

Perth Racing

Ascot Racecourse Local Structure Plan and Scheme Amendment

Transport Impact Assessment

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Project Code: 07575

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I Introduction

I.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.

I.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.

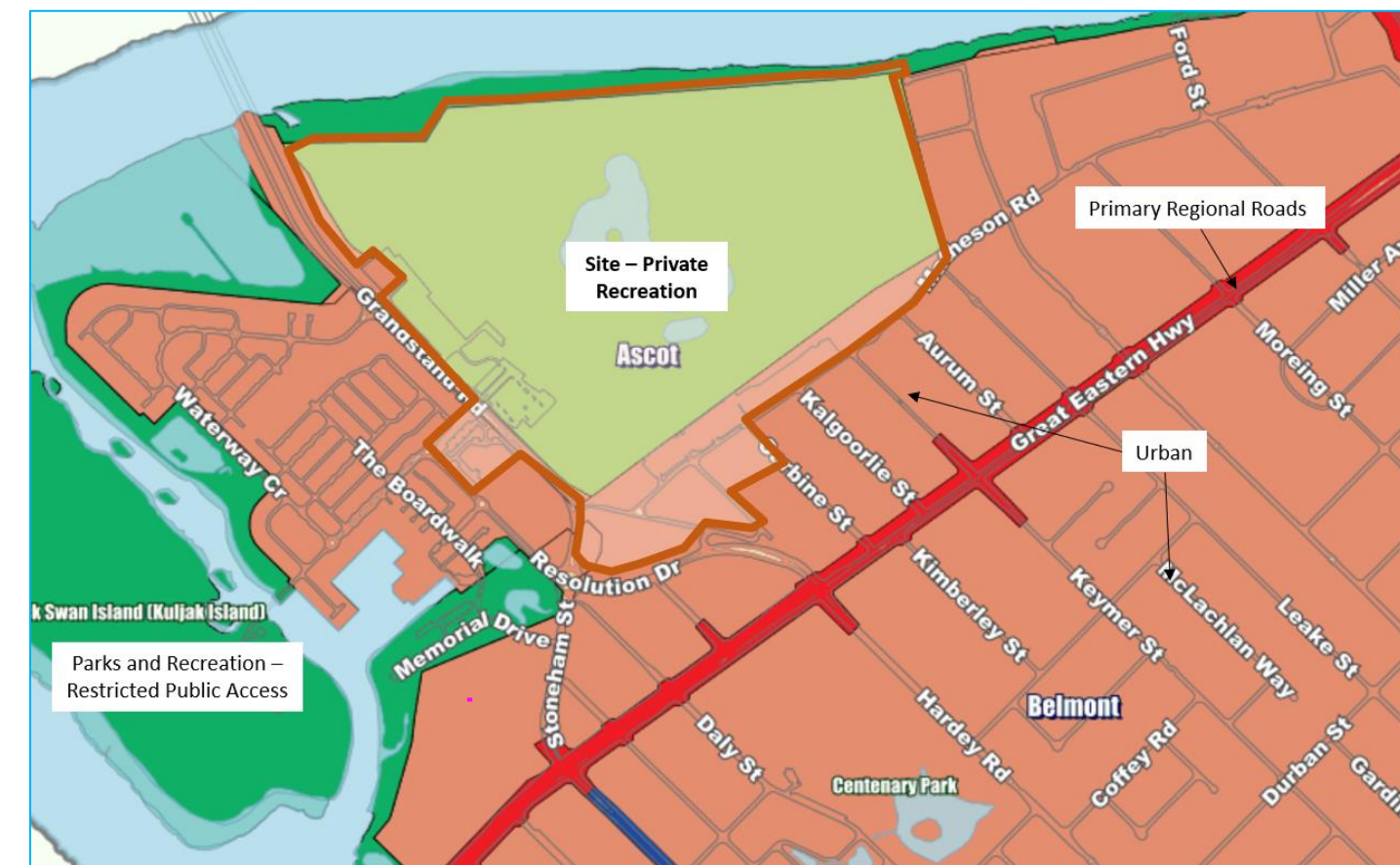
This TIA also refers to the developing City of Belmont's Golden Gateway LSP (GGLSP) which currently encompasses part of the land under the ownership of the Applicant, which has been a catalyst to complete this LSP and Scheme Amendment to guide development in this area in a considered way. In pre-submission 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.

I.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 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:

- 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.

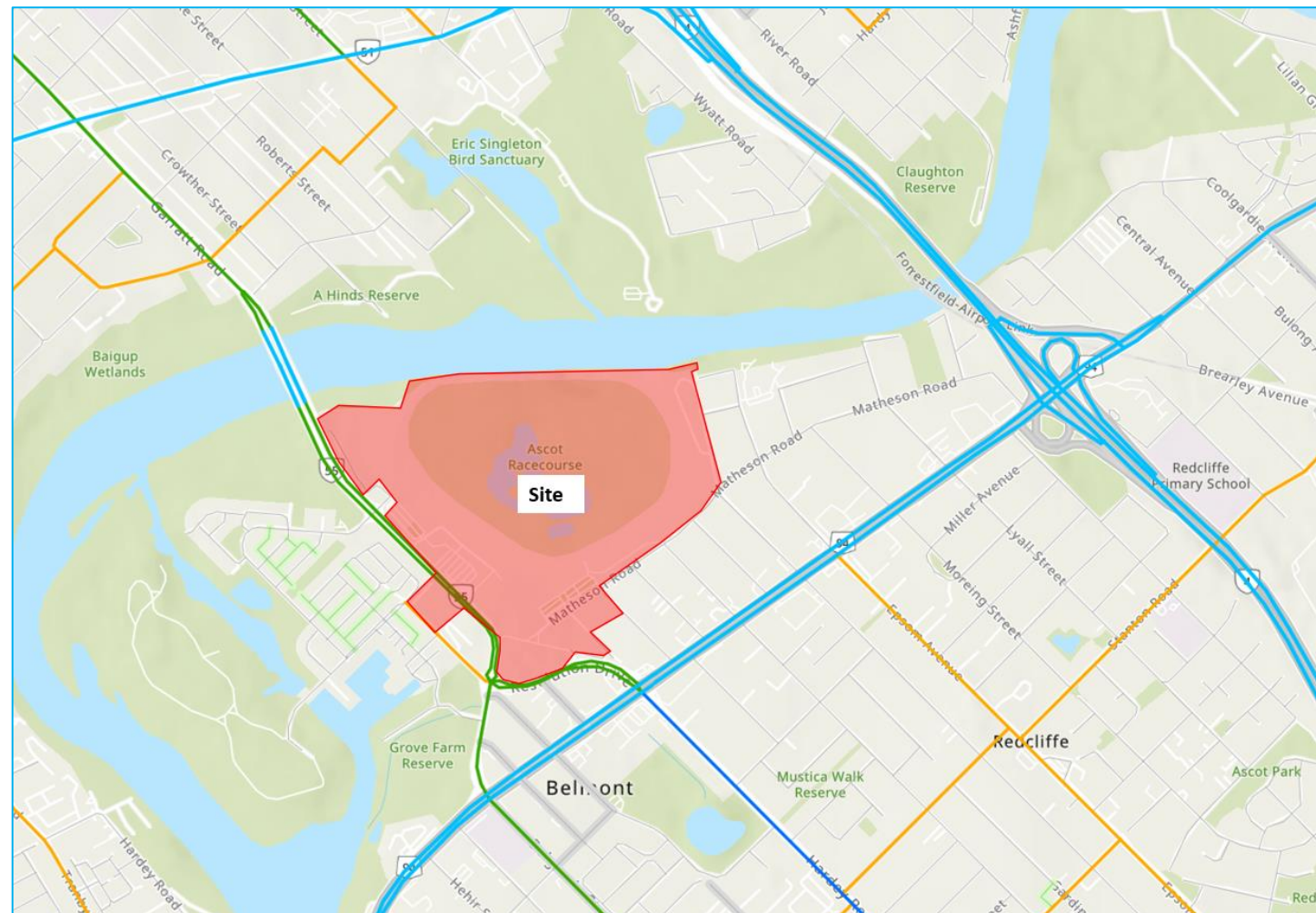
South of the site boundary, Resolution Drive continues west as a Distributor A route, from the Grandstand Road / Stoneham Street / Resolution Drive roundabout intersection. Resolution Drive is a single carriageway with shoulders of approx. 1.8m, each side of the approx. 3.5m carriageway. East of the 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

