Environmental Report: Golden Gateway

Prepared for City of Belmont

By Essential Environmental

June 2018

essential environmental

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EXECUTIVE SUMMARY

The City of Belmont has engaged Essential Environmental to prepare an environmental report to support structure planning vicinity of Great Eastern Hwy, Resolution Dr, Grandstand Rd and Stoneham St, Ascot, within the City of Belmont.

This report provides an analysis of the environmental constraints and considerations to development and proposes broad approaches to mitigate any impacts and/or constraints on the basis of future land use.

The majority of the site has been historically cleared, although a number of significant trees have been established predominantly along driveways and boundaries and within the Grove Farm Reserve. The study area abuts a small section of the Swan River, which is a Bush Forever site, a conservation category wetland, and an environmentally sensitive area. Development of the study area will require adequate management of bushfire risk (the subject of a separate management plan) and potential impacts on fauna species.

In addition, a range of management strategies have been proposed to effectively manage or mitigate potential environmental impacts caused as a result of the development. Proposed management actions are summarised in the table below. It is considered that urban development of the site is an acceptable land use given the current environmental condition and lack of significance of the site, and in consideration of the proposed management strategies outlined in this report.

Issue	Action	Frequency	Responsibility
Preconstruction phase			
Contamination	Complete preliminary site investigation for contamination in accordance with Contaminated Sites Act 2003 should areas of known contamination be disturbed.	Once	Developer
Acid sulfate soils	Complete self-assessment checklist and consider need for a preliminary site assessment.	Once	Developer Consistent with DPLH and DWER guidelines
Vegetation and flora	Clearly delineate POS areas and trees to be retained.	Once	Licensed Surveyor (Developer)
Fauna and habitat	All site staff to participate in Environment, Health and Safety inductions which provide requirements for management of significant fauna and reporting procedures for environmental incidents.	Once	Developer and Construction contractor

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Issue	Action	Frequency	Responsibility
Water management	Refer the local structure plan to the Department of Biodiversity, Conservation and Attractions as it contains a portion of land within and abutting the Swan River Trust Development Control Area.	Once	Developer/City of Belmont
	A Local water management strategy will be completed and used as the basis for detailed design. Following approval of the LWMS, UWMP(s) will be prepared prior to subdivision for approval by City of Belmont.		Developer, in accordance with SPP 2.9: Water Resources
Bushfire	A Bushfire Management Plan will be prepared to support the LSP. The Bushfire Management Plan will be revised and implemented at subdivision.	Once	Developer, in accordance with SPP 3.7: Planning in Bushfire Prone Areas
Construction phase			
Soils and topography	Ground disturbing activities should be kept to a minimum and carried out 'as required' (in stages) immediately prior to lots being released for sale as part of a 'staged' development of the site.	Ongoing during construction phase.	Construction Contractor (Developer)
Contamination	Management of any identified contamination in accordance with the Contaminated Sites Act 2003.	Ongoing during construction phase.	Construction Contractor (Developer)
Acid sulfate soils	Management of any identified ASS consistent with DPLH and DWER guidelines.	Ongoing during construction phase.	Construction Contractor (Developer)
Vegetation and flora	Maintain markings and fencing around vegetation and trees to be retained. Cleared vegetation to be mulched and stored on site.	Ongoing during construction phase.	Construction Contractor (Developer)
Fauna and habitat	Undertake clearing in the direction of the river to allow fauna to escape.	Ongoing during construction phase.	Construction Contractor (Developer)
Water management	Manage sediment transport to waterways and drainage systems consistent with the LWMS.	Ongoing during construction phase.	Construction Contractor (Developer)

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Issue	Action	Frequency	Responsibility
Aboriginal heritage	In the event a site is discovered, all work in the area will cease and the Department of Planning, Lands and Heritage will be contacted.	Ongoing during construction phase.	Construction Contractor (Developer)
Construction impacts	Ensure dust and sediment runoff is adequately managed. Ensure appropriate waste disposal of building materials.	Ongoing during construction phase.	Construction Contractor (Developer)
Post construction phase			
Soils and topography	Landscape or stabilise cleared areas immediately.	Once	Construction Contractor (Developer)
Vegetation and flora	Inspect fencing (if applicable) and replace if required. Ensure ongoing maintenance of retained vegetation and any revegetation areas / native landscaping prior to handover.	6 months Ongoing until handover.	Developer until hand over to City of Belmont

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1 INTRODUCTION

The City of Belmont has engaged Essential Environmental to prepare an environmental report to support structure planning in the vicinity of Great Eastern Hwy, Resolution Dr, Grandstand Rd and Stoneham St, Ascot, within the City of Belmont.

This report provides an analysis of the environmental constraints and considerations to development and proposes broad approaches to mitigate any impacts and/or constraints on the basis of likely future commercial, mixed use and residential land use.

1.1 Study area

The study area consists of approximately 31.8 hectares of land in the vicinity of Great Eastern Hwy, Resolution Dr, Grandstand Rd and Stoneham St in Ascot. The study area currently comprises of a mixture of commercial lots, the heritage listed Ascot Brick Works and public open space (Figure 1).

The study area has 4 distinct regions: (i) the south-eastern commercial area, bound by Great Eastern Hwy, Resolution Dr and Stoneham St; (ii) west where Grove Farm Reserve is bound by Great Eastern Hwy and public open space adjacent to the Swan River; (iii) largely undeveloped land, with exception of local distributor roads, through the centre of the study area; and (iv) most northern portion within which is located the Perth Racing Administration Office.

1.2 Methodology

This report considers the following environmental aspects of the study area to inform preparation of a local structure plan and the future development of the area:

- Topography, soils (including acid sulfate soils), contamination;
- Vegetation, flora and fauna and bushfire risk;
- Water resources; and
- Heritage.

The following information has been provided on the basis of a desktop investigation only, using data and information that is publically available. No attempt has been made to ground-truth the information at this stage.

1.3 Previous environmental assessments and key requirements

Limited environmental assessment has been undertaken for the site to date.

The following City of Belmont strategic and planning documents are considered relevant to this environmental report:

- City of Belmont Environmental Plan 2010-2016;
- City of Belmont Local Planning Scheme No. 15 scheme report supporting document: Environment;
- City of Belmont Local Planning Scheme No. 15 scheme report supporting document: Heritage.

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- City of Belmont Local Planning Scheme No. 15 scheme report supporting document: Public Open Space.
- Belmont Foreshore Precinct Plan
- City of Belmont Street Trees Plan 2013.

There are a number of pieces of legislation, which govern management of the environment and have been considered as part of this assessment. These are listed in Table 1.

Table 1: Relevant environmental legislation

Legislation	Summary of relevant intent
Aboriginal Heritage Act 1972	Protects significant Aboriginal heritage, registered or unregistered.
Biosecurity and Agriculture Management Act 2007	Provides for the management of declared pests.
Contaminated Sites Act 2003	Requires the reporting of potential contaminated sites to the Department of Water and Environment Regulation.
Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth) (EPBC Act)	Provides protection for Matters of National Environmental Significance (MNES).
Environmental Protection Act 1986	Provides protection for the environment as well as the licencing of prescribed premises and regulation of the clearing of remnant vegetation.
Fire and Emergency Services Act 1998	Provides for the management of bushfire risk.
Heritage of Western Australia Act 1990	Protection of places listed by the Heritage Council of WA.
Swan and Canning Rivers Management Act 2006	Establishes the Swan Canning River park and provides for the assessment of planning proposals within this area by the Swan River Trust Board.
Wildlife Conservation Act 1950 (WC Act)	Protects species of flora & fauna and communities that are listed.

The following environmental policies are also considered relevant to the management of potential environmental impacts on the site:

- EPA Guidance Statement No. 33 – Environmental Guidance for Land Development (EPA, 2008);
- Better Urban Water Management (WAPC, 2008); and
- Liveable Neighbourhoods (WAPC, 2011).

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Figure 1: Study area location

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2 PROPOSED DEVELOPMENT

2.1 Planning context

The majority of the study area is zoned 'Urban' under the Metropolitan Region Scheme, with a portion zoned for 'Mixed use' and reserved for 'Parks and Recreation' under the City of Belmont Local Planning Scheme No. 15 (Figure **2**).

