how development could transition to low scale existing residential development*

5.8.3 Lots subject to a 'medium transition typology' shall complement adjacent land uses in terms of building height and rear and side setbacks. Development should be designed to minimise negative impacts associated with building bulk and scale on adjacent uses.

## 5.9 Amalgamation of Adjacent Land

5.9.1 The amalgamation of land within the Strategy area with land zoned 'Residential,' or with lots adjacent to, abutting or across the road from land zoned 'Residential' will not result in the residential land benefiting from higher development potential under this policy.

5.9.2 Where amalgamation is proposed with non-residential zoned land, and the amalgamated lots are not adjacent to, abutting or across the road from land zoned 'Residential,' the provisions of this Policy may also be applied to the portion of land proposed to be amalgamated, treating the combined lots as a single site. However, such amalgamation must demonstrate improved built form, access and site planning outcomes without adversely impacting nearby residential areas.

## Governance References

| | |
|---|---|
| **Statutory compliance** | *Planning and Development Act 2005*<br>*Planning and Development (Local Planning Schemes) Regulations 2015*<br>Local Planning Scheme No. 15 |
| **Industry compliance** | |
| **Organisational compliance** | Great Eastern Highway Urban Corridor Strategy |
| **Process links** | |

## Local planning policy administration

| Directorate | Officer Title | Contact |
|---|---|---|
| Development and Communities | Manager Planning Services | 9477 7222 |

| Document Date | Review Cycle | Next due |
|---|---|---|
| | Triennial | |

| Version | Decision to advertise | Decision to adopt | Synopsis |
|---|---|---|---|
| | | | |

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**Attachment A**




*Figure 1: Lots subject to this policy*

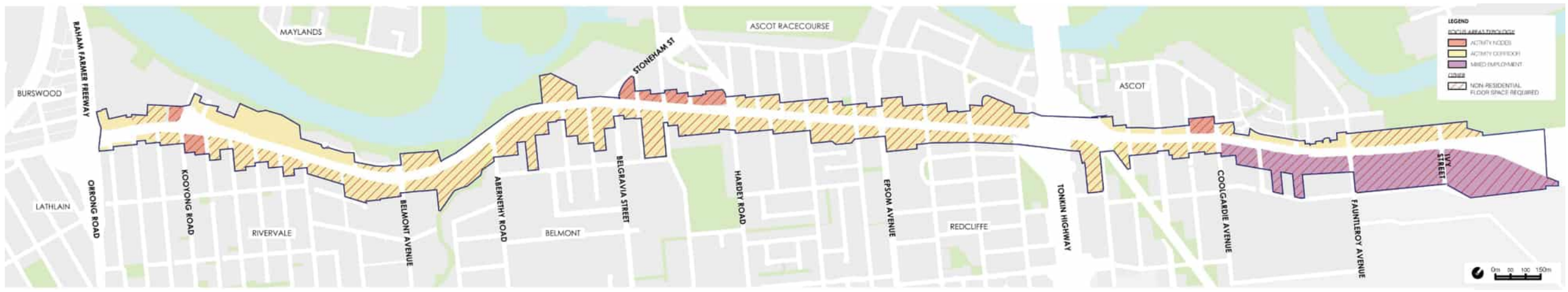



*Figure 2: Locations of activity nodes, activity corridors and mixed employment area*




*Figure 3: Location of public spaces*




*Figure 5: Access and parking typologies and locations of pedestrian and cyclist connections*

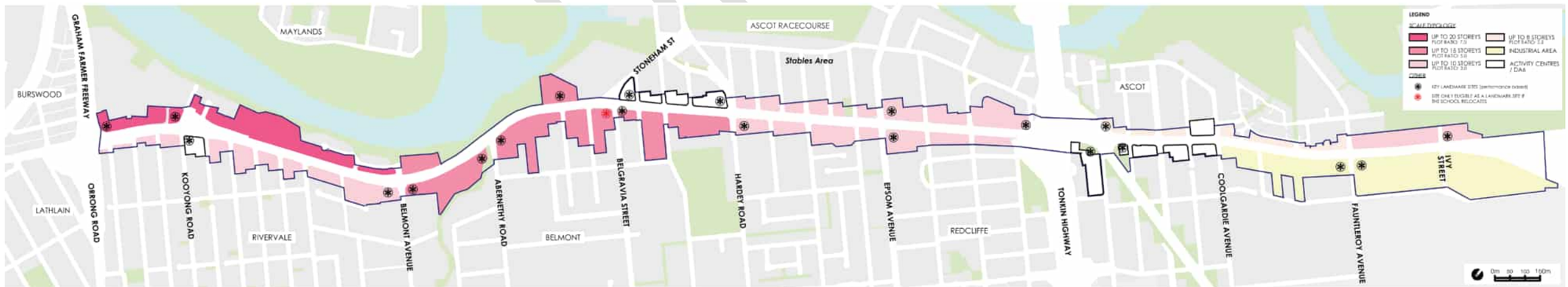



*Figure 6: Building heights and plot ratio*




*Figure 7: Building setback typologies*

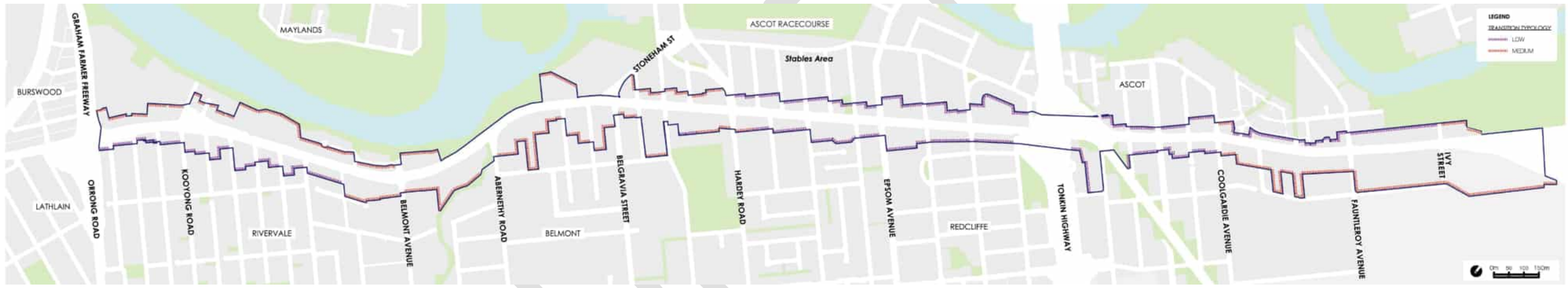



*Figure 8: Transition typologies*

## SCHEDULE OF SUBMISSIONS

| No. | Name and Address | Summary of Submission | Officer Comment |
|---|---|---|---|
| 1. | Public Submitter | Outlines that combining business and residential interests and considerations is an important aspect with respect to City of Belmont residents.<br><br>Highlights that no one can foresee the future with sufficient accuracy. Therefore, making 'provision' for is an important criteria.<br><br>Considers that the City has been considerate of residents and hopes this continues.<br><br>Considers the combination of a road and parkland corridor to separate commercial developments from the urban living aspects could go a long way. Considers that this separation may seem somewhat in conflict with urban infill, however outlines that quality of urban lifestyle is important and a parkland corridor would maintain this concept. | Noted.<br><br>Noted.<br><br>Noted.<br><br>Noted. |
| 2. | Public Submitter | Notes their clients are generally supportive of the Policy and the built form outcomes it seeks to achieve. | Noted. |

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| | | Request the following modifications be made to the Policy to provide greater clarity, flexibility and alignment with the recommendations of the Great Eastern Highway Urban Corridor Strategy.<br><br><u>Policy Application</u><br>Notes that the Policy applies to lots adjacent to Great Eastern Highway.<br><br>Requests that the Policy wording be amended to clarify the treatment of amalgamating adjoining lots not included in the Strategy area. Suggests this could explain that amalgamating land with 'Residential' zoned land or with lots adjacent to, abutting or across the road from 'Residential' zoned land will not result in these benefitting from development at a higher scale in accordance with the Strategy.<br><br><u>Land Use and Activation</u><br>Notes being supportive of the wording proposed by clause 5.1.2: "Within activity corridors, active commercial uses such as showrooms and offices should be located on the ground floor or a development. On upper floors, residential, commercial and office land uses are encouraged. | Noted.<br><br>Noted.<br><br>Refer to the 'Report' section.<br><br>Noted. |

| | | | |
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| | | Requests the clause 5.1.4 relating to window permeability be amended to instead read "No less than 60% of the total window façade shall remain unobstructed and not be covered with opaque materials such as films, signage or permanent fixtures."<br><br>Notes understanding the City's intent to maintain active frontages, however considers the provision should recognise circumstances where windows facing the street may need to be obscure such as adult shops or medical centres and hospitals. Considers the suggested modified wording balances the City's activation objectives with practical operational needs and legislative requirements.<br><br><u>Spaces</u><br>Suggests that reference to 'Spaces' throughout the Policy is replaced with 'Public Spaces' or 'Space Typology'.<br><br>Considers that in lieu of the term being defined, 'spaces' could be misinterpreted to include any form of space, rather than | Clause 5.1.4 has been drafted to facilitate windows facing the public realm in providing a clear visual connection between the building and the street. This outcome is important for achieving active frontages, improving safety through passive surveillance and enhancing the quality of the streetscape.<br><br>It is recognised that in some cases, such as certain medical facilities or specialised uses, discretion may be required to allow alternative treatments. These circumstances can be considered on their merits, without including a set standard within the Policy. Introducing a 60% requirement would alter the intent of the provision and is not considered necessary given the flexibility already available through discretion.<br><br>Accordingly, no modification to Clause 5.1.4 is proposed.<br><br>The use of the term 'Spaces' in the Policy is consistent with the terminology of the Great Eastern Highway Urban Corridor Strategy. Supporting images provide clear guidance on the intended design and function of these areas, and each of the identified spaces is defined within the |

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| | | intended 'public spaces' identified in the Strategy in Figure 3. Considers that amending the wording would avoid ambiguity and ensure consistency with the City's intent and Figure 3 terminology.<br><br><u>Building height and plot ratio</u><br>Notes being supportive of the proposed building heights and plot ratios.<br><br><u>Transition</u><br>Suggests the inclusion of an additional clause which states "In accordance with Clause 2.1, the Transition Typologies as identified in Figure 8 may be adjusted in line with the proposed or new lot boundaries in circumstances where:<br>• The abutting lots are proposed to be amalgamated as part of a Development Approval (and conditioned accordingly); or<br>• Subdivision approval has been granted; or<br>• The lots have been amalgamated.<br><br>Considers this would provide additional clarity and flexibility as to how the transition typologies should be applied where lot boundaries change. Outlines that this would align with the suggested modified wording of Clause 2.1 and is consistent with LU22 of the Strategy. | Policy itself. On this basis, no modification is considered necessary.<br><br>Noted.<br><br>It is acknowledged that lot boundaries may change over time through subdivision or amalgamation. The application of transition typologies in these instances is best considered on a case-by-case basis, having regard to the specific site context. On this basis, no modification is proposed. |

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| 3. | Water Corporation<br>PO Box 100<br>Leederville WA 6902 | Outlines that there is significant Water Corporation infrastructure along the Great Eastern Highway Urban Corridor. Any development is required to adhere to the Water Corporation Technical Guidelines and Developers Manual to protect these assets.<br><br>Any changes to setbacks or road layouts will require assessment by Water Corporation to ensure correct alignments for infrastructure is maintained. Any changes may be at the cost of the proponent.<br><br>Any high-density development will need to be assessed on a case-by-case basis to ensure servicing is possible. Any upgrades will be at the developer's cost.<br><br>Developers are expected to provide all water and sewerage reticulation if required. A contribution for water, sewerage and drainage headworks may also be required. Additionally, the developer may be required to fund new works or the upgrading of existing works and protection of all works associated with the Water Corporation. Water Corporation may also require land being provided for works. | Noted.<br><br>Noted.<br><br>Noted.<br><br>Noted. |
| 4. | Department of Transport and Major Infrastructure<br>140 William Street<br>Perth WA 6000 | The Department supports the policy objectives set out in section 3. | Noted. |

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| | | The Department notes that Figure 4: North and South landscape zones typologies shows a 4.5m shared path along the northbound lane and an on-road cycle lane with 3m pedestrian path along the south bound lane. Notes that this aligns with the Primary Long Term Cycle Network (LTCN) route along Great Eastern Highway. | Noted. |
| | | The Department suggests that in planning for path infrastructure, reference is made to the Department's 'Planning and Designing for Active Transport in Western Australia: All Ages and Abilities Contextual Guidance' which provides recommendations on appropriate bicycle facilities based on road function. | Noted. Future planning for this infrastructure would need to occur in conjunction with the Department of Transport and Major Infrastructure as well as Main Roads WA. |
| | | Notes support for the addition of new public spaces and pedestrian and cyclist connections per sections 5.2/figure 3 and 5.3/figure 5. | Noted. |
| | | Outlines that construction and upgrading of paths should reflect user priority, with the path material continuing over crossovers. Suggests this be included as an additional point in section 5.5: Access and Parking. | It is not considered necessary to update the Policy to include this requirement, as it is already addressed through the City's Engineering Requirements and Specifications. |
| 5. | Main Roads Western Australia<br>PO Box 6202<br>East Perth WA 6892 | In response to correspondence received on 13 August 2025, Main Roads provides the following comments on the above draft local planning policy: | |

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| | | 1. The Great Eastern Vehicle Access Strategy (VAS) prepared by Main Roads has been supported by the City. | Noted. Whilst there may be differences between the MRWA Strategy Figure 5 of the draft policy, both documents aim to achieve the same outcome which is to remove direct access onto Great Eastern Highway. |
| | | 2. Great Eastern Highway between Graham Farmer Freeway and Tonkin Highway is built to its ultimate. | Noted however officers will continue to advocate for improvements where possible. |
| | | 3. Main Roads is not in a position to support the new access points onto Great Eastern Highway as shown in Figure 5 at this point in time. This has been previously advised (see attached letter). Further engagement between the City and Main Roads is required regarding this matter. | Front access, front parking has only been designated on nominated sites where rear access and rear parking has been determined to be unachievable due to topographical and/or other physical constraints. A modifications is recommended to update 5.5.1 to make it clear that in considering future access consultation will be undertaken with Main Roads. |
| | | 4. Main Roads is undertaking an Urban Road Planning Study for Great Eastern Highway east of Tonkin Highway. The study will identify strategic connections and associated access requirements to support the local road network, as well as opportunities to integrate active transport links within the corridor. | Officers recently met with MRWA and were advised of the study for the area east of Tonkin Highway. Officers will continue to engage with MRWA to advocate for improvements identified in the Great Eastern Highway Urban Corridor Strategy to be incorporated into the project. |

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| | | 5. The upgrading/widening of Great Eastern Highway east of Tonkin Highway is not in Main Roads current 4-year forward estimated construction program and all projects not listed are subject to change without notice, and Main Roads assumes no liability for the information provided. | Noted |

Mayor Rossi disclosed at Item 3 of the Agenda "Disclosure of Interest" an Impartiality Interest in the following item in accordance with Regulation 22 of the *Local Government (Model Code of Conduct) Regulations 2021 (WA)*.

# 12.4 Demolition of a Single Dwelling - Lot 502 (314) Kew Street, Cloverdale

| | | |
|---|---|---|
| Voting Requirement | : | Simple Majority |
| Subject Index | : | 115/001 & 34/046 |
| Location/Property Index | : | Lot 502 (314) Kew Street, Cloverdale |
| Application Index | : | N/A |
| Disclosure of any Interest | : | Nil |
| Previous Items | : | Item 12.1.5 |
| Applicant | : | City of Belmont |
| Owner | : | State of WA |
| Responsible Division | : | Development and Communities<br>Infrastructure Services |

## Council role

| | |
|---|---|
| **Quasi-Judicial** | The judicial character arises from the obligation for Council to abide by the principles of natural justice in making a decision on an application, e.g. development applications, building permits, applications for other permits/licences (under *Health Act*, *Dog Act* or Local Laws) and other decisions that may be appealed to the State Administrative Tribunal. |

## Purpose of report

To present Council with an analysis of potential options for the future of the dwelling located at Lot 502 (314) Kew Street, Cloverdale, and to identify a preferred approach for the site having regard to its heritage value, structural condition and financial considerations.

## Summary and key issues

- The dwelling at Lot 502 (314) Kew Street, Cloverdale — known locally as "Stella Hay's House" — is listed as a Category 2 place on the City's Local Heritage List, signifying considerable local heritage significance.
- The property was constructed in 1951 and has remained vacant since 2022, following the surrender of the lease originally granted to Ms. Hay.

- In 2007, Council resolved to pursue demolition once the dwelling was no longer occupied, establishing a dedicated Reserve Account to support future restoration and redevelopment of the land.
- The site is co-located with the State Emergency Services (SES) building and is reserved for Parks and Recreation under the Metropolitan Region Scheme.
- In April 2023, the City formally assumed management of the site and commissioned both a structural engineer, a buildings inspector and a heritage consultant to assess its condition and heritage value.
- A structural report (July 2024) and subsequent building inspection (August 2024) confirmed the dwelling is in a severely deteriorated and unsafe condition, with extensive termite damage, ground subsidence, and structural instability affecting key components of the building.
- A Heritage Impact Statement (August 2025) concluded that demolition is acceptable, provided appropriate mitigation measures are implemented, including archival documentation and interpretive signage.
- Restoration costs are estimated to exceed $750,000, with no viable reuse plan or tenant identified. Expenses of $59,991 have been incurred since 2022 on security and maintenance, with further costs expected.
- The dwelling poses a significant safety and liability risk, with repeated unlawful access and antisocial behaviour observed on site.
- Demolition aligns with the City's strategic objectives, particularly the Public Open Space Strategy and Urban Forest Strategy, which support the enhancement of recreational land and canopy coverage.
- There are no statutory or legislative barriers to demolition under the Planning and Development (Local Planning Schemes) Regulations 2015 or the Heritage Act 2018.
- It is recommended that Council endorses Option 3 – Demolition and instructs the CEO to lodge a development application and implement interpretive measures that honour the site's heritage.

**Officer Recommendation**

That Council:

1. Notes the options analysis undertaken for the dwelling at Lot 502 (314) Kew Street, Cloverdale.
2. Endorses Option 3 – Demolition as the preferred approach.
3. Instructs the Chief Executive Officer to lodge a development application for demolition of the dwelling.
4. Instructs the Chief Executive Officer to develop and install interpretive signage acknowledging the history of the site as part of the site

remediation.

**An absolute majority of Council is required.**

**Note:**

**Cr Sessions put forward the following Alternative Motion.**

**Alternative Councillor Motion**

That Council:

1. Notes the options analysis undertaken for the dwelling at Lot 502 (314) Kew Street, Cloverdale.
2. Endorses Option 3 – Demolition as the preferred approach.
3. Instructs the Chief Executive Officer to lodge a development application for demolition of the dwelling.
4. Instructs the Chief Executive Officer to develop and install interpretive signage acknowledging the history of the site as part of the site remediation.
5. Instructs the Chief Executive Officer to:
    a) Investigate suitable naming of the location in accordance with the City's Policy for Naming or Renaming of Roads, Parks and Reserves and Landgate's Policies and Standards for Geographical Naming in Western Australia, having regard for the Place Name "Stella Hay's House" in the City's Local Heritage List.
    b) Provide a report for Council to consider community consultation to progress naming of the location in accordance with Point a) above.

**Reasons**

- This is property has rich history in Belmont, and forms part of our Heritage List and survey as a category 2 item, which represents considerable significance.
- Stella Hay significantly contributed to Belmont and helped shape it into the City it now is, spending 30 years as arts co-ordinator here.
- I note that the name is not currently on our pre-approved list but feel it would be remiss of Council not to do this. As Stella Hay often said, 'there is no future without a past' and I think we need to acknowledge and share the history of this part of our City with future generations.
- Goal 1 of our Strategic Community Plan: Liveable Belmont Strategy: 1.1 Respect, protect and celebrate our shared living histories and embrace our

heritage

- As per our policy, this pioneering family moved to Belmont in 1951 and lived here for an extended time.

**Note:**

**Cr Kulczycki put forward the following foreshadowed motion.**

**Alternative Councillor Motion**

That Council:

1. Notes the options analysis undertaken for the dwelling at Lot 502 (314) Kew Street, Cloverdale.
2. Endorses Option 3 – Demolition as the preferred approach.
3. Instructs the Chief Executive Officer to lodge a development application for demolition of the dwelling.
4. Instructs the Chief Executive Officer, as part of the site remediation and heritage mitigation measures, to:
   a) Develop and install interpretive signage acknowledging the history and cultural significance of the site; and,
   b) Design and deliver an iconic public art installation that pays homage to the historical and aesthetic importance of the original dwelling, incorporating selected salvaged materials from the demolished structure to ensure a tangible, place-specific connection to Stella Hay's House.

**Reasons**

- The silhouette and unique façade of the dwelling have long served as a recognisable feature when entering into Cloverdale and the City of Belmont, contributing to the area's sense of place and local identity, which will be lost through demolition of the structure.
- The house holds acknowledged cultural significance as a Category 2 heritage place, representing mid-century residential development in Cloverdale and reflecting the life and long-term presence of Ms Stella Hay, a well-known local figure associated with arts and community involvement. While demolition is supported by technical evidence, its historical meaning warrants a respectful and enduring interpretive outcome.
- The heritage consultant's assessment confirms that demolition is acceptable only where meaningful mitigation measures are implemented, including archival recording and interpretive acknowledgement. An iconic artwork created from salvaged elements of the house will ensure the memory of the

place is retained on site in a visually compelling manner.

- Whilst from a historical perspective complete demolition is a regretful outcome, it is one that is pragmatic. The structure is now in a severely deteriorated and unsafe condition, with confirmed termite damage, water ingress, ground subsidence, roof failure, and non-compliant framing. This renders physical restoration financially prohibitive, impractical, and inconsistent with efficient of sound asset management principles.
- The site's intended future use as public open space under both the City's Public Open Space Strategy and the Metropolitan Region Scheme provides an opportunity to embed heritage interpretation into the landscape, ensuring community benefit, educational value, and improved amenity while preserving the history of the site.
- Salvaging and repurposing components of the house into public art is environmentally responsible, aligning with the City's sustainability objectives by reducing waste to landfill, promoting adaptive reuse of materials and reinforcing the Urban Forest and Streetscape Enhancement strategies through integrated place-making.
- The 2007 Council resolution established a clear and longstanding intent that the dwelling would eventually be demolished, meaning the alternative motion does not alter the strategic direction set by Council in 2007 but strengthens the heritage outcomes associated with that decision by requiring a more meaningful, place-based commemoration than signage alone.

**The Mover and Seconder agreed to amend the Alternative Councillor Motion to include Cr Kulczycki's foreshadowed motion.**

**Alternative Councillor Motion**

**Mayor Rossi moved, Sessions seconded**

That Council:

1. Notes the options analysis undertaken for the dwelling at Lot 502 (314) Kew Street, Cloverdale.
2. Endorses Option 3 – Demolition as the preferred approach.
3. Instructs the Chief Executive Officer to lodge a development application for demolition of the dwelling.
4. Instructs the Chief Executive Officer, as part of the site remediation and heritage mitigation measures, to:

a) Develop and install interpretive signage acknowledging the history and cultural significance of the site; and,

b) Design and deliver an iconic public art installation that pays homage to the historical and aesthetic importance of the original dwelling, incorporating selected salvaged materials from the demolished structure to ensure a tangible, place-specific connection to Stella Hay's House.

5. Instructs the Chief Executive Officer to:

a) Investigate suitable naming of the location in accordance with the City's Policy for Naming or Renaming of Roads, Parks and Reserves and Landgate's Policies and Standards for Geographical Naming in Western Australia, having regard for the Place Name "Stella Hay's House" in the City's Local Heritage List.

b) Provide a report for Council to consider community consultation to progress naming of the location in accordance with Point a) above.

**Carried by an absolute majority 9 votes to 0**

For: Abedin, Davis, Harris, Kulczycki, Marks, Ryan, Sekulla and Sessions

Against: Rossi

**Reasons**

Refer to the reasons set out in the Alternative Councillor Motion and the Foreshadowed Motion above.

## Location

The dwelling located at Lot 502 (314) Kew Street, Cloverdale is co-located with the current State Emergency Services (SES) building. The land is owned by the State of Western Australia, with the City of Belmont holding the management order over Reserve 48303 for the purpose of recreation.




## Consultation

While no community consultation has been undertaken on this matter, the City commissioned a qualified structural engineer in July 2024 to prepare a structural condition report (refer Attachment 12.4.1), followed by a comprehensive building inspection in August 2024 (refer Attachment 12.4.2) to assess the overall integrity and habitability of the dwelling. In parallel, a heritage consultant was engaged to evaluate the heritage significance of the property, with the Heritage Impact Statement finalised in July 2025 (refer Attachment 12.4.3.

The findings of these reports have informed the options analysis and recommended approach outlined in this report.

## Strategic Community Plan implications

In accordance with the 2024–2034 Strategic Community Plan:

**Key Performance Area: People**
**Outcome:** 2. A strong sense of pride, belonging and creativity.
**Outcome:** 3. People of all ages and abilities feel connected and supported.

**Key Performance Area: Performance**
**Outcome:** 10. Effective leadership, governance and financial management.

## Policy implications

While there are no direct policy implications associated with this report, the proposed demolition and subsequent remediation of the site align with the objectives of the City of Belmont Public Open Space Strategy – A Strategic Approach to the Planning and Provision of Public Open Space (2022). The strategy supports the enhancement of recreational spaces and the integration of heritage interpretation within the public realm. In addition, the initiative complements the goals of the City of Belmont Urban Forest Strategy by promoting opportunities for increased tree canopy coverage and biodiversity within rehabilitated public spaces.

## Statutory environment

City of Belmont Local Heritage List and Survey

The subject property is listed on the City's Local Heritage List and Survey as a 'Category 2' place, representing considerable significance. Development approval is required prior to any change or development of a property that is included on the Heritage List.

Metropolitan Region Scheme

The subject land is reserved 'Regional Open Space' under the Metropolitan Region Scheme. Certain forms of development, including the demolition of a property located in a heritage-protected place require approval from the Western Australian Planning Commission.

## Background

The dwelling located at Lot 502 (314) Kew Street, Cloverdale — locally known as "Stella Hay's House" — was constructed in 1951 and is co-located with the existing State Emergency Services (SES) building. The property is owned by the State of Western Australia, with the City of Belmont holding a management order over Reserve 48303 for the purpose of recreation, including a power to lease.

At the Ordinary Council Meeting held on 5 June 2007, Council considered a request to obtain a management order over the property (then known as Pt Lot 1, 314 Kew Street) to facilitate the construction of a new SES facility. As part of this arrangement, the City sought to secure a lease that would allow the then-resident, Ms. Stella Hay, to remain in the dwelling until her circumstances changed. The house has remained vacant since 2022.

The 2007 Council resolution also established a dedicated Reserve Account titled "Pt Lot 1 (314) Kew Street – Hay Property" to support the restoration and development of the land following the eventual demolition of the dwelling. This resolution signaled Council's long-term intent for the building to be removed once it was no longer occupied.

The property was formally listed on the City's Local Heritage List in 1996 as a Category 2 place, indicating considerable local heritage significance. It remained

on the updated Local Heritage Survey and Heritage List adopted in 2023. The City commissioned a heritage consultant, a structural engineer and a building inspector to assess the dwelling's condition and significance. The heritage assessment confirmed that while the building holds local heritage value, demolition could be supported if appropriate mitigation measures — such as archival recording — are undertaken. The structural assessment and building inspection report found the building to be in a severely deteriorated and unsafe condition, with extensive termite damage, structural instability, and significant maintenance issues.

An analysis of potential options for the future of the site — including retention, adaptive reuse, and demolition — is outlined below.

## Report

Previous Council resolution

At its Ordinary Council Meeting held on 5 June 2007, Council considered a report regarding a request to obtain a management order over the property then known as Pt Lot 1, 314 Kew Street, Cloverdale. The intent was to secure a management order in favour of the City, including the power to lease, thereby allowing the then-resident to remain in the dwelling until her circumstances changed.

The report acknowledged the property's inclusion on the City's Revised Municipal Heritage Inventory (2002), which provided the following guidance:

"Retain and conserve if possible; endeavour to conserve the significant features of the place: the original fabric remaining especially zinc light windows. Ensure that any future extensions and/or modifications reflect the character and style of the house. Photographically record the place prior to any redevelopment."

The resolution states as follows:

**OFFICER RECOMMENDATION**

***DORNFORD MOVED, BASS SECONDED, that Council:***

1. ***Request the Western Australian Planning Commission to purchase Pt Lot 1 (314) Kew Street and that when transferring the land to the State of Western Australia that Council be granted a management order with the power to lease for the following reasons.***

    - ***It would allow the Council to negotiate with the current owner Mrs Hay a suitable arrangement for her to continue residing at the property until her circumstances change.***
    - ***It would allow the Council to deal with the State Emergency Service on building on the south-east section of the subject property.***
    - ***Mrs Hay would only agree to the sale of her property if she can continue to reside in her home and the management of this is best dealt with by the Council. Council can demonstrate that it has successfully reached agreement with other owners whose land was reserved for Parks and Recreation.***

2. ***Request the Western Australian Planning Commission to consider an allocation of funds to Council to cover the cost of a heritage report on the dwelling/ improvements and the future demolition and clearing of the property.***

3. ***Request the support of the Western Australian Planning Commission to establishing the State Emergency Service headquarters being built on portion of the rear (or south-east section) of her property at Pt Lot 1 (314) Kew Street.***

4. ***Authorise the Chief Executive Officer to reach a suitable lease agreement with Mrs Hay, based on a commercial rental and that payments be placed in a separate reserve account for future expenditure on the subject land.***

5. ***Establish a Reserve Account called "Pt Lot 1 (314) Kew Street - Hay Property" for the restoration and development of land following the demolition of the Hay building.***

***CARRIED 10 VOTES TO 1***

*For: Martin, Rossi, Hitt, Bass, Marks, Godfrey, Whiteley, Brennan, Powell, Teasdale*

Importantly, Council resolved to establish a dedicated Reserve Account titled "Pt Lot 1 (314) Kew Street – Hay Property" to support the restoration and development of the land following the eventual demolition of the building. This resolution signalled Council's long-term intent for the dwelling to be removed once it was no longer occupied.

This historical decision provides a clear precedent for the current proposal and reinforces the City's longstanding objective to pursue demolition and redevelopment of the site in alignment with broader land management goals.

Building Condition

A structural condition survey was undertaken in July 2024, followed by a comprehensive building inspection in August 2024, to assess the integrity of the dwelling located at Lot 502 (314) Kew Street, Cloverdale. While the structural assessment focused exclusively on structural soundness—excluding electrical systems, energy efficiency, damp and weatherproofing, fire safety, and general amenity—the building inspection report went further, commenting specifically on the works required to bring the house up to a habitable standard.

The combined findings confirm that the building is in a severely deteriorated and unsafe condition. Extensive and costly intervention is required to address structural deficiencies, rectify water ingress and termite damage, replace compromised finishes and fixtures, and reinstate essential services. As a result, the property remains unfit for occupation.

Key Findings

- Severe structural deterioration: The building inspection confirmed extensive movement and cracking throughout the structure, with walls showing signs of displacement. Stabilisation using stainless steel reinforcement bars is required.
- Subfloor instability: Although the structural report questioned the need for restumping, the building inspection identified age-related instability requiring re-shimming and re-levelling of the floor to restore safe occupancy.
- Compromised roofing and ceiling systems: Roof tiles, flashings, and structural members are damaged, allowing moisture ingress. Ceilings are sagging, water-damaged, and in some areas partially collapsed. Full replacement is required.
- Extensive termite damage and ongoing risk: Active infestations have caused visible damage to timber flooring, skirtings, and cabinetry. The property is classified as “very high risk” for termite and timber pest activity due to surrounding vegetation and poor subfloor ventilation.
- Non-compliant framing and linings: Wall and roof framing do not meet Australian standards. Internal linings are extensively water-damaged and require full replacement.
- Essential services disconnected or degraded: Power, water, and gas are not connected. Electrical and plumbing systems would require full reinstatement, including new fixtures, appliances, and compliance upgrades.
- Restoration scope equivalent to near total rebuild: The combined findings indicate that restoration would require comprehensive reconstruction of floors, framing, linings, finishes, and services to achieve a habitable standard.

The reports conclude that while technical remediation may be possible, the cost of doing so would exceed the value of the building. The scale of deterioration, combined with safety risks and the absence of a viable reuse plan, supports demolition as the most practical and responsible course of action.

Land Use and Zoning Considerations

The subject land at Lot 502 (314) Kew Street, Cloverdale is zoned "Parks and Recreation" under both the City of Belmont Local Planning Scheme No. 15 and the Metropolitan Region Scheme. This zoning restricts future use of the site to recreational or community purposes consistent with its reserve designation.

Demolition of the existing structure would enable the site to be repurposed in accordance with the City of Belmont Public Open Space Strategy 2022–2040, adopted in 2022. The strategy provides a framework for enhancing the quality, accessibility, and functionality of public open spaces across the City, with a focus on supporting community wellbeing and environmental resilience.

Potential future uses of the site may include:

- Development as public open space;
- Continuation of the footpath to the bus stop to improve pedestrian safety and connectivity;
- Improve passive recreation;
- Creation of community facilities such as gardens or small-scale recreational amenities.

These outcomes align with the strategic direction set by the City and reflect the intended purpose of the reserve. Removal of the existing building is necessary to enable these uses to be realised.

The Local Heritage Value

The dwelling holds recognised heritage significance as a Category 2 place on the City's Local Heritage List, contributing to the historical character of Cloverdale and reflecting mid-century residential development. While its physical condition no longer supports retention, its heritage value will be acknowledged through archival documentation and interpretive measures that honour its place in the City's history.

## Discussion

In balancing the reserve's purpose with its heritage significance, the City's land management approach gives careful consideration to the economic, social and environmental dimensions of land use, including the site's heritage value and potential for future community use.

Three options have been considered for the future of the dwelling located at Lot 502 (314) Kew Street, Cloverdale. These options have been assessed with regard to the site's heritage value, structural condition, financial implications, and alignment with strategic planning objectives. The options presented for Council's consideration are:

- Option 1 – Retain the existing dwelling with no adaptive reuse.
- Option 2 – Retention and adaptive reuse
- Option 3 – Demolition

A detailed analysis of each option is provided below.

Options Analysis

**Option 1 – Retain the Existing Dwelling with No Adaptive Reuse**

This option involves retaining the existing structure in its current state without undertaking any restoration or adaptive reuse. While this would preserve the physical heritage fabric of the site, it presents several significant concerns.

A structural condition survey undertaken in July 2024, alongside a comprehensive building inspection completed in August 2024, found the dwelling to be in a severely deteriorated and unsafe condition. While the structural report focused primarily on structural soundness, the building inspection assessed a broader range of elements including electrical systems, weatherproofing, fire safety, and general amenity. Together, the findings confirm that the property requires extensive remediation across multiple disciplines to restore it to a habitable standard.

In its current state, the dwelling poses a liability and safety risk to both the City and the community. The site has been subject to ongoing unlawful access, with evidence of drug and alcohol use regularly observed. Without intervention, these risks are likely to escalate.

Retaining the structure without a clear purpose would also require continued expenditure on security, maintenance, and risk mitigation, without delivering any tangible community benefit or alignment with the City's strategic objectives.

Given the safety, liability and financial implications, this option is not recommended.

**Option 2 – Retention and Adaptive Reuse**

This option involves undertaking full structural remediation and restoration to enable reuse of the building for community or administrative purposes. While this would retain the heritage structure, it is not considered viable due to the extent of deterioration and associated costs.

The structural condition survey and building inspection collectively identified a broad scope of remedial works required to restore the dwelling to a habitable standard. Key interventions include subfloor stabilisation, reinforcement of masonry walls, replacement of water-damaged ceilings, and major repairs to the roof structure and cladding. The extent of deterioration across structural and internal elements means that near-total reconstruction of floors, framing, and linings would be necessary.

The property is classified as very high risk of termite and timber pest activity, with visible damage to flooring and subfloor areas. While treatment has been undertaken to prevent further deterioration and reduce the risk of infestation, the extent of structural damage may already render remediation unviable. The surrounding vegetation and timber-rich environment further elevate the risk of ongoing pest activity, compounding long-term maintenance concerns.

Building restoration costs are estimated to exceed $750,000. In addition to the upfront investment, long-term maintenance and compliance obligations would remain with the City. No viable tenant or operator has been identified to support ongoing use, and the option is not considered financially sustainable or aligned with responsible asset management.

Given the lack of a viable reuse plan and the significant financial burden, this option is not recommended.

**Option 3 – Demolition**

This option involves removing the existing dwelling to enable the site's redevelopment for recreational purposes, consistent with its Metropolitan Region Scheme (MRS) 'Regional Open Space' reservation and Council's previous resolution as detailed above.

The Heritage Impact Statement prepared by a qualified heritage consultant confirms that removal of the dwelling is acceptable, provided appropriate mitigation measures are implemented. These measures include detailed photographic recording and archival documentation prior to demolition, ensuring the building's contribution to the City's history is appropriately recognised and preserved.

To further honour the site's heritage significance, interpretive measures should extend beyond basic signage. Recommended initiatives include professionally curated archival records accessible to the public, and commemorative artwork or features that reflect Stella Hay's contribution to the local arts community. These measures will provide a meaningful and lasting tribute, consistent with the City's Strategic Community Plan and Public Open Space Strategy.

The structural report and building inspection both confirm the dwelling is in a severely deteriorated and unsafe condition. Significant issues include extensive termite damage, ground subsidence, and structural instability. Restoration to a habitable standard would require near-total reconstruction, with estimated costs

exceeding $750,000. In contrast, demolition and site remediation are expected to cost approximately $250,000.

Demolition would eliminate the existing liability and safety risks associated with the deteriorated structure and remove ongoing maintenance and security costs. It would also enable the site to be remediated and repurposed for recreation in accordance with its Metropolitan Region Scheme 'Regional Open Space' reservation and consistent with the City's Public Open Space Strategy.

Importantly, this approach aligns with the intent of Council's 2007 resolution, which anticipated the eventual removal of the building once it was no longer occupied. The resolution supported future remediation and redevelopment of the site following demolition, reflecting Council's long-standing position that the building would not be retained indefinitely.

Given these considerations, demolition is considered the most practical, cost-effective and strategically aligned option for the future of the site. As the land is reserved under the Metropolitan Region Scheme, a development application for demolition will be required to be lodged with, and determined by, the Western Australian Planning Commission.

## Financial Considerations

Historical Expenditure

Over the past five years, the City has incurred approximately $115,251 in costs associated with managing the property at Lot 502 (314) Kew Street, Cloverdale. These expenses reflect ongoing efforts to maintain the site, address safety concerns, and mitigate risks associated with its deteriorated condition.

Since 2022 alone, $59,991 has been spent, primarily on maintenance, security measures, and responses to unlawful access. Despite the dwelling being vacant, the site has required frequent intervention to ensure public safety and compliance with duty-of-care obligations.

City officers have attended the property on more than 25 occasions, contributing in excess of 100 hours staff time to secure the premises and respond to incidents. While these operational efforts have not been formally costed, they represent a significant internal resource burden and highlight the unsustainable nature of retaining the structure in its current state.

Restoration vs Demolition

Restoration of the dwelling to a habitable standard is estimated to exceed $750,000, based on the combined findings of the structural and building inspection reports. This estimate accounts for extensive structural remediation—including full restumping, floor re-levelling, masonry wall stabilisation, ceiling replacement, and comprehensive roof repairs—as well as the reinstatement of

essential services such as electrical, plumbing, and amenity upgrades. The figure reflects the full scope of works required to meet contemporary standards, though it may increase further due to concealed deterioration or compliance-related costs.

The building is currently in a severely deteriorated condition, with significant termite damage, structural instability, and compromised internal linings. It has been classified as very high risk for termite and timber pest activity, with the surrounding vegetation and timber-rich environment further elevating the likelihood of ongoing infestation and long-term maintenance concerns.

Demolition and basic site remediation are currently budgeted at $150,000 in the 2025–2026 Capital Works Program. Based on current estimates, the total cost to safely demolish the structure and prepare the site for future public use is approximately $250,000. The remaining funds will be drawn from the Streetscape Enhancement Renewal Budget and the Path Network Improved Access and Connectivity Budget. No additional funding is required. This integrated funding approach provides a financially sustainable and predictable outcome, consistent with the City’s long-term strategic intent for the site.

## Environmental implications

The proposed demolition and transition of Lot 502 (314) Kew Street, Cloverdale to public open space presents clear environmental benefits and aligns with multiple strategic frameworks adopted by the City. Specifically, it supports the objectives of the Public Open Space Strategy, which promotes the enhancement of recreational areas and integration of heritage interpretation within the public realm. It also complements the Urban Forest Strategy by enabling increased canopy cover and biodiversity through future landscaping initiatives and aligns with the Streetscape Enhancement Strategy by improving pedestrian connectivity and contributing to a more attractive and accessible local environment.

## Social Implications

The current condition of the dwelling at Lot 502 (314) Kew Street presents ongoing amenity and safety concerns, with repeated unlawful access and antisocial behaviour impacting the surrounding area. These issues have required significant officer time and resources to manage.

While the site holds local heritage value, the social benefit of retaining the structure is outweighed by the risks and limitations it imposes. The building is not fit for occupation, and restoration is not economically viable.

The proposed demolition is consistent with the 2007 Council Resolution. Future use of the site—such as public open space, shared paths, or community facilities—will deliver broader social value and improve amenity for residents.

## Conclusion

The dwelling at Lot 502 (314) Kew Street, Cloverdale has reached a point of structural deterioration and safety risk that renders retention or restoration impractical. While the site holds recognised heritage value, professional assessments confirm that demolition is both acceptable and necessary, provided appropriate interpretive measures are implemented.

Restoration costs are estimated to exceed $750,000. In contrast, demolition and basic site remediation are estimated at $250,000. This approach is significantly more financially sustainable and predictable and aligns with the City's long-term strategic intent for the site.

Demolition will eliminate ongoing liability, enable the site to be repurposed in line with its "Parks and Recreation" zoning, and support key priorities under the Public Open Space Strategy, Urban Forest Strategy, and Environmental Sustainability Strategy.

Council's endorsement of Option 3 – Demolition is consistent with Council's 2007 Resolution and will allow the City to proceed with a development application and deliver a respectful and community-focused transition for the site.

## Attachment details

| Attachment No and title |
|---|
| 1. Structural Report - 314 Kew Street, Cloverdale - July 2024 [**12.4.1** - 15 pages] |
| 2. Building Inspection Report - August 2024 [**12.4.2** - 20 pages] |
| 3. Heritage Impact Statement July 2025 [**12.4.3** - 8 pages] |

AUSTRALIAN BUILDING SPECIALIST PTY LTD
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# STRUCTURAL INSPECTION REPORT

**314 KEW STREET, CLOVERDALE**

AUSTRALIAN BUILDING SPECIALIST PTY LTD
STRUCTURAL ENGINEERING

ABN: 34 644 228 580
ACN: 644 228 580

26th July 2024

Our Ref: S5527 – STI - 0

**THEO SARTZIDIS**

## STRUCTURAL INSPECTION OF EXISTING CRACKS
**314 KEW STREET, CLOVERDALE**

Dear Theo,

Following your request, a representative from this office visited the above-mentioned site to carry out a structural inspection of the existing cracks. The inspection was carried out on the 16th of July 2024. The inspection was a non-invasive examination only.

## Disclaimer

- This report and certification as carried out do not include certification of installation methods.
- This inspection is based on a visual, non-invasive inspection only, therefore durability measures and non-visible or inaccessible structural elements were not inspected.
- This report does not include structural or recertification of the existing structure but rather a partial visual record of the existing structures.

## Inspected Structure




*Figure 1 Inspected Structure*

*Location of inspected structures*

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## Analysis / Findings

The existing wind classification for the structure was determined to be equivalent to N2 (AS4055) in accordance with AS 4055.

| | |
|---|---|
| Wind Region: | **A** |
| Terrain Category: | **TC2.5** |
| Topographic Class: | **T0** |
| Shielding Class: | **NS** |

- This office was engaged to carry out a structural inspection of the existing cracks located at the above mentioned address.
- A representative from this office inspected the existing residence, which consisted of a single-story building, double brick walls and a tiled roof as covering.
- Upon inspection, existing cracks of varying damage were observed. These slight and moderate cracks were found along the external walls of the inspected structure.
- As inspected, a representative from this office observed that the existing dowpipes in all locations were cut and stopping above the ground.
- The existing downpipes as inspected were not connected to sufficient undergound drainage and soakwell systems at the time of the inspection.
- It is the opinion of this office that water from the downpipes is filtrating into the soil adjacent to the inspected house structure, causing the footings to subside due to the water ingression.
- The overall structure was inspected and based on the visual findings and information gathered at the time of the inspection, it is the professional opinion of this office that the following remedial works are required be undertaken to rectify the cracks.
- The existing wall cracks are considered to be of “Slight” and “Moderate” damage in accordance with Table C1 below.

  Appendix B of AS2870: Residential slabs and footings provide guidance in relation to the damage categories and structural implications of cracking within walls. Refer to Table C1 below.

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**TABLE C1**

**CLASSIFICATION OF DAMAGE WITH REFERENCE TO WALLS**

| Description of typical damage and required repair | Approximate crack width limit (see Note 1) | Damage category |
|---|---|---|
| Hairline cracks | <0.1 mm | 0 Negligible |
| Fine cracks that do not need repair | <1 mm | 1 Very slight |
| Cracks noticeable but easily filled. Doors and windows stick slightly | <5 mm | 2 Slight |
| Cracks can be repaired and possibly a small amount of wall will need to be replaced. Doors and windows stick. Service pipes can fracture. Weather tightness often impaired | 5 mm to 15 mm (or a number of cracks 3 mm or more in one group) | 3 Moderate |
| Extensive repair work involving breaking out and replacing sections of walls, especially over doors and windows. Window frames and door frames distort. Walls lean or bulge noticeably, some loss of bearing in beams. Service pipes disrupted | 15 mm to 25 mm but also depends on number of cracks | 4 Severe |

NOTES:

1 Where the cracking occurs in easily repaired plasterboard or similar clad-framed partitions, the crack width limits may be increased by 50% for each damage category.

2 Crack width is the main factor by which damage to walls is categorized. The width may be supplemented by other factors, including serviceability, in assessing category of damage.

3 In assessing the degree of damage, account shall be taken of the location in the building or structure where it occurs, and also of the function of the building or structure.

*Table C1 – Classification of Damage with Reference to Wall*

## Remedial Works

- All slight and moderate wall cracks are required to be stitched with Helifix brick stitching, to prevent the crack from developing any further. Refer to the link for the product application: https://www.helifix.com.au/.
- Any existing hairline cracking should be patched using Polyfilla and then painted.
- Additional grout injection is required to the underside of the existing footings around the entire perimeter of the house structure, to provide additional structural stability and support, as well as preventing the footings from potentially subsiding further.
- All existing downpipes are required to be connected to sufficient underground drainage and soakwell systems.
- Allow 6 months for any additional settlement cracks to occur. After 6 months patch and paint cracks as required.

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## Conclusion

Following the analysis and based on the information gathered at the time of the inspection, it is the opinion of this office that once the above report and remedial works have been adhered to and undertaken, the inspected structure can then be considered structurally adequate.

Should you have any questions regarding the above or require further assistance please contact the undersigned on (08) 6154 2896.

Yours Sincerely



**Nino Llapi**
**Structural Engineer**
**BEng (Hons) (Civil/Structural)**
**CPEng, NER, APEC, IntPE(Aus), MIEAust (5948108), RPEQ (31477), BLA (PE0014398)**




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## Appendix A



*Figure 2 Structure as inspected.*



*Figure 3 Structure as inspected.*

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*Figure 4 Structure as inspected.*



*Figure 5 Structure as inspected.*

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*Figure 6 Structure as inspected.*



*Figure 7 Structure as inspected.*

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*Figure 8 Structure as inspected.*



*Figure 9 Structure as inspected.*

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*Figure 10 Structure as inspected.*

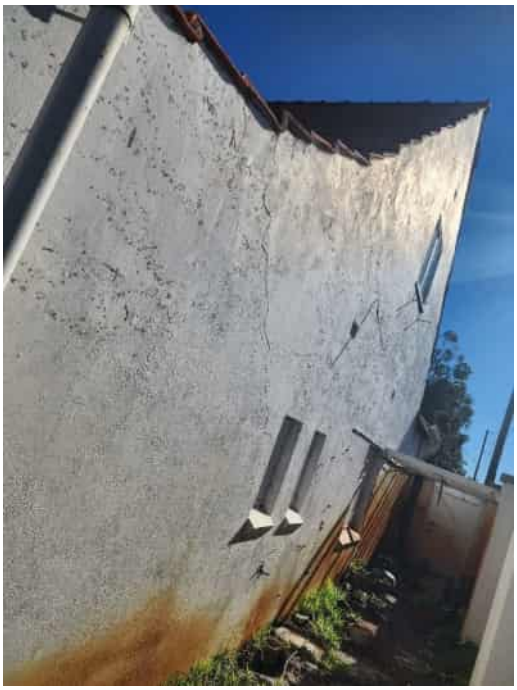


*Figure 11 Structure as inspected.*

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*Figure 12 Structure as inspected.*



*Figure 13 Structure as inspected.*

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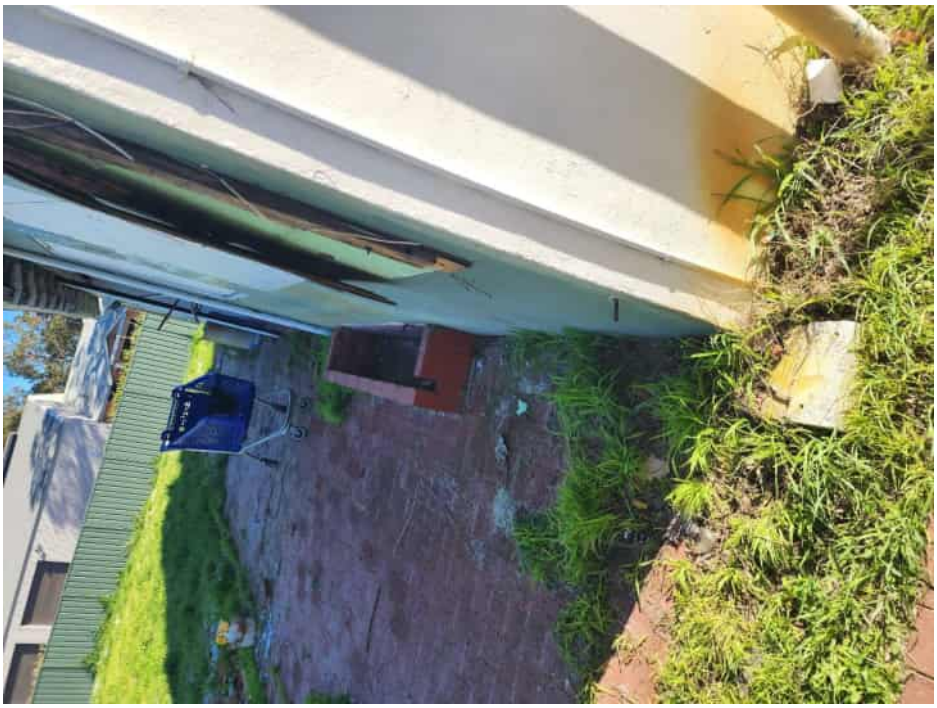


*Figure 14 Structure as inspected.*



*Figure 15 Structure as inspected.*

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*Figure 16 Structure as inspected.*



*Figure 17 Structure as inspected.*

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*Figure 18 Structure as inspected.*



*Figure 19 Structure as inspected.*

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*Figure 20 Structure as inspected.*



*Figure 21 Structure as inspected.*

This certification is limited to the documentation supplied for the specific site address and compliance with the requirements of the published codes of practice listed and should not be used for any other purpose. Australian Building Specialist Pty Ltd accepts no responsibility for information that has not been expressly identified as part of this assessment. This assessment can only be relied upon by the addressee and cannot be relied upon by any third party. Australian Building Specialist Pty Ltd accepts no responsibility for any third party that seeks to rely upon this assessment.