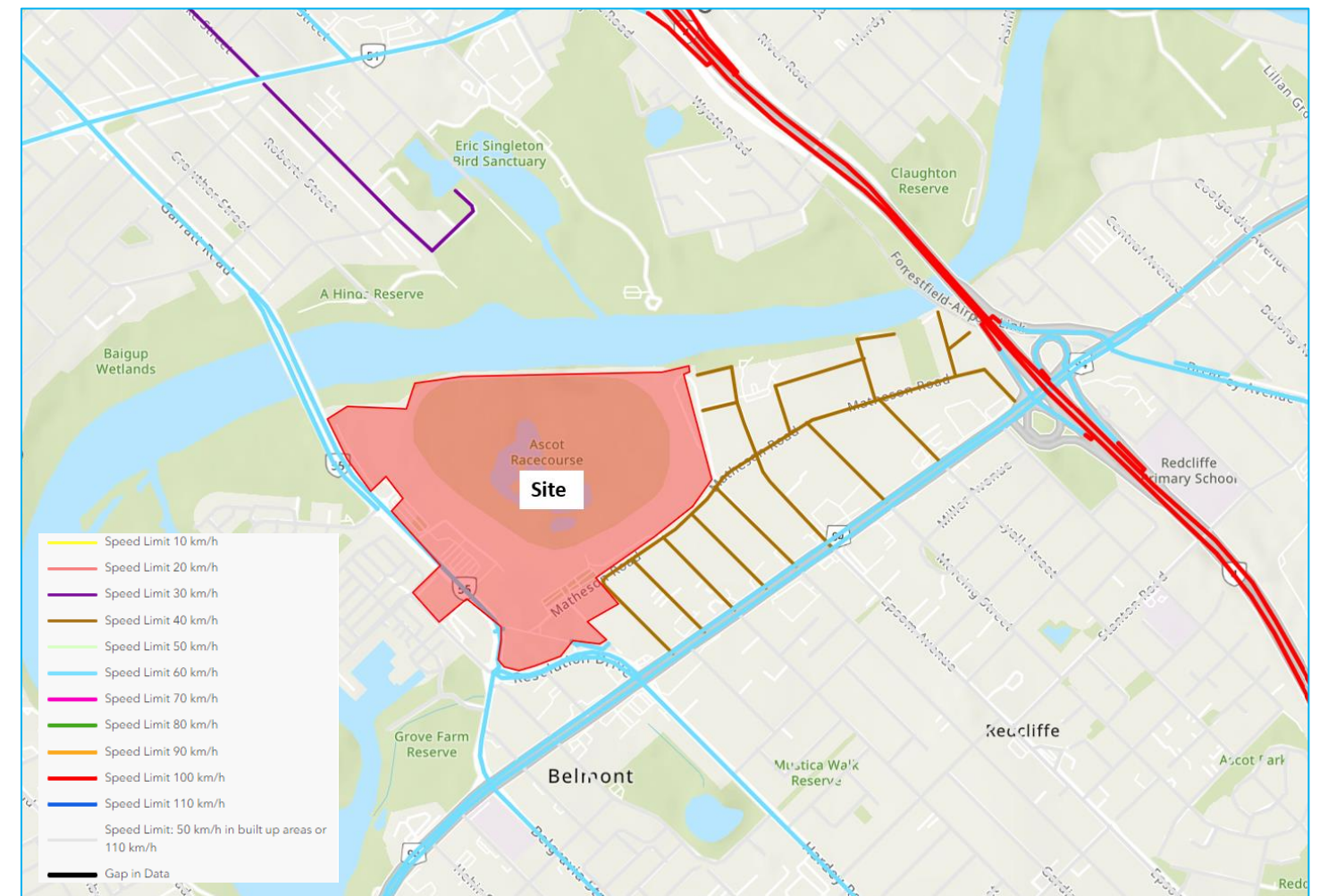
Road classifications are defined in the Main Roads Functional Hierarchy as follows:

- **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 2-5** 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.



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:

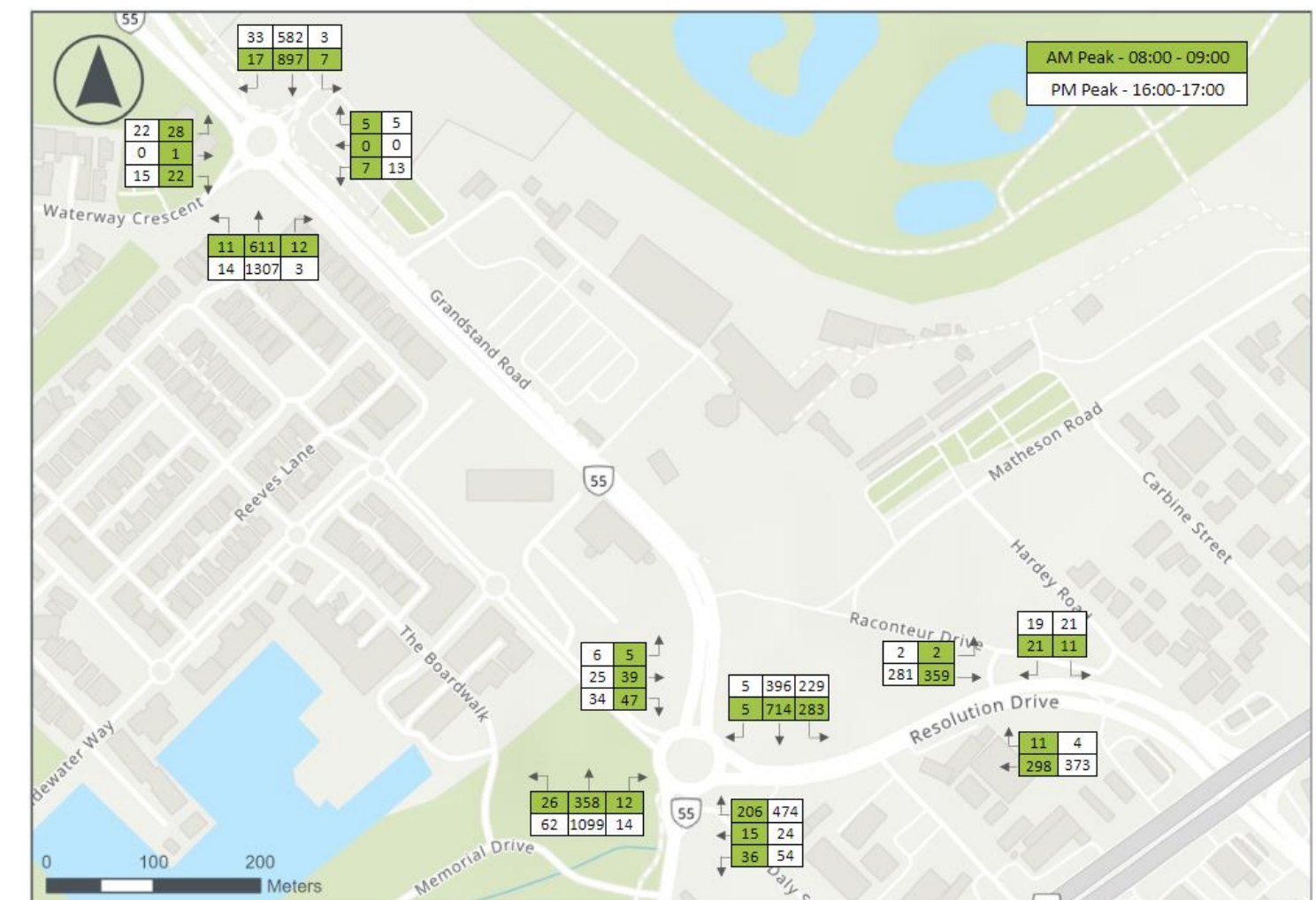
- Grandstand Road 16,670 vehicles per day (vpd) – 2018 counts
- Resolution Drive 7,860 vpd – 2021 counts
- Stoneham Street 14,270 vpd – 2018 counts.

¹ Extended period over approximately 20 years (2002 – 2021).

Review of these midblock traffic flows over an extended period¹ 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

Credits: Esri Community Maps Contributors, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, Foursquare, METI/NASA,

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



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 is 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.



Figure 2-11: Public Transport Services



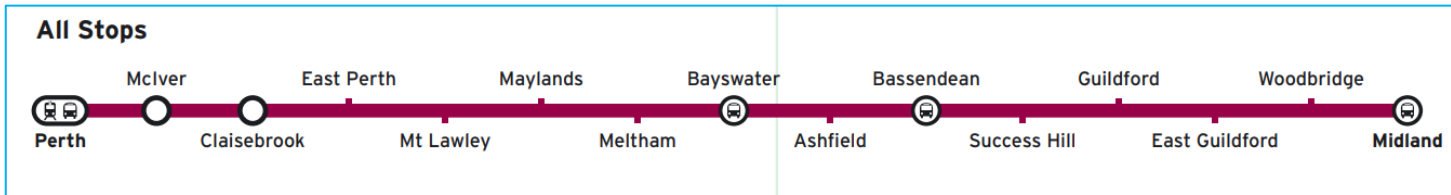
Source: WA Department of Transport (2024)

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.

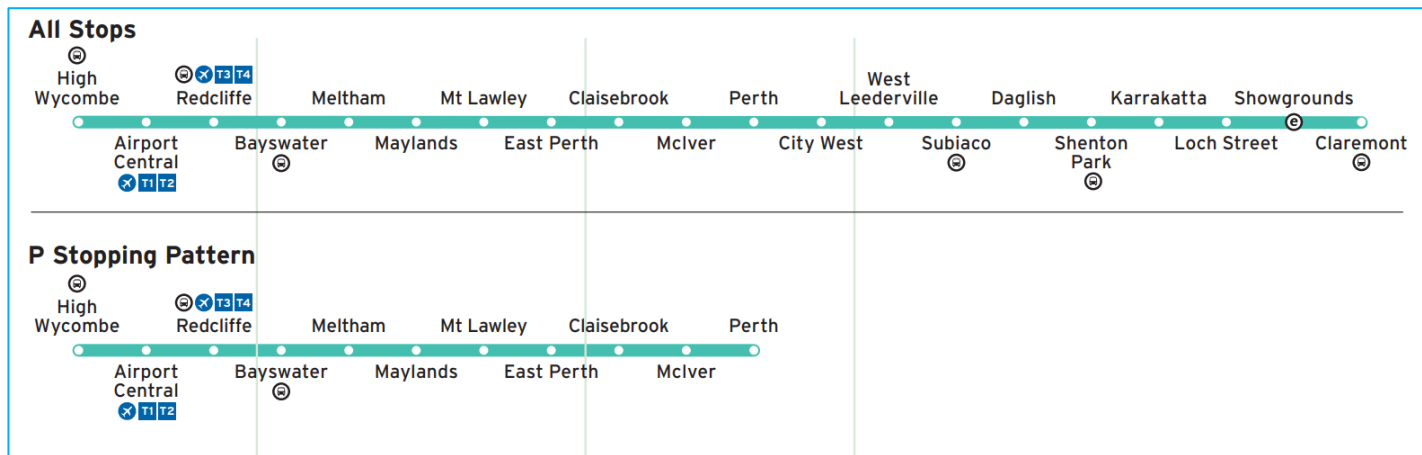
Figure 2-12: Stopping Pattern on the Midland Rail Line