The City of Belmont Local Planning Scheme No. 15, adopted in December 2011, provides a district level framework to guide more detailed planning for the City. It requires local structure plans to be prepared to provide the level of detailed planning required to facilitate subdivision and development within the scheme area. The Western Australian Planning Commission and the City of Belmont are preparing a local structure plan to guide land use and development outcomes for the Golden Gateway precinct, the subject land.

The Golden Gateway Precinct includes a large portion of 'Mixed use' land, which encompasses the historical Ascot's Bristle beehive kilns and chimney stacks and portions of the Ascot Racecourse. The precinct also contains approximately 5.3 ha of Parks and Recreation reserve which covers the Belmont Trust Land. There is also a small portion of Parks and Recreation: water supply sewerage and drainage reserve, which is under the control of the Water Corporation.

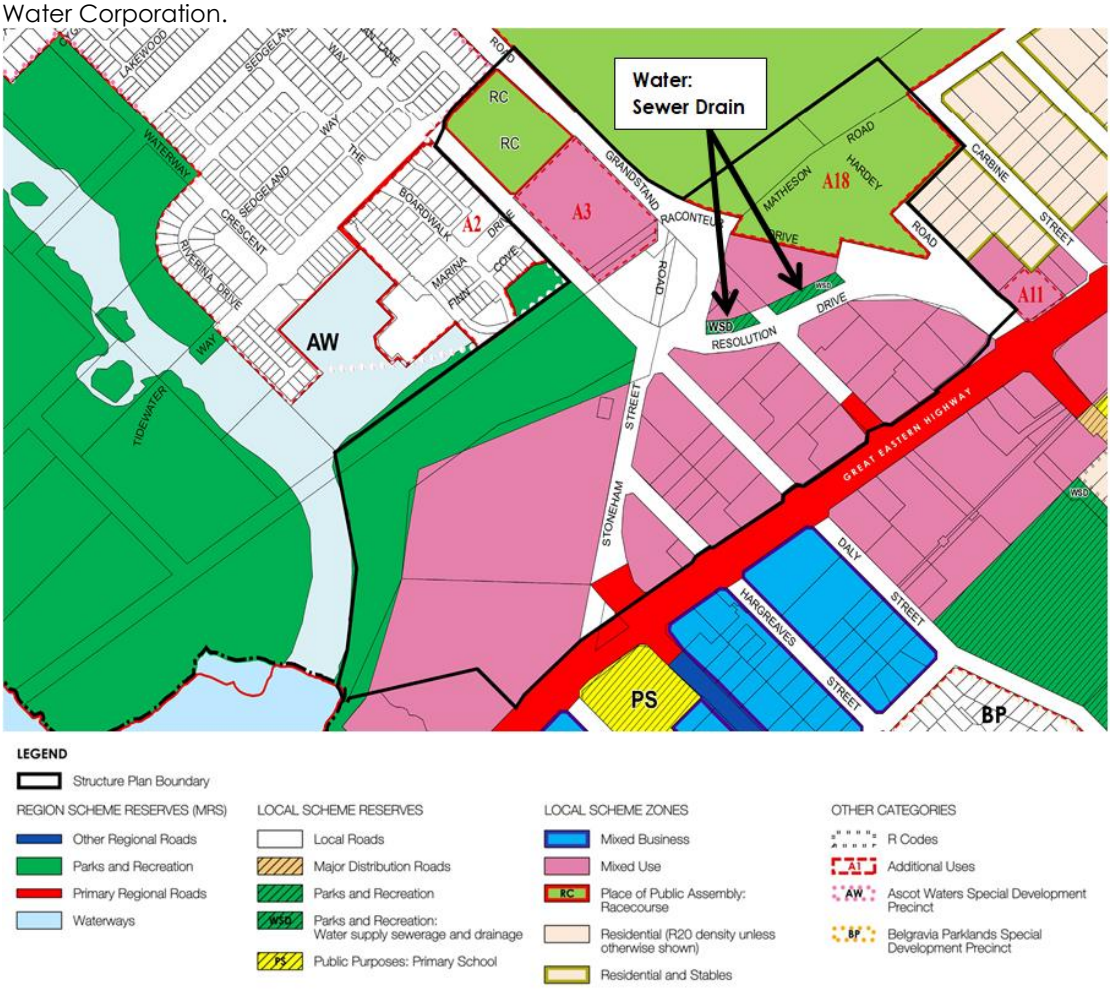

Figure 2: Local Planning Scheme

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3 EXISTING ENVIRONMENT

A desktop environmental investigation of the study area has been undertaken, the findings of which are presented below.

3.1 Land use context

3.1.1 Historical land use

Historical aerial photography from Landgate suggests the land has been used for commercial purposes for over 50 years, with the majority of lots being approximately 1/3 hectare, accommodating warehouse facilities and such, predominantly adjacent to Great Eastern Hwy. The northern portion of the study area contains the Bristle kilns and Brick Works, which were established in 1929 and ceased operation in 1982 (Heritage Council, WA). The western portion of the study area, over the Belmont Trust Land, was historically used for sporting purposes such baseball fields (Clark, 1952), and more recently as a temporary worksite for development in the area, such as the widening of the Great Eastern Hwy.

3.1.2 Current land use

Commercial property still exists adjacent to Great Eastern Hwy south of Resolution Dr and Stoneham St. East of Stoneham St, the Belmont Trust Land is largely cleared and vacant with large mature trees sparsely located though the middle of the reserve. The perimeter of the reserve is lined with small to large mature trees such as *Brachychiton acerifolius* (Illawarra Flame Tree) and *Eucalyptus grandis* (Flooded Gum).

The north and east of Resolution Dr contains a parcel of land approximately 5 hectares in size that is largely vacant, with the exception of a few mature trees, used as overflow parking servicing the Ascot Racecourse. This portion of land, as shown in Figure **2**, also accommodates a 150 m Water Corporation open channel drain, which discharges via piped drainage under the Stoneham St/Resolution Drive roundabout into the Ascot Waters compensation basin on the north-western boundary of the study area. North of the Ascot Waters Compensation Basin is a second compensation basin servicing the Ascot Waters development. This compensation basin is herein referred to as 'Northern Drainage Lake'. The northern portion of the site contains the Perth Racing Administration Offices.

The Belmont Foreshore Precinct Plan (City of Belmont, 2014) was prepared to guide development and landuse within the river setting and ensure that the landscape values of the river system are conserved or enhanced. The study area, particularly Belmont Trust Land and public open space contains areas identified as parkland within the precinct plan, characterised by open lawns surrounding large individual trees. The precinct plan outlines strategic recommendations that will need to be incorporated into future planning of the Belmont Trust Land.

3.2 Topography, geology and soils

The study area has generally flat topography and grades gently from 6mAHD in the south-east to 3mAHD in the west. The study area has a few low points of approximately 1-2mAHD through the centre of the study area, as shown in Figure 3.