# BUILDING LOCALLY

ABN 91 565 770 189
65A WEAPONESS RD
SCARBOROUGH WA 6019
PHONE: 0430 557 262
B LIC: 12815


14TH AUGUST 2024

**Gerry Brien**
**City of Belmont**
**Locked Bag 379,**
**CLOVERDALE, WA 6985**

REF: CB2405

**REPORT**

Attn: Gerry Brien – Building & Facilities Operations Advisor,

**Re: 316 KEW ST, CLOVERDALE**
The purpose of this report is determining the condition of the building in regards to its structural integrity, the extent of work required to bring the premise back to a habitable state in a like for like manner and based on that, determine a cost to remediate/renovate the property.

Included with this report will be a structural engineering report and pest & weed control report.

Australian Building Specialist Pty Ltd on the 16th July 2024 conducted their own inspection of the building and provided their Structural Building Report. (Ref: S5527 – STI – 0)
CBA Pest & Weed Control inspected the building on the 31st July 2024 to review any live infestations of termites & vermin and to provide recommendations as per their report JOB NUMBER 174,538.

**DESCRIPTION**
Based on information provided the home was built in 1970 approximately making it 54 years. The building is a double brick for most part on the ground level built on concrete foundation and timber framed floor, stud walls and roof to the upper floor with a clay roof tile cover. The majority of the floors to the lower level are timber floor on brick stumps with the bathroom floor being concrete.



**Fig 1**

**1 - SITE CONDITIONS**
The site comprises of sandy soil with grassed vegetation to the front and right side of the property. The remaining site has been cleared of all previous out building and trees.
To the front the building has the ground levels above the foundation levels and are set at 1 course below the finished floor level. The left, rear and right side the level is at just below door threshold levels. (Refer Fig 2 – 5)

E. & O. E.



**Fig 2**



**Fig 3**



**Fig 4**



**Fig 5**

Externally the blockwork has not been adequately waterproofed to prevent moisture ingress. The foundations are not visible and are deeper than the current ground levels. The issue with this being is that the cement blocks used are porous element that absorb and hold water content having an impact on the integrity of the wall & foundation.
The property does not have a stormwater system to capture roof water or ground surface water away from the building. The building has 1 downpipe at the rear (Fig 6), 3 downpipes to the front elevation



**Fig 6**



**Fig 7**



**Fig 8**



**Fig 9**

(Fig 7 & 8) and 1 downpipe to the left corner (Fig 9).
The stormwater discharge from these downpipes has a direct impact on the ground conditions and on the foundations. This is evident from the external cracks to the outer walls both on the left and right side of the home Fig 10 – 14).

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**Fig 10**



**Fig 11**



**Fig 12**



**Fig 13**



**Fig 14**

Refer to Australian Building Specialist Pty Ltd Structural Building Report. (Ref: S5527 – STI – 0) for their observations and recommendations.

**1.1 - RECOMMENDATION**

Remove all vegetation in a 2m proximity to the building.
Remove the concrete area to the right side of the house.
Remove all paving from the left side and rear of the home.
Drop ground levels around the perimeter of the building by a minimum 2 course (172mm).
Provide 2 soakwells and stormwater system to the front of the building, for the discharge and capture of all roof water from the front of the house. (4 downpipe outlets)
Provide 1 soakwell and stormwater system to the rear of the building, for the discharge and capture of all roof water from the rear of the house. (1 existing downpipe outlet plus 1 additional outlet)
Provide grout injection to perimeter foundation of the home to stabilise ground subsidence (Refer to Australian Building Specialist Pty Ltd Structural Building Report. (Ref: S5527 – STI – 0)).
Reinstate paving at the right ground level and slope to direct ground surface water away from the building.
Provide strip drains and grates for the capture of surface ground water in to soakwells.

**2 - BRICKWORK**

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The building has been constructed with cement blocks for the external walls and mostly single course red bricks internally. The exception appears to be the external chimney, which was laid with red bricks.
The building, on the ground floor comprises of double brickwork to left, right and front sides.
The wall between the bathroom, kitchen, dining room has backing onto the store room and the laundry is a single leaf wall. The laundry and the store are also constructed as a single leaf wall. It is evident that due to the ground subsidence and the location of the cracking, this is the weakest point on the walls (refer to Fig 15 – 17 & Australian Building Specialist Pty Ltd Structural Building Report. (Ref: S5527 – STI – 0)).



**Fig 15 Right Side**



**Fig 16 Left Side**



**Fig 17**

It is also observed that the planter boxes would also be contributing to water saturation of the foundations as the water discharges directly beneath them.

The external fireplace chimney on the right side to the house faces the prevailing weather coming from the South and South West directions. It is evident that the factors which have affected this corner of the home are water ingress due to access to inner side of foundation and as mentioned earlier the discharge of stormwater straight onto the ground next to the foundation (Fig 8 above, Fig 18 & 19)

E. & O. E.



**Fig 18**



**Fig 19**

To the ground floor internal walls, there does not appear to be any visible cracking other than to the wall in the dining room (Fig 20). All the walls are covered with wall paper but there does not appear to be rips or tears.



**Fig 20**

**2.1 - RECOMMENDATION**

To prevent further damage to the building, recommended actions that should be taking include:
Helifix brick stitching to right side external and affected internal wall/s.
Helifix brick stitching to left side external and any affected internal wall/s.
Helifix brick stitching to front side external wall/s.
Investigate and remediate all minor cracking throughout the building as necessary.
Refer to Australian Building Specialist Pty Ltd Structural Building Report. (Ref: S5527 – STI – 0).

**3 – GROUND FLOOR**

The ground floor is constructed with brick stumps without ant caps, with timber bearers and joists. The internal stumps have not been affected by the issues noted above (1 & 2). The timber bearers and joists appear to be in good condition. The floor is jarrah boards approximately 50mm wide. The floors to all rooms except the kitchen have carpets as the covering. The kitchen has a lino floor covering (most likely asbestos based product). The height from the ground to the underside of the bearers ranges between 200 to 250mm in clearance.
Inspection of the jarrah floors indicates that there has been an infestation of termites which have damaged part of the floors in most rooms (Fig 21 – 39). The worst affect floor is in the kitchen. Refer to CBA Pest & Weed Control Inspection report JOB NUMBER 174,538. The floor to the kitchen will need to be replaced. In all other floor areas, the affected boards will need to be cut out and replaced. It is evident that some skirtings, the staircase stringer and some of the built-in cabinets have been affected by white ants. The cause of the infestation is due to damp conditions around the base of the building and easy access for white ants to gain entry. Also, the subfloor does not have any ventilation vents due to how the building has been constructed.

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The construction of the kitchen wall as a single leaf and location of external wall opening/s have assisted termite access. As a result, the extent of the damage to the kitchen floor.



**Fig 21 Termite trail**



**Fig 22 Termite damage**



**Fig 23 Termite damage lounge**



**Fig 24 Termite damage lounge**



**Fig 25 Termite damage lounge**



**Fig 26 Floor hatch lounge**



**Fig 27 Floor hatch front bedroom**



**Fig 28 Termite damage front bedroom**

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**Fig 29** Termite damage front bedroom



**Fig 30** Termite damage front bedroom



**Fig 31** Floor hatch 2nd bedroom



**Fig 32** Termite damage 2nd bedroom



**Fig 33** Under staircase



**Fig 34** Termite damage stringer



**Fig 35** Termite damage kitchen



**Fig 36** Termite damage kitchen

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**Fig 37 Termite damage kitchen**



**Fig 38 Termite damage kitchen**



**Fig 39 Termite damage kitchen**

The store room floor is in a poor state as it saturated due to the roof above leaking.

**3.1 - RECOMMENDATION**

Based on evaluation made, it is recommended
All external ground levels be lowered to reduce moisture ingress into the building.
Perimeter of building be excavated to expose wall down to foundation to waterproof wall below ground level.
Repair and point any penetrations where termites can gain access to the subfloor.
Repair any wall penetrations to the kitchen wall.
Repair all jarrah floors affect by termite damage
Refer to CBA Pest & Weed Control Inspection report JOB NUMBER 174,538 for all recommendations.

**4 – UPPER FLOOR**

The upper floor is timber constructed. The ceiling battens and floor joists are of jarrah and are in very good condition. The back left bedroom has a jarrah T & G floor boards with carpet on top.



**Fig 40**



**Fig 41**

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**Fig 42**



**Fig 43 Jarrah boards**

The staircase is also constructed of jarrah and appears in good condition. The floor to the 2 last rooms is of particle board nature. The boards have been saturated with water due to the roof leaking the house has sustained and as such the floor feels soft to walk on Fig 44 & 45.



**Fig 44**



**Fig 45**

The stud walls appear to be in a reasonable condition. It is an opinion that the weight of the roof frame applied onto the wall framing has compressed the particle board floor. The impact of this means the wall and roof frame have shifted. What is evident from the inspection is that the rafters have bowed, and there appears to be a small gap between the rafter and the ridge beam.



**Fig 46**



**Fig 47**

The roof frame does not comply to current building standards. The under purlins are not fixed to the most rafters. There is no strapping to the rafters and ridge. There is no strapping to the strut and ridge board. The roof frame is lacking sufficient collar ties Fig 46 & 47.
In Fig 48 – 51indicate the roof rafters over the store room, kitchen veranda. What is evident are that there are no bolted connections, no strapping and evidence that there has been movement due to gaps

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appearing. This occurrence seems to coincide with Australian Building Specialist Pty Ltd Structural Building Report. (Ref: S5527 – STI – 0) specifically in regards to subsidence



**Fig 48**



**Fig 49**



**Fig 50**



**Fig 51**

The roof tiles have slipped off the battens due to wire ties having rusted, roof tiles having been disturbed. Overall, the roof cover is in a poor state (Fig 48 – 53).



**Fig 52**



**Fig 53**

Where built in cabinets have been installed the wall framing is undersized and thus non-compliant to current building standards.

**4.1 - RECOMMENDATION**

Refer to Recommendations 1.1 and 2.1.
Based on evaluation made, it is recommended

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The damaged particle board be removed and replaced with structorflor.
The stud walls are reset and secured to frame.
The wall and roof frame are made complaint to NCC standards and AS1684 Residential Timber-Frame Construction.
Remove and replace roof tiles with new. Provide sarking and pin all tiles.

**5 – CEILING & WALL LININGS**

Ceilings
The ground & upper floor ceilings are plasterglass boards. They have sustained extensive water damage due to leaks from the roof. Visible cracking to the plasterglass is caused by wind pressure and the dislodgement of wading. (Fig 54 – 67).

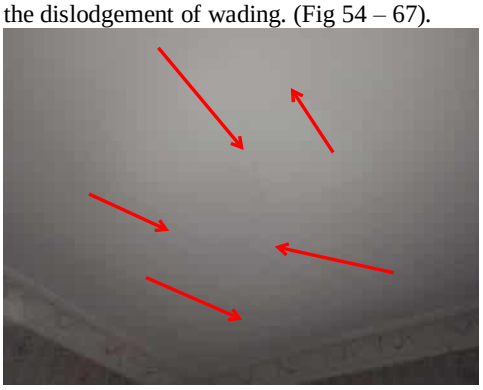


**Fig 54 Front bedroom**



**Fig 55 Front bedroom**



**Fig 56 Dining**



**Fig 57 Dining**



**Fig 58 Lounge**



**Fig 59 Passage**

E. & O. E.



**Fig 60** **Passage**



**Fig 61** **Entry**




**Fig 61** **Kitchen - Dislodged**



**Fig 62** **Kitchen**

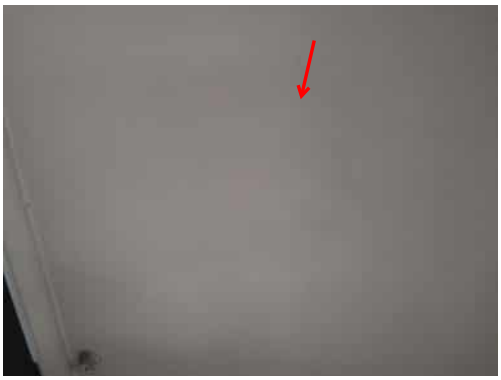


**Fig 63** **Kitchen – Cracking**

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**Fig 64** **Sitting Rm**



**Fig 65** **Sitting Room Nook**



**Fig 66** **Bedroom**



**Fig 67** **Store room**

Walls
The upper floor walls comprise of pinboard lining with the exception of the attic store, bedroom on the left and the stairwell void. All walls have severe water damage.

**5.1 - RECOMMENDATION**

Based on evaluation made, it is recommended
All ceiling and wall linings both internally and externally be removed and reinstate with 13mm plaster board. All cornices be replace with new matching plaster glass cornices.
Provide wall and ceiling insulation.

**6 – WINDOW & DOORS**



**Fig 68** **Repair**



**Fig 69** **Replace**



**Fig 70** **Replace**

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**Fig 71 Replace**



**Fig 72 Replace**



**Fig 73 Replace kitchen & upper**



**Fig 74 Replace laundry**



**Fig 75 Replace**



**Fig 76 Replace**



**Fig 77 Replace**



**Fig 78 Replace**

E. & O. E.

**6.1 - RECOMMENDATION**

Based on evaluation made, it is recommended
All window sashes be removed and replaced where the cost to replace is more cost effective than repairing.
Replace all windows where the damage to the frame and sash/es is too severe to repair.
Repair all leadlights and replace glass to NCC conditions.
Replace all external doors (like for like where possible) due to the extent of damage due to break ins and securing.
Replace all door and window hardware.

**7 – CABINETRY**



**Fig 79**



**Fig 80**



**Fig 81**



**Fig 82**



**Fig 83**



**Fig 84**



**Fig 85**



**Fig 86**

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**Fig 87**



**Fig 88**



**Fig 89**



**Fig 90**



**Fig 91**

**7.1 - RECOMMENDATION**

Based on evaluation made, that all cabinetry to the building is not fit for purpose. It is recommended All Cabinets be removed and replaced.

**8 – FINISHES**

All carpets are not fit for purpose and will need to be removed and replaced.
All wall paper to entire home is in a poor condition and will need to be removed and replaced. Most of the damage has been caused due to water damage.
The walls will need to be decontaminated, resurfaced, and painted.
Painting is required to all ceilings, walls, internal woodwork including doors, windows, sills skirtings and architraves as well as the staircase and balustrade.
External painting is required to all rendered walls, all roof timbers (rafter ends, barge boards and/or other).
Rectify missing tiles in the laundry.

**9 – ROOF PLUMBING**

All gutters, downpipes, valley gutters, apron flashings, chimney flashings and flume need to be removed and replaced.

**10 – SERVICES**

Currently there is no power, gas or water connected at the house.
Electrical
The building will need a new meter box installed and power brought back into the home.
Due to the extensively poor condition of the home, it would be recommended that:

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- The current wiring to switches and power points be tested and verified that it is suitable for purpose.
- Alternatively, all electrical wiring, power points and switches be renewed.

The home will require new lighting as all have been removed.
The home will require new appliances (oven & hot plate or stove, rangehood, split system air conditioner).



**Fig 92**

Plumbing
Currently all external water pipes have been removed. New water pipes will need to be laid to service the laundry, kitchen, store room and the bathroom.
The sewer connection will need to be inspected to make sure all drainage outlets exiting from the house are connected to the mains sewer junction (location unknown).
New plumbing fixtures will be required for the bathroom, laundry, kitchen and store (cistern for the toilet in the bathroom, is located here). Currently some fittings are missing, incomplete and/or not fit for purpose.
A new storage hot water unit is required.
It would be optional to gas or electric. Items requiring gas are the hot plate/stove, the storage hot water unit and possibly the fire place in the front room.



**Fig 93**

## 11 - REVIEW OF REPORTS

Having completed the investigation, I have reviewed the structural report conducted by Sebastian Chira from VTP Engineering.

Structural Condition Survey conducted on the 9/3/2023 by Sebastian Chira from VTP Engineering produced the report with his findings:

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1. Restumping of subfloor due to its age and the requirement to re-shim and relevel floor.
2. An extensive pest inspection is recommended to determine existence of pest damage.
3. Any damp rot affected or deteriorated timbers beneath the floor
4. Re- stitching of main cracks in masonry with the use of Helifix stainless steel bars
5. Re-point the brickwork in the affected areas
6. Due to the poor conditions of the ceiling (sagging, moisture damage and water damage) replacement would be required.
7. Roof frame not compliant to current building standards but consistent with buildings of a similar age.
8. Weatherproofing of the roof cladding compromised in some areas requiring replacement of damaged tiles and roof flashings
9. Possible full removal and reroof of the entire cover
10. Roof frame upgrades more effectively performed if cover removed for frame upgrades and maintenance.

I agree with above items 2 to 10.
Note: Previous reference to outbuilding has been excluded from this report as they were removed prior to this inspection.
I do not agree with item 1 as there was no evidence of restumping required. The stumps are brick stumps and in good condition.

Building inspection conducted on 9th March 2023 and subsequent report issued by Tony D'Alonzo Director of Inspecwest P/L (present Laurence Jankulovski and Theo Sartzidis) addresses the visual condition of the home.
Findings were as follows:
**INTERNALLY**

- Bedroom 1 – Water and mould damage to north wall – Ceiling in poor condition & failing.
- Bedroom 2 – Window sashes deteriorated.
- Sitting Room – Ceiling condition water saturated, has failed. To be replaced.
- Study - Ceiling condition water saturated, has failed. To be replaced.
- Landing – Wall linings have failed. Need replacing
- Bedroom 3 – Water damage to wall linings (4 walls). Window sashes have seized. Ceiling poor condition. Floor poor condition.
- Attic Room – Conditions of walls and ceiling have failed. Floor poor condition, possible asbestos lino covering.
- Stairway to 1st floor – Ceiling poor condition.
- Entry – Walls & ceiling poor condition.
- Lounge – Room in reasonable condition
- Kitchen/meals – Ceiling reasonable. Floor condition terminal. Condition of cabinets aged. Condition of fixtures and appliances was not reviewed.
- Passage centre – Walls & ceilings reasonable.
- Linen Cupboard – (Under stairs) Aged
- Storage - (Under stairs) Possible asbestos lino.
- Bedroom 4 – Window condition poor. Ceiling in an average condition.
- Store room – Walls & ceiling in poor condition
- Bathroom – Floor, Walls and ceiling sound.
- Laundry – Wall tiles have fallen; ceiling is possibly asbestos due to its age. Walls reasonable condition

EXTERNALLY

- North Wall – Stepped cracks, roof tiles have slipped (water ingress occurring) roof condition poor.
- South Wall - Stepped crack, Chimney detaching, Vertical jagged crack and Horizontal crack.
- East Wall – Roof tiles have slipped
- Patio – Brick paving has subsided
- Front Portico - Cornice in poor condition. Sub board opening poor condition. Cracked tiles.
- Rear Veranda - North wall Stepped crack RH side of door, West wall Stepped crack,

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Whilst the Building inspection report was a visual investigation, which I concur with, that inspection was conducted before the home have been cleaned out. The photos included in this report were taken some 4 months later as part of my investigation. It is noted that in the previous reports there were no invasive actions taken to review the sub floor, behind stud walls or inaccessible ceiling spaces. Roof frame was not investigated to assess extent or condition of the building.

**12 – FINAL FINDINGS**

I am of the opinion that the building is in a very poor state. The extent of the work required to bring this house to structurally adequate condition as well as renovate and refurbish the interiors and exteriors to bring this house to a habitable state, in a like for like state, will require a financial injection of the range $715,000. [Verified]

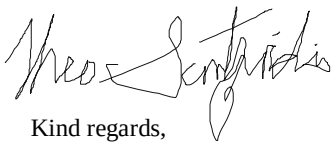
1. **PRELIMINARY COSTS:**
    a. Building Consultants
    b. Building Permits
    c. Insurance
    d. Mobilisation & Demobilisation costs
2. **SITE CONDITIONS:**
    a. Earthworks
    b. Soakwells
    c. Stormwater system
    d. Foundation stabilisation – Grout injection
3. **BRICKWORK:**
    a. Structural stitching
    b. Brick repairs
4. **GROUND FLOOR**
    a. Perimeter foundation waterproofing.
    b. Site works lower ground levels.
    c. Termite Treatment.
    d. Repairs and pointing below floor level.
    e. Repair all jarrah floors - termite damage, moisture content damage.
5. **UPPER FLOOR**
    a. Particle board removed and replacement.
    b. The stud walls reset and secure to frame.
    c. The wall and roof frame are made complaint to NCC standards and AS1684 Residential Timber-Frame Construction.
    d. Remove and replace roof tiles with new. including sarking and pinning.
6. **CEILING & WALL LININGS**
    a. All ceiling and wall linings both internally and externally removed and reinstated with boards
    b. All cornices replaced with new matching plaster glass cornices.
    c. Provide wall and ceiling insulation.
7. **WINDOW & DOORS**
    a. Replace all windows where the damage to the frame and sash/es is too severe to repair.
    b. Repair all leadlights and replace glass to NCC conditions.
    c. Replace all external doors (like for like where possible) due to the extent of damage due to break ins and securing.
    d. Replace all door and window hardware.
8. **CABINETRY**
    a. Remove & replace all cabinetry
9. **FINISHES**
    a. Carpets floor coverings.
    b. Wall paper to entire home and replaced.
    c. Decontamination, resurface, and painted of walls.
    d. Internal painting
    e. External painting
    f. Rectify finishes, laundry, store, bathroom & kitchen
10. **ROOF PLUMBING**
11. **SERVICES**
    a. **Electrical**
        i. New meter box, meter & breakers.

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ii. Power Connection
iii. Testing of wiring, switches and power points.
iv. Alternatively, all electrical wiring, power points and switches be renewed.
v. Light fittings.
vi. New appliances (oven & hot plate or stove, rangehood, split system air conditioner).

b. **Plumbing**
i. New water pipes to be laid to service the house.
ii. The sewer connection inspection.
iii. New plumbing fixtures for bathroom, laundry, kitchen and store (cistern for the toilet in the bathroom, is located here).
iv. Hot water unit.
v. Optional - gas or electric. Items requiring gas are the hot plate/stove, the storage hot water unit and possibly the fire place in the front room.

I am of the opinion that the home could be demolished and rebuilt, requiring a financial injection of the range $575,000. [Unverified]



Kind regards,
Theo Sartzidis
BL R: 12815

E. & O. E.



Proposed Demolition of Stella Hay's House

At 314 Kew Street Cloverdale

# Heritage Impact Statement

Prepared for

**City of Belmont**

By

HOCKING HERITAGE + ARCHITECTURE

July 2025

Cover Illustration:

Figure 1 View of the front of *Stella Hay's House*.
Hocking H+A, June 2025.

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HHA Job No. 202505

| Rev No | Approved | Date |
|---|---|---|
| - | Dinah Mujati, RAIA | 03 July 2025 |
| A | Dinah Mujati, RAIA | 05 August 2025 |
| | | |

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# FIGURES

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# 1.0 INTRODUCTION

This Heritage Impact Statement has been prepared for the proposed demolition of the house at 314 Kew Street Cloverdale formerly known as *Stella Hays House*.

The residence was designed in the Inter War Spanish Mission style and constructed from 1951 to 1956. It is currently owned by the State Government and managed by City of Belmont.

The building has been unoccupied for a few years and is in disrepair. The City of Belmont are considering demolishing it to regain the area for parks/ recreational use.

This Heritage Impact Statement assesses the impact of the demolition of *Stella's Hays House* against the cultural heritage significance of the place.

## 1.1 The Site

The physical address of 314 Kew Street Cloverdale is also referred to as 314 Abernethy Road Cloverdale. *Stella Hay's House* is at the northern end of the large lot and has a tapered masonry wall along the boundary facing Abernethy Road. South of the residence is the Victoria Park SES headquarters separated by a Colorbond steel dividing fence.




Figure 2 Aerial view of 314 Kew Street Cloverdale with *Stella Hay's House* at the northern end of the block.
Courtesy *Nearmap,* accessed 30 June 2025.

## 1.2 Heritage Listings

*Stella Hay's House* has been identified as having cultural heritage significance. It is entered in the Heritage Council WA database as Place Number no. 08643 and in the City of Belmont Local Planning Scheme No. 15 Heritage List.

**Statutory Listings:**

| Type | Status | Date | More information |
|---|---|---|---|
| Heritage List | Removed | 31 Dec 1996 | City of Belmont |
| Heritage List | Adopted | 27 Jun 2023 | City of Belmont |

**Other Listings:**

| Type | Status | Date | More information |
|---|---|---|---|
| Municipal Inventory | Removed | 31 Dec 1996 | Category 2, City of Belmont |
| Municipal Inventory | Removed | 22 Nov 2016 | Category 2, City of Belmont |

## 1.3 Statement of Significance

The following Statement of Significance is drawn from the Register of Heritage Places Entry for *Stella Hay's House* with Place Number 08643. Acknowledgement is extended to the author of this document.

> The place has aesthetic value as a modest demonstration of the Inter War Spanish Mission style.
>
> The place is prominent in the streetscape because of its location on a high traffic road and its unusual design in the region.
>
> The place has historic value for its association with the period following World War Two when building materials were scarce and many homes were built by their occupants.
>
> The place has historic value for its association with the period following World War Two when the population of metropolitan Perth grew and the outer suburbs became more densely settled.
>
> The place is a good demonstration of the style and scale of housing in the post war period and the resourcefulness of the owner builders.
>
> The construction of the cement bricks used in this property may provide information about the techniques and materials used during the post war period.

## 1.4 References


- Australian Building Specialist Pty Ltd, WA, *Structural Inspection Report 314 Kew Street, Cloverdale.*
- CBA Pest & Weed Control, WA, July 2024, *Timber Pert Inspection Report.*
- InspecWest Pty Ltd, WA, March 2023, *Building Report - 314 Kew Street, Cloverdale.*
- InspecWest Pty Ltd, WA, March 2023, *Structural Condition Survey #314 Kew Street Cloverdale WA.*
- TDM Pert Solutions, WA, March 2023, *Termite Inspection Report.*

# 2.0 DESCRIPTION OF THE PLACE

*Stella Hay's House* is a two-storey asymmetrical structure with steep hipped roofs which are tiled and painted masonry walls. A stepped masonry wall runs along the northern boundary and returns for part of the east boundary which is defined by a solid metal fence. The rear of the block has been cleared and levelled.

A single chimney stack is on the southwest wall and a dormer window is present on the rear roof. At the time of this report, all the openings were boarded up with graffiti on some of the walls and a few missing roof tiles characteristic of a disused building.

Internally most of the walls were lined with wallpaper, including some of the ceilings. The fireplace in the living room is still intact, including the staircase leading to the upper storey. The timber floorboards had remnants of carpet glue. Carpentry and fitout are in poor condition.



Figure 3 *Rear view of Stella Hay's House.*
Hocking H+A, June 2025.



Figure 4 *Side view of Stella Hay's House.*
Hocking H+A, June 2025.

The structural investigations undertaken in 2023 identified that the walls were in fair condition relative to the building's age. The recommendation was to restump the floors and upgrade the wall and roof framing. Further investigations in 2024 recommended that grout injection should be undertaken to the underside of the existing footings to provide additional structural stability and support to prevent further subsidence.

# 3.0 PROPOSED CHANGES TO THE HERITAGE PLACE

City of Belmont have no use for the house and no intentions for its adaptive re-use to rectify existing damage and deterioration. The stated reason is the cost of retaining the building and adapting it for an alternative use.

*Stella Hay's house* is located in an area zoned for Parks and Recreation use. The proposal is to demolish the house and redevelop the site for recreation use for the community.

Initial sketches indicate a basketball court to be situated where the house is, with a winding path along Abernethy Road and other landscape elements and parkland.

The drawings which document the proposed works are:

- Landscape Concept Plan - Belmont POS Reviews | Abernethy Verge_Draft for Comment
- Landscape Concept Plan - Belmont POS Reviews | Stella Hays POS_Schematic Design

# 4.0 ASSESSMENT OF IMPACT

Demolition of *Stella Hay's House* will result in the total loss of a structure that demonstrates a late example of the Inter War Spanish Mission style architecture and craftsmanship. It is a prominent structure along the main road and its absence will diminish the visual identity of Kew Street and the area's historical character.

Demolition of the property will lead to the loss of an example of self-build homes that were common in the Post War period and are now few in number.

If demolition is accepted as the only viable outcome, it is recommended that the following strategies are employed to capture the heritage values and mitigate the negative impact of the loss of the building:

- Interpretation of the building relating to the history of the house, and Clement and Stella Hay. Any collated material should be deposited with the City of Belmont Local History Collection.
- Preparation of an Archival Record and photographic survey of the site.

# 5.0 CONCLUSION

The proposed demolition of *Stella Hay's House* at 314 Kew Street Cloverdale will have a negative impact on the values of the place. Its Category 2 status in the Local Heritage Scheme identifies it as a place very important to the heritage of the City of Belmont, but redevelopment of the site is acceptable.

Prior to its removal it is advised to undertake an Archival Record and photographic survey as a record of the site. The Archival Record can be based on the DPLH guide and should include the place's history, drawings (plans, elevations) and photographs of the place as it is currently.

In addition, appropriate interpretative signage should be installed to commemorate *Stella Hay's House* and maintain its connection to the site. Consideration should be given to the development and installation of engaging interpretive elements that provide historical facts, stories and contextual information about the broader area. The repurposing of salvaged elements of the building would create a tangible connection to the past.

# 12.5 Accounts for Payment October 2025

| | | |
|---|---|---|
| Voting Requirement | : | Simple Majority |
| Subject Index | : | 54/007 - Creditors - Payment Authorisations |
| Location/Property Index | : | N/A |
| Application Index | : | N/A |
| Disclosure of any Interest | : | Nil |
| Previous Items | : | N/A |
| Applicant | : | N/a |
| Owner | : | N/A |
| Responsible Division | : | Corporate and Governance |

## Council role

**Overseeing** Overseeing the allocation of the City's finances and resources e.g. setting the annual budget, accepting tenders, determining what services and facilities the City is to provide, annual reports, selecting the CEO and reviewing the CEO's performance.

## Purpose of report

To present to Council the list of expenditure paid for the period 01 October 2025 to 31 October 2025 under delegated authority.

## Summary and key issues

A list of payments is presented to the Council each month for confirmation and endorsement in accordance with the *Local Government (Financial Management) Regulations 1996 (WA)*.

**Officer Recommendation**

That the Authorised Payment Listing for October 2025 as provided under Attachment 12.5.1 be received.

**Officer Recommendation adopted en bloc - Refer to Resolution appearing at Item 12.**

## Location

Not applicable.

## Consultation

There has been no specific consultation undertaken in respect to this matter.

## Strategic Community Plan implications

In accordance with the 2024–2034 Strategic Community Plan:

**Key Performance Area: Performance**

**Outcome:** 10. Effective leadership, governance and financial management.

**Outcome:** 11. A happy, well informed and engaged community.

## Policy implications

There are no policy implications associated with this report.

## Statutory environment

Regulation 13(1) of the *Local Government (Financial Management) Regulations 1996 (WA)* states:

> "If the local government has delegated to the CEO the exercise of its power to make payments from the municipal fund or the trust fund, a list of accounts paid by the CEO is to be prepared each month showing for each account paid since the last such list was prepared:
>
> (a) the payee's name;
>
> (b) the amount of the payment;
>
> (c) the date of the payment; and
>
> (d) sufficient information to identify the transaction."

(3) A list prepared under sub regulation (1) is to be presented to Council at the next ordinary meeting of Council after the list is prepared; and recorded in the minutes of that meeting.

Regulation 13A of the *Local Government (Financial Management) Regulations 1996 (WA)* effective from 1 September 2023 states:

(1) If a local government has authorised an employee to use a credit, debit or other purchasing card, a list of payments made using the card must be prepared each month showing the following for each payment made since the last such list was prepared —

(a) the payee's name;

(b) the amount of the payment;

(c) the date of the payment;

(d) sufficient information to identify the payment.

(2) A list prepared under subregulation (1) must be —

(a) presented to the council at the next ordinary meeting of the council after the list is prepared; and

(b) recorded in the minutes of that meeting.

## Background

Council has delegated to the Chief Executive Officer under Delegation 1.1.18 to make payment from the Municipal and Trust Fund account. In accordance with Regulation 13(1) of the *Local Government (Financial Management) Regulations 1996 (WA),* where this power has been delegated, a list of payments each month is to be compiled and presented to Council.

## Report

The following summary of payments are recommended for confirmation and endorsement.

| Payment type | Payment reference | $ |
|---|---|---|
| **Municipal Fund Cheques** | 788902-788903 | 623.40 |
| **Municipal Fund EFTs** | EF098470-EF098878 | 7,300,688.24 |
| **Municipal Fund Payroll** | October | 2,512,189.15 |
| **Trust Fund EFT** | EF098560-EF098561 | 12,910.32 |
| **Total Payments for October 2025** | | **9,826,391.11** |

A copy of the Authorised Payment Listing is included as Attachment 12.5.1.

## Financial implications

All expenditure included in the Payment Listing is in accordance with Council's Annual budget.

## Environmental implications

There are no environmental implications associated with this report.

## Social implications

There are no social implications associated with this report.

## Attachment details

| Attachment No and title |
|---|
| 1. October 2025 Payments [**12.5.1** - 8 pages] |

**City of Belmont**

**Accounts for Payment - October 2025**

Compiled : 04/11/25 14:04

| Pmnt_Ref | Date | CR_Code | Supplier | Pmnt_Amnt | Description |
|---|---|---|---|---|---|
| **Contractors** | | | | | |
| EF098470 | 03/10/25 | 00346 | Action Couriers | 62.17 | Courier Service |
| EF098471 | 03/10/25 | 00390 | Landgate | 394.65 | Title Searches - GRV's Metro & DFES |
| EF098472 | 03/10/25 | 00391 | Chemistry Centre (WA) t/as ChemCentre | 4,240.12 | Professional Fees - Water Sampling Testing |
| EF098473 | 03/10/25 | 00394 | Child & Adolescent Health Service - Dept of Health WA | 836.00 | Immunisation Expenses - August 2025 |
| EF098474 | 03/10/25 | 00557 | City Subaru | 620.09 | Plant Parts & Repairs |
| EF098477 | 03/10/25 | 00830 | Canon Production Printing Australia Pty Ltd | 182.66 | Photocopy Expenses |
| EF098478 | 03/10/25 | 00856 | John Papas Trailers Pty Ltd | 935.00 | Plant Parts & Repairs |
| EF098479 | 03/10/25 | 01074 | Shred - X Pty Ltd | 328.35 | Rubbish Removals |
| EF098481 | 03/10/25 | 01133 | J Tagz Pty Ltd | 528.55 | Hardware |
| EF098482 | 03/10/25 | 01243 | WARP Pty Ltd | 25,868.34 | Traffic Control - Various Locations |
| EF098484 | 03/10/25 | 01255 | Wattleup Tractors | 288.75 | Plant Parts & Repairs |
| EF098486 | 03/10/25 | 01318 | Flexi Staff Group Pty Ltd | 7,620.09 | Labour/Personnel Hire |
| EF098488 | 03/10/25 | 01499 | Porter Consulting Engineers | 33,990.00 | Professional Fees - Revised Lcurst Design & Construction |
| EF098491 | 03/10/25 | 02958 | Yoshino Sushi | 198.88 | Catering/Catering Supplies |
| EF098492 | 03/10/25 | 03537 | Mackay Urban Design | 960.00 | Professional Fees - DRP Meeting |
| EF098493 | 03/10/25 | 03543 | Labyrinth Constructions | 4,015.00 | Building Construction |
| EF098494 | 03/10/25 | 03593 | Philip Swain | 1,687.50 | Labour/Personnel Hire |
| EF098498 | 03/10/25 | 04002 | Ray White Urban Springs | 3,080.00 | Professional Fees - Ceiling Repairs |
| EF098499 | 03/10/25 | 04320 | ABM Landscaping | 3,836.25 | Bricks/Bricklaying |
| EF098501 | 03/10/25 | 04779 | One 20 Productions | 7,226.67 | Plant/Equipment Hire - Belmont Youth Awards |
| EF098504 | 03/10/25 | 05091 | Shaun Chandran - Coco Bros | 800.00 | Music/Entertainment Expenses - Citizenship Ceremony |
| EF098505 | 03/10/25 | 05190 | Mark Foote | 198.00 | Building Maintenance - COB |
| EF098506 | 03/10/25 | 05346 | Kevin Fitzgerald | 1,800.00 | Music/Entertainment Expenses - Citizenship Ceremony |
| EF098507 | 03/10/25 | 05547 | FE Technologies Pty Ltd | 23,921.92 | Computer Hardware Maintenance - Annual Maintenance |
| EF098508 | 03/10/25 | 05558 | BlueFit Pty Ltd | 76,053.26 | Oasis Expenses - Oasis Management Subsidy |
| EF098509 | 03/10/25 | 05738 | Double G (WA) Pty Ltd t/as Think Water Perth | 3,514.00 | Reticulation Parts & Repairs |
| EF098510 | 03/10/25 | 05776 | Level 5 Design Pty Ltd | 1,140.00 | Professional Fees - Design Review Panel |
| EF098511 | 03/10/25 | 05782 | Jane Wetherall | 1,380.00 | Professional Fees - Design Review Panel |
| EF098513 | 03/10/25 | 05887 | 1Spatial Australia Pty Ltd | 17,710.00 | Computer Software Maintenance - Annual Subscription |
| EF098514 | 03/10/25 | 05944 | Delron Cleaning Pty Ltd - Ventia | 630.74 | Cleaning Services - Various Locations |
| EF098515 | 03/10/25 | 06125 | Harbour Software | 15,906.00 | Computer Software Maintenance - Annual Subscription |
| EF098516 | 03/10/25 | 06142 | Medical Edge Australia Pty Ltd | 837.99 | First Aid Service |
| EF098517 | 03/10/25 | 06147 | CrowdPleaser Pty Ltd | 72.00 | Music/Entertainment Expenses - The Melody Maker |
| EF098518 | 03/10/25 | 06164 | Brianology | 439.00 | Hardware - iPad |
| EF098519 | 03/10/25 | 06293 | Freo Fire Maintenance Services Pty Ltd | 924.00 | Fire Equipment/Service |
| EF098520 | 03/10/25 | 06358 | The Event Mill Pty Ltd | 15,144.54 | Plant/Equipment Hire - Art Awards |
| EF098522 | 03/10/25 | 06468 | Perth Bouncy Castle Hire | 548.20 | Plant/Equipment Hire - Wiggle & Giggle |
| EF098523 | 03/10/25 | 06528 | Diplomatik Pty Ltd | 3,442.01 | Professional Fees - Recruitment Services |
| EF098524 | 03/10/25 | 06592 | Grosvenor Engineering Group | 1,802.35 | Electrical Contractor - COB |
| EF098527 | 03/10/25 | 06706 | TLS Productions | 3,014.00 | Music/Entertainment Expenses - Art Awards |
| EF098528 | 03/10/25 | 06720 | Karlka Fencewright WA Pty Ltd | 126,304.20 | Fencing - Volcano Playground |
| EF098529 | 03/10/25 | 06751 | HFM Asset Management | 2,266.00 | Building Maintenance |
| EF098530 | 03/10/25 | 06773 | Evolve Talent | 3,352.60 | Labour/Personnel Hire |
| EF098531 | 03/10/25 | 06841 | Andrew Quilty | 1,000.00 | Art Awards/Exhibition - Workshop |
| EF098532 | 03/10/25 | 06863 | Kleen Slate Services | 585.00 | Other Property & Services |
| EF098533 | 03/10/25 | 06884 | McLeods Lawyers | 789.36 | Legal Expenses |
| EF098534 | 03/10/25 | 06900 | AMS Installation & Maintenance Solutions | 2,043.25 | Airconditioning/Refrigeration Maintenance - COB |
| EF098536 | 03/10/25 | 07021 | Gobotech Pty Ltd | 144.10 | Library - LED Projector |
| EF098537 | 03/10/25 | 07043 | Kinglarp Pty Ltd T/A The Pressure King | 2,942.50 | Graffiti Removal - Various Locations |
| EF098538 | 03/10/25 | 07104 | Aboriginal Land Care (Ngala - Boodja) Pty Ltd | 14,421.00 | Gardening Maintenance |
| EF098539 | 03/10/25 | 07106 | Gemma Joanna Ben - Ary T/A Herbivore | 450.00 | Art Awards/Exhibition - Art Awards Judge |
| EF098540 | 03/10/25 | 07113 | Jarni Creative | 385.00 | Public Art Project Consultancy - Speaker |
| EF098541 | 03/10/25 | 07141 | Susanna Castleden Heidi | 450.00 | Art Awards/Exhibition - Art Awards Judge |
| EF098542 | 03/10/25 | 07150 | Gerard Callinan | 650.00 | Library - Entertainment Expense - Oral History |
| EF098543 | 03/10/25 | 07168 | Corestaff WA Pty Ltd | 9,287.42 | Labour/Personnel Hire |
| EF098544 | 03/10/25 | 07181 | Sugarland Studios | 750.00 | Art Awards/Exhibition - DJ Service |
| EF098545 | 03/10/25 | 07187 | Deluxe Detailing | 300.00 | Plant Parts & Repairs |
| EF098547 | 03/10/25 | 07195 | Oddbods Custom Corporate Mascots | 4,158.00 | Library Expense - Belmonster |
| EF098565 | 10/10/25 | 00350 | Veolia Environmental Services | 644,489.73 | Rubbish Removals - Oct 2025 |
| EF098566 | 10/10/25 | 00390 | Landgate | 97.80 | Title Searches - Service Fee |
| EF098569 | 10/10/25 | 00815 | New Town Toyota | 2,880.97 | Plant Parts & Repairs |
| EF098572 | 10/10/25 | 01255 | Wattleup Tractors | 288.75 | Plant Parts & Repairs |
| EF098574 | 10/10/25 | 01318 | Flexi Staff Group Pty Ltd | 3,939.90 | Labour/Personnel Hire |
| EF098576 | 10/10/25 | 02172 | Miss Maud | 885.30 | Catering/Catering Supplies |
| EF098578 | 10/10/25 | 02958 | Yoshino Sushi | 142.88 | Catering/Catering Supplies |
| EF098580 | 10/10/25 | 03543 | Labyrinth Constructions | 4,246.00 | Building Construction |
| EF098582 | 10/10/25 | 04106 | Effects Picture Framing | 40.00 | Photography/Framing Expenses |
| EF098583 | 10/10/25 | 04211 | Triodia Scanning Services | 4,780.60 | Survey Expenses |
| EF098584 | 10/10/25 | 04301 | Michael Page - Page Personnel | 5,767.52 | Labour/Personnel Hire |
| EF098585 | 10/10/25 | 04454 | FM Contract Solutions Pty Ltd | 2,348.50 | Professional Fees - Auditing of Sites |
| EF098586 | 10/10/25 | 04524 | Moore Australia WA Pty Ltd | 3,696.00 | 2025 Financial Reporting Workshop |
| EF098587 | 10/10/25 | 04643 | Nyoongar Outreach Services Inc | 6,875.00 | Security Services |
| EF098588 | 10/10/25 | 05190 | Mark Foote | 495.00 | Building Maintenance - COB |
| EF098590 | 10/10/25 | 05336 | West - Sure Group Pty Ltd | 576.35 | Security Services |
| EF098591 | 10/10/25 | 05346 | Kevin Fitzgerald | 1,200.00 | Music/Entertainment Expenses - National Tree Day |

| Pmnt_Ref | Date | CR_Code | Supplier | Pmnt_Amnt | Description |
|---|---|---|---|---|---|
| EF098592 | 10/10/25 | 05558 | BlueFit Pty Ltd | 231.00 | Oasis Expenses |
| EF098594 | 10/10/25 | 06126 | Maintenance Experts Pty Ltd | 4,598.00 | Computer Software Maintenance - Annual Subscription |
| EF098595 | 10/10/25 | 06138 | Cake Twist by Kim | 560.00 | Catering/Catering Supplies |
| EF098596 | 10/10/25 | 06160 | SEEK Limited | 2,283.60 | Advertising |
| EF098597 | 10/10/25 | 06303 | Event Bike Rack Hire | 492.00 | Plant/Equipment Hire - Avon Descent |
| EF098598 | 10/10/25 | 06414 | Complete Glass & Glazing Services | 460.00 | Road Building Contractor |
| EF098600 | 10/10/25 | 06608 | Robert Walters Pty Ltd | 7,083.98 | Labour/Personnel Hire |
| EF098601 | 10/10/25 | 06712 | Ozipond Solutions | 16,500.00 | Gardening Maintenance - COB |
| EF098602 | 10/10/25 | 06754 | Doon Raj P/L - T/as Belmont (WA) Carpet Court | 13,500.00 | Building Maintenance - Oasis |
| EF098603 | 10/10/25 | 06773 | Evolve Talent | 10,295.84 | Labour/Personnel Hire |
| EF098604 | 10/10/25 | 06847 | Trayd Australia Pty Ltd | 99.00 | Building Maintenance - COB |
| EF098605 | 10/10/25 | 06861 | Mode Design Corp | 42,713.00 | Professional Fees - Civic Centre Rendering |
| EF098606 | 10/10/25 | 06871 | Mobile Sentinel T/A Little Rippers Technology | 6,107.36 | Cleaning Services |
| EF098608 | 10/10/25 | 06960 | Phase 3 Landscape Construction | 557,294.48 | Professional Fees - Landscaping Wilson Park Zone 2 & Faulkner Park |
| EF098609 | 10/10/25 | 06989 | Propagule Consulting Pty Ltd | 3,564.00 | Professional Fees - Volcano Park Renovations |
| EF098610 | 10/10/25 | 07043 | Kinglarp Pty Ltd T/A The Pressure King | 25,226.21 | Graffiti Removal - Various Locations |
| EF098611 | 10/10/25 | 07099 | Perth Testing and Tagging | 2,663.65 | Building Maintenance - COB |
| EF098612 | 10/10/25 | 07165 | Arexion Pty Ltd | 7,647.20 | Building Maintenance |
| EF098614 | 10/10/25 | 07168 | Corestaff WA Pty Ltd | 7,887.38 | Labour/Personnel Hire |
| EF098618 | 10/10/25 | 07201 | Meltwater Australia Pty Ltd | 29,150.00 | Media Monitoring Subscription |
| EF098636 | 17/10/25 | 00118 | Australia Post | 5,890.65 | Postage |
| EF098639 | 17/10/25 | 00346 | Action Couriers | 37.53 | Courier Service |
| EF098641 | 17/10/25 | 00491 | Fujifilm Business Innovation Australia | 2,121.90 | Photocopy Expenses |
| EF098642 | 17/10/25 | 00699 | Marketforce Pty Ltd | 2,271.50 | Advertising & Printing |
| EF098643 | 17/10/25 | 00717 | Main Roads Western Australia | 18,461.71 | Road Building Contractor - Abernethy Rd |
| EF098644 | 17/10/25 | 00734 | McIntosh and Son WA | 7,473.71 | Plant Parts & Repairs |
| EF098650 | 17/10/25 | 01318 | Flexi Staff Group Pty Ltd | 2,062.61 | Labour/Personnel Hire |
| EF098653 | 17/10/25 | 02210 | Macri Partners | 1,430.00 | Audit Fee |
| EF098654 | 17/10/25 | 02234 | Blackwell and Associates Pty Ltd | 780.00 | Professional Fees - Planning |
| EF098655 | 17/10/25 | 02387 | Triton Electrical Contractors Pty Ltd | 280.50 | Electrical Contractor |
| EF098656 | 17/10/25 | 02425 | Prestige Alarms | 132.00 | Security Services |
| EF098658 | 17/10/25 | 02672 | Ruah Community Services | 61,377.15 | Provision of Preventive Domestic - September |
| EF098659 | 17/10/25 | 02711 | CPG Research and Advisory Pty Ltd | 1,558.33 | Professional Fees - Advisory Fee |
| EF098660 | 17/10/25 | 03419 | Gott Health | 2,060.00 | Community Exercise Classes |
| EF098661 | 17/10/25 | 03504 | Classic Tree Services | 8,629.26 | Tree Pruning Within CoB |
| EF098662 | 17/10/25 | 03824 | Konica Minolta | 2,654.21 | Photocopy Expenses |
| EF098663 | 17/10/25 | 04002 | Ray White Urban Springs | 4,554.00 | Professional Fees - Ceiling Repairs |
| EF098665 | 17/10/25 | 04301 | Michael Page - Page Personnel | 1,871.75 | Labour/Personnel Hire |
| EF098666 | 17/10/25 | 04467 | Rent a Fence Pty Ltd | 55.24 | Fencing |
| EF098668 | 17/10/25 | 05016 | Cyclus Pty Ltd | 224.40 | Labour/Personnel Hire |
| EF098669 | 17/10/25 | 05127 | Champion Music | 847.00 | Music/Entertainment Expenses - Art Awards |
| EF098670 | 17/10/25 | 05190 | Mark Foote | 2,805.00 | Building Maintenance - COB |
| EF098671 | 17/10/25 | 05237 | Crown Perth | 13,900.27 | Catering/Catering Supplies |
| EF098672 | 17/10/25 | 05283 | IRP Pty Ltd | 10,873.50 | Labour/Personnel Hire |
| EF098673 | 17/10/25 | 05623 | Tree Planting and Watering - Baroness Holdings | 9,898.38 | Street Tree Watering Services for CoB |
| EF098674 | 17/10/25 | 05642 | Steve's Sand Sifting for Playground Services | 7,540.00 | Sand Sifting - Various Parks |
| EF098675 | 17/10/25 | 05738 | Double G (WA) Pty Ltd t/as Think Water Perth | 3,080.00 | Reticulation Parts & Repairs |
| EF098676 | 17/10/25 | 06091 | Engineering Technology Consultants | 546.29 | Professional Fees - Belvidere Street Revitalisation Project |
| EF098677 | 17/10/25 | 06293 | Freo Fire Maintenance Services Pty Ltd | 2,161.29 | Fire Equipment/Service |
| EF098679 | 17/10/25 | 06358 | The Event Mill Pty Ltd | 112.34 | Plant/Equipment Hire |
| EF098681 | 17/10/25 | 06458 | ES2 Pty Ltd - One Step Group | 102,124.09 | Computer Software Maintenance - Netskope Subscription |
| EF098682 | 17/10/25 | 06468 | Perth Bouncy Castle Hire | 541.66 | Plant/Equipment Hire |
| EF098683 | 17/10/25 | 06527 | Jurovich Surveying | 4,645.00 | Survey Expenses - Easement |
| EF098684 | 17/10/25 | 06528 | Diplomatik Pty Ltd | 9,474.09 | Professional Fees - Recruitment Services |
| EF098687 | 17/10/25 | 06602 | Perth Symphony Orchestra | 3,300.00 | Art Awards/Exhibition - PSO singer Workshop |
| EF098688 | 17/10/25 | 06726 | PJA Holdings (Australia) Pty Ltd | 4,950.00 | Audit Fee - Road Safety Audit |
| EF098689 | 17/10/25 | 06798 | Aspire Performance Training | 385.00 | Professional Fees - Recruitment Services |
| EF098690 | 17/10/25 | 06847 | Trayd Australia Pty Ltd | 633.54 | Building Maintenance - COB |
| EF098691 | 17/10/25 | 06884 | McLeods Lawyers | 2,302.41 | Legal Expenses |
| EF098692 | 17/10/25 | 06901 | Educated by Nature Pty Ltd | 2,687.52 | Music/Entertainment Expenses - Family Trial Day |
| EF098693 | 17/10/25 | 06907 | Leanne Hampson | 1,600.00 | Workshop |
| EF098694 | 17/10/25 | 06930 | Matthew Lukin Biocich | 591.80 | Photography/Framing Expenses |
| EF098695 | 17/10/25 | 07043 | Kinglarp Pty Ltd T/A The Pressure King | 8,708.15 | Graffiti Removal - Various Locations |
| EF098696 | 17/10/25 | 07104 | Aboriginal Land Care (Ngala - Boodja) Pty Ltd | 18,876.00 | Gardening Maintenance |
| EF098697 | 17/10/25 | 07172 | Eurofins Apal Pty Ltd | 1,748.69 | Professional Fees - Testing |
| EF098698 | 17/10/25 | 07174 | Joel Evans | 500.00 | Library - Entertainment Expense - Afterdark |
| EF098700 | 17/10/25 | 07193 | Non - Drowsy Designs | 2,750.00 | Art Awards/Exhibition - Visual Projection |
| EF098701 | 17/10/25 | 07204 | Bridged Group Pty Ltd | 968.00 | Computer Software Maintenance |
| EF098715 | 24/10/25 | 00195 | Bin Bath Australia Pty Ltd | 693.72 | Cleaning Services |
| EF098716 | 24/10/25 | 00221 | John Hughes Group | 515.00 | Plant Parts & Repairs |
| EF098720 | 24/10/25 | 00350 | Veolia Environmental Services | 2,902.04 | Rubbish Removals - Oct 2025 |
| EF098724 | 24/10/25 | 01318 | Flexi Staff Group Pty Ltd | 9,197.38 | Labour/Personnel Hire |
| EF098725 | 24/10/25 | 01772 | Data3 Limited | 70,714.73 | Computer Software - HP ProBook's |
| EF098726 | 24/10/25 | 01782 | Belmont Automotive Engineers | 1,702.50 | Plant Parts & Repairs |
| EF098727 | 24/10/25 | 02050 | Austraffic WA | 3,889.60 | Traffic Count - ATC Survey COB |
| EF098728 | 24/10/25 | 02172 | Miss Maud | 1,559.80 | Catering/Catering Supplies |
| EF098730 | 24/10/25 | 02958 | Yoshino Sushi | 210.32 | Catering/Catering Supplies |
| EF098731 | 24/10/25 | 03543 | Labyrinth Constructions | 632.50 | Building Construction |
| EF098733 | 24/10/25 | 03772 | Open Windows Australia Pty Ltd | 23,665.32 | Computer Software Maintenance - Annual Subscription |
| EF098734 | 24/10/25 | 03941 | Metro Bee Services | 165.00 | Bee Removal |