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



Figure 2-14: Summary of All Crashes in Latest 5-Year Period

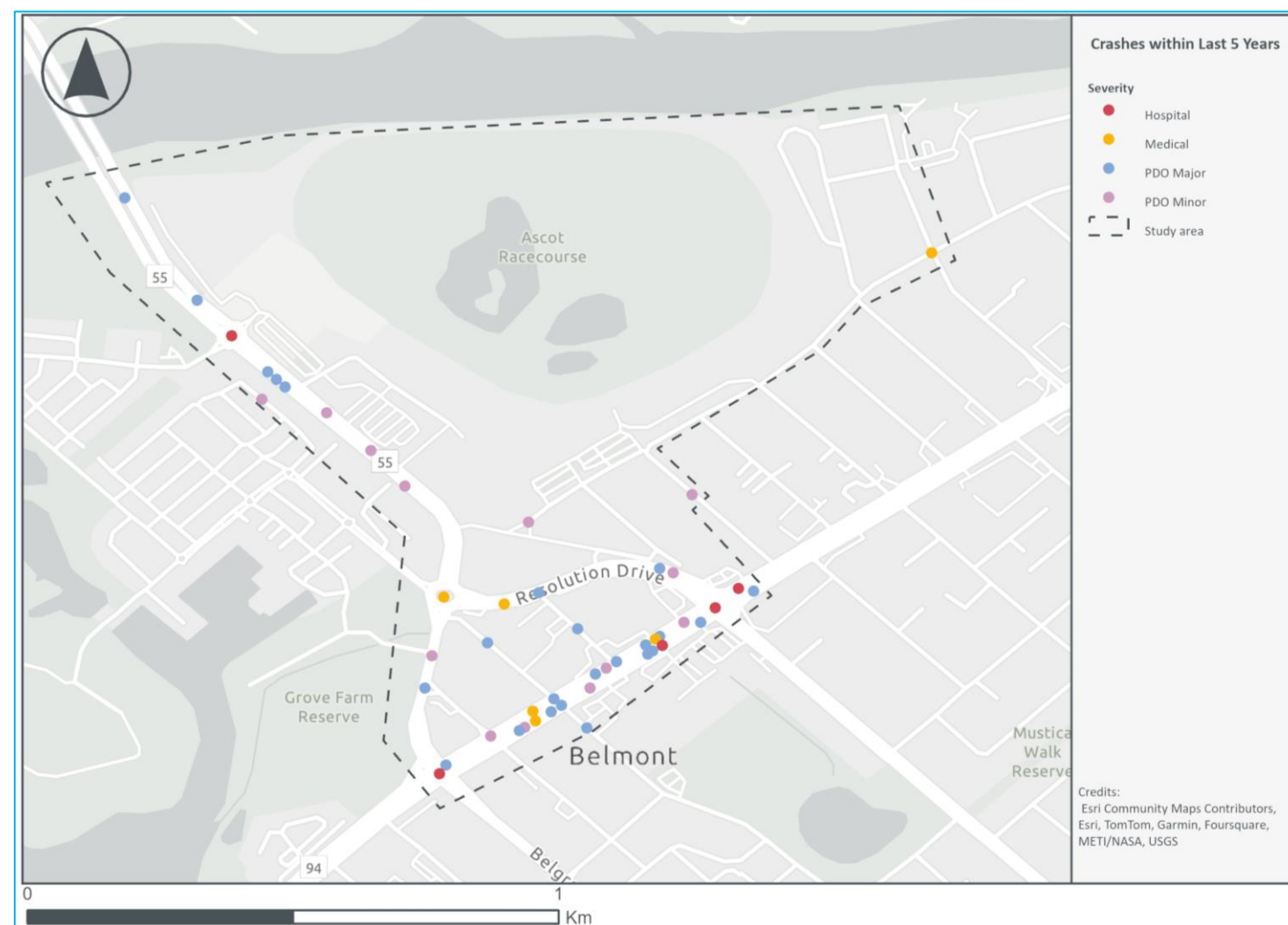
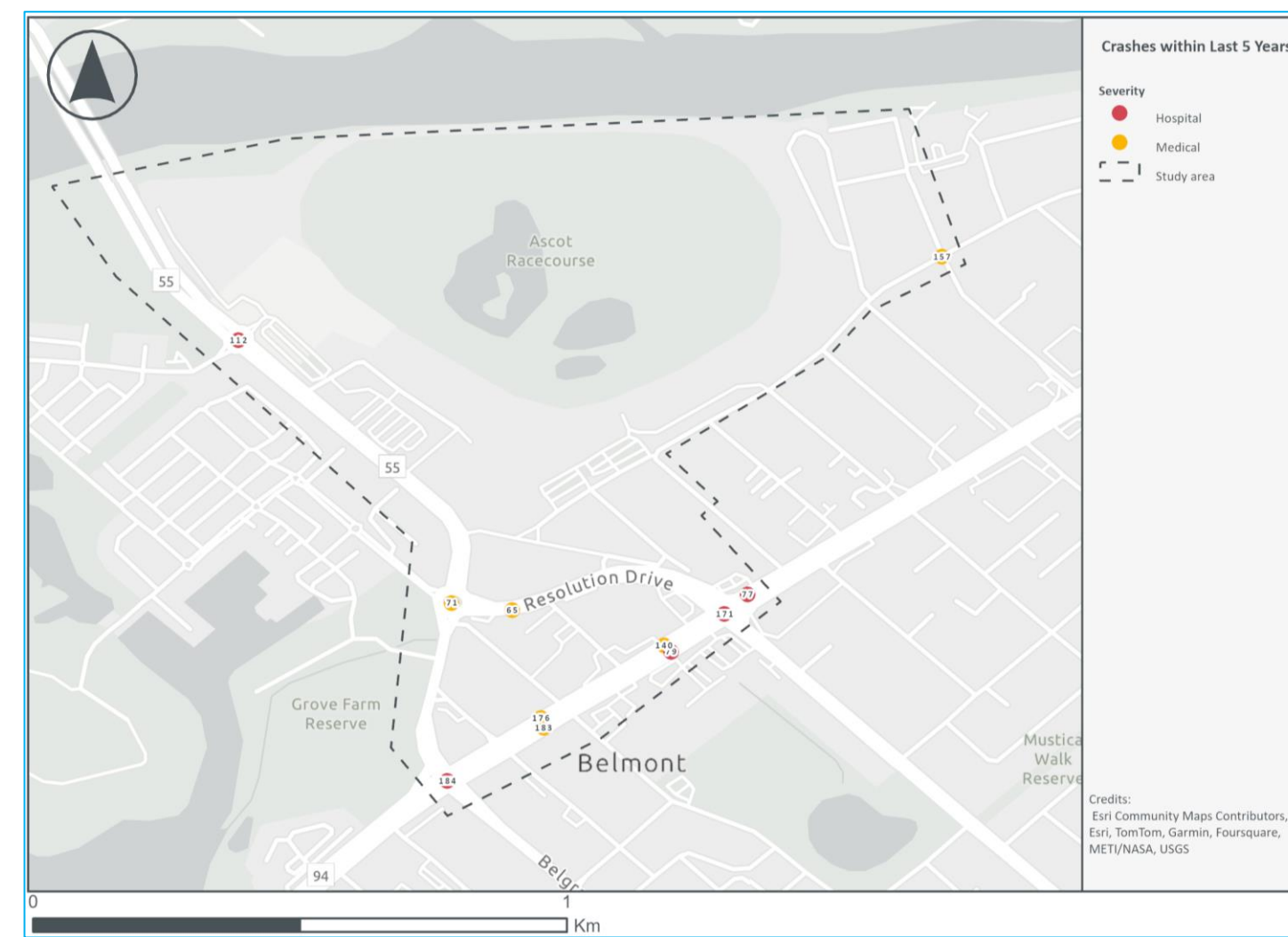