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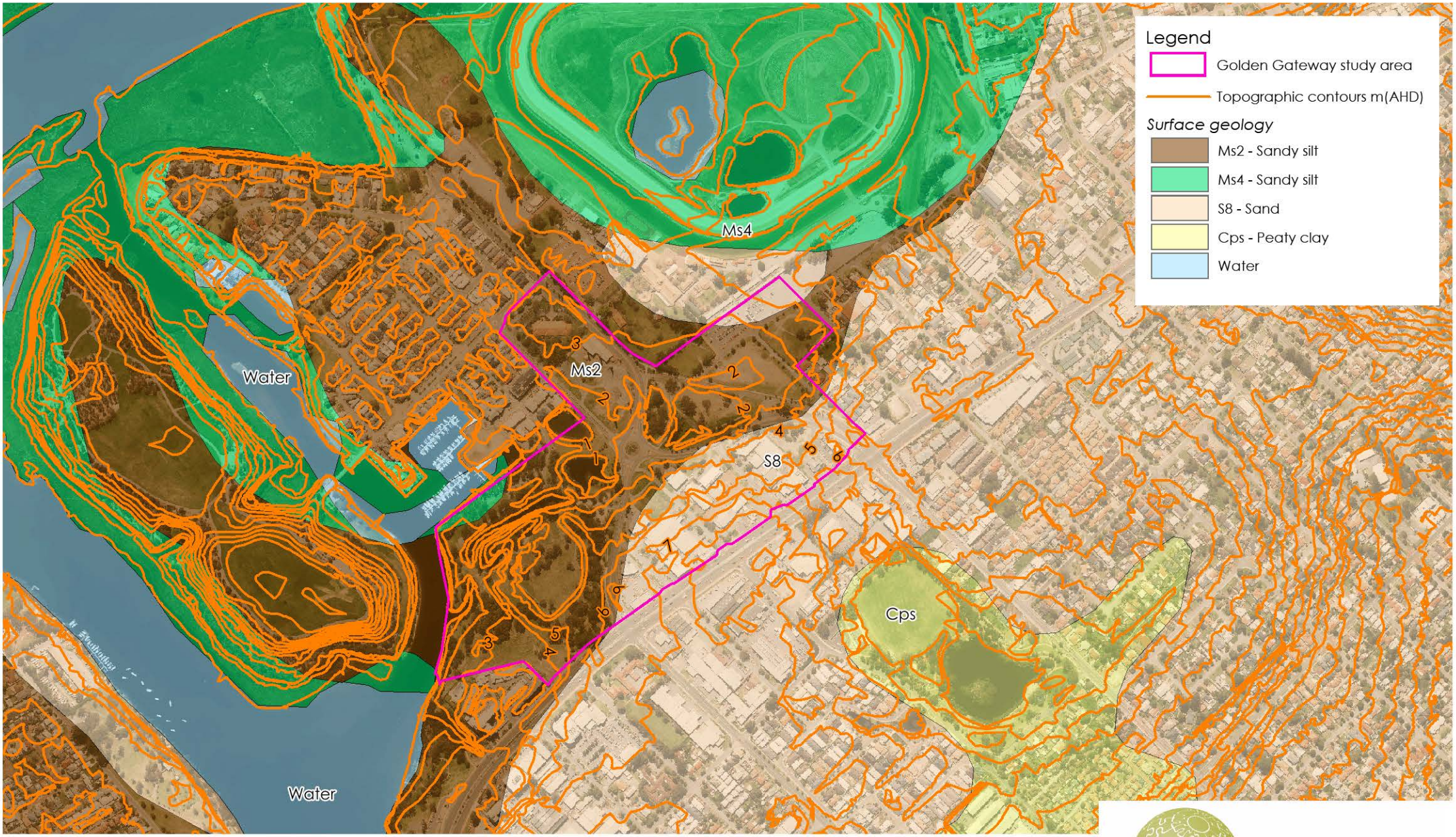
Figure 3: Topography and surface geology



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3.2.1 Geology

The surface geology is described broadly as Guildford formation: Alluvial sand and clay with shallow-marine and estuarine lenses and local basal conglomerate (WA surface geology 1:250,000 scale geological maps, Geological Survey of WA, and Geoscience Australia).

As shown in Figure 3, two-thirds of the north-western portion of the study area is classified as Ms2 – Sandy Silt, and the eastern third is classified as S8 – Sand, with a small portion of peaty clay adjacent to the Ascot Waters marina, described as follows:

- Ms2 – Sandy Silt: strong brown to mild grey, mottled, blocky, disseminated fine sand, hard when dry, variable clay content. This soil type is historically resourced for clay bricks and tile manufacture. It has a low permeability and low potential for erosion. Sandy Silt has a low shrink swell potential, however is prone to flooding.
- S8 – Sand: very light grey at surface, yellow at depth, fine to medium grained, sub rounded quartz, moderately well sorted. Sand of eolian origin is used for construction purposes with a high permeability and low erosion potential. Well drained given a low water table.
- Cps – Peaty Clay: dark grey and black with variable sand content of lacustrine origin. This soil has low permeability, high erosion potential, and is prone to flooding.

3.2.2 Acid sulfate soils

A review of Department of Water and Environmental Regulation acid sulfate soils (ASS) risk mapping identifies two-thirds of the study area, predominantly the area coinciding with surface geology Ms2-Sandy Silt (see 3.2.1), as containing a Class I 'high to moderate' risk of ASS and the remainder, coinciding with S8-Sand, classified as Class II 'moderate to low' risk occurring within 3 m of the natural soil surface (Figure 3).

In 2009, Douglas Partners undertook an Acid Sulfate Soil investigation and Waste Classification investigation to assess the soil conditions of the Ascot Water Compensation Basin because the City intended to increase the size of the basin. The results of the investigation indicate the basin contains ASS, which are generally located at and below the groundwater table (approximately 1.5 m below ground level) (Douglas Partners, 2009). Should the soil below the groundwater table be exposed or groundwater be lowered for future development, further investigation of ASS is likely to be required.

Consistent with Department of Water and Environmental Regulation guidelines, sites should be investigated for ASS if any of the following works are proposed:

- ASS disturbing subdivision or development that is subject to conditional approval requiring the investigation and management of ASS;
- soil or sediment disturbance of 100 m^3 or more in an area depicted on an ASS risk map as Class I 'high to moderate risk of ASS occurring within 3 m of natural soil surface' (e.g. construction of roads, foundations, installation of underground infrastructure, drainage works, land forming works, dams and aquaculture ponds or sand or gravel extraction);
- soil or sediment disturbance of 100 m^3 or more with excavation from below the natural watertable in an area depicted on an ASS risk map as Class II 'moderate to low risk of ASS occurring within 3 m of natural soil surface but high to moderate risk of ASS beyond 3 m of natural soil surface';
- lowering of the watertable, whether temporary or permanent (e.g. for groundwater abstraction, dewatering, installation of new drainage, modification to existing drainage), in areas depicted in an ASS risk map as Class I 'high to moderate risk of

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actual acid sulfate soils (AASS) or potential acid sulfate soils (PASS) occurrence' or Class II 'moderate to low risk of AASS or PASS occurrence within 3 m of natural soil surface';
- any dredging operations;
- extractive industry works (e.g. mineral sand mining) in any of the areas listed in Table 1 of the guidelines; and
- flood mitigation works, including construction of levees and flood gates in any of the areas listed in Table 1 of the guideline.

Given the Class I classification for ASS, it is recommended that a self-assessment checklist is completed for the study area. Some investigation for ASS will be required if any of the above works are proposed in Class 1 areas. Investigations should be undertaken consistent with Department of Water and Environmental Regulation guidelines: *Identification and investigation of acid sulfate soils and acidic landscapes* (DER, 2015).

If ASS is found to be present at the site, all site works must be carried out in accordance with a Department of Water and Environmental Regulation-approved ASS management plan.

3.2.3 Contaminated sites

DWER Contaminated sites database

A search of the Department of Water and Environmental Regulation Contaminated Sites database found no contaminated sites within the study area. Lot 5 Resolution Drive (160 Stoneham Street) is listed as "Possibly Contaminated, Investigation Required".

Ascot Water compensation basin

In 2009, Douglas Partners undertook a waste classification assessment at Lot 5 Stoneham St, corner of Resolution Dr and Stoneham St to assess the occurrence of acid sulphate soils; assess the nature and suitability of the soil for re-use; and assess the waste classification of the soil to be excavated, as the City of Belmont intended to increase the size of the current Ascot Waters Basin by approximately 4000 m^2.

A Preliminary and Detailed Site Investigation (PSI/DSI) was also undertaken in 2012 (GHD, 2013), and a subsequent Site Management Plan was developed. Soil and groundwater contamination were investigated to assess risk to ecological and human receptors in accordance with the Department of Water and Environment Regulation. A summary of the contamination issues identified through these investigations are as follows:

- Soil - Inorganic
    - Samples were tested for metals (As, Ca, Mn, Hg, Ni, Pb, Zn, Al, Fe). Exceedances of Ecological Investigation Levels (EIL, as per DER guidelines) were minimal, so metals were considered to be low risk to ecological receptors in the basin's current state. Metals were also below Health Investigation Levels (HIL-E), with the exception of lead. Further sampling indicated this was a localised test result.
    - Douglas Partners reported Asbestos Containing Materials (ACM) at several bores from 0 to 2 m below ground level (BGL). ACM was also found in samples collected at greater than 0.5 m BGL. However, no samples were taken near the surface profile (less than 0.3 m BGL) and the exposure pathway for the community or workers is considered incomplete. Overall, asbestos is considered low risk in its current state, however, further investigation needs to be undertaken.