| Pmnt_Ref | Date | CR_Code | Supplier | Pmnt_Amnt | Description |
|---|---|---|---|---|---|
| EF098735 | 24/10/25 | 04301 | Michael Page - Page Personnel | 2,264.98 | Labour/Personnel Hire |
| EF098738 | 24/10/25 | 05190 | Mark Foote | 4,895.00 | Building Maintenance - COB |
| EF098739 | 24/10/25 | 05283 | IRP Pty Ltd | 2,319.68 | Labour/Personnel Hire |
| EF098740 | 24/10/25 | 05523 | Go Doors Pty Ltd | 561.74 | Building Maintenance |
| EF098741 | 24/10/25 | 05623 | Tree Planting and Watering - Baroness Holdings | 25,544.19 | Street Tree Watering Services for CoB |
| EF098742 | 24/10/25 | 05963 | Mr Potplants | 638.00 | Plant/Equipment Hire |
| EF098743 | 24/10/25 | 06138 | Cake Twist by Kim | 1,180.00 | Catering/Catering Supplies |
| EF098744 | 24/10/25 | 06293 | Freo Fire Maintenance Services Pty Ltd | 563.33 | Fire Equipment/Service |
| EF098745 | 24/10/25 | 06304 | Prestige Property Maintenance | 28,379.73 | Plants Supply - Various Parks |
| EF098746 | 24/10/25 | 06393 | Stantec Australia Pty Ltd | 2,145.00 | Professional Fees - Marketing |
| EF098748 | 24/10/25 | 06591 | Blue Tang (WA) T/A The Reef Unit Trust | 1,100.00 | Professional Fees - Faulkner Park Civic Centre |
| EF098749 | 24/10/25 | 06642 | Event Artillery Pty Ltd | 2,326.20 | Catering/Catering Supplies - Civic Dinner |
| EF098752 | 24/10/25 | 06833 | First Choice Gates (WA) | 1,848.00 | Fencing - Balbuk Reserve & BRSC |
| EF098753 | 24/10/25 | 06929 | Brett David Investments T/A Successful Projects | 1,632.49 | Superintendent Service May 2025 |
| EF098756 | 24/10/25 | 07108 | Joanna Elizabeth Lamb | 1,500.00 | Art Awards/Exhibition - Mentorship Program |
| EF098757 | 24/10/25 | 07119 | Maxey Plumbing Pty Ltd | 146.03 | Plumbing Maintenance/Supplies |
| EF098758 | 24/10/25 | 07183 | Durst Industries (Aust) Pty Ltd | 4,164.60 | Fire Equipment/Service |
| EF098771 | 31/10/25 | 00027 | ABB Australia Pty Limited | 9,702.00 | Reticulation Parts & Repairs |
| EF098773 | 31/10/25 | 00083 | Ascot Veterinary Hospital | 260.00 | Pound Expenses |
| EF098776 | 31/10/25 | 00195 | Bin Bath Australia Pty Ltd | 129.98 | Cleaning Services |
| EF098778 | 31/10/25 | 00221 | John Hughes Group | 3,302.36 | Plant Parts & Repairs |
| EF098780 | 31/10/25 | 00247 | CAI Fences | 2,464.00 | Fencing |
| EF098782 | 31/10/25 | 00295 | Capital Recycling | 3,366.00 | Rubbish Removals |
| EF098783 | 31/10/25 | 00346 | Action Couriers | 75.85 | Courier Service |
| EF098784 | 31/10/25 | 00391 | Chemistry Centre (WA) t/as ChemCentre | 2,044.55 | Professional Fees - Water Sampling Testing |
| EF098785 | 31/10/25 | 00557 | City Subaru | 480.90 | Plant Parts & Repairs |
| EF098787 | 31/10/25 | 00613 | Qualcon Laboratories Pty Ltd | 6,270.00 | Core Analysis and Asphalt Testing |
| EF098789 | 31/10/25 | 00665 | Kennards Hire Pty Ltd | 343.20 | Plant/Equipment Hire |
| EF098791 | 31/10/25 | 00718 | Major Motors Pty Ltd | 2,061.56 | Plant Parts & Repairs |
| EF098792 | 31/10/25 | 00726 | T - Quip | 3,615.14 | Plant Parts & Repairs |
| EF098793 | 31/10/25 | 00734 | McIntosh and Son WA | 102,080.00 | Plant purchase |
| EF098794 | 31/10/25 | 00815 | New Town Toyota | 1,530.87 | Plant Parts & Repairs |
| EF098795 | 31/10/25 | 00830 | Canon Production Printing Australia Pty Ltd | 445.66 | Photocopy Expenses |
| EF098797 | 31/10/25 | 00856 | John Papas Trailers Pty Ltd | 935.00 | Plant Parts & Repairs |
| EF098798 | 31/10/25 | 00917 | Positive Auto Electrics | 3,318.44 | Plant Parts & Repairs |
| EF098800 | 31/10/25 | 00931 | Sonic HealthPlus Pty Ltd | 1,004.50 | Pre Employment Medicals |
| EF098801 | 31/10/25 | 00972 | Repco Auto Parts | 2,735.32 | Plant Parts & Repairs |
| EF098802 | 31/10/25 | 00988 | Reece Australia Pty Ltd | 4,849.90 | Plumbing Maintenance/Supplies |
| EF098803 | 31/10/25 | 01058 | Slater - Gartrell Sports | 1,045.00 | Belmont Oasis - Hardwood Flooring |
| EF098804 | 31/10/25 | 01059 | Sledgehammer Concrete Cutting Service | 133.03 | Concrete Contractor |
| EF098806 | 31/10/25 | 01090 | St John Ambulance Australia Inc | 285.00 | Hardware |
| EF098807 | 31/10/25 | 01138 | E & M J Rosher Pty Ltd | 1,872.89 | Plant Parts & Repairs |
| EF098808 | 31/10/25 | 01186 | ZircoDATA Pty Ltd | 1,968.37 | Records Storage |
| EF098809 | 31/10/25 | 01199 | Toyota Material Handling Pty Ltd | 193.88 | Plant Parts & Repairs |
| EF098810 | 31/10/25 | 01233 | Stihl Shop Redcliffe | 1,948.90 | Tools/Tool Repairs |
| EF098811 | 31/10/25 | 01237 | Wren Oil | 2,035.00 | Rubbish Removals |
| EF098812 | 31/10/25 | 01243 | WARP Pty Ltd | 4,198.72 | Traffic Control - Various Locations |
| EF098819 | 31/10/25 | 01499 | Porter Consulting Engineers | 2,750.00 | Professional Fees - Stormwater Management Review |
| EF098823 | 31/10/25 | 01712 | Donegan Enterprises Pty Ltd | 7,852.06 | Gardening Maintenance |
| EF098824 | 31/10/25 | 01721 | Fulton Hogan Industries | 4,137.98 | Road Building Contractor - Asphalt |
| EF098827 | 31/10/25 | 01976 | Ecoscape Australia Pty Ltd | 2,660.35 | Professional Fees - Wilson Zone 2 |
| EF098828 | 31/10/25 | 02049 | NVMS - Noise and Vibration Measurement Systems | 1,243.00 | Plant Parts & Repairs |
| EF098829 | 31/10/25 | 02059 | Western Resource Recovery Pty Ltd | 297.00 | Rubbish Removals |
| EF098831 | 31/10/25 | 02298 | Pelican Linemarking | 3,443.00 | Line Marking |
| EF098832 | 31/10/25 | 02303 | Ultimo Catering and Events | 2,935.10 | Catering/Catering Supplies - Council Dinner |
| EF098833 | 31/10/25 | 02387 | Triton Electrical Contractors Pty Ltd | 781.00 | Electrical Contractor - COB |
| EF098834 | 31/10/25 | 02410 | System Maintenance T/A Systems By Ballantyne | 6,641.15 | Plumbing Maintenance/Supplies |
| EF098835 | 31/10/25 | 02411 | Allsports Linemarking | 1,807.30 | Line Marking - Gerry Archer |
| EF098836 | 31/10/25 | 02425 | Prestige Alarms | 7,619.70 | Security Services |
| EF098840 | 31/10/25 | 02589 | Zenien | 1,001.00 | Security Services |
| EF098841 | 31/10/25 | 02627 | Dunbar Services WA Pty Ltd | 276.10 | Cleaning Services |
| EF098842 | 31/10/25 | 02779 | Natural Area Holdings Pty Ltd | 1,173.70 | Gardening Maintenance |
| EF098843 | 31/10/25 | 02837 | GLG Greenlife Group | 6,949.69 | Gardening Maintenance - Verge Mowing |
| EF098848 | 31/10/25 | 03197 | West Coast Turf | 12,342.00 | Turf Maintenance - COB |
| EF098849 | 31/10/25 | 03366 | Daimler Trucks Perth | 185.89 | Plant Parts & Repairs |
| EF098850 | 31/10/25 | 03464 | Bridgestone Australia Ltd | 2,584.85 | Plant Parts & Repairs |
| EF098851 | 31/10/25 | 03498 | Talis Consultants Pty Ltd | 12,100.00 | Provision of Consultancy Service - Belvidere St |
| EF098853 | 31/10/25 | 03567 | Gardner Autos Pty Ltd t/as Gardner Isuzu | 1,927.55 | Plant Parts & Repairs |
| EF098855 | 31/10/25 | 03599 | Donald Cant Watts Corke (WA) Pty Ltd | 8,382.00 | Professional Fees - Wilson Zone 2 Superintendent Svc & Belmont Hub |
| EF098856 | 31/10/25 | 03707 | Access Unlimited International Pty Ltd | 6,886.00 | Plant Parts & Repairs |
| EF098857 | 31/10/25 | 03824 | Konica Minolta | 1,994.17 | Photocopy Expenses |
| EF098858 | 31/10/25 | 03941 | Metro Bee Services | 165.00 | Bee Removal |
| EF098859 | 31/10/25 | 04046 | Beacon Equipment | 3,916.00 | Plant Parts & Repairs |
| EF098861 | 31/10/25 | 04120 | Randstad Pty Ltd | 27,174.06 | Labour/Personnel Hire |
| EF098862 | 31/10/25 | 04131 | Total Green Recycling Pty Ltd | 3,969.69 | Rubbish Removals |
| EF098863 | 31/10/25 | 04211 | Triodia Scanning Services | 2,535.50 | Survey Expenses |
| EF098864 | 31/10/25 | 04391 | Lifeskills Australia | 1,210.00 | Professional Fees - Analysis |
| EF098865 | 31/10/25 | 04454 | FM Contract Solutions Pty Ltd | 2,348.50 | Professional Fees - Auditing of Sites |
| EF098866 | 31/10/25 | 04474 | Aquamonix | 328.90 | Gardening Contractor |
| EF098867 | 31/10/25 | 04496 | Azure Painting Pty Ltd | 2,420.00 | Painting Contractor |

| Pmnt_Ref | Date | CR_Code | Supplier | Pmnt_Amnt | Description |
|---|---|---|---|---|---|
| EF098868 | 31/10/25 | 04594 | Website Weed and Pest W A Pty Ltd | 2,849.00 | Weed Control - Kerbs & Paths |
| EF098869 | 31/10/25 | 04689 | Hempfield Small Motor Service | 13.45 | Plant Parts & Repairs |
| EF098873 | 31/10/25 | 05190 | Mark Foote | 330.00 | Building Maintenance - COB |
| EF098874 | 31/10/25 | 05252 | AAAC Towing Pty Ltd | 3,197.70 | Towing Vehicles |
| EF098875 | 31/10/25 | 05339 | Elliotts Filtration Pty Ltd | 1,133.00 | Reticulation Parts & Repairs |
| EF098876 | 31/10/25 | 05427 | Horizon West Landscape & Irrigation Pty Ltd | 5,812.40 | Gardening Maintenance - Various Locations |
| EF098879 | 31/10/25 | 05576 | NPB Security Australia | 2,517.77 | Security Services - Art Awards |
| EF098880 | 31/10/25 | 05771 | Alsco Pty Ltd | 205.62 | Cleaning Services |
| EF098881 | 31/10/25 | 05840 | Commercial Aquatics Australia Pty Ltd | 1,633.50 | Oasis Expenses - Monthly Maintenance |
| EF098882 | 31/10/25 | 05897 | HopgoodGanim Lawyers | 1,501.50 | Legal Expenses |
| EF098883 | 31/10/25 | 05944 | Delron Cleaning Pty Ltd - Ventia | 5,208.90 | Cleaning Services - Various Locations |
| EF098884 | 31/10/25 | 05953 | DADAA Limited | 1,956.74 | Music/Entertainment Expenses - Art Awards |
| EF098886 | 31/10/25 | 06067 | TK Elevator Australia Pty Ltd | 2,811.49 | Building Maintenance |
| EF098887 | 31/10/25 | 06094 | Boyan Electrical Services | 8,248.88 | Electrical Contractor - COB |
| EF098888 | 31/10/25 | 06276 | Efficient Site Services (WA) | 880.00 | Building Construction |
| EF098889 | 31/10/25 | 06282 | Dell Financial Services Pty Ltd | 19,916.49 | Plant/Equipment Hire - July to Sept |
| EF098890 | 31/10/25 | 06293 | Freo Fire Maintenance Services Pty Ltd | 2,041.81 | Fire Equipment/Service |
| EF098891 | 31/10/25 | 06304 | Prestige Property Maintenance | 3,109.32 | Building Maintenance |
| EF098892 | 31/10/25 | 06345 | SoCo Studios - Travis Hayto Photography | 1,732.50 | Photography/Framing Expenses |
| EF098893 | 31/10/25 | 06362 | Marjan Partitions Pty Ltd t/as M & M Interiors | 35,323.83 | Building Construction - Miles & Centenary Park Comm Cnt & Reserve |
| EF098894 | 31/10/25 | 06389 | Netstar Australia Pty Ltd | 286.00 | Security Services |
| EF098896 | 31/10/25 | 06458 | ES2 Pty Ltd - One Step Group | 1,771.44 | Computer Software Maintenance - NCM Renewal |
| EF098897 | 31/10/25 | 06469 | Element Advisory Pty Ltd | 313.50 | Professional Fees - Building |
| EF098898 | 31/10/25 | 06472 | Overall Perth Gutter Cleaning | 1,595.00 | Cleaning Services |
| EF098899 | 31/10/25 | 06552 | Iconic Security Services Pty Ltd | 1,253.87 | Security Services |
| EF098900 | 31/10/25 | 06570 | Industrias Services Group Pty Ltd | 884.30 | Building Maintenance |
| EF098901 | 31/10/25 | 06573 | Orikan Australia Pty Ltd | 1,320.00 | Computer Software Maintenance |
| EF098903 | 31/10/25 | 06591 | Blue Tang (WA) T/A The Reef Unit Trust | 2,750.00 | Professional Fees - Faulkner Park Civic Centre |
| EF098904 | 31/10/25 | 06592 | Grosvenor Engineering Group | 9,597.80 | Electrical Contractor - COB |
| EF098909 | 31/10/25 | 06718 | Empire Roofing Services | 5,550.00 | Building Maintenance - COB |
| EF098910 | 31/10/25 | 06743 | East African Coffee | 945.00 | Catering/Catering Supplies - R U Ok & Mental Health |
| EF098911 | 31/10/25 | 06776 | Easy Access Lifts | 539.00 | Plant Parts & Repairs |
| EF098913 | 31/10/25 | 06829 | Fenix Structural Engineers Pty Ltd | 2,200.00 | Professional Fees - Glasshouse Damaged Concrete |
| EF098915 | 31/10/25 | 06847 | Trayd Australia Pty Ltd | 1,242.23 | Building Maintenance - COB |
| EF098916 | 31/10/25 | 06857 | Arion Service | 2,574.00 | Building Maintenance - COB |
| EF098917 | 31/10/25 | 06874 | Bug Busters | 3,712.50 | Pest Control |
| EF098918 | 31/10/25 | 06875 | Jimbu4J | 1,133.00 | Catering/Catering Supplies - WorkSafe |
| EF098919 | 31/10/25 | 06884 | McLeods Lawyers | 6,634.76 | Legal Expenses |
| EF098920 | 31/10/25 | 06888 | Veolia Water Operations Pty Ltd T/A Allpipe Technologies | 1,329.83 | Building Maintenance - COB |
| EF098921 | 31/10/25 | 06900 | AMS Installation & Maintenance Solutions | 4,407.34 | Airconditioning/Refrigeration Maintenance - COB |
| EF098922 | 31/10/25 | 06929 | Brett David Investments T/A Successful Projects | 1,443.57 | Superintendent Service Sep 2025 |
| EF098923 | 31/10/25 | 06934 | Positively Green Pty Ltd | 443.66 | BSRC Bowling Green Maintenance |
| EF098924 | 31/10/25 | 06995 | Jerra Nominees & Neil Norrish T/A State Wide Turf Services | 40,987.23 | Gardening Maintenance - Mulch COB |
| EF098925 | 31/10/25 | 06996 | Newground Facilities Management Pty Ltd | 182.00 | Turf Maintenance - COB |
| EF098926 | 31/10/25 | 07004 | I Know | 1,500.00 | Creative Cultural Conversation Programme |
| EF098928 | 31/10/25 | 07119 | Maxey Plumbing Pty Ltd | 11,425.84 | Plumbing Maintenance/Supplies |
| EF098929 | 31/10/25 | 07143 | The Ortin Family Trust t/a Eastside Concrete | 15,048.00 | Building Maintenance |
| EF098930 | 31/10/25 | 07145 | Airline Laundry Services Australia Pty Ltd | 135.30 | Cleaning Services |
| EF098933 | 31/10/25 | 07173 | Philippa Lewi | 330.00 | Library - Entertainment Expense - Artist Talk Series |
| EF098934 | 31/10/25 | 07182 | Brightmark Group Pty Ltd | 2,438.15 | Cleaning Services - COB |
| | **Contractors Total** | | | **2,928,227.34** | |
| **Councillor Payments** | | | | | |
| EF098487 | 03/10/25 | 01369 | Philip Marks | 3,248.15 | Elected Member Remuneration |
| EF098489 | 03/10/25 | 02145 | Robert Rossi | 13,102.13 | Elected Member Remuneration |
| EF098497 | 03/10/25 | 03916 | Bernard Ryan | 3,248.15 | Elected Member Remuneration |
| EF098502 | 03/10/25 | 05084 | Jenny Davis | 3,248.15 | Elected Member Remuneration |
| EF098503 | 03/10/25 | 05085 | George Sekulla | 3,248.15 | Elected Member Remuneration |
| EF098512 | 03/10/25 | 05828 | Deborah Sessions | 5,342.13 | Elected Member Remuneration |
| EF098526 | 03/10/25 | 06704 | Christopher John Kulczycki | 3,248.15 | Elected Member Remuneration |
| EF098535 | 03/10/25 | 06968 | Jarod Harris | 3,248.15 | Elected Member Remuneration |
| | **Councillor Payments Total** | | | **37,933.16** | |
| **Credit Card 2310** | | | | | |
| EF098764 | 27/10/25 | 03526 | Winners Circle | 4.99 | Stationery |
| EF098764 | 27/10/25 | 03526 | SP From You Flowers | 81.90 | Flowers |
| EF098764 | 27/10/25 | 03526 | Officeworks | 2.25 | Photo Frame |
| EF098764 | 27/10/25 | 03526 | Work Health & Safety | 990.00 | Training |
| EF098764 | 27/10/25 | 03526 | Work Health & Safety | 990.00 | Training |
| EF098764 | 27/10/25 | 03526 | Coles Supermarkets Aust Pty Ltd | 220.00 | Gratuity Gift |
| EF098764 | 27/10/25 | 03526 | Ebay | 87.62 | R U OK Day - Cake Toppers |
| EF098764 | 27/10/25 | 03526 | Walga | 1,375.00 | Registration |
| EF098764 | 27/10/25 | 03526 | IIA - Australia | 990.00 | Conference Expenses |
| EF098764 | 27/10/25 | 03526 | Coles Supermarkets Aust Pty Ltd | 220.00 | Gratuity Gift |
| EF098764 | 27/10/25 | 03526 | Business Excellence | 1,400.00 | Subscription |
| | **Credit Card 2310 Total** | | | **6,361.76** | |
| **Credit Card 4739** | | | | | |
| EF098767 | 27/10/25 | 06409 | ASIC | 20.00 | Company Search |
| EF098767 | 27/10/25 | 06409 | DMIRS | 31.28 | Application Fee |
| EF098767 | 27/10/25 | 06409 | Dept of Justice | 194.30 | Legal Expenses |
| EF098767 | 27/10/25 | 06409 | Dept of Justice | 194.30 | Legal Expenses |
| EF098767 | 27/10/25 | 06409 | CEDA | 820.00 | Subscription |

| Pmnt_Ref | Date | CR_Code | Supplier | Pmnt_Amnt | Description |
|---|---|---|---|---|---|
| EF098767 | 27/10/25 | 06409 | ChatGPT | 31.52 | Subscription |
| EF098767 | 27/10/25 | 06409 | ChatGPT | 31.52 | Subscription |
| EF098767 | 27/10/25 | 06409 | Australian Financial Services Authority | 15.00 | Company Search |
| EF098767 | 27/10/25 | 06409 | Google | 12.98 | Subscription |
| EF098767 | 27/10/25 | 06409 | News | 36.00 | Subscription |
| | **Credit Card 4739 Total** | | | **1,386.90** | |
| **Credit Card 7563** | | | | | |
| EF098768 | 27/10/25 | 06834 | Kynd Coffee | 19.33 | Staff Meeting |
| | **Credit Card 7563 Total** | | | **9,362.03** | |
| **Credit Card 7996** | | | | | |
| EF098765 | 27/10/25 | 05121 | Brianlogy | 50.48 | Hardware |
| EF098765 | 27/10/25 | 05121 | 8 Yolks | 10.65 | Coffee - Meeting |
| | **Credit Card 7996 Total** | | | **61.13** | |
| **Credit Card 8380** | | | | | |
| EF098766 | 27/10/25 | 06342 | Dept of Racing & Gaming | 60.50 | Licence Fee |
| | **Credit Card 8380 Total** | | | **7,773.63** | |
| **Credit Card 8670** | | | | | |
| EF098769 | 27/10/25 | 06849 | 99 Bikes | 500.00 | Staff Car Free Week Gift Vouchers |
| EF098769 | 27/10/25 | 06849 | Winners Circle | 50.00 | Corporate Smart Rider Card |
| EF098769 | 27/10/25 | 06849 | Winners Circle | 45.00 | Corporate Smart Rider Card |
| EF098769 | 27/10/25 | 06849 | Oxlade Bros | 106.56 | Badges |
| EF098769 | 27/10/25 | 06849 | WA Electric Bicycles | 4,372.23 | COB Fleet - eBike |
| EF098769 | 27/10/25 | 06849 | 8 Yolks | 33.48 | Catering - Team Meeting |
| EF098769 | 27/10/25 | 06849 | Western Power | 1,329.50 | Application Fee - Centenary Park Metering |
| EF098769 | 27/10/25 | 06849 | Live Payments | 31.08 | Taxi - IPWC Conference |
| EF098769 | 27/10/25 | 06849 | Transport for NSW | 20.00 | Transport - Conference |
| EF098769 | 27/10/25 | 06849 | Airport Link Company | 40.00 | Transport - Conference |
| | **Credit Card 8670 Total** | | | **6,527.85** | |
| **Fuels and Utilities** | | | | | |
| 788902 | 01/10/25 | 00392 | Department of Transport - Fleet Licensing | 260.50 | Vehicle Licences |
| EF098467 | 03/10/25 | 00042 | Alinta Energy | 557.30 | Light, Power, Gas |
| EF098483 | 03/10/25 | 01252 | Water Corporation | 6,894.46 | Water, Annual & Excess |
| EF098485 | 03/10/25 | 01274 | Synergy | 1,805.61 | Light, Power, Gas |
| EF098490 | 03/10/25 | 02474 | Digital Marketing Australia - Captivate Connect | 1,320.00 | Phone/Internet expenses |
| EF098521 | 03/10/25 | 06424 | Telstra Limited | 7,491.23 | Phone/Internet expenses |
| EF098573 | 10/10/25 | 01274 | Synergy | 2,731.26 | Light, Power, Gas |
| EF098577 | 10/10/25 | 02471 | Western Power | 3,300.00 | Light, Power, Gas |
| EF098581 | 10/10/25 | 03592 | Steven Harling | 98.31 | Fuel, Oil, Additives |
| EF098635 | 17/10/25 | 00042 | Alinta Energy | 180.90 | Light, Power, Gas |
| EF098648 | 17/10/25 | 01252 | Water Corporation | 1,681.71 | Water, Annual & Excess |
| EF098649 | 17/10/25 | 01274 | Synergy | 7,685.02 | Light, Power, Gas |
| EF098657 | 17/10/25 | 02631 | Ampol - Caltex | 2,262.08 | Fuel, Oil, Additives |
| EF098680 | 17/10/25 | 06424 | Telstra Limited | 3,942.23 | Phone/Internet expenses |
| EF098712 | 24/10/25 | 00042 | Alinta Energy | 6,351.60 | Light, Power, Gas |
| EF098722 | 24/10/25 | 01252 | Water Corporation | 12,553.20 | Water, Annual & Excess |
| EF098723 | 24/10/25 | 01274 | Synergy | 79,772.54 | Light, Power, Gas |
| EF098747 | 24/10/25 | 06424 | Telstra Limited | 19,194.87 | Phone/Internet expenses |
| EF098772 | 31/10/25 | 00042 | Alinta Energy | 301.85 | Light, Power, Gas |
| EF098813 | 31/10/25 | 01252 | Water Corporation | 8,657.72 | Water, Annual & Excess |
| EF098816 | 31/10/25 | 01274 | Synergy | 28,746.17 | Light, Power, Gas |
| EF098854 | 31/10/25 | 03592 | Steven Harling | 130.91 | Fuel, Oil, Additives |
| EF098895 | 31/10/25 | 06424 | Telstra Limited | 7,608.21 | Phone/Internet expenses |
| EF098905 | 31/10/25 | 06614 | Oracle Customer Management Solutions | 6,380.16 | Phone/Internet expenses |
| EF098908 | 31/10/25 | 06707 | Motorpass - 0177 - WEX Card Fee | 4.95 | Fuel, Oil, Additives |
| | **Fuels and Utilities Total** | | | **220,550.06** | |
| **Materials** | | | | | |
| EF098469 | 03/10/25 | 00317 | Coles Supermarkets Aust Pty Ltd | 238.61 | Groceries |
| EF098500 | 03/10/25 | 04491 | Woolworths Group - Functions/Catering only | 398.64 | Groceries |
| EF098563 | 10/10/25 | 00203 | BOC Gases Australia Ltd | 118.10 | Welding Equipment/Supplies |
| EF098567 | 10/10/25 | 00617 | Jacksons Drawing Supplies Pty Ltd | 70.40 | Craft/Display Materials |
| EF098568 | 10/10/25 | 00664 | Kmart Australia Limited | 48.50 | Stationery & Printing |
| EF098571 | 10/10/25 | 01073 | Spotlight Pty Ltd | 192.05 | Craft/Display Materials |
| EF098575 | 10/10/25 | 01398 | Winc Australia Pty Ltd | 17.81 | Stationery & Printing |
| EF098589 | 10/10/25 | 05295 | Kentico Software Pty Ltd | 9,843.90 | Computer Software - Standard Custom License |
| EF098593 | 10/10/25 | 05966 | Light Application Pty Ltd | 252.45 | Lights & Light Fittings |
| EF098599 | 10/10/25 | 06457 | Wall Art Australia Pty Ltd | 369.28 | Signs |
| EF098613 | 10/10/25 | 07167 | Khodal Krupa WA | 116.90 | Publications/Newspapers |
| EF098615 | 10/10/25 | 07178 | BioBag World Australia Pty Ltd | 5,644.94 | Cleaning Products |
| EF098616 | 10/10/25 | 07184 | Mane Liquor Osborne Park Pty Ltd | 3,357.40 | Beverages |
| EF098617 | 10/10/25 | 07200 | Blue Sky Beverages Pty Ltd | 26,840.00 | Beverages - Bespoke Watter Bottles |
| EF098637 | 17/10/25 | 00311 | Cloverdale Hardware and Western Supply | 30.00 | Hardware |
| EF098638 | 17/10/25 | 00317 | Coles Supermarkets Aust Pty Ltd | 941.99 | Groceries |
| EF098645 | 17/10/25 | 00778 | Modern Teaching Aids Pty Ltd | 894.14 | Library Furniture Replenishment |
| EF098647 | 17/10/25 | 01083 | SERCUL South East Regional Centre for Urban Landcare | 2,614.37 | Gardening - Water Sampling Collection |
| EF098664 | 17/10/25 | 04053 | Totally Workwear TWW | 104.74 | Safety Clothing/Equipment |
| EF098667 | 17/10/25 | 04491 | Woolworths Group - Functions/Catering only | 302.54 | Groceries |
| EF098699 | 17/10/25 | 07184 | Mane Liquor Osborne Park Pty Ltd | 152.13 | Beverages |
| EF098714 | 24/10/25 | 00185 | Benara Nurseries | 20,102.50 | Gardening - Winter Tree Planting |
| EF098717 | 24/10/25 | 00231 | Bunnings Group Ltd | 48,400.87 | Hardware |
| EF098718 | 24/10/25 | 00285 | City of Armadale | 110.55 | LSL Portability |

| Pmnt_Ref | Date | CR_Code | Supplier | Pmnt_Amnt | Description |
|---|---|---|---|---|---|
| EF098719 | 24/10/25 | 00317 | Coles Supermarkets Aust Pty Ltd | 139.50 | Groceries |
| EF098721 | 24/10/25 | 01175 | Vision Australia | 57.00 | Hardware |
| EF098729 | 24/10/25 | 02201 | Neverfail Springwater Limited | 31.40 | Beverages |
| EF098732 | 24/10/25 | 03660 | Safe T Card Australia Pty Ltd | 53.90 | Safety Clothing/Equipment |
| EF098736 | 24/10/25 | 05036 | Smedia Pty Ltd | 500.00 | Books/CDs/DVDs |
| EF098751 | 24/10/25 | 06684 | CADplanners Pty Ltd T/A EventDraw | 3,294.50 | Computer Software - Annual Event Draw Licence |
| EF098754 | 24/10/25 | 06957 | Booktopia Direct | 353.50 | Books/CDs/DVDs |
| EF098755 | 24/10/25 | 07027 | Future Village Placemaking Pty Ltd | 44,000.00 | Gardening - Faulkner Civic Precinct Landscaping |
| EF098774 | 31/10/25 | 00132 | Bolinda Publishing Pty Ltd | 4,400.00 | Books/CDs/DVDs |
| EF098775 | 31/10/25 | 00185 | Benara Nurseries | 8,187.41 | Gardening - Streetscape Strategy & Plants |
| EF098777 | 31/10/25 | 00203 | BOC Gases Australia Ltd | 21.23 | Welding Equipment/Supplies |
| EF098779 | 31/10/25 | 00233 | Bunzl Limited | 4,792.04 | Cleaning Products |
| EF098781 | 31/10/25 | 00278 | Chefmaster Australia | 2,193.71 | Cleaning Products |
| EF098788 | 31/10/25 | 00627 | Jason Signmakers | 2,898.68 | Signs |
| EF098790 | 31/10/25 | 00697 | Nutrien AG Solutions Ltd | 712.80 | Gardening Maintenance |
| EF098796 | 31/10/25 | 00850 | Pacific Safety Wear Malaga | 461.73 | Safety Clothing/Equipment |
| EF098799 | 31/10/25 | 00923 | Pope Packaging | 616.00 | Cleaning Products |
| EF098805 | 31/10/25 | 01083 | SERCUL South East Regional Centre for Urban Landcare | 5,151.71 | Gardening - Soil Sampling Collection |
| EF098814 | 31/10/25 | 01265 | Westbooks | 1,693.55 | Books/CDs/DVDs |
| EF098817 | 31/10/25 | 01325 | Poolegrave Signs and Engraving | 88.00 | Signs |
| EF098818 | 31/10/25 | 01398 | Winc Australia Pty Ltd | 2,144.38 | Stationery & Printing |
| EF098820 | 31/10/25 | 01568 | Allstate Safety Products | 190.30 | Safety Clothing/Equipment |
| EF098821 | 31/10/25 | 01570 | Blackwoods | 539.36 | Hardware |
| EF098825 | 31/10/25 | 01906 | Frazzcon Enterprises | 3,561.25 | Street & Parking Sign Maintenance |
| EF098826 | 31/10/25 | 01955 | Image Extra - Starmix Holdings Pty Ltd | 5,821.20 | Building Material |
| EF098830 | 31/10/25 | 02088 | Lock Stock & Farrell Locksmith | 338.00 | Hardware |
| EF098837 | 31/10/25 | 02431 | Look Brilliant Pty Ltd | 4,847.70 | Promotional Items |
| EF098838 | 31/10/25 | 02498 | City of South Perth | 5,090.50 | Impound Fee - Dogs & Cats |
| EF098839 | 31/10/25 | 02516 | Advance Press | 1,886.50 | Stationery & Printing |
| EF098844 | 31/10/25 | 02862 | James Bennett Pty Ltd | 2,480.73 | Books/CDs/DVDs |
| EF098845 | 31/10/25 | 02912 | Sanity Music Stores Pty Ltd | 377.91 | Books/CDs/DVDs |
| EF098846 | 31/10/25 | 03117 | Six Axis Nominees T/A OCP Sales | 450.45 | Safety Clothing/Equipment |
| EF098847 | 31/10/25 | 03144 | COS Complete Office Supplies Pty Ltd | 1,769.70 | Stationery & Printing |
| EF098852 | 31/10/25 | 03539 | Environment Essentials Pty Ltd, Victoria | 2,420.00 | Compliance Register - Environment |
| EF098860 | 31/10/25 | 04053 | Totally Workwear TWW | 2,317.19 | Safety Clothing/Equipment |
| EF098870 | 31/10/25 | 04759 | StrataGreen | 284.74 | Gardening Maintenance |
| EF098871 | 31/10/25 | 05055 | Statewide Cleaning Supplies | 557.83 | Cleaning Products |
| EF098872 | 31/10/25 | 05082 | Accidental Health and Safety Perth | 2,424.55 | Medical/First Aid Supplies |
| EF098877 | 31/10/25 | 05465 | QBD Books | 313.85 | Books/CDs/DVDs |
| EF098885 | 31/10/25 | 05992 | Corsign WA | 74.80 | Signs |
| EF098902 | 31/10/25 | 06589 | OverDrive Australia Pty Ltd | 735.02 | Books/CDs/DVDs |
| EF098907 | 31/10/25 | 06681 | Prefet Pty Ltd T/A Minuteman Press Perth | 5,362.14 | Stationery & Printing - Various Events |
| EF098912 | 31/10/25 | 06800 | The Aivish Family Trust T/as Fruit Break | 3,046.76 | Groceries |
| EF098914 | 31/10/25 | 06844 | Print and Sign Co | 2,070.45 | Stationery & Printing |
| EF098927 | 31/10/25 | 07015 | Supagas Pty Ltd | 65.69 | Welding Equipment/Supplies |
| EF098932 | 31/10/25 | 07167 | Khodal Krupa WA | 116.90 | Publications/Newspapers |
| EF098935 | 31/10/25 | 07190 | Green Plant Enterprises Pty Ltd - Bloomin Boxes | 392.50 | Flowers |
| | **Materials Total** | | | **250,489.87** | |
| **Other** | | | | | |
| EF098468 | 03/10/25 | 00140 | Australian Library & Information Association | 1,100.00 | Membership Fee |
| EF098476 | 03/10/25 | 00795 | LGISWA | 7,893.79 | Insurance Premiums |
| EF098480 | 03/10/25 | 01094 | Stormwater Industry Association (W A) Inc | 165.00 | Subscription |
| EF098495 | 03/10/25 | 03595 | Ascot Eagles Junior Cricket Club Inc | 150.00 | Community Contribution Fund - Multisport |
| EF098496 | 03/10/25 | 03760 | Wilmot Loh | 2,288.10 | Adachi 2026 |
| EF098525 | 03/10/25 | 06613 | Host Tel | 145.00 | State Emergency Services Expense |
| EF098548 | 03/10/25 | 99998 | Lop Leasing | 1,649.54 | Rates Refund |
| EF098549 | 03/10/25 | 99998 | Kai Gornall | 100.00 | Cloth Nappy Rebate |
| EF098550 | 03/10/25 | 99998 | Clare D Barber | 67.22 | Application Fee |
| EF098551 | 03/10/25 | 99998 | Natalie Schultz | 900.00 | Sports Donation |
| EF098552 | 03/10/25 | 99998 | Choon Hong Tan | 900.00 | Sports Donation |
| EF098553 | 03/10/25 | 99998 | Rentwest Trust Account | 66.72 | Pool Levy Refund |
| EF098554 | 03/10/25 | 99998 | FAI WAH YAP | 50.28 | Rates Refund |
| EF098555 | 03/10/25 | 99998 | RH Property | 2,457.40 | Rates Refund |
| EF098556 | 03/10/25 | 99998 | Housesmart Realestate | 99.12 | Pool Rates Refund |
| EF098557 | 03/10/25 | 99998 | Harry Young | 10,000.00 | Art Awards Winner |
| EF098558 | 03/10/25 | 99998 | Leah T Mannes | 500.00 | Art Awards Winner |
| EF098564 | 10/10/25 | 00296 | City of Gosnells | 10,312.50 | Switch Your Thinking 2025-26 Membership |
| EF098579 | 10/10/25 | 03071 | Department of Transport - Vehicle Owner Searches | 499.80 | Vehicle Ownership Searches |
| EF098607 | 10/10/25 | 06896 | Benjamin White | 822.50 | Sister City Expenses |
| EF098622 | 10/10/25 | 99998 | Michael & Larissa Williams | 100.00 | Art Awards Winner |
| EF098623 | 10/10/25 | 99998 | RJ Akerstrom | 1,060.54 | Rates Refund |
| EF098624 | 10/10/25 | 99998 | Zubaida Zafar | 785.20 | Pensioner Concessions |
| EF098625 | 10/10/25 | 99998 | RICHARDSONS STRATA MGT | 147.00 | Application Fee |
| EF098626 | 10/10/25 | 99998 | Kiam Dee Art | 1,000.00 | Art Awards Winner |
| EF098627 | 10/10/25 | 99998 | J C Meleisea | 500.00 | Art Awards Winner |
| EF098628 | 10/10/25 | 99998 | Zephyr Lane | 500.00 | Art Awards Winner |
| EF098629 | 10/10/25 | 99998 | Madhugiri R Shivaram | 189.27 | Rates Refund |
| EF098630 | 10/10/25 | 99998 | Lucy Lilleyman | 500.00 | Art Awards Winner |
| EF098631 | 10/10/25 | 99998 | Burgess Rawson WA | 773.82 | Rates Refund |
| EF098632 | 10/10/25 | 99998 | St Vincent De Paul Society | 920.00 | Rates Refund |

| Pmnt_Ref | Date | CR_Code | Supplier | Pmnt_Amnt | Description |
|---|---|---|---|---|---|
| EF098633 | 10/10/25 | 99998 | Joburne Pty Ltd Trust A/C | 409.50 | Rates Refund |
| EF098634 | 10/10/25 | 99998 | Joburne Pty Ltd Trust A/C | 472.50 | Rates Refund |
| EF098646 | 17/10/25 | 00793 | LGIS Insurance Broking - JLT | 22,930.29 | Insurance Premiums |
| EF098651 | 17/10/25 | 01599 | WA Rangers Association Inc | 100.00 | Membership Fee |
| EF098652 | 17/10/25 | 01711 | Irrigation Australia Ltd | 1,584.00 | Irrigation Testing Signs |
| EF098685 | 17/10/25 | 06553 | Darren Trengove | 243.25 | Staff Reimbursement - Mental Health Initiative |
| EF098686 | 17/10/25 | 06595 | Helen Karageorgiou | 27.37 | Staff Reimbursement - Parking |
| EF098702 | 17/10/25 | 07209 | Bijay Humagain | 30.00 | Staff Reimbursement - Visitor Pass |
| EF098703 | 17/10/25 | 07210 | Cameron Dixon | 118.00 | Staff Reimbursement - Flowers |
| EF098704 | 17/10/25 | 99998 | Sandra Curtis | 1,488.33 | Rates Refund |
| EF098705 | 17/10/25 | 99998 | Monica Malaga Mindani | 64.77 | Rates Refund |
| EF098706 | 17/10/25 | 99998 | Monica Malaga Mindani | 79.26 | Rates Refund |
| EF098707 | 17/10/25 | 99998 | Cynthia C Henderson | 60.51 | Rates Refund |
| EF098708 | 17/10/25 | 99998 | Hannii Pty Ltd | 17,133.00 | Rates Refund |
| EF098709 | 17/10/25 | 99998 | Carrooda Pty Ltd | 90.42 | Application Fee |
| EF098710 | 20/10/25 | 01236 | Department of Fire and Emergency Services | 3,042,521.86 | Emergency Services Levy September 2025 |
| 788903 | 24/10/25 | 00893 | Petty Cash - Library | 362.90 | Petty Cash Recoup |
| EF098713 | 24/10/25 | 00177 | Belmont Park Tennis Club Inc | 32,000.00 | Grants General - Turf Maintenance |
| EF098737 | 24/10/25 | 05135 | Umbrella Multicultural Community Care Inc | 900.00 | Workshop - Dementia |
| EF098750 | 24/10/25 | 06653 | Forget - Me - Not Dementia Support Inc | 200.00 | Grants General - Connecting with Dementia |
| EF098762 | 24/10/25 | 99998 | K&R Taylor | 500.00 | Sports Donation |
| EF098763 | 24/10/25 | 99998 | Victoria Gilkes | 100.00 | Cloth Nappy Rebate |
| EF098770 | 31/10/25 | 01244 | Western Australian Treasury Corporation | 539,241.69 | Loan Repayment |
| EF098815 | 31/10/25 | 01270 | Perth Racing - WA Turf Club | 2,520.84 | Irrigation of Grandstand Road & Ascot |
| EF098936 | 31/10/25 | 07209 | Bijay Humagain | 29.93 | Staff Reimbursement - Airport Parking |
| EF098937 | 31/10/25 | 07222 | Waivpay Ltd | 502.95 | Staff Recognition Program |
| EF098938 | 31/10/25 | 99998 | Heamasi V Akauola | 295.00 | Application Fee |
| EF098939 | 31/10/25 | 99998 | Yohanna Nathasia | 195.00 | Application Fee |
| EF098940 | 31/10/25 | 99998 | Perth Patio Magic | 147.00 | Application Fee |
| EF098941 | 31/10/25 | 99998 | David Davis | 147.00 | Application Fee |
| EF098942 | 31/10/25 | 99998 | Joyce Property Investment | 514.50 | Rates Refund |
| EF098943 | 31/10/25 | 99998 | Antoniet Riddell | 787.55 | Vendor Pensioner Rebate |
| EF098944 | 31/10/25 | 99998 | Joyce Property Investments A371622 | 514.50 | Rates Refund |
| EF098945 | 31/10/25 | 99998 | Khalil Bourgy | 61.65 | Application Fee |
| EF098946 | 31/10/25 | 99998 | Nadine Klein | 79.45 | Cloth Nappy Rebate |
| EF098947 | 31/10/25 | 99998 | JE Asselin | 676.64 | Rates Refund |
| EF098948 | 31/10/25 | 99998 | Barbara L KIng | 829.55 | Vendor Pensioner Rebate |
| EF098949 | 31/10/25 | 99998 | Christopher Hummel | 225.00 | Art Sales |
| EF098950 | 31/10/25 | 99998 | Grayson M Harper | 56.25 | Art Sales |
| EF098951 | 31/10/25 | 99998 | Sky D Edwards | 150.00 | Art Sales |
| EF098952 | 31/10/25 | 99998 | Parvathi Ranjan | 375.00 | Art Sales |
| EF098953 | 31/10/25 | 99998 | Esa Mika Johannes Nykanen | 412.50 | Art Sales |
| EF098954 | 31/10/25 | 99998 | MR P & MRS SP ZOETHOUT | 234.37 | Art Sales |
| EF098955 | 31/10/25 | 99998 | Jo Anne Haythornthwaite | 487.50 | Art Sales |
| EF098956 | 31/10/25 | 99998 | Maram Dalab | 150.00 | Art Sales |
| EF098957 | 31/10/25 | 99998 | Easy transaction | 187.50 | Art Sales |
| EF098958 | 31/10/25 | 99998 | Adela Ulrychova | 117.75 | Art Sales |
| EF098959 | 31/10/25 | 99998 | GA MJ Pirie | 37.50 | Art Sales |
| EF098960 | 31/10/25 | 99998 | Georgia Derham | 359.25 | Art Sales |
| EF098961 | 31/10/25 | 99998 | GENEVIEVE J HARTNEY | 712.50 | Art Sales |
| EF098962 | 31/10/25 | 99998 | Saskia Lopes | 862.50 | Art Sales |
| EF098963 | 31/10/25 | 99998 | Zephyr Lane | 187.50 | Art Sales |
| EF098964 | 31/10/25 | 99998 | Cole Baxter | 2,318.18 | Art Sales |
| EF098965 | 31/10/25 | 99998 | DAVID BRIAN PRIOR | 1,125.00 | Art Sales |
| EF098966 | 31/10/25 | 99998 | PATRCIA ANN REMEDIOS | 48.75 | Art Sales |
| EF098967 | 31/10/25 | 99998 | Lucy Gray | 131.25 | Art Sales |
| EF098968 | 31/10/25 | 99998 | Pamela L Hulshoff | 262.50 | Art Sales |
| EF098969 | 31/10/25 | 99998 | Miss Vanessa Maree Lombardo | 337.50 | Art Sales |
| EF098970 | 31/10/25 | 99998 | Tate Orsini | 120.00 | Art Sales |
| EF098971 | 31/10/25 | 99998 | Dinah M Pantic | 337.50 | Art Sales |
| EF098972 | 31/10/25 | 99998 | TR and MR Shilton | 712.50 | Art Sales |
| EF098973 | 31/10/25 | 99998 | Elizabeth J Turnbull | 262.50 | Art Sales |
| EF098974 | 31/10/25 | 99998 | Annette Nestor | 487.50 | Art Sales |
| EF098975 | 31/10/25 | 99998 | Emma Harradine | 112.50 | Art Sales |
| EF098976 | 31/10/25 | 99998 | Transaction Account Gita Caroline GOPALK | 599.25 | Art Sales |
| EF098977 | 31/10/25 | 99998 | Anne O'Leary | 172.50 | Art Sales |
| EF098978 | 31/10/25 | 99998 | Rhian Healy | 375.00 | Art Sales |
| EF098979 | 31/10/25 | 99998 | Ai Chen Lee | 600.00 | Art Sales |
| EF098980 | 31/10/25 | 99998 | Josephine A Johnson | 825.00 | Art Sales |
| EF098981 | 31/10/25 | 99998 | JOANNE ROSE WHITE | 112.50 | Art Sales |
| EF098982 | 31/10/25 | 99998 | LW and PME Hegvold | 1,875.00 | Art Sales |
| EF098983 | 31/10/25 | 99998 | Percival & Helen Morris | 672.05 | Vendor Pensioner Rebate |
| | **Other Total** | | | **3,730,644.11** | |
| **Property, Plant & Equipment** | | | | | |
| EF098640 | 17/10/25 | 00377 | Dell Australia Pty Ltd | 91,960.00 | Computer Hardware Subscription |
| EF098678 | 17/10/25 | 06332 | New Eagle International Pty Ltd T/A UMart | 229.00 | Computer Hardware |
| EF098906 | 31/10/25 | 06640 | Arteil (WA) Pty Ltd | 1,012.00 | Office Furniture |
| EF098931 | 31/10/25 | 07148 | Digital Imaging Express Pty Ltd | 31.40 | Computer Hardware |
| | **Property, Plant & Equipment Total** | | | **93,232.40** | |
| **Salaries/Wages** | | | | | |

| Pmnt_Ref | Date | CR_Code | Supplier | Pmnt_Amnt | Description |
|---|---|---|---|---|---|
| WG011025 | 01/10/25 | COB | City of Belmont Payroll | 1,183.60 | Salaries/Wages |
| WG021025 | 02/10/25 | COB | City of Belmont Payroll | 169,776.29 | Salaries/Wages |
| EF098559 | 07/10/25 | 99971 | SuperChoice | 182,149.14 | Superannuation Contribution |
| SL081025 | 09/10/25 | COB | City of Belmont Payroll | 801,617.36 | Salaries/Wages |
| EF098619 | 10/10/25 | 99952 | Child Support Agency | 1,626.69 | Salaries/Wages |
| EF098620 | 10/10/25 | 99954 | City of Belmont Social Club | 440.00 | Salaries/Wages |
| EF098621 | 10/10/25 | 99962 | LGRCEU - WA Shire Councils Union | 144.00 | Salaries/Wages |
| WG151025 | 16/10/25 | COB | City of Belmont Payroll | 167,693.95 | Salaries/Wages |
| EF098711 | 21/10/25 | 99971 | SuperChoice | 200,834.35 | Superannuation Contribution |
| SL211025 | 21/10/25 | COB | City of Belmont Payroll | 6,772.03 | Salaries/Wages |
| SL221025 | 23/10/25 | COB | City of Belmont Payroll | 809,960.13 | Salaries/Wages |
| EF098759 | 24/10/25 | 99952 | Child Support Agency | 2,073.70 | Salaries/Wages |
| EF098760 | 24/10/25 | 99954 | City of Belmont Social Club | 465.00 | Salaries/Wages |
| EF098761 | 24/10/25 | 99962 | LGRCEU - WA Shire Councils Union | 276.00 | Salaries/Wages |
| WG241025 | 24/10/25 | COB | City of Belmont Payroll | 1,548.06 | Workers Compensation |
| WG291025 | 30/10/25 | COB | City of Belmont Payroll | 165,628.85 | Salaries/Wages |
| | **Salaries/Wages Total** | | | **2,512,189.15** | |
| **Training and Conferences** | | | | | |
| EF098475 | 03/10/25 | 00602 | Local Government Professionals Australia WA | 190.00 | Conference Expenses |
| EF098546 | 03/10/25 | 07194 | HiLogic Pty Ltd | 3,738.90 | Training |
| EF098562 | 10/10/25 | 00108 | Australian Institute of Building Surveyors | 420.00 | Training |
| EF098570 | 10/10/25 | 00953 | Planning Institute of Australia Limited | 1,100.00 | Conference Expenses |
| EF098786 | 31/10/25 | 00601 | Institute of Public Works Engineering Sydney | 1,144.00 | Training |
| EF098822 | 31/10/25 | 01605 | ATM Australian Training Management | 1,945.00 | Training |
| EF098878 | 31/10/25 | 05550 | Remix Summits Pty Ltd | 203.50 | Subscription |
| | **Training and Conferences Total** | | | **8,741.40** | |
| **MUNI Total** | | | | **9,813,480.79** | |
| **Trust Funds** | | | | | |
| EF098560 | 10/10/25 | 150748 | Building and Construction Industry Training Fund | 351.75 | Building and Construction Industry Training Fund |
| EF098561 | 10/10/25 | 154102 | Building and Energy - Building Services Levy | 12,558.57 | Building and Energy - Building Services Levy |
| | **Trust Funds Total** | | | **12,910.32** | |
| **TRUST Total** | | | | **12,910.32** | |
| | | | | | |
| | | | | | |
| **Grand Total** | | | | **9,826,391.11** | |
| | | | | | |
| | | | | | |
| | | | | 9,826,391.11 | |
| | | | | | |
| | | | Breakdown - Cheques : | 623.40 | |
| | | | EFT : | 9,825,767.71 | |

# 12.6 Monthly Financial Report for October 2025

| | | |
|---|---|---|
| Voting Requirement | : | Simple Majority |
| Subject Index | : | 32/009 Financial Operating Statements |
| Location/Property Index | : | N/A |
| Application Index | : | N/A |
| Disclosure of any Interest | : | Nil |
| Previous Items | : | N/A |
| Applicant | : | N/A |
| Owner | : | N/A |
| Responsible Division | : | Corporate and Governance |

## Council role

**Overseeing** Overseeing the allocation of the City's finances and resources e.g. setting the annual budget, accepting tenders, determining what services and facilities the City is to provide, annual reports, selecting the CEO and reviewing the CEO's performance.