Figure 2-15: Hospital and Medical Severity Crashes in the Latest 5-Year Period





3 Proposed Local Structure Plan and Scheme Amendment

3.1 Proposed Zoning

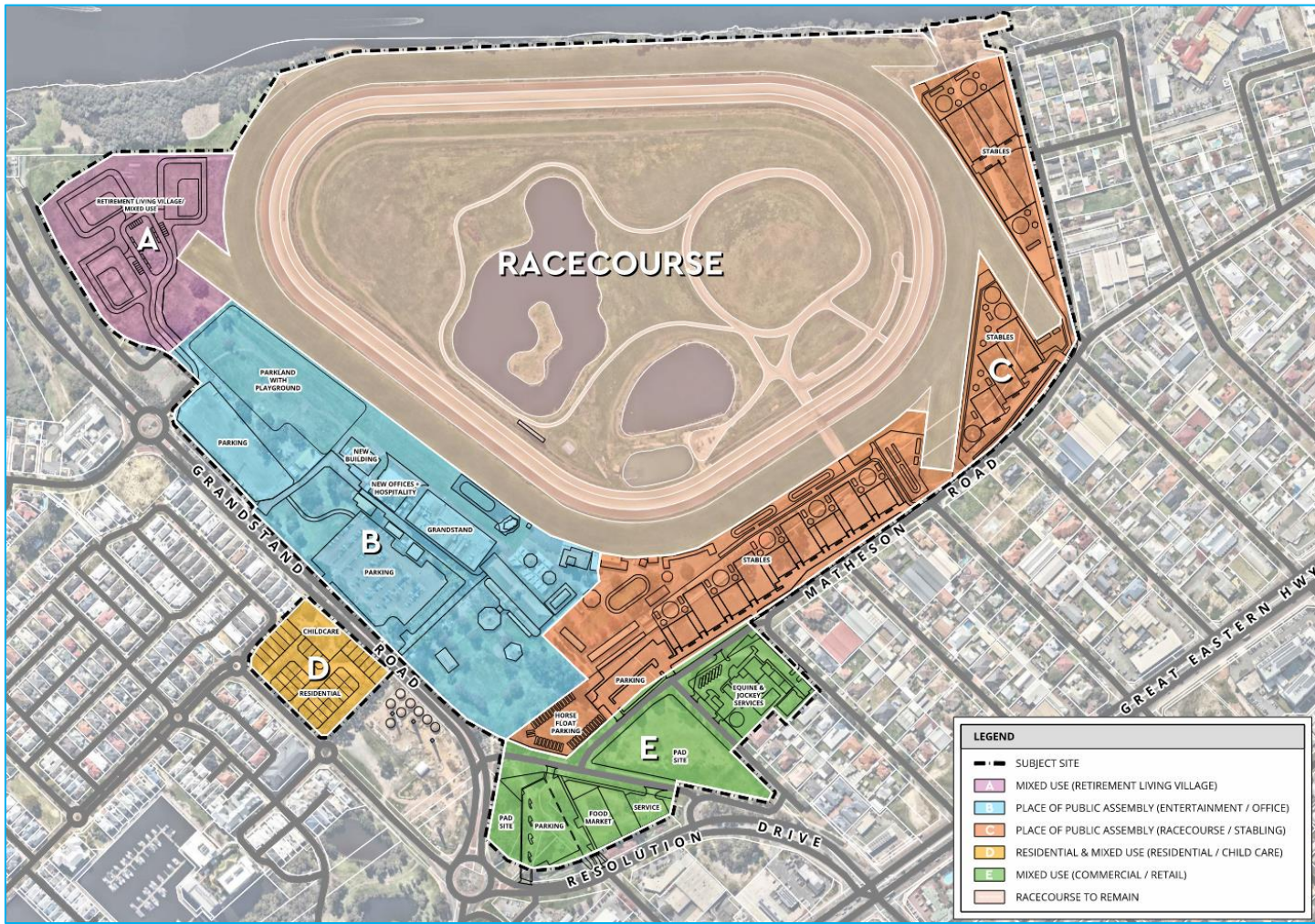
In Section 1 of this TIA, the site area was identified as largely dedicated to uses relating to Ascot Racecourse, such as ‘Private Recreation’ (MRS) or ‘Place of Public Assembly’ (LPS No.15), with some areas within the site boundary zoned as ‘Urban’ or ‘Mixed Use’.

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). - Maximum 300m² café.
B	Place Of Public Assembly (No Change to Existing Zone)	Entertainment / Racecourse Administration Office (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 680m² NLA (Net Lettable Area). - New Building - Hospitality venue on Upper Floor - Total building footprint of 1,020m² - Parkland with a playground.
C	Place Of Public Assembly (No Change to Existing Zone)	Racecourse / Stabling	3 On-course stabling complexes. - Approx. 400 stables. - Parking area inc. Horse float parking.
D	Residential & Mixed Use (R60)	Residential / Child Care	- Child care centre fronting Grandstand Rd, across approx. 2,100m² for 70-90 children. - Residential development with a yield of approx. 41 lots.
E	Mixed Use (with additional use of ‘shop’)	Commercial / Retail	- Site 1: 3,400m² retail floorspace and 2,500m² commercial floorspace - Site 2: 5,200-7,100m² commercial floorspace. - 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.

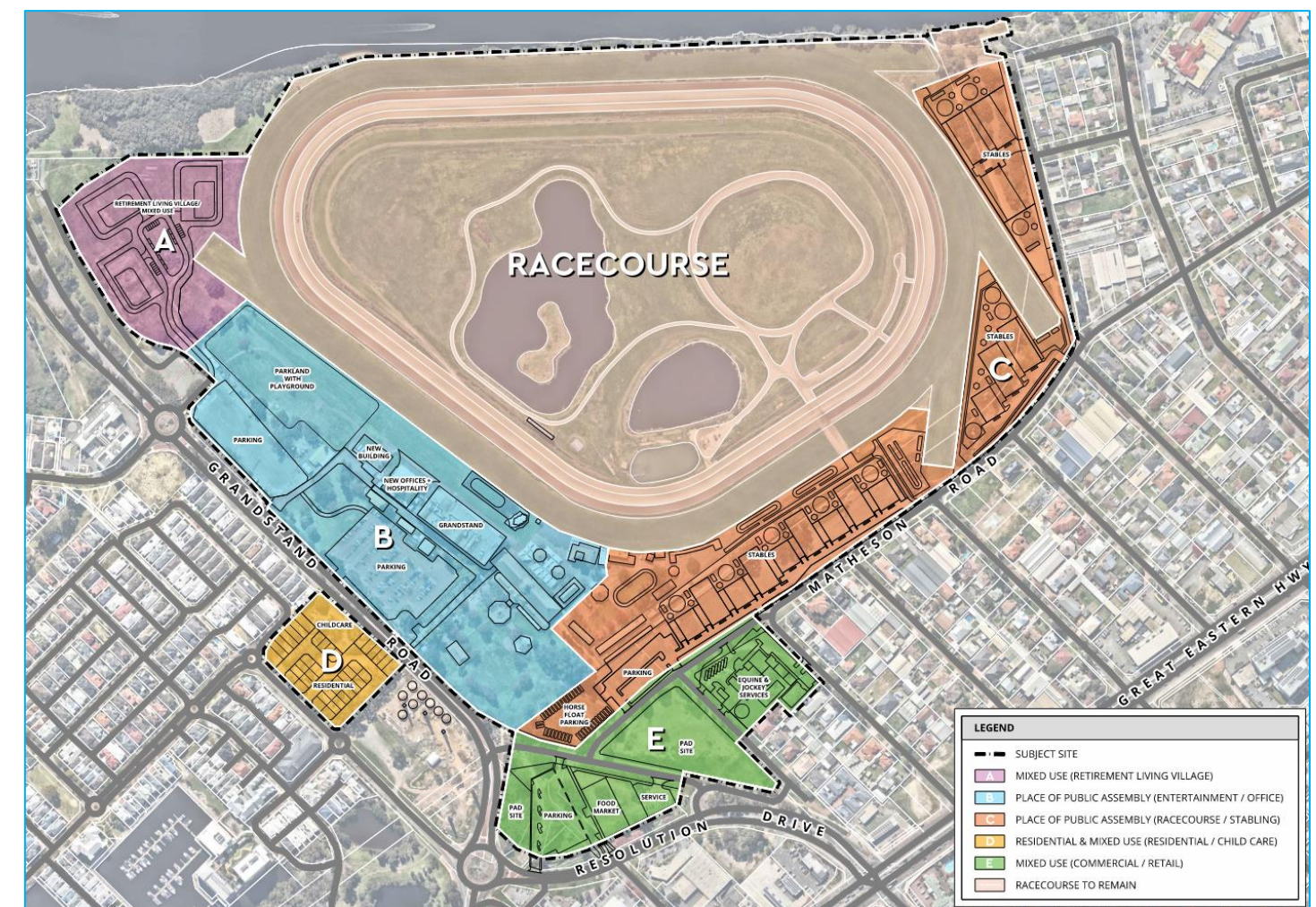
Current parking layout in **Figure 3-2** shows typical parking demand for an opening racing day on 14th October 2023. This shows paved patron parking and members parking within Precinct B (the racecourse entertainment) and patron parking within Precincts C (stabling) and E (commercial/retail). Similarly, 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 from 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 is 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.



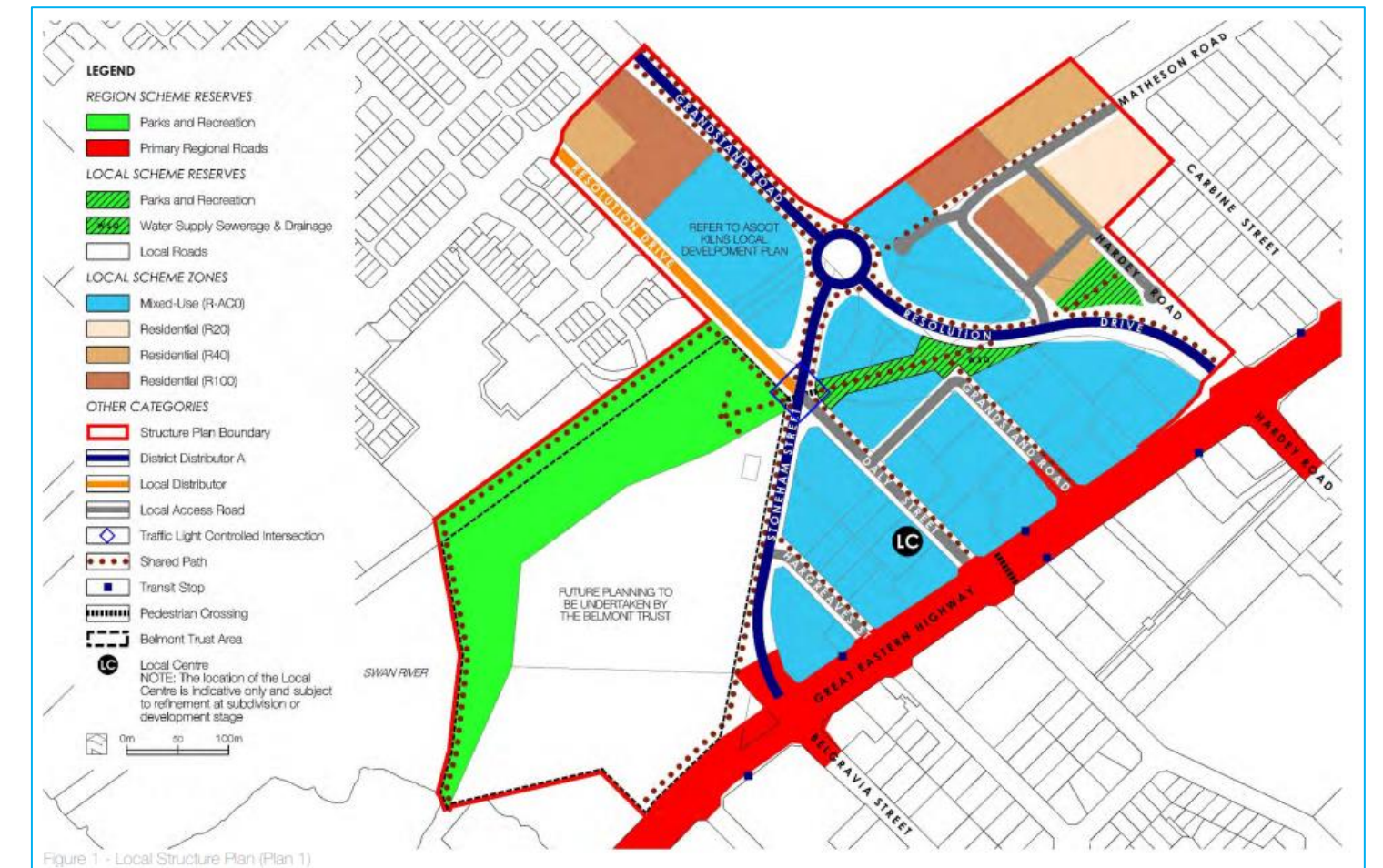
4 Changes to External Transport Network

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 100-200m² 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)