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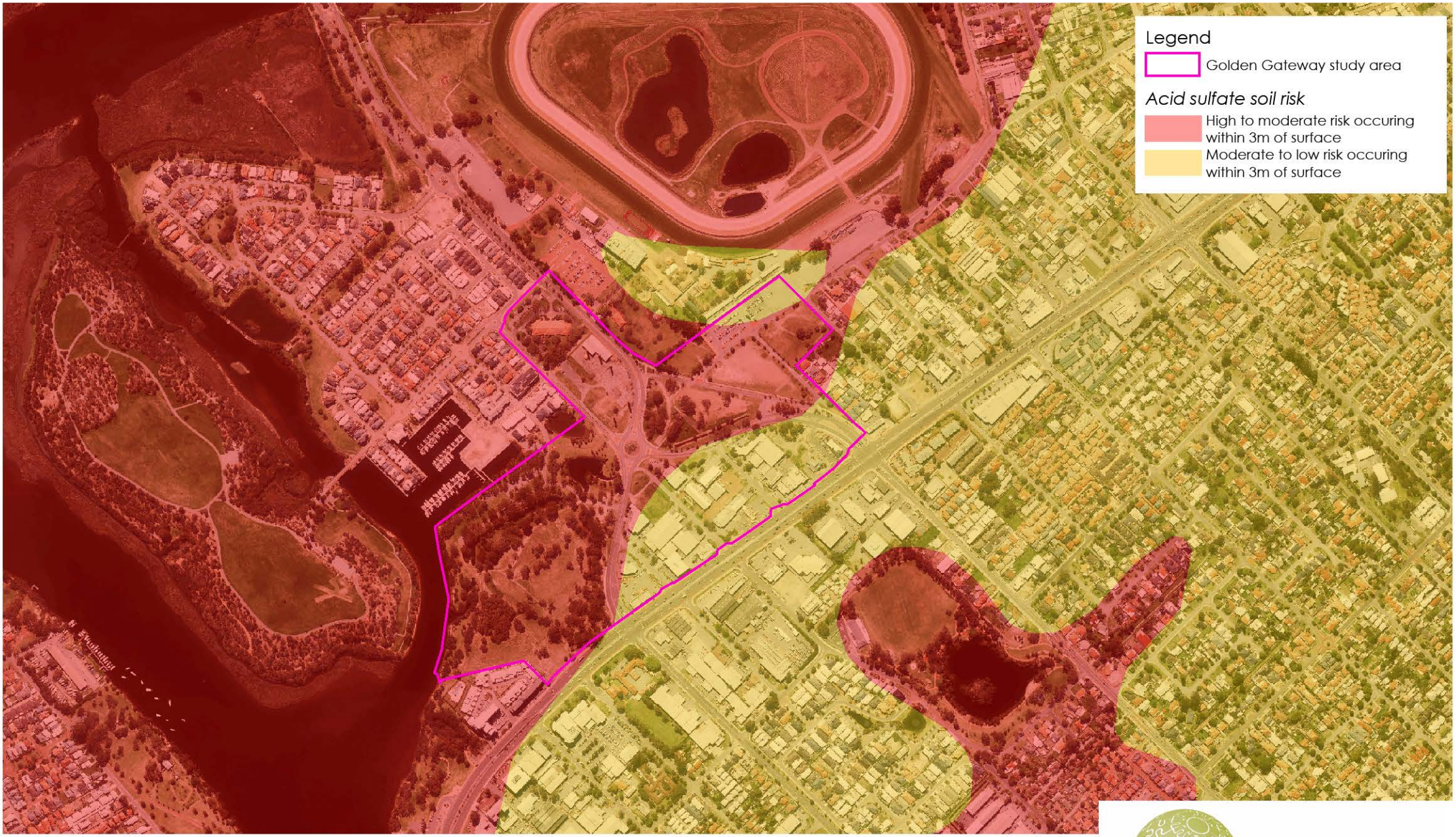
Figure 4: Acid sulfate soil risk



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- Organic
  - Both Douglas Partners and GHD reports indicate that encountered hydrocarbons were localised in nature and not considered to pose a risk to ecological or human receptors. However, works such as excavation would increase risk, and appropriate precautions should be taken.
- Groundwater
  - Inorganic
    - Three groundwater bores were sampled to test for Fe, Zn, Ni, NH_3, NO_2, Total Nitrogen and Total Phosphorous. Concentrations of Zn, NH_3, and Ni were reported marginally above ANZECC guidelines in all bores, and Fe concentrations were recorded 20 times above ANZECC guidelines. The exceedances are considered characteristic of winter conditions in the Swan River and natural soils in the locality (e.g. iron). Therefore, these results are not considered to reflect any potential risk to ecological or human receptors.
  - Organic
    - All samples were analysed for BTEX, Total Recoverable Hydrocarbons (TRH) and Polycyclic Aromatic Hydrocarbons (PAH). These were all reported below the DER Domestic Non-potable water criteria (GHD, 2013).

Based on these results, it is understood that the basin in its current state does not propose a risk to ecological or human receptors. Management guidelines provided in the Site Management Plan are effectively for the management of the basin expansion works and the City of Belmont have not proceeded with increasing the basin size.

3.3 Flora, fauna and vegetation

3.3.1 Conservation areas

There are no Bush Forever sites within the study area.

Bush Forever site 313, Swan River Salt Marshes, exists to the north and west of the study area, as shown on Figure 5. The closest proximity of the Bush Forever site to the study area is adjacent to the Belmont Trust Land at the south-western boundary. Apart from this point, the study area is largely disconnected from the Bush Forever site.

An environmentally sensitive area, as mapped by the Department of Water and Environmental Regulation surrounds the Bush Forever site as described above. This area is described as 'Temperate Saltmarsh' and listed as 'vulnerable' under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Temperate salt marshes are an important habitat for local and migratory bird species (Department of Environment, 2015).

3.3.2 Flora

Searches of the EPBC Protected Matters Search Tool and the former Department of Parks and Wildlife (now Department of Biodiversity, Conservation and Attractions) NatureMap database were undertaken to identify flora species of conservation significance potentially occurring within a 2 km buffer of the study area. Results are outlined in Table 2.

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Table 2: Conservation significant flora likely to occur in the study area

Taxa	Common name	Conservation status	
		WC Act	EPBC Act
Dillwynia dillwynioides	-	Priority 3	
Johnsonia sericea	Waldjumi	Priority 4	
Caladenia huegelii	King Spider-orchid		Endangered
Darwinia foetida	Muchea Bell		Critically endangered
Lepidossperma rostratum	Beaked Lepidosperma		Endangered

3.3.3 Fauna

Searches of the EPBC Protected Matters Search Tool and the Department of Biodiversity, Conservation and Attractions NatureMap database were undertaken to identify fauna species of conservation significance potentially occurring within a 2 km buffer of the study area. Results are outlined in Table 3.

Table 3: Conservation significant fauna known or likely to occur in the study area

Taxa	Common name	Conservation status	
		WC Act	EPBC Act
Calyptorhynchus latirostris	Carnaby's Balck Cockatoo	Rare or likely to become extinct	Endangered
Calidris ferruginea	Curlew Sandpiper	Rare or likely to become extinct	-
Caretta caretta	Loggerhead Turtle	-	Endangered
Chelonia mydas	Green Turtle	-	Vunerable
Dermochelys coriacea	Leatherback Turtle	-	Endangered
Natator depressus	Flatback Turtle	-	Vunerable
Diomedea epomophora epomophora	Southern Royal Albatross	-	Vunerable
Dioedea exulans (sensu lato)	Wandering Albatross	-	Vunerable
Pachyptila turtur subantarctia	Fairy Prion	-	Vunerable
Thalassarche cauta steadi	White-capped Albatross	-	Vunerable
Dasyurus geoggroii	Chuditch	-	Vunerable
Actitis hypoleucos	Common Sandpiper	Protected under international agreement	-
Ardea modesta	Eastern Great Egret	Protected under international agreement	-
Merops ornatus	Rainbow Bee-eater	Protected under international agreement	-
Tringa nebularia	Common Greenshank	Protected under international agreement	-
Falco peregrinus	Peregrine Falcon	Specially protected fauna	-
Oxyura australis	Blue-billed Duck	Priority 4	

WC=Wildlife Conservation Act 1950
EPBC=Environmental Protection and Biodiversity Conservation 1999

