Proposed Mixed-Use Development - Lot 508 Shenton Road, Claremont Terraces - Stage 2, Town of Claremont

Transport Impact Assessment

Stantec

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Revision Schedule

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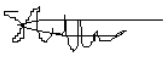

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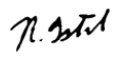

Signature

Richard Isted

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1 Introduction

Stantec has been commissioned by Norup Pty Ltd ("the client") to prepare a Transport Impact Assessment (TIA) for Stage 2 of the proposed residential development located at Lot 508 Shenton Road, Claremont within the Town of Claremont (the "Site").

A Traffic Impact Assessment (TIA) report was previously prepared for the Stage 1 development, which included 137 apartments combined with commercial and retail tenancies. This TIA focuses on assessing the impacts associated with the Stage 2 development comprising 61 apartment units with 59sqm of residential amenity and 12sqm manager's office space at the ground level.

This Traffic Impact Assessment report was prepared in accordance with the *WAPC TIA Guidelines Volume 4 – Individual Developments (2016),* with the checklist attached in **Appendix A**.

1.1 Study Area

The Site is located in the suburb of Claremont within the Town of Claremont. The Site is bounded by Claremont Football Oval to the north, Shenton Road to the south, Tiger Way to the east and other mixed-use development to the west. The location of the Stage 1 and Stage 2 development is outlined in **Figure 1-1**.

Figure 1-1. Site Location

Source: Metromap 2025

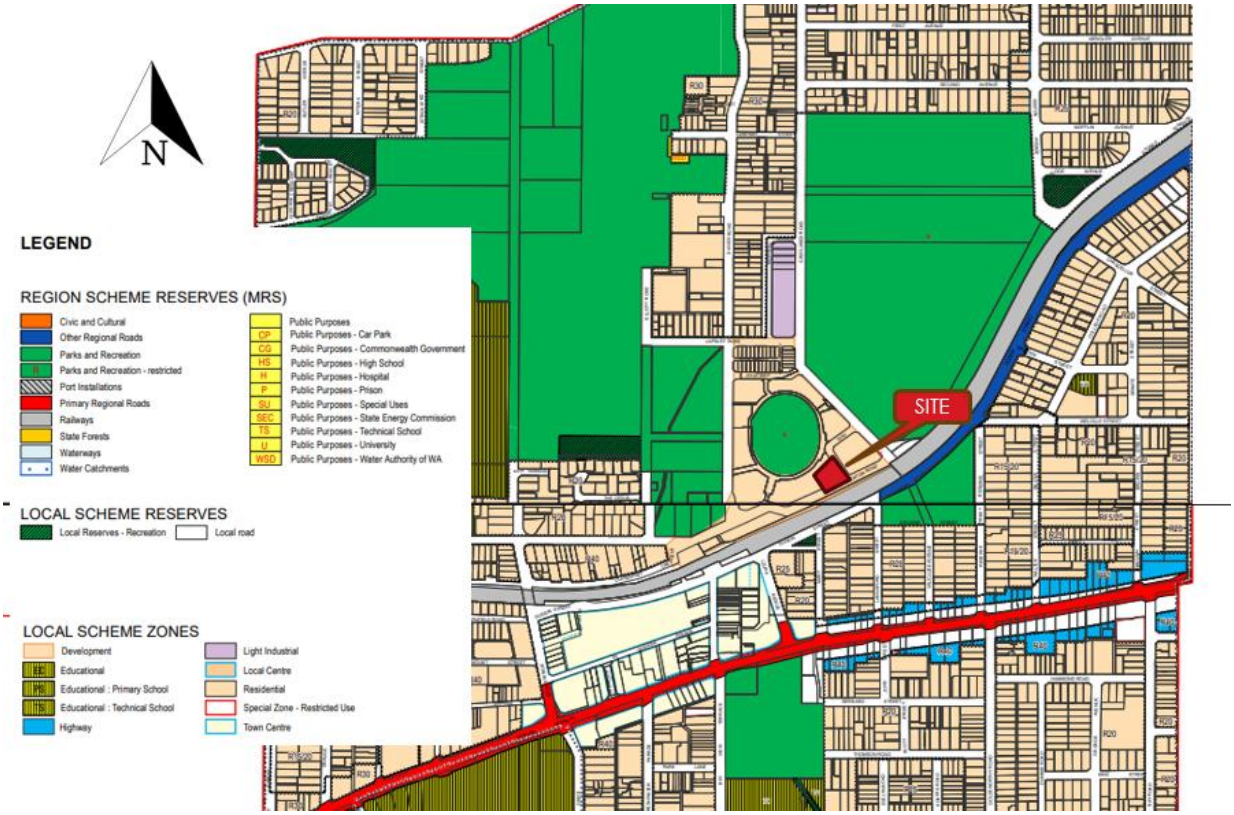
2 Existing Situation

2.1 Surrounding Land Uses

Based on the Town of Claremont Town Planning Scheme No.3, the Site is zoned as 'Development' as shown in **Figure 2-1**. The surrounding land uses include residential developments to the south, Metropolitan Region Scheme (MRS) reserved 'Parks and Recreation' and 'Rural' site to the north and east.

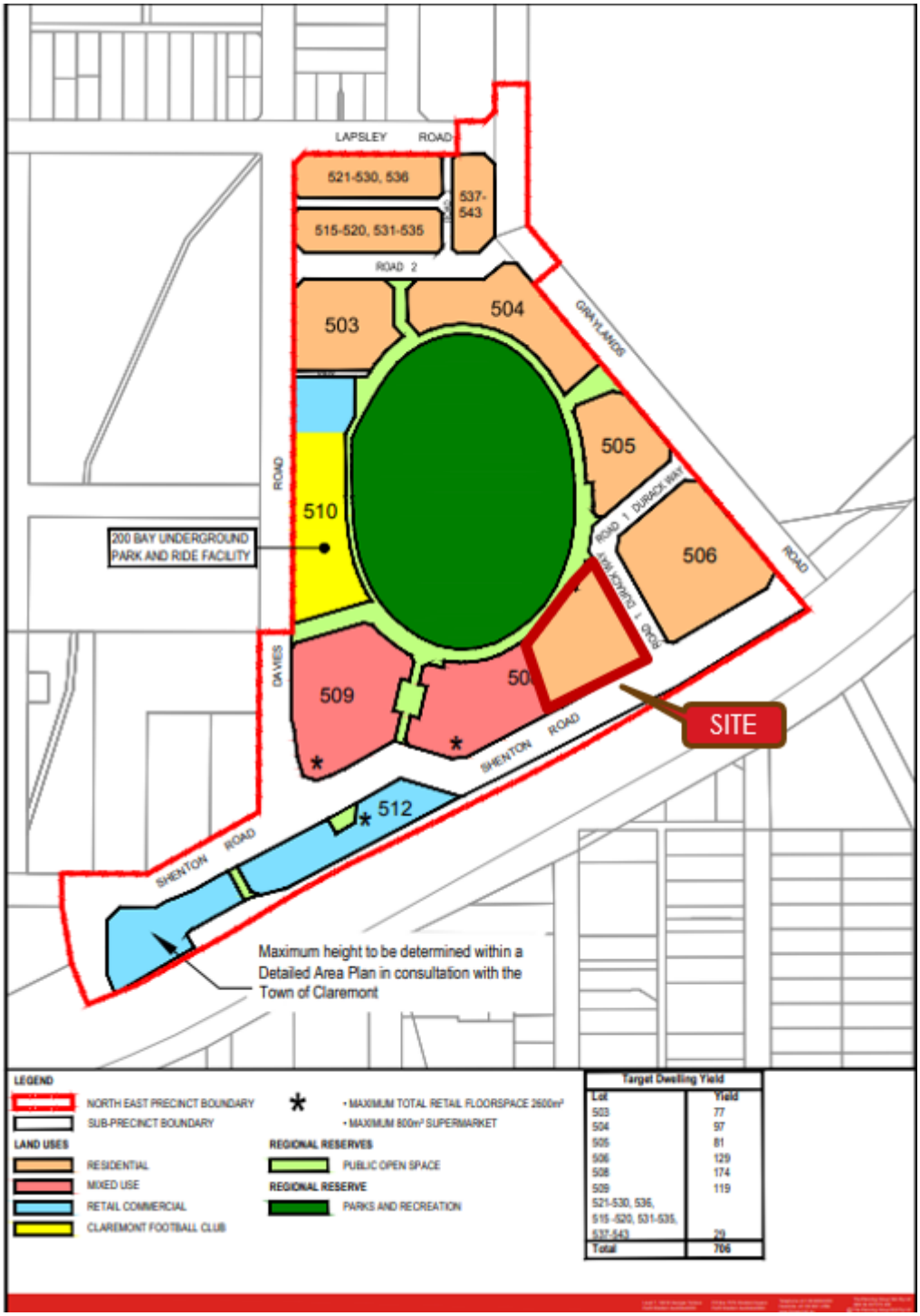
The Claremont *North East Precinct (NEP) Structure Plan – Addendum* provides a detailed zoning map which is included in **Figure 2-2** and indicates that the Stage 1 development is zoned as 'Mixed Use' and Stage 2 is zoned as 'Residential'.

Figure 2-1. Existing Zoning



Source: Claremont Town Planning Scheme No. 3 (2020)

Figure 2-2. Claremont Northeast Precinct (NEP) Structure Plan - Addendum



Source: Claremont NEP Structure Plan – Addendum (2014)

2.2 Existing Road Network

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

- **Primary Distributors (light blue):** Form the regional and inter-regional grid of Main Roads WA traffic routes and carry large volumes of fast-moving traffic. Some are strategic freight routes, and all are National or State Roads WA.
- **Regional Distributors (red):** Roads that are not Primary Distributors, but which 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 properties. They are managed by Local Government.
- **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.

The surrounding road network is further described in **Table 2-1** which describes the existing characteristics, whilst **Figure 2-3** shows a map of the road hierarchy as per the Main Roads WA Road Information Mapping System.

Table 2-1. Road Network Classification

Road Names	Road Hierarchy	Jurisdiction	No. of Lanes (2-way)	No. of Footpaths	Approximate Width (m)	Posted Speed Limit (km/h)
Shenton Road	Distributor B	Local Government	2	2	12.4m (including on-street parking on both sides)	50
Davies Road	Distributor B	Local Government	2	2	9.8m (including on-street parking on eastern side)	50
Graylands Road	Access Road	Local Government	2	2	10.4m (including on-street parking on western side)	50
Gugeri St	Distributor A	Local Government	2	1	8.6m	50
Leura Avenue	Distributor B	Local Government	2	1	11.4m (including median)	50

Figure 2-3. Existing Road Hierarchy Map

Source: MRWA Road Information Mapping System (2025)

2.3 Existing Key Intersections

The following describes the intersections in the vicinity of the Site:

Shenton Road / Davies Road Intersection is located to the southwest of the Site. The intersection is a three-way signalised as illustrated in Figure 2-4. The configuration of the intersection is as follows:

- Northern approach: Two (2) approach lanes (for left and right turn movements) and one (1) departure lane.
- Eastern approach: Two (2) approach lanes (for right turn and through movements) and one (1) departure lane.
- Western approach: Two (2) approach lanes (for left turn and through movements) and one (1) departure lane.

Figure 2-4. Shenton Road / Davies Road Intersection

Source: Metromap (2025)

Shenton Road / Graylands Road Intersection is located to the east of the Site. The intersection is three-way stop priority-controlled intersection as shown in **Figure 2-5**. The configuration of the intersection is as follows:

- North-western approach: Two (2) approach lanes (for left and right turn movements) and one (1) departure lane.
- North-eastern approach: Two (2) approach lanes (for right turn and through movements) and one (1) departure lane.
- South-western approach: One (1) approach lane and one (1) departure lane.

Figure 2-5. Shenton Road / Graylands Road Intersection

Source: Metromap (2025)

Shenton Road / Gugeri Street Intersection is located to the east of the Site. The intersection is three-way stop priority-controlled intersection as shown in **Figure 2-6**. The configuration of the intersection is as follows:

- North-western approach: One (1) approach lane (for right turn movements) and one (1) departure lane. Left turning vehicles will turn left at the split approximately 60m prior to the approach which merges into Gugeri Street.
- North-eastern approach: Two (2) approach lanes (for right turn and through movements) and one (1) departure lane.
- South-western approach: One (1) approach lane and one (1) departure lane.

Figure 2-6. Shenton Road / Gugeri Street Intersection

Source: Metromap (2025)

2.4 Existing Traffic Volumes

The existing traffic volumes for the surrounding roads in the vicinity of the Site have been obtained from the Main Roads Traffic Map and from the from the previously prepared TIA report for Stage 1 of the development which were obtained from the Town of Claremont and summarised in **Table 2-2**.