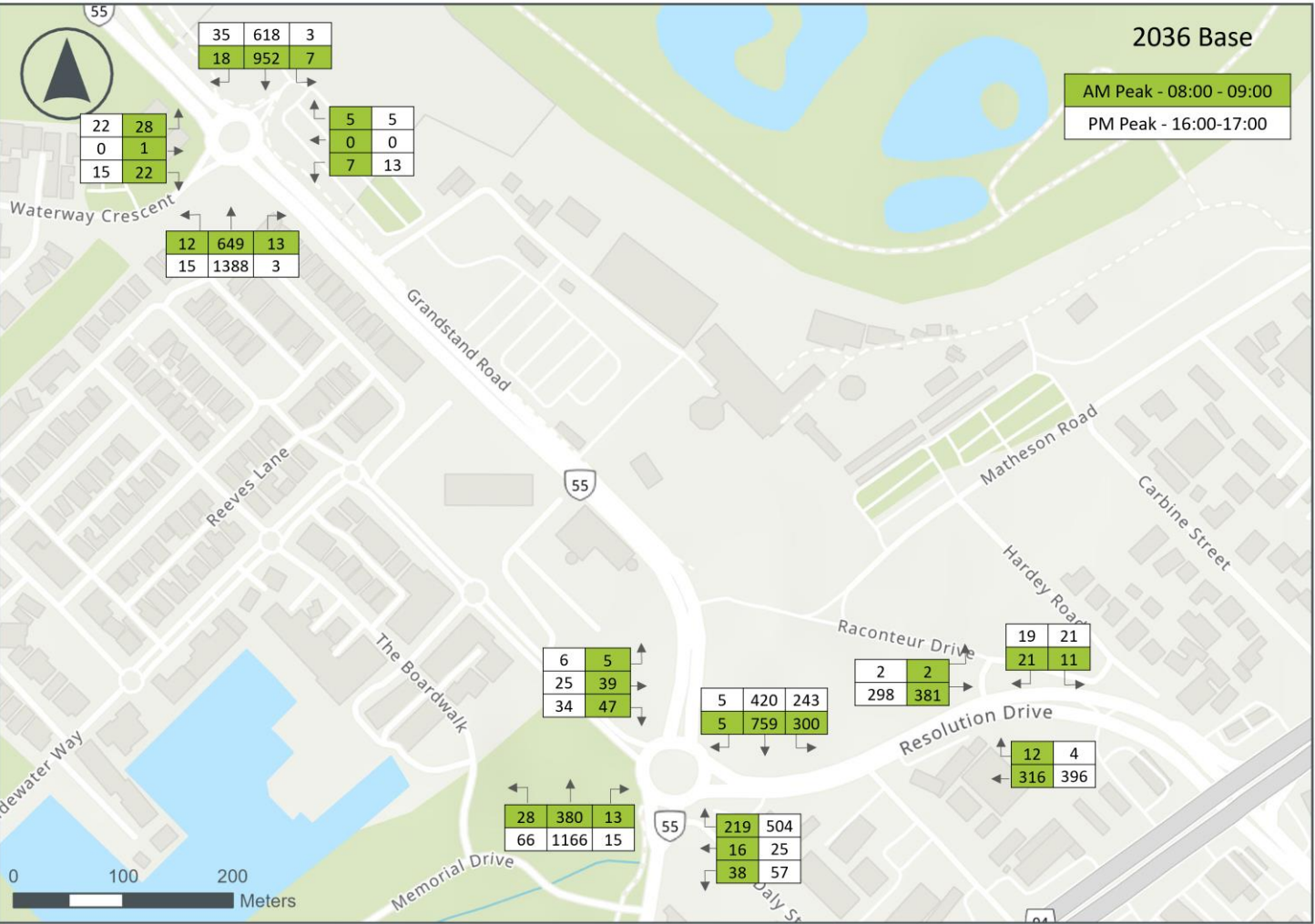
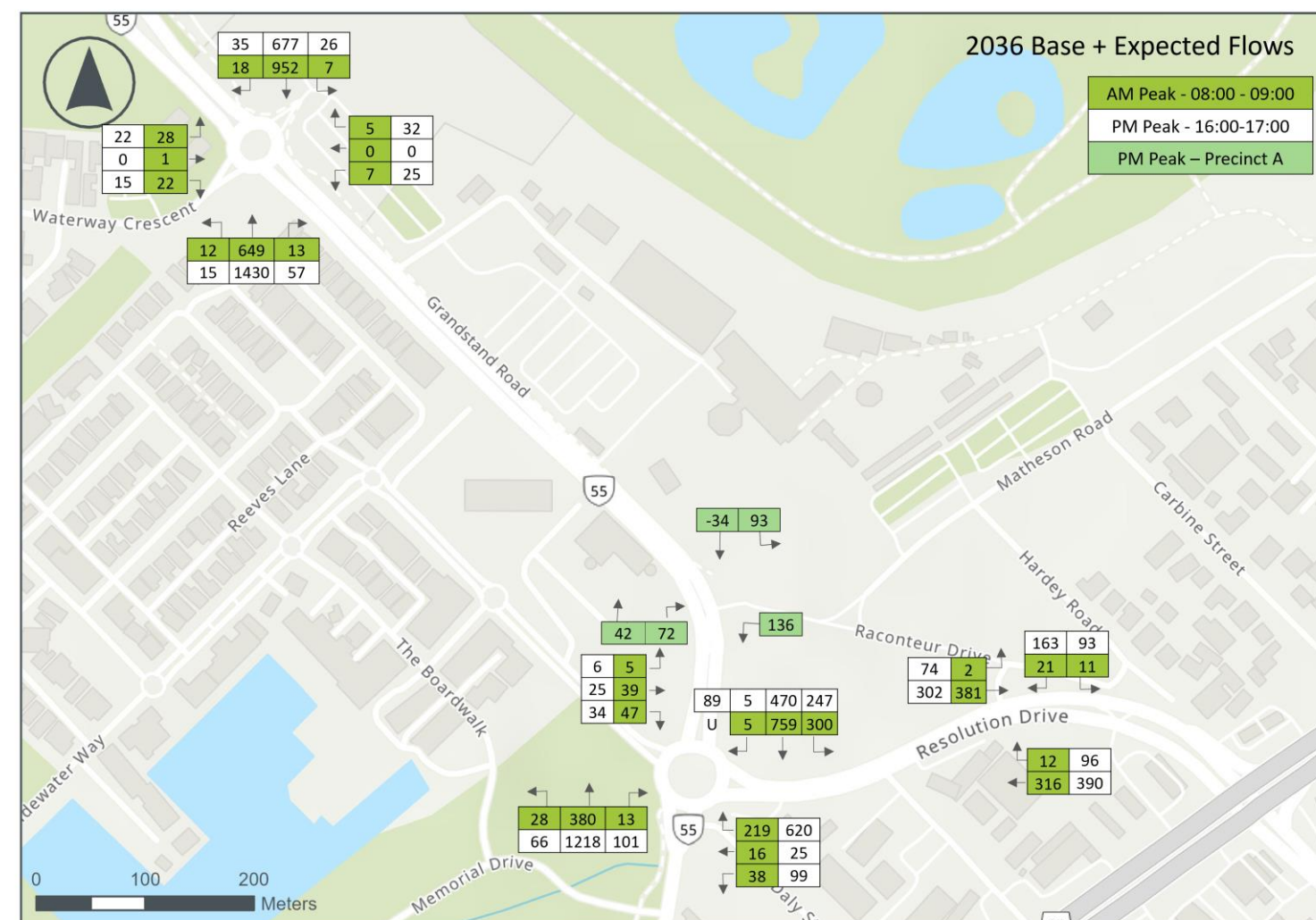