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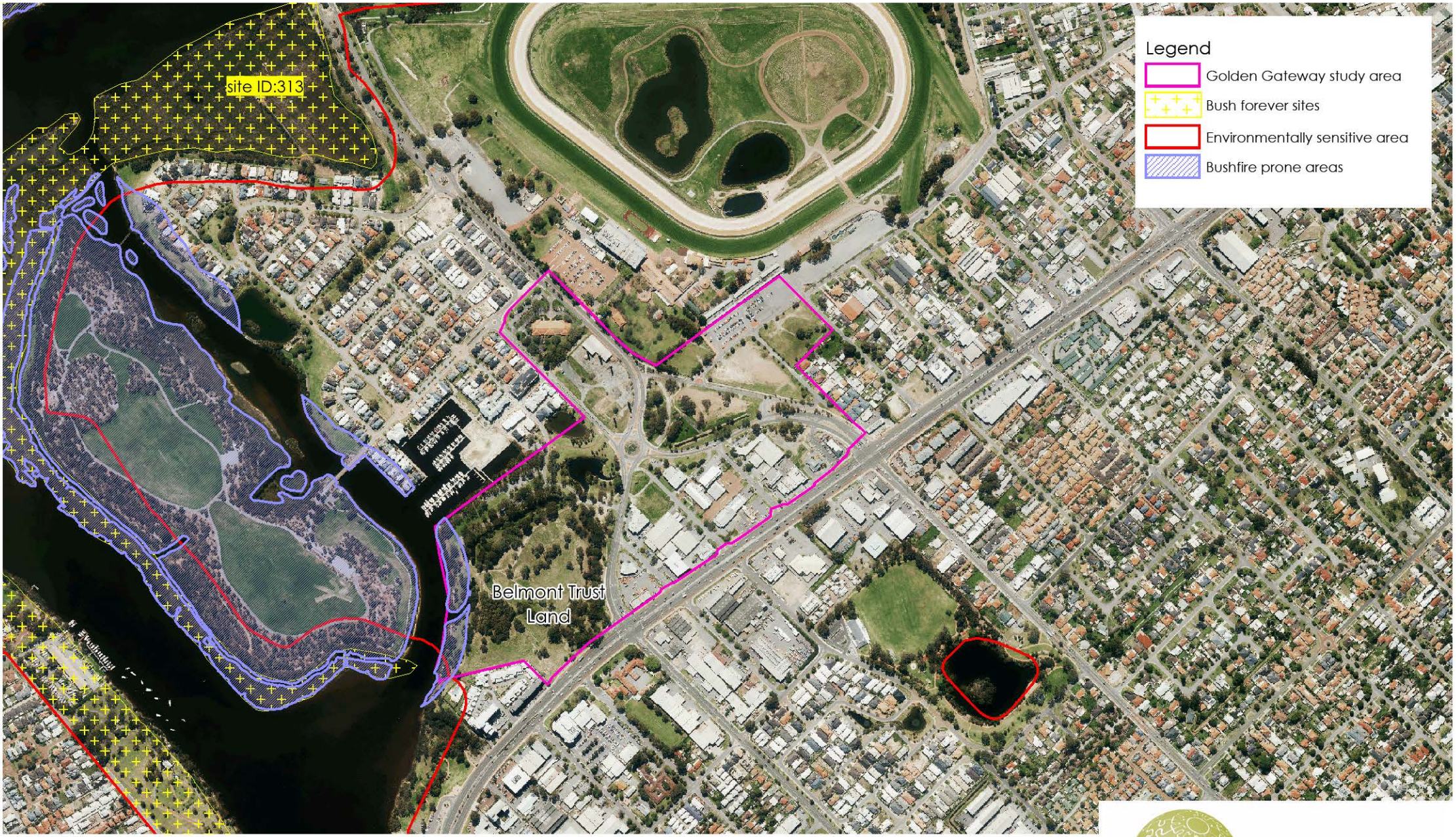
Figure 5: Vegetation



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3.3.4 Bushfire risk

A portion of the study area along the banks of the Swan River is identified as a Bush Fire Prone Area (Figure 5), as designated by the Fire and Emergency Services (FES) Commissioner. Accordingly, any planning and development in the area must consider bushfire risk and the requirements of *State Planning Policy 3.7: Planning in Bushfire Prone Areas* (SPP 3.7) (2015).

The *Guidelines for Planning in Bushfire Prone Areas* (WAPC, 2015) refer to the need for a Bushfire Hazard Level assessment and Bushfire Attack Level Contour Map where possible to support strategic planning proposals in Bushfire Prone Areas. It is understood that this is being addressed separately from this report for the structure plan area.

3.4 Water resources

3.4.1 Public Drinking Water Source Area

There are no Public Drinking Water Source Areas within the study area.

3.4.2 Surface water resources

The Swan River is adjacent to the western portion of the study area (Belmont Trust Land). The Swan River holds significant ecological value because it provides habitat for local and migratory birds and other fauna, with the majority of the River being identified as a conservation category wetland and environmentally protected area. Furthermore, the Swan River provides important social value for visual amenity, and recreation on the river and its reserves. The Swan River also holds significant Aboriginal and European heritage values.

The Department of Water and Environmental Regulation Floodway mapping indicates that a large area in the northern portion of the study area lies within the Swan River 100 year average reoccurrence interval (ARI) flood fringe (Figure 6).

A Water Corporation open drain exists at the centre of the study area. The open drain is approximately 150 m in length and directs runoff flows from the eastern urban and industrial areas to piped drainage under the Stoneham St/Resolution Drive roundabout to the Ascot Waters compensation basin (Figure 6). The compensation basin allows for dissipation of energy, mixing of water for oxygenation and sediment control before flowing through a further 350 m of open drain to the Swan River. A contaminated sites investigation was conducted by GHD and a Site Management Plan was subsequently developed in 2013 for the expansion of the compensation basin. The investigation identified issues of leachable metals, PAH and TPH fractions, and asbestos (see section 3.2.4).

North of the Ascot Waters Compensation Basin is a second compensation basin servicing the Ascot Water development, the Northern Drainage Lake. The Northern Drainage Lake has experienced water quality issues in the past with two fish kill incidents occurring during July and September 2012. The first incident involved approximately 300 fish deaths and the latter 100-150 fish deaths. No incidents have occurred since 2012. No water quality monitoring was undertaken by the City (pers, comm. Nicole Davey – City of Belmont coordinator-environment, 1 August 2016). However, investigations were undertaken by the Swan River Trust in 2012 in response to the fish kills. Water quality testing indicated low concentrations of algae, and higher concentrations of organic matter resulting in oxygen-depleted water. In addition, it was identified that fish often become trapped in backwaters such as this lake. It was concluded

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that a combination of the above factors resulted in the fish kill incidents (pers. comms. Swan River Trust: Rivers Systems Branch, 23 August 2016).

A portion of the site is located within the Swan River Trust Development Control area (Figure 6). Land use planning and development within the Development Control Area is subject to approval of the Department of Biodiversity, Conservation and Attractions under Part 5 of the *Swan and Canning Rivers Management Act 2006* and the *Swan and Canning Rivers Management Regulations 2007*. This area includes the waterways of the Swan and Canning rivers and the adjoining parks and recreation reserves.

All development plans and applications for this area should be referred to Parks and Wildlife for advice in accordance with Clause 30A of the Metropolitan Region Scheme.

3.4.3 Groundwater resources

The study area is within the Perth groundwater area and City of Belmont sub-area. The Department of Water and Environmental Regulation's Water Register shows no available allocation within the study area, as shown in Table 4.

Table 4: Groundwater resource allocation and availability (as of January 2016)

Management Area	Management Sub Area	Resource	Allocation Limit	Allocated Volume	Remaining Volume
Perth	City of Belmont	Perth - Superficial Swan	1,497,000	2,243,830	-746,830

The City of Belmont currently has a groundwater licence allocation of 1,171,200 kL (licence no. 157042) located south-west of the study area along the Swan River.

It can be inferred from the groundwater levels in the Department of Water and Environmental Regulation's Perth Ground Water Atlas that maximum groundwater levels are within 3 m of the natural surface through the northern and central portions of the study area, with groundwater flowing in a north-westerly direction toward the Swan River.