Table 2-2. Existing Traffic Volumes

Road Name	Source	Year	Average Daily Traffic Volume (weekday)	Average AM Peak Traffic Volume	Average PM Peak Traffic Volume
Gugeri St Off Ramp to Shenton Rd	Town of Claremont	2024	3,933	412	453
Davies Rd / Shenton Rd (SCATS)	MRWA	2023	11,527	1,178	909
Shenton Rd (east of Graylands Rd)	Town of Claremont	2016	4,244	405	374
Shenton Rd (east of Davies Rd)	Town of Claremont	2016	3,332	361	338
Graylands Rd (north of Shenton Rd)	Town of Claremont	2016	4,311	349	407
Davies Rd (south of Second Av)	Town of Claremont	2016	3,207	333	272

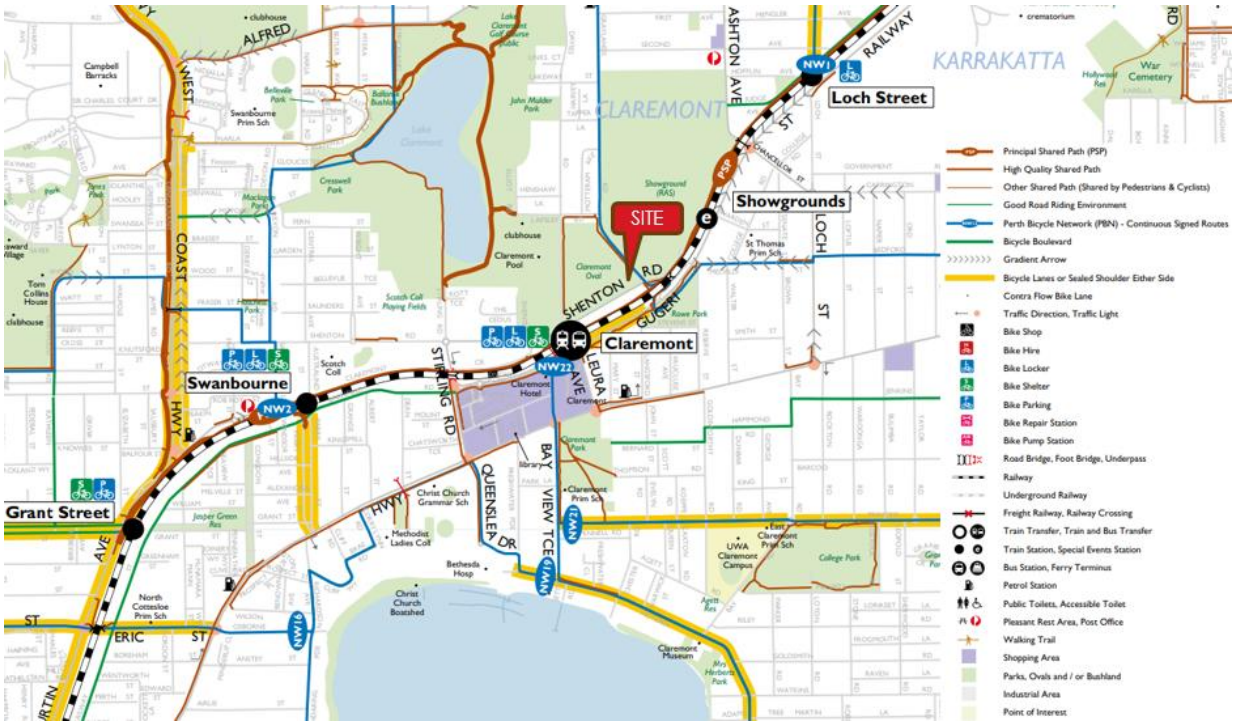
2.5 Existing Pedestrian / Cycling Networks

The existing pedestrian/cycle networks in the area surrounding the development site are illustrated in **Figure 2-7.** The site is located within close proximity to the Fremantle Railway Principal Shared Path (PSP).

Footpaths are available on both sides of the road for Shenton Road, Davies Road, and Graylands Road. The nearest access across the rail line is available via the pedestrian overpass at Claremont Station or level crossings located 50m to the west and to the east of the Station.

Overall, the Site has excellent access to the existing pedestrian and cycling network with multiple safe crossing points across the railway line.

Figure 2-7. Existing Pedestrian and Cycling Facilities

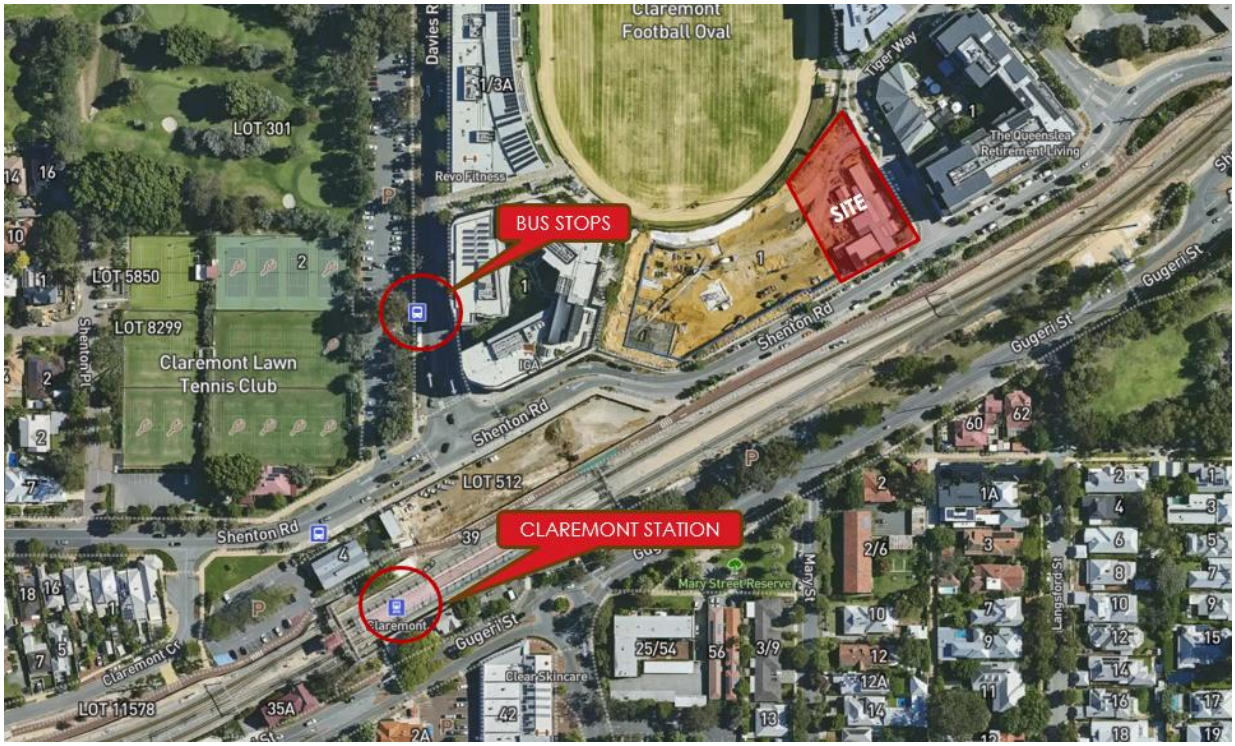


Source: Department of Transport (Perth, Fremantle and Stirling Map

2.6 Existing Public Transport Services

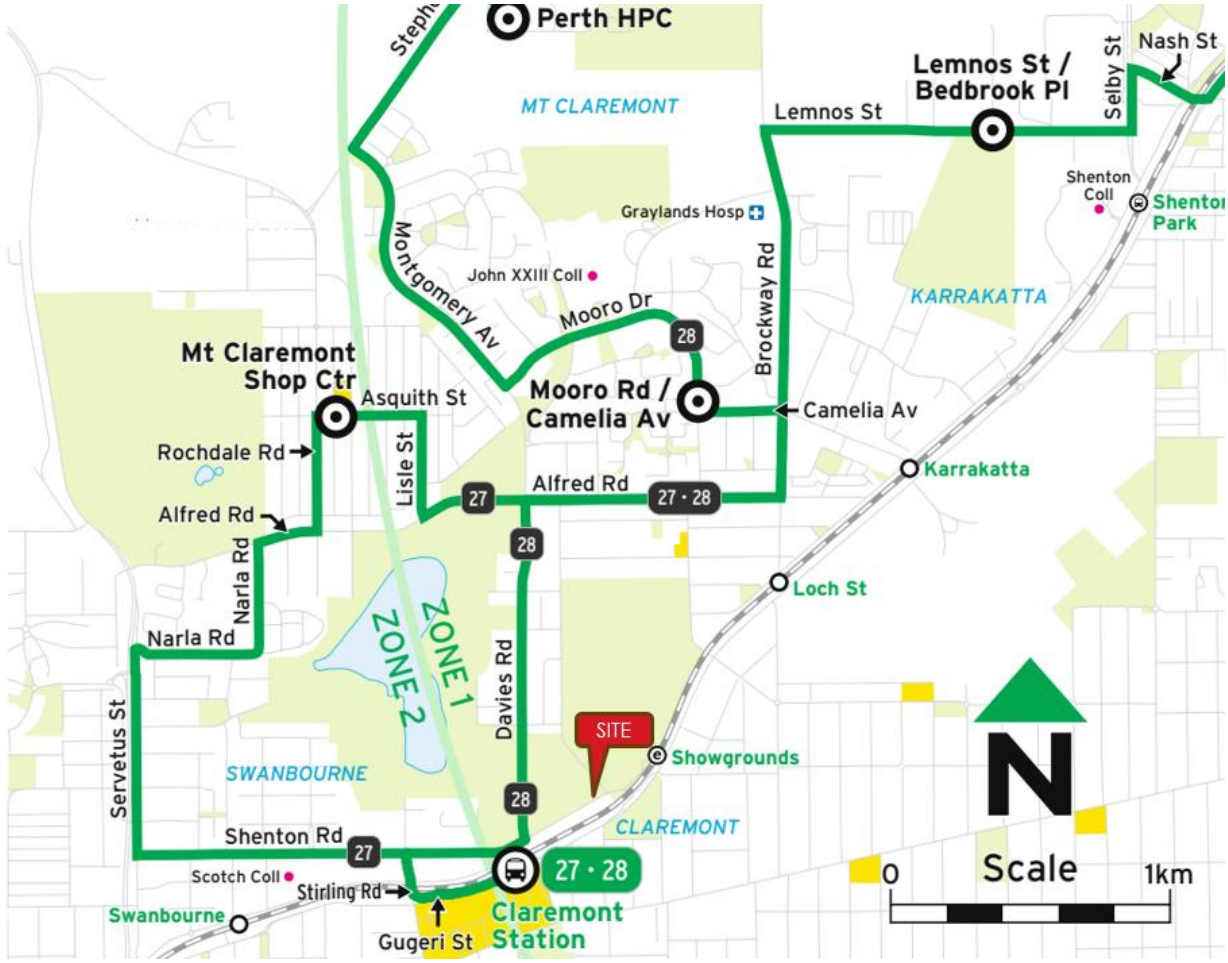
Train and bus services are located within close proximity of the Site as shown in the Transperth map. The closest bus stops are located on Shenton Road and Davies Road, approximately 150m southwest of the Site. The bus stops are currently being serviced by Bus Routes 27 and 28 from Claremont Station to Perth Busport and vice versa. The access to Fremantle train line service is extremely convenient, with Claremont station located 200m south-west of the Site. **Figure 2-8** and **Figure 2-9** illustrate the location and route map of the existing public transport services with **Table 2-3** summarises the existing bus frequency and **Table 2-4** summarises the existing train service frequency.

Figure 2-8. Existing Public Transport



Source: Metromap (2025)

Figure 2-9. Surrounding Public Transport



Source: Transperth (2025)

Table 2-3. Bus Service Frequency

Bus Service	Route Description	Weekday Peak Period	Saturday	Sunday and Public Holidays
27	Perth Bus port to Claremont Station	10-60 mins	60 mins	60mins
28	Perth Bus port to Claremont Station	20-60 mins	60 mins	60mins

Source: Transperth

Table 2-4. Train Service Frequency

Route Description	Weekday Peak Period	Weekday Off Peak Period	Saturday	Sunday and Public Holidays
Fremantle Line	10-15 mins	30 mins	15-30 mins	15-30 mins

Source: Transperth

2.7 Crash Assessment

The crash data has been extracted from the Main Roads WA Reporting Centre for all the midblock and intersection crashes in the vicinity of the Site from 1 January 2020 to 31 December 2024.

The crash data has been extracted for the following roads in the surrounding area:

- Shenton Road
- Tiger Way
- Davies Road
- Graylands Road
- Lapsley Road
- Kyle Way
- Kitson Way

These are summarised in **Table 2-5** through to **Table 2-7** and the location and severity of the crashes are illustrated in **Figure 2-10** and **Figure 2-11**.

Table 2-5. Total Crashes

Type of Crash (RUM Code)	Fatal	Hospital	Medical	Major Property Damage	Minor Property Damage	Total Crashes
Right Angle	-	-	1	5	3	**9**
Sideswipe Same Direction	-	-	-	1	-	**1**
Rear End	-	-	1	2	5	**8**
Right Turn Thru	-	-	1	2	-	**3**
Hit Object	-	-	-	-	-	**-**
Non-Collision	-	-	-	-	-	**-**
Unspecified	-	-	2	1	-	**3**
Total	**-**	**-**	**5**	**11**	**8**	**24**

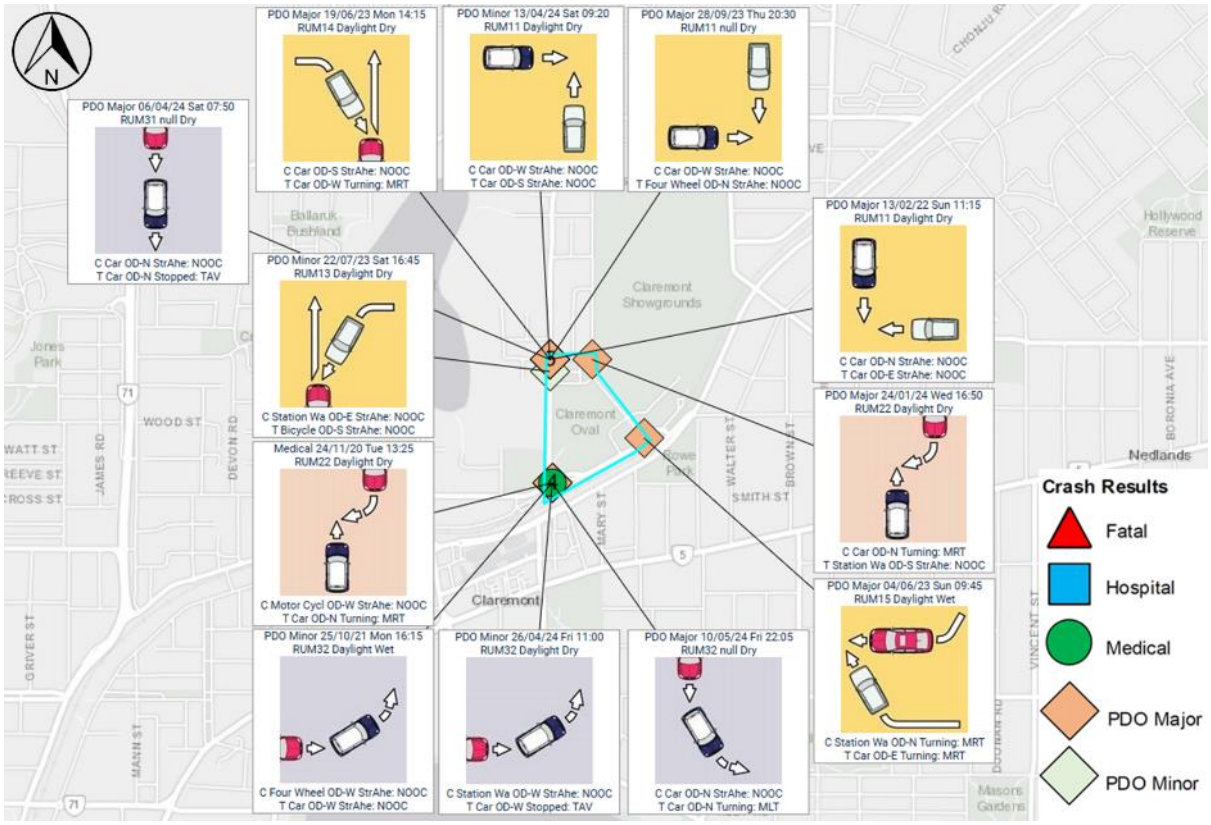
Table 2-6. Intersection Crashes

Intersection Name	Fatal	Hospital	Medical	Major Property Damage	Minor Property Damage	Total Crashes
Graylands Rd / Lapsley Rd	-	-	-	1	-	**1**
Shenton Rd / Graylands Rd	-	-	-	1	-	**1**
Shenton Rd / Davies Rd	-	-	1	1	2	**4**
Davies Rd / Kitson Wy	-	-	-	-	1	**1**
Davies Rd / Lapsley Rd	-	-	-	4	1	**5**
Total	**-**	**-**	**1**	**7**	**4**	**12**