## Purpose of report

To provide Council with relevant monthly financial information for the 2025-26 financial year.

## Summary and key issues

The following report includes a concise list of material variances for the month ending 31 October 2025.

**Officer Recommendation**

That the Monthly Financial Reports as at 31 October 2025 as included in Attachment 12.6.1 be received.

**Officer Recommendation adopted en bloc - Refer to Resolution appearing at Item 12.**

## Location

Not applicable.

## Consultation

There has been no specific consultation undertaken in respect to this matter.

## Strategic Community Plan implications

In accordance with the 2024–2034 Strategic Community Plan:

**Key Performance Area: Performance**

**Outcome:** 10. Effective leadership, governance and financial management.

## Policy implications

There are no policy implications associated with this report.

## Statutory environment

Section 6.4 of the *Local Government Act 1995 (WA)* (the Act) in conjunction with Regulations 34 (1) of the *Local Government (Financial Management) Regulations 1996 (WA)* (the Regulations) requires monthly financial reports to be presented to Council.

Regulation 34(1) requires a monthly Statement of Financial Activity reporting on revenue and expenditure.

Regulation 34(5) determines the mechanism required to ascertain the definition of material variances which are required to be reported to Council as a part of the monthly report.

## Background

The Regulations prescribe that a Local Government is to prepare each month a Statement of Financial Activity.

Regulation 34(2) requires the Statement of Financial Activity to be accompanied by documents containing:

1. Explanation for each material variance identified between year to date budgets and actuals

2. Any other supporting information considered relevant by the Local Government.

Regulation 34 (5) states that "Each financial year, a Local Government is to adopt a percentage or value, calculated in accordance with the Australian Accounting Standards, to be used in statements of financial activity for reporting material variances."

This regulation requires Council to annually set a materiality threshold for the purpose of disclosing budget variances within monthly financial reporting.

The materiality threshold has been set by Council at $100,000 for the 2025-26 financial year.

## Report

At the June 2025 Ordinary Council Meeting, Council adopted the materiality threshold for the 2025-26 financial year as $100,000. The table below provides a summary of significant variances based on this materiality threshold. The detailed financial activity report is included at Attachment 12.6.1.

| Report Section | Budget YTD | Actual YTD | Report Comments |
|---|---|---|---|
| **OPERATING ACTIVITIES** | | | |
| ***Revenue from operating activities*** | | | |
| **Operating grants, subsidies and contributions** | | | |
| Finance | 181,029 | 70,128 | Workers' compensation reimbursements to be claimed from LGIS |
| **Interest earnings** | | | |
| Finance | 2,241,364 | 3,369,989 | Variance reflects interest amounts earned on amounts not spent as budgeted. Return on investments is as anticipated. |
| ***Expenditure from operating activities*** | | | |
| **Employee costs** | | | |

| Report Section | Budget YTD | Actual YTD | Report Comments |
|---|---|---|---|
| Parks, Leisure & Environment | (1,473,813) | (1,327,120) | Salaries are below budget due to vacancies which are currently being recruited by the City. |
| **Materials and contracts** | | | |
| Governance, Strategy & Risk | (450,757) | (209,726) | Costs arising from the Local Government Elections, including engaging the WAEC to undertake the election, have not yet been received. |
| Information Technology | (1,588,591) | (1,762,826) | Suppliers invoicing marginally ahead of expectations. |
| Works | (3,030,878) | (2,470,261) | October waste invoices to be received and paid. |
| Parks, Leisure & Environment | (3,241,135) | (1,763,964) | This reflects delays in seasonal projects due to weather conditions; however, the projects have now commenced. |
| Economic & Community Development | (882,032) | (632,950) | Expenditure associated with several City-funded community and economic programs has not yet occurred. |
| Library, Culture & Place | (1,136,422) | (795,240) | Various projects in progress with some timing variances. |
| **Utility charges** | | | |
| City Facilities & Property | (401,286) | (216,569) | Delay in receiving utility bills for the current period. |
| **INVESTING ACTIVITIES** | | | |
| ***Inflows from investing activities*** | | | |
| **Non-Operating grants, subsidies and contributions** | | | |

| Report Section | Budget YTD | Actual YTD | Report Comments |
|---|---|---|---|
| Works | Nil | 311,289 | MRRG funding was received ahead of schedule. |
| City Facilities & Property | 25,000 | 171,701 | Grant payment received for Middleton Park lighting works carried out in 24/25. |
| **Proceeds from disposal of assets** | | | |
| ***Outflows from investing activities*** | | | |
| **Payments for property, plant and equipment** | | | |
| Information Technology | (580,000) | (72,179) | Tender for Network Implementation project is expected to be presented to March 2026 OCM. |
| **Payments for construction of infrastructure** | | | |
| City Projects | (5,139,743) | (2,476,579) | Awaiting Superintendent approval of invoices for Esplanade and Wilson Park. |
| Parks, Leisure & Environment | (2,047,544) | (822,165) | This reflects delays in seasonal projects due to weather conditions. |

## Financial implications

The presentation of these reports to Council ensures compliance with the Act and associated Regulations, and also ensures that Council is regularly informed as to the status of its financial position.

## Environmental implications

There are no environmental implications associated with this report.

## Social implications

There are no social implications associated with this report.

## Attachment details

| Attachment No and title |
| --- |
| 1. Monthly Financial Report October 2025 [**12.6.1** - 12 pages] |

# CITY OF BELMONT

## MONTHLY FINANCIAL REPORT

**(Containing the required statement of financial activity and statement of financial position)**

**For the period ended 31 October 2025**

***LOCAL GOVERNMENT ACT 1995***
***LOCAL GOVERNMENT (FINANCIAL MANAGEMENT) REGULATIONS 1996***

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## CITY OF BELMONT
## STATEMENT OF FINANCIAL ACTIVITY
## FOR THE PERIOD ENDED 31 OCTOBER 2025

| | Note | Adopted Budget Estimates (a) | YTD Budget Estimates (b) | YTD Actual (c) | Variance* $ (c) - (b) | Variance* % ((c) - (b))/(b) | Var. |
|---|---|---|---|---|---|---|---|
| | | $ | $ | $ | $ | % | |
| **OPERATING ACTIVITIES** | | | | | | | |
| **Revenue from operating activities** | | | | | | | |
| General rates | | 63,219,787 | 62,818,211 | **62,778,336** | (39,875) | (0.06%) | |
| Grants, subsidies and contributions | | 2,438,054 | 475,567 | **373,679** | (101,888) | (21.42%) | ▼ |
| Fees and charges | | 11,585,080 | 9,111,776 | **9,157,843** | 46,067 | 0.51% | |
| Interest revenue | | 6,091,426 | 2,241,362 | **3,381,715** | 1,140,353 | 50.88% | ▲ |
| Other revenue | | 754,365 | 237,863 | **428,224** | 190,361 | 80.03% | ▲ |
| Profit on asset disposals | | 34,012 | (612) | **0** | 612 | 100.00% | |
| | | **84,122,724** | **74,884,167** | **76,119,797** | **1,235,630** | 1.65% | |
| **Expenditure from operating activities** | | | | | | | |
| Employee costs | | (31,456,949) | (10,785,379) | **(10,461,735)** | 323,644 | 3.00% | ▲ |
| Materials and contracts | | (39,253,111) | (13,514,616) | **(10,919,265)** | 2,595,351 | 19.20% | ▲ |
| Utility charges | | (2,558,409) | (974,568) | **(689,400)** | 285,168 | 29.26% | ▲ |
| Depreciation | | (12,617,329) | (4,205,776) | **(4,205,776)** | 0 | 0.00% | |
| Finance costs | | (488,408) | (209,100) | **(209,100)** | 0 | 0.00% | |
| Insurance | | (896,361) | (896,361) | **(848,842)** | 47,519 | 5.30% | |
| Other expenditure | | (1,579,803) | (510,447) | **(472,710)** | 37,737 | 7.39% | |
| | | **(88,850,370)** | **(31,096,247)** | **(27,806,828)** | **3,289,419** | 10.58% | |
| Non cash amounts excluded from operating activities | 2(c) | 12,646,636 | 4,206,388 | **4,008,286** | (198,102) | (4.71%) | ▼ |
| **Amount attributable to operating activities** | | **7,918,990** | **47,994,308** | **52,321,255** | **4,326,947** | 9.02% | |
| **INVESTING ACTIVITIES** | | | | | | | |
| **Inflows from investing activities** | | | | | | | |
| Proceeds from capital grants, subsidies and contributions | | 6,582,066 | 749,424 | **1,190,748** | 441,324 | 58.89% | ▲ |
| Proceeds from disposal of assets | | 661,489 | 0 | **0** | 0 | 0.00% | |
| | | **7,243,555** | **749,424** | 1,190,748 | **441,324** | 58.89% | |
| **Outflows from investing activities** | | | | | | | |
| Acquisition of property, plant and equipment | | (5,070,672) | (942,056) | **(450,556)** | 491,500 | 52.17% | ▲ |
| Acquisition of infrastructure | | (20,873,136) | (8,088,169) | **(4,205,673)** | 3,882,496 | 48.00% | ▲ |
| | | **(25,943,808)** | **(9,030,225)** | **(4,656,229)** | **4,373,996** | 48.44% | |
| **Amount attributable to investing activities** | | **(18,700,253)** | **(8,280,801)** | **(3,465,481)** | **4,815,320** | 58.15% | |
| **FINANCING ACTIVITIES** | | | | | | | |
| **Inflows from financing activities** | | | | | | | |
| Transfer from reserves | | 36,475,834 | 0 | **0** | 0 | 0.00% | |
| | | **36,475,834** | **0** | **0** | **0** | 0.00% | |
| **Outflows from financing activities** | | | | | | | |
| Payments for principal portion of lease liabilities | | (39,341) | 0 | **0** | 0 | 0.00% | |
| Repayment of borrowings | | (666,575) | (330,142) | **(330,142)** | 0 | 0.00% | |
| Transfer to reserves | | (25,199,613) | 0 | **0** | 0 | 0.00% | |
| | | **(25,905,529)** | **(330,142)** | **(330,142)** | **0** | 0.00% | |
| **Amount attributable to financing activities** | | **10,570,305** | **(330,142)** | **(330,142)** | **0** | 0.00% | |
| **MOVEMENT IN SURPLUS OR DEFICIT** | | | | | | | |
| **Surplus or deficit at the start of the financial year** | 2(a) | 560,958 | 560,958 | **(532,987)** | (1,093,945) | (195.01%) | ▼ |
| Amount attributable to operating activities | | 7,918,990 | 47,994,308 | **52,321,255** | 4,326,947 | 9.02% | ▲ |
| Amount attributable to investing activities | | (18,700,253) | (8,280,801) | **(3,465,481)** | 4,815,320 | 58.15% | ▲ |
| Amount attributable to financing activities | | 10,570,305 | (330,142) | **(330,142)** | 0 | 0.00% | |
| **Surplus or deficit after imposition of general rates** | | **350,000** | **39,944,323** | **47,992,645** | **8,048,322** | 20.15% | ▲ |

**KEY INFORMATION**

▲▼ Indicates a variance between Year to Date (YTD) Budget and YTD Actual data outside the adopted materiality threshold.
▲ Indicates a variance with a positive impact on the financial position.
▼ Indicates a variance with a negative impact on the financial position.
Refer to Note 3 for an explanation of the reasons for the variance.

This statement is to be read in conjunction with the accompanying notes.

## CITY OF BELMONT
## STATEMENT OF FINANCIAL POSITION
## FOR THE PERIOD ENDED 31 OCTOBER 2025

| | Actual 30 June 2025 | Actual as at 31 October 2025 |
|---|---|---|
| | $ | $ |
| **CURRENT ASSETS** | | |
| Cash and cash equivalents | 4,466,071 | 1,561,500 |
| Trade and other receivables | 4,214,595 | 20,009,976 |
| Other financial assets | 85,941,157 | 118,678,912 |
| Inventories | 239,454 | 252,414 |
| Contract assets | 260,661 | 0 |
| Other assets | 3,604,985 | 3,303,769 |
| **TOTAL CURRENT ASSETS** | 98,726,923 | 143,806,571 |
| **NON-CURRENT ASSETS** | | |
| Trade and other receivables | 415,855 | 396,037 |
| Property, plant and equipment | 340,667,856 | 340,825,435 |
| Infrastructure | 300,802,125 | 300,948,159 |
| Right-of-use assets | 166,998 | 166,998 |
| Intangible assets | 136,843 | 136,843 |
| **TOTAL NON-CURRENT ASSETS** | 642,189,677 | 642,473,472 |
| **TOTAL ASSETS** | 740,916,600 | 786,280,043 |
| **CURRENT LIABILITIES** | | |
| Trade and other payables | 11,062,651 | 6,756,701 |
| Contract liabilities | 67,053 | 67,053 |
| Capital grant/contributions liabilities | 368,476 | 0 |
| Other liabilities | 1,038,346 | 1,955,647 |
| Lease liabilities | 84,567 | 84,567 |
| Borrowings | 666,573 | 336,431 |
| Employee related provisions | 5,160,838 | 5,103,503 |
| **TOTAL CURRENT LIABILITIES** | 18,448,504 | 14,303,902 |
| **NON-CURRENT LIABILITIES** | | |
| Other liabilities | 127,197 | 127,197 |
| Lease liabilities | 52,499 | 52,499 |
| Borrowings | 10,309,794 | 10,309,794 |
| Employee related provisions | 553,045 | 553,045 |
| **TOTAL NON-CURRENT LIABILITIES** | 11,042,535 | 11,042,535 |
| **TOTAL LIABILITIES** | 29,491,039 | 25,346,437 |
| **NET ASSETS** | **711,425,561** | **760,933,606** |
| **EQUITY** | | |
| Retained surplus | 181,531,744 | 231,039,789 |
| Reserve accounts | 82,270,250 | 82,270,250 |
| Revaluation surplus | 447,623,567 | 447,623,567 |
| **TOTAL EQUITY** | **711,425,561** | **760,933,606** |

This statement is to be read in conjunction with the accompanying notes.

## CITY OF BELMONT
## NOTES TO THE STATEMENT OF FINANCIAL ACTIVITY
## FOR THE PERIOD ENDED 31 OCTOBER 2025

### 1 BASIS OF PREPARATION AND MATERIAL ACCOUNTING POLICIES

**BASIS OF PREPARATION**

This prescribed financial report has been prepared in accordance with the *Local Government Act 1995* and accompanying regulations.

***Local Government Act 1995 requirements***
*Section 6.4(2) of the Local Government Act 1995* read with the *Local Government (Financial Management) Regulations 1996,* prescribe that the financial report be prepared in accordance with the *Local Government Act 1995* and, to the extent that they are not inconsistent with the Act, the Australian Accounting Standards. The Australian Accounting Standards (as they apply to local governments and not-for-profit entities) and Interpretations of the Australian Accounting Standards Board were applied where no inconsistencies exist.

The *Local Government (Financial Management) Regulations 1996* specify that vested land is a right-of-use asset to be measured at cost, and is considered a zero cost concessionary lease. All right-of-use assets under zero cost concessionary leases are measured at zero cost rather than at fair value, except for vested improvements on concessionary land leases such as roads, buildings or other infrastructure which continue to be reported at fair value, as opposed to the vested land which is measured at zero cost. The measurement of vested improvements at fair value is a departure from AASB 16 which would have required the City to measure any vested improvements at zero cost.

*Local Government (Financial Management) Regulations 1996,* regulation 34 prescribes contents of the financial report. Supplementary information does not form part of the financial report.

Accounting policies which have been adopted in the preparation of this financial report have been consistently applied unless stated otherwise. Except for cash flow and rate setting information, the financial report has been prepared on the accrual basis and is based on historical costs, modified, where applicable, by the measurement at fair value of selected non-current assets, financial assets and liabilities.

**PREPARATION TIMING AND REVIEW**
Date prepared: All known transactions up to 31 October 2025

**THE LOCAL GOVERNMENT REPORTING ENTITY**
All funds through which the City controls resources to carry on its functions have been included in the financial statements forming part of this financial report.

All monies held in the Trust Fund are excluded from the financial statements.

**MATERIAL ACCOUNTING POLICES**
Material accounting policies utilised in the preparation of these statements are as described within the 2024-25 Annual Budget. Please refer to the adopted budget document for details of these policies.

**Critical accounting estimates and judgements**
The preparation of a financial report in conformity with Australian Accounting Standards requires management to make judgements, estimates and assumptions that effect the application of policies and reported amounts of assets and liabilities, income and expenses.

The estimates and associated assumptions are based on historical experience and various other factors believed to be reasonable under the circumstances; the results of which form the basis of making the judgements about carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates.

As with all estimates, the use of different assumptions could lead to material changes in the amounts reported in the financial report.

The following are estimates and assumptions that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year and further information on their nature and impact can be found in the relevant note:
- Fair value measurement of assets carried at reportable value including:
  - Property, plant and equipment
  - Infrastructure
- Impairment losses of non-financial assets
- Estimated useful life of intangible assets
- Measurement of employee benefits
- Estimation uncertainties and judgements made in relation to lease accounting

## CITY OF BELMONT
## NOTES TO THE STATEMENT OF FINANCIAL ACTIVITY
## FOR THE PERIOD ENDED 31 OCTOBER 2025

### 2 NET CURRENT ASSETS INFORMATION

### (a) Net current assets used in the Statement of Financial Activity

| | Note | Adopted Budget Opening 1 July 2025 | Actual as at 30 June 2025 | Actual as at 31 October 2025 |
|---|---|---|---|---|
| **Current assets** | | $ | $ | $ |
| Cash and cash equivalents | | 14,829,264 | 4,466,071 | 1,561,500 |
| Trade and other receivables | | 3,722,485 | 4,214,595 | 20,009,976 |
| Other financial assets | | 52,496,278 | 85,941,157 | 118,678,912 |
| Inventories | | 234,387 | 239,454 | 252,414 |
| Contract assets | | 50,000 | 260,661 | 0 |
| Other assets | | 3,574,704 | 3,604,985 | 3,303,769 |
| | | 74,907,118 | 98,726,923 | 143,806,571 |
| **Less: current liabilities** | | | | |
| Trade and other payables | | (1,919,484) | (11,062,651) | (6,756,701) |
| Other liabilities | | (1,345,261) | (1,038,346) | (1,955,647) |
| Lease liabilities | | (9,948) | (84,567) | (84,567) |
| Borrowings | | (692,211) | (666,573) | (336,431) |
| Employee related provisions | | (4,791,653) | (5,160,838) | (5,103,503) |
| Other provisions | | (744,717) | 0 | 0 |
| | | (9,503,274) | (18,012,975) | (14,236,849) |
| Net current assets | | 65,403,844 | 80,713,948 | 129,569,722 |
| Less: Total adjustments to net current assets | 2(b) | (80,964,173) | (81,246,935) | (81,577,077) |
| **Closing funding surplus / (deficit)** | | **(15,560,329)** | **(532,987)** | **47,992,645** |

### (b) Current assets and liabilities excluded from budgeted deficiency

| | | | | |
|---|---|---|---|---|
| **Adjustments to net current assets** | | | | |
| Less: Reserve accounts | | (82,270,250) | (82,267,210) | (82,267,210) |
| Add: Current liabilities not expected to be cleared at the end of the year | | | | |
| - Current portion of lease liabilities | | 9,948 | 84,567 | 84,567 |
| - Current portion of borrowings | | 692,211 | 666,573 | 336,431 |
| - Current portion of employee benefit provisions held in reserve | | 603,918 | 269,135 | 269,135 |
| **Total adjustments to net current assets** | 2(a) | **(80,964,173)** | **(81,246,935)** | **(81,577,077)** |

### (c) Non-cash amounts excluded from operating activities

| | Adopted Budget Estimates 30 June 2026 | YTD Budget Estimates 31 October 2025 | YTD Actual 31 October 2025 |
|---|---|---|---|
| | $ | $ | $ |
| **Adjustments to operating activities** | | | |
| Less: Profit on asset disposals | (34,012) | 612 | 0 |
| Add: Depreciation | 12,617,329 | 4,205,776 | 4,205,776 |
| Non-cash movements in non-current assets and liabilities: | | | |
| - Pensioner deferred rates | | | 19,818 |
| - Employee provisions | 63,319 | | (217,308) |
| **Total non-cash amounts excluded from operating activities** | **12,646,636** | **4,206,388** | **4,008,286** |

**CURRENT AND NON-CURRENT CLASSIFICATION**

In the determination of whether an asset or liability is current or non-current, consideration is given to the time when each asset or liability is expected to be settled. Unless otherwise stated assets or liabilities are classified as current if expected to be settled within the next 12 months, being the local governments' operational cycle.

## CITY OF BELMONT
## NOTES TO THE STATEMENT OF FINANCIAL ACTIVITY
## FOR THE PERIOD ENDED 31 OCTOBER 2025

### 3 EXPLANATION OF MATERIAL VARIANCES

The material variance thresholds are adopted annually by Council as an indicator of whether the actual expenditure or revenue varies from the year to date actual materially.
The material variance adopted by Council for the 2025-26 year is $100,000.

| Description | Var. $ | Var. % | |
|---|---|---|---|
| | $ | % | |
| **Revenue from operating activities** | | | |
| **Grants, subsidies and contributions** | **(101,888)** | **(21.42%)** | ▼ |
| Finance - Workers compensation reimbursements to be claimed. - ($110,901) | | Timing | |
| **Interest revenue** | **(1,770,859)** | **50.88%** | ▲ |
| Finance - Variance reflects interest amounts earned on amounts not spent as budgeted. Return on investments is as anticipated. - $1,128,625 | | Timing | |
| **Expenditure from operating activities** | | | |
| **Employee costs** | **562,719** | **3.00%** | ▲ |
| Salaries are below budget due to vacancies which are currently being recruited by the City | | Permanent | |
| **Materials and contracts** | **2,700,355** | **19.20%** | ▲ |
| Works - October waste invoices to be received and paid. - $560,616 | | Timing | |
| Parks, This reflects delays in seasonal projects due to weather conditions, however, the projects have now commenced. - $1,477,172 | | Timing | |
| Information Technology - Suppliers invoicing marginally ahead of expectations.- ($174,235) | | Timing | |
| Economic & Community Development - Expenditure associated with several City-funded community and economic programs has not yet occurred.- $249,081 | | Timing | |
| Library, Culture & Place - Projects in progress with some timing variances - $341,182 | | Timing | |
| Governance, Strategy & Risk - Costs arising from the Local Government Elections, including enaging the WAEC to undertake the election, have not yet been incurred.- $241,031 | | Timing | |
| **Utility charges** | **285,168** | **29.26%** | ▲ |
| City Facilities & Property - Delay in receiving utility bills for the current period. - $184,717 | | | |
| **Inflows from investing activities** | | | |
| **Proceeds from capital grants, subsidies and contributions** | **201,172** | **58.89%** | ▲ |
| Works - MRRG funding received ahead of schedule. - ($311,289) | | Timing | |
| City Facilities & Property - Grant payment received for Middleton Park lighting works carried out in 24/25.- ($146,701) | | Timing | |
| **Proceeds from disposal of assets** | **140,627** | **0.00%** | |
| Design, Assets & Development-New vehicles were delivered ahead of schedule, resulting in the early disposal of old vehicles prior to the allocated budget timeline.-($140,627) | | Timing | |
| **Outflows from investing activities** | | | |
| **Acquisition of property, plant and equipment** | **725,927** | **52.17%** | ▲ |
| Information Technology -Tender for Network implementation project expected to be presented to March OCM.-$507,821 | | Timing | |
| **Acquisition of infrastructure** | **3,615,055** | **48.00%** | ▲ |
| City Projects - Awaiting Superintendent approval of invoices for Esplanade and Wilson Park.- $2,663,164 | | Timing | |
| Parks, Leisure & Environment - Reflects the delays to programs as a result of weather conditions however program timelines have been adjusted - $1,225,379 | | Timing | |

# CITY OF BELMONT

## SUPPLEMENTARY INFORMATION

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BASIS OF PREPARATION - SUPPLEMENTARY INFORMATION

Supplementary information is presented for information purposes. The information does not comply with the disclosure requirements of the Australian Accounting Standards.

**CITY OF BELMONT**
**SUPPLEMENTARY INFORMATION**
**FOR THE PERIOD ENDED 31 OCTOBER 2025**

## 1 CASH AND FINANCIAL ASSETS

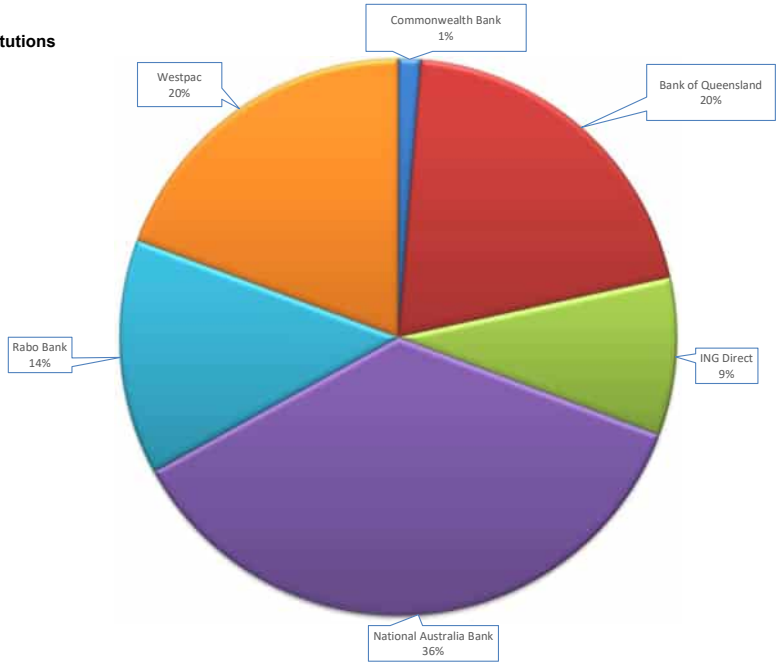
### BY INVESTMENT HOLDINGS

| | Municipal $ | Reserve $ | Trust-Reserve $ | Total $ | Total % |
|---|---|---|---|---|---|
| Municipal Account | 286,085 | - | - | 286,085 | 0% |
| On-Call Account | 1,272,365 | - | - | 1,272,365 | 1% |
| Term Deposits | 39,000,000 | 79,479,863 | (0) | 118,479,863 | 99% |
| | 40,558,449 | 79,479,863 | (0) | 120,038,312 | 100.00% |

### BY INSTITUTION

| | Rating | Municipal $ | Reserve $ | Trust-Reserve $ | Total $ | Total % | Policy Max % |
|---|---|---|---|---|---|---|---|
| Commonwealth Bank | | 1,558,449 | - | - | 1,558,449 | 1% | 40% |
| Bank of Queensland | | 8,000,000 | 16,308,898 | - | 24,308,898 | 20% | 30% |
| ING Direct | | - | 10,999,808 | - | 10,999,808 | 9% | 30% |
| National Australia Bank | | 27,000,000 | 16,557,050 | - | 43,557,050 | 36% | 40% |
| Rabo Bank | | 4,000,000 | 12,413,664 | - | 16,413,664 | 14% | 30% |
| Westpac | | - | 23,200,443 | - | 23,200,443 | 19% | 40% |
| | | 40,558,449 | 79,479,863 | - | 120,038,312 | 100.00% | |

**Investment Institutions**




### BY CREDIT RATINGS

| Rating | Municipal $ | Reserve $ | Trust Reserve $ | Total $ | Total % | Policy Max % |
|---|---|---|---|---|---|---|
| AAA | - | - | - | - | 0% | 100% |
| AA | 28,558,449 | 39,757,493 | - | 68,315,942 | 57% | 100% |
| A | 12,000,000 | 39,722,370 | - | 51,722,370 | 43% | 80% |
| BBB / NR | - | - | - | - | 0% | 60% |
| | 40,558,449 | 79,479,863 | - | 120,038,312 | 100.00% | |

**CITY OF BELMONT**
**SUPPLEMENTARY INFORMATION**
**FOR THE PERIOD ENDED 31 OCTOBER 2025**

## 2 RESERVE ACCOUNTS

| | Budget | | | | Actual | | | |
|---|---|---|---|---|---|---|---|---|
| Reserve account name | Opening Balance | Transfers In (+) | Transfers Out (-) | Closing Balance | Opening Balance | Transfers In (+) | Transfers Out (-) | Closing Balance |
| | $ | $ | $ | $ | $ | $ | $ | $ |
| **Reserve accounts restricted by legislation** | | | | | | | | |
| Other provisions [describe] | 70,632 | 4,511 | 0 | 75,143 | 67,592 | 0 | 0 | 67,592 |
| **Reserve accounts restricted by Council** | | | | | | | | |
| Administration building Reserve | 269,135 | 17,187 | (286,322) | 0 | 269,135 | 0 | 0 | 269,135 |
| Aged Accommodation Reserve | 1,049,911 | 67,435 | 0 | 1,117,346 | 1,049,911 | 0 | 0 | 1,049,911 |
| Aged Community Care Reserve | 249,649 | 15,943 | 0 | 265,592 | 249,649 | 0 | 0 | 249,649 |
| Aged persons housing Reserve | 315,479 | 16,344 | 0 | 331,823 | 315,479 | 0 | 0 | 315,479 |
| Aged Services Reserve | 1,156,701 | 77,555 | 0 | 1,234,256 | 1,156,701 | 0 | 0 | 1,156,701 |
| Ascot Waters Marina Maintenance & Restoration | 1,155,801 | 73,811 | (50,000) | 1,179,612 | 1,155,801 | 0 | 0 | 1,155,801 |
| Belmont District Band Reserve | 53,561 | 3,420 | (56,981) | 0 | 53,561 | 0 | 0 | 53,561 |
| Belmont Oasis Refurbishment Reserve | 12,279,947 | 301,458 | (243,163) | 12,338,242 | 12,279,947 | 0 | 0 | 12,279,947 |
| Belmont Trust Reserve | 1,686,073 | 112,196 | (222,324) | 1,575,945 | 1,686,073 | 0 | 0 | 1,686,073 |
| Building Reserve | 9,764,967 | 374,132 | (403,471) | 9,735,628 | 9,764,967 | 0 | 0 | 9,764,967 |
| Capital Projects Reserve | 5,195,085 | 5,250,000 | (1,580,828) | 8,864,257 | 5,195,085 | 0 | 0 | 5,195,085 |
| Carry Forward Projects Reserve | 1,362,715 | 0 | (1,097,493) | 265,222 | 1,362,715 | 0 | 0 | 1,362,715 |
| District valuation Reserve | 119,745 | 1,580 | (121,325) | 0 | 119,745 | 0 | 0 | 119,745 |
| Election expenses Reserve | 83,879 | 567 | (84,446) | 0 | 83,879 | 0 | 0 | 83,879 |
| Employee Entitlements Reserve | 0 | 3,267,756 | (162,678) | 3,105,078 | 0 | | | 0 |
| Environment Reserve | 969,567 | 61,918 | (808,095) | 223,390 | 969,567 | 0 | 0 | 969,567 |
| Faulkner Park Retirement Village Buy Back Reserve | 3,036,050 | 171,380 | 0 | 3,207,430 | 3,036,050 | 0 | 0 | 3,036,050 |
| Faulkner Park Retirement Village Owners Maintenance Reserve | 562,135 | 35,042 | (200,000) | 397,177 | 562,135 | 0 | 0 | 562,135 |
| History Reserve | 189,628 | 12,110 | (201,738) | 0 | 189,628 | 0 | 0 | 189,628 |
| Information Technology Reserve | 1,574,755 | 100,566 | (70,000) | 1,605,321 | 1,574,755 | 0 | 0 | 1,574,755 |
| Infrastructure Reserve | 0 | 1,176,781 | | 1,176,781 | 0 | | | 0 |
| Insurance Reserve | 1,481,646 | 94,620 | 0 | 1,576,266 | 1,481,646 | 0 | 0 | 1,481,646 |
| Land Acquisition Reserve | 11,535,626 | 0 | (11,535,626) | 0 | 11,535,626 | 0 | 0 | 11,535,626 |
| Long Service Leave Reserve - Salaries | 1,970,332 | 0 | (1,970,332) | 0 | 1,970,332 | 0 | 0 | 1,970,332 |
| Long Service Leave Reserve - Wages | 319,943 | 0 | (319,943) | 0 | 319,943 | 0 | 0 | 319,943 |
| Miscellaneous Entitlements Reserve | 760,227 | 0 | (760,227) | 0 | 760,227 | 0 | 0 | 760,227 |
| Parks Development Reserve | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Plant replacement Reserve | 1,820,649 | 110,123 | (1,368,476) | 562,296 | 1,820,649 | 0 | 0 | 1,820,649 |
| Property development Reserve | 15,218,474 | 13,445,007 | (13,524,656) | 15,138,825 | 15,218,474 | 0 | 0 | 15,218,474 |
| Public Art Reserve | 435,650 | 27,859 | (24,000) | 439,509 | 435,650 | 0 | 0 | 435,650 |
| Ruth Faulkner library Reserve | 52,366 | 3,344 | (55,710) | 0 | 52,366 | 0 | 0 | 52,366 |
| Streetscapes Reserve | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Urban Forest Strategy Management Reserve | 1,132,489 | 0 | (1,132,489) | 0 | 1,132,489 | 0 | 0 | 1,132,489 |
| Waste Management Reserve | 6,397,433 | 320,873 | (195,511) | 6,522,795 | 6,397,433 | 0 | 0 | 6,397,433 |
| Underground Power Reserve | 0 | 56,095 | 0 | 56,095 | 0 | | | 0 |
| | **82,270,250** | **25,199,613** | **(36,475,834)** | **70,994,029** | **82,267,210** | **0** | **0** | **82,267,210** |

**CITY OF BELMONT** **INVESTING ACTIVITIES**
**SUPPLEMENTARY INFORMATION**
**FOR THE PERIOD ENDED 31 OCTOBER 2025**

## 3 CAPITAL ACQUISITIONS

| Capital acquisitions | Adopted Budget | YTD Budget | YTD Actual | YTD Variance |
|---|---|---|---|---|
| | $ | $ | $ | $ |
| Buildings | 2,032,196 | 186,076 | 146,142 | (39,934) |
| Furniture and equipment | 1,620,000 | 640,000 | 95,131 | (544,869) |
| Plant and equipment | 1,368,476 | 110,424 | 209,283 | 98,859 |
| Other property, plant and equipment | 50,000 | 5,556 | 0 | (5,556) |
| **Acquisition of property, plant and equipment** | **5,070,672** | **942,056** | **450,556** | **(491,500)** |
| Infrastructure - roads | 4,704,029 | 767,219 | 840,941 | 73,722 |
| Infrastructure - Reserve Improvements | 15,110,668 | 7,142,704 | 3,233,456 | (3,909,248) |
| Infrastructure - Footpath Network | 718,865 | 160,746 | 72,095 | (88,651) |
| Infrastructure - Drainage Network | 339,574 | 17,500 | 59,181 | 41,681 |
| **Acquisition of infrastructure** | **20,873,136** | **8,088,169** | **4,205,673** | **(3,882,496)** |
| **Total capital acquisitions** | **25,943,808** | **9,030,225** | **4,656,229** | **(4,373,996)** |
| **Capital Acquisitions Funded By:** | | | | |
| Capital grants and contributions | 6,582,066 | 749,424 | 0 | (749,424) |
| Other (disposals & C/Fwd) | 661,489 | 0 | 0 | 0 |
| Reserve accounts | | | | |
| Administration building Reserve | 286,322 | 0 | 0 | 0 |
| Ascot Waters Marina Maintenance & Restoration | 50,000 | 0 | 0 | 0 |
| Belmont District Band Reserve | 56,981 | 0 | 0 | 0 |
| Belmont Oasis Refurbishment Reserve | 243,163 | 0 | 0 | 0 |
| Belmont Trust Reserve | 222,324 | 0 | 0 | 0 |
| Building Reserve | 403,471 | 0 | 0 | 0 |
| Capital Projects Reserve | 1,580,828 | 0 | 0 | 0 |
| Carry Forward Projects Reserve | 1,097,493 | 0 | 0 | 0 |
| District valuation Reserve | 121,325 | 0 | 0 | 0 |
| Election expenses Reserve | 84,446 | 0 | 0 | 0 |
| Environment Reserve | 808,095 | 0 | 0 | 0 |
| Faulkner Park Retirement Village Owners Maintenance R | 200,000 | 0 | 0 | 0 |
| History Reserve | 201,738 | 0 | 0 | 0 |
| Information Technology Reserve | 70,000 | | 0 | 0 |
| Land Acquisition Reserve | 11,535,626 | 0 | 0 | 0 |
| Long Service Leave Reserve - Salaries | 1,970,332 | 0 | 0 | 0 |
| Long Service Leave Reserve - Wages | 319,943 | 0 | 0 | 0 |
| Miscellaneous Entitlements Reserve | 760,227 | 0 | 0 | 0 |
| Parks Development Reserve | 0 | 0 | 0 | 0 |
| Plant replacement Reserve | 1,368,476 | 0 | 0 | 0 |
| Property development Reserve | 13,524,656 | 0 | 0 | 0 |
| Public Art Reserve | 24,000 | 0 | 0 | 0 |
| Ruth Faulkner library Reserve | 55,710 | 0 | 0 | 0 |
| Streetscapes Reserve | 0 | 0 | 0 | 0 |
| Urban Forest Strategy Management Reserve | 1,132,489 | 0 | 0 | 0 |
| Waste Management Reserve | 195,511 | 0 | 0 | 0 |
| Insurance Reserve | 0 | 0 | 0 | 0 |
| Infrastructure Reserve | 0 | 0 | 0 | 0 |
| Underground Power Reserve | 0 | 0 | 0 | 0 |
| Employee Entitlements Reserve | 162,678 | 0 | 0 | 0 |
| Contribution - operations | 18,413,931 | 8,280,801 | 4,656,229 | (3,624,572) |
| **Capital funding total** | **62,133,320** | **9,030,225** | **4,656,229** | **(4,373,996)** |

**KEY INFORMATION**

**Initial recognition**
An item of property, plant and equipment or infrastructure that qualifies for recognition as an asset is measured at its cost.

Upon initial recognition, cost is determined as the amount paid (or other consideration given) to acquire the assets, plus costs incidental to the acquisition. The cost of non-current assets constructed by the City includes the cost of all materials used in construction, direct labour on the project and an appropriate proportion of variable and fixed overheads. For assets acquired at zero cost or otherwise significantly less than fair value, cost is determined as fair value at the date of acquisition.

Assets for which the fair value as at the date of acquisition is under $5,000 are not recognised as an asset in accordance with *Local Government (Financial Management) Regulation 17A(5).* These assets are expensed immediately.

Where multiple individual low value assets are purchased together as part of a larger asset or collectively forming a larger asset exceeding the threshold, the individual assets are recognised as one asset and capitalised.

Individual assets that are land, buildings and infrastructure acquired between scheduled revaluation dates of the asset class in accordance with the City's revaluation policy, are recognised at cost and disclosed as being at reportable value.

**Measurement after recognition**
Plant and equipment including furniture and equipment and right-of-use assets (other than vested improvements) are measured using the cost model as required under *Local Government (Financial Management) Regulation 17A(2).* Assets held under the cost model are carried at cost less accumulated depreciation and any impairment losses being their reportable value.

**Reportable Value**
In accordance with *Local Government (Financial Management) Regulation 17A(2),* the carrying amount of non-financial assets that are land and buildings classified as property, plant and equipment, investment properties, infrastructure or vested improvements that the local government controls.

Reportable value is for the purpose of *Local Government (Financial Management) Regulation 17A(4)* is the fair value of the asset at its last valuation date minus (to the extent applicable) the accumulated depreciation and any accumulated impairment losses in respect of the non-financial asset subsequent to its last valuation date.

**CITY OF BELMONT** **INVESTING ACTIVITIES**
**SUPPLEMENTARY INFORMATION**
**FOR THE PERIOD ENDED 31 OCTOBER 2025**

## 3 CAPITAL ACQUISITIONS (CONTINUED) - DETAILED

**Capital expenditure total**
**Level of completion indicators**

- 0%
- 20%
- 40%
- 60%
- 80%
- 100%
- Over 100%

Percentage Year to Date Actual to Annual Budget expenditure where the expenditure over budget highlighted in red.

| Account Description | Adopted Budget | YTD Budget | YTD Actual | Variance (Under)/Over |
|---|---|---|---|---|
| City Projects | 9,166,347 | 5,139,743 | 2,476,576 | 2,663,167 |
| Parks and Environment | 6,142,484 | 2,047,544 | 822,166 | 1,225,378 |
| Buildings and facilities | 1,834,033 | 141,493 | 80,856 | 60,637 |
| Infrastructure Capital Works | 5,762,468 | 945,465 | 972,217 | (26,752) |
| Furniture and equipment | 1,620,000 | 640,000 | 95,131 | 544,869 |
| Plant and equipment | 1,368,476 | 110,424 | 209,283 | (98,859) |
| Other | 50,000 | 5,556 | 0 | 5,556 |

**CITY OF BELMONT**
**SUPPLEMENTARY INFORMATION**
**FOR THE PERIOD ENDED 31 OCTOBER 2025**

## 4 BUDGET AMENDMENTS

Amendments to original budget since budget adoption. Surplus/(Deficit)

| Description | Council Resolution | Classification | Non Cash Adjustment | Increase in Available Cash | Decrease in Available Cash | Amended Budget Running Balance |
|---|---|---|---|---|---|---|
| | | | $ | $ | $ | $ |
| **Budget adoption** | | | | | | 350,000 |
| October Budget Review | October OCM#12.3 | Opening surplus(deficit) | | | (5,473,434) | (5,123,434) |
| October Budget Review | October OCM#12.3 | Operating revenue | | | (244,623) | (5,368,057) |
| October Budget Review | October OCM#12.3 | Operating expenses | | | (298,567) | (5,666,624) |
| October Budget Review | October OCM#12.3 | Capital grants | | | (459,285) | (6,125,909) |
| October Budget Review | October OCM#12.3 | Capital expenses | | | (2,106,212) | (8,232,121) |
| October Budget Review | October OCM#12.3 | Non cash item | | | 8,582,121 | 350,000 |
| | | | | **0** | **0** | **350,000** |

**8:34pm Cr Harris departed the meeting.**

# 12.7 Annual Report 2024-25

| | | |
|---|---|---|
| Voting Requirement | : | Absolute Majority |
| Subject Index | : | 32/001 - Operational/Strategic Planning-Originals |
| Location/Property Index | : | N/A |
| Application Index | : | N/A |
| Disclosure of any Interest | : | Nil |
| Previous Items | : | N/A |
| Applicant | : | N/A |
| Owner | : | N/A |
| Responsible Division | : | Corporate and Governance |

## Council role

**Overseeing** Overseeing the allocation of the City's finances and resources e.g. setting the annual budget, accepting tenders, determining what services and facilities the City is to provide, annual reports, selecting the CEO and reviewing the CEO's performance.

## Purpose of report

To adopt the City of Belmont Annual Report for Financial Year 2024-25.

## Summary and key issues

The statutory Annual Report is prepared to advise the community on the activities of the local government and includes the audited Annual Financial Report. The Annual Report also contains an overview of the Plan for the Future.

**Officer Recommendation**

**Sekulla moved, Kulczycki seconded**

That Council:

1. Accepts the City of Belmont 2024-25 Annual Report, including the Annual Financial Report and Independent Auditors Report, as included in Attachment 12.7.1.
2. Directs the Chief Executive Officer to make any further minor administrative amendments/layout changes as required prior to publication of the Annual Report 2024-25.
3. Directs the Chief Executive Officer to ensure the availability of the Annual Report is advertised in accordance with Section 5.55 of the *Local Government Act 1995 (WA).*
4. Directs the Chief Executive Officer to ensure the Annual Report is available for distribution to members of the public at the Annual Meeting of Electors on Monday 15 December 2025, and copies are available for inspection by the public as soon as practicable after this meeting.
5. Notes the Management letter for the Information Systems Audit provided by the Office of the Auditor General for the year ended 30 June 2025 (Confidential Attachment 12.7.2).

**Carried Unanimously 8 votes to 0**

For: Abedin, Davis, Kulczycki, Marks, Rossi, Ryan, Sekulla and Sessions

Against: Nil

## Location

Not applicable.

## Consultation

No public consultation was required on this matter. The Annual Financial Report and Audit Report for the financial year ended 30 June 2025 have been considered and accepted by the Audit, Risk and Improvement Committee.

## Strategic Community Plan implications

In accordance with the 2024–2034 Strategic Community Plan:

**Key Performance Area: Performance**

**Outcome:** 10. Effective leadership, governance and financial management.

**Outcome:** 11. A happy, well informed and engaged community.

## Policy implications

There are no policy implications associated with this report.

## Statutory environment

Section 5.53(1) of the *Local Government Act 1995 (WA*) (the Act) prescribes that a local government must prepare an Annual Report and Section 5.53(2) of the Act sets out what must be contained within the Annual Report.

Section 5.54 of the Act prescribes that the Annual Report be accepted (Absolute Majority required) by the Local Government by 31 December after that financial year however, if the Auditor's Report is not available in time for acceptance by 31 December, then it must be accepted within two months after the receipt of the Auditor's Report.

Section 5.55 of the Act prescribes that local public notice is to be given as soon as practicable as to the availability of the Annual Report after its acceptance by the local government.

Section 7.12A of the Act provides further detail with respect to audits including that the auditor must meet with the local government at least once every financial year, and that the local government is to report to the Minister addressing any findings identified as significant by the auditor and stating what action the local government has taken or intends to take with respect to those matters.  S.7.12(4)(b) requires a copy of the report to be provided to the Minister within 3 months of the audit report being received by the local government.

Section 29(2) of the *Disability Services Act 1993 (WA)* requires a local government with a Disability Services Plan to report via its Annual Report on the implementation of this Plan.

Principle 6 of the State Records Principles and Standards 2002 (*State Records Act 2000 (WA))* requires that the City's Annual Report include evidence of the efficiency and effectiveness of the City's Record Keeping Plan, training, and induction programs.