A search of the Department of Water and Environmental Regulation Water Information Network (WIN) bores showed a few bores located within the vicinity of the study area; however, none of the bores have current monitoring data. The most recently sampled bore was in 2011(ID: 616 71004) situated 500 m east and hydrologically upstream of the study area showing a groundwater level 4.5 m below ground level (BGL). Consideration of this information together with that of another bore closer to the study area (ID: 616 05266), which has last recorded data from 1999 of 4 m BGL, indicates that the groundwater level may be lower than the mapped groundwater atlas level. Two other bores located north of the study area (ID: 616 05225 and ID: 616 05224), which have data from 1996 record groundwater at approximately 3 m BGL. These bores are part of the Ascot Waters development, which topographically sits approximately 2 m higher than the northern section of the study area and has been built-up for the purposes of the development. Therefore, it is reasonable to conclude that the groundwater level of these bores is less likely to be representative of the groundwater level within the study area than the surrounding locations.

It is noted that water resources and urban water management will be specifically addressed by the local water management strategy, which is being prepared to support the structure plan.

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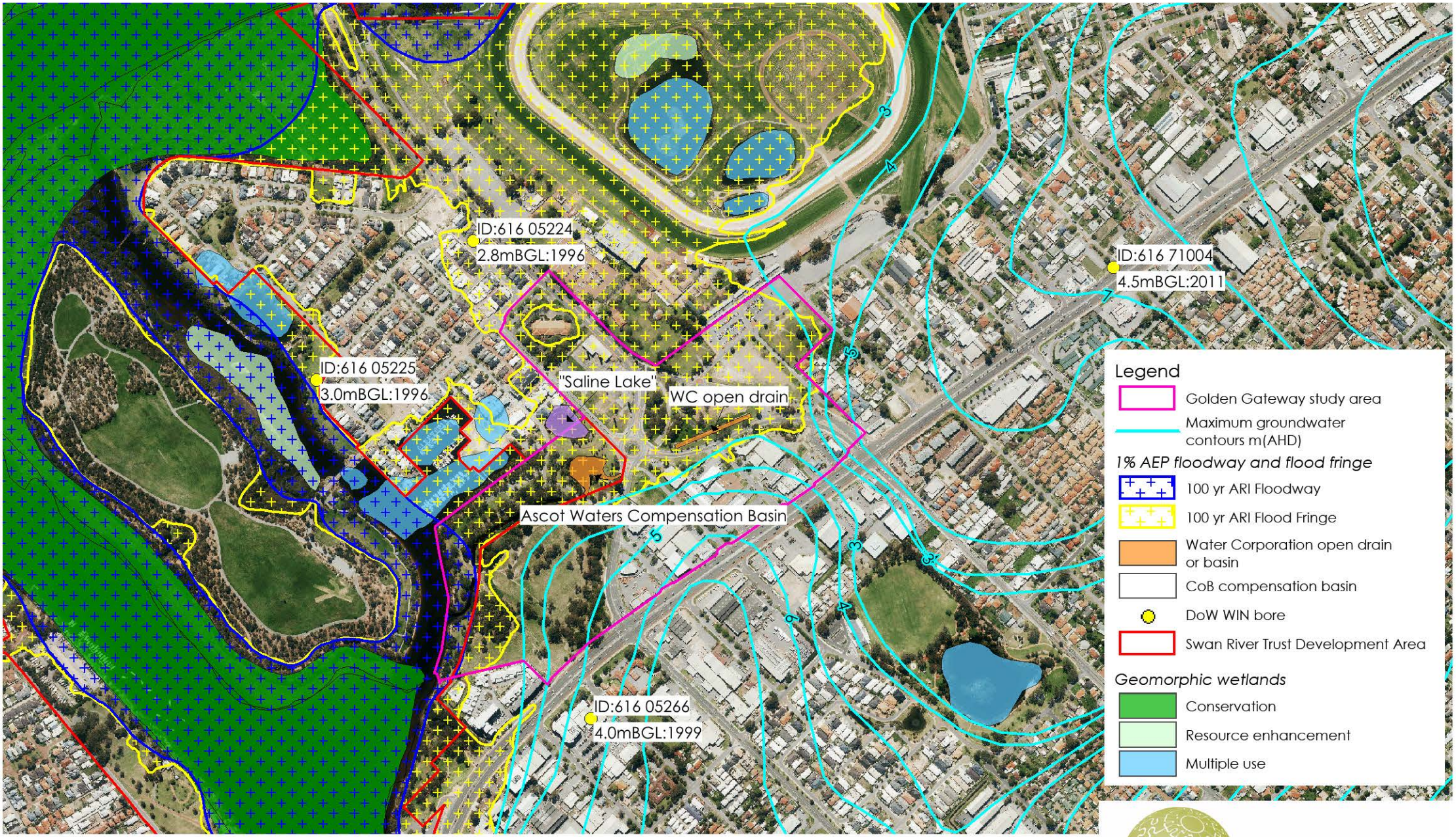
City of Belmont: Golden Gateway - Desktop environmental report
Figure 6: Water resources



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3.5 Heritage

3.5.1 Aboriginal heritage

A search of the Department of Planning, Lands and Heritage aboriginal heritage enquiry system showed one site overlaying the study area (Figure 7):

- Site ID 3753 – Registered site, Name: Perth, Type: Historical, mythological, hunting place, named place, natural feature.

One other site is adjacent to the study area, however not within the boundary, site ID 3536 - Registered site, Name: Swan River, Type: mythological.

3.5.2 European heritage

The Bristle Kilns are beehive and tunnel kilns, with associated chimney and floor ducts, located at 197 Grandstand Rd Ascot. The Kilns were first built in 1930, manufacturing terracotta, stoneware and steel products. Production ceased in 1982 (Heritage Council, 2012). The Kilns and chimneys remain and were placed on the State Heritage List in 2003. The Bristle Kilns are a visually striking feature of the area and are viewed as an asset for restoration by the community (Strutt, 2015).

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Figure 7: Heritage

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Data source: DAA. Heritage Compliance Update. Created by: RM. Projection: MGA: zone 50.

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4 FINDINGS AND RECOMMENDATIONS

The following section presents findings of the desktop environmental assessment of the study area. It highlights a number of environmental issues, which should be considered as part of the preparation of the local structure plan and future development of the site. These relate primarily to:

- A portion of the site being within the Swan River Trust Development Control Area;
- Proximity to the Swan River and potential for offsite impacts on values;
- Bushfire risk;
- Contamination and water quality management in the compensating basins; and
- Soils and acid sulfate soils.

Key recommendations to address these issues are provided below.

4.1 Soils and topography

The north-western portion, approximately two-thirds of the largely undeveloped area, is classified as Sandy Silt (Ms2), which has a low permeability and will need to be considered with regards to runoff and stormwater disposal.

In order to reduce the potential for erosion and sediment transport to drains and the River, ground disturbing activities should be kept to a minimum and carried out 'as required' (in stages) immediately prior to lots being released for sale as part of a 'staged' development of the site. Where land is cleared, the area should be stabilised (e.g. through landscaping/ stabilising materials/dust suppression) as soon as possible.

4.2 Acid Sulfate Soils

Approximately two-thirds of the study area is mapped as being High to Moderate ASS Risk (<3 m from the surface). The WAPC *Acid Sulfate Soils Planning Guidelines* (WAPC, 2008) indicates that "acid sulphate soils are technically manageable in the majority of cases".

It is recommended that a self-assessment checklist is completed for the study area. ASS Investigation and, if required, Management Plans should be prepared at subdivision stage once the detailed design of the site is finalised. This should be undertaken in accordance with the Acid Sulphate Soils Guideline Series: *Identification and Investigation of Acid Sulphate Soils and Acidic Landscapes* (DER, 2015a) and *Treatment and Management of Soils and Water in Acid Sulphate Soil Landscapes* (DER, 2015b).

4.3 Surrounding land use and buffer requirements

The Swan River is the most important environmental attribute in proximity to the study area. Protection of the environmental values associated with the River requires consideration of compatible adjacent land uses that limit impacts. The provision of a 50 m buffer to the banks of the Swan River consistent with its designation as an environmentally protected area and conservation category wetland is generally applied.

Any proposal within the Swan River Trust Development Control Area that is likely to impact on the water quality and/or values of the Swan River should be referred to the Department of Biodiversity, Conservation and Attractions. It is recommended that consultation occur with the

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Department of Biodiversity, Conservation and Attractions, Rivers and Estuaries Branch as part of the preparation of the local structure plan.

4.4 Vegetation and flora

The vegetation on the site is degraded and the site does not contain any areas with an intact understorey. No Declared Rare Flora are likely to be on the site and no priority species are likely to be present. It is recommended that no further vegetation assessment of the site is required and therefore, protected flora is not an impediment to the development of the area.