Table 2-7. Midblock Crashes

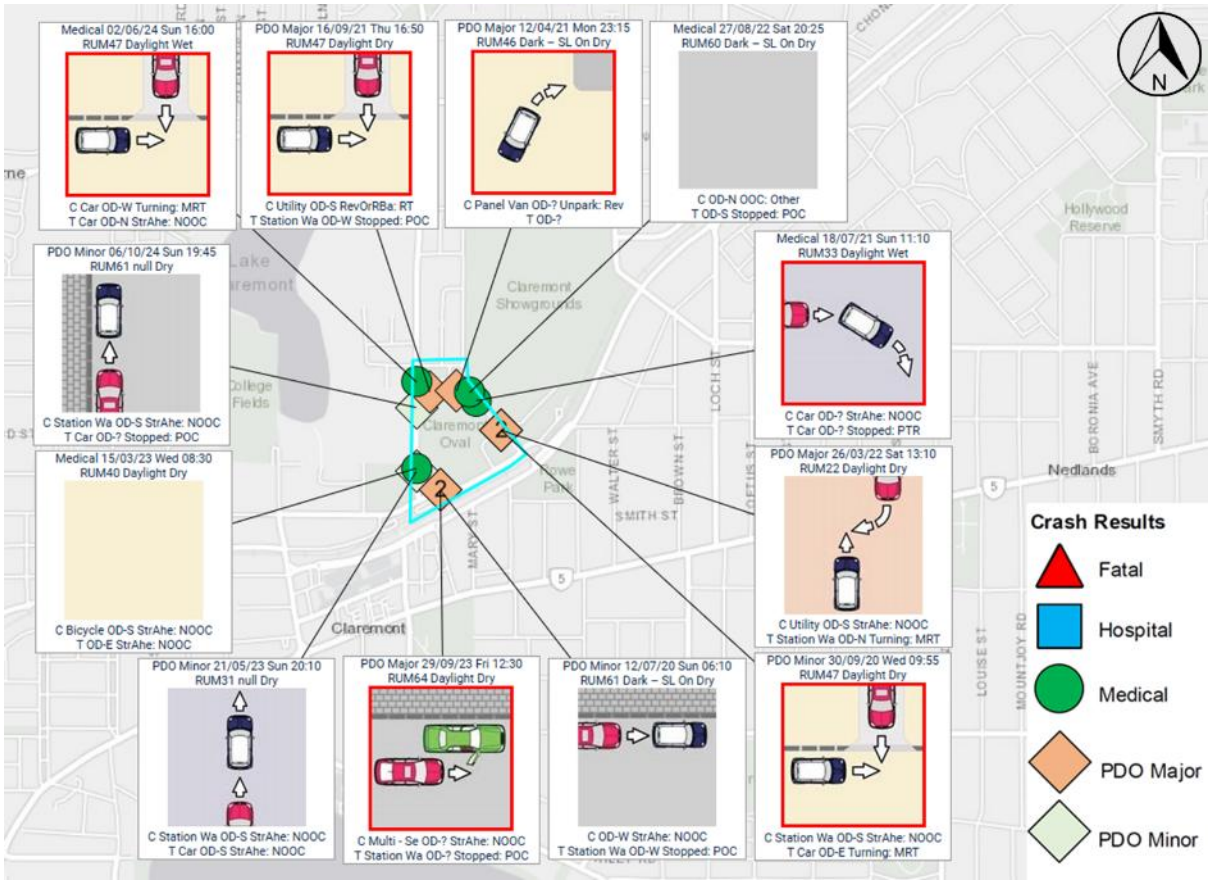
Road Name	Fatal	Hospital	Medical	Major Property Damage	Minor Property Damage	Total Crashes
Shenton Rd	-	-	-	1	1	**2**
Davies Rd	-	-	2	-	2	**4**
Graylands Rd	-	-	2	1	1	**4**
Kyle Way	-	-	-	2	-	**2**
Total	**-**	**-**	**4**	**4**	**4**	**12**

Figure 2-10. Intersection Crash Locations



Source: MRWA Crashmap 2025

Figure 2-11. Midblock Crash Locations



Source: MRWA Crashmap (2025)

A summary of the crash data is as follows:

- A total of twenty-four (24) crashes were recorded in the surrounding road network of the subject Site, with no fatalities or hospitalisations recorded.
- Five (5) crashes recorded required medical attention.
- Four (4) midblock crashes and seven (7) intersection crashes recorded resulted in major property damage.
- Majority of the recorded crashes occurred along Davies Road and at the Davies Road / Lapsley Road intersection resulting in medical attention, major and minor property damage.

Overall, it is not expected that the Site will have any material impact on the overall safety and operations of the surrounding road network.

3 Development Proposal

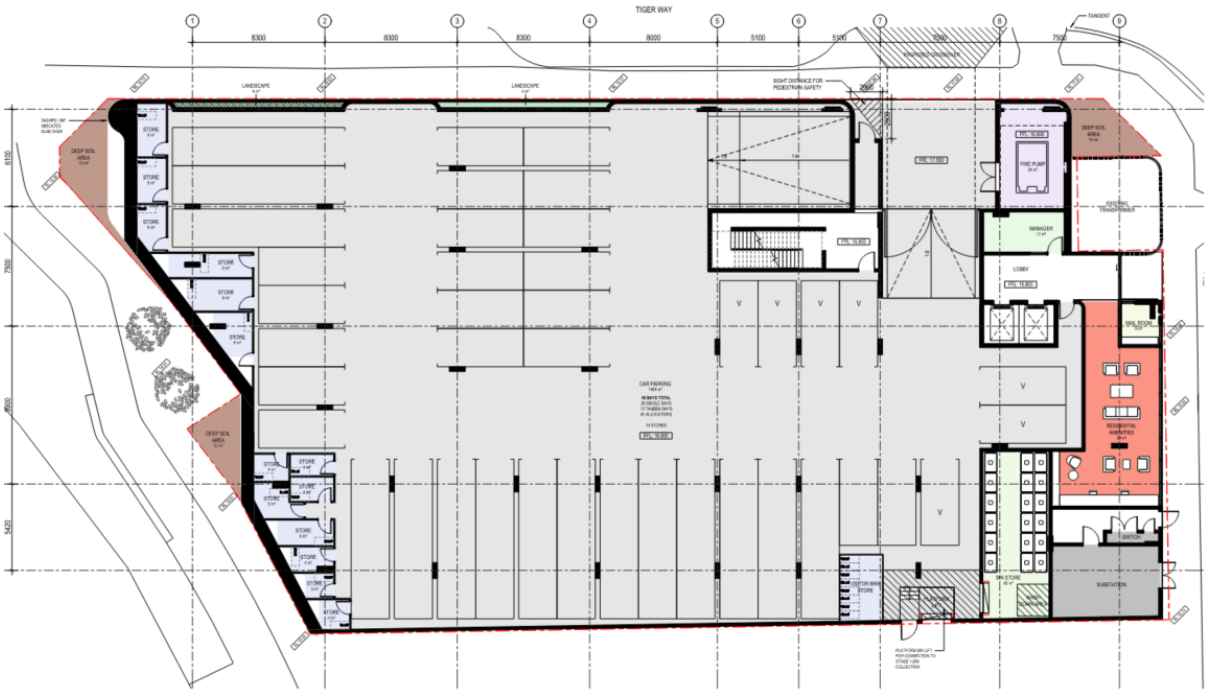
3.1 Proposed Land Uses

Table 3-1 summarises the proposed land use yields and **Figure 3-1** illustrates the proposed ground floor site development plan. Larger scaled site layout drawings are included in **Table 3-1**.

Table 3-1. Proposed Land Use Mix

Type	Development Yield
Residential (Units)	61 apartment units
1 bed	5
2x2	24
3x2	30
4x3	2
Residential Amenity (GFA) (ground floor)	59 sq. m.
Manager's Office (GFA)	12 sq. m

Figure 3-1. Proposed Site Plan

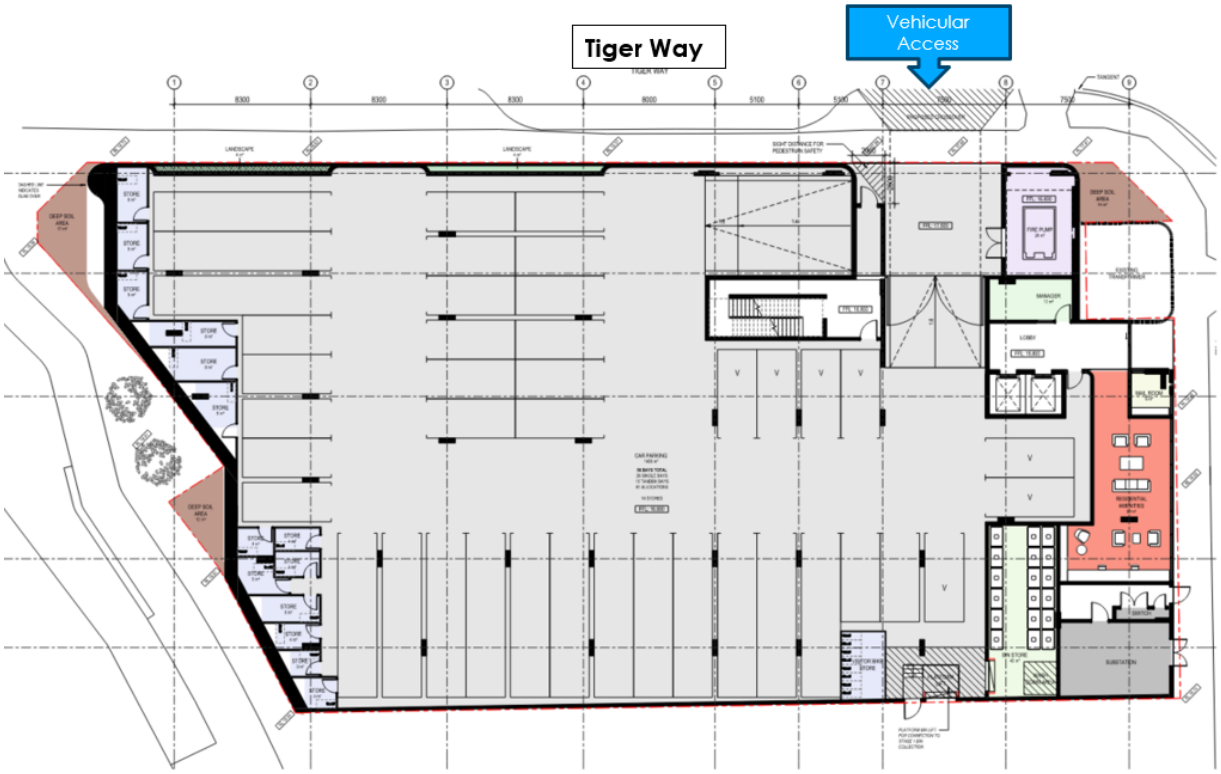


Source: Hillam Architects (2025)

3.2 Proposed Site Access Arrangements

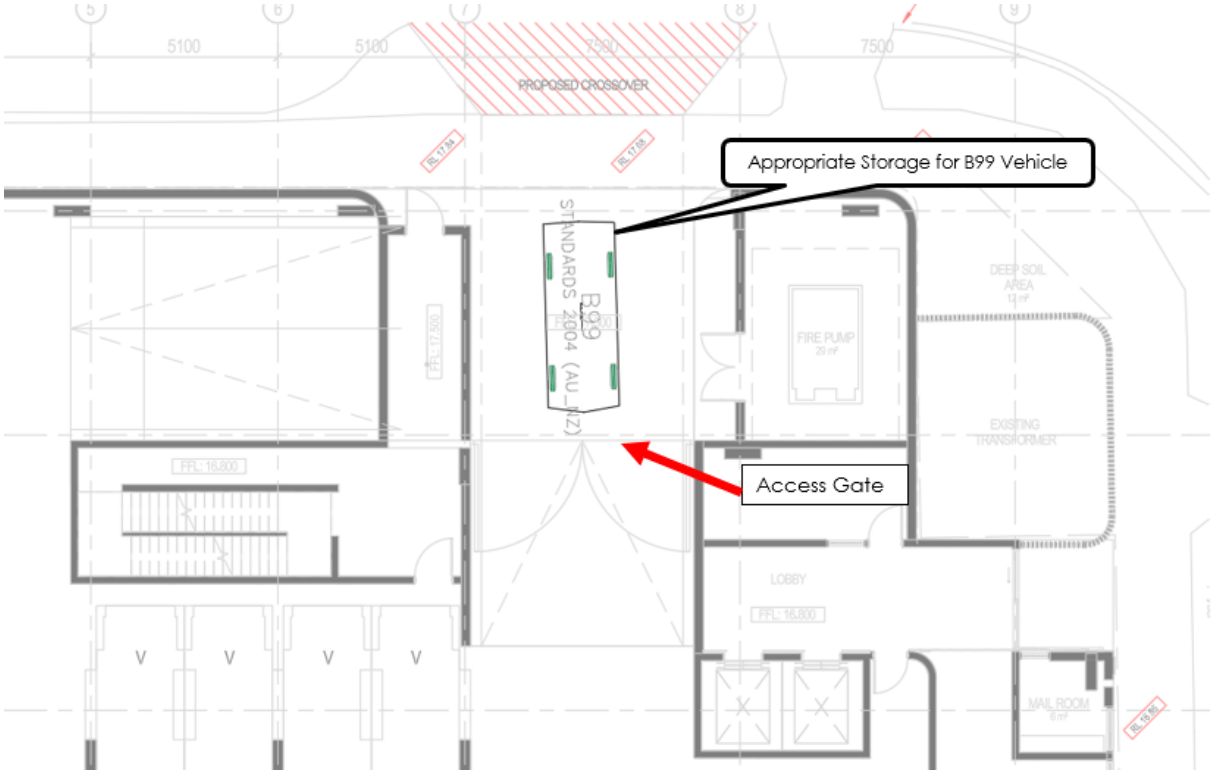
Vehicular access to the Site is proposed to be located along Tiger Way with an access gate as shown in **Figure 3-2**. Full movement access/egress is proposed for this access. The use of number plate recognition technology is proposed to be implemented at the access gate in order to reduce the time taken for vehicles to enter/exit the car park. In addition, it is also proposed that a double-hinged gate be used to reduce the time spent waiting for the gate to open to enter/exit the car park. The gate is appropriately positioned to accommodate a vehicle to store within the site boundary without encroaching into the pedestrian path or hindering vehicular traffic on Tiger Way as shown in **Figure 3-3**.