Section 94 of the *Freedom of Information Act 1992 (WA)* requires the City to provide an "Information Statement" that outlines the structure of the City, access to information and a range of other information. The City provides details of the "Information Statement" in the Annual Report.

Regulation 19B of the *Local Government (Administration) Regulations 1996 (WA)* prescribes what information is to be included in the Annual Report.

## Background

The Annual Report is to be accepted prior to the 31 December of the financial year being reported on, subject to availability of the Auditor's Report. The Auditor's Report was signed on 21 November 2025 following acceptance by the Audit, Risk and Improvement Committee (the Committee).

The local government is required to prepare, adopt, and advertise its Annual Report prior to the Elector's Meeting. The Annual General Meeting of Electors is to be held not more than 56 days after the local government accepts the annual report for the previous financial year (s5.27(2) of the *Local Government Act 1995 (WA)*). The Annual Electors' Meeting has been scheduled for Monday 15 December 2025.

A presentation and the Annual Audited Financial Statements were provided to the Committee at its meeting on Monday 17 November 2025. Representatives of the Office of the Auditor General attended the Committee meeting and discussed the Auditor's Report. The below was resolved by the Committee at its meeting on 17 November 2025:

> That the Audit, Risk and Improvement Committee recommend that Council:
>
> 1. Accepts the Annual Financial Statements for the period ending 30 June 2025 at Attachment 11.3.2.
> 2. Accepts the Auditor's Exit Briefing Report, prepared for the year ended 30 June 2025 at Attachment 11.3.3.
> 3. Accepts the Auditor's Management Letter (Information Systems Audit) for the year ended 30 June 2025 at Confidential Attachment 11.3.5; and
> 4. Approves the Chief Executive Officer to sign the Annual Financial Report for the period ending 30 June 2025 and Management Representation Letter at Attachments 11.3.2 and 11.3.4.

## Report

The Annual Report contains:

- Reports from the Mayor and Chief Executive Officer together with reports from individual Committee Presiding Members;
- A copy of the Financial Statements including the Auditor's Report;
- An overview of the Plan for the Future;
- Report on the City's Disability Access and Inclusion Plan achievements;
- Report on the Environment and Sustainability Strategy 2023-2033;
- Report on the Urban Forest Strategy;
- Details of the City's Freedom of Information Act - Information Statement; and
- Report on the status of the City's Record Keeping Plan.

Further additional information included within the Annual Report is as follows:

- Councillor demographics (required by regulations);
- Attendance by Councillors at council and committee meetings (required by regulations);
- Corporate Governance/Code of Conduct (including Complaints);
- Salary ranges (required by regulations);
- CEO Remuneration (required by regulations);
- Capital grants for the renewal of assets (required by regulations); and
- Payments to each elected member (required by regulations).

It should be noted that there were no major trading undertakings or major land transactions in 2024-25.

In accordance with Council Policy 21 - Elected Member Professional Development and Authorised Travel, a table is included which discloses the total expenditure on Councillor Professional Development activities for the year being reported on. The listed expenditure does not include expenditure for mandatory training or Council Nominated Professional Development and Authorised Travel as defined in the Policy.

A copy of the Annual Report has been provided (refer Attachment 12.7.1) and a final "published" version will be prepared following acceptance by Council and will be circulated to all Elected Members when available.

Copies of the Annual Report will be available for members of the public at the Annual Electors' Meeting and includes the Annual Financial Statements, however a copy will be made available for public inspection as soon as practicable following Council's resolution on this report.

The appropriate advertising will be carried out once the Annual Report has been accepted.

## Financial implications

There are no significant financial implications evident at this time other than the costs associated with the publication of the Annual Report and statutory advertising and are available within existing budgets.

## Environmental implications

There are no environmental implications associated with this report.

## Social implications

There are no social implications associated with this report.

## Attachment details

| Attachment No and title |
|---|
| 1. City of Belmont Annual Report 2024-2025 [**12.7.1** - 114 pages] |
| 2. CONFIDENTIAL - City of Belmont IS GCC Audit Management Letter Confidential matter i [**12.7.2** - 22 pages] |

City of Belmont

# City of Belmont Annual Report 2024-25



## Acknowledgement of Country

The City of Belmont acknowledges the Whadjuk Noongar people as the Traditional Owners of this land and we pay our respects to Elders past, present and emerging. We further acknowledge their cultural heritage, beliefs, connection and relationship with this land which continues today.

We acknowledge all Aboriginal and Torres Strait Islander peoples living within the City of Belmont.

Detail of Jupp Lane mural by Shane Yondee Hansen

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# History of Belmont



For tens of thousands of years, the First Australians knew this area as Goorgyp.

First Australians moved through different areas through different seasons to follow food at the optimum times of the year, in a way that did not interfere with breeding cycles or populations of their food sources.

A well-established track through the area was mimicked by what we now recognise as the Great Eastern Highway. At the time of the Swan River Colony, Goorgyp was under the stewardship of the Beeloo Clan under Munday.

Most land grants of the early settlement were granted along the Swan and Canning Rivers. By 1830, nearly all the river frontage from Perth to Guildford had been divided into grants including land located in the current City of Belmont.

In 1848, the first horse race was held at Grove Farm. TRC Walters then donated land from his adjoining property for a permanent racetrack, now known as Ascot Racecourse. The West Australian Turf Club was established in 1852.

The Gold Rush in the 1890s brought people through the Belmont district, as people travelled up the Great Eastern Highway (then Guildford Road) to the goldfields. In response to this growing market, general stores, boarding houses and hotels sprung up along the route.

As people returned from the Gold Rush, housing developments grew in the area, prompting churches and schools to be built. This also meant the popularity of horse racing grew and in 1897, a new railway bridge and a station next to the racecourse were built.

Food production also boomed to address the demands of a growing population, and dairies, piggeries, poultry farms and Chinese market gardens flourished.

The Belmont Road Board was gazetted in December 1898, the precursor to our current City of Belmont.

In early 1942 the area now known as Perth Airport was converted from a golf course to an RAAF base which operated until the end of World War II. It became Guildford Aerodrome and later changed its name to Perth Airport in 1952.

The City of Belmont became a Shire in 1961 and in 1979 was proclaimed a City by the Governor of Western Australia Sir Wallace Kyle when he opened the Civic and Administration Building on Wright Street.

Today, the City of Belmont includes a unique mix of people, cultures and businesses coming together to connect as one community. Our history is woven from the countless stories of those who have called this place home.

From the First Nations communities who nurtured the land for thousands of years to new arrivals seeking new opportunities, each have contributed their unique traditions, struggles and triumphs to make the City of Belmont what it is today.

To find out about the many stories of our City, visit or contact the Belmont Museum.

# Your City of Belmont Elected Members



**Mayor Robert ROSSI JP**

M 0408 693 584
E MayorRossi@belmont.wa.gov.auu
Term expires: 16 October 2027

**West Ward**

**Cr Deborah SESSIONS**
DEPUTY MAYOR



M 0403 907 856
E crsessions@belmont.wa.gov.au
Term expires: 18 October 2025

**Cr Christopher KULCZYCKI**



M 0404 767 583
E crkulczycki@belmont.wa.gov.au
Term expires: 16 October 2027

**Central Ward**

**Cr George SEKULLA JP**



M 0431 963 660
E crsekulla@belmont.wa.gov.au
Term expires: 18 October 2025

**Cr VIJAY**



(resigned 16 October 2024)

**Cr Jarod HARRIS**



M 0478 256 196
E crharris@belmont.wa.gov.au
Term expires: 16 October 2027

**East Ward**

**Cr Phil MARKS**



M 0417 998 229
E crmarks@belmont.wa.gov.au
Term expires: 16 October 2027

**Cr Bernie RYAN**



M 0418 941 328
E crryan@belmont.wa.gov.au
Term expires: 18 October 2025

**South Ward**

**Cr Jenny DAVIS**



M 0413 579 390
E crdavis@belmont.wa.gov.au
Term expires: 18 October 2025

**Cr Janet POWELL**



**In memory of Councillor Janet Powell**

The City of Belmont is deeply saddened by the passing of South Ward Councillor Janet Powell in April 2025.

Councillor Powell was a long-standing and respected member of Council. The City extends heartfelt condolences to her family, friends and all who had the privilege of working with, and knowing, her.

# Elected Member demographics

### Gender

Female 2

Male 6

### Ages

| | |
|---|---|
| 25-34 | 1 |
| 35-44 | 1 |
| 45-54 | 2 |
| 55-64 | 2 |
| Over 64 | 2 |

### Country of birth

| | |
|---|---|
| Australia | 6 |
| New Zealand | 1 |
| England | 1 |

### Languages spoken at home

| | |
|---|---|
| English | 8 |
| Croatian | 1 |
| Italian | 1 |
| Polish | 1 |

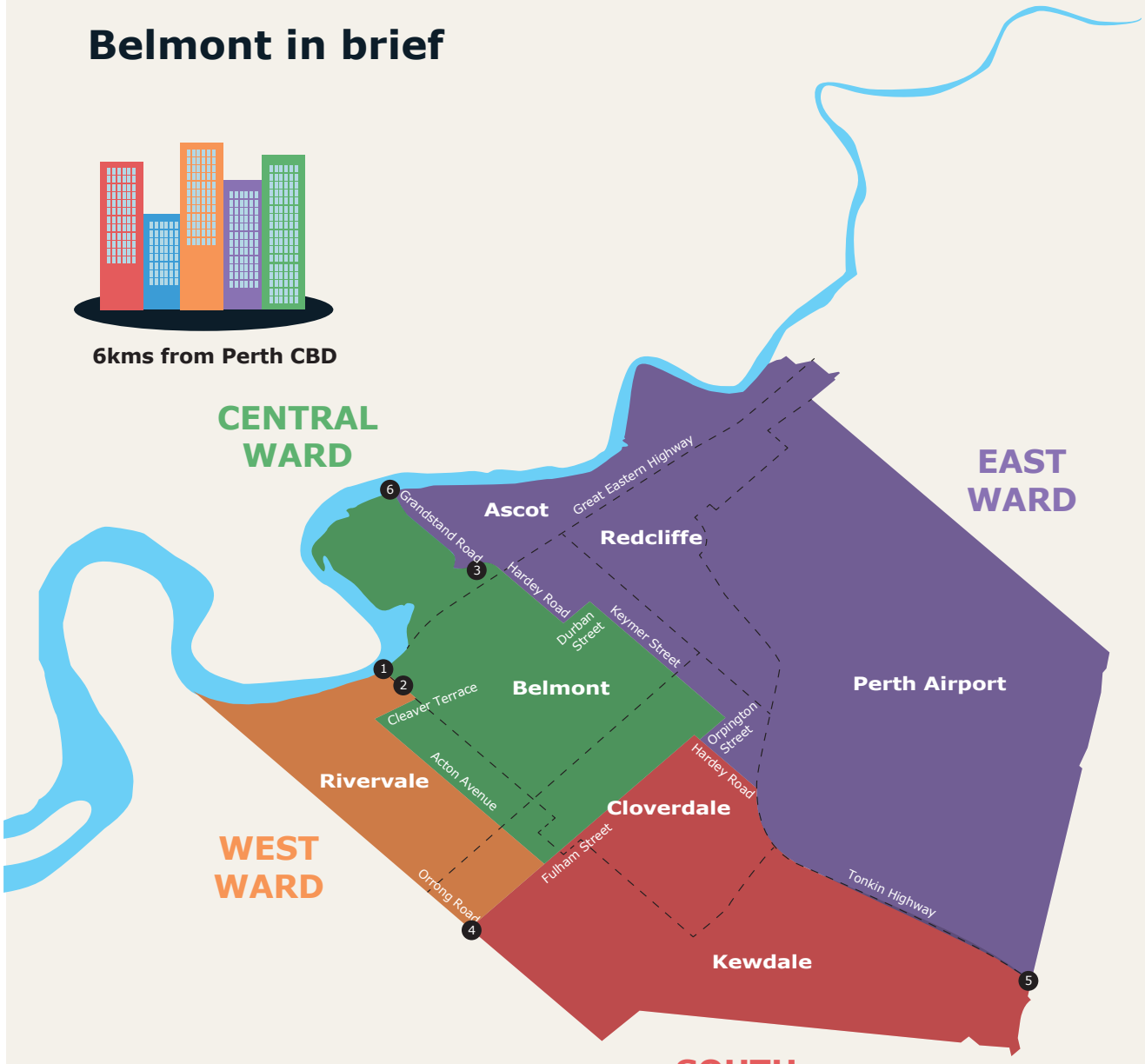
Note:
Information as at 30 June 2025.



# Belmont in brief



**6kms from Perth CBD**




1. Intersection of the prolongation northwesterly of Belmont Avenue with the left bank of the Swan River.
2. Belmont Avenue and it's prolongation northwesterly
3. Resolution Drive
4. Intersection of the northern side of Orrong Road with Fulham Street
5. Intersection of Tonkin Highway with the prolongation southwesterly of the northernmost northwestern boundary of Lot 300 (Reserve 51776) as shown on Deposited Plan 416045
6. Intersection of Grandstand Road with the left bank of the Swan River

--- Suburb boundaries



**40 km²**
total area

**47,300**
population (approx.)

**6 kms**
from Perth

**27,594**
eligible electors

**309 ha**
parks and gardens

**21,799**
rates assessments

**234 kms**
of roads

**20,839**
dwellings (2026 forecast)

Figures shown at 30 June 2025 .
For more demographic information visit profile.id.com.au/belmont

# Mayor's report



It is with great pleasure that I present the City of Belmont's Annual Report for 2024–25.

Over the past year we have built on solid foundations of the past and made great progress towards a welcoming, connected and sustainable future for our community. I am proud of what we have achieved together, and even more excited for what lies ahead.

This year, with the help of our community, we have delivered services and projects that really matter; from waste collection and libraries to community safety programs, local support services and improved streetscapes. These aren't just budget items, they are the things that help people feel at home, stay connected, and take pride in belonging to a growing City like ours.

Community safety, local events, traffic projects, grants and programs have helped bring people together and make our neighbourhoods safer and more vibrant, where everyone feels they belong.

Over the past year, we responded to community feedback calling for better lighting in our parks and public spaces. We continued our Winter Night Lights Program and, with support from other tiers of government, we delivered new solar bollards at Tomato Lake and upgraded sports lighting at Middleton Park. These improvements help make our parks safer and more welcoming for everyone to enjoy, day and night.

Expanding green spaces and creating places for people to enjoy has remained a priority. The endorsement of our Urban Forest Strategy, community planting days, streetscape improvements and the verge garden program are helping us grow a greener city for future generations. We have also taken big steps forward with our plans for Faulkner Park and Wilson Park.

We know our community expects us to listen and respond, and it was encouraging to see strong results in our community perception survey, where we were recognised as a leader in areas such as value for money from rates, open and transparent decision-making, celebrating cultural diversity and our communication channels.

We remain focused on supporting our local businesses and encouraging new ideas, with grants and initiatives that help our business community thrive. This included the successful Jobs Expo that aimed to put local people in local jobs.

As your Mayor, I am genuinely excited about the future and the immense potential it holds for everyone who lives, works, and visits the City of Belmont.

I am grateful to everyone; residents, local businesses, volunteers and staff who play their part in making our city - the City of Opportunity.

**Robert Rossi JP**
**Mayor**

# Chief Executive Officer's report



I am delighted to present the City of Belmont's Annual Report 2024–25 and to share our plans for the year ahead.

Looking back, I commend the Council and City staff for their dedication and professionalism, which have enabled us to finish the year in a strong and sustainable position. I'm proud of what we've achieved together with our community, and I'm excited about what comes next.

Looking forward, the Strategic Community Plan and Corporate Business Plan set out a clear roadmap to meet our community's needs now and into the future.

This year, we will adopt and implement the Community Safety Strategy 2025–2030 to strengthen safety and crime prevention across our city.

We will also expand our lighting upgrades in our parks and on City-owned infrastructure, building on the recent solar bollard installations at Tomato Lake and improved sports lighting at Middleton Park.

Our capital works program will continue to enhance our streetscapes, parks and community spaces. Key projects include the Peet Park Redevelopment, the Belvidere Streetscape Revitalisation Project, and upgrades to facilities at Centenary Park and Miles Park.

Environmental sustainability remains central to our work. We will implement the Urban Forest Strategy 2025–2030 and progress a range of initiatives to help create greener, more resilient neighbourhoods.

Our commitment to fostering connection remains strong. We will expand the Your Neighbour Grant project to help bring people together and continue to partner with local organisations to deliver programs supporting health, wellbeing, early years and the prevention of domestic and family violence. Finalising the Local Housing Strategy and continuing the Community Contribution Fund Program will also support our vision for a vibrant, inclusive community.

We will keep listening to our residents, businesses and stakeholders to make sure our work reflects local needs and delivers real value.

Working together with our partners is also vital to achieving the best results for our community. Over the past year, we secured valuable funding support from both the State and Federal Governments to help deliver key infrastructure projects and we look forward to sharing updates on those projects in the years ahead.

We continue to build strong relationships with local businesses and regularly collaborate with neighbouring local governments to share ideas, tackle common challenges, and create opportunities that benefit our whole region.

I am continually inspired by the dedication of our Elected Members and staff, and I know that, together with our community, we will keep building a better City of Belmont.

**John Christie**
**Chief Executive Officer**

# Executive Committee report



The role of the Executive Committee is to obtain and consider the information it requires to make unbiased, objective recommendations to Council on CEO appointments, contract reviews/ renewals, performance and remuneration reviews as required by the City of Belmont 'Standards for CEO Recruitment Performance and Termination'.

The Executive Committee also monitor sanctions ordered by the Standards Panel for minor breaches pursuant to the Local Government Act 1995 (WA).

During 2024-25, the Executive Committee met on two occasions; in July 2024 to conduct the CEO's 2023-24 performance appraisal and to set goals and targets for 2024-25 and in February 2025 to conduct the CEO's Interim Review for 2024-25.

The Committee was not required to meet to consider any sanctions ordered by the Standards Panel for minor breaches. I would like to thank the members of the Committee, as well as the Chief Executive Officer and staff for their assistance during the year and the support I have received as Presiding Member.

**Mayor Robert Rossi JP**
**Presiding Member**
**Executive Committee**

# Standing Committee (Audit and Risk) report



The Standing Committee (Audit and Risk) met four times during 2024-25.

The purpose of the Committee is to assist Council to discharge its responsibilities by exercising due care and diligence in relation to the reporting of financial information, the application of accounting policies and the management of the financial affairs of the City in accordance with the provisions of the Local Government Act 1995 (WA) and associated Regulations including an assessment of the management of risk.

The Committee provides guidance and assistance to the City of Belmont in carrying out its functions relating to audits carried out under Part 7 of the Local Government Act 1995 (WA).

The Committee considered the City's Annual Audited Financial Report to 30 June 2024 and recommended its adoption by Council prior to the Annual Meeting of Electors.

The Committee considered nine internal audit reports conducted on:

- Leisure and Wellbeing Oasis Contract
- Waste Management
- Governance and Compliance
- Parks Asset Management and Maintenance
- Building Permit Approvals
- Revenue and Funding Cycle
- Building Maintenance
- Internal Audit Quality Assurance
- Roads, Footpaths and Drains Maintenance and Construction

These reports were recommended to Council for noting.

The Committee monitors and reviews progress of audit logs which record recommendations advised by the Office of the Auditor General and other audits.

The Committee also received the 2024 Compliance Audit Return.

I would like to thank the members of the Committee including Cr George Sekulla (Deputy Presiding Member), Mayor Robert Rossi, Cr Jenny Davis, Cr Bernie Ryan and Ms Shona Zulsdorf (Independent Member) as well as City staff for their assistance and support during the year.

In accordance with the State Government Reform Program for Local Government, this Committee will be renamed Audit, Risk and Improvement Committee (ARIC) effective July 2025.

**Cr Christopher Kulczycki**
**Presiding Member**
**Standing Committee (Audit and Risk)**

# Disability access and inclusion plan progress to date



The City's Access and Inclusion Plan 2022-2026 has guided the development and implementation of projects and activities during this reporting period. The City is proud of its achievements in creating a more accessible and inclusive community and will continue to strive to meet the needs of all those who work, live and play in the City.

The Plan outlines 73 actions across eight outcome areas. 53 actions have been completed, 8 are on track, and 12 are scheduled to be progressed in the final year of the Plan.

This year's key actions included:

- Completion of online virtual tours for all community centres, supporting people with disability in assessing accessibility before making a booking.
- Implementation of accessible communication practices, including Easy English versions of key documents and captioned videos outlining City services.
- Upgrade of Faulkner Park Ornamental Lakes with a compliant, accessible pedestrian bridge as part of the City's commitment to inclusive infrastructure.
- Use of Disability Activity Transfer Elder Services (DATES) to provide continuous shuttle service to support accessibility at major events, including Kids Fest 2024, the 2024 Christmas event, and Harmony Week.
- Continued improvements to access and inclusion at the City's events, such as accessible event layouts and including AUSLAN lessons at the Harmony Week Festival.
- Quarterly meetings of the Access and Inclusion Advisory Group to receive updates and support implementation of the Access and Inclusion Plan.
- Strengthening our partnership with the Belmont Forum, Valued Lives, Sussex Street Community Law Service and Guide Dogs WA to deliver the International Day of People with Disability event.
- City staff undertaking training with a lived-experience training provider with sight impairment on how to provide best practice customer service to our community.
- A partnership with Ballroom Fit to offer group dance lessons to the community at Belmont Hub.
- Ongoing improvements to access and inclusion in footpaths, parks, facilities, and playgrounds.

# Environment and Sustainability Strategy 2023-2033



The City continues to deliver on a range of initiatives identified in the *Environment and Sustainability Strategy 2023-2033*, with the following key achievements during the 2024/2025 financial year:

## Ecology and biodiversity

- Delivery of the City's 'Verge Garden' and 'Trees for Residents' programs including educational workshops, resulting in over 200 'Verge Makeover Kits' being issued to residents.
- Facilitated over 30 environment-focused events and initiatives including community and corporate planting days, citizen science programs, sustainability workshops, and free mulch for residents.
- Three (3) successful grant applications totalling over $875,000 to deliver greening initiatives in the public realm including:
  - $8,464 through the Waterwise Council's Program,
  - $367,903 through the Urban Greening Grants Program, and
  - $500,000 through the Drainage for Liveability Program.
- Over 30,000 understorey plants installed across 10 City locations, including the conversion of 1.6 ha of dry grassland at Garvey Park into native habitat to enhance ecological connectivity.
- Updated flora mapping in natural areas used to inform development of consolidated species lists which promote ecological biodiversity and resilience.
- The first of two (2) proposed 'cockitroughs' installed at Signal Hill Bushland, providing respite for vulnerable populations of black cockatoos and other birdlife during increasingly hot and dry conditions.
- Plant pathogen analysis undertaken for susceptible bushland reserves and biosecurity measures implemented to ensure the ongoing management of polyphagous shot hole borer (PSHB).

## Water management

- A catchment-based inspection program for commercial and industrial premises was introduced, with an aim to further integrate with the City's ongoing stormwater monitoring program.
- Public open space was maintained within the City's licensed groundwater allocation, despite a 12% reduction in annual rainfall compared to the region's long-term average.
- Developed and implemented a Nutrient & Irrigation Management Plan (NIMP) and achieved an 83% ('excelling') rating on the Local Government Nutrient Management Scorecard.
- Recognition as a Waterwise Council since 2001 and maintenance of the City's 'Gold' status since 2021.

## Sustainably built environment

- Adoption of CP64 Tree Preservation Orders under the City's Local Planning Scheme No. 15. to protect eligible trees with significant environmental, biological, cultural, or historical value.
- Continued participation in the Lower Swan Locality Plan (LSLP) Steering Group to inform development of the LSLP by Department Biodiversity, Conservation & Attractions (DBCA).

## Climate resilience and sustainable energy

- Reduced emission of approximately 1,107 tonnes of CO2 through the purchase of 100% renewable energy at eight (8) of the City's highest energy-consuming facilities.
- Continued promotion of sustainable transport to reduce community reliance on private vehicles and encourage walking, cycling, and public transport use.
- Switch Your Thinking member-Council providing a range of educational resources and incentives to encourage local residents and businesses to adopt sustainable practices.

## Waste and resource recovery

- Community drop-off days for specialised waste streams including asbestos, white goods and ewaste.
- Phase 2 of the Food Organics and Garden Organics (FOGO) rollout completed to 1,800 units with shared kerbside waste collection.
- Roll out for high-density developments with internal waste collection points will continue over the next two (2) years.

# Urban forest strategy

The City continues to place a high importance on a healthy and well-managed urban forest. This ongoing commitment has seen the endorsement of the Urban Forest Strategy 2025-2030.

### Tree Planting Program

The City continued its tree planting programme during the 2024-25 financial year, which resulted in:

- Over 3,000 trees planted within parks and road reserves.
- As reported in the Environment and Sustainability section of this report, over 30,000 understory plantings were added across the City.

### Community Initiatives

2024-25 also saw an increase in the very popular 'Trees for Residents' initiative, which resulted in 191 trees provided to residents to plant on their private property.

The City continues to invest in the future with the Trees for Schools program, which has resulted in the development of school gardens where students can plant and maintain trees, shrubs, and other plants.

### Biosecurity Measures

While actively growing our urban forest, the City, like all other metropolitan local governments, addressed the need to increase our biosecurity inspections and controls to manage the threat of the polyphagous shot hole borer (PSHB).

PSHB, scientifically known as *Euwallacea fornicatus*, is a small beetle native to Southeast Asia. It is highly invasive and attacks a wide range of plant species.

To minimise its impact, the City has increased biosecurity inspections and implemented stringent control measures, including a review of the City's tree planting palette as the City actively looks to increase its biodiversity.

These efforts include regular monitoring of susceptible tree species, rapid response to detected infestations, and public education campaigns to raise awareness about the signs of PSHB infestation and the importance of early detection and reporting.



# Record keeping report

Records are a key information asset of the City, all staff and elected members are expected to keep records as part of their day-to-day tasks and responsibilities.

The City manages its Records in accordance with the requirements of the *State Records Act 2000 (WA)* and through guidance provided by the State Records Commission.

The current Recordkeeping Plan was approved by the State Records Commission in November 2021 and is due to be resubmitted in 2026.

In 2024, the City implemented a new format for its corporate recordkeeping system ECM. 2025 has seen the Records Team pursuing quality assurance in document registration, and in training staff in specialised areas of the City's record-keeping software.

The Records team has created and introduced user guides for staff in response to queries and issues identified through the quality assurance process, and undertaken the required three yearly review of published documents.

## Training

All new officers are required to attend records management induction training.

This induction covers topics such as:

- Legislation covering the City's recordkeeping responsibilities
- Legal deposit
- Officer responsibilities in managing records
- Access to records
- Benefits of good recordkeeping
- Further training is provided for officers who are given access to ECM.

Refresher training is also available on request for officers and pop-in sessions are available each month to all staff.

In the 2024-25 financial year training was held for:

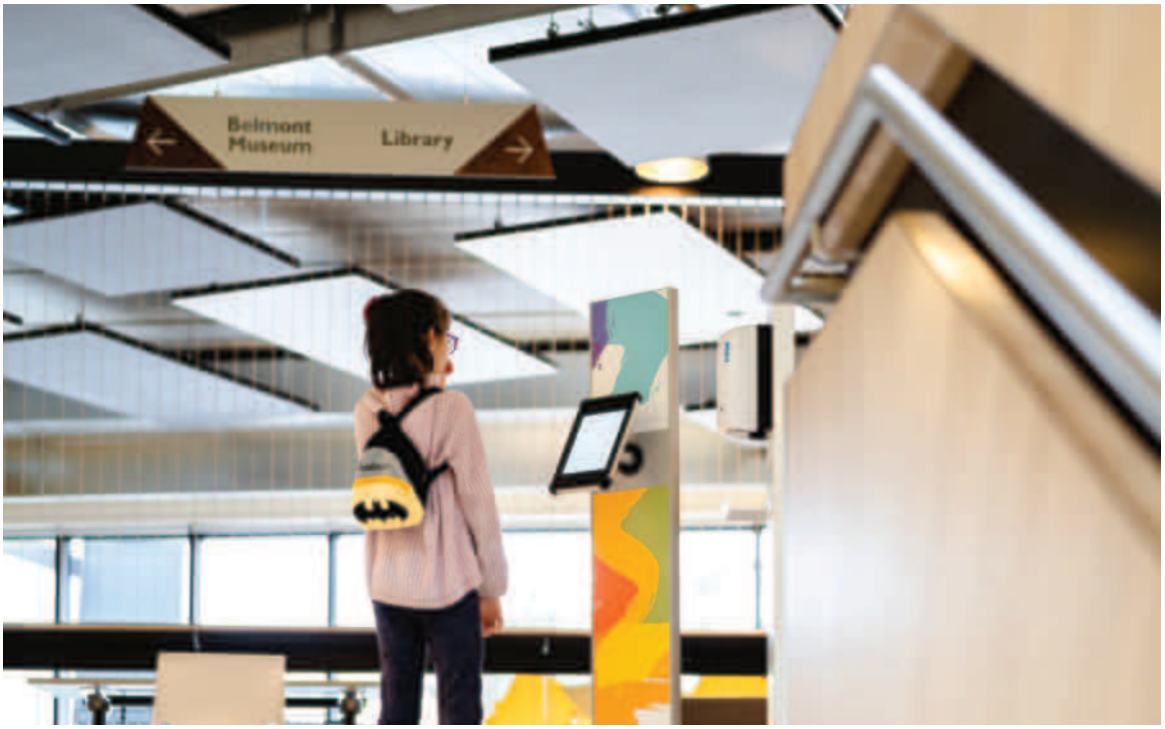
- 43 new users received ECM and records management induction training,
- 18 officers received refresher training
- 20 officers attended induction only training

## Training evaluation

Officers were asked to complete feedback forms on the Record-Keeping system training delivered, resulting in 42 completed feedback forms during the relevant period.

The level of confidence in using the system reported by staff after this initial training has identified this as an area for improvement. This will be a key area of focus in the 2025-2026 year. All the other feedback on training averaged out to be between good and very confident (above 4). (scale is: 1 – not confident to 5 - very confident).

# Freedom of information




The *Freedom of Information Act 1992 (WA)* (FOI Act) provides a general right of access to the City's documents. This right of access is subject to limitations and exemptions as set out in the FOI Act.

As required by the FOI Act, the City:

- provides an Information Statement on its website to give details on accessing the City's documents.
- submits a statistical return to the Information Commissioner's Office every year.
- releases documents that are not otherwise exempt to applicants.

During 2024-25, the City received nine valid applications for access to documents, one application was withdrawn, six of the of the applications were completed by the end of the financial year and two are still outstanding. The completed applications were processed within an average of thirty-two days.

# Plan for the future

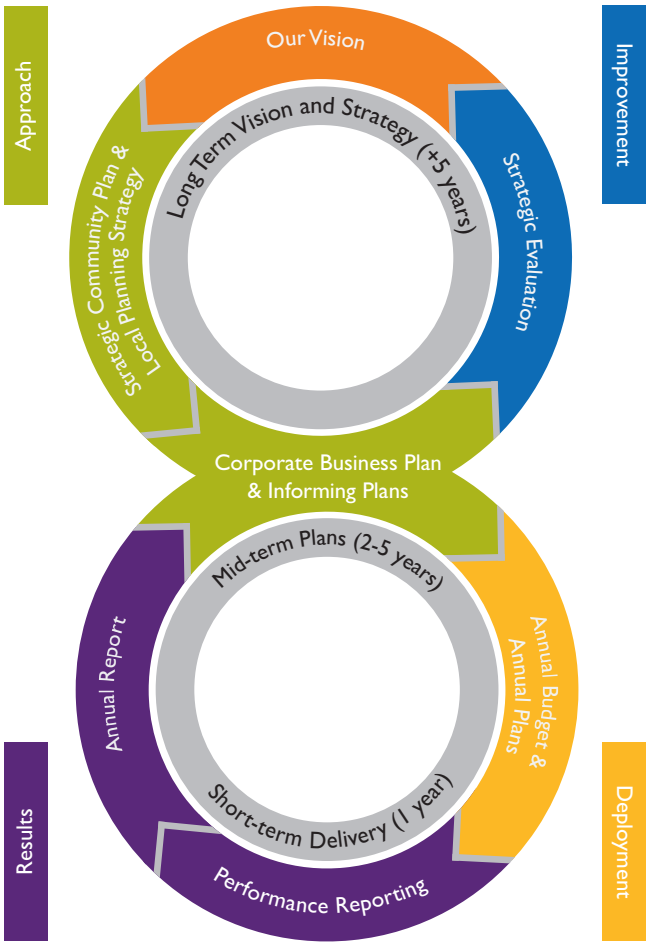
## Integrated planning and reporting

### How we plan and report

As required by the *Local Government Act 1995 (WA)* and the *Local Government (Administration) Regulations 1996 (WA*) all local governments in Western Australia are required to develop a Strategic Community Plan and a Corporate Business Plan, supported and informed by resourcing and delivery strategies, including the Workforce Plan, Long Term Financial Plan and Asset Management Plans. These Plans drive the development of each local government's annual budget and help local governments plan for their community's future.

The City's Strategic Community Plan 2024-2034, and Corporate Business Plan 2024-2028 were adopted by Council on 24 June 2024 after undergoing a major review.

## City of Belmont's integrated planning and reporting framework



## Strategic plans

### Strategic Community Plan 2024-2034




The City's Strategic Community Plan 2024-2034 presents the vision and aspirations for the future of our community. It sets out the key outcomes required to achieve these and provides the City, and others, with a clear understanding of what matters most to the community and guides the way in which the City plans for the future and deliver services.

### Corporate Business Plan 2024-2028




The Corporate Business Plan guides the implementation of our Strategic Community Plan.
The Corporate Business Plan translates the aspirations and desired outcomes of the Strategic Community Plan into operational priorities and indicates how they will be resourced over a four-year period. The Corporate Business Plan articulates how the Strategic Community Plan will be delivered through services, capital works, projects and activities.

## Informing plans

The City's Integrated Planning and Reporting Framework includes informing plans that address financial and non-financial resources required over the life of the Corporate Business Plan. The plans in place for the year ended 30 June 2025:

| Workforce Plan | Long Term Financial Plan | Asset Management Plans |
|---|---|---|
| The City's Workforce Plan 2023-2026 shapes the direction of how the City will build workforce and organisational capacity and capability. The plan has been designed to ensure the right people – those with the skills and capabilities necessary – are available in the right numbers, in the right place and at the right time to deliver organisational objectives. This is balanced with the need to attract and retain the right people in a competitive labour market. | The Long-Term Financial Plan has been developed as part of the City's ongoing financial planning to ensure continued long-term financial sustainability while providing sufficient funding for future workforce, services, and infrastructure to the community. | The City plans for the effective and sustainable management of its assets to meet current and future needs and to optimise return on investment. Directed by an Asset Management Strategy, Asset Management Plans (AMPs) define the levels of service and operational requirements for the various classes of assets. AMPs also highlight the processes used to manage the assets and how assets will be sustainably renewed, upgraded or disposed of at the most appropriate standard, time, place and cost. The AMPs feed into the long-term financial plan and associated capital works program. |

# Reporting and performance

The City monitors performance and reports on progress to ensure the success of the Strategic Community Plan and the Corporate Business Plan.

## Performance reporting

During 2024-25, the City monitored and reported on the progress of actions listed in the Corporate Business Plan and submitted a number of other performance related reports to Council Committees and Council during 2024-25.

Below are key achievements and progress made during 2024-25 against the plans and priorities for the future. There are 5 sections representing the 5 key performance areas of the Strategic Community Plan.

## Our plan for the future

To achieve Our Vision, the community helped to shape a plan for the future. Within the framework, there are five key performance areas: People, Planet, Place, Prosperity and Performance. In each of these areas the community reviewed and helped to define key outcomes, objectives, major projects and strategic actions.

**Key performance areas:**



**People**

People covers all aspects of community health and wellbeing, from youth and senior services, to access and inclusion, sport and recreation, culture and the arts, community safety, responsible pet ownership, volunteering, and ranger services.



**Planet**

Planet covers all aspects of the environment and sustainability, from the river foreshore and nature reserves to waste and energy management, water conservation, and tree planting.



**Place**

Place covers the built form, from urban planning and building services, to housing, streetscapes, roads, footpaths, parks, playgrounds, community buildings, toilets, parking and transport.



**Prosperity**

Prosperity covers all aspects of economic development, place activation, business support services, education and lifelong learning, and library services.



**Performance**

Performance covers all aspects of leadership and governance, from financial sustainability, risk management, human resources and fleet management, to community engagement, communications and customer service.

## People

We have a diverse, harmonious, healthy and active community, where everyone feels safe and there is a strong sense of connection, belonging and pride in the area.

| Desired outcomes | | Objectives | |
|---|---|---|---|
| 1 | A safe, healthy community. | 1.1 | Facilitate improved community safety. |
| | | 1.2 | Facilitate community health and wellbeing. |
| | | 1.3 | Grow participation in sport and recreation activities. |
| 2 | A strong sense of pride, belonging and creativity. | 2.1 | Respect, protect and celebrate our shared living histories, heritage and cultural diversity. |
| | | 2.2 | Increase recognition and respect for local First Nations peoples, places and stories. |
| | | 2.3 | Increase participation in the arts, creative industries, and community events. |
| 3 | People of all ages and abilities feel connected and supported. | 3.1 | Support the health and wellbeing of families and children. |
| | | 3.2 | Support young people to flourish. |
| | | 3.3 | Support people to age safely, happily, with dignity and respect. |
| | | 3.4 | Advance opportunities, community participation and quality of life for people of all abilities. |
| | | 3.5 | Grow participation in volunteering. |

## Corporate Business Plan achievements 2024-2025

- ✓ Adoption of the Safer Communities Operational Plan 2025-2028
- ✓ New Community Safety Strategy drafted and ready for adoption in early 2025-26
- ✓ CCTV and network upgrades completed around the City, including at the Skateboard Park, the Glasshouse, Abernethy Road, Faulkner Park, Redcliffe Community Centre, Middleton Park Centre, Epsom Avenue Shops, Eastgate Shopping precinct, Forster Park, Byblos Building and Belmont Oasis, Kewdale Industrial area Abernethy Road
- ✓ Community Safety Crime Prevention, Pop Up events held at local shopping precincts, Kooyong Rd, Love Street, Belvidere Street, and the Belmont Forum, Bunning Belmont and promoted Community markets.
- ✓ MOU between the City and Western Power for underground power in Cloverdale
- ✓ Condition audit completed for all City-owned lighting infrastructure
- ✓ Ongoing security appraisals and CCTV footage provision to police
- ✓ Public Health Plan drafted
- ✓ Healthy Communities Program implemented, including CountUSin sessions, the Youth Urban Arts Project, Walking Group Breakfasts and partnerships with the Drug and Alcohol Foundation, Act Belong Commit, East Metropolitan Health Service, the Australian Drug Foundation and Cancer Council
- ✓ Peet Park Redevelopment – Business Case approved by Council, State and Federal funding commitments of $1,233,000, stakeholder engagement and detailed design commenced
- ✓ Multicultural Strategy continued to be delivered, with Advisory Group meetings, Australian English classes, employment support programs, multicultural playgroups and Food Safaris held throughout the year
- ✓ A five-year plan setting the themes for future museum exhibitions in Belmont Hub has progressed with Year 1 featuring the theme of Sport and Year 2 focused on the theme of Home Made in Belmont
- ✓ First Nations Strategy adopted by Council and implementation begun
- ✓ Adoption of the Arts and Culture Strategy 2025-2030
- ✓ Public Art Management Plan and Guidelines 2025-2030 finalised and implemented
- ✓ Successful delivery of the Winter Warmer series and Imaginarium Land at KidzFest, with final preparations underway for the AfterDark Performance Lounge cabaret series in July 2025
- ✓ Proposed expansion of the Your Neighbour Grants Initiative developed and budgeted for trial to begin mid 2025
- ✓ Launched the Volunteer Assistance Program

## Projects looking forward

- ✓ Adopt and implement the:
  - ✓ Community Safety Strategy 2025-2030
  - ✓ Public Health Plan
  - ✓ Recreation Strategy 2025-2030
- ✓ Peet Park Redevelopment – Lighting upgrades, oval realignment, new clubroom facility
- ✓ Belmont Oasis Redevelopment – Concept design and business case development
- ✓ Implement the new Arts and Culture Strategy 2025-2030
- ✓ Launch of the expanded Your Neighbour Grant Initiative
- ✓ Review of Health Local Laws and Consolidated Local Laws
- ✓ Review and update of the Multicultural Strategy, Youth Strategy and Access and Inclusion Plan

## Planet



Our natural heritage, including the Derbarl Yerrigan (Swan River) and nature reserves, is being cared for, enhanced and enjoyed responsibly. We are working together to grow our tree canopy and reduce waste, emissions and water use for improved sustainability.

| Desired outcomes | | Objectives | |
|---|---|---|---|
| 4 | Healthy and sustainable ecosystems. | 4.1 | Protect and enhance our natural environment. |
| | | 4.2 | Improve management of the Swan River and local waterways. |
| | | 4.3 | Grow the urban forest. |
| 5 | Climate resilience. | 5.1 | Adopt sustainable practices to reduce waste, emissions and water usage. |
| | | 5.2 | Build our resilience to cope with natural disasters and emergencies, including storms, flooding and fire. |

### Corporate Business Plan achievements 2024-2025

- ✓ Adoption of the Urban Forest Strategy 2025-2035
- ✓ Implementation of planting programs and revegetation plans to increase the quality of natural areas
- ✓ Esplanade Park foreshore stabilisation works completed
- ✓ Design work well progressed for foreshore stabilisation works at Bilya Kard Boodja
- ✓ Review of the Belmont Foreshore Management Plan commenced
- ✓ Phase 1 and 2 of the FOGO rollout completed
- ✓ E-waste service developed in line with legislation
- ✓ Quarterly reporting on e-waste collection rates introduced
- ✓ Successfully maintained GOLD Status in Waterwise Accreditation
- ✓ Over 600 pre-bush fire season inspections and notification undertaken
- ✓ Local Emergency Management Arrangements (LEMA) were adopted following extensive review
- ✓ A multi-agency exercise and workshops were held to test the new LEMA

### Projects looking forward

- ✓ Implementation of the Urban Forest Strategy
- ✓ Foreshore stabilisation works at Bilya Kard Boodja and Garvey Park
- ✓ Adopt the revised Belmont Foreshore Management Plan
- ✓ Phase 3 of the FOGO rollout
- ✓ Implement surface water quality monitoring projects to identify priority catchments and methods of reducing nutrients
- ✓ Restore 6.3 ha of 'Completely Degraded' and 'Degraded' vegetation with condition rates as 'Excellent'
- ✓ Develop a City wide hydrological model for risk management and informing upgrades and land use developments

## Place

Responsible urban planning is helping to create green, healthy and well-connected neighbourhoods with good public facilities, attractive streetscapes and parks, and housing opportunities for everyone.



| Desired outcomes | | Objectives | |
|---|---|---|---|
| 6 | Sustainable population growth with responsible urban planning. | 6.1 | Responsible planning and development to enhance liveability, with consideration for supporting infrastructure and services. |
| | | 6.2 | Improve access to safe, affordable and diverse housing options. |
| 7 | Attractive and welcoming places. | 7.1 | Provide quality community buildings, halls and toilets. |
| | | 7.2 | Provide attractive green spaces, streetscapes, parks and playgrounds for recreation, relaxation and enjoyment. |
| 8 | A city that is easy to get around safely and sustainably. | 8.1 | Make our city more enjoyable, connected and safe for people to walk and cycle. |
| | | 8.2 | Deliver a safe, efficient and sustainable road network with supporting infrastructure, including sufficient parking. |

**Corporate Business Plan achievements 2024-2025**

- ✓ Principal planning harmonisation outcomes with LinkWA alliance Councils completed, with Councils agreeing to implement when each Council next reviews their Local Planning Strategies
- ✓ Endorsed the draft Local Planning Strategy and referred it to the Western Australian Planning Commission for consent to advertise
- ✓ The Local Housing Strategy was drafted and endorsed by Council for advertising concurrently with the draft Local Planning Strategy
- ✓ Adoption of the the Great Eastern Highway Urban Corridor Strategy
- ✓ Recommended approval of the draft Golden Gateway Structure Plan, which was referred to the Western Australian Planning Commission for determination
- ✓ Recommended approval of the draft Ascot Racecourse Precinct Structure Plan, subject to modifications, and referred it to the Western Australian Planning Commission for determination
- ✓ Upgrade of facilities at Forster Park completed, and new lights installed at Centenary Park
- ✓ Implementation of the City's 10 Year Streetscape Upgrade and Renewal Program progressing positively
- ✓ Renewal works of the Faulkner Park Ornamental Lakes infrastructure and parklands completed
- ✓ Construction begun on Zone 2 of the Wilson Park Precinct Revitalisation project
- ✓ Sustainable Transport Strategy completed and presented to council
- ✓ Completion of a new children's school crossing on Kooyong Rd
- ✓ Garvey Park Trail Development Plan reviewed, and budget estimates included in the City’s long term financial plan
- ✓ Funding received from Federal and State Government grants for priority road improvement projects
- ✓ Redcliffe Area Traffic Study endorsed by council for implementation

**Corporate Business Plan achievements 2024-2025 (continued)**

- ✓ Abernethy Road Traffic Study completed with the median closure works at the Gabriel Street intersection completed
- ✓ City wide traffic modelling study – scope under discussion with Main Roads WA
- ✓ Road Safety Management Plan developed
- ✓ Development of a 3, 5 and 10-year Capital Works Program that identifies and aligns drainage works, median tree planting and other works with required roadworks. Road network was subject to a laser survey
- ✓ Belmont Trust – consultant engaged to develop a landscape masterplan

**Projects looking forward**

- ✓ Approval of the Golden Gateway Structure Plan by the Western Australian Planning Commission
- ✓ Complete the Belmont Trust Landscape Masterplan and business case presented to Council and the Trust
- ✓ Review the Faulkner Civic Precinct Master Plan following completion of the Belmont Oasis Redevelopment Business Case
- ✓ Complete the business cases for remaining zones of the Wilson Park Precinct Revitalisation project
- ✓ Formalise and implement the planning framework for the Local Planning Scheme No. 15
- ✓ Finalise the Local Housing Strategy
- ✓ Upgrade Redcliffe Community Centre
- ✓ Implement the City's 10 Year Streetscape Upgrade and Renewal Program
- ✓ Progress the review of the Sustainable Transport Strategy for Council endorsement
- ✓ Progress delivery of the Abernethy Road study recommendations
- ✓ Progress delivery of the Redcliffe Area Traffic Study recommendations
- ✓ Implement the Road Safety Management Plan actions
- ✓ Improve pedestrian safety around the Belmont Forum business precinct with speed limit reduction and traffic signal upgrade considerations
- ✓ Complete formal pedestrian crossings on Wright Street and Fulham Street, following Western Power lighting upgrades
- ✓ Implement the Garvey Park Trail Development Plan
- ✓ Progress a City-wide transport and traffic modelling study in partnership with Main Roads WA, to support planning for future road network infrastructure upgrades

## Prosperity



By nurturing creativity and innovation, we have a diverse, dynamic and resilient economy with excellent investment, business development and job opportunities. It is an exciting and vibrant place to visit, with a good range of entertainment, shopping and dining experiences.

| Desired outcomes | Objectives |
|---|---|
| 9 A progressive, vibrant and thriving economy with active participation in lifelong learning. | 9.1 Attract public and private investment and support the attraction, retention, growth and prosperity of local businesses.<br>9.2 Plan and deliver vibrant, attractive, safe and economically sustainable activity centres.<br>9.3 Enhance corporate social responsibility and promote the benefits this brings to both the business sector, the environment and the wider community.<br>9.4 Facilitate access to quality education and lifelong learning opportunities for all. |

### Corporate Business Plan achievements 2024-2025

- ✓ Implementation of the Economic Development Strategy, including Business Breakfast networking events, a new 'Visit Belmont' website and 'Adventure in Belmont' visitor campaign, homebased business workshops, the Belmont Jobs Expo and more
- ✓ Signing of a two year funding agreement between the Belmont Business Enterprise Centre and the City for business support to Belmont- based businesses
- ✓ Implementation of the Activity Centre Planning Strategy commenced, with key actions and recommendations incorporated into the draft Local Planning Strategy
- ✓ Development milestones met for the Belvidere Streetscape Revitalisation project
- ✓ Successful application for a $4.7m grant from the Federal Government as part of the Thriving Suburbs Program. This will contribute approximately 50% of the construction costs to the Belvidere Streetscape Revitalisation project
- ✓ Welcome to Belmont Meet-ups launched at Ruth Faulkner Library

### Projects looking forward

- ✓ Continue to implement the Economic Development Strategy
- ✓ Review the Business Approvals System
- ✓ Continue to implement the Activity Centre Planning Strategy
- ✓ Complete the Belvidere Streetscape Revitalisation project, with a focus on activation, beautification, community safety, and better connections with other areas to support existing businesses and attract new businesses and private development
- ✓ Develop an innovative youth-focused literacy program for individuals aged 12 to 18 that encourages development of a diverse array of literacy skills, including reading, writing, digital literacy, media literacy, and artistic literacy

## Performance



Local leaders seek, listen and value community input into local decisions, and keep the community well informed about what's happening. There is a clear vision and plan for the future, with a strong focus on balancing service delivery and financial sustainability to deliver excellent value for money from rates. We are inclusive, engaging and act with integrity.

| Desired outcomes | | Objectives |
|---|---|---|
| 10 | Effective leadership, governance and financial management. | 10.1 Deliver effective, fair and transparent leadership and governance.<br>10.2 Manage the City's finances, assets and resources in a responsible manner.<br>10.3 Embrace technology, creativity and innovation to solve complex problems and improve our city.<br>10.4 Support collaboration and partnerships to deliver key outcomes for our City. |
| 11 | A happy, well-informed and engaged community. | 11.1 Effectively inform and engage the community about local services, events and City matters.<br>11.2 Deliver the best possible customer service and experiences. |

### Corporate Business Plan achievements 2024-2025

- ✓ Leadership Strategy developed and adopted
- ✓ Review of the City's Business Management System documents
- ✓ Major review of the City's Risk Management Framework underway
- ✓ Asset Management maturity audit completed
- ✓ Asset Management Plans updated against the IPWEA NAMS Plus template
- ✓ Migration of the City's financial, mapping, infringement/compliance and record-keeping systems and data to top tier datacentres
- ✓ Business Innovation grants program delivered
- ✓ Ongoing participation in the Perth Airport Planning Coordination Forum, alongside the lodgement of submissions on several draft Major Development Plans
- ✓ Continued to fund, promote and manage the Community Contribution Fund program
- ✓ Sister City Affirmation Agreement signed with Adachi, Japan
- ✓ SmoothRates implemented as part of issue of 2024-25 rates
- ✓ Adoption of the Corporate Business Plan 2025–2029

### Projects looking forward

- ✓ Implement the new Leadership Strategy
- ✓ Major review of the Asset Management Policy and Strategy
- ✓ Progress the Asset Management Maturity Audit, improvement plan actions
- ✓ Finalisation of the major review of the Risk Management Framework
- ✓ Implement new risk management software
- ✓ Review of the Customer Service Charter
- ✓ Investigate and implement improvements to Customer Relationship Management (CRM) systems to improve customer experiences



## Continuous improvement

The City is committed to continuous improvement and utilises the Australian Business Excellence Framework (ABEF) and ISO audit and accreditation process as tools to drive continuous improvement. ABEF has been incorporated into the City of Belmont's Integrated Planning and Reporting Framework to identify and drive improvement in business practice and performance. Executives, Managers and other staff are trained in the principles of the ABEF.