It is recommended that, as part of the detailed design process, any trees that can be retained in street verges, landscaped areas, parking areas and in road/entry areas should be identified and included in the detailed design plans for the area. Mature trees to be retained must be identified and clearly marked prior to commencement of any pre-construction activities.

4.5 Fauna and habitat

Due to historic clearing, urbanisation activities, and lack of native remnant vegetation across the majority of the study area, particularly the understorey, any fauna habitat is considered of low value to native fauna. This is with the exception of the portion of the study area that abuts the Swan River, where the foreshore area may provide important habitat for local and migratory birds.

To minimise impacts to fauna resulting from any clearing activities, the following management strategies are proposed:

- During construction, the extent of authorised clearing will be clearly defined and demarcated to avoid accidental clearing;
- Loud noises (e.g. air horns) will be made just prior to commencement of clearing;
- Clearing works will occur in the direction of a conservation area where possible, to allow animals time to escape;
- If any injured or distressed fauna are encountered during site works the Site Supervisor will be instructed to immediately call the Department of Biodiversity, Conservation and Attractions' Wildcare Hotline (08) 9474 9055, to allow for the closest appropriate registered wildlife rehabilitator to attend the site; and
- Where possible, local native species will be planted along road verges and median strips in and near conservation areas and strategic ecological linkages to enhance the value of the linkage to fauna.

4.6 Flood protection, groundwater and water quality management

As the development is partly within the Swan River Trust Development Control Area, planning and development should consider Department of Biodiversity, Conservation and Attractions' *Corporate policy statement no. 42: Planning for land use, development and permitting affecting the Swan Canning Development Control Area* (June 2016) and other relevant policies. Development may be subject to a Part 5; Clause 30A(2)a or Clause 30A(2)b application process.

A portion of the study area is also within the 100 year ARI flood fringe. Any development in the flood fringe should not impact on the risk of upstream flooding.

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Limited assessment of groundwater levels has been undertaken at this stage. As shown on Figure 6, the maximum groundwater contours from the Department of Water and Environmental Regulation's Perth Groundwater Atlas (2004) only extends to the southern portion of the study area and local groundwater bores have limited information. It is recommended to further investigate groundwater levels.

Surface water and groundwater management will be described in the Local Water Management Strategy and any future Urban Water Management Plans that will be prepared for each stage of development. Therefore, potential impacts on surface water and groundwater can be mitigated and managed in order to achieve the objectives of *State Planning Policy 2.9: Water Resources* (WAPC, 2006).

A Local Water Management Strategy is being prepared in accordance with *Better Urban Water Management* (WAPC, 2008) to address the following:

- Identification of the site's current hydrological regime and existing environment;
- Identification of the constraints within the development area which may affect the design of the development with respect to urban stormwater drainage and management of groundwater;
- A description of the stormwater management strategy for minor and major events, including details on the proposed management practices to be employed;
- Identification and description of mechanisms to protect the water regime, including water quality and water levels. This will include a discussion of the overarching engineering principles that will be employed to mitigate any impact from run-off, groundwater and water quality issues, and ensure that the environment and the development will not be adversely impacted upon;
- Identification of the proposed water supply (including irrigation requirements) and wastewater disposal;
- Identification of monitoring requirements and derivation of agreed performance criteria for the urban water management system; and
- Identification of contingency measures to be implemented in the event that the system is not achieving agreed performance targets.

4.7 Heritage

A buffer area of a site of Aboriginal heritage has been identified to cross the boundary of the study area. All contractors working on the development will need to be made aware of their responsibilities under the *Aboriginal Heritage Act 1972* with regard to finding potential archaeological sites. In the event that a site is discovered, all work in the area will cease and the Department of Planning, Lands and Heritage will be contacted.

The Bristle Kilns are on the State Heritage list and future land use planning will need to take this into consideration.

4.8 Construction impacts

Construction activities need to be managed to minimise the impact to nearby Swan River, surrounding residents and the retained vegetation on-site. Impacts can include:

- Nuisance dust generation during bulk earthworks;
- Disturbance of ASS during earthworks and/or installation of services;

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- Silt and sediment runoff to waterways and drains from uncontrolled runoff during site works;
- Inadvertent damage to trees and other vegetation earmarked for retention;
- Impacts to new stormwater drainage systems and existing environmentally sensitive areas from wind- and water-borne sediment during construction; and
- Inappropriate disposal of waste building material and poor housekeeping on building sites leading to wind-blown litter.

All of these potential impacts are manageable through appropriate engineering design and/or good site management practices.

4.9 Conclusion, constraints and opportunities

Several significant environmental constraints to the proposed development have been identified as follows:

- risks associated with urban stormwater runoff to the Swan River (sections 3 and 4);
- contamination risks associated with Ascot Water Compensation Basin, which will need to be considered if future work on the basin is to be undertaken (section 3.2.4);
- contamination risks associated with the Northern Drainage Lake, which may need to be considered because of previous fish kills in the lake (section 3.4.2); and
- the associated bushfire risk of the north-western portion of the study area, which will need to consider the requirements of *State Planning Policy 3.7: Planning in Bushfire Prone Areas* (SPP 3.7) (2015) (section 3).

Two figures have been developed to show the environmental constraints (Figure 8) and environmental opportunities (Figure 9). As summarised above, the environmental constraints include soil of low permeability and ASS risk to the majority of the study area. Further to this, the geology of the site may have created a perched groundwater table, and in conjunction with the close proximity of the study area to the receiving water body, groundwater levels are inferred to be close to the surface. The topography of the study area generally directs surface water flows toward the centre and south-westerly toward the Swan River, an environmentally sensitive area and conservation category wetland.

Although the Swan River is identified as an environmental constraint due to its protection requirements, the opportunities the River provides to the study area are of exceptional significance. The Swan River has long been valued for its social, recreational and visual amenity and would provide a substantial opportunity for increased land value. This can also be said for the mature trees within the study area, which provide visual amenity and urban heat island mitigation. Furthermore, deep rooted trees help maintain hydraulic control of the groundwater table by reducing recharge and using groundwater via transpiration, and promote soil stability and erosion control, especially at the river banks and at any other points where a water body receives inundation. The compensation basins identified in Figure 9 are also an opportunity for rehabilitation for improved visual amenity, flora and fauna habitat and upstream pre-treatment of surface and/or groundwater before discharge to the Swan River.

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Figure 8: Environmental constraints