Figure 3-2. Tiger Way Site Access



Source: Hillam Architects (2025)

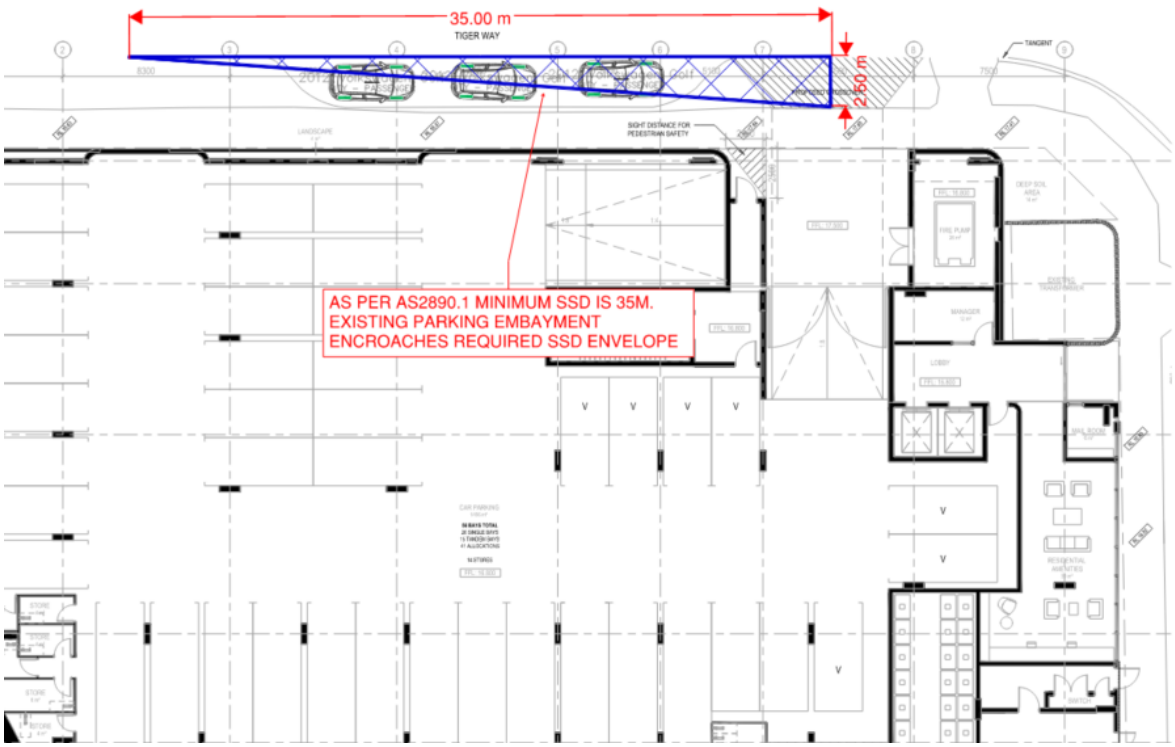
Figure 3-3. Vehicle Storage Space at Site Access



3.3 Sight Line Assessment

As assessment has been undertaken to determine the access sight line requirements. AS2890.1 specifies a minimum Safe Sight Distance (SSD) of 35 m for a frontage road speed of 40 km/h. The assessment indicates that the existing parking embayment north of the access encroaches into the SSD envelope and may require further consideration with potential relocation or modification. The current parking restrictions allows permit holders to be exempt, therefore there is a risk of permanent obstruction to sight lines if parked in this location all day. The Sight Line assessment is illustrated in **Figure 3-4** below.

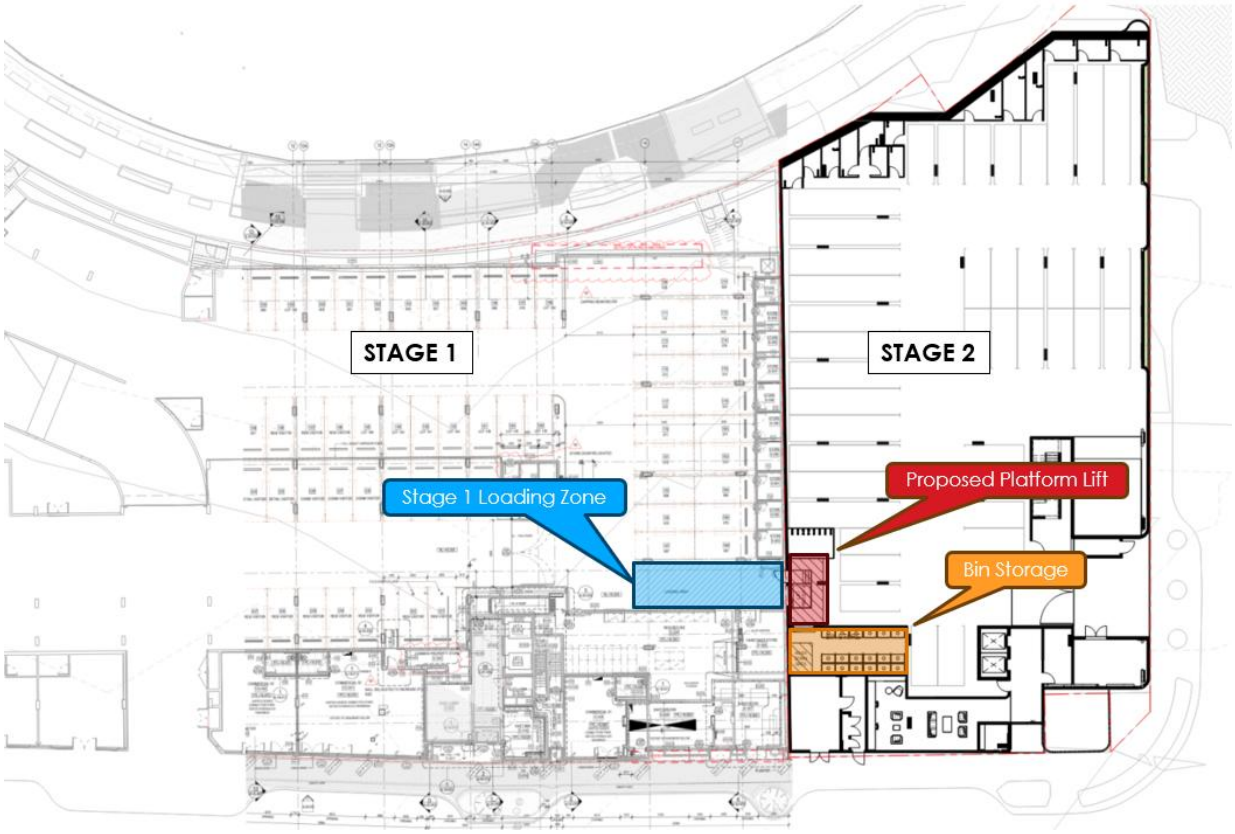
Figure 3-4. Sight Line Assessment



3.4 Provision for Service Vehicles

Access for delivery and waste vehicles is anticipated to take place via Stage 1 of the proposed development with a proposed platform lift connecting Stage 2. It is anticipated that waste will be transported from the adjacent bin storage onto the platform lift and then collected by the waste truck parked in the Stage 1 loading area as shown in **Figure 3-5**.

Figure 3-5. Proposed Stage 2 Waste Strategy



Source: Hillam Architects (2025)

3.4.1.1 Waste Truck Swept Paths

It is proposed that delivery and waste vehicles will access the Stage 1 development along Shenton Road. All loading and unloading activity will be conducted within the Site. In addition, the Town of Claremont requires all delivery and waste vehicles to enter and exit the Site in forward gear only with all turning manoeuvres to achieve this to be conducted within the Site boundaries.

A swept path analysis has been undertaken for a 7.4m rear-lift waste vehicle and 8.6m bulk waste vehicle entering and exiting the Site (consistent with the vehicle identified by the Council for this development). The collection vehicle will enter the Site in forward gear via the Shenton Road crossover. On entering the Site, the waste vehicle will turn right and park in the Loading Area adjacent to the residential bin store.

The swept paths indicate that the 7.4m waste truck is able to adequately enter the site as shown in **Figure 3-6** but the body of the waste truck vehicle is expected to encroach onto the tree canopy on exiting the site.

The 8.6m bulk waste truck will require several manoeuvres to enter the loading bay, however due to the infrequent nature of bulk collections this is considered acceptable. The vehicle is also anticipated to encroach onto the tree canopy on exiting the site as shown in **Figure 3-7**. It is suggested that consideration be given to requesting the tree canopy to be trimmed by the Council.

Figure 3-6. 7.4m Rear-Lift Waste Vehicle Swept Path

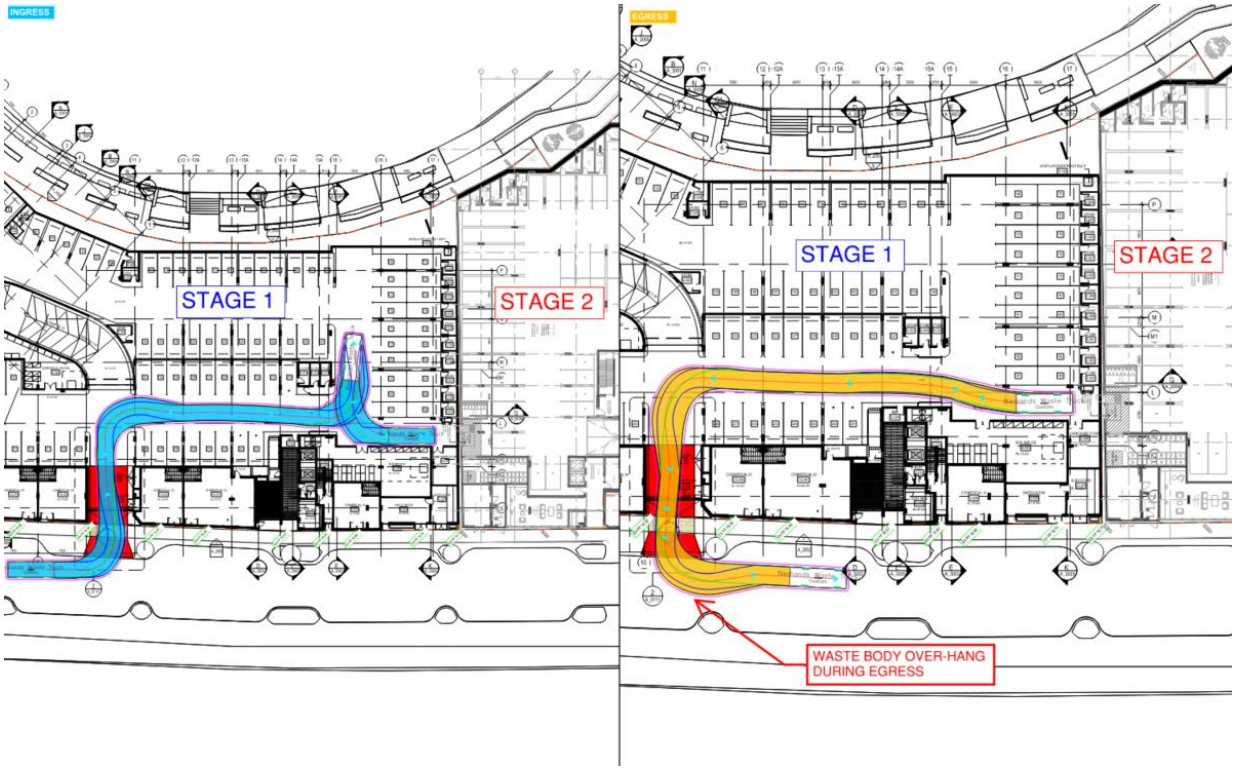
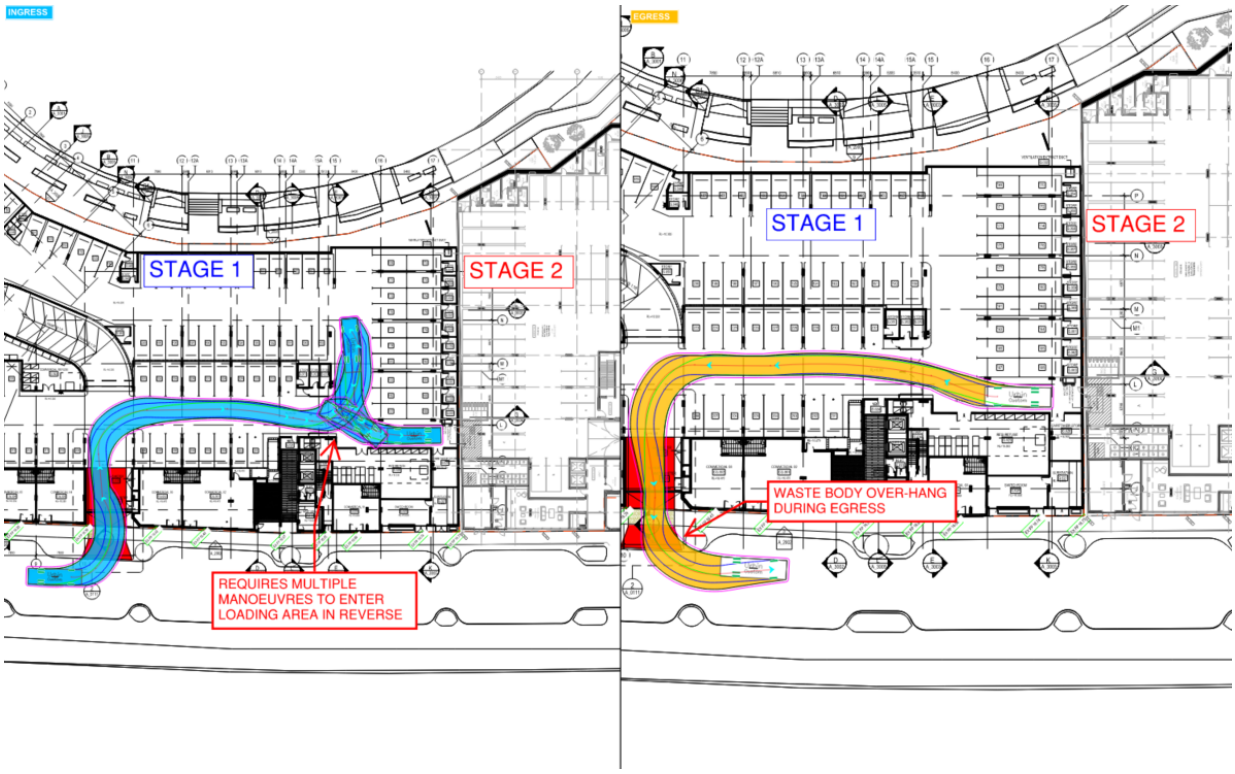