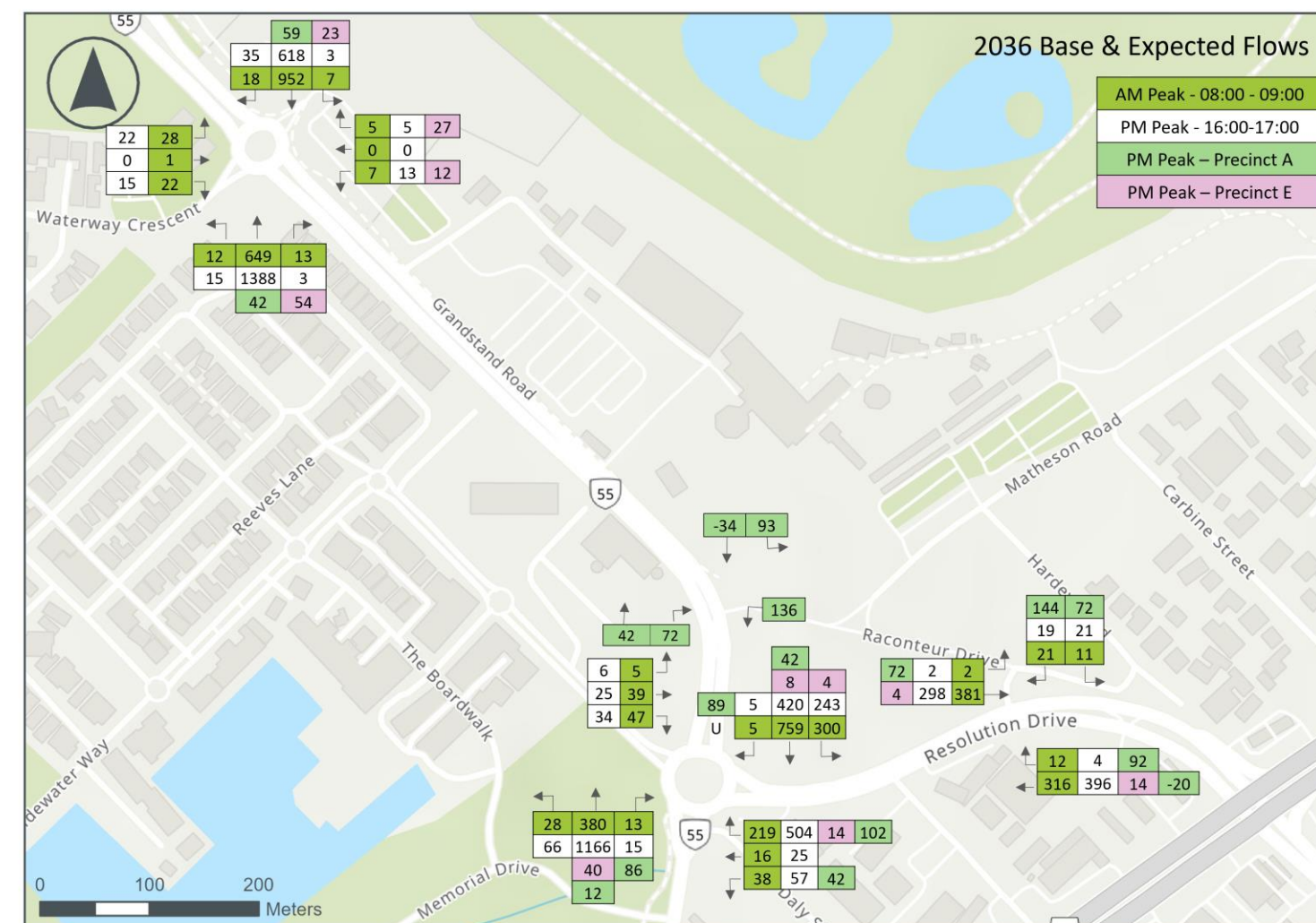


Figure 6-2: 2036 Traffic Flows (plus Precinct A Development Flows)



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 Crescent 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 I - 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	95 th %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	95 th %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	95 th %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	95 th %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	95 th %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	95 th %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	95 th %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	95 th %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	95 th %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	95 th %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	95 th %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	95 th %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	95 th %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	95 th %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	95 th %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	95 th %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	95 th %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	95 th %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 Crescent 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 Station, 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/Harvey Road
 - Great Eastern Highway/Stoneham Street/Belgravia Street.



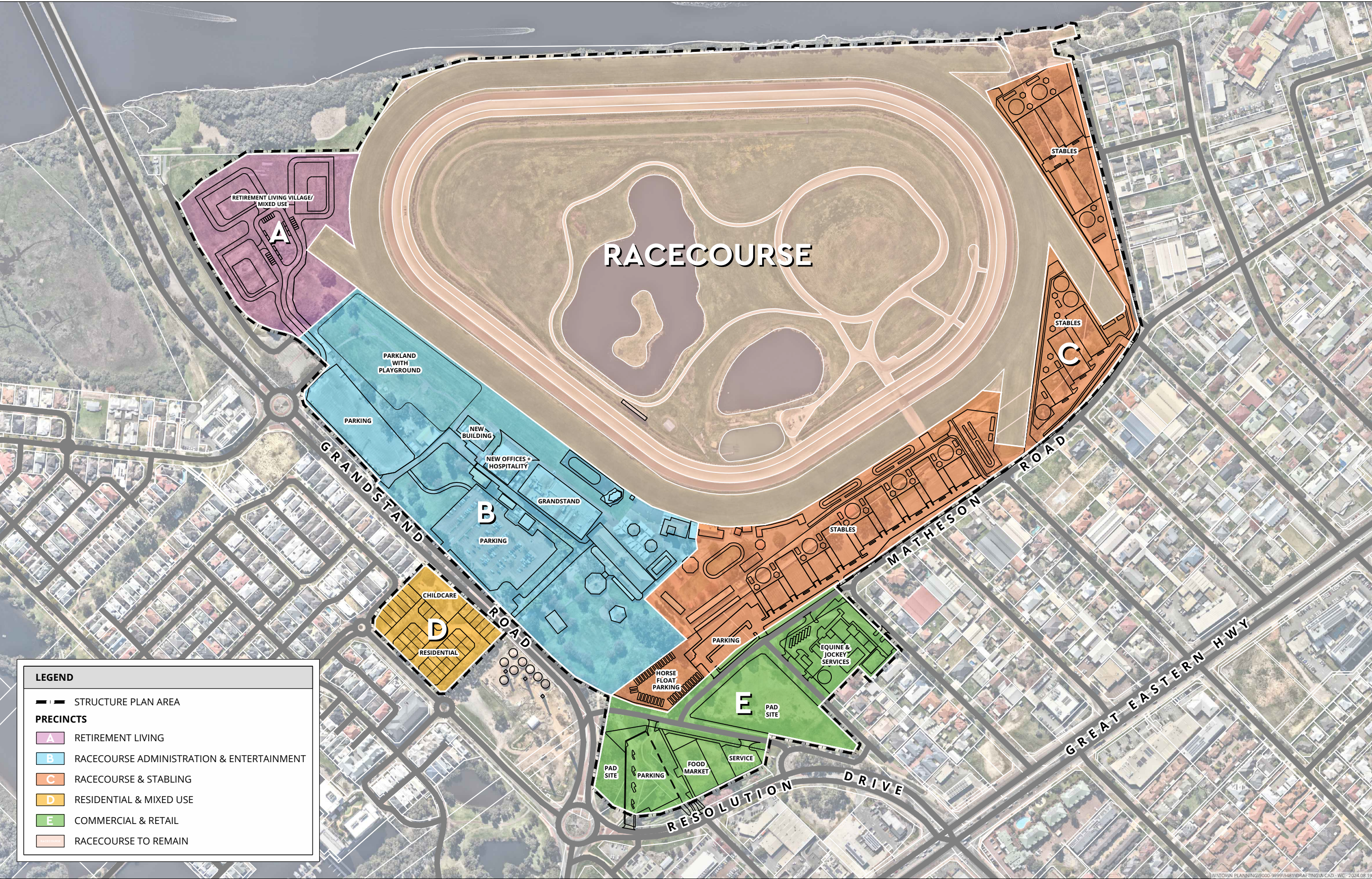
Appendix A TIA Checklist

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	

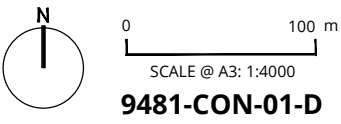


Appendix B Proposed Masterplan Precincts



DRAFT MASTER PLAN CONCEPT
VARIOUS LOTS - ASCOT RACECOURSE
ASCOT

Document Set ID: 5885123
Version: 1, Version Date: 18/09/2024



DRAWN: WC
DATE CREATED: 2024.08.19
PROJECTION: MGA50 GDA94
CADASTRE: LANDGATE
AERIAL: NEARMAP 20230831
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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		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[Total veh/h]	HV %	[Total veh/h]	HV %	veh/h	v/c	%	sec		[Veh]	Dist m		m	%	%
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.	T1	Total	%HV		Deg. Satn	Lane Util.	Prob. SL	Ov. Lane	
From S					Cap. veh/h	v/c	%	%	No.
To Exit:	N								
Lane 1	101	101	0.0		1149	0.088	100	NA	NA
Approach	101	101	0.0			0.088			
North: Racecourse									
Mov.	L2	T1	Total	%HV		Deg. Satn	Lane Util.	Prob. SL	Ov. Lane
From N					Cap. veh/h	v/c	%	%	No.
To Exit:	E	S							
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	T1	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 % veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane 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

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		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.						
	[Total	HV]	[Total	HV]														[Veh	Dist]		
	veh/h	%	veh/h	%						veh/h	v/c					%	sec		m		m
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	R2	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	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	pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Capacity Flow Rate 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		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[Total veh/h]	[HV %]	[Total veh/h]	[HV %]	veh/h	v/c	%	sec		[Veh]	[Dist m]		m	%	%
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.	L2	T1	Total	%HV		Deg. Satn	Lane Util.	Prob. SL	Ov.	
From NE					Cap. veh/h	v/c	%	%	Lane No.	
To Exit:	SE	SW								
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.	L2	T1	Total	%HV		Deg. Satn	Lane Util.	Prob. SL	Ov.	
From NW					Cap. veh/h	v/c	%	%	Lane No.	
To Exit:	NE	SE								
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	Total	%HV		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
	NE								
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 %	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
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

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		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[Total	HV]	[Total	HV]						[Veh	Dist]				
	veh/h	%	veh/h	%											
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	R2	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.	
	NW	NE								
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	Total	%HV		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.	
	NW									
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
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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 % 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