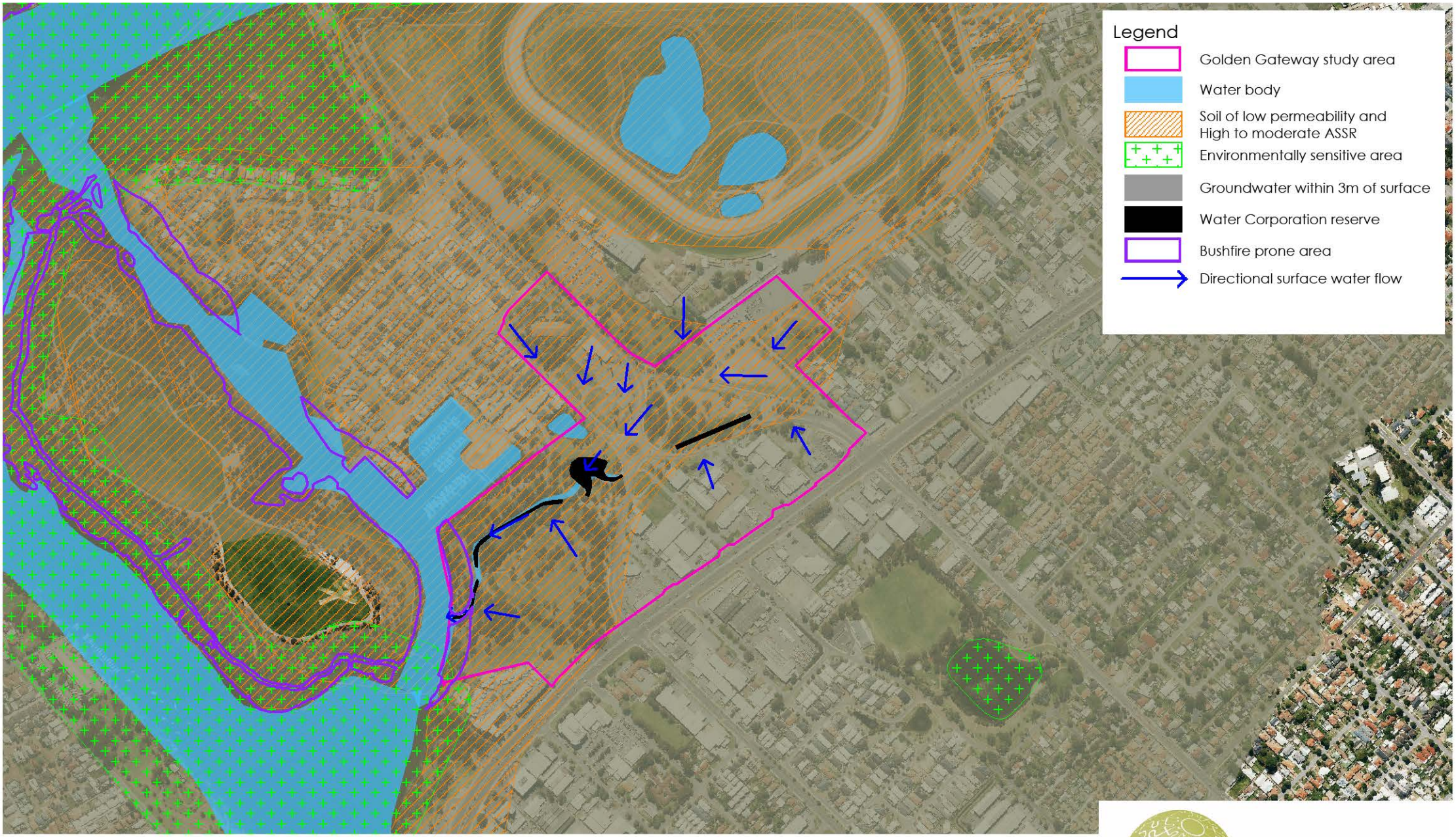

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Figure 9: Environmental opportunities

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5 IMPLEMENTATION STRATEGY

Table 5 provides a preliminary schedule of activities, which should be undertaken at Preconstruction, Construction and Post-construction phases of the project to mitigate and manage potential impacts to the environment. This advice is based on the current predominantly desktop assessment contained within this report. More detailed management measures should be determined as part of more detailed investigation and planning as the proposed development progresses.

Table 5: Implementation strategy

Issue	Action	Frequency	Responsibility
Preconstruction phase			
Contamination	Complete preliminary site investigation for contamination in accordance with Contaminated Sites Act 2003 should areas of known contamination be disturbed.	Once	Developer
Acid sulfate soils	Complete self-assessment checklist and consider need for a preliminary site assessment.	Once	Developer - Consistent with DPLH and DWER guidelines
Vegetation and flora	Clearly delineate POS areas and trees to be retained.	Once	Licensed Surveyor (Developer)
Fauna and habitat	All site staff to participate in Environment, Health and Safety inductions, which provide requirements for management of significant fauna and reporting procedures for environmental incidents.	Once	Developer and Construction contractor
Water management	Refer the local structure plan to the Department of Biodiversity, Conservation and Attractions as it contains a portion of land within and abutting the Swan River Trust Development Control Area.	Once	Developer/City of Belmont
	A Local water management strategy will be completed and used as the basis for detailed design. Following approval of the LWMS, UWMP(s) will be prepared prior to subdivision for approval by City of Belmont.		Developer, in accordance with SPP 2.9: Water Resources
Bushfire	A Bushfire Management Plan will be prepared to support the LSP. The Bushfire Management Plan will be revised and implemented at subdivision.	Once	Developer, in accordance with SPP 3.7: Planning in Bushfire Prone Areas

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Issue	Action	Frequency	Responsibility
Construction phase			
Soils and topography	Ground disturbing activities should be kept to a minimum and carried out 'as required' (in stages) immediately prior to lots being released for sale as part of a 'staged' development of the site.	Ongoing during construction phase.	Construction Contractor (Developer)
Contamination	Management of any identified contamination in accordance with the Contaminated Sites Act 2003.	Ongoing during construction phase.	Construction Contractor (Developer)
Acid sulfate soils	Management of any identified ASS consistent with DPLH and DWER guidelines.	Ongoing during construction phase.	Construction Contractor (Developer)
Vegetation and flora	Maintain markings and fencing around vegetation and trees to be retained. Cleared vegetation to be mulched and stored on site.	Ongoing during construction phase.	Construction Contractor (Developer)
Fauna and habitat	Undertake clearing in the direction of the river to allow fauna to escape.	Ongoing during construction phase.	Construction Contractor (Developer)
Water management	Manage sediment transport to waterways and drainage systems consistent with the LWMS.	Ongoing during construction phase.	Construction Contractor (Developer)
Aboriginal heritage	In the event a site is discovered, all work in the area will cease and the Department of Planning, Lands and Heritage will be contacted.	Ongoing during construction phase.	Construction Contractor (Developer)
Construction impacts	Ensure dust and sediment runoff is adequately managed. Ensure appropriate waste disposal of building materials.	Ongoing during construction phase.	Construction Contractor (Developer)
Post construction phase			
Soils and topography	Landscape or stabilise cleared areas immediately.	Once	Construction Contractor (Developer)
Vegetation and flora	Inspect fencing (if applicable) and replace if required. Ensure ongoing maintenance of retained vegetation and any revegetation areas / native landscaping prior to handover.	6 months Ongoing until handover.	Developer until hand over to City of Belmont

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6 REFERENCES

Clark J, 1952, A history of Australian Baseball: time and game. University of Nebraska, London.

Department of Environment, 2015, Temperate Saltmarsh—Protecting a threatened ecological community and creating habitat for birds (factsheet), www.environment.gov.au

Department of Environment and Conservation (DEC) (2001-2010). *Contaminated Sites Management Series*. DEC, Perth.

DEC, 2010a, *Acid Sulphate Soil Risk Map, Swan Coastal Plain*. Department of Environment and Conservation, Perth.

DER, 2015a, Identification and investigation of acid sulfate soils and acidic landscapes, Department of Environment Regulation, Perth, WA.

DER, 2015b, Treatment and Management of Soils and Water in Acid Sulphate Soil Landscapes Department of Environment Regulation, Perth, WA.

Department of Parks and Wildlife (2016) Corporate policy statement no. 42: Planning for land use, development and permitting affecting the Swan Canning Development Control Area.

Department of Parks and Wildlife (DPaW) 2015, *Naturemap* Database, http://naturemap.dpaw .wa.gov.au, [18 September 2015]

Environmental Protection Authority (EPA) 2004a, Guidance for the Assessment of Environmental Factors, Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia, Guidance Statement No. 51, Perth.

Environmental Protection Authority (EPA) 2004b, Guidance for the Assessment of Environmental Factors, Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia, Guidance Statement No. 56, Perth.

Environmental Protection Authority (EPA) 2008, Environmental Guidance for Planning and Development, Guidance Statement No. 33, Perth.

GHD (2013) Lot 5 Resolution Drive Ascot Site Management Plan.

Heritage Council State Heritage Office, 2012, *Bristile Kilns (fmr), Belmont,* http://inherit.stateheritage.wa.gov.au

Jordan, JE, 1986, Perth, part sheets 2033 I and 2033 IV, Perth Metropolitan Region, Environmental geology series, Geological Survey of Western Australia.

Strutt, Jessica, 2015, 'Ascot's heritage-listed kiln site likely to be developed by private sector', *Australian Broadcasting Corporation (ABC)*, 2 June 2015. abc.net.au/news/2015-06-02/ascot-brick-kiln-land-likely-to-be-developed/6516154

Western Australian Planning Commission (WAPC) (2000). *Bush Forever*. WAPC, Perth, WA.

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Client: City of Belmont

Report	Version	Prepared by	Reviewed by	Submitted to Client	
				Copies	Date
Draft report	V1	RM	SSh	Electronic	2 March 2016
Draft – amendments to study area	V2	RM	SSh	Electronic	31 August 2016
Final	V3	SSh	HBr	Electronic	3 May 2018
Amended Final	V4	SSh	HBr	Electronic	21 May 2018
Final Amendments	V5	SSh	HBr	Electronic	25 June 2018

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