The City of Belmont aims to provide quality local government services and has been internationally certified in ISO 9001 for Quality, ISO 14001 for Environment and ISO 45001 for Occupational Health and Safety.

The City actively seeks and uses its certification to ensure that its processes are delivering the right outcomes for the community and delivering those outcomes consistently.

## Community and stakeholder feedback

The City is committed to keeping our community informed and seeking regular feedback on our projects, programs and services. We use a number of different methods to understand community sentiment and how the City has progressed towards achieving our vision and strategic objectives. These include surveys, workshops, face-to-face engagement and a range of online tools.

# Executive responsibilities

(as at 30 June 2025)



**John Christie**
Chief Executive Officer

**Responsible for:**

- Overall responsibility for the management of City operations
- People and Culture
- Internal Audit
- Work, Health and Safety



**Stuart Downing**
Director Corporate and Governance

**Responsible for:**

- Governance, Strategy and Risk
- Finance
- Information Technology
- Public Relations and Stakeholder Engagement



**Wilmot Loh**
Director Development and Communities

**Responsible for:**

- Economic and Community Development
- Planning and Building Services
- Safer Communities
- Library, Culture and Place



**Mario Murphy**
Director Infrastructure Services

**Responsible for:**

- Works
- Parks, Leisure and Environment
- Design, Assets and Development
- City Projects
- City Facilities and Property



**Clare Bridges**
Executive Manager People and Culture

**Responsible for:**

- People and Culture

# Salary ranges

The number of employees of the Council, in bands of $10,000, entitled to an annual salary of $130,000 or more is as follows.

| Salary range | 2025 | 2024 | 2023 | 2022 |
|---|---|---|---|---|
| 130,000 – 139,999 | 3 | 4 | 5 | 7 |
| 140,000 – 149,999 | 1 | 5 | 2 | 1 |
| 150,000 – 159,999 | 5 | 2 | 1 | 0 |
| 160,000 – 169,999 | 0 | 0 | 4 | 3 |
| 170,000 – 179,999 | 4 | 3 | 4 | 4 |
| 180,000 – 189,999 | 0 | 5 | 0 | 1 |
| 190,000 – 199,999 | 2 | 1 | 1 | 3 |
| 200,000 – 209,999 | 5 | 4 | 4 | 0 |
| 210,000 – 219,999 | 3 | 2 | 0 | 0 |
| 220,000 – 229,999 | 1 | 0 | 0 | 1 |
| 230,000 – 239,999 | 2 | 0 | 1 | 0 |
| 240,000 – 249,999 | 0 | 1 | 0 | 0 |
| 250,000 – 259,999 | 0 | 0 | 0 | 1 |
| 260,000 – 269,999 | 0 | 0 | 1 | 0 |
| 270,000 – 279,999 | 1 | 0 | 0 | 0 |
| 280,000 – 289,999 | 0 | 0 | 0 | 0 |
| 290,000 – 299,999 | 0 | 0 | 0 | 0 |
| 300,000 – 399,999 | 0 | 0 | 0 | 0 |
| 310,000 – 319,999 | 0 | 0 | 0 | 0 |
| 320,000 – 329,999 | 0 | 0* | 0* | 1 |
| 330,000 – 339,999 | 0 | 0 | 1* | 0 |
| 340,000 – 349,999 | 0 | 1* | 0 | 0 |
| 350,000 – 359,999 | 1 | 0 | 0 | 0 |
| **Total** | **28** | **28** | **24** | **22** |

*Incorrectly reported in previous reports

# Membership of committees

Committee membership as at 30 June 2025

## Executive Committee[1]

- Mayor Robert Rossi*
- Cr Deborah Sessions – Deputy Mayor**
- Cr Jenny Davis
- Cr Jarod Harris
- Cr Christopher Kulczycki
- Cr Phil Marks
- Cr Janet Powell (until April 2025)
- Cr Bernie Ryan
- Cr George Sekulla

## Standing Committee (Audit and Risk)

- Cr Christopher Kulczycki*
- Cr George Sekulla**
- Mayor Robert Rossi (Ex Officio)
- Cr Jenny Davis
- Cr Bernie Ryan
- Ms Shona Zulsdorf – Independent Member

1 Executive Committee abolished as of 30 June 2025 (resolved by Council at the 27 May 2025 Ordinary Council Meeting)

* Presiding Member
** Deputy Presiding Member



# Elected Member Attendance at council and committee meetings

(1 July 2024– 30 June 2025)

| | Ordinary Council Meeting | Special Council Meeting | Annual / Special Electors' Meeting | Agenda Briefing Forum | Information Forum/ Special Information Forum |
|---|---|---|---|---|---|
| **No. of** | | | | | |
| Meetings | 11 | 1 | 1 | 11 | 22 |
| Mayor Rossi | 11 | 1 | 1 | 10 | 18 |
| Cr Sessions | 11 | 1 | 1 | 11 | 21 |
| Cr Davis | 10 | 1 | 1 | 8 | 18 |
| Cr Powell [3] | 1 | 0 | 0 | 2 | 3 |
| Cr Kulczycki | 11 | 1 | 1 | 10 | 22 |
| Cr Marks | 11 | 1 | 1 | 10 | 20 |
| Cr Ryan | 10 | 1 | 0 | 11 | 20 |
| Cr Sekulla | 11 | 1 | 1 | 8 | 20 |
| Cr Vijay [1] | 0 | 0 | 0 | 0 | 0 |
| Cr Harris [2] | 8 | 1 | 1 | 7 | 15 |

| | Standing Committee (Audit and Risk) | | Executive Committee | |
|---|---|---|---|---|
| **No. of Meetings** | **4** | | **2** | |
| Mayor Rossi | 4 | M | 2 | M |
| Cr Sessions | 3 | O | 2 | M |
| Cr Davis | 4 | M | 2 | M |
| Cr Powell | 0 | | 1 | M |
| Cr Kulczycki | 4 | M | 2 | M |
| Cr Marks | 0 | | 0 | M |
| Cr Ryan | 2 | M | 2 | M |
| Cr Sekulla | 3 | M | 2 | M |
| Cr Vijay* | 0 | | 0 | M |
| Cr Harris | 3 | O | 1 | M |

[1] Resigned October 2024
[2] Elected October 2024
[3] Passed away April 2025

M Committee Member
P Committee Member Proxy
O Observer

# Elected Member professional development

Council Policy 21 – *Elected Member Professional Development and Authorised Travel* provides each Elected Member with an allocation of $7,450 per year during their four-year term to cover professional development costs. The annual allocation was increased from $5,000. The 4 year allocation for elected members whose term expires at the ordinary election in October 2025 is $22,450. For those elected members whose term expires at the ordinary election in October 2027 the 4 year allocation is $27,350. This allocation can be utilised at any point during their term, provided that total professional development costs do not exceed the allocation over the four-year term of office. Expenses associated with legislated mandatory training and the Western Australian Local Government Week event are excluded from the allocation.

| Councillor | Election Term | 4YR Term Allocation Balance remaining as at 1/7/2024 | Expenditure 1/7/2024-30/6/2025 | Allocation Remaining as at 30/6/2025 | Mandatory Training Expenses 2024-2025 |
|---|---|---|---|---|---|
| Cr Davis | Oct 2021 – Oct 2025 | 5,262 | 6,989 | 723 | 0 |
| Cr Marks | Oct 2023 – Oct 2027 | 20,000 | 0 | 27,350 | 0 |
| Mayor Rossi | Oct 2023 – Oct 2027 | 20,000 | 0 | 27,350 | 0 |
| Cr Ryan | Oct 2021 – Oct 2025 | 19,850 | 0 | 22,300 | 0 |
| Cr Sekulla | Oct 2021 – Oct 2025 | 5,680 | 4,793 | 3,337 | 0 |
| Cr Sessions | Oct 2021 – Oct 2025 | 8,148 | 5,580 | 5,018 | 0 |
| Cr Kulcyzcki | Oct 2023 - Oct 2025 | 9,937 | 0 | 12,387 | 0 |
| Cr Vijay [1] | Oct 2023 - Oct 2025 | 20,000 | 0 | 0 | 0 |
| Cr Powell [2] | Jun 2024 - Apr2025 | 6,666 | 0 | 0 | 0 |
| Cr Harris [3] | Oct 2024 – Oct 2027 | 0 | 1,785 | 20,565 | 1,590 |
| **Total** | | **115,543** | **19,147** | **119,030** | **1,590** |

[1] Resigned October 2024
[2] Passed Away April 2025
[3] Elected October 2024

# Payments to each Elected Member

| Elected Member Remuneration | |
|---|---|
| Fees, expenses and allowances paid or reimbursed to elected members. | Actual $ |
| **Mayor Rossi** | |
| Mayoral Local Government Allowance | 97,115 |
| Mayor Meeting Attendance Fees | 51,412 |
| Information & Communications Allowance | 3,500 |
| Superannuation | 7,117 |
| Sundry Expense Reimbursement | 6 [1] |
| Mayoral Travel Expense | 3,500 |
| | **162,650** |
| **Deputy Mayor - Cr Sessions** | |
| Deputy Mayoral Local Government Allowance | 24,279 |
| Annual Meeting Attendance Fees | 34,278 |
| Information & Communications Allowance | 3,500 |
| Superannuation | 2,806 |
| Sundry Expense Reimbursement | 5,106 [2] |
| | **69,969** |
| **Cr Powell** | |
| Annual Meeting Attendance Fees (1 July 2024-30 April 2025) | 27,951 |
| Information & Communications Allowance | 2,856 |
| | **30,807** |
| **Cr Davis** | |
| Annual Meeting Attendance Fees | 34,278 |
| Information & Communications Allowance | 3,500 |
| Superannuation | 1,642 |
| Sundry Expense Reimbursement | 391 [3] |
| | **39,811** |
| **Cr Kulczycki** | |
| Annual Meeting Attendance Fees | 34,278 |
| Information & Communications Allowance | 3,500 |
| Superannuation | 1642 |
| | **39,420** |

| Elected Member Remuneration | |
|---|---|
| Fees, expenses and allowances paid or reimbursed to elected members. | Actual $ |
| **Cr Marks** | |
| Annual Meeting Attendance Fees | 34,278 |
| Information & Communications Allowance | 3,500 |
| Superannuation | 1642 |
| | **39,420** |
| **Cr Ryan** | |
| Annual Meeting Attendance Fees | 34,278 |
| Information & Communications Allowance | 3,500 |
| Superannuation | 1,642 |
| | **39,420** |
| **Cr Sekulla** | |
| Annual Meeting Attendance Fees | 34,278 |
| Information & Communications Allowance | 3,500 |
| Superannuation | 1,642 |
| | **39,420** |
| **Cr Vijay (1 July 2024 to October 2024)** | |
| Annual Meeting Attendance Fees | 10,068 |
| Information & Communications Allowance | 1,028 |
| | **11,096** |
| **Cr Harris** | |
| Annual Meeting Attendance Fees (October 2024 to June 2024) | 23,695 |
| Information & Communications Allowance Fees (October 2024 to June 2024) | 2,419 |
| Superannuation | 0 [4] |
| | **26,114** |
| Total Elected Member Fees, Allowances and Expenses | **498,127** |

[1] Mayor Rossi Parking $6

[2] Cr Sessions Childcare: $4,697

[2] Cr Sessions Travel and Parking: $409

[3] Cr Davis Travel and Parking: $391

[4] Cr Harris Deferred superannuation until October 2025

# Capital grants for the renewal of assets

| Income from capital grants, subsidies and contributions and capital grants, subsidies and contributions | 2025 Actual | 2024 Actual | 2023 Actual |
|---|---|---|---|
| | $ | $ | $ |
| Law, order and public safety | 0 | 0 | 139,095 |
| Community amenities | 800,638 | 55,784 | 52,955 |
| Recreation and culture | 0 | 100,579 | 206,058 |
| Transport | 1,973,527 | 1,999,401 | 1,322,304 |
| Economic services | 524,752 | 19,067 | 162,544 |
| Other property and services | 1,397,800 | 205,000 | 688,122 |
| | **4,696,717** | **2,379,831** | **2,571,078** |



# Funding partners

This year, valuable funding partnerships helped us deliver programs, events and projects that make a real difference in our community.

We thank our partners for their continued support in creating opportunities for people to connect, learn and thrive in the City of Belmont.

### Brearley Avenue Living Stream

The Brearley Avenue Living Stream project is part of the Assets for Liveability Program delivered by Water Corporation in collaboration with Department of Water and Environmental Regulation (DWER).

The project is delivered with the support of the Urban Greening Grant Program delivered by WALGA and funded through the Government of Western Australia.

### Buckle Up and Drop 5

This City of Belmont Buckle Up and Drop 5 initiative is supported by the Road Safety Community Initiatives Grants Program and funded through the Road Trauma Trust Account.

### Garvey Park Urban Trail Discovery

Department of Local Government, Sport and Cultural Industries - WA Hiking Participation Grants Program

### Kidsport

KidSport is delivered by the Department of Local Government, Sport and Cultural Industries in partnership with the City of Belmont.

### Wilson Park Precinct Zone 2 Heart + Playground

The Wilson Park Zone 2 project is jointly funded by the Australian Government, the Western Australian Government and the City of Belmont.

The Australian Government has committed $2million to the project through its Investing in our Communities Program.

Lotterywest has committed $2million to the project to raise community sense of belonging and strengthen social connections.

# Financial Report

For the year ended 30 June 2025



City of Belmont

Financial Report
for the year ended 30 June 2025

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**Content Overview**

The City of Belmont conducts the operations of a local government with the following community vision:

*Belmont - The City of Opportunity*

*Our Vision is to be home to a diverse and harmonious community, thriving from the opportunities of our unique, riverside City.*

Principal place of business:
215 Wright Street
Cloverdale WA 6105

City of Belmont

Financial Report
for the year ended 30 June 2025

*Local Government Act 1995*
*Local Government (Financial Management) Regulations 1996*

**Statement by CEO**

The accompanying financial report of the City of Belmont has been prepared in compliance with the provisions of the *Local Government Act 1995* from proper accounts and records to present fairly the financial transactions for the reporting period ended 30 June 2025 and the financial position as at 30 June 2025.

At the date of signing this statement the particulars included in the financial report are not misleading or inaccurate.

Signed on the 17 day of November 2025



**John Christie**



City of Belmont

## Statement of comprehensive income for the year ended 30 June 2025

| | Note | 2025 Actual $ | 2025 Budget $ | 2024 Actual $ |
|---|---|---|---|---|
| **Revenue** | | | | |
| Rates | 28,2a | 60,305,167 | 59,790,869 | 56,821,093 |
| Grants, subsidies and contributions | 2a | 2,845,544 | 2,425,280 | 2,687,747 |
| Fees and charges | 2a | 11,263,155 | 10,444,111 | 10,603,344 |
| Interest revenue | 2a | 4,480,788 | 6,751,202 | 5,498,868 |
| Other revenue | 2a | 1,309,085 | 592,353 | 1,637,147 |
| | | 80,203,739 | 80,003,815 | 77,248,199 |
| **Expenses** | | | | |
| Employee costs | 2b | (29,132,513) | (29,084,855) | (26,371,607) |
| Materials and contracts | | (37,538,951) | (36,674,146) | (33,568,344) |
| Utility charges | | (1,634,698) | (2,392,835) | (2,329,974) |
| Depreciation | | (13,028,201) | (12,935,924) | (12,953,278) |
| Finance costs | 2b | (530,097) | (520,949) | (531,283) |
| Insurance | | (874,833) | (940,842) | (722,861) |
| Other expenditure | 2b | (1,273,229) | (1,543,703) | (1,622,528) |
| | | (84,012,522) | (84,093,254) | (78,099,875) |
| | | (3,808,783) | (4,089,439) | (851,676) |
| Capital grants, subsidies and contributions | 2a | 4,696,717 | 3,566,506 | 2,379,832 |
| Profit on asset disposals | | 28,259 | 87,469 | 27,368 |
| Loss on asset disposals | | (261,932) | – | (744,290) |
| Loss on disposal of investment in EMRC | 23 | (5,782,061) | – | – |
| Fair value adjustments to financial assets at fair value through profit or loss | 4b | (8,878) | 4,203 | 4,203 |
| | | (1,327,895) | 3,658,178 | 1,667,113 |
| **Net result for the period** | 27b | (5,136,678) | (431,261) | 815,437 |
| **Other comprehensive income for the period** | | | | |
| Items that will not be reclassified subsequently to profit or loss | | – | – | – |
| **Total other comprehensive income for the period** | | – | – | – |
| **Total comprehensive income for the period** | | (5,136,678) | (431,261) | 815,437 |

This statement is to be read in conjunction with the accompanying notes.

OAG AUDITED

City of Belmont

## Statement of financial position as at 30 June 2025

| | Note | 2025 $ | 2024 $ |
|---|---|---|---|
| **Current assets** | | | |
| Cash and cash equivalents | 3 | 65,020,615 | 23,433,621 |
| Trade and other receivables | 5 | 4,214,593 | 24,999,919 |
| Other financial assets | 4a | 25,187,565 | 53,024,893 |
| Inventories | 6 | 239,454 | 262,339 |
| Contract assets | | 260,661 | 37,717 |
| Other assets | 7 | 3,604,977 | 3,483,614 |
| **Total current assets** | | 98,527,865 | 105,242,103 |
| **Non-current assets** | | | |
| Trade and other receivables | 5 | 415,855 | 515,831 |
| Other financial assets | 4b | 199,049 | 3,486,733 |
| Property, plant and equipment | 8 | 340,724,864 | 342,414,320 |
| Infrastructure | 9 | 300,745,115 | 291,434,830 |
| Right of use assets | 11a | 166,998 | 158,975 |
| Intangible assets | 12 | 136,843 | 236,828 |
| **Total non-current assets** | | 642,388,724 | 638,247,517 |
| **Total assets** | | 740,916,589 | 743,489,620 |
| **Current liabilities** | | | |
| Trade and other payables | 13 | 11,062,651 | 7,630,356 |
| Contract liabilities | 14 | 1,105,399 | 929,402 |
| Capital grant/contributions liabilities | 14 | 368,476 | 906,148 |
| Lease liabilities | 11b | 84,567 | 105,428 |
| Borrowings | 15 | 666,573 | 641,884 |
| Employee related provisions | 16 | 5,160,839 | 4,987,946 |
| **Total current liabilities** | | 18,448,505 | 15,201,164 |
| **Non-current liabilities** | | | |
| Contract liabilities | 14 | 127,197 | 151,558 |
| Lease liabilities | 11b | 52,499 | 57,042 |
| Borrowings | 15 | 10,309,794 | 10,976,367 |
| Employee related provisions | 16 | 553,045 | 541,262 |
| **Total non-current liabilities** | | 11,042,535 | 11,726,229 |
| **Total liabilities** | | 29,491,040 | 26,927,393 |
| **Net assets** | | 711,425,549 | 716,562,227 |
| **Equity** | | | |
| Retained surplus | | 181,531,738 | 195,472,405 |
| Reserve accounts | 31 | 82,270,244 | 69,265,327 |
| Revaluation surplus | 17 | 447,623,567 | 451,824,495 |
| **Total equity** | | 711,425,549 | 716,562,227 |

This statement is to be read in conjunction with the accompanying notes.

OAG AUDITED

City of Belmont

## Statement of changes in equity
## for the year ended 30 June 2025

| | Note | Retained surplus $ | Reserve accounts $ | Revaluation surplus $ | Total Equity $ |
|---|---|---|---|---|---|
| **Balance as at 1 July 2023** | | 202,240,918 | 61,681,377 | 451,824,495 | 715,746,790 |
| Comprehensive income for the period | | | | | |
| Net result for the period | | 815,437 | – | – | 815,437 |
| **Total comprehensive income for the period** | | 815,437 | – | – | 815,437 |
| Transfer of revaluation surplus - share from investment in associates | | – | – | – | – |
| Transfers from reserve accounts | 31 | 5,874,818 | (5,874,818) | – | – |
| Transfers to reserve accounts | 31 | (13,458,768) | 13,458,768 | – | – |
| **Balance as at 30 June 2024** | | 195,472,405 | 69,265,327 | 451,824,495 | 716,562,227 |
| **Balance as at 1 July 2024** | | 195,472,405 | 69,265,327 | 451,824,495 | 716,562,227 |
| Comprehensive income for the period | | | | | |
| Net result for the period | | (5,136,678) | – | – | (5,136,678) |
| **Total comprehensive income for the period** | | (5,136,678) | – | – | (5,136,678) |
| Transfer of revaluation surplus - share from investment in associates | | 4,200,928 | – | (4,200,928) | – |
| Transfers from reserve accounts | 31 | 9,376,293 | (9,376,293) | – | – |
| Transfers to reserve accounts | 31 | (22,381,210) | 22,381,210 | – | – |
| **Balance as at 30 June 2025** | | 181,531,738 | 82,270,244 | 447,623,567 | 711,425,549 |

This statement is to be read in conjunction with the accompanying notes.

OAG AUDITED

City of Belmont

## Statement of cash flows
for the year ended 30 June 2025

| | Note | 2025 Actual $ | 2024 Actual $ |
|---|---|---|---|
| **Cash flows from operating activities** | | | |
| Rates | | 60,567,713 | 56,784,697 |
| Grants, subsidies and contributions | | 2,777,946 | 2,674,717 |
| Fees and charges | | 11,111,903 | 10,536,127 |
| Interest revenue | | 4,480,788 | 5,498,868 |
| Goods and services tax received | | 5,376,822 | 4,270,594 |
| Other revenue | | 1,485,082 | 1,677,024 |
| | | 85,800,254 | 81,442,027 |
| Employee costs | | (28,775,958) | (25,663,318) |
| Materials and contracts | | (35,509,576) | (32,815,633) |
| Utility charges | | (1,634,698) | (2,329,974) |
| Finance costs | | (534,151) | (531,283) |
| Insurance paid | | (874,833) | (722,861) |
| Goods and services tax paid | | (5,832,514) | (4,514,849) |
| Other expenditure | | (1,273,227) | (1,688,278) |
| | | (74,434,957) | (68,266,196) |
| **Net cash provided by operating activities** | 18b | 11,365,297 | 13,175,831 |
| **Cash flows from investing activities** | | | |
| Payments for purchase of property, plant & equipment | 8a | (3,405,959) | (4,038,462) |
| Payments for construction of infrastructure | 9a | (16,541,222) | (8,743,245) |
| Payments for intangible assets | 12 | – | (166,533) |
| Proceeds from capital grants, subsidies and contributions | | 4,159,045 | 2,602,175 |
| Proceeds from financial assets at amortised cost | | 31,116,134 | 7,972,063 |
| Proceeds from sale of property, plant & equipment | | 317,904 | 696,997 |
| Proceeds from sale of infrastructure | | 108,130 | – |
| Proceeds from disposal of investment in EMRC | | 15,218,456 | – |
| **Net cash (used in) investing activities** | | 30,972,488 | (1,677,005) |
| **Cash flows from financing activities** | | | |
| Repayment of borrowings | 30a | (641,884) | (618,112) |
| Payments for principal portion of lease liabilities | 30c | (108,907) | (118,561) |
| **Net cash (used in) financing activities** | | (750,791) | (736,673) |
| **Net increase /(decrease) in cash held** | | 41,586,994 | 10,762,153 |
| Cash at beginning of year | | 23,433,621 | 12,671,468 |
| **Cash and cash equivalents at the end of the year** | 3 | 65,020,615 | 23,433,621 |

City of Belmont

## Statement of financial activity
## for the year ended 30 June 2025

| | Note | 2025 Actual $ | 2025 Budget $ | 2024 Actual $ |
|---|---|---|---|---|
| **OPERATING ACTIVITIES** | | | | |
| **Revenue from operating activities** | | | | |
| General rates | 28 | 45,459,259 | 45,259,803 | 42,251,503 |
| Rates excluding general rates | 28 | 14,845,908 | 14,531,066 | 14,569,590 |
| Grants, subsidies and contributions | | 2,845,544 | 2,425,280 | 2,687,747 |
| Fees and charges | | 11,263,155 | 10,444,111 | 10,603,344 |
| Interest revenue | | 4,480,788 | 6,751,202 | 5,498,868 |
| Other revenue | | 1,309,085 | 592,353 | 1,637,147 |
| Profit on asset disposals | | 28,259 | 87,469 | 27,368 |
| Fair value adjustments to financial assets at fair value through profit or loss | 4b | (8,878) | 4,203 | 4,203 |
| | | 80,223,120 | 80,095,487 | 77,279,770 |
| **Expenditure from operating activities** | | | | |
| Employee costs | | (29,132,513) | (29,084,855) | (26,371,607) |
| Materials and contracts | | (37,538,951) | (36,674,146) | (33,568,344) |
| Utility charges | | (1,634,698) | (2,392,835) | (2,329,974) |
| Depreciation | | (13,028,201) | (12,935,924) | (12,953,278) |
| Finance costs | | (530,097) | (520,949) | (531,283) |
| Insurance | | (874,833) | (940,842) | (722,861) |
| Other expenditure | | (1,273,229) | (1,543,703) | (1,622,528) |
| Loss on asset disposals | | (261,932) | – | (744,290) |
| Loss on disposal of investment in EMRC | | (5,782,061) | – | – |
| | | (90,056,515) | (84,093,254) | (78,844,165) |
| **Non-cash amounts excluded from operating activities** | | | | |
| Non-cash amounts excluded from operating activities | 29 | 19,237,837 | 12,829,160 | 13,599,408 |
| **Amount attributable to operating activities** | | 9,404,442 | 8,831,393 | 12,035,013 |
| **INVESTING ACTIVITIES** | | | | |
| **Inflows from investing activities** | | | | |
| Capital grants, subsidies and contributions | | 4,696,717 | 3,566,506 | 2,379,832 |
| Proceeds from disposal of assets | | 426,032 | 672,140 | 696,997 |
| Proceeds from disposal of investment in EMRC | | 15,218,456 | – | – |
| | | 20,341,205 | 4,238,646 | 3,076,829 |
| **Outflows from investing activities** | | | | |
| Acquisition of property, plant and equipment | 8a | (3,405,963) | (4,084,028) | (4,038,462) |
| Acquisition of infrastructure | 9a | (16,541,223) | (13,995,445) | (8,743,245) |
| Right of use assets received - non cash | | (90,261) | – | – |
| Payments for intangible assets | 12 | – | – | (166,533) |
| | | (20,037,447) | (18,079,473) | (12,948,240) |
| Non-cash amounts excluded from investing activities | 29 | (1,095,829) | – | – |
| **Amount attributable to investing activities** | | (792,071) | (13,840,827) | (9,871,411) |
| **FINANCING ACTIVITIES** | | | | |
| **Inflows from financing activities** | | | | |
| Transfers from reserve accounts | 31 | 9,376,293 | 11,309,790 | 5,874,818 |
| Proceeds from new leases - non cash | 30c | 90,261 | – | – |
| | | 9,466,554 | 11,309,790 | 5,874,818 |
| **Outflows from financing activities** | | | | |
| Repayment of borrowings | 30a | (641,886) | (641,885) | (618,112) |
| Payments for principal portion of lease liabilities | 30c | (115,664) | (105,427) | (118,561) |
| Transfers to reserve accounts | 31 | (22,381,210) | (11,360,386) | (13,458,768) |
| | | (23,138,760) | (12,107,698) | (14,195,441) |
| Non-cash amounts excluded from financing activities | | (90,261) | – | – |
| **Amount attributable to financing activities** | | (13,762,467) | (797,908) | (8,320,623) |
| **MOVEMENT IN SURPLUS OR DEFICIT** | | | | |
| **Surplus or deficit at the start of the financial year** | 29 | 5,795,621 | 6,304,342 | 11,952,642 |
| Amount attributable to operating activities | | 9,404,442 | 8,831,393 | 12,035,013 |
| Amount attributable to investing activities | | (792,071) | (13,840,827) | (9,871,411) |
| Amount attributable to financing activities | | (13,762,467) | (797,908) | (8,320,623) |
| **Surplus/(deficit) after imposition of general rates** | 29 | 645,525 | 497,000 | 5,795,621 |

This statement is to be read in conjunction with the accompanying notes.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

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City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 1. BASIS OF PREPARATION

The financial report of the City of Belmont, a Class 1 local government, comprises general purpose financial statements which have been prepared in accordance with the *Local Government Act 1995* and accompanying regulations.

**Local Government Act 1995 requirements**
Section 6.4(2) of the *Local Government Act 1995,* read with the *Local Government (Financial Management) Regulations 1996* prescribe that the financial report be prepared in accordance with the *Local Government Act 1995* and, to the extent that they are not inconsistent with the Act, the Australian Accounting Standards. The Australian Accounting Standards (as they apply to local governments and not-for-profit entities) and Interpretations of the Australian Accounting Standards Board were applied where no inconsistencies exist.

*The Local Government (Financial Management) Regulations 1996* specify that vested land is a right-of-use asset to be measured at cost, and is considered a zero cost concessionary lease. All right-of-use assets under zero cost concessionary leases are measured at zero cost rather than at fair value, except for vested improvements on concessionary land leases such as roads, buildings or other infrastructure which continue to be reported at fair value, as opposed to the vested land which is measured at zero cost. The measurement of vested improvements at fair value is a departure from AASB 16 which would have required the City to measure any vested improvements at zero cost.

The *Local Government (Financial Management) Regulations 1996* provide that:

- land and buildings classified as property, plant and equipment; or
- infrastructure; or
- vested improvements that the local government controls;

and measured at reportable value, are only required to be revalued every five years. Revaluing these non-financial assets every five years is a departure from AASB 116 *Property, Plant and Equipment*, which would have required the City to assess at each reporting date whether the carrying amount of the above mentioned non-financial assets materially differs from their fair value and, if so, revalue the class of non-financial assets.

Accounting policies which have been adopted in the preparation of this financial report have been consistently applied unless stated otherwise. Except for cash flow and rate setting information, the financial report has been prepared on the accrual basis and is based on historical costs, modified, where applicable, by the measurement at fair value of selected non-current assets, financial assets and liabilities.

**Critical accounting estimates and judgements**
The preparation of a financial report in conformity with Australian Accounting Standards requires management to make judgements, estimates and assumptions that effect the application of policies and reported amounts of assets and liabilities, income and expenses.

The estimates and associated assumptions are based on historical experience and various other factors that are believed to be reasonable under the circumstances; the results of which form the basis of making the judgements about carrying amounts of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates.

As with all estimates, the use of different assumptions could lead to material changes in the amounts reported in the financial report.

The following are estimates and assumptions that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year and further information on their nature and impact can be found in the relevant note:

- Fair value measurement of assets carried at reportable value including:
  - Property, plant and equipment - note 8
  - Infrastructure - note 9
- Expected credit losses on financial assets - note 5
- Impairment losses of non-financial assets - note 8 and 9
- Estimated useful life of intangible assets - note 10
- Measurement of employee benefits - note 16

Fair value hierarchy information can be found in note 26.

**The local government reporting entity**
All funds through which the City controls resources to carry on its functions have been included in the financial statements forming part of this financial report.

All monies held in the Trust Fund are excluded from the financial statements. A separate statement of those monies appears at Note 32 of the financial report.

**Initial application of accounting standards**
During the current year, the following new or revised Australian Accounting Standards and Interpretations were applied for the first time.

- *AASB 2020-1 Amendments to Australian Accounting Standards - Classification of Liabilities as Current or Non-current*
- *AASB 2022-5 Amendments to Australian Accounting Standards - Lease Liability in a Sale and Leaseback*
- *AASB 2022-6 Amendments to Australian Accounting Standards - Non-current Liabilities with Covenants*
- *AASB 2023-3 Amendments to Australian Accounting Standards - Disclosure of Non-current Liabilities with Covenants: Tier 2*
- *AASB 2024-1 Amendments to Australian Accounting Standards - Supplier Finance Arrangements: Tier 2 Disclosures*
- *AASB 2023-1 Amendments to Australian Accounting Standards - Supplier Finance Arrangements*

These amendment are not expected to have any material impact on the financial report on initial application.

- *AASB 2022-10 Amendments to Australian Accounting Standards - Fair Value Measurement of Non-Financial Assets of Not-for-Profit Public Sector Entities*

This amendment may result in changes to the fair value of certain non-financial assets on revaluation. The impact has not been quantified as it is not considered practicable to determine the amount of the difference in fair value attributable to the change in the standard.

**New accounting standards for application in future years**
The following new accounting standards will have application to local government in future years:

- *AASB 2014-10 Amendments to Australian Accounting Standards - Sale or Contribution of Assets between an Investor and its Associate or Joint Venture*
- *AASB 2024-4b Amendments to Australian Accounting Standards - Effective date of Amendments to AASB 10 and AASB 128 [deferred AASB 10 and AASB 128 amendments in AASB 2014-10 apply]*
- *AASB 2022-9 Amendments to Australian Accounting Standards - Insurance Contracts in the Public Sector*

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 1. BASIS OF PREPARATION (continued)

- *AASB 2023-5 Amendments to Australian Accounting Standards - Lack of Exchangeability*
- *AASB 18 (FP) Presentation and Disclosure in Financial Statements - (Appendix D) [for for-profit entities]*
- *AASB 18 (NFP/super) Presentation and Disclosure in Financial Statements - (Appendix D) [for not-for-profit and superannuation entities]*
- *AASB 2024-2 Amendments to Australian Accounting Standards - Classification and Measurement of Financial Instruments*
- *AASB 2024-3 Amendments to Australian Accounting Standards - Annual Improvements Volume 11*

These amendments are not expected to have any material impact on the financial report on initial application.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 2. Revenue and expenses

### (a) Revenue

**Contracts with customers**

Recognition of revenue is dependent on the source of revenue and the associated terms and conditions associated with each source of revenue and recognised as follows:

| Revenue category | Nature of goods and services | When obligations typically satisfied | Payment terms | Returns/ refunds/ warranties | Timing of revenue recognition |
|---|---|---|---|---|---|
| Grants, subsidies or contributions | Community events, minor facilities, research, design, planning evaluation and services | Over time | Fixed terms transfer of funds based on agreed milestones and reporting | Contract obligation if project not complete | Output method based on project milestones and/or completion date matched to performance obligations |
| Fees and charges - licences, registrations, approvals | Building, planning, development and animal management. | Single point in time | Full payment prior to issue | None | On payment and issue of the licence, registration or approval |
| Fees and charges - waste management entry fees | Waste treatment, recycling and disposal service at disposal sites | Single point in time | Payment in advance at gate or on normal trading terms if credit provided | None | On entry to facility |
| Fees and charges - airport landing charges | Permission to use facilities and runway | Single point in time | Monthly in arrears | None | On landing/departure event |
| Fees and charges - sale of stock | Aviation fuel, kiosk and visitor centre stock | Single point in time | In full in advance, on 15 day credit | Refund for faulty goods | At point of sale |
| Other revenue - private works | Contracted private works | Single point in time | Monthly in arrears | None | At point of service |

Consideration from contracts with customers is included in the transaction price.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 2. Revenue and expenses (continued)

**(a) Revenue** (continued)

**Revenue Recognition**

Rate revenue was recognised from the rate record as soon as practicable after the City resolved to impose rates in the financial year as well as when the rate record was amended to ensure the information in the record was current and correct.

Revenue recognised during the year under each basis of recognition by nature of goods or services is provided in the table below:

| Nature | Contracts with customers $ | Capital grant/ contributions $ | Statutory requirements $ | Other $ | Total $ |
|---|---|---|---|---|---|
| **For the year ended 30 June 2025** | | | | | |
| Rates | – | – | 60,305,167 | – | 60,305,167 |
| Grants, subsidies and contributions | 504,842 | – | – | 2,340,702 | 2,845,544 |
| Fees and charges | 2,048,465 | – | 9,077,547 | 137,143 | 11,263,155 |
| Interest revenue | – | – | 235,513 | 4,245,275 | 4,480,788 |
| Other revenue | 1,226,746 | – | – | 82,339 | 1,309,085 |
| Capital grants, subsidies and contributions | – | 4,544,181 | – | 152,536 | 4,696,717 |
| **Total** | 3,780,053 | 4,544,181 | 69,618,227 | 6,957,995 | 84,900,456 |
| **For the year ended 30 June 2024** | | | | | |
| Rates | – | – | 56,821,093 | – | 56,821,093 |
| Grants, subsidies and contributions | 441,678 | – | – | 2,246,069 | 2,687,747 |
| Fees and charges | 1,762,985 | – | 8,565,263 | 275,096 | 10,603,344 |
| Interest revenue | – | – | 312,866 | 5,186,002 | 5,498,868 |
| Other revenue | 1,246,890 | – | – | 390,257 | 1,637,147 |
| Capital grants, subsidies and contributions | – | 2,379,832 | – | – | 2,379,832 |
| **Total** | 3,451,553 | 2,379,832 | 65,699,222 | 8,097,424 | 79,628,031 |

| | 2025 Actual $ | 2024 Actual $ |
|---|---|---|
| **Interest revenue** | | |
| Interest on reserve account | 3,114,935 | 2,881,939 |
| Trade and other receivables overdue interest | 235,513 | 312,866 |
| Other interest revenue | 1,130,340 | 2,304,063 |
| **Total interest earnings** | 4,480,788 | 5,498,868 |
| **Fees and charges relating to rates receivable** | | |
| Charges on instalment plan | 2,580 | 108,760 |

The 2025 original budget estimate in relation to charges on instalment plans was nil.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 2. Revenue and expenses (continued)

**(b) Expenses**

| | 2025 Actual $ | 2024 Actual $ |
|---|---|---|
| **Auditors remuneration** | | |
| - Audit of the Annual Financial Report | 90,190 | 74,847 |
| - Other services - grant acquittals | 34,352 | 3,400 |
| | 124,542 | 78,247 |
| **Employee costs** | | |
| Employee benefit costs | 28,522,283 | 25,784,084 |
| Workers' compensation insurance | 361,571 | 299,878 |
| Other employee costs | 248,659 | 287,645 |
| | 29,132,513 | 26,371,607 |
| **Finance costs** | | |
| Interest and financial charges paid/payable for lease liabilities and financial liabilities not at fair value through profit or loss | 530,097 | 531,283 |
| | 530,097 | 531,283 |
| **Other expenditure** | | |
| Impairment losses on trade receivables | (11,267) | (67,233) |
| Sundry expenses | 1,284,496 | 1,689,761 |
| | 1,273,229 | 1,622,528 |

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 3. CASH AND CASH EQUIVALENTS

| | Note | 2025 $ | 2024 $ |
|---|---|---|---|
| Cash at bank and on hand | | 4,466,071 | 10,980,523 |
| Term deposits | | 60,554,544 | 12,453,098 |
| **Total cash and cash equivalents** | 18a | 65,020,615 | 23,433,621 |
| | | | |
| Held as | | | |
| - Unrestricted cash and cash equivalents | | 7,502,407 | 9,500,744 |
| - Restricted cash and cash equivalents | 18a | 57,518,208 | 13,932,877 |
| | | 65,020,615 | 23,433,621 |

### MATERIAL ACCOUNTING POLICIES

**Cash and cash equivalents**

Cash and cash equivalents include cash on hand, cash at bank, deposits available on demand with banks and other short term highly liquid investments with original maturities of three months or less that are readily convertible to known amounts of cash and which are subject to an insignificant risk of changes in value.

Bank overdrafts are reported as short term borrowings in current liabilities in the statement of financial position.

Term deposits are presented as cash equivalents if they have a maturity of three months or less from the date of acquisition and are repayable with 24 hours notice with no loss of interest.

**Restricted financial assets**

Restricted financial asset balances are not available for general use by the local government due to externally imposed restrictions. Restrictions are specified in an agreement, contract or legislation. This applies to reserve accounts, unspent grants, subsidies and contributions and unspent loans that have not been fully expended in the manner specified by the contributor, legislation or loan agreement and for which no liability has been recognised.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 4. OTHER FINANCIAL ASSETS

| | Note | 2025 $ | 2024 $ |
|---|---|---|---|
| **(a) Current assets** | | | |
| Financial assets at amortised cost | | 25,187,565 | 53,024,893 |
| | | 25,187,565 | 53,024,893 |
| **Other financial assets at amortised cost** | | | |
| Term deposits | | 25,187,565 | 53,024,893 |
| | | 25,187,565 | 53,024,893 |
| Held as | | | |
| - Restricted other financial assets at amortised cost | 18a | 25,187,565 | 53,024,893 |
| | | 25,187,565 | 53,024,893 |
| **(b) Non current assets** | | | |
| Financial assets at amortised cost | | – | 3,278,806 |
| Financial assets at fair value through profit or loss | | 199,049 | 207,927 |
| | | 199,049 | 3,486,733 |
| **Financial assets at amortised cost** | | | |
| Term deposits | | – | 3,278,806 |
| | | – | 3,278,806 |
| **Financial assets at fair value through profit or loss** | | | |
| Units in Local Government House Trust - opening balance | | 207,927 | 203,724 |
| Movement attributable to fair value increment | | (8,878) | 4,203 |
| **Units in Local Government House Trust - closing balance** | | 199,049 | 207,927 |

Fair value of financial assets at fair value through profit and loss is determined from the net asset value of the units held in the Trust at balance date as compiled by WALGA.

**MATERIAL ACCOUNTING POLICIES**

**Other financial assets at amortised cost**

The City classifies financial assets at amortised cost if both of the following criteria are met:
- the asset is held within a business model whose objective is to collect the contractual cashflows, and
- the contractual terms give rise to cash flows that are solely payments of principal and interest.

Fair values of financial assets at amortised cost are not materially different to their carrying amounts, since the interest receivable on those assets is either close to current market rates or the assets are of a short term nature. Non-current financial assets at amortised cost fair values are based on discounted cash flows using a current market rates. They are classified as level 2 fair values in the fair value hierarchy (see Note 26(i)) due to the observable market rates.

Interest received is presented under cashflows from operating activities in the Statement of Cash Flows where it is earned from financial assets that are held for cash management purposes.

**Financial assets at fair value through profit or loss**

The City has elected to classify the following financial assets at fair value through profit or loss:
- debt investments which do not qualify for measurement at either amortised cost or fair value through other comprehensive income.
- equity investments which the City has not elected to recognise as fair value gains and losses through profit or loss.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

Note 4. OTHER FINANCIAL ASSETS (continued)

**Impairment and risk**

Information regarding impairment and exposure to risk can be found at Note 24.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 5. TRADE AND OTHER RECEIVABLES

| | Note | 2025 $ | 2024 $ |
|---|---|---|---|
| **Current** | | | |
| Rates and statutory receivables | | 2,173,462 | 2,364,117 |
| Trade receivables | | 449,581 | 604,927 |
| GST receivable | | 1,251,351 | 795,659 |
| Receivables for employee related provisions | | 340,199 | 245,966 |
| Allowance for credit losses of trade receivables | 24b | – | (11,267) |
| EMRC receivable * | | – | 21,000,517 |
| | | 4,214,593 | 24,999,919 |

(*) The City was a participant in the Eastern Metropolitan Regional Council (EMRC) and had voting rights of 1/6th and the interest in the assets and liabilities of the EMRC (refer note 23a for further details).

| | | |
|---|---|---|
| **Non-current** | | |
| Rates and statutory receivables | 331,278 | 384,022 |
| Receivable for employee related provisions | 84,577 | 131,809 |
| | 415,855 | 515,831 |

**Disclosure of opening and closing balances related to contracts with customers**

Information about receivables from contracts with customers along with financial assets and associated liabilities arising from transfers to enable the acquisition or construction of recognisable non financial assets is:

| | 30 June 2025 Actual $ | 30 June 2024 Actual $ | 1 July 2023 Actual $ |
|---|---|---|---|
| Trade and other receivables from contracts with customers | 447,733 | 602,361 | 418,178 |
| Contract assets | 260,661 | 37,717 | – |
| Allowance for credit losses of trade receivables | – | (11,267) | (78,500) |
| **Total trade and other receivables from contracts with customers** | 708,394 | 628,811 | 339,678 |

### MATERIAL ACCOUNTING POLICIES

**Rates and statutory receivables**

Rates and statutory receivables are non-contractual receivables arising from statutory requirements and include amounts due from ratepayers for unpaid rates and service charges and other statutory charges or fines.

Rates and statutory receivables are recognised when the taxable event has occurred and can be measured reliably.

**Trade receivables**

Trade receivables are amounts receivable from contractual arrangements with customers for goods sold, services performed or grants or contributions with sufficiently specific performance obligations as part of the ordinary course of business.

**Other Receivables**

Other receivables are amounts receivable from contractual arrangements with third parties other than contracts with customers including grants for the construction of recognisable non financial assets.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 5. TRADE AND OTHER RECEIVABLES (continued)

**Measurement**

Trade and other receivables are recognised initially at the amount of the transaction price, unless they contain a significant financing component, and are to be recognised at fair value.

**Classification and subsequent measurement**

Receivables which are generally due for settlement within 30 days except rates receivables which are expected to be collected within 12 months are classified as current assets. All other receivables such as, deferred pensioner rates receivable after the end of the reporting period are classified as non-current assets.

Trade and other receivables are held with the objective to collect the contractual cashflows and therefore the City measures them subsequently at amortised cost using the effective interest rate method.

Due to the short term nature of current receivables, their carrying amount is considered to be the same as their fair value. Non-current receivables are indexed to inflation, any difference between the face value and fair value is considered immaterial.

**Impairment and risk exposure**

Information about the impairment of trade receivables and their exposure to credit risk and interest rate risk can be found in Note 24.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 6. INVENTORIES

| | 2025<br>$ | 2024<br>$ |
|---|---|---|
| **Current** | | |
| Fuel and materials | 239,454 | 262,339 |
| | 239,454 | 262,339 |
| The following movements in inventories occurred during the year: | | |
| **Balance at beginning of year** | 262,339 | 246,770 |
| Inventories expensed during the year | (22,885) | – |
| Additions to inventory | – | 15,569 |
| **Balance at end of year** | 239,454 | 262,339 |

### MATERIAL ACCOUNTING POLICIES

**General**

Inventories are measured at the lower of cost and net realisable value.

Net realisable value is the estimated selling price in the ordinary course of business less the estimated costs of completion and the estimated costs necessary to make the sale.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 7. OTHER ASSETS

| | 2025<br>$ | 2024<br>$ |
|---|---|---|
| **Other assets - current** | | |
| Prepayments | 757,790 | 590,562 |
| Accrued income | 2,847,187 | 2,893,052 |
| | 3,604,977 | 3,483,614 |

### MATERIAL ACCOUNTING POLICIES

**Other current assets**

Other non-financial assets include prepayments which represent payments in advance of receipt of goods or services or that part of expenditure made in one accounting period covering a term extending beyond that period.

# Notes to the Financial Statements
# for the year ended 30 June 2025

## Note 8. PROPERTY, PLANT AND EQUIPMENT

### (a) Movements in balances

Movement in the balances of each class of property, plant and equipment between the beginning and the end of the current financial year.

| | Assets not subject to operating lease | | Assets subject to operating lease | | Total Property | | | | Plant and equipment | | Total property, plant and equipment |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Land | Buildings specialised | Land | Buildings specialised | Land | Buildings specialised | Work in progress | Total Property | Furniture and equipment | Plant and equipment | |
| | $ | $ | $ | $ | $ | $ | $ | $ | $ | $ | $ |
| **Balance at 1 July 2023** | 197,124,960 | 92,401,149 | 15,938,000 | 31,850,156 | 213,062,960 | 124,251,305 | 327,459 | 337,641,724 | 2,185,713 | 4,096,989 | 343,924,426 |
| Additions | – | – | – | – | – | – | 1,730,625 | 1,730,625 | 938,566 | 819,845 | 3,489,036 |
| Disposals | (582,000) | – | – | – | (582,000) | – | – | (582,000) | (37,765) | (373,368) | (993,133) |
| Depreciation | – | (2,461,203) | – | (873,577) | – | (3,334,780) | – | (3,334,780) | (981,878) | (238,778) | (4,555,436) |
| Transfers | – | 1,408,495 | – | 35,586 | – | 1,444,081 | (1,161,539) | 282,542 | 266,885 | – | 549,427 |
| **Balance at 30 June 2024** | 196,542,960 | 91,348,441 | 15,938,000 | 31,012,165 | 212,480,960 | 122,360,606 | 896,545 | 335,738,111 | 2,371,521 | 4,304,688 | 342,414,320 |
| **Comprises:** | | | | | | | | | | | |
| Gross balance amount at 30 June 2024 | 196,542,960 | 135,352,254 | 15,938,000 | 48,069,033 | 212,480,960 | 183,421,287 | 896,545 | 396,798,792 | 12,009,317 | 7,649,482 | 416,457,591 |
| Accumulated depreciation at 30 June 2024 | – | (44,003,813) | – | (17,056,868) | – | (61,060,681) | – | (61,060,681) | (9,637,796) | (3,344,794) | (74,043,271) |
| **Balance at 30 June 2024** | 196,542,960 | 91,348,441 | 15,938,000 | 31,012,165 | 212,480,960 | 122,360,606 | 896,545 | 335,738,111 | 2,371,521 | 4,304,688 | 342,414,320 |
| **Balance at 1 July 2024** | 196,542,960 | 91,348,441 | 15,938,000 | 31,012,165 | 212,480,960 | 122,360,606 | 896,545 | 335,738,111 | 2,371,521 | 4,304,688 | 342,414,320 |
| Additions | – | – | – | – | – | – | 2,153,451 | 2,153,451 | 678,556 | 573,956 | 3,405,963 |
| Disposals | – | (4,424) | – | – | – | (4,424) | – | (4,424) | (73,119) | (474,034) | (551,577) |
| Depreciation | – | (2,538,331) | – | (874,590) | – | (3,412,921) | – | (3,412,921) | (864,912) | (266,009) | (4,543,842) |
| Transfers | – | 2,787,151 | – | 4,890 | – | 2,792,041 | (2,992,987) | (200,946) | 173,427 | 27,519 | – |
| **Balance at 30 June 2025** | 196,542,960 | 91,592,837 | 15,938,000 | 30,142,465 | 212,480,960 | 121,735,302 | 57,009 | 334,273,271 | 2,285,473 | 4,166,120 | 340,724,864 |
| **Comprises:** | | | | | | | | | | | |
| Gross balance amount at 30 June 2025 | 196,542,960 | 138,123,105 | 15,938,000 | 48,073,923 | 212,480,960 | 186,197,028 | 57,009 | 398,734,997 | 12,284,931 | 7,525,918 | 418,545,846 |
| Accumulated depreciation at 30 June 2025 | – | (46,530,268) | – | (17,931,458) | – | (64,461,726) | – | (64,461,726) | (9,999,458) | (3,359,798) | (77,820,982) |
| **Balance at 30 June 2025** | 196,542,960 | 91,592,837 | 15,938,000 | 30,142,465 | 212,480,960 | 121,735,302 | 57,009 | 334,273,271 | 2,285,473 | 4,166,120 | 340,724,864 |

## Note 8. PROPERTY, PLANT AND EQUIPMENT (continued)

**(b) Carrying Amount Measurements**

| Asset class | Note | Carrying amount 2025 $ | Carrying amount 2024 $ | Fair value hierarchy | Valuation technique | Basis of valuation | Date of last valuation | Inputs used |
|---|---|---|---|---|---|---|---|---|
| **(i) Fair Value - as determined at the last valuation date** | | | | | | | | |
| **Land and buildings** | | | | | | | | |
| Land - market value | | 81,144,000 | 81,144,000 | 2 | Market approach using recent sales evidence of similar or reference assets | Independent Valuation | April 2023 | Level 2 valuation inputs were used to value land in freehold title as well as land used for special purposes which are restricted in use under current zoning rules. Sales prices of comparable land sites in close proximity are adjusted for differences in key attributes such as property size. The most significant inputs into this valuation approach are price per square metre. |
| Land - subject to useage restrictions | | 131,336,960 | 131,336,960 | 2 | Market approach using recent sales evidence of similar or reference assets | Independent Valuation | April 2023 | Level 2 valuation inputs were used to value land in freehold title as well as land used for special purposes which are restricted in use under current zoning rules. Sales prices of comparable land sites in close proximity are adjusted for differences in key attributes such as property size. The most significant inputs into this valuation approach are price per square metre. |
| **Total land** | 8a | 212,480,960 | 212,480,960 | | | | | |
| Buildings | | 121,735,302 | – | 3 | Cost approach using current replacement cost | Independent Valuation | May 2023 | This required estimating the replacement costs for each building by componentising the buildings into significant parts with different useful lives and taking into account a range of factors. Other inputs such as residual value, useful life, pattern of consumption and asset condition required extensive professional judgement and impacted significantly on the final determination. |
| **Total buildings** | 8a | 121,735,302 | – | | | | | |

Level 3 inputs are based on assumptions with regards to future values and patterns of consumption utilising current information. If the basis of these assumptions were varied, they have the potential to result in a significantly higher or lower fair value measurement.