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		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[Total veh/h]	[HV %]	[Total veh/h]	[HV %]	veh/h	v/c	%	sec		[Veh]	[Dist m]		m	%	%
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.	T1	Total	%HV		Deg. Satn	Lane Util.	Prob. SL	Ov.	Ov.
From S					Cap. veh/h	v/c	%	%	Lane No.
To Exit:	N								
Lane 1	4	4	0.0		1200	0.004	100	NA	NA
Approach	4	4	0.0			0.004			
North: Racecourse									
Mov.	L2	T1	Total	%HV		Deg. Satn	Lane Util.	Prob. SL	Ov.
From N					Cap. veh/h	v/c	%	%	Lane No.
To Exit:	E	S							
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	T1	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 % veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane 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

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		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.		
	[Total	HV]	[Total	HV]							[Veh					Dist]	
	veh/h	%	veh/h	%						veh/h	v/c					%	sec
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	R2	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.	
	W	N								
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	Total	%HV		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.	
	W									
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 sec	Follow-up Headway sec	Lane Capacity Flow Rate 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: 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		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Prob. Adj. Block.	
	[Total	HV]	[Total	HV]						[Veh	Dist]			%	%
	veh/h	%	veh/h	%											
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.	L2	T1	R2	U	Total	%HV		Deg. Satn	Lane Util.	Prob. SL	Ov.	
From SE							Cap. veh/h	v/c	%	%	Lane No.	
To Exit:	SW	NW	NE	SE								
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.	L2	T1	R2	Total	%HV		Deg. Satn	Lane Util.	Prob. SL	Ov.		
From NE							Cap. veh/h	v/c	%	%	Lane No.	
To Exit:	SE	SW	NW									

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.	L2	T1	R2	U	Total	%HV		Deg.	Lane	Prob.	Ov.
From NW							Cap.	Satn	Util.	SL	Lane
To Exit:	NE	SE	SW	NW			veh/h	v/c	%	%	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.	L2	T1	R2	Total	%HV			Deg.	Lane	Prob.	Ov.
From SW							Cap.	Satn	Util.	SL	Lane
To Exit:	NW	NE	SE				veh/h	v/c	%	%	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	Short	Percent	Opposing	Critical	Follow-up	Lane Capacity	Deg.	Min.	Merge		
	Lane	Lane	Opng in	Flow Rate	Gap	Headway	Flow	Satn	Delay	Delay		
	Number	Length	Lane	% veh/h	pcu/h	sec	sec	veh/h	veh/h	v/c	sec	sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis				
	Initial	Residual	Time for	Duration
	Queued	Queued	Residual	of
	Demand	Demand	Demand	Oversatn
	veh	veh	to Clear	sec
			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

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		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[Total veh/h	HV %	[Total veh/h	HV %	veh/h	v/c	%	sec		[Veh	Dist] m		m	%	%
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.	L2	T1	R2	U	Total	%HV		Deg. Satn	Lane Util.	Prob. SL Ov.	Ov. Lane No.	
From SE To Exit:	SW	NW	NE	SE			Cap. veh/h	v/c	%	%		
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.	L2	T1	R2	Total	%HV		Deg. Satn	Lane Util.	Prob. SL Ov.	Ov. Lane No.		
From NE To Exit:	SE	SW	NW				Cap. veh/h	v/c	%	%		
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.	L2	T1	R2	U	Total	%HV		Deg. Satn	Lane	Prob.	Ov.	
From NW												
To Exit:	NE	SE	SW	NW			Cap. veh/h	v/c	Util. %	SL 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.	L2	T1	R2	Total	%HV			Deg. Satn	Lane	Prob.	Ov.	
From SW												
To Exit:	NW	NE	SE				Cap. veh/h	v/c	Util. %	SL 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 sec	Follow-up Headway sec	Lane 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

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		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Prob. Adj. Block.		
	[Total	HV]	[Total	HV]						[Veh	Dist]			%	%	
	veh/h	%	veh/h	%												
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.	L2	T1	R2	U	Total	%HV		Deg. Satn	Lane Util.	Prob. SL	Ov.	
From SE							Cap. veh/h	v/c	%	%	Lane No.	
To Exit:	SW	NW	NE	SE								
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.	L2	T1	R2	Total	%HV		Deg. Satn	Lane Util.	Prob. SL	Ov.		
From NE							Cap. veh/h	v/c	%	%	Lane No.	
To Exit:	SE	SW	NW									

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.	L2	T1	R2	U	Total	%HV		Deg.	Lane	Prob.	Ov.
From NW							Cap.	Satn	Util.	SL	Lane
To Exit:	NE	SE	SW	NW			veh/h	v/c	%	%	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.	L2	T1	R2	Total	%HV			Deg.	Lane	Prob.	Ov.
From SW							Cap.	Satn	Util.	SL	Lane
To Exit:	NW	NE	SE				veh/h	v/c	%	%	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 sec	Follow-up Headway sec	Lane 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

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		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Prob.	
	[Total	HV]	[Total	HV]						[Veh	Dist]			Adj. Block.	
	veh/h	%	veh/h	%											
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.	L2	T1	R2	U	Total	%HV		Deg. Satn	Lane Util.	Prob. SL	Ov. Lane	
From SE							Cap. veh/h	v/c	%	%	No.	
To Exit:	SW	NW	NE	SE								
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.	L2	T1	R2	Total	%HV		Deg. Satn	Lane Util.	Prob. SL	Ov. Lane		
From NE							Cap. veh/h	v/c	%	%	No.	
To Exit:	SE	SW	NW									

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.	L2	T1	R2	U	Total	%HV		Deg.	Lane	Prob.	Ov.
From NW							Cap.	Satn	Util.	SL Ov.	Lane
To Exit:	NE	SE	SW	NW			veh/h	v/c	%	%	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.	L2	T1	R2	Total	%HV			Deg.	Lane	Prob.	Ov.
From SW							Cap.	Satn	Util.	SL Ov.	Lane
To Exit:	NW	NE	SE				veh/h	v/c	%	%	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 sec	Follow-up Headway sec	Lane 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

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		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Prob.	
	[Total	HV]	[Total	HV]						[Veh	Dist]			Adj.	Block.
	veh/h	%	veh/h	%											
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.	L2	T1	R2	U	Total	%HV		Deg. Satn	Lane Util.	Prob. SL	Ov. Lane	
From SE							Cap. veh/h	v/c	%	%	No.	
To Exit:	SW	NW	NE	SE								
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.	L2	T1	R2	Total	%HV		Deg. Satn	Lane Util.	Prob. SL	Ov. Lane		
From NE							Cap. veh/h	v/c	%	%	No.	
To Exit:	SE	SW	NW									

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.	L2	T1	R2	U	Total	%HV		Deg.	Lane	Prob.	Ov.
From NW							Cap.	Satn	Util.	SL Ov.	Lane
To Exit:	NE	SE	SW	NW			veh/h	v/c	%	%	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.	L2	T1	R2	Total	%HV			Deg.	Lane	Prob.	Ov.
From SW							Cap.	Satn	Util.	SL Ov.	Lane
To Exit:	NW	NE	SE				veh/h	v/c	%	%	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 sec	Follow-up Headway sec	Lane 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

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		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Prob. Adj. Block.	
	[Total	HV]	[Total	HV]						[Veh	Dist]			%	%
	veh/h	%	veh/h	%						veh/h	v/c				
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.	L2	T1	R2	U	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.	
From SE To Exit:	SW	NW	NE	SE								
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.	L2	T1	R2	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.		
From NE To Exit:	SE	SW	NW									

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.	L2	T1	R2	U	Total	%HV		Deg.	Lane	Prob.	Ov.
From NW							Cap.	Satn	Util.	SL	Lane
To Exit:	NE	SE	SW	NW			veh/h	v/c	%	%	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.	L2	T1	R2	Total	%HV			Deg.	Lane	Prob.	Ov.
From SW							Cap.	Satn	Util.	SL	Lane
To Exit:	NW	NE	SE				veh/h	v/c	%	%	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 sec	Follow-up Headway sec	Lane 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

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		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Prob.	
	[Total	HV]	[Total	HV]						[Veh	Dist]			Adj. Block.	
	veh/h	%	veh/h	%											
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.	L2	T1	R2	U	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.	
From S To Exit:	W	N	E	S								
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.	L2	T1	R2	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.		
From E To Exit:	S	W	N									

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.	L2	T1	R2	U	Total	%HV		Deg.	Lane	Prob.	Ov.
From N							Cap.	Satn	Util.	SL	Lane
To Exit:	E	S	W	N			veh/h	v/c	%	%	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.	L2	T1	R2	Total	%HV			Deg.	Lane	Prob.	Ov.
From W							Cap.	Satn	Util.	SL	Lane
To Exit:	N	E	S				veh/h	v/c	%	%	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 sec	Follow-up Headway sec	Lane 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

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		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Prob. Adj. Block.		
	[Total	HV]	[Total	HV]						[Veh	Dist]			%	%	
	veh/h	%	veh/h	%												
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.	L2	T1	R2	U	Total	%HV		Deg. Satn	Lane Util.	Prob. SL	Ov. Lane		
From S							Cap. veh/h	v/c	%	%	No.		
To Exit:	W	N	E	S									
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.	L2	T1	R2	Total	%HV		Deg. Satn	Lane Util.	Prob. SL	Ov. Lane			
From E							Cap. veh/h	v/c	%	%	No.		
To Exit:	S	W	N										

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.	L2	T1	R2	U	Total	%HV		Deg.	Lane	Prob.	Ov.
From N							Cap.	Satn	Util.	SL	Lane
To Exit:	E	S	W	N			veh/h	v/c	%	%	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.	L2	T1	R2	Total	%HV			Deg.	Lane	Prob.	Ov.
From W							Cap.	Satn	Util.	SL	Lane
To Exit:	N	E	S				veh/h	v/c	%	%	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 sec	Follow-up Headway sec	Lane 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