Figure 3-7. 8.6m Bulk Waste Vehicle Swept Path



4 Parking Requirements and Provision

The statutory parking requirements for the Site were calculated in accordance with the relevant planning documents. The Site's car park layout has been reviewed with reference to the Australian Standard AS2890.1: Off-Street Parking.

4.1 Car Parking Requirements

The statutory requirements as defined by the *State Planning Policy 7.3 Residential Design Codes: Volume 2 – Apartments (R-Codes)* for the minimum requirements and the *Claremont North East Precinct (NEP) Design Guidelines* have been considered for the maximum permitted parking bays in the context of the proposed development and are summarised in **Table 4-1**.

Table 4-1. Car Parking Requirements

Development Classification	Source	Yield	Minimum Requirements	Maximum Permitted	Minimum Required	Maximum Permitted	Provision
1 bedroom dwelling	R-codes Volume 2	5 units	0.75 bay per dwelling	1.2 bays per multiple dwelling	4 bays	73 bays	**110 residential bays plus 7 residential visitor bays**
2+ bedroom dwelling	Claremont NEP Design Guidelines	56 units	1.00 bay per dwelling		56 bays		
Residential Visitors	R-codes Volume 2	61 units	1.00 bay per 4 dwellings (up to 12th dwelling) 1.00 bay per 8 dwellings (13th dwelling and above)	0.25 bays per multiple dwelling (R-codes)	8 bays	16 bays	
				Total	**69 bays**	**89 bays**	**117 bays**

The total number of parking bays provided in the latest concept Site design is 117 parking bays which exceeds the maximum parking requirements of the *Claremont North East Precinct (NEP) Design Guidelines* by 28 bays.

The addition of 28 parking bays has been advised by the client to be required to address market requirements. Larger apartments, which the development has a greater portion of, have been allocated two bays. These additional bays are primarily provided in a tandem arrangement.

For the residential amenity and managers' office, a reciprocal parking arrangement could be considered, allowing the office manager to use the residential visitor bays during business hours.

4.2 Bicycle Parking Requirements

The statutory requirement of bicycle parking and end-of-trip facilities for the proposed development is defined by the *Claremont North East Precinct (NEP) Design Guidelines* and summarised in **Table 4-2**.

Table 4-2. Bicycle Parking Requirements

Development Classification	Source	Yield	Requirements	Minimum Required	Provision
Residential	Claremont NEP Design Guidelines	61 units	1 cycle bay per apartment	61 spaces	**Basement: 47 stores Ground Floor: 14 stores + 8 visitor bike bays**
			Total	**61 spaces**	**69 spaces**

Sufficient storage for bicycles owned by residential tenants is available in 61 storerooms located at both the basement and ground levels. In addition, a visitor bike storeroom with 8 bicycle bays is also proposed.

4.3 Parking Compliance Checks

The parking bay geometry requirements set forth by AS2890.1 for User Class 1A (residential, domestic and employee parking), were assessed for the 90˚ angled parking bays. The corresponding provisions in the proposed development are summarised in **Table 4-3.**

Table 4-3. Parking Geometric Compliance

Parameter	Minimum Requirement	Provided	Remarks
Bay Width, m (User Class 1A)	2.4	**2.4**	No non-compliance identified
Bay Length, m	5.4	**5.4**	No non-compliance identified
Tandem Bay Width, m	2.4	**2.4**	No non-compliance identified
Small Car Tandem Bay Length, m	10.0	**10.0**	No non-compliance identified
Aisle width, m	5.8	**5.8 – 6.1**	No non-compliance identified
Access width, m (Category 3 – User Class 1A)	4.0 – 6.0	**5.5**	No non-compliance identified
Blind Aisle Extension	1.0	**1.0 – 1.2**	No non-compliance identified

4.4 Swept Path Analysis

A swept path analysis was conducted for a B85 and B99 passenger vehicle for selected parking bays. The swept path analysis indicates that the design vehicles can manoeuvre in and out of the bays on the ground floor and basement level as shown in **Figure 4-1** and **Figure 4-2**.

The analysis shows that the B99 passenger vehicle will require several manoeuvres to enter and exit the end parking bays in an aisle. This is considered to be acceptable since these bays are proposed to be allocated to the residential tenants who will become very familiar on how to enter and exit these bays. A B85 passenger vehicle is able to adequately enter and exit all parking bays.

Larger scaled swept path diagrams including the circulation, ingress and egress from various parking bays are included in **Appendix C**.

4.4.1 Parking Bays – Ingress and Egress

Figure 4-1. Swept Paths - Ground Floor Parking (Ingress and Egress)

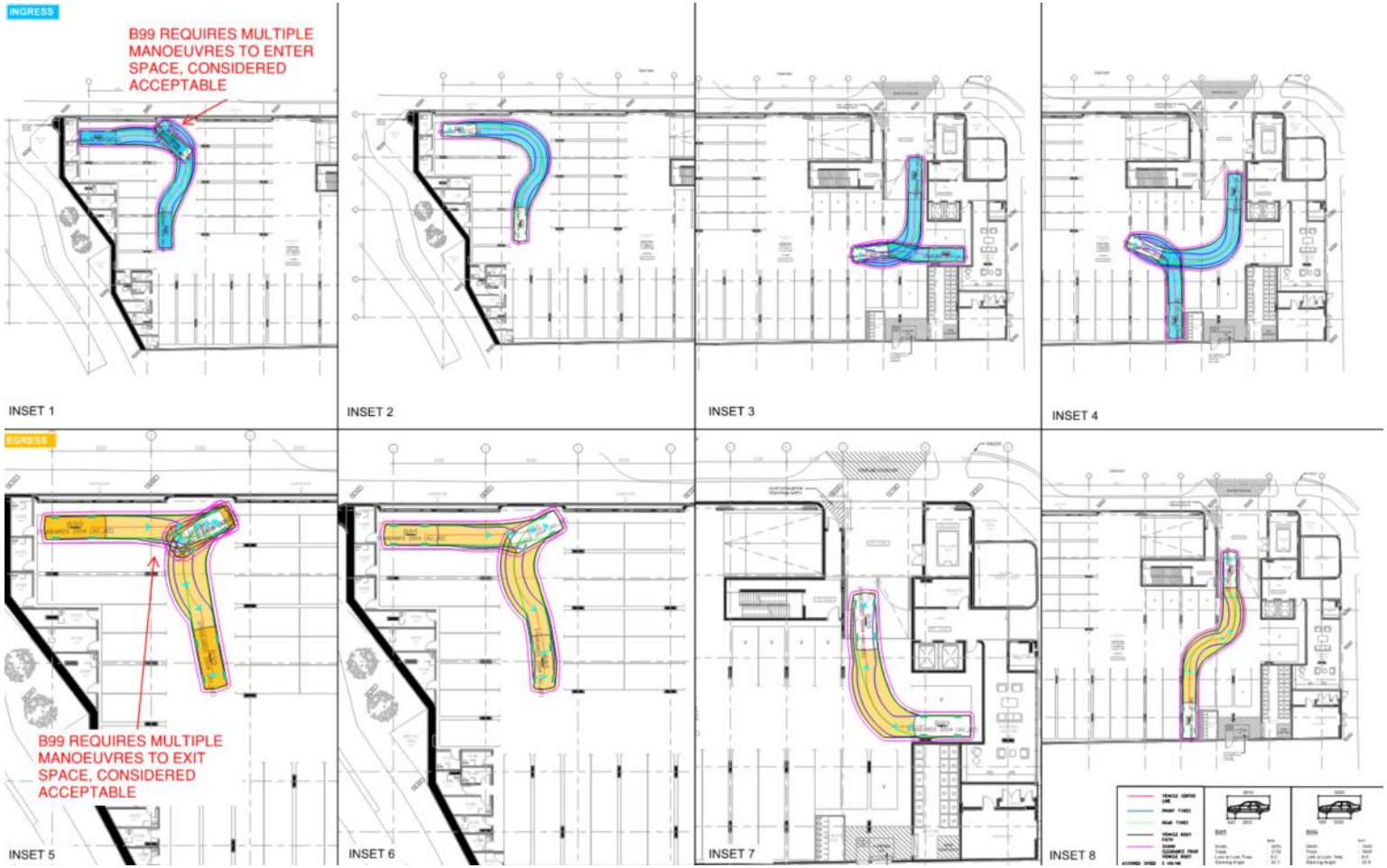
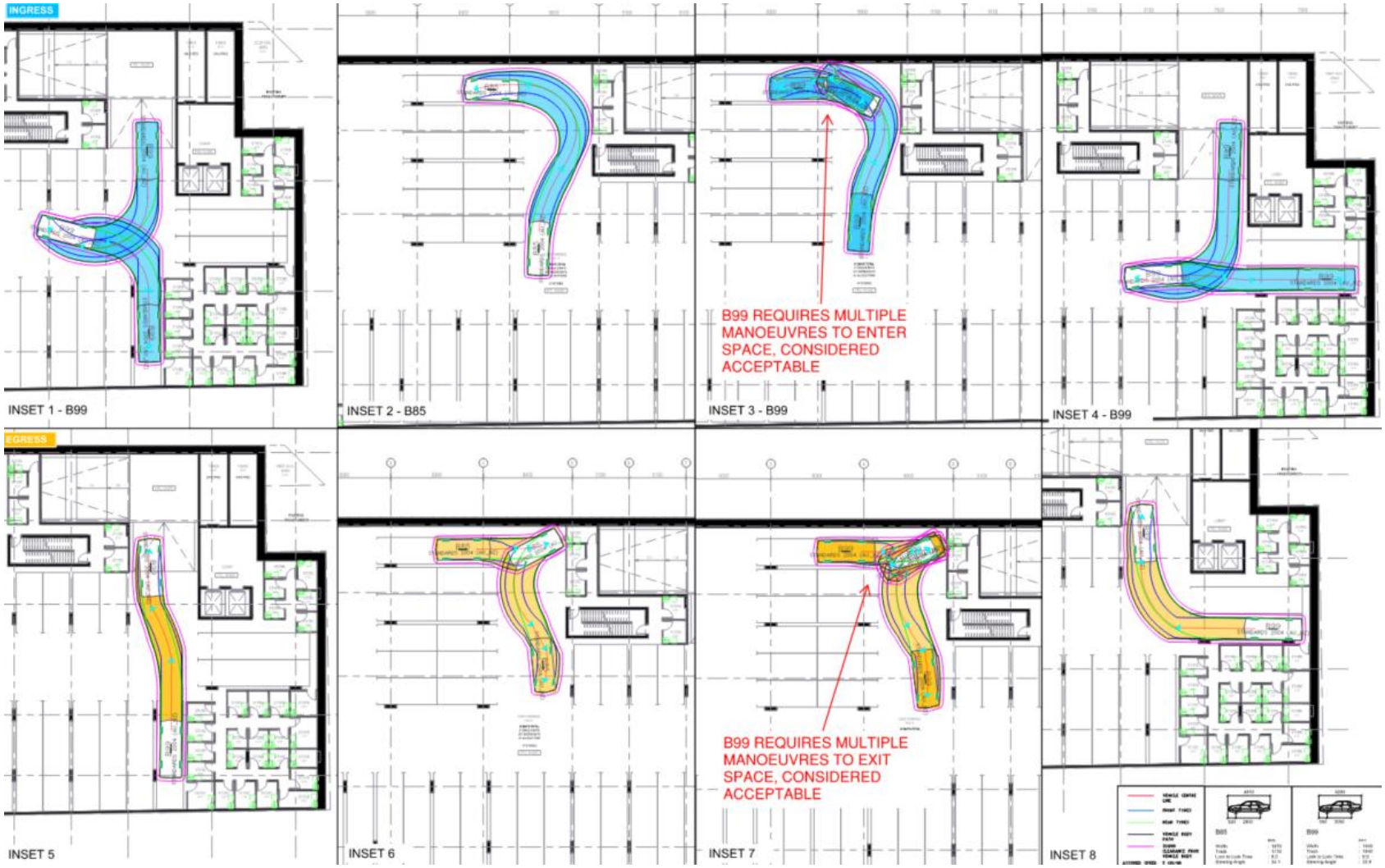


Figure 4-2. Swept Paths – Basement Level Parking



4.4.2 Site Circulation

A swept path analysis was conducted for both B85 and B99 design vehicles to confirm that these vehicles are able to circulate through the car park simultaneously. The analysis indicates some encroachment at the corners is expected as shown in Figure 4-3 to Figure 4-4. It is recommended that consideration be given to implement suitable traffic management measures such as mirrors in the car park to increase visibility and safety within the car park.