During the period there were no changes in the valuation techniques used by the local government to determine the fair value of property, plant and equipment using either level 2 or level 3 inputs.The valuation techniques applied to property subject to lease was the same as that applied to property not subject to lease.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 8. PROPERTY, PLANT AND EQUIPMENT (continued)

| Asset class | Valuation technique | Basis of valuation | Date of last valuation | Inputs used |
|---|---|---|---|---|
| **(ii) Cost** | | | | |
| Furniture and equipment | Cost | Cost | N/A | Cost |
| Plant and equipment | Cost | Cost | N/A | Cost |

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 9. INFRASTRUCTURE

### (a) Movements in balances

Movement in the balances of each class of infrastructure between the beginning and the end of the current financial year.

| | Roads | Footpath Network | Drainage Network | Infrastructure Reserve Improvements | Carparks | Work in progress | Total |
|---|---|---|---|---|---|---|---|
| | $ | $ | $ | $ | $ | $ | $ |
| **Balance as at 1 July 2023** | 135,885,010 | 33,987,765 | 74,635,128 | 41,695,407 | 3,811,147 | 1,303,888 | 291,318,345 |
| Additions | – | – | – | – | – | 9,292,674 | 9,292,674 |
| (Disposals) | – | – | – | (420,786) | – | – | (420,786) |
| Depreciation | (3,984,856) | (1,141,404) | (1,178,996) | (1,781,336) | (119,384) | – | (8,205,976) |
| Transfers | 3,986,224 | 230,200 | 433,685 | 3,000,834 | – | (8,200,370) | (549,427) |
| **Balance at 30 June 2024** | 135,886,378 | 33,076,561 | 73,889,817 | 42,494,119 | 3,691,763 | 2,396,192 | 291,434,830 |
| **Comprises:** | | | | | | | |
| Gross balance amount at 30 June 2024 | 207,004,047 | 53,795,449 | 109,598,831 | 54,738,738 | 6,861,154 | 2,396,192 | 434,394,411 |
| Accumulated depreciation at 30 June 2024 | (71,117,669) | (20,718,888) | (35,709,014) | (12,244,619) | (3,169,391) | – | (142,959,581) |
| **Balance at 30 June 2024** | 135,886,378 | 33,076,561 | 73,889,817 | 42,494,119 | 3,691,763 | 2,396,192 | 291,434,830 |
| **Balance as at 1 July 2024** | 135,886,378 | 33,076,561 | 73,889,817 | 42,494,119 | 3,691,763 | 2,396,192 | 291,434,830 |
| Additions | – | – | – | – | – | 17,727,312 | 17,727,312 |
| (Disposals) | – | – | – | (108,128) | – | – | (108,128) |
| Depreciation | (4,061,379) | (1,145,892) | (1,184,020) | (1,798,224) | (119,384) | – | (8,308,899) |
| Transfers | 5,319,179 | 811,000 | 323,044 | 1,460,999 | – | (7,914,222) | – |
| **Balance at 30 June 2025** | 137,144,178 | 32,741,669 | 73,028,841 | 42,048,766 | 3,572,379 | 12,209,282 | 300,745,115 |
| **Comprises:** | | | | | | | |
| Gross balance amount at 30 June 2025 | 212,323,226 | 54,606,448 | 109,921,875 | 55,895,576 | 6,861,154 | 12,209,282 | 451,817,561 |
| Accumulated depreciation at 30 June 2025 | (75,179,048) | (21,864,779) | (36,893,034) | (13,846,810) | (3,288,775) | – | (151,072,446) |
| **Balance at 30 June 2025** | 137,144,178 | 32,741,669 | 73,028,841 | 42,048,766 | 3,572,379 | 12,209,282 | 300,745,115 |

## Note 9. INFRASTRUCTURE (continued)

### (b) Carrying Amount Measurements

| Asset class | Fair value hierarchy | Valuation technique | Basis of valuation | Date of last valuation | Inputs used |
|---|---|---|---|---|---|
| **(i) Fair Value - as determined at the last valuation date** | | | | | |
| Infrastructure - roads | 3 | Cost approach using depreciated replacement cost | Independent Valuation | June 2023 | While the replacement cost of the assets could be supported by market supplied evidence (level 2), the other unobservable inputs (such as estimates of useful life, and asset condition) were also required (level 3). |
| Infrastructure - Reserve Improvements | 3 | Cost approach using depreciated replacement cost | Independent Valuation | May 2023 | Cost guides and recent City project costs have been utilised to determine the gross replacement cost to construct a modern equivalent asset (level 2), recommended useful lives are primarily informed by industry experience through reliable and trusted industry sources (Level 3). |
| Infrastructure - Reserve Improvements | 3 | Cost approach using depreciated replacement cost | Management Valuation | May 2023 | Current replacement costs as included in current City contracts. |
| Infrastructure - Footpath Network | 3 | Cost approach using depreciated replacement cost | Independent Valuation | June 2023 | While the replacement cost of the assets could be supported by market supplied evidence (level 2), the other unobservable inputs (such as estimates of useful life, and asset condition) were also required (level 3). |
| Infrastructure - Drainage Network | 3 | Cost approach using depreciated replacement cost | Independent Valuation | June 2023 | While the replacement cost of the assets could be supported by market supplied evidence (level 2), the other unobservable inputs (such as estimates of useful life, and asset condition) were also required (level 3). |
| Infrastructure - Carparks | 3 | Cost approach using depreciated replacement cost | Independent Valuation | June 2023 | While the replacement cost of the assets could be supported by market supplied evidence (level 2), the other unobservable inputs (such as estimates of useful life, and asset condition) were also required (level 3). |

Level 3 inputs are based on assumptions with regards to future values and patterns of consumption utilising current information. If the basis of these assumptions were varied, they have the potential to result in a significantly higher or lower fair value measurement.

During the period there were no changes in the valuation techniques used by the local government to determine the fair value of infrastructure using level 3 inputs.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 10. FIXED ASSETS

**Depreciation rates**
Typical estimated useful lives for the different asset classes for the current and prior years are included in the table below:

| **Asset Class** | **Useful life** |
|---|---|
| Buildings | 25 - 80 years |
| Sub Structure | 30 - 96 years |
| Envelope | 25 - 80 years |
| Roof | 20 - 64 years |
| Floor Coverings | 20 - 40 years |
| Internal Fitout | 30 - 48 years |
| Services - Mechanical | 30 - 48 years |
| Services - Fire | 30 - 48 years |
| Services - Electrical | 30 - 64 years |
| Services - Hydraulic | 32 - 64 years |
| Services - Other & Security & Transport | 36 - 48 years |
| Furniture and equipment | 3 - 20 years |
| Plant and equipment | 3 - 15 years |
| Right-of-use assets - plant and equipment | 2 - 5 years |
| Infrastructure - Roads | |
| Access Roads | |
| Surface | 35 - 70 years |
| Subbase | 70 years |
| Formation | Not depreciated |
| Distributor Roads | |
| Surface | 25 - 70 years |
| Subbase | 50 years |
| Formation | Not depreciated |
| Infrastructure - Reserve Improvements | 5 - 80 years |
| Irrigation | 5 - 30 years |
| Playgrounds | 10 - 15 years |
| Park furniture | 10 - 20 years |
| Other structures | 20 - 80 years |
| Turf | Not depreciated |
| Infrastructure - Footpath Network | 20 - 50 years |
| Asphalt | 20 years |
| Paved | 35 years |
| Concrete | 50 years |
| Infrastructure - Drainage Network | |
| Pits | 77 years |
| Pipes | 100 years |
| Sumps | 200 years |
| Infrastructure - Carparks | 35 - 70 years |
| Intangible assets | 3 years |

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 10. FIXED ASSETS (continued)

| | 2025 Actual $ | 2024 Actual $ |
|---|---|---|
| **(a) Fully depreciated assets in use** | | |
| The gross carrying amount of assets held by the City which are currently in use yet fully depreciated are shown in the table below. | | |
| Plant and equipment | 2,010,350 | 2,340,189 |
| | 2,010,350 | 2,340,189 |

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 10. FIXED ASSETS (continued)

**MATERIAL ACCOUNTING POLICIES**

### Initial recognition

An item of property, plant and equipment or infrastructure that qualifies for recognition as an asset is measured at its cost.

Upon initial recognition, cost is determined as the amount paid (or other consideration given) to acquire the assets, plus costs incidental to the acquisition. The cost of non-current assets constructed by the City includes the cost of all materials used in construction, direct labour on the project and an appropriate proportion of variable and fixed overheads. For assets acquired at zero cost or otherwise significantly less than fair value, cost is determined as fair value at the date of acquisition.

Assets for which the fair value as at the date of acquisition is under $5,000 are not recognised as an asset in accordance with *Local Government (Financial Management) Regulation 17A(5)*. These assets are expensed immediately.

Where multiple individual low value assets are purchased together as part of a larger asset or collectively forming a larger asset exceeding the threshold, the individual assets are recognised as one asset and capitalised.

Individual assets that are land, buildings and infrastructure acquired between scheduled revaluation dates of the asset class in accordance with the City's revaluation policy, are recognised at cost and disclosed as being at reportable value.

### Measurement after recognition

Plant and equipment including furniture and equipment and right-of-use assets (other than vested improvements) are measured using the cost model as required under *Local Government (Financial Management) Regulation 17A(2)*. Assets held under the cost model are carried at cost less accumulated depreciation and any impairment losses.

### Reportable Value

In accordance with *Local Government (Financial Management) Regulation 17A(2*), the carrying amount of non-financial assets that are land and buildings classified as property, plant and equipment, investment properties, infrastructure or vested improvements that the local government controls.

Reportable value is for the purpose of *Local Government (Financial Management) Regulation 17A(4)* is the fair value of the asset at its last valuation date minus (to the extent applicable) the accumulated depreciation and any accumulated impairment losses in respect of the non-financial asset subsequent to its last valuation date.

### Revaluation

Land and buildings classified as property, plant and equipment, infrastructure or vested improvements that the local government controls and measured at reportable value, are only required to be revalued every five years in accordance with the regulatory framework. This includes buildings and infrastructure items which were pre-existing improvements (i.e. vested improvements) on land vested in the City.

Whilst the regulatory framework only requires a revaluation to occur every five years, it also provides for the City to revalue earlier if it chooses to do so.

For land, buildings and infrastructure, increases in the carrying amount arising on revaluation of asset classes are credited to a revaluation surplus in equity.

Decreases that offset previous increases of the same class of asset are recognised against revaluation surplus directly in equity. All other decreases are recognised in profit or loss.

Subsequent increases are then recognised in profit or loss to the extent they reverse a net revaluation decrease previously recognised in profit or loss for the same class of asset.

### Depreciation

The depreciable amount of all property, plant and equipment and infrastructure, are depreciated on a straight-line basis over the individual asset's useful life from the time the asset is held ready for use. Leasehold improvements are depreciated over the shorter of either the unexpired period of the lease or the estimated useful life of the improvements.

The assets residual values and useful lives are reviewed, and adjusted if appropriate, at the end of each reporting period.

### Depreciation on revaluation

When an item of property, plant and equipment and infrastructure is revalued, any accumulated depreciation at the date of the revaluation is treated in one of the following ways:

(i) The gross carrying amount is adjusted in a manner that is consistent with the revaluation of the carrying amount of the asset.
(ii) Eliminated against the gross carrying amount of the asset and the net amount restated to the revalued amount of the asset.

### Impairment

In accordance with *Local Government (Financial Management) Regulations 17A(4C)*, the City is not required to comply with *AASB136 Impairment of Assets* to determine the recoverable amount of its non-financial assets that are land or buildings classified as property, plant and equipment, infrastructure or vested improvements that the local government controls in circumstances where there has been an impairment indication of a general decrease in asset values.

In other circumstances where it has been assessed that one or more of these non-financial assets are impaired, the asset's carrying amount is written down immediately to its recoverable amount if the asset's carrying amount is greater than its estimated recoverable amount.

### Gains or losses on disposal

Gains and losses on disposals are determined by comparing proceeds with the carrying amount. These gains and losses are included in the statement of comprehensive income in the period in which they arise.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 11. LEASES

### (a) Right of use assets

Movement in the balance of each class of right-of-use asset between the beginning and the end of the current financial year

| | Plant & Equipment $ | Total $ |
|---|---|---|
| **2024** | | |
| **Balance at 1 July 2023** | 275,308 | 275,308 |
| Depreciation | (116,333) | (116,333) |
| **Balance at 30 June 2024** | 158,975 | 158,975 |
| Gross balance amount at 30 June 2024 | 362,107 | 362,107 |
| Accumulated depreciation at 30 June 2024 | (203,133) | (203,133) |
| **Balance at 30 June 2024** | 158,974 | 158,974 |
| **2025** | | |
| **Balance at 1 July 2024** | 158,975 | 158,975 |
| Additions * | 83,503 | 83,503 |
| Depreciation | (75,480) | (75,480) |
| **Balance at 30 June 2025** | 166,998 | 166,998 |
| Gross balance amount at 30 June 2025 | 445,611 | 445,611 |
| Accumulated depreciation at 30 June 2025 | (278,613) | (278,613) |
| **Balance at 30 June 2025** | 166,998 | 166,998 |

(*) Right of use asset additions are non-cash additions. Refer to note 18(c).

The following amounts were recognised in the statement of comprehensive income during the period in respect of leases where the entity is the lessee:

| | Note | 2025 Actual $ | 2024 Actual $ |
|---|---|---|---|
| Depreciation on right-of-use assets | | (75,480) | (116,333) |
| Finance charge on lease liabilities | 30c | (14,838) | (9,284) |
| **Total amount recognised in the statement of comprehensive income** | | (90,318) | (125,617) |
| Total cash outflow from leases | | (123,745) | (118,562) |

### (b) Lease liabilities

| | | | |
|---|---|---|---|
| Current | | 84,567 | 105,428 |
| Non-current | | 52,499 | 57,042 |
| | 30c | 137,066 | 162,470 |

The City has two leases relating to plant and equipment for terms of two and three years, both with fixed lease payments. The measurement of lease liabilities does not include variable lease payments and any future cash outflows associated with leases not yet commenced to which the City is committed. Refer to Note 30c for details of lease liabilities.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

Note 11. LEASES (continued)

**Secured liabilities and assets pledged as security**

Lease liabilities are effectively secured, as the rights to the leased assets recognised in the financial statements revert to the lessor in the event of default.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

Note 11. LEASES (continued)

**MATERIAL ACCOUNTING POLICIES**

**Leases**

At inception of a contract, the City assesses if the contract contains or is a lease. A contract is, or contains, a lease if the contract conveys the right to control the use of an identified asset for a period of time in exchange for consideration.

At the commencement date, a right-of-use asset is recognised at cost and lease liability at the present value of the lease payments that are not paid at that date. The lease payments are discounted using the interest rate implicit in the lease, if that rate can be readily determined. If that rate cannot be readily determined, the City uses its incremental borrowing rate.

All contracts that are classified as short-term leases (i.e. a lease with a term of 12 months or less) and leases of low value assets are recognised as an operating expense on a straight-line basis over the term of the lease.

Details of individual lease liabilities required by regulations are provided at Note 30c.

**Right-of-use assets - measurement**

Right-of-use assets are measured at cost. All right-of-use assets (other than vested improvements) under zero cost concessionary leases are measured at zero cost (i.e. not recognised in the Statement of Financial Position). The exception is vested improvements on concessionary land leases such as roads, buildings or other infrastructure which are reported at fair value.

Refer to Note 10 under revaluation for details on the material accounting policies applying to vested improvements.

**Right-of-use assets - depreciation**

Right-of-use assets are depreciated over the lease term or useful life of the underlying asset, whichever is the shorter. Where a lease transfers ownership of the underlying asset, or the cost of the right-of-use asset reflects that the City anticipates to exercise a purchase option, the specific asset is depreciated over the useful life of the underlying asset.

| | 2025 Actual $ | 2024 Actual $ |
|---|---|---|
| **(c) Lessor - Property, Plant and Equipment Subject to Lease** | | |
| The table below represents a maturity analysis of the undiscounted lease payments to be received after the reporting date. | | |
| Less than 1 year | 783,248 | 531,061 |
| 1 to 2 years | 247,331 | 355,502 |
| 2 to 3 years | 204,347 | 206,691 |
| 3 to 4 years | 171,384 | 200,347 |
| 4 to 5 years | 136,363 | 170,786 |
| > 5 years | 96,197 | 227,708 |
| | 1,638,870 | 1,692,095 |
| **Amounts recognised in profit or loss for property, plant and equipment subject to lease** | | |
| Rental income | 1,059,030 | 937,629 |

The City leases property to tenants, with rentals payable monthly. These leases are classified as operating leases as they do not transfer substantially all of the risks and rewards incidental to the ownership of the

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

Note 11. LEASES (continued)

assets. The aged persons housing are considered a joint operation and are not considered investment property as the primary purpose is provision of community housing.

Lease payments for some contracts include CPI increases, but there are no other variable lease payments that depend on an index or rate.

Although the City is exposed to changes in the residual value at the end of the current leases, the City typically enters into new operating leases and therefore will not immediately realise any reduction in residual value at the end of these leases. Expectations about the future residual values are reflected in the fair value of the properties.

**MATERIAL ACCOUNTING POLICIES**

**The City as Lessor**

Upon entering into each contract as a lessor, the City assesses if the lease is a finance or operating lease.

The contract is classified as a finance lease when the terms of the lease transfer substantially all the risks and rewards of ownership to the lessee. All other leases not within this definition are classified as operating leases. Rental income received from operating leases is recognised on a straight-line basis over the term of the specific lease.

Initial direct costs incurred in entering into an operating lease (e.g. legal cost, cost to setup) are included in the carrying amount of the leased asset and recognised as an expense on a straight-line basis over the lease term.

When a contract is determined to include lease and non-lease components, the City applies *AASB 15 Revenue from Contracts with Customers* to allocate the consideration under the contract to each component.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 12. INTANGIBLE ASSETS

| | 2025 Actual $ | 2024 Actual $ |
|---|---|---|
| **Intangible assets** | | |
| **Non-current** | | |
| Corporate website | 473,929 | 473,929 |
| Less: Accumulated amortisation | (337,086) | (237,101) |
| | 136,843 | 236,828 |
| Movements in balances during the financial year are shown as follows: | | |
| **Balance at 1 July** | 236,828 | 145,828 |
| Recognition of computer software | – | 166,533 |
| Amortisation | (99,985) | (75,533) |
| **Balance at 30 June** | 136,843 | 236,828 |
| **TOTAL INTANGIBLE ASSETS** | **136,843** | **236,828** |

**Amortisation**

The estimated useful life of intangible assets is 5 years for the current and prior years.

### MATERIAL ACCOUNTING POLICIES

**Corporate Website**

Costs associated with planning, administration and other general overhead expenses are recognised as an expense when incurred. The application, graphical design and content development costs directly attributable to preparing the website to operate in the manner requested by management meets the recognition criteria in AASB 138.21 and AASB 138.57 and are recognised as intangible assets.

Similarly, the operating website costs are recognised as intangible assets when it meets the recognition criteria set out in AASB 138.18 where it is demonstrated that the intangible asset will generate probable future economic benefits when the asset is ready for use.

**Computer software**

Costs associated with maintaining software programmes are recognised as an expense as incurred. Development costs that are directly attributable to the design and testing of identifiable and unique software products controlled by the the City are recognised as intangible assets where the following criteria are met:

- it is technically feasible to complete the software so that it will be available for use;
- management intends to complete the software and use or sell it;
- there is an ability to use or sell the software.
- it can be demonstrated how the software will generate probable future economic benefits;
- adequate technical, financial and other resources to complete the development and to use or sell the software are available; and
- the expenditure attributable to the software during its development can be reliably measured.

Directly attributable costs that are capitalised as part of the software include employee costs and an appropriate portion of relevant overheads.

Capitalised development costs are recorded as intangible assets and amortised from the point at which the asset is ready for use.

**Amortisation**

All intangible assets with a finite useful life, are amortised on a straight-line basis over the individual asset's useful life from the time the asset is held ready for use.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 12. INTANGIBLE ASSETS (continued)

The residual value of intangible assets is considered to be zero and the useful life and amortisation method are reviewed at the end of each financial year.

Amortisation is included within depreciation in the Statement of Comprehensive Income.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 13. TRADE AND OTHER PAYABLES

| | 2025<br>$ | 2024<br>$ |
|---|---|---|
| **Current** | | |
| Sundry creditors | 3,003,064 | 1,245,963 |
| Accrued interest | 69,321 | 73,375 |
| Prepaid rates | 1,183,586 | 1,111,695 |
| Accrued payroll liabilities | 797,302 | 625,423 |
| Accrued expenses | 6,009,378 | 4,573,900 |
| | 11,062,651 | 7,630,356 |

### MATERIAL ACCOUNTING POLICIES

**Financial liabilities**

Financial liabilities are initially recognised at fair value when the City becomes a party to the contractual provisions of the instrument.

Non-derivative financial liabilities (excluding financial guarantees) are subsequently measured at amortised cost.

Financial liabilities are derecognised where the related obligations are discharged, cancelled or expired. The difference between the carrying amount of the financial liability extinguished or transferred to another party and any consideration paid, including the transfer of non-cash assets or liabilities assumed, is recognised in profit or loss.

**Trade and other payables**

Trade and other payables represent liabilities for goods and services provided to the City prior to the end of the financial year that are unpaid and arise when the City becomes obliged to make future payments in respect of the purchase of these goods and services.

The amounts are unsecured, are recognised as a current liability and are usually paid within 30 days of recognition. The carrying amounts of trade and other payables are considered to be the same as their fair values, due to their short-term nature.

**Prepaid rates**

Prepaid rates are, until the taxable event has occurred (start of the next financial year), refundable at the request of the ratepayer. Rates received in advance are initially recognised as a financial liability. When the taxable event occurs, the financial liability is extinguished and the City recognises income for the prepaid rates that have not been refunded.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 14. OTHER LIABILITIES

| | 2025<br>$ | 2024<br>$ |
|---|---|---|
| **Current** | | |
| **Contract liabilities** | | |
| Payable to other Councils | 247,516 | 221,387 |
| Emergency Services Levy | 311,014 | 383,640 |
| Bonds and deposits held | 452,380 | 230,983 |
| Contract liabilities | 67,053 | 65,100 |
| Other Liabilities | 27,436 | 28,292 |
| | 1,105,399 | 929,402 |
| **Capital grant/contributions liabilities** | | |
| Capital grant/contributions liabilities | 368,476 | 906,148 |
| | 368,476 | 906,148 |
| | 1,473,875 | 1,835,550 |
| **Non-current** | | |
| **Contract liabilities** | | |
| Emergency Services Levy (Deferred) | 59,787 | 68,468 |
| Payable to other Councils | 67,410 | 83,090 |
| | 127,197 | 151,558 |
| | 127,197 | 151,558 |

| **Reconciliation of changes in contract liabilities** | | |
|---|---|---|
| Opening balance | 65,100 | 79,883 |
| Additions | 67,053 | 65,100 |
| Revenue from contracts with customers included as a contract liability at the start of the period | (65,100) | (79,883) |
| | 67,053 | 65,100 |

The aggregate amount of the performance obligations unsatisfied (or partially unsatisfied) in relation to these contract liabilities was $67,053 (2024: $65,100)

The City expects to satisfy the performance obligations, from contracts with customers unsatisfied at the end of the reporting period, within the next 12 months.

| **Reconciliation of changes in capital grant/contribution liabilities** | | |
|---|---|---|
| Opening balance | 906,148 | 453,553 |
| Additions | 368,476 | 676,066 |
| Revenue from capital grant/contributions held as a liability at the start of the period | (906,148) | (223,471) |
| | 368,476 | 906,148 |

| **Expected satisfaction of capital grant/contribution liabilities** | | |
|---|---|---|
| Less than 1 year | 37,376 | 906,148 |
| 1 to 2 years | 331,100 | – |
| | 368,476 | 906,148 |

Performance obligations in relation to capital grant/contribution liabilities are satisfied as project milestones are met or completion of construction or acquisition of the asset.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

Note 14. OTHER LIABILITIES (continued)

**MATERIAL ACCOUNTING POLICIES**

**Contract Liabilities**

Contract liabilities represent the the City's obligation to transfer goods or services to a customer for which the City has received consideration from the customer.

Contract liabilities represent obligations which are not yet satisfied. Contract liabilities are recognised as revenue when the performance obligations in the contract are satisfied.

**Capital grant/contribution liabilities**

Capital grant/contribution liabilities represent the City's obligations to construct recognisable non-financial assets to identified specifications to be controlled by the City which are yet to be satisfied. Capital grant/contribution liabilities are recognised as income when the obligations in the contract are satisfied.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 15. BORROWINGS

| | | 2025 | | | 2024 | | |
|---|---|---|---|---|---|---|---|
| | | Current | Non-current | Total | Current | Non-current | Total |
| | Note | $ | $ | $ | $ | $ | $ |
| **Secured** | | | | | | | |
| WATC loan | | 666,573 | 10,309,794 | 10,976,367 | 641,884 | 10,976,367 | 11,618,251 |
| **Total secured borrowings** | 30a | 666,573 | 10,309,794 | 10,976,367 | 641,884 | 10,976,367 | 11,618,251 |

**Secured liabilities and assets pledged as security**

Debentures, bank overdrafts and bank loans are secured by a floating charge over the assets of the City of Belmont
Other loans relate to transferred receivables. Refer to Note 5.

City of Belmont has complied with the financial covenants of its borrowing facilities during the 2025 and 2024 years.

**MATERIAL ACCOUNTING POLICIES**

**Borrowing costs**

The City has elected to recognise borrowings costs as an expense when incurred regardless of how the borrowings are applied.

Fair values of borrowings are not materially different to their carrying amounts, since the interest payable on those borrowings is either close to current market rates or the borrowings are of a short term nature.

Borrowings fair values are based on discounted cash flows using a current borrowing rate. They are classified as level 3 fair values in the fair value hierarchy (see Note 26(i)) due to the unobservable inputs, including own credit risk.

**Risk**

Information regarding exposure to risk can be found at Note 24.

Details of individual borrowings required by regulations are provided at Note 30a.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 16. EMPLOYEE RELATED PROVISIONS

| | 2025 $ | 2024 $ |
|---|---|---|
| **Employee related provisions** | | |
| **Current provisions** | | |
| **Employee benefit provisions** | | |
| Annual leave | 2,199,735 | 2,192,843 |
| Long service leave | 2,085,269 | 1,994,409 |
| Other employee leave provision | 199,310 | 170,678 |
| | 4,484,314 | 4,357,930 |
| **Employee related other provisions** | | |
| Employment on-costs | 676,525 | 630,016 |
| | 676,525 | 630,016 |
| **Total current employee related provisions** | 5,160,839 | 4,987,946 |
| **Non-current provisions** | | |
| **Employee benefit provisions** | | |
| Long service leave | 477,337 | 469,767 |
| | 477,337 | 469,767 |
| **Employee related other provisions** | | |
| Employment on-costs | 75,708 | 71,495 |
| | 75,708 | 71,495 |
| **Total non-current employee related provisions** | 553,045 | 541,262 |
| **Total employee related provisions** | 5,713,884 | 5,529,208 |

Provision is made for benefits accruing to employees in respect of wages and salaries, annual leave and long service leave and associated on costs for services rendered up to the reporting date and recorded as an expense during the period the services are delivered.

Annual leave liabilities are classified as current, as there is no unconditional right to defer settlement for at least 12 months after the end of the reporting period. Assessments indicate that actual settlement of the liabilities is expected to occur as follows:

| | Note | 2025 $ | 2024 $ |
|---|---|---|---|
| **Amounts are expected to be settled on the following basis:** | | | |
| Less than 12 months after the reporting date | | 3,412,992 | 3,338,703 |
| More than 12 months from reporting date | | 2,300,892 | 2,190,505 |
| | | 5,713,884 | 5,529,208 |
| Expected reimbursements of employee related provisions from other WA local governments included within other receivables | 5 | (424,776) | (377,775) |

**MATERIAL ACCOUNTING POLICIES**

**Employee benefits**

The City's obligations for employees' annual leave, long service leave and other employee leave entitlements are recognised as employee related provisions in the Statement of Financial Position.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 16. EMPLOYEE RELATED PROVISIONS (continued)

**Short-term employee benefits**

Provision is made for the City's obligations for short-term employee benefits. Short-term employee benefits are benefits (other than termination benefits) that are expected to be settled wholly before 12 months after the end of the annual reporting period in which the employees render the related service, including wages, salaries and sick leave. Short-term employee benefits are measured at the (undiscounted) amounts expected to be paid when the obligation is settled.

The City's obligations for short-term employee benefits such as wages, salaries and sick leave are recognised as a part of current trade and other payables in the statement of financial position

**Other long-term employee benefits**

Long-term employee benefits provisions are measured at the present value of the expected future payments to be made to employees. Expected future payments incorporate anticipated future wage and salary levels, durations of service and employee departures and are discounted at rates determined by reference to market yields at the end of the reporting period on government bonds that have maturity dates that approximate the terms of the obligations. Any remeasurements for changes in assumptions of obligations for other long-term employee benefits are recognised in profit or loss in the periods in which the changes occur.

The City's obligations for long-term employee benefits are presented as non-current provisions in its statement of financial position, except where the City does not have an unconditional right to defer settlement for at least 12 months after the end of the reporting period, in which case the obligations are presented as current provisions.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 17. REVALUATION SURPLUS

| | 2025 Opening Balance $ | 2025 Total Movement on Revaluation $ | 2025 Closing Balance $ | 2024 Opening Balance $ | 2024 Total Movement on Revaluation $ | 2024 Closing Balance $ |
|---|---|---|---|---|---|---|
| Revaluation surplus - Land - freehold land | 214,759,687 | – | 214,759,687 | 214,759,687 | – | 214,759,687 |
| Revaluation surplus - Buildings | 64,985,519 | – | 64,985,519 | 64,985,519 | – | 64,985,519 |
| Revaluation surplus - Assets subject to operating lease – land | 2,632,500 | – | 2,632,500 | 2,632,500 | – | 2,632,500 |
| Revaluation surplus - Assets subject to operating lease - buildings specialised | (2,311,546) | – | (2,311,546) | (2,311,546) | – | (2,311,546) |
| Revaluation surplus - Infrastructure - roads | 52,470,322 | – | 52,470,322 | 52,470,322 | – | 52,470,322 |
| Revaluation surplus - Infrastructure - footpaths | 29,715,529 | – | 29,715,529 | 29,715,529 | – | 29,715,529 |
| Revaluation surplus - Infrastructure - drainage | 61,308,956 | – | 61,308,956 | 61,308,956 | – | 61,308,956 |
| Revaluation surplus - Infrastructure - reserve improvements | 21,359,009 | – | 21,359,009 | 21,359,009 | – | 21,359,009 |
| Revaluation surplus - Infrastructure - carparks | 2,703,591 | – | 2,703,591 | 2,703,591 | – | 2,703,591 |
| | 447,623,567 | – | 447,623,567 | 447,623,567 | – | 447,623,567 |
| Revaluation surplus - Share from investments in associates | 4,200,928 | (4,200,928) | – | 4,200,928 | – | 4,200,928 |
| | 451,824,495 | (4,200,928) | 447,623,567 | 451,824,495 | – | 451,824,495 |

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 18. NOTES TO THE STATEMENT OF CASH FLOWS

**(a) Reconciliation of cash**

For the purposes of the Statement of Cash Flows, cash includes cash on hand and cash equivalents, net of outstanding bank overdrafts. Cash at the end of the reporting period is reconciled to the related items in the Statement of Financial Position as follows:

| | Note | 2025 Actual $ | 2024 Actual $ |
|---|---|---|---|
| **Cash and cash equivalents** | 3 | 65,020,615 | 23,433,621 |
| **Restrictions** | | | |
| The following classes of financial assets have restrictions imposed by regulations or other externally imposed requirements which limit or direct the purpose for which the resources may be used: | | | |
| - Cash and cash equivalents | 3 | 57,518,208 | 13,932,877 |
| - Financial assets at amortised cost | 4 | 25,187,565 | 56,303,699 |
| | | 82,705,773 | 70,236,576 |
| The restricted financial assets are a result of the following specific purposes to which the assets may be used: | | | |
| Restricted reserve accounts | 31 | 82,270,244 | 69,265,328 |
| Contract liabilities | 14 | 67,053 | 65,100 |
| Capital grant liabilities | 14 | 368,476 | 906,148 |
| **Total restricted financial assets** | | 82,705,773 | 70,236,576 |

**(b) Reconciliation of Net Result to Net Cash Provided By Operating Activities**

| | | |
|---|---|---|
| Net result | (5,136,678) | 815,437 |
| Non-cash items: | | |
| Depreciation/amortisation | 13,028,201 | 12,953,278 |
| Adjustments to fair value of financial assets at fair value through profit or loss | 8,878 | (4,203) |
| (Profit)/loss on sale of asset | 233,673 | 716,922 |
| Loss on the disposal of investment in EMRC | 5,782,061 | – |
| Movement in receivable from EMRC | – | (72,898) |
| Changes in assets and liabilities: | | |
| (Increase)/decrease in trade and other receivables | (115,216) | (669,467) |
| (Increase)/decrease in inventories | 22,885 | (15,569) |
| (Increase)/decrease in other assets | (121,363) | (1,053,753) |
| (Increase)/decrease in contract assets | (222,944) | 65,750 |
| Increase/(decrease) in trade and other payables | 2,250,259 | 1,890,826 |
| Increase/(decrease) in contract liabilities | – | – |
| Increase/(decrease) in accrued interest payable | (4,054) | (3,904) |
| Increase/(decrease) in employee related provisions | 184,676 | 734,116 |
| Increase/(decrease) in other liabilities | 151,636 | 421,471 |
| Capital grants, subsidies and contributions | (4,696,717) | (2,602,175) |
| **Net cash provided by/(used in) operating activities** | 11,365,297 | 13,175,831 |

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 18. NOTES TO THE STATEMENT OF CASH FLOWS (continued)

| | Note | 2025 Actual $ | 2024 Actual $ |
|---|---|---|---|
| **(c) Undrawn borrowing facilities credit standby arrangements** | | | |
| **Credit standby arrangements** | | | |
| Bank overdraft limit | | 200,000 | 200,000 |
| Bank overdraft at balance date | | – | – |
| Credit card limit | | 60,000 | 60,000 |
| Credit card balance at balance date | | (5,646) | (4,045) |
| **Total amount of credit unused** | | 254,354 | 255,955 |
| | | | |
| **Loan facilities** | | | |
| Loan facilities - current | 15 | 666,573 | 641,884 |
| Loan facilities - non-current | 15 | 10,309,794 | 10,976,367 |
| **Total facilities in use at balance date** | | 10,976,367 | 11,618,251 |
| | | | |
| **Unused loan facilities at balance date** | | – | – |

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 19. CONTINGENT LIABILITIES

**(a) Contaminated Sites**

The City has 2 sites with possible contamination at 5 Resolution Drive, Ascot and 78 Hardey Road, Belmont. Additionally, the City has 1 site classified as 'Contaminated – Restricted Use' at Peachey Park (400 Acton Ave and 50 Peachey Ave, Kewdale).

Regarding 5 Resolution Drive and 78 Hardey Road, until the City conducts investigations to determine the presence and scope of contamination, assesses the risk, and agrees with the respective state government authorities on the need and criteria for remediation, the City is unable to estimate the potential costs associated with the remediation works.

Two lots within Peachey Park are classified as 'Contaminated - Restricted Use', as they are suitable for public open space and recreational use, but may not be suitable for a more sensitive land use.

**(b) Springs Development Contribution Plan**

In February 2017 the Springs Development Contribution Plan (DCP) was established which required landowners to make a financial contribution towards infrastructure when undertaking any subdivision or development within the area, with the funds collected by the City used to reimburse Development WA.

This future reimbursement by the City is a contingent liability of which the amount and timing of the development is uncertain. The previous DCP expired in February 2022 and the City sought an extension of the DCP through an amendment to Local Planning Scheme No. 15. This Amendment was approved by the Minister for Planning and notice of the approval was published in the 14 February 2023 Government Gazette. The Minister approved an extension of the Development Contribution Plan until 7 February 2027.

## Note 20. CAPITAL COMMITMENTS

| | 2025<br>$ | 2024<br>$ |
|---|---|---|
| **(a) Capital expenditure commitments** | | |
| **Contracted for:** | | |
| - capital expenditure projects | 9,906,213 | 5,896,249 |
| - plant & equipment purchases | 403,076 | 784,612 |
| | 10,309,289 | 6,680,861 |
| **Payable:** | | |
| - not later than one year | 10,309,289 | 6,680,861 |

The capital expenditure projects outstanding at the end of the current reporting period represents various projects including foreshore project works, traffic management for various infrastructure projects and various replacements of fleet and plant assets for which delivery has been delayed.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 21. RELATED PARTY TRANSACTIONS

| | Note | 2025 Actual $ | 2025 Budget $ | 2024 Actual $ |
|---|---|---|---|---|
| **(a) Council Member Remuneration** | | | | |
| Fees, expenses and allowances to be paid or reimbursed to elected council members. | | | | |
| Mayor's annual allowance | | 97,115 | 97,115 | 93,125 |
| Mayor's meeting attendance fees | | 51,412 | 51,412 | 49,301 |
| Mayor's other expenses | | 3,500 | – | 4 |
| Mayor's superannuation | | 7,117 | – | – |
| Mayor's annual allowance for ICT expenses | | 3,500 | 3,500 | 3,500 |
| | | 162,644 | 152,027 | 145,930 |
| Deputy Mayor's annual allowance | | 24,279 | 24,279 | 23,281 |
| Deputy Mayor's meeting attendance fees | | 34,278 | 34,278 | 32,960 |
| Deputy Mayor's other expenses | | 5,067 | – | 654 |
| Deputy Mayor's superannuation | | 2,806 | – | – |
| Deputy Mayor's annual allowance for ICT expenses | | 3,500 | 3,500 | 3,500 |
| | | 69,930 | 62,057 | 60,395 |
| All other council member's meeting attendance fees | | 233,104 | 205,668 | 209,373 |
| All other council member's expenses | | 299 | – | 235 |
| All other council member's superannuation | | 8,212 | – | – |
| All other council member's annual allowance for ICT expenses | | 23,803 | 21,000 | 22,243 |
| | | 265,418 | 226,668 | 231,851 |
| | 21b | 497,992 | 440,752 | 438,176 |

| | Note | 2025 Actual $ | 2024 Actual $ |
|---|---|---|---|
| **(b) Key management personnel** | | | |
| The total of compensation paid to KMP of the City during the year are as follows: | | | |
| Short-term employee benefits | | 1,374,089 | 1,083,275 |
| Post-employment benefits | | 181,133 | 127,896 |
| Employee - other long-term benefits | | 35,739 | 3,300 |
| Council member costs | 21a | 497,992 | 438,176 |
| **Total** | | 2,088,953 | 1,652,647 |

*Short-term employee benefits*
These amounts include all salary and fringe benefits awarded to KMP except for details in respect to fees and benefits paid to council members which may be separately found in the table above.

*Post-employment benefits*
These amounts are the current-year's estimated cost of providing for the City's superannuation contributions made during the year.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 21. RELATED PARTY TRANSACTIONS (continued)

*Other long-term benefits*
These amounts represent annual leave and long service leave entitlements accruing during the year.

*Termination benefits*
These amounts represent termination benefits paid to KMP (Note: may or may not be applicable in any given year).

*Council member costs*
These amounts represent payments of member fees, expenses, allowances and reimbursements during the year.

**(c) Transactions with related parties**

Transactions between related parties and the City are on normal commercial terms and conditions, no more favourable than those available to other parties, unless otherwise stated.

No outstanding balances or provisions for doubtful debts or guarantees exist in relation to related parties at year end.

| | 2025 Actual $ | 2024 Actual $ |
|---|---|---|
| **In addition to KMP compensation above the following transactions occurred with related parties:** | | |
| Payments made to Faulkner Park Board of Management | – | 243,405 |
| Income from the Belmont Retirement Villages Board of Management | 308,094 | 313,267 |
| | 308,094 | 556,672 |

**(d) Related parties**

**The City's main related parties are as follows:**

*i. Key management personnel*
Any person(s) having authority and responsibility for planning, directing and controlling the activities of the entity, directly or indirectly, including any council member, are considered key management personnel.

*ii. Other Related Parties*
Short-term employee benefits related to an associate person of the CEO who was employed by the City under normal employment terms and conditions.

Outside of normal citizen type transactions with the City, there were no other related party transactions involving key management personnel and/or their close family members and/or their controlled (or jointly controlled) entities.

*iii. Entities subject to significant influence by the City*
Joint arrangements detailed in Note 22 and associates detailed in Note 23.

The City of Belmont has 2 elected members and the CEO on the Board of the Belmont Retirement Villages Board of Management (BRVBM). As the City is represented by 3 of the 7 Board members this would illustrate significant influence although it is not an investee/investor relationship and the City cannot benefit financially from this arrangement.

Under the Lease to Residents of Faulkner Park Retirement Village, certain monies are received from the Residents and retained by the Board. Income derived from investing these monies, in addition to annual

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

Note 21. RELATED PARTY TRANSACTIONS (continued)

operational costs payable by the Residents, fund ongoing operations and management. A percentage of income from unit sales is received by the City and placed into reserves controlled by the City.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 22. JOINT ARRANGEMENTS

**Share of joint operations**

The City has an agreement with the Housing Authority for the provision of aged accommodation. This arrangement has been determined to be a joint arrangement. The assets held under the agreement by both parties are land and 22 units located at Orana Aged Persons and land and 20 units located at Gabriel Gardens Retirement Village.

The ownership of the joint operation is defined in the agreement including the percentage of each party's proportionate interest in the assets of the joint operation. The total value of the City's share of jointly controlled assets at 30 June 2025 is $2,405,358 (2024: $2,215,986) being 30.63% share of Gabriel Gardens and 13.04% share of Orana Aged Persons. Surplus funds are returned to the City and transferred to the Homeswest and Aged Housing Reserves for future building maintenance and capital improvements of the City's aged housing centres.

| | 2025 Actual $ | 2024 Actual $ |
|---|---|---|
| **Statement of Financial Position** | | |
| Cash and cash equivalents | 1,049,910 | 1,010,521 |
| Land and buildings | 3,403,532 | 3,169,800 |
| Less: accumulated depreciation | (998,175) | (953,814) |
| **Total assets** | 3,455,267 | 3,226,507 |
| | | |
| Reserve accounts | 1,049,910 | 1,010,521 |
| **Total equity** | 1,049,910 | 1,010,521 |
| | | |
| **Statement of Comprehensive Income** | | |
| Grants, subsidies and contributions | – | 319,250 |
| Interest revenue | 15,569 | 9,794 |
| Other revenue | 492,432 | 1,164 |
| Employee costs | (23,170) | (14,104) |
| Materials and contracts | (79,354) | (217,818) |
| Depreciation | (52,821) | (38,490) |
| Finance costs | (1,169) | (465) |
| **Profit/(loss) for the period** | 351,487 | 59,331 |
| Other comprehensive income | – | – |
| **Total comprehensive income for the period** | 351,487 | 59,331 |
| **Statement of Cash Flows** | | |
| Grants, subsidies and contributions | – | – |
| **Net cash provided by (used in) operating activities** | – | – |

**MATERIAL ACCOUNTING POLICIES**

**Joint operations**

A joint operation is a joint arrangement where the City has joint control with two or more parties to the joint arrangement. All parties to a joint arrangement have rights to the assets, and obligations for the liabilities relating to the arrangement.

Assets, liabilities, revenues and expenses relating to the City's interest in the joint operation are accounted for in accordance with the relevant Australian Accounting Standard.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 23. INVESTMENT IN ASSOCIATES

**Investment in associates**

Set out below are the associates of the City. All associates are measured using the equity method.

Western Australia is the principal place of business for all associates.

**Investment in EMRC**

The City was a participant in the Eastern Metropolitan Regional Council (EMRC), with voting rights and interest in assets and liabilities of the EMRC equal to 1/6th of the total. The City's interest in the EMRC was calculated to be 11.31% as at 30 June 2021, representing a share of net assets equal to $21,000,517. On the 23 December 2020 the City issued its Notice of Withdrawal from the EMRC, effective from 1 July 2021, with the City's interest in the EMRC as at 30 June 2021 to be payable on 1 July 2023. This value was discounted and incorporated as a non current receivable from the EMRC for the year ended 30 June 2022.

For the year ended 30 June 2023, the City's equity entitlement remained subject to a valuation methodology and subsequent payment of the City's share of net assets. The amount of $21,000,517 was therefore discounted to the present value as at 30 June 2023 and was reclassified from a non current to a current asset receivable.

For the year ended 30 June 2024, the City's equity entitlement remained subject to a valuation methodology and subsequent payment of the City's share of net assets on a wind-up basis per the EMRC establishment agreement. While a draft valuation had been prepared by the appointed financial advisory, it remained subject to review by both parties before finalisation. In the absence of the finalised valuation, the amount of $21,000,517, being the City’s share of EMRC’s Net Book Value at the time of departure, was used to calculate the receivable as at 30 June 2024, with the asset continuing to be classified as a current asset receivable (refer note 5).

On the 5 March 2025, the City received payment of $15,218,456 from the EMRC, being the City's share of net assets on a wind-up basis per the EMRC establishment agreement. This resulted in the City recognising a loss on disposal of the investment in EMRC of $5,782,061.

**MATERIAL ACCOUNTING POLICIES**

**Investments in associates**

An associate is an entity over which the City has significant influence, that is it has the power to participate in the financial and operating policy decisions of the investee but not control or joint control of those policies.

Investments in associates are accounted for using the equity method. The equity method of accounting, is whereby the investment is initially recognised at cost and adjusted thereafter for the post-acquisition change in the City’s share of net assets of the associate. In addition, the City’s share of the profit or loss of the associate is included in the City’s profit or loss.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 24. FINANCIAL RISK MANAGEMENT

This note explains the City's exposure to financial risks and how these risks could affect the City's future financial performance.

| Risk | Exposure arising from | Measurement | Management |
|---|---|---|---|
| **Market risk - interest rate** | Long term borrowings at variable rates | Sensitivity analysis | Utilise fixed interest rate borrowings |
| **Credit risk** | Cash and cash equivalents, trade receivables, financial assets and debt investments | Aging analysis<br>Credit analysis | Diversification of bank deposits, credit limits.<br>Investment policy |
| **Liquidity risk** | Borrowings and other liabilities | Rolling cash flow forecasts | Availability of committed credit lines and borrowing facilities |

The City does not engage in transactions expressed in foreign currencies and is therefore not subject to foreign currency risk.

Financial risk management is carried out by the finance department under policies approved by Council. Finance identifies, evaluates and manages financial risks in close co-operation with the operating divisions. Council have approved the overall risk management policy and provide policies on specific areas such as investment.

**(a) Interest rate risk**

### Cash and cash equivalents

The City's main interest rate risk arises from cash and cash equivalents with variable interest rates, which exposes the City to cash flow interest rate risk. Short term overdraft facilities also have variable interest rates however these are repaid within 12 months, reducing the risk level to minimal.

Excess cash and cash equivalents are invested in fixed interest rate term deposits which do not expose the City to cash flow interest rate risk. Cash and cash equivalents required for working capital are held in variable interest rate accounts and non-interest bearing accounts. Carrying amounts of cash and cash equivalents at the 30 June and the weighted average interest rate across all cash and cash equivalents, term deposits, and Treasury bonds held disclosed as financial assets at amortised cost are reflected in the table below.

| | Weighted average interest rate<br>% | Carrying amounts<br>$ | Fixed interest rate<br>$ | Variable interest rate<br>$ | Non interest bearing<br>$ |
|---|---|---|---|---|---|
| **2025** | | | | | |
| Cash and cash equivalents | 4.76% | 65,020,614 | 60,554,544 | 4,463,021 | 3,050 |
| Financial assets at amortised cost - term deposits | 4.65% | 25,187,565 | 25,187,565 | – | – |
| **2024** | | | | | |
| Cash and cash equivalents | 4.37% | 23,433,627 | 12,453,104 | 10,976,473 | 4,050 |
| Financial assets at amortised cost - term deposits | 5.04% | 56,303,699 | 56,303,699 | – | – |

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

Note 24. FINANCIAL RISK MANAGEMENT (continued)

**Sensitivity**

Profit or loss is sensitive to higher/lower interest income from cash and cash equivalents as a result of changes in interest rates.

| | 2025 $ | 2024 $ |
|---|---|---|
| Impact of a 1% movement in interest rates on profit or loss and equity * | 44,630 | 109,765 |

(*) Holding all other variables constant

**Borrowings**

Borrowings are subject to interest rate risk - the risk that movements in interest rates could adversely affect funding costs.

The City manages this risk by borrowing long term and fixing the interest rate to the situation considered the most advantageous at the time of negotiation. The City does not consider there to be any interest rate risk in relation to borrowings.

Details of interest rates applicable to each borrowing may be found at Note 30a.

**(b) Credit risk**

**Trade and Other Receivables**

The City's major trade and other receivables comprise contractual non-statutory user fees and charges, grants, contributions and reimbursements. The major risk associated with these receivables is credit risk – the risk that the debts may not be repaid. The City manages this risk by monitoring outstanding debt and employing debt recovery policies.