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		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Prob.	
	[Total	HV]	[Total	HV]						[Veh	Dist]			Adj. Block.	
	veh/h	%	veh/h	%											
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.	L2	T1	R2	U	Total	%HV							
From S							Cap.	Deg.	Lane	Prob.	Ov.		
To Exit:	W	N	E	S			veh/h	Satn	Util.	SL	Ov.	Lane	
								v/c	%	%	%	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.	L2	T1	R2	Total	%HV								
From E							Cap.	Deg.	Lane	Prob.	Ov.		
To Exit:	S	W	N				veh/h	Satn	Util.	SL	Ov.	Lane	
								v/c	%	%	%	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.	L2	T1	R2	U	Total	%HV		Deg.	Lane	Prob.	Ov.
From N							Cap.	Satn	Util.	SL Ov.	Lane
To Exit:	E	S	W	N			veh/h	v/c	%	%	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.	L2	T1	R2	Total	%HV			Deg.	Lane	Prob.	Ov.
From W							Cap.	Satn	Util.	SL Ov.	Lane
To Exit:	N	E	S				veh/h	v/c	%	%	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 sec	Follow-up Headway sec	Lane 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

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		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Prob. Adj. Block.	
	[Total	HV]	[Total	HV]						[Veh	Dist]			%	%
	veh/h	%	veh/h	%											
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.	L2	T1	R2	U	Total	%HV		Deg. Satn	Lane Util.	Prob. SL	Ov. Lane	
From S							Cap. veh/h	v/c	%	%	No.	
To Exit:	W	N	E	S								
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.	L2	T1	R2	Total	%HV		Deg. Satn	Lane Util.	Prob. SL	Ov. Lane		
From E							Cap. veh/h	v/c	%	%	No.	
To Exit:	S	W	N									

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.	L2	T1	R2	U	Total	%HV		Deg.	Lane	Prob.	Ov.
From N							Cap.	Satn	Util.	SL	Lane
To Exit:	E	S	W	N			veh/h	v/c	%	%	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.	L2	T1	R2	Total	%HV			Deg.	Lane	Prob.	Ov.
From W							Cap.	Satn	Util.	SL	Lane
To Exit:	N	E	S				veh/h	v/c	%	%	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 sec	Follow-up Headway sec	Lane 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

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		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Prob. Adj. Block.		
	[Total	HV]	[Total	HV]						[Veh	Dist]			%	%	
	veh/h	%	veh/h	%												veh/h
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.	L2	T1	R2	U	Total	%HV		Deg. Satn	Lane Util.	Prob. SL	Ov. Lane	
From S							Cap. veh/h	v/c	%	%	No.	
To Exit:	W	N	E	S								
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.	L2	T1	R2	Total	%HV		Deg. Satn	Lane Util.	Prob. SL	Ov. Lane		
From E							Cap. veh/h	v/c	%	%	No.	
To Exit:	S	W	N									

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.	L2	T1	R2	U	Total	%HV		Deg.	Lane	Prob.	Ov.
From N							Cap.	Satn	Util.	SL	Lane
To Exit:	E	S	W	N			veh/h	v/c	%	%	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.	L2	T1	R2	Total	%HV			Deg.	Lane	Prob.	Ov.
From W							Cap.	Satn	Util.	SL	Lane
To Exit:	N	E	S				veh/h	v/c	%	%	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 Capacity Flow Rate 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

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		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[Total veh/h	HV %	[Total veh/h	HV %	veh/h	v/c	%	sec		[Veh	Dist] m		m	%	%
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.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.	
From SE						Cap.	Satn	Util.	SL Ov.	Lane	
To Exit:	SW	NW	NE			veh/h	v/c	%	%	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.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.	
From NE						Cap.	Satn	Util.	SL Ov.	Lane	
To Exit:	SE	SW	NW			veh/h	v/c	%	%	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.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.	
From NW						Cap.	Satn	Util.	SL Ov.	Lane	
To Exit:	NE	SE	SW			veh/h	v/c	%	%	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.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.	
From SW						Cap.	Satn	Util.	SL Ov.	Lane	
To Exit:	NW	NE	SE			veh/h	v/c	%	%	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	pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Capacity Flow Rate 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 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 veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn 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

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		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Prob. Adj. Block.	
	[Total	HV]	[Total	HV]						[Veh	Dist]				
	veh/h	%	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
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.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.	
From SE						Cap.	Satn	Util.	SL Ov.	Lane	
To Exit:	SW	NW	NE			veh/h	v/c	%	%	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.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.	
From NE						Cap.	Satn	Util.	SL Ov.	Lane	
To Exit:	SE	SW	NW			veh/h	v/c	%	%	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.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.	
From NW						Cap.	Satn	Util.	SL Ov.	Lane	
To Exit:	NE	SE	SW			veh/h	v/c	%	%	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.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.	
From SW						Cap.	Satn	Util.	SL Ov.	Lane	
To Exit:	NW	NE	SE			veh/h	v/c	%	%	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 %	Flow % 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	

NorthEast Exit: GEH 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 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	Residual Queued Demand	Time for Residual Demand to Clear	Duration of Oversatn
	veh	veh	sec	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

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		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Prob.	
	[Total veh/h	HV] %	[Total veh/h	HV] %						[Veh	Dist] m			Adj.	Block.
					veh/h	v/c	%	sec					m	%	%
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.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.
From SE						Cap.	Satn	Util.	SL Ov.	Lane
To Exit:	SW	NW	NE			veh/h	v/c	%	%	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.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.
From NE						Cap.	Satn	Util.	SL Ov.	Lane
To Exit:	SE	SW	NW			veh/h	v/c	%	%	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.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.
From NW						Cap.	Satn	Util.	SL Ov.	Lane
To Exit:	NE	SE	SW			veh/h	v/c	%	%	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.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.
From SW						Cap.	Satn	Util.	SL Ov.	Lane
To Exit:	NW	NE	SE			veh/h	v/c	%	%	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 sec	Follow-up Headway sec	Lane 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												
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												
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	Residual Queued Demand	Time for Residual Demand to Clear	Duration of Oversatn
	veh	veh	sec	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

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		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Prob.	
	[Total	HV]	[Total	HV]						[Veh	Dist]			Adj.	Block.
	veh/h	%	veh/h	%											
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.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.
From SE						Cap.	Satn	Util.	SL Ov.	Lane
To Exit:	SW	NW	NE			veh/h	v/c	%	%	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.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.
From NE						Cap.	Satn	Util.	SL Ov.	Lane
To Exit:	SE	SW	NW			veh/h	v/c	%	%	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.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.
From NW						Cap.	Satn	Util.	SL Ov.	Lane
To Exit:	NE	SE	SW			veh/h	v/c	%	%	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.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.
From SW						Cap.	Satn	Util.	SL Ov.	Lane
To Exit:	NW	NE	SE			veh/h	v/c	%	%	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	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
SouthEast Exit: Hardey Rd											
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 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 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	Residual Queued Demand	Time for Residual Demand to Clear	Duration of Oversatn
	veh	veh	sec	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

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		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[Total veh/h	HV %	[Total veh/h	HV %	veh/h	v/c	%	sec		[Veh	Dist] m		m	%	%
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 % veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Capacity Flow Rate 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
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Variable Demand Analysis				
	Initial Queued Demand	Residual Queued Demand	Time for Residual Demand to Clear	Duration of Oversatn
	veh	veh	sec	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

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		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[Total	HV]	[Total	HV]	veh/h	v/c	%	sec		[Veh	Dist]		m	%	%
	veh/h	%	veh/h	%							m				
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.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.
From SE						Cap.	Satn	Util.	SL Ov.	Lane
To Exit:	SW	NW	NE			veh/h	v/c	%	%	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.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.
From NE						Cap.	Satn	Util.	SL Ov.	Lane
To Exit:	SE	SW	NW			veh/h	v/c	%	%	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.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.
From NW						Cap.	Satn	Util.	SL Ov.	Lane
To Exit:	NE	SE	SW			veh/h	v/c	%	%	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.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.
From SW						Cap.	Satn	Util.	SL Ov.	Lane
To Exit:	NW	NE	SE			veh/h	v/c	%	%	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 veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane 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	Residual Queued Demand	Time for Residual Demand to Clear	Duration of Oversatn
	veh	veh	sec	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

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		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Prob. Adj. Block.	
	[Total veh/h	HV %	[Total veh/h	HV %						[Veh	Dist] m			%	%
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.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.	
From SE						Cap.	Satn	Util.	SL Ov.	Lane	
To Exit:	SW	NW	NE			veh/h	v/c	%	%	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.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.	
From NE						Cap.	Satn	Util.	SL Ov.	Lane	
To Exit:	SE	SW	NW			veh/h	v/c	%	%	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.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.	
From NW						Cap.	Satn	Util.	SL Ov.	Lane	
To Exit:	NE	SE	SW			veh/h	v/c	%	%	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.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.	
From SW						Cap.	Satn	Util.	SL Ov.	Lane	
To Exit:	NW	NE	SE			veh/h	v/c	%	%	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 %	Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane 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 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 veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn 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

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		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Prob. Adj. Block.	
	[Total	HV]	[Total	HV]						[Veh	Dist]			%	%
	veh/h	%	veh/h	%	veh/h	v/c	%	sec			m		m		
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.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.	
From SE						Cap.	Satn	Util.	SL Ov.	Lane	
To Exit:	SW	NW	NE			veh/h	v/c	%	%	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.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.	
From NE						Cap.	Satn	Util.	SL Ov.	Lane	
To Exit:	SE	SW	NW			veh/h	v/c	%	%	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.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.	
From NW						Cap.	Satn	Util.	SL Ov.	Lane	
To Exit:	NE	SE	SW			veh/h	v/c	%	%	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.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.	
From SW						Cap.	Satn	Util.	SL Ov.	Lane	
To Exit:	NW	NE	SE			veh/h	v/c	%	%	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 %	Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane 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	Residual Queued Demand	Time for Residual Demand to Clear	Duration of Oversatn
	veh	veh	sec	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