Figure 4-3. Swept Paths - Ground Floor Circulation

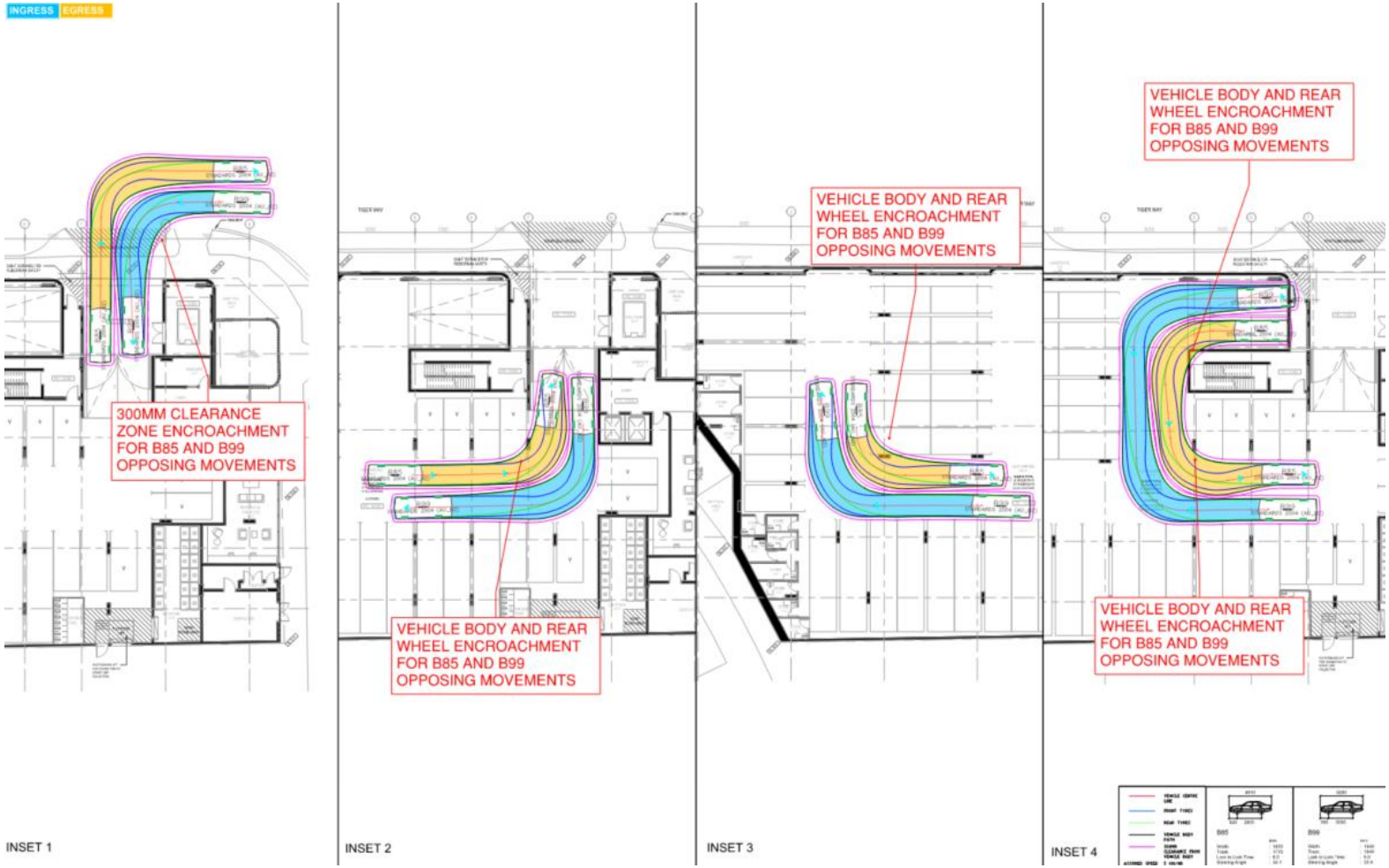
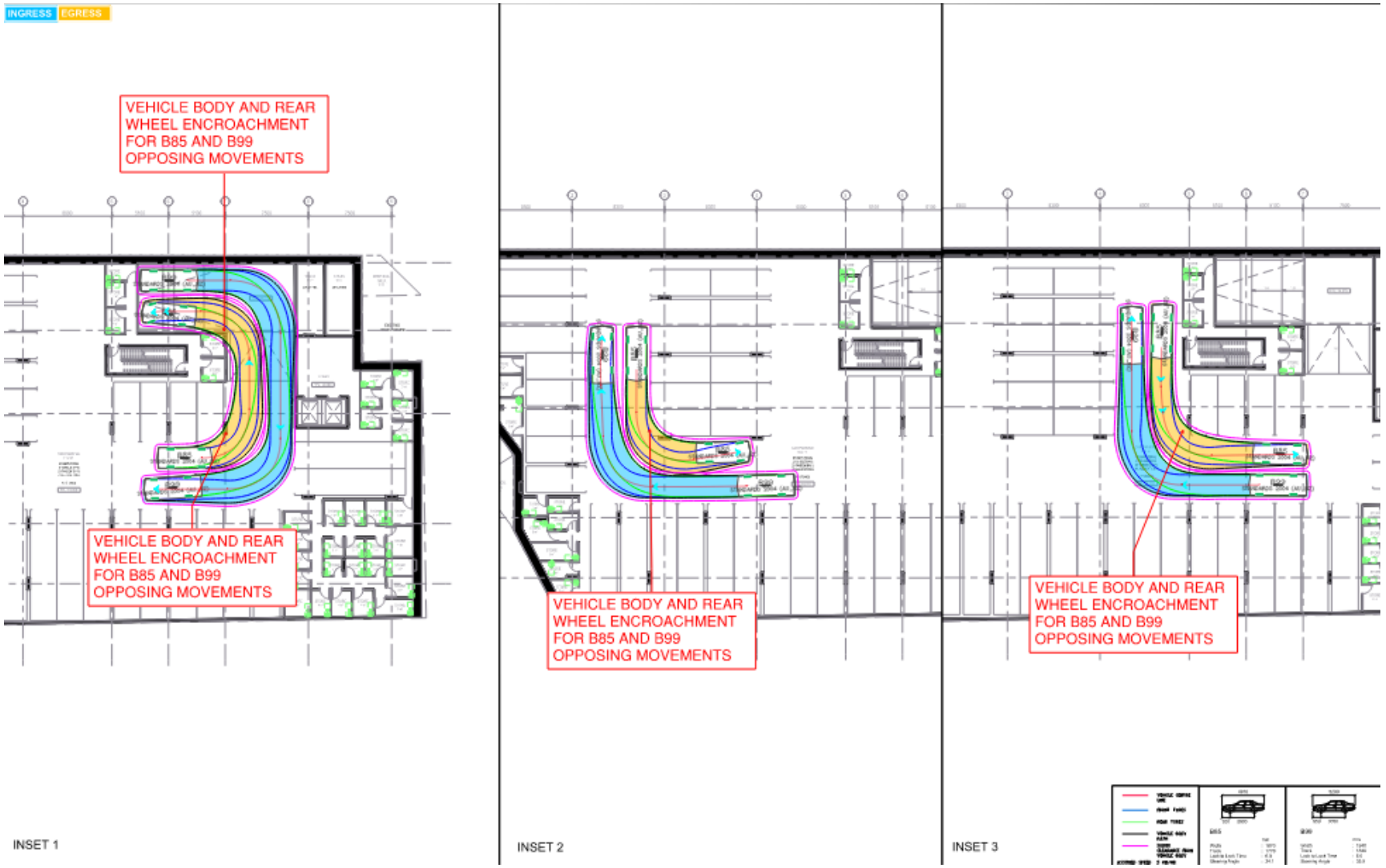


Figure 4-4. Swept Paths - Basement Level Circulation



5 Proposed Changes to Transport Network

5.1 Surrounding Road Network

Stantec contacted the Town of Claremont previously and were advised that there are no immediate changes to the surrounding road network in the vicinity of the subject Site. In addition, there are no anticipated modifications to the intersection control in the vicinity of the Site in the near future.

5.2 Pedestrian/Cycle Network Facilities

Stantec contacted the Town of Claremont previously and were advised that there are no planned changes for pedestrian and cycling facilities.

5.3 Future Public Transport Network

Stantec contacted the Public Transport Authority previously and were advised that there are no major changes for the bus network in the vicinity of the Site.

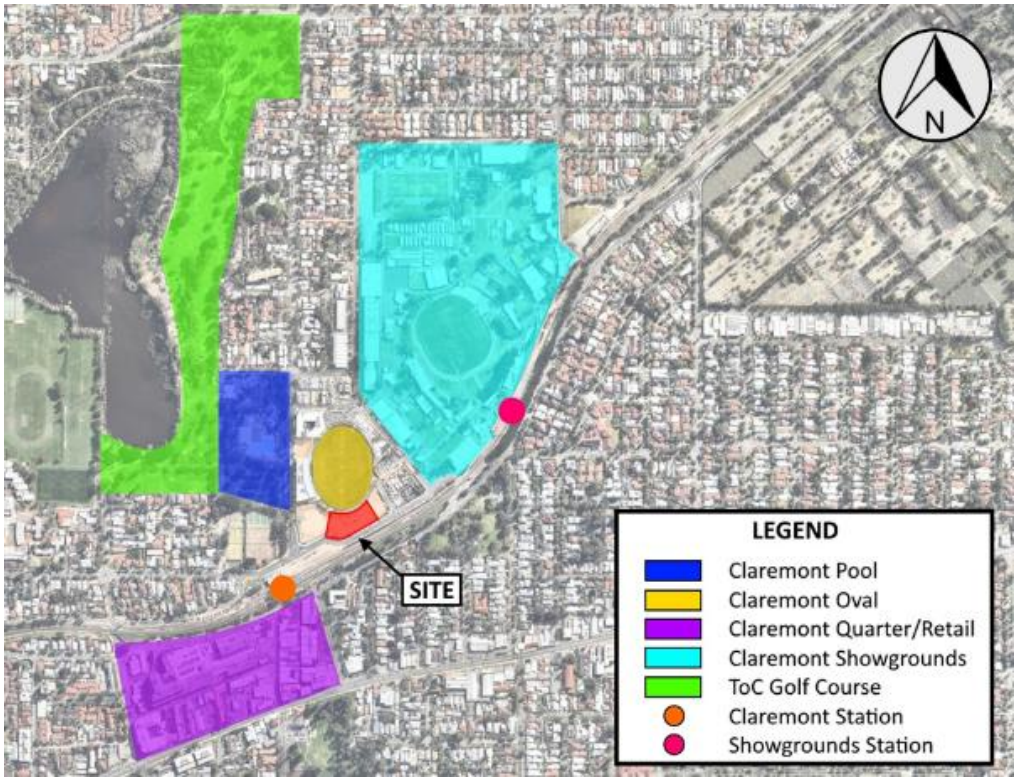
6 Integration with Surrounding Area

6.1 Surrounding Major Attractors and Generators

The major attractors/generators surrounding the Stage 1 and Stage 2 development are shown in **Figure 6-1**. Key attractors/generators include:

- Claremont Station
- Showgrounds Station
- Claremont Pool
- Claremont Oval
- Claremont Quarter
- Claremont Showgrounds
- Town of Claremont Golf Course

Figure 6-1. Key Attractors and Generators



It is likely that trips to from the Site to and from these major attractors will be undertaken by foot due to their close proximity.

6.2 Proposed Changes to Surrounding Land Uses

Stantec contacted the Town of Claremont previously and was advised that there is a residential development at 3 Shenton Road and a commercial development at 2 Shenton Road. Although the construction sites are fenced, there are still no commencement dates for these two (2) identified developments.

7 Analysis of Transport Network

7.1 Analysis Overview

7.1.1 Key Intersections

A SIDRA analysis was conducted for the following intersections to evaluate the potential impact of Stage 2 site-generated traffic on the surrounding road network:

- Shenton Road / Graylands Road
- Shenton Road / Davies Road
- Shenton Road / Gugeri Street
- Shenton Road / Stage 1 Access.

Given the low volume of traffic expected from the Stage 2 development, no SIDRA analysis was undertaken at the intersections located on Tiger Way including the proposed Stage 2 site access. The proposed Stage 2 development comprises 61 apartment units with 59sqm of residential amenity and 12sqm of manager's office space on the ground floor. The anticipated trip generation is expected to generate a nominal increase of traffic on the surrounding road network during the peak hour periods and is discussed in detail in Section 7.2. Tiger Way is a laneway and is not classified under the Main Roads Functional Road Hierarchy. The Shenton Road / Stage 1 access intersection has been included in the traffic assessments for Stage 2.

The location of the abovementioned intersections analysed using SIDRA in relation to the Site is indicated in **Figure 7-1**.

Figure 7-1. Location of Key Intersections

Source: Metromap (2025)

7.1.2 Assessment Years

As identified in the WAPC's *Transport Impact Assessment Guidelines: Individual Developments* (revised August 2016), it is recommended that, for analysis purposes, the appropriate assessment years include the year of full opening of the development and 10 years after full opening.

The exact opening year is still not known, however for the purpose of the assessment, it is assumed to occur in the year 2027. Traffic forecasts for the "without" development scenario for the future 2027 and 2037 years were also assessed in order to assess the impact of the background traffic growth and identify if the intersection performance of the future years were caused by development generated trips.