Credit risk on rates and annual charges is minimised by the ability of the City to recover these debts as a secured charge over the land, that is, the land can be sold to recover the debt. The City is able to charge interest on overdue rates and annual charges at higher than market rates, which further encourages payment.

The level of outstanding receivables is reported to Council monthly and benchmarks are set and monitored for acceptable collection performance.

The City applies the AASB 9 simplified approach to measuring expected credit losses using a lifetime expected loss allowance for all trade and other receivables. To measure the expected credit losses, receivables from grants, contributions and reimbursements are separated from other trade receivables due to the difference in payment terms and security.

The expected loss rates are based on the payment profiles of trade and other receivables over a period of 36 months before 1 July 2024 or 1 July 2025 respectively and the corresponding historical losses experienced within this period. Historical credit loss rates are adjusted to reflect current and forward-looking information on macroeconomic factors such as the ability of users to settle the receivables.

The loss allowance as at 30 June 2025 and 30 June 2024 was determined as follows for trade and other receivables.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

Note 24. FINANCIAL RISK MANAGEMENT (continued)

| | Current $ | More than 30 days past due $ | More than 60 days past due $ | More than 90 days past due $ | Total $ |
|---|---|---|---|---|---|
| **30 June 2025** | | | | | |
| **Trade receivables** | | | | | |
| Expected credit loss | 0.00% | 0.00% | 0.00% | 0.00% | |
| Gross carrying amount | 395,650 | 4,070 | 24,214 | 25,647 | 449,581 |
| Loss allowance | – | – | – | – | – |
| **Other receivables** | | | | | |
| Expected credit loss | 0.00% | 0.00% | 0.00% | 0.00% | |
| Gross carrying amount | 424,776 | – | – | – | 424,776 |
| Loss allowance | – | – | – | – | – |
| **30 June 2024** | | | | | |
| **Trade receivables** | | | | | |
| Expected credit loss | 0.00% | 0.00% | 0.00% | 4.49% | |
| Gross carrying amount | 203,659 | 114,943 | 35,407 | 250,918 | 604,927 |
| Loss allowance | – | – | – | 11,267 | 11,267 |
| **Other receivables** | | | | | |
| Expected credit loss | 0.00% | 0.00% | 0.00% | 0.00% | |
| Gross carrying amount | 377,775 | – | – | – | 377,775 |
| Loss allowance | – | – | – | – | – |

The loss allowances for trade, other receivables and contract assets as at 30 June reconcile to the opening loss allowances as follows:

| | Trade receivables | | Other receivables | | Contract Assets | |
|---|---|---|---|---|---|---|
| | 2025 Actual $ | 2024 Actual $ | 2025 Actual $ | 2024 Actual $ | 2025 Actual $ | 2024 Actual $ |
| **Opening loss allowance as at 1 July** | 11,267 | 78,500 | – | – | – | – |
| Receivables written off during the year as uncollectible | – | – | 12,840 | 2,566 | – | – |
| Unused amount reversed | (11,267) | (67,233) | (12,840) | (2,566) | – | – |
| **Closing loss allowance at 30 June** | – | 11,267 | – | – | – | – |

Trade, other receivables and contract assets are written off where there is no reasonable expectation of recovery. Indicators that there is no reasonable expectation of recovery include, amongst others, the failure of a debtor to engage in a repayment plan with the City, and a failure to make contractual payments for a period of greater than 120 days past due.

Impairment losses on rates and statutory receivables, trade, other receivables and contract assets are presented as net impairment losses within operating profit. Subsequent recoveries of amounts previously written off are credited against the same line item.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 24. FINANCIAL RISK MANAGEMENT (continued)

**Contract Assets**

The City's contract assets represent work completed, which have not been invoiced at year end. This is due to the City not having met all the performance obligations in the contract which give an unconditional right to receive consideration. The City applies the simplified approach to measure expected credit losses which uses a lifetime expected loss allowance for all contract assets. To measure the expected credit losses, contract assets have been grouped based on shared credit risk characteristics and the days past due. Contract assets have substantially the same risk characteristics as the trade receivables for the same types of contracts. The City has therefore concluded that the expected loss rates for trade receivables are a reasonable approximation of the loss rates for the contract assets.

**(c) Liquidity risk**

**Payables and borrowings**

Payables and borrowings are both subject to liquidity risk – that is the risk that insufficient funds may be on hand to meet payment obligations as and when they fall due. The City manages this risk by monitoring its cash flow requirements and liquidity levels and maintaining an adequate cash buffer.
Payment terms can be extended and overdraft facilities drawn upon if required and disclosed in Note 18c.

The contractual undiscounted cash flows of the City's payables and borrowings are set out in the liquidity table below. Balances due within 12 months equal their carrying balances, as the impact of discounting is not significant.

| | Due within 1 year $ | Due between 1 & 5 years $ | Due after 5 years $ | Total contractual cash flows $ | Carrying values $ |
|---|---|---|---|---|---|
| **2025** | | | | | |
| Trade and other payables | 10,993,330 | – | – | 10,993,330 | 10,993,330 |
| Borrowings | 1,153,415 | 4,564,589 | 8,847,207 | 14,565,211 | 10,976,367 |
| Other liabilities | 727,332 | 70,214 | – | 797,546 | 794,742 |
| Lease liabilities | 84,567 | 52,499 | – | 137,066 | 137,066 |
| | 12,958,644 | 4,687,302 | 8,847,207 | 26,493,153 | 22,901,505 |
| **2024** | | | | | |
| Trade and other payables | 7,556,981 | – | – | 7,556,981 | 7,556,981 |
| Borrowings | 1,158,165 | 4,584,687 | 9,980,524 | 15,723,376 | 11,618,251 |
| Other liabilities | 480,662 | 87,585 | – | 568,247 | 563,752 |
| Lease liabilities | 114,763 | 61,623 | – | 176,386 | 162,470 |
| | 9,310,571 | 4,733,895 | 9,980,524 | 24,024,990 | 19,901,454 |

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 25. EVENTS OCCURRING AFTER THE END OF THE REPORTING PERIOD

There has been no material post balance sheet event after 30 June 2025.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 26. OTHER MATERIAL ACCOUNTING POLICIES

**a) Goods and services tax (GST)**
Revenues, expenses and assets are recognised net of the amount of GST, except where the amount of GST incurred is not recoverable from the Australian Taxation Office (ATO).

Receivables and payables are stated inclusive of GST receivable or payable. The net amount of GST recoverable from, or payable to, the ATO is included with receivables or payables in the statement of financial position.

Cash flows are presented on a gross basis. The GST components of cash flows arising from investing or financing activities which are recoverable from, or payable to, the ATO are presented as operating cash flows.

**b) Current and non-current classification**
The asset or liability is classified as current if it is expected to be settled within the next 12 months, being the City's operational cycle. In the case of liabilities where the City does not have the unconditional right to defer settlement beyond 12 months, such as vested long service leave, the liability is classified as current even if not expected to be settled within the next 12 months. Inventories held for trading are classified as current or non-current based on the City's intentions to release for sale.

**c) Rounding off figures**
All figures shown in this annual financial report, other than a rate in the dollar, are rounded to the nearest dollar. Amounts are presented in Australian Dollars.

**d) Comparative figures**
Where required, comparative figures have been adjusted to conform with changes in presentation for the current financial year.

When the City applies an accounting policy retrospectively, makes a retrospective restatement or reclassifies items in its financial statements that has a material effect on the statement of financial position, an additional (third) statement of financial position as at the beginning of the preceding period in addition to the minimum comparative financial report is presented.

**e) Budget comparative figures**
Unless otherwise stated, the budget comparative figures shown in this annual financial report relate to the original budget estimate for the relevant item of disclosure.

**f) Superannuation**
The City contributes to a number of Superannuation Funds on behalf of employees. All funds to which the City contributes are defined contribution plans.

**g) Fair value of assets and liabilities**
Fair value is the price that the City would receive to sell the asset or would have to pay to transfer a liability, in an orderly (i.e. unforced) transaction between independent, knowledgeable and willing market participants at the measurement date.

As fair value is a market-based measure, the closest equivalent observable market pricing information is used to determine fair value. Adjustments to market values may be made having regard to the characteristics of the specific asset or liability. The fair values of assets that are not traded in an active market are determined using one or more valuation techniques. These valuation techniques maximise, to the extent possible, the use of observable market data.

To the extent possible, market information is extracted from either the principal market for the asset or liability (i.e. the market with the greatest volume and level of activity for the asset or liability) or, in the absence of such a market, the most advantageous market available to the entity at the end of the reporting period (i.e. the market that maximises the receipts from the sale of the asset after taking into account transaction costs and transport costs).

For non-financial assets, the fair value measurement also takes into account a market participant's ability to use the asset in its highest and best use or to sell it to another market participant that would use the asset in its highest and best use.

**h) Interest revenue**
Interest revenue is calculated by applying the effective interest rate to the gross carrying amount of a financial asset measured at amortised cost except for financial assets that subsequently become credit-impaired. For credit-impaired financial assets the effective interest rate is applied to the net carrying amount of the financial asset (after deduction of the loss allowance).

**i) Fair value hierarchy**
*AASB 13 Fair Value Measurement* requires the disclosure of fair value information by level of the fair value hierarchy, which categorises fair value measurement into one of three possible levels based on the lowest level input that is significant to the measurement can be categorised into as follows:

**Level 1**
Measurements based on quoted prices (unadjusted) in active markets for identical assets or liabilities that the entity can access at the measurement date.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 26. OTHER MATERIAL ACCOUNTING POLICIES (continued)

**Level 2**
Measurements based on inputs other than quoted prices included in Level 1 that are observable for the asset or liability, either directly or indirectly.

**Level 3**
Measurements based on unobservable inputs for the asset or liability.

The fair values of assets and liabilities that are not traded in an active market are determined using one or more valuation techniques. These valuation techniques maximise, to the extent possible, the use of observable market data. If all significant inputs required to measure fair value are observable, the asset or liability is included in Level 2. If one or more significant inputs are not based on observable market data, the asset or liability is included in Level 3.

**Valuation techniques**
The City selects a valuation technique that is appropriate in the circumstances and for which sufficient data is available to measure fair value. The availability of sufficient and relevant data primarily depends on the specific characteristics of the asset or liability being measured. The valuation techniques selected by the City are consistent with one or more of the following valuation approaches:

**Market approach**
Valuation techniques that use prices and other relevant information generated by market transactions for identical or similar assets or liabilities.

**Income approach**
Valuation techniques that convert estimated future cash flows or income and expenses into a single discounted present value.

**Cost approach**
Valuation techniques that reflect the current replacement cost of the service capacity of an asset.

Each valuation technique requires inputs that reflect the assumptions that buyers and sellers would use when pricing the asset or liability, including assumptions about risks. When selecting a valuation technique, the City gives priority to those techniques that maximise the use of observable inputs and minimise the use of unobservable inputs. Inputs that are developed using market data (such as publicly available information on actual transactions) and reflect the assumptions that buyers and sellers would generally use when pricing the asset or liability are considered observable, whereas inputs for which market data is not available and therefore are developed using the best information available about such assumptions are considered unobservable.

**j) Impairment of assets**
In accordance with Australian Accounting Standards, the City's assets, other than inventories, are assessed at each reporting date to determine whether there is any indication they may be impaired.

Where such an indication exists, an impairment test is carried out on the asset by comparing the recoverable amount of the asset, being the higher of the asset's fair value less costs to sell and value in use, to the asset's carrying amount except for non-financial assets that are:

- land and buildings classified as property, plant and equipment;
- infrastructure; or
- vested improvements that the local government controls, in circumstances where there has been an impairment indication of a general decrease in asset values.

These non-financial assets are assessed in accordance with the regulatory framework detailed in Note 10.

Any excess of the asset's carrying amount over its recoverable amount is recognised immediately in profit or loss, unless the asset is carried at a revalued amount in accordance with another Standard *(e.g. AASB 116 Property, Plant and Equipment)* whereby any impairment loss of a revalued asset is treated as a revaluation decrease in accordance with that other Standard.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 27. FUNCTION AND ACTIVITY

**(a) Service objectives and descriptions**

City operations as disclosed in this financial report encompass the following service orientated functions and activities.

| OBJECTIVE | DESCRIPTION |
|---|---|
| **GOVERNANCE**<br>To provide a decision-making process for the efficient allocation of scarce resources. | All costs associated with the elected members of Council, together with all costs associated with the general governance of the district. Includes all costs generated by the full allocation of administration costs in accordance with the principles of Activity Based Costing. |
| **GENERAL PURPOSE FUNDING**<br>To collect revenue to allow for the provision of services. | Includes the cost of collecting rates revenue and all general purpose funding e.g. Grants Commission funding. |
| **LAW, ORDER, PUBLIC SAFETY**<br>To provide services to help ensure a safer and environmentally conscious community. | The control and prevention of fire. Administration of all matters relating to the control of animals, mainly dogs and all general law, order and public safety matters administered by City Rangers. |
| **HEALTH**<br>To provide an operational framework for environmental and community health. | The administration of maternal health and infant health through child health clinics. The administration of preventative services such as: immunisation, inspection of food premises and pest control. |
| **EDUCATION AND WELFARE**<br>To provide services to disadvantaged persons, the elderly, children and youth. | The provision of children services, the care of the aged and disabled through aged and disabled services and senior citizen centres. The provision of some pre-school education facilities, but not the delivery of education. |
| **HOUSING**<br>To provide and maintain elderly residents housing. | The provision of aged housing facilities throughout the district. |
| **COMMUNITY AMENITIES**<br>To provide services required by the community. | Includes sanitation (household refuse); stormwater drainage; town and regional planning and development; the provision of rest rooms and protection of the environment. |
| **RECREATION AND CULTURE**<br>To establish and effectively manage infrastructure and resources which will help the social wellbeing of the community. | The provision of facilities and support of organisations concerned with leisure time activities and sport. The provision and maintenance of a public library. The provision of a cultural centre and a historical museum. |
| **TRANSPORT**<br>To provide safe, effective and efficient transport services to the community. | Construction and maintenance of streets, roads, footpaths, cycleways and Council Operations Centre. The control of street parking and the control of traffic management of local streets. |
| **ECONOMIC SERVICES**<br>To help promote the local government and its economic wellbeing. | The management of local tourism and area promotion. The provision of building approvals, control and any other economic services. |
| **OTHER PROPERTY AND SERVICES**<br>To monitor and control operating accounts. | Private works, public work overheads, plant operations. A summary of salaries and wages total costs and any other miscellaneous activities that cannot otherwise be classified in the above. |

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

Note 27. FUNCTION AND ACTIVITY (continued)

**(b) Income and expenses**

| | 2025 Actual $ | 2024 Actual $ |
|---|---|---|
| **Income excluding grants, subsidies and contributions and capital grants, subsidies and contributions** | | |
| Governance | 342,267 | 456,058 |
| General purpose funding | 66,570,579 | 64,275,145 |
| Law, order, public safety | 395,468 | 499,921 |
| Health | 300,344 | 270,201 |
| Education and welfare | 5,671 | 14,499 |
| Housing | 383,439 | 428,008 |
| Community amenities | 7,867,543 | 7,477,267 |
| Recreation and culture | 724,698 | 620,227 |
| Transport | 6,202 | 46,234 |
| Economic services | 597,686 | 389,679 |
| Other property and services | 192,560 | 114,783 |
| | 77,386,457 | 74,592,022 |
| **Grants, subsidies and contributions and capital grants, subsidies and contributions** | | |
| Governance | 92,018 | 44,004 |
| General purpose funding | 810,737 | 1,045,953 |
| Law, order, public safety | 95,901 | 99,124 |
| Health | 38,010 | 60,574 |
| Education and welfare | 74,939 | 85,727 |
| Housing | 508,001 | 330,208 |
| Community amenities | 1,291,043 | 169,819 |
| Recreation and culture | 62,559 | 149,247 |
| Transport | 2,554,917 | 2,808,658 |
| Economic services | 524,752 | 19,067 |
| Other property and services | 1,489,381 | 255,197 |
| | 7,542,258 | 5,067,578 |
| **Total income** | 84,928,715 | 79,659,600 |
| **Expenses** | | |
| Governance | (9,390,024) | (9,515,690) |
| General purpose funding | (9,794,384) | (4,103,449) |
| Law, order, public safety | (4,940,111) | (4,241,143) |
| Health | (1,803,026) | (1,967,297) |
| Education and welfare | (3,089,842) | (2,339,878) |
| Housing | (605,624) | (1,117,053) |
| Community amenities | (11,622,241) | (12,938,325) |
| Recreation and culture | (23,437,854) | (20,691,382) |
| Transport | (16,000,123) | (14,024,543) |
| Economic services | (4,786,169) | (3,734,354) |
| Other property and services | (4,595,993) | (4,171,049) |
| **Total expenses** | (90,065,391) | (78,844,163) |
| **Net result for the period** | (5,136,676) | 815,437 |

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

Note 27. FUNCTION AND ACTIVITY (continued)

**(c) Assets**

| | 2025 Actual $ | 2024 Actual $ |
|---|---|---|
| Governance | 5,208,205 | 3,952,963 |
| General purpose funding | 207,553,389 | 207,879,033 |
| Law, order, public safety | 1,376,183 | 1,080,112 |
| Health | 2,116,120 | 3,138,575 |
| Education and welfare | 3,304,200 | 4,462,638 |
| Housing | 6,246,089 | 4,857,441 |
| Community amenities | 2,825,766 | 22,047,723 |
| Recreation and culture | 117,386,132 | 113,899,382 |
| Transport | 263,186,355 | 265,157,745 |
| Economic services | 28,904,209 | 24,971,017 |
| Other property and services | 10,535,384 | 12,097,745 |
| Unallocated | 92,274,559 | 79,945,246 |
| **Total assets** | 740,916,591 | 743,489,620 |

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 28. RATING INFORMATION

| Rate type | Basis of valuation | Rate in $ | Number of properties | 2024/25 Actual Rateable value * $ | 2024/25 Actual Rate revenue $ | 2024/25 Actual Interim rates $ | 2024/25 Actual Total revenue $ | 2024/25 Budget rate revenue $ | 2024/25 Budget interim rate $ | 2024/25 Budget total revenue $ | 2023/24 Actual Total revenue $ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **(a) General Rates** | | | | | | | | | | | |
| **Rate Description** | | | | | | | | | | | |
| Residential rate | Gross rental valuation | 0.063171 | 18,330 | 367,235,276 | 23,226,722 | 285,675 | 23,512,397 | 23,188,559 | 245,253 | 23,433,812 | 22,316,257 |
| Commercial Rate | Gross rental valuation | 0.075805 | 885 | 147,133,955 | 11,153,490 | (20,140) | 11,133,350 | 11,130,313 | 56,390 | 11,186,703 | 10,758,150 |
| Industrial Rate | Gross rental valuation | 0.082122 | 475 | 129,554,659 | 10,639,288 | 89,391 | 10,728,679 | 10,639,288 | – | 10,639,288 | 9,601,418 |
| **Total general rates** | | | 19,690 | 643,923,890 | 45,019,500 | 354,926 | 45,374,426 | 44,958,160 | 301,643 | 45,259,803 | 42,675,825 |
| **Minimum payment** | | | | | | | | | | | |
| Residential rate | Gross rental valuation | 880 | 1,507 | 17,701,228 | 1,326,160 | – | 1,326,160 | 1,336,720 | – | 1,336,720 | 1,378,700 |
| Commercial Rate | Gross rental valuation | 1,040 | 142 | 997,975 | 147,680 | – | 147,680 | 147,680 | – | 147,680 | 141,000 |
| Industrial Rate | Gross rental valuation | 1,060 | 8 | 77,155 | 8,480 | – | 8,480 | 8,480 | – | 8,480 | 13,260 |
| **Total minimum payments** | | | 1,657 | 18,776,358 | 1,482,320 | – | 1,482,320 | 1,492,880 | – | 1,492,880 | 1,532,960 |
| **Total general rates and minimum payments** | | | 21,347 | 662,700,248 | 46,501,820 | 354,926 | 46,856,746 | 46,451,040 | 301,643 | 46,752,683 | 44,208,785 |
| **Ex-gratia rates** | | | | | | | | | | | |
| Airport Rates | | 0.075805 | 1 | 199,385,969 | 15,114,453 | 353,319 | 15,467,772 | 15,012,867 | – | 15,012,867 | 14,460,296 |
| Other Rates in Lieu | | – | 1 | – | 133,859 | – | 133,859 | 102,337 | – | 102,337 | 109,294 |
| **Total amount raised from rates (excluding general rates)** | | | 2 | 199,385,969 | 15,248,312 | 353,319 | 15,601,631 | 15,115,204 | – | 15,115,204 | 14,569,590 |
| | | | | | | | 62,458,377 | | | 61,867,887 | 58,778,375 |
| Discounts | | | | | | | | | | | |
| General rates | | | | | | | (2,153,210) | | | (2,077,018) | (1,957,282) |
| **Total rates** | | | | | | | 60,305,167 | | | 59,790,869 | 56,821,093 |
| **(b) Rates related information** | | | | | | | | | | | |
| Rate instalment interest | | | | | | | – | | | – | 150,765 |
| Rates overdue interest | | | | | | | 222,228 | | | 150,000 | 151,371 |

The rate revenue was recognised from the rate record as soon as practicable after the City resolved to impose rates in the financial year as well as when the rate record was amended to ensure the information in the record was current and correct.

(*) Rateable Value at time of raising of rate.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 29. DETERMINATION OF SURPLUS OR DEFICIT

| | Note | 2024/25 30 June 2025 Carried Forward $ | 2024/25 Budget 30 June 2025 Carried Forward $ | 2023/24 30 June 2024 Carried Forward $ |
|---|---|---|---|---|
| **(a) Non-cash amounts excluded from operating activities** | | | | |
| The following non-cash revenue or expenditure has been excluded from amounts attributable to operating activities within the Statement of Financial Activity in accordance with *Financial Management Regulation 32*. | | | | |
| **Adjustments to operating activities** | | | | |
| Less: Profit on asset disposals | | (28,259) | (87,469) | (27,368) |
| Less: Fair value adjustments to financial assets at fair value through profit or loss | | 8,878 | (4,203) | (4,203) |
| Add: Loss on disposal of assets | | 261,932 | – | 744,290 |
| Add: Loss on disposal of investment in EMRC | 23 | 5,782,061 | – | – |
| Add: Depreciation | | 13,028,201 | 12,935,924 | 12,953,278 |
| Non-cash movements in non-current assets and liabilities: | | | | |
| Pensioner deferred rates | | 52,744 | – | 24,053 |
| Employee benefit provisions | | 132,280 | – | (4,611) |
| Movement in current lease liability | | – | – | (13,133) |
| Movement in receivable from EMRC | | – | – | (72,898) |
| Movement in current employee provisions associated with restricted cash | | – | (15,092) | – |
| **Non-cash amounts excluded from operating activities** | | 19,237,837 | 12,829,160 | 13,599,408 |
| **(b) Non-cash amounts excluded from investing activities** | | | | |
| The following non-cash revenue or expenditure has been excluded from amounts attributable to investing activities within the Statement of Financial Activity in accordance with *Financial Management Regulation 32.* | | | | |
| **Adjustments to investing activities** | | | | |
| Right of use assets received - non cash | 11a | 90,261 | – | – |
| Movement in Work in Progress | | (1,186,090) | – | – |
| **Non-cash amounts excluded from investing activities** | | (1,095,829) | – | – |
| Non cash proceeds from new leases | 30c | (90,261) | – | – |
| **Non-cash amounts excluded from financing activities** | | (90,261) | – | – |

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 29. DETERMINATION OF SURPLUS OR DEFICIT (continued)

| | Note | 2024/25 30 June 2025 Carried Forward $ | 2024/25 Budget 30 June 2025 Carried Forward $ | 2023/24 30 June 2024 Carried Forward $ |
|---|---|---|---|---|
| **(c) Surplus/(deficit) after imposition of general rates** | | | | |
| The following current assets and liabilities have been excluded from the net current assets used in the Statement of Financial Activity in accordance with *Financial Management Regulation 32* to agree to the surplus/ (deficit) after imposition of general rates. | | | | |
| **Adjustments to net current assets** | | | | |
| Less: Reserve accounts | 31 | (82,270,244) | (64,831,110) | (69,265,327) |
| Add: Financial assets at amortised cost | | – | – | 3,278,806 |
| Less: Current assets not expected to be received at end of year - EMRC receivable | | – | – | (21,000,517) |
| Add: Current liabilities not expected to be cleared at end of year | | | | |
| - Current portion of borrowings | 15 | 666,573 | 666,573 | 641,884 |
| - Current portion of lease liabilities | 11 | 84,567 | 39,341 | 105,428 |
| - Employee benefit provisions | | 2,085,269 | 2,539,414 | 1,994,408 |
| **Total adjustments to net current assets** | | (79,433,835) | (61,585,782) | (84,245,318) |
| **Net current assets used in the Statement of Financial Activity** | | | | |
| Total current assets | | 98,527,865 | 74,101,879 | 105,242,103 |
| Less: Total current liabilities | | (18,448,505) | (12,019,097) | (15,201,164) |
| Less: Total adjustments to net current assets | | (79,433,835) | (61,585,782) | (84,245,318) |
| **Surplus or deficit after imposition of general rates** | | 645,525 | 497,000 | 5,795,621 |

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 30. Borrowing and lease liabilities

### (a) Borrowings

| | | Actual | | | | | | | Budget | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Purpose | Note | Principal at 1 July 2023 $ | New loans During 2023-24 $ | Principal repayments During 2023-24 $ | Principal at 30 June 2024 $ | New loans During 2024-25 $ | Principal repayments During 2024-25 $ | Principal at 30 June 2025 $ | Principal at 1 July 2024 $ | New loans during 2024-25 $ | Principal repayments during 2024-25 $ | Principal at 30 June 2025 $ |
| New Community Centre | | 12,236,363 | – | (618,110) | 11,618,253 | – | (641,886) | 10,976,367 | 10,682,228 | – | (641,884) | 10,040,344 |
| **Total Borrowings** | 15 | 12,236,363 | – | (618,110) | 11,618,253 | – | (641,886) | 10,976,367 | 10,682,228 | – | (641,884) | 10,040,344 |

All loan payments were financed by general purpose revenue.

**Borrowing Finance Cost Payments**

| Purpose | Loan number | Institution | Interest rate | Date final payment is due | Actual for year ending 30 June 2025 $ | Budget for year ending 30 June 2025 $ | Actual for year ending 30 June 2024 $ |
|---|---|---|---|---|---|---|---|
| New Community Centre | 183 | WATC* | 3.81% | 01/05/2038 | (522,015) | (516,281) | (540,567) |
| **Total Finance Cost Payments** | | | | | (522,015) | (516,281) | (540,567) |

*WA Treasury Corporation

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 30. Borrowing and lease liabilities (continued)

**(b) Unspent Borrowings**

There were no unspent borrowings as at 30 June.

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 30. Borrowing and lease liabilities (continued)

### (c) Lease liabilities

| | | Actual | | | | | | | Budget | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Purpose | Note | Principal at 1 July 2023 $ | New leases during 2023-24 $ | Principal repayments during 2023-24 $ | Principal at 30 June 2024 $ | New leases during 2024-25 $ | Principal repayments during 2024-25 $ | Principal at 30 June 2025 $ | Principal at 1 July 2024 $ | New leases during 2024-25 $ | Principal repayments during 2024-25 $ | Principal at 30 June 2025 $ |
| Parking Sensors | | 156,981 | – | (51,554) | 105,427 | 2,151 | (49,103) | 58,475 | 104,413 | – | (47,371) | 57,042 |
| Cardio Equipment | | 124,049 | – | (67,007) | 57,042 | 88,110 | (66,561) | 78,591 | 58,056 | – | (58,056) | – |
| **Total lease liabilities** | 11b | 281,030 | – | (118,561) | 162,469 | 90,261 | (115,664) | 137,066 | 162,469 | – | (105,427) | 57,042 |

**Lease Finance Cost Payments**

| Purpose | Lease number | Institution | Lease interest rate | Date final payment is due | Actual for year ending 30 June 2025 $ | Budget for year ending 30 June 2025 $ | Actual for year ending 30 June 2024 $ | Lease term |
|---|---|---|---|---|---|---|---|---|
| Cardio Equipment | E6TEC63884 | MAIA | 3.82% | 25/05/2025 | (10,907) | (3,659) | (3,571) | 36 months |
| Parking Sensors | 20200618 | Database Consultants | 4.50% | 02/04/2028 | (3,931) | (1,009) | (5,713) | 60 months |
| **Total Finance Cost Payments** | | | | | (14,838) | (4,668) | (9,284) | |

# City of Belmont

## Notes to the Financial Statements
## for the year ended 30 June 2025

## Note 31. RESERVE ACCOUNTS

| | 2025 Opening Balance Actual $ | 2025 Transfer to Actual $ | 2025 Transfer (from) Actual $ | 2025 Closing Balance Actual $ | 2025 Opening Balance Budget $ | 2025 Transfer to Budget $ | 2025 Transfer (from) Budget $ | 2025 Closing Balance Budget $ | 2024 Opening Balance Actual $ | 2024 Transfer to Actual $ | 2024 Transfer (from) Actual $ | 2024 Closing Balance Actual $ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Restricted by legislation/agreement** | | | | | | | | | | | | |
| (a) Car Parking Reserve | 67,593 | 3,040 | – | 70,633 | 67,645 | 2,956 | – | 70,601 | 64,595 | 2,998 | – | 67,593 |
| | 67,593 | 3,040 | – | 70,633 | 67,645 | 2,956 | – | 70,601 | 64,595 | 2,998 | – | 67,593 |
| **Restricted by council** | | | | | | | | | | | | |
| (b) Administration Building Reserve | 257,553 | 11,582 | – | 269,135 | 257,768 | 11,264 | – | 269,032 | 246,141 | 11,412 | – | 257,553 |
| (c) Aged Accommodation - Homeswest Reserve | 1,010,521 | 95,736 | (56,347) | 1,049,910 | 980,051 | 51,084 | – | 1,031,135 | 928,711 | 81,810 | – | 1,010,521 |
| (d) Aged Community Care Reserve | 238,904 | 10,744 | – | 249,648 | 239,107 | 10,449 | – | 249,556 | 228,320 | 10,584 | – | 238,904 |
| (e) Aged Persons Housing Reserve | 244,913 | 225,561 | (154,996) | 315,478 | 467,246 | 32,618 | (309,374) | 190,490 | 712,757 | 32,899 | (500,743) | 244,913 |
| (f) Aged Services Reserve | 1,162,167 | 52,264 | (57,730) | 1,156,701 | 1,163,138 | 50,828 | – | 1,213,966 | 1,110,671 | 51,496 | – | 1,162,167 |
| (g) Ascot Waters Marina Maintenance & Restoration Reserve | 1,106,060 | 49,741 | – | 1,155,801 | 1,057,555 | 48,399 | (50,000) | 1,055,954 | 1,057,595 | 49,040 | (575) | 1,106,060 |
| (h) Belmont District Band Reserve | 51,255 | 2,305 | – | 53,560 | 51,297 | 2,242 | – | 53,539 | 48,983 | 2,272 | – | 51,255 |
| (i) Belmont Oasis Refurbishment Reserve | 4,517,363 | 7,762,584 | – | 12,279,947 | 4,521,127 | 197,568 | – | 4,718,695 | 4,317,188 | 200,175 | – | 4,517,363 |
| (j) Belmont Trust Reserve | 1,681,258 | 75,608 | (70,794) | 1,686,072 | 1,707,597 | 74,620 | (216,324) | 1,565,893 | 1,630,570 | 75,574 | (24,886) | 1,681,258 |
| (k) Building Maintenance Reserve | 4,739,102 | 5,128,615 | (102,750) | 9,764,967 | 5,022,812 | 233,538 | (200,000) | 5,056,350 | 5,103,194 | 236,912 | (601,004) | 4,739,102 |
| (l) Capital Projects Reserve | 5,827,421 | 1,717,141 | (2,349,477) | 5,195,085 | 3,801,763 | 7,844,987 | (705,161) | 10,941,589 | – | 6,057,504 | (230,083) | 5,827,421 |
| (m) Carry Forward Projects Reserve | 1,744,079 | 1,525,951 | (1,907,316) | 1,362,714 | 3,508,977 | (25,166) | (2,738,320) | 745,491 | – | 1,744,079 | – | 1,744,079 |
| (n) District Valuation Reserve | 23,679 | 96,065 | – | 119,744 | 108,999 | 96,049 | – | 205,048 | 22,915 | 764 | – | 23,679 |
| (o) Election Expenses Reserve | 8,497 | 75,382 | – | 83,879 | 43,723 | 81,412 | – | 125,135 | 140,105 | 6,562 | (138,170) | 8,497 |
| (p) Environment Reserve | 927,841 | 41,726 | – | 969,567 | 928,453 | 69,281 | – | 997,734 | 1,513,904 | 70,902 | (656,965) | 927,841 |
| (q) Faulkner Park Retirement Village Buy Back Reserve | 2,568,148 | 467,902 | – | 3,036,050 | 2,590,287 | 112,319 | – | 2,702,606 | 2,454,348 | 113,800 | – | 2,568,148 |
| (r) Faulkner Park Retirement Village Owners Maintenance Reserve | 525,107 | 37,029 | – | 562,136 | 532,453 | 31,613 | – | 564,066 | 690,804 | 32,142 | (197,839) | 525,107 |
| (s) History Reserve | 181,468 | 8,161 | – | 189,629 | 181,622 | 7,937 | – | 189,559 | 173,429 | 8,039 | – | 181,468 |
| (t) Information Technology Reserve | 1,506,984 | 67,771 | – | 1,574,755 | 1,448,239 | 65,908 | – | 1,514,147 | 1,440,206 | 66,778 | – | 1,506,984 |
| (u) Land Acquisition Reserve | 11,039,182 | 496,444 | – | 11,535,626 | 11,047,425 | 467,902 | – | 11,515,327 | 10,224,436 | 814,746 | – | 11,039,182 |
| (v) Long Service Leave - Salaries Reserve | 2,103,511 | 342,923 | (476,103) | 1,970,331 | 1,520,081 | 86,855 | (143,273) | 1,463,663 | 1,897,920 | 678,237 | (472,646) | 2,103,511 |
| (w) Long Service Leave - Wages Reserve | 360,664 | 16,219 | (56,942) | 319,941 | 231,924 | 11,137 | (5,753) | 237,308 | 243,366 | 171,554 | (54,256) | 360,664 |
| (x) Miscellaneous Entitlements Reserve | 791,398 | 35,590 | (66,761) | 760,227 | 802,501 | 35,942 | – | 838,443 | 785,400 | 36,769 | (30,771) | 791,398 |
| (y) Plant Replacement Reserve | 1,650,203 | 170,446 | – | 1,820,649 | 1,482,390 | 662,491 | (323,278) | 1,821,603 | 1,646,845 | 202,255 | (198,897) | 1,650,203 |
| (z) Property Development Reserve | 17,573,013 | 790,277 | (3,144,816) | 15,218,474 | 21,754,992 | 703,244 | (5,347,558) | 17,110,678 | 15,367,065 | 2,205,948 | – | 17,573,013 |
| (aa) Public Art Reserve | 417,466 | 18,774 | (590) | 435,650 | 417,826 | 18,870 | (30,000) | 406,696 | 412,347 | 19,119 | (14,000) | 417,466 |
| (ab) Ruth Faulkner Library Reserve | 50,112 | 2,254 | – | 52,366 | 50,154 | 2,192 | – | 52,346 | 47,891 | 2,221 | – | 50,112 |
| (ac) Streetscapes Reserve | 536,898 | 24,145 | (561,043) | – | 537,345 | 23,481 | – | 560,826 | 513,107 | 23,791 | – | 536,898 |
| (ad) Urban Forest Strategy Management Reserve | 126,787 | 1,005,702 | – | 1,132,489 | 126,892 | 5,545 | – | 132,437 | 121,167 | 5,620 | – | 126,787 |
| (ae) Waste Management Reserve | 4,808,296 | 1,959,764 | (370,628) | 6,397,432 | 5,481,809 | 282,028 | (1,240,749) | 4,523,088 | 7,208,970 | 350,947 | (2,751,621) | 4,808,296 |
| (af) Workers Compensation/Insurance Reserve | 1,417,884 | 63,764 | – | 1,481,648 | 1,301,180 | 60,793 | – | 1,361,973 | 1,328,427 | 91,819 | (2,362) | 1,417,884 |
| | 69,197,734 | 22,378,170 | (9,376,293) | 82,199,611 | 73,366,733 | 11,357,430 | (11,309,790) | 73,414,373 | 61,616,782 | 13,455,770 | (5,874,818) | 69,197,734 |
| | 69,265,327 | 22,381,210 | (9,376,293) | 82,270,244 | 73,434,378 | 11,360,386 | (11,309,790) | 73,484,974 | 61,681,377 | 13,458,768 | (5,874,818) | 69,265,327 |

All reserves are supported by cash and cash equivalents and financial assets at amortised cost and are restricted within equity as Reserve accounts.

In accordance with Council resolutions or adopted budget in relation to each reserve account, the purpose for which the reserves are set aside and their anticipated date of use are as follows:

## Note 31. RESERVE ACCOUNTS (continued)

| Name of reserve | Purpose of the reserve |
|---|---|
| (a) Car parking reserve | This reserve is used to fund any activities that create or enhance car parks and includes funds received as cash in lieu for this purpose. |
| (b) Administration Building Reserve | This reserve is used to fund the refurbishment of the City's administration building. |
| (c) Aged Accommodation - Homeswest Reserve | This reserve is used to provide for the long term maintenance of Gabriel Gardens and Orana aged housing units. |
| (d) Aged Community Care Reserve | This reserve is used to fund the provision of aged care community services within the City. |
| (e) Aged Persons Housing Reserve | This reserve is used to manage the surplus/deficit position and capital improvements of the City's aged housing centres. |
| (f) Aged Services Reserve | This reserve is used to fund the provision of aged services within the City. |
| (g) Ascot Waters Marina Maintenance & Restoration Reserve | This reserve is used to provide for the ongoing maintenance and future redevelopment needs of the marina at Ascot Waters. |
| (h) Belmont District Band Reserve | This reserve is used to provide funds for the replacement and acquisition of instruments for the Belmont District Band. |
| (i) Belmont Oasis Refurbishment Reserve | This reserve is used to fund the future refurbishment of the Belmont Oasis Leisure Centre. |
| (j) Belmont Trust Reserve | This reserve is used to fund costs in relation to the Belmont Trust land. |
| (k) Building Maintenance Reserve | This reserve is used to provide funds for the refurbishment and maintenance of the City's buildings. |
| (l) Capital Projects Reserve | This reserve is used to manage municipal funding for capital works projects to occur over multiple financial years. |
| (m) Carry Forward Projects Reserve | This reserve is used to manage municipal funding for incomplete projects carried forward to the following financial year. |
| (n) District Valuation Reserve | This reserve is used to spread the costs of the 3 yearly revaluation of properties for rating purposes. |
| (o) Election Expenses Reserve | This reserve is used to spread the biennial cost of postal voting for elections over two years. |
| (p) Environment Reserve | This reserve is used to fund environmental programs. |
| (q) Faulkner Park Retirement Village Buy Back Reserve | This reserve is used to fund the future buy-back of the Faulkner Park Retirement Village from existing residents. |
| (r) Faulkner Park Retirement Village Owners Maintenance Reserve | This reserve is used to provide for the future major maintenance and refurbishment requirements at the Faulkner Park Retirement Village. |
| (s) History Reserve | This reserve is used to provide for the future costs associated with the acquisition, recording, preservation and display of articles and information. |
| (t) Information Technology Reserve | This reserve is used for the replacement and enhancement of the City's core business hardware and software requirements. |
| (u) Land Acquisition Reserve | This reserve is used for the acquisition and/or redevelopment of land and buildings and receives the proceeds of any land or building sales. |
| (v) Long Service Leave Reserve - Salaries | This reserve is used to part fund the long service leave liability of the City's salaried staff. |
| (w) Long Service Leave Reserve - Wages | This reserve is used to part fund the long service leave liability of the City's waged staff. |
| (x) Miscellaneous Entitlements Reserve | This reserve is used to provide funding for unforeseen expenditures relating to staff and entitlements. |
| (y) Plant Replacement Reserve | This reserve is used to fund the shortfall between income generated through plant operation recoveries and replacement costs of the City's heavy plant. |
| (z) Property Development Reserve | This reserve is used to fund any property development within the City. |
| (aa) Public Art Reserve | This reserve is used to fund future acquisitions of public art for display in the City. |
| (ab) Ruth Faulkner Library Reserve | This reserve is used for capital improvements to the City's library. |
| (ac) Streetscapes Reserve | This reserve is used to fund shopping centre revitalisation and streetscape enhancements. |
| (ad) Urban Forest Strategy Management Reserve | This reserve is used to fund the management and retention of the urban forest. |
| (ae) Waste Management Reserve | This reserve is used to fund waste management initiatives and activities. |
| (af) Workers Compensation/Insurance Reserve | This reserve is used to fund self insurance expenses and major fluctuations in insurance premiums. |

City of Belmont

Notes to the Financial Statements
for the year ended 30 June 2025

## Note 32. TRUST FUNDS

| | 1-Jul-2024 $ | Amounts received $ | Amounts paid $ | 30 June 2025 $ |
|---|---|---|---|---|
| **Funds held at balance date which are required to be held in trust and which are not included in the financial statements are as follows:** | | | | |
| BCITF Levy | 2,435 | 11,596 | (13,492) | 539 |
| Cash-in-lieu of public open space | 1,303,865 | – | – | 1,303,865 |
| Building Services Levy | 56,702 | 562,818 | (575,460) | 44,060 |
| Development Asset Panels | 511 | 70,325 | (70,836) | – |
| Unclaimed Monies | – | 21,130 | (8,957) | 12,173 |
| | 1,363,513 | 665,869 | (668,745) | 1,360,637 |

Auditor General

**INDEPENDENT AUDITOR'S REPORT**

**2025**

**City of Belmont**

**To the Council of the City of Belmont**

## Opinion

I have audited the financial report of the City of Belmont (City) which comprises:

- the statement of financial position as at 30 June 2025, the statement of comprehensive income, statement of changes in equity, statement of cash flows and statement of financial activity for the year then ended
- notes comprising a summary of material accounting policies and other explanatory information.

In my opinion, the financial report :

- is based on proper accounts and records
- presents fairly, in all material respects, the results of the operations of the City for the year ended 30 June 2025 and its financial position at the end of that period
- is in accordance with the *Local Government Act 1995* (the Act) and, to the extent that they are not inconsistent with the Act, Australian Accounting Standards.

## Basis for opinion

I conducted my audit in accordance with Australian Auditing Standards. My responsibilities under those standards are further described in the Auditor's responsibilities for the audit of the financial report section below.

I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my opinion.

## Other information

The Chief Executive Officer (CEO) is responsible for the preparation and the Council for overseeing the other information. The other information is the information in the entity's annual report for the year ended 30 June 2025, but not the financial report and my auditor's report.

My opinion on the financial report does not cover the other information and accordingly, I do not express any form of assurance conclusion thereon.

In connection with my audit of the financial report, my responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial report or my knowledge obtained in the audit or otherwise appears to be materially misstated.



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If, based on the work I have performed, I conclude that there is a material misstatement of this other information, I am required to report that fact. I did not receive the other information prior to the date of this auditor's report. When I do receive it, I will read it and if I conclude that there is a material misstatement in this information, I am required to communicate the matter to the CEO and Council and request them to correct the misstated information. If the misstated information is not corrected, I may need to retract this auditor's report and re-issue an amended report.

## Responsibilities of the Chief Executive Officer and Council for the financial report

The Chief Executive Officer (CEO) of the City is responsible for:

- keeping proper accounts and records
- preparation and fair presentation of the financial report in accordance with the requirements of the Act, the Regulations and Australian Accounting Standards
- managing internal control as required by the CEO to ensure the financial report is free from material misstatement, whether due to fraud or error.

In preparing the financial report, the CEO is responsible for:

- assessing the City's ability to continue as a going concern
- disclosing, as applicable, matters related to going concern
- using the going concern basis of accounting unless the State Government has made decisions affecting the continued existence of the City.

The Council is responsible for overseeing the City's financial reporting process.

## Auditor's responsibilities for the audit of the financial report

As required by the *Auditor General Act 2006*, my responsibility is to express an opinion on the financial report. The objectives of my audit are to obtain reasonable assurance about whether the financial report as a whole is free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes my opinion. Reasonable assurance is a high level of assurance but is not a guarantee that an audit conducted in accordance with Australian Auditing Standards will always detect a material misstatement when it exists.

Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the financial report. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations or the override of internal control.

A further description of my responsibilities for the audit of the financial report is located on the Auditing and Assurance Standards Board website. This description forms part of my auditor's report and can be found at https://www.auasb.gov.au/auditors_responsibilities/ar4.pdf.

## My independence and quality management relating to the report on the financial report

I have complied with the independence requirements of the *Auditor General Act 2006* and the relevant ethical requirements relating to assurance engagements. In accordance with ASQM 1 *Quality Management for Firms that Perform Audits or Reviews of Financial Reports and Other Financial Information, or Other Assurance or Related Services Engagements*, the Office of the Auditor General maintains a comprehensive system of quality management including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

## Matters relating to the electronic publication of the audited financial report

This auditor's report relates to the financial report of the City of Belmont for the year ended 30 June 2025 included in the annual report on the City's website. The City's management is responsible for the integrity of the City's website. This audit does not provide assurance on the integrity of the City's website. The auditor's report refers only to the financial report. It does not provide an opinion on any other information which may have been hyperlinked to/from the annual report. If users of the financial report are concerned with the inherent risks arising from publication on a website, they are advised to contact the City to confirm the information contained in the website version.



Sandra Labuschagne
Deputy Auditor General
Delegate of the Auditor General for Western Australia
Perth, Western Australia
21 November 2025

# CEO remuneration

The total remuneration paid to the Chief Executive Officer in the financial year ended 30 June 2025 under the *Salaries and Allowances Act 1975*, including salary, superannuation, private use of a motor vehicle and allowances, was $422,771.



# Corporate Governance/Code of Conduct

## Local Laws

The *Local Government Act 1995 (WA)* and other legislation allows Western Australian local governments to make local laws considered necessary for the good government of the district. The City of Belmont currently has the following local laws in place:

- *Consolidated Local Law 2020*
- *Health Local Laws 2002*
- *Standing Orders Local Law 2017*

The *City of Belmont Consolidated Local Law 2020* was gazetted in January 2021 and amended in November 2022 following an undertaking to the Joint Standing Committee on Delegated Legislation.

## Code of Conduct

As required by the *Local Government Act 1995 (WA)* the City has two codes of conduct: one for Elected Members, Committee Members and Candidates, and the other for employees of the City of Belmont.

Both codes set out the standards of behaviour which must be observed when performing a person's respective duties and are intended to promote accountable and ethical decision-making.

## Gift Disclosures

If Elected Members when acting in their official capacity receive any gifts with a value over $300, the *Local Government Act 1995 (WA)* requires them to disclose the gift in writing to the Chief Executive Officer within 10 days of receipt of the gift. This requirement includes any contributions to travel. The Chief Executive Officer is also required to disclose such gifts in writing to the Mayor.

The Chief Executive Officer maintains a register of gifts which is published on the City's website and is available for public inspection on request at the City of Belmont Administration Building.

Elected Members are also required to make a disclosure of interest relating to any gifts received from a person who requires a decision of Council. The disclosure must be in writing to the Chief Executive Officer before the meeting, or at the meeting where the matter will be discussed. The Chief Executive Officer must also make such disclosures.

## Complaints Register

No Complaints under Section 5.121 of the *Local Government Act 1995 (WA)* were entered on the Register of Complaints during the 2024-25 financial year.

One behaviour complaint was lodged under the Code of Conduct for Council Members, Committee Members and Candidates during the 2024–25 financial year.

## Compliance Audit Return

The *Local Government (Audit) Regulations 1996 (WA)* requires local governments to carry out an annual compliance audit for the period 1 January to 31 December. The compliance audit must address whether the compliance requirements relating to the following local government functions/ activities have been met:

- Commercial Enterprises by Local Government;
- Delegation of Power / Duty;
- Disclosure of Interest;
- Disposal of Property;
- Elections;
- Finance;
- Integrated Planning and Reporting;
- Local Government Employees;
- Official Conduct;
- Optional Questions – Pertaining to Financial Management and Policy; and
- Tenders for Providing Goods and Services.

There were no non-compliances reported for the 2024 Compliance Audit Return. The 2024 Compliance Audit Return was adopted by Council on 25 February 2025 and a certified copy of the return along with an extract of the Minutes including the Council resolution was submitted to the Department of Local Government, Sport and Cultural Industries.

## Delegation of Authority

The *Local Government (Audit) Regulations 1996 (WA)* allows a local government to delegate some of its powers or discharge duties to the Chief Executive Officer. The Act also allows the Chief Executive Officer to delegate some of those powers to other employees. These Delegations are recorded in the Delegated Authority Register.

The purpose of delegating Chief Executive Officer functions to officers is to achieve efficiencies in delivering strategic outcomes and provide a best practice approach to the City's operations within the constraints allowed by the relevant legislation and Council. The Delegations are reviewed annually to ensure appropriateness and to enable an effective decision-making process. The Delegated Authority Register was reviewed and endorsed by Council in 2024-25 at the June 2025 Ordinary Council Meeting.

City of Belmont

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BelmontCouncilWA
City-of-Belmont-WA
CityofBelmontWA

**8:38pm Cr Harris joined the meeting.**

# 13 Reports by the Chief Executive Officer

## 13.1 Request for leave of absence

Nil.

## 13.2 Notice of motion

Nil.

# 14 Matters for which the meeting may be closed

**Note:**

**The Presiding Member advised that in accordance with Section 5.23(2)(b) of the *Local Government Act 1995 (WA)* in order to discuss Confidential Item 14.1, Council will need to go behind closed doors.**

**8:39pm Harris moved, Sessions seconded that in accordance with Section 5.23(2)(b) of the *Local Government Act 1995 (WA)*, the meeting proceed behind closed doors to discuss Confidential Item 14.1 - NAIDOC Awards 2025 Nomination.**

**Carried unanimously 9 votes to 0.**

For: Abedin, Davis, Harris, Kulczycki, Marks, Rossi, Ryan, Sekulla and Sessions

Against: Nil

**8:39pm The Desktop Support Officer departed the meeting.**

**8:39pm Members of the public gallery departed the meeting.**

## 14.1 NAIDOC Awards 2025 Nomination

| Officer Recommendation |
| --- |
| **Sessions moved, Davis seconded**<br><br>That Council accepts the Officer Recommendation in relation to this item.<br><br>**Carried unanimously 9 votes to 0**<br><br>For: Abedin, Davis, Harris, Kulczycki, Marks, Rossi, Ryan, Sekulla and Sessions<br><br>Against: Nil |

**8:43pm The meeting came out from behind closed doors. No members of the public returned to the meeting.**

# 15 Closure

**There being no further business, the Presiding Member thanked everyone for their attendance and closed the meeting at 8:43pm.**