7.1.3 Assessment Scenarios

All relevant intersections have been analysed for the three assessment years applying a conservative growth rate of 3% per annum based on historical traffic data. For this analysis, five (5) scenarios are considered:

- Existing base year (2025)
- 2027 without the proposed development traffic
- 2027 opening year with the proposed development traffic
- 2037 without the proposed development traffic
- 2037 with the development traffic (+ 10 year horizon)

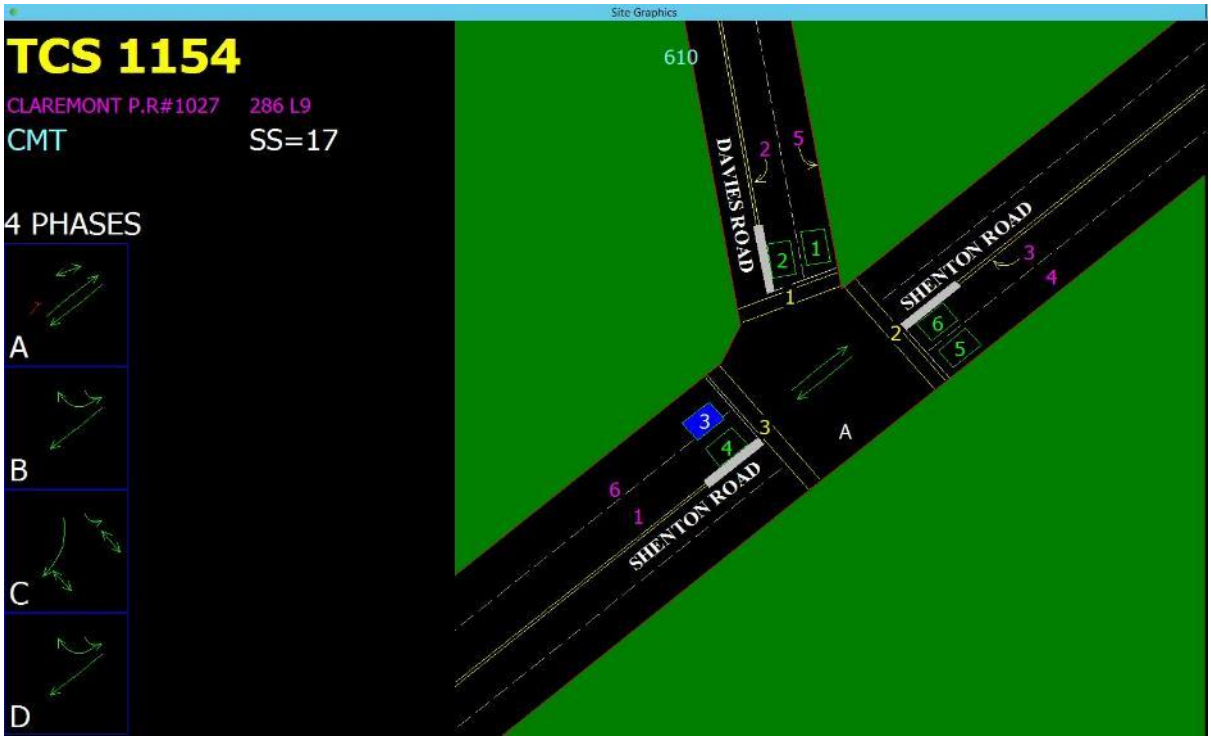
7.1.4 Signal Phasings

Signal phasing and timings for Shenton Road / Davies Road intersection have been based on the current signal phasing provided by MRWA through the IDM (Intersection Diagnostics Monitor) data. The existing phasing will also be used for the 2027 and 2037 design years in order to provide a fair comparison of the impact of the increased traffic volume. It is understood that MRWA may vary the signal operation to improve the function of the intersection or the Stirling Highway Corridor.

The site cycle time option for the 2027 and 2037 assessments was set to 'Optimum Cycle Time' to allow SIDRA to adjust the cycle time in order to minimise the average delay caused by the usage of existing signal phasing in future scenarios.

Figure 7-2 illustrates the signal phasing obtained from the 2023 SCATS data for Shenton Road / Davies Road intersection.

Figure 7-2. Signal Phasing (2023) - Shenton Road / Davies Road Intersection



7.2 Development Traffic Generation

The trip generation rates for residential / commercial sites are set out by the *Western Australian Planning Commission (WAPC) Transport Assessment Guidelines Volume 5 – Technical Guidance*. **Table 7-1** shows the trip generation and **Table 7-2** presents the total potential trip generation of the proposed development for the full development buildout of Stage 2.

Table 7-1. Trip Generation Rates

Land Use	Weekday AM Peak		Weekday PM Peak	
	In	Out	In	Out
Residential	0.2 trips per dwelling	0.6 trips per dwelling	0.5 trips per dwelling	0.3 trips per dwelling
Manager's Office (Commercial)	1.6 trips per 100 sqm	0.4 trips per 100 sqm	0.4 trips per 100 sqm	1.6 trips per 100 sqm

Source: WAPC Transport Assessment Guidelines Volume 5 – Technical Guidance

Table 7-2. Estimated Trip Generation

Land Use	Weekday AM Peak		Weekday PM Peak	
	In	Out	In	Out
Residential	13	37	31	19
Commercial	0	0	0	0
Total	**13**	**37**	**31**	**19**

The proposed Stage 2 development is anticipated to generate an additional 50 two-way vehicular trips during the AM peak and 50 two-way vehicular trips in the PM peak hour (arrivals plus departures) for the Stage 2 development buildout.

According to the Western Australian Planning Commission [WAPC] guidelines, developments generating between 10 and 100 vehicular trips in the peak hour is considered to have a moderate impact on the surrounding road network.

7.3 Development Trip Distribution

Development trip distribution for the weekday AM and PM peaks have been derived from the existing distribution flow of Shenton Road, Graylands Road, Davies Road and Gugeri Street, as sourced from SCATS data and link counts.

The likely route for people arriving/leaving Stage 1 of the Site including the distribution proportions is shown in **Figure 7-3** and **Figure 7-4** respectively.

Due to a lack of traffic data available on Tiger Way, it has been assumed that inbound and outbound traffic leaving the proposed Stage 2 development will be distributed 50% : 50% on Tiger Way.

Figure 7-3. Inbound Routes

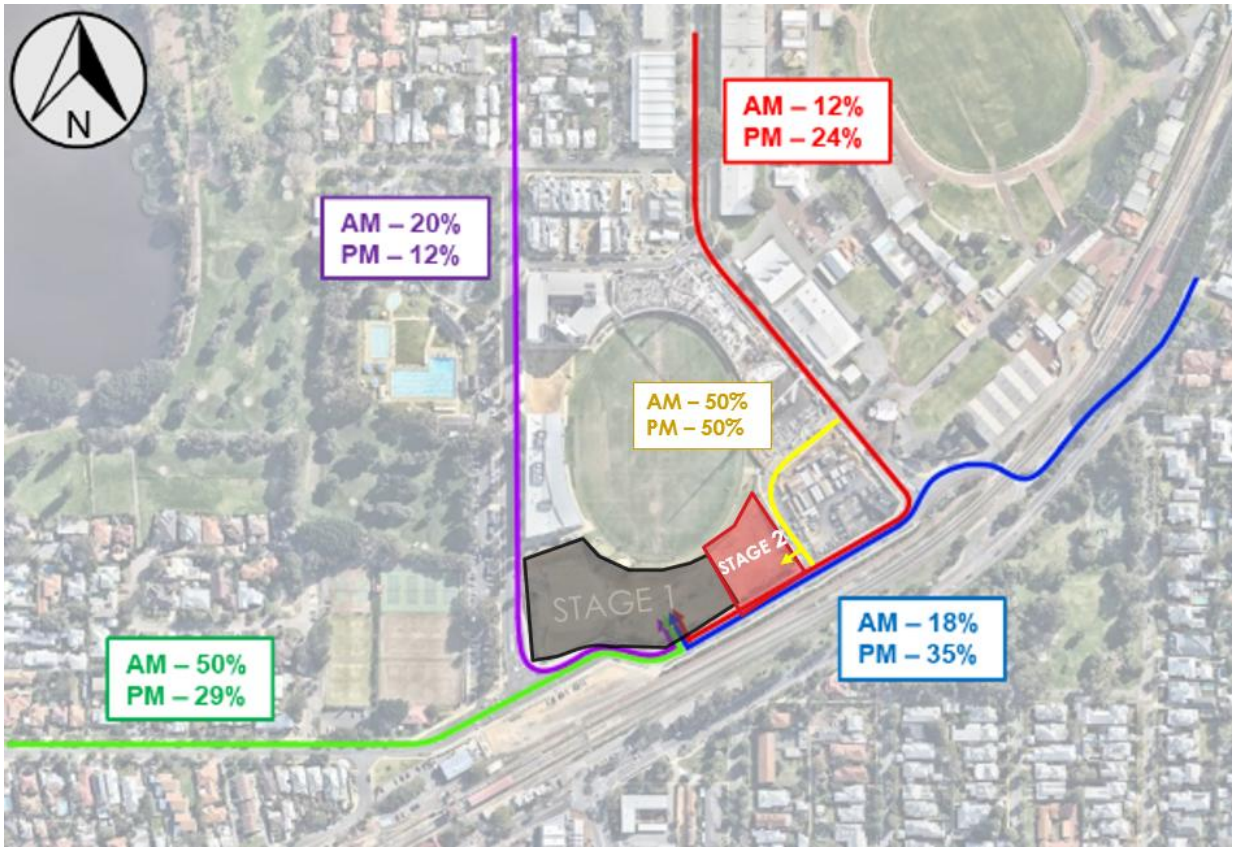
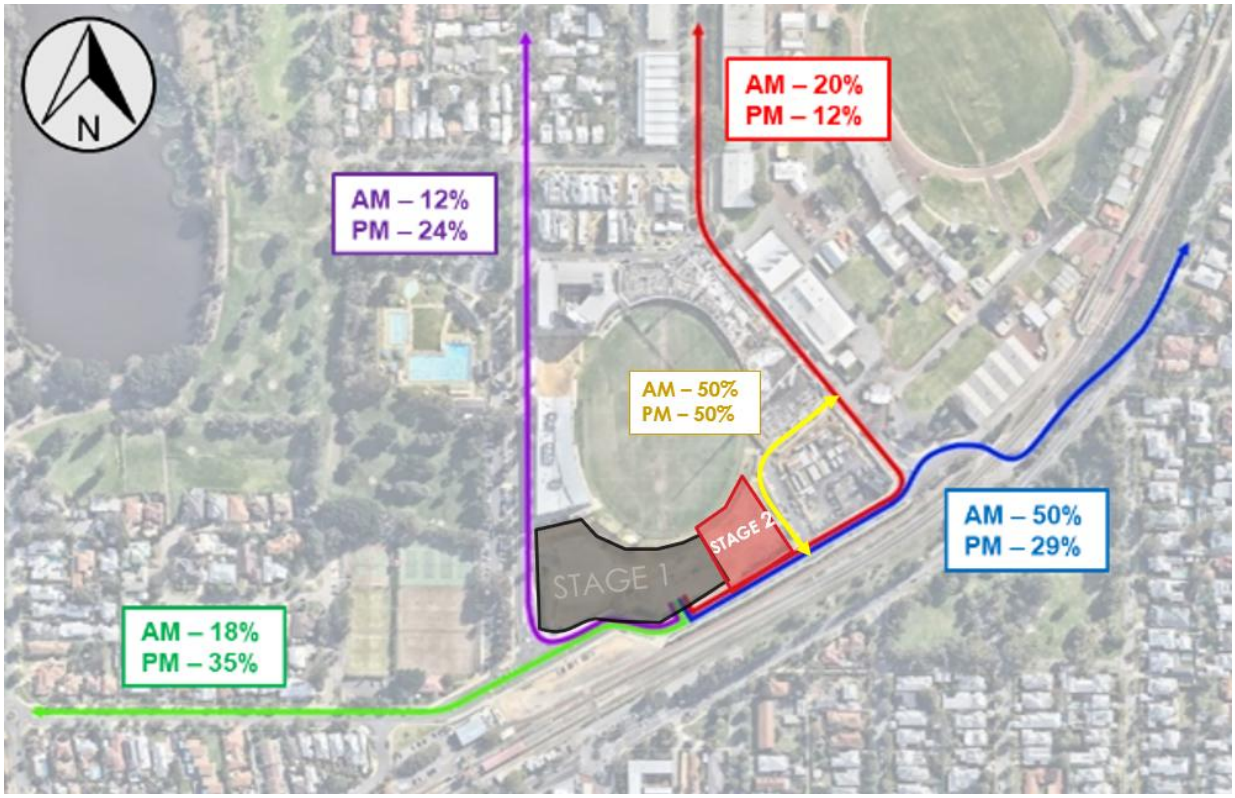


Figure 7-4. Outbound Routes



7.4 Background Traffic

Background traffic volumes have been sourced from existing 2023 SCATS data from Main Roads Western Australia and traffic count data from the Town of Claremont as part of Stage 1 of the development.

- **Year 2025**
  - » Background traffic volume and turning counts for Shenton Road / Davies Road intersection were sourced from 2023 SCATS data and information obtained from the Main Roads Western Australia (MRWA) Traffic Map.
  - » Signals operation (phasings, timings) at Shenton Road / Davies Road were obtained from MRWA Traffic Map.
  - » Background traffic volume for the Shenton Road / Gugeri Street was sourced from the 2024 traffic count data from the Town of Claremont and was used to determine the traffic growth rate from the 2017 traffic data.
  - » To derive the background traffic volume for the year 2025, a conservative 3% growth rate has been applied to the existing 2017 background traffic data and turning counts for the key intersections. It should be noted that this calculated growth rate for the study area is extremely high, and if anything, traffic on many roads in the wider vicinity of the Site can be observed to be stable with minimal traffic growth.
- **Year 2027**
  - » To derive the background traffic volume for the year 2027, a conservative 3% growth rate has been applied to the 2025 background traffic to estimate the future traffic volumes for the 2027 design year.

  - » Signals operation at the Shenton Road / Davies Road intersection for 2027 is assumed to operate as per the existing arrangement.

- **Year 2037**
  - » To derive the background traffic volume for the 2037 design year, a conservative 3% growth rate has been applied to the 2025 background traffic to estimate the future traffic volumes in 2037.
  - » Signals operation at the Shenton Road / Davies Road intersection for 2037 scenario is assumed to operate as per the existing arrangement.

Figure 7-5 to **Figure 7-7** show the background traffic volumes within the vicinity of the Site for the year 2025, 2027 and 2037 without the development.

Figure 7-5. Background Traffic 2025 – Weekday AM and PM Peak

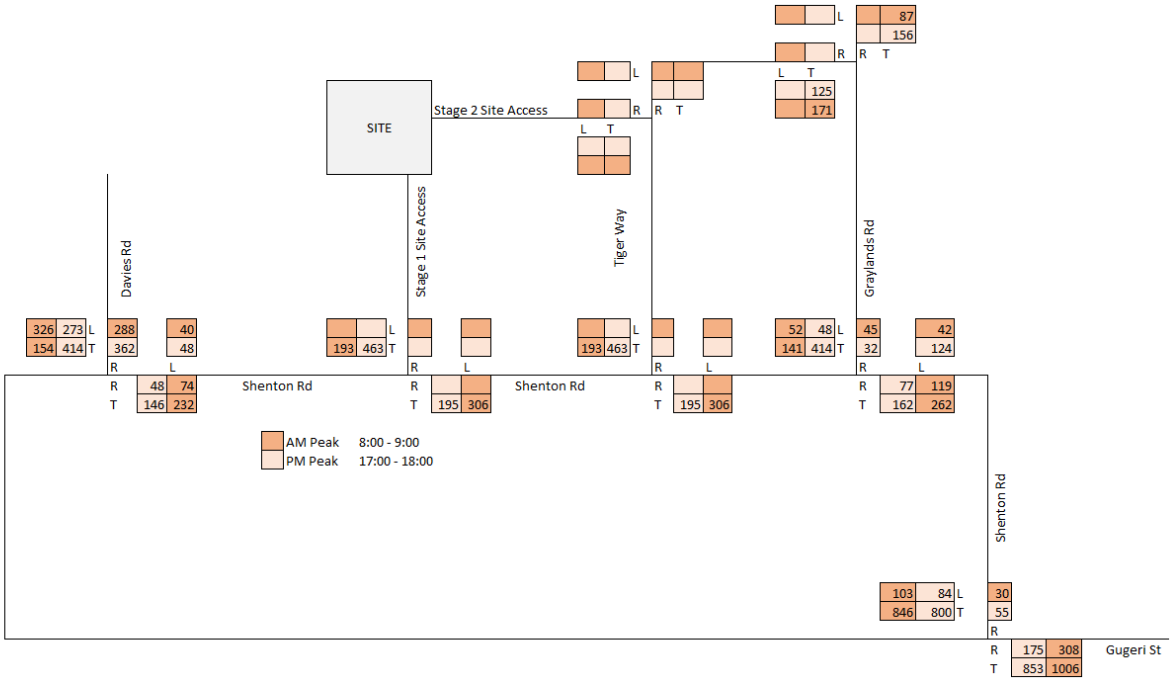


Figure 7-6. 2027 Traffic without Development – Weekday AM and PM Peak

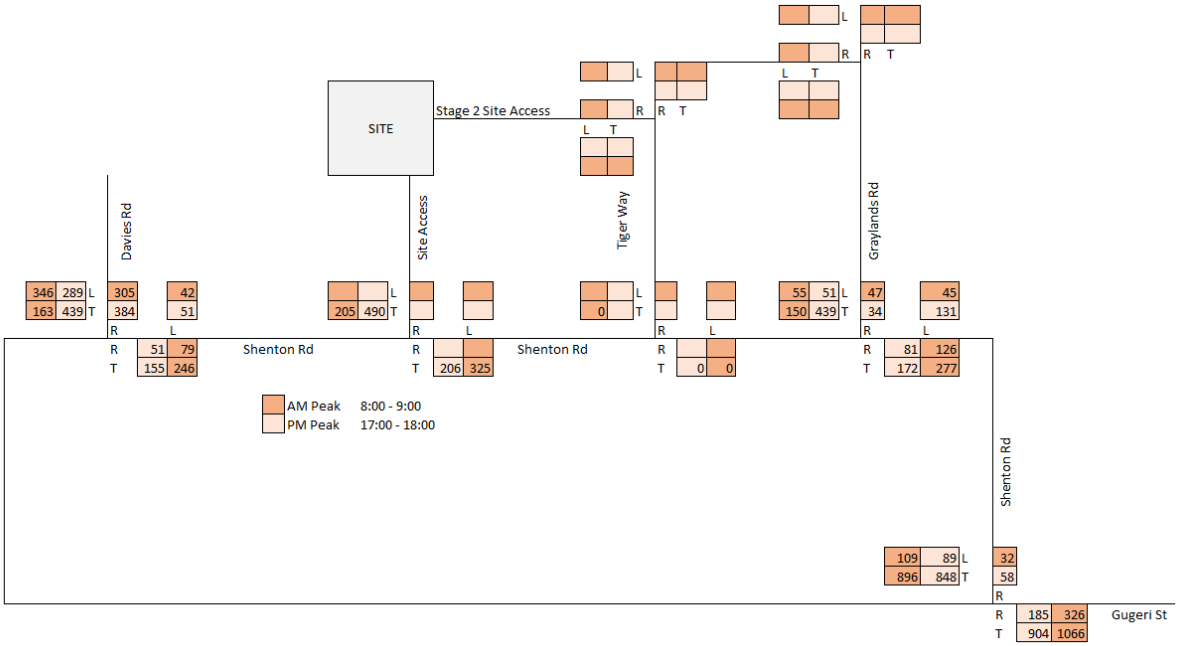
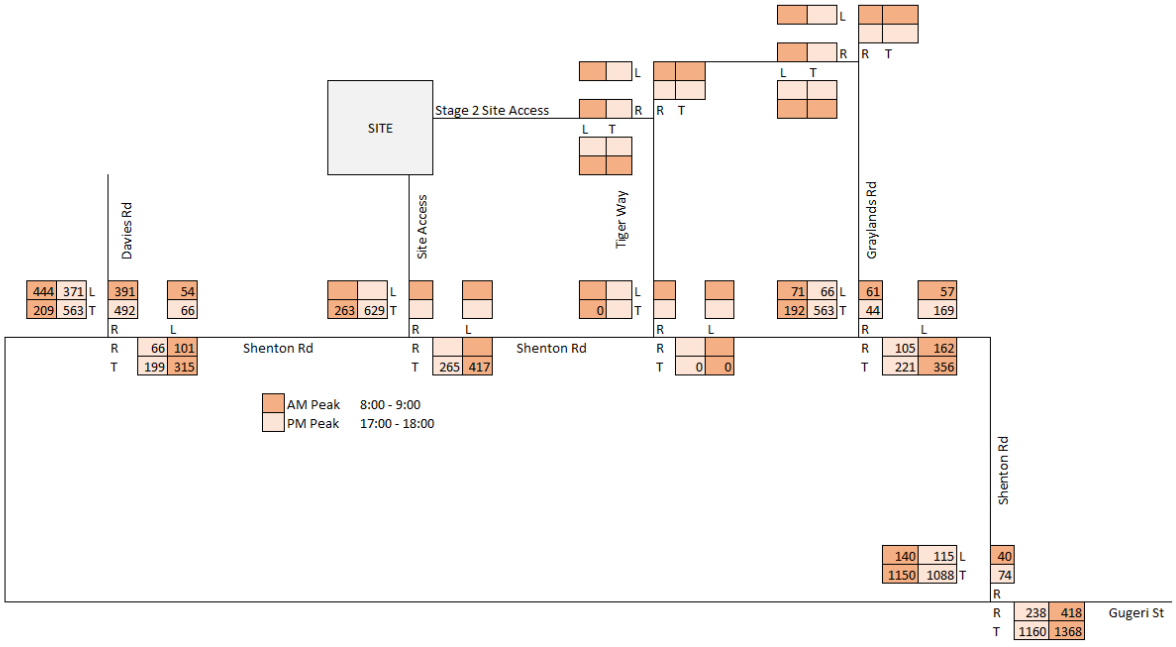


Figure 7-7. 2037 Traffic without Development – Weekday AM and PM Peak



7.5 Background with Development Traffic

The background and with development traffic adopted for the assessment are shown in **Figure 7-8** to **Figure 7-9**.

Figure 7-8. Opening Year of Development (2027) - Weekday AM and PM Peak

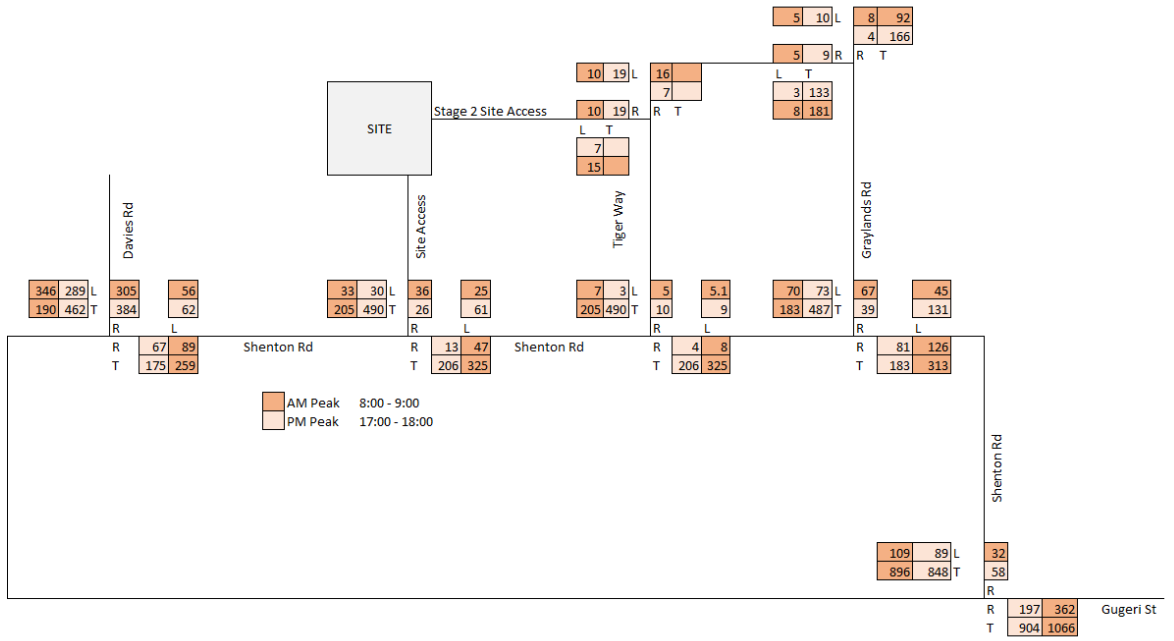
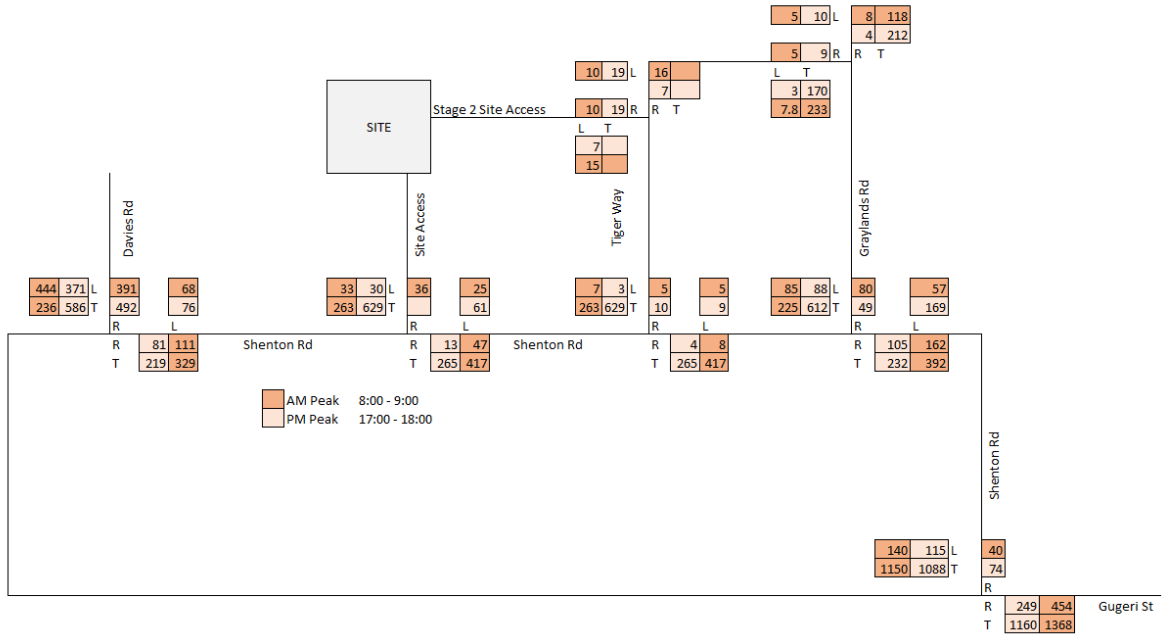


Figure 7-9. Opening Year of the Development + 10 Year Horizon (2037) - Weekday AM and PM Peak



8 Intersection Performance

Analysis of the traffic impacts of the proposed development has been carried out for the following intersections:

- Shenton Road / Graylands Road
- Shenton Road / Davies Road
- Shenton Road / Gugeri Street
- Shenton Road / Stage 1 Site Access

The identified intersections and accesses have been analysed for the five scenarios using the SIDRA analysis program. This program calculates the performance of intersections based on input parameters, including geometry and traffic volumes. As an output SIDRA provides values for the Degree of Saturation (DOS), queue lengths, delays, level of service, and 95th Percentile Queue. These parameters 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-signalized 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 can be considered to be operating 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. The different levels of service can generally be described as shown in **Table 8-1**.

Table 8-1. Level of Service (LOS) Performance Criteria

LOS	Description	Signalised Intersection	Unsignalised Intersection
A	Free-flow operations (best condition)	≤10 sec	≤10 sec
B	Reasonable free-flow operations	10-20 sec	10-15 sec
C	At or near free-flow operations	20-35 sec	15-25 sec
D	Decreasing free-flow levels	35-55 sec	25-35 sec
E	Operations at capacity	55-80 sec	35-50 sec
F	A breakdown in vehicular flow (worst condition)	≥80 sec	≥50 sec

An LOS exceeding these values indicates that the intersection is exceeding its practical capacity. Above these values, users of the intersections are likely to experience unsatisfactory queueing and delays during the peak hour periods.

The detailed SIDRA results for each of the scenarios assessed is included in **Appendix D**. The results of the assessment are discussed in the following sub-sections.

8.1.1 Scenario 1: Background (2025)

8.1.1.1 Shenton Road / Graylands Road

The following presents the results of the analysis of the Shenton Road / Graylands Road intersection for both AM and PM peak hour periods. **Figure 8-1** illustrates the SIDRA layout of the intersection. **Table 8-2** shows the results of the analysis.

Figure 8-1. SIDRA Layout for Shenton Road / Graylands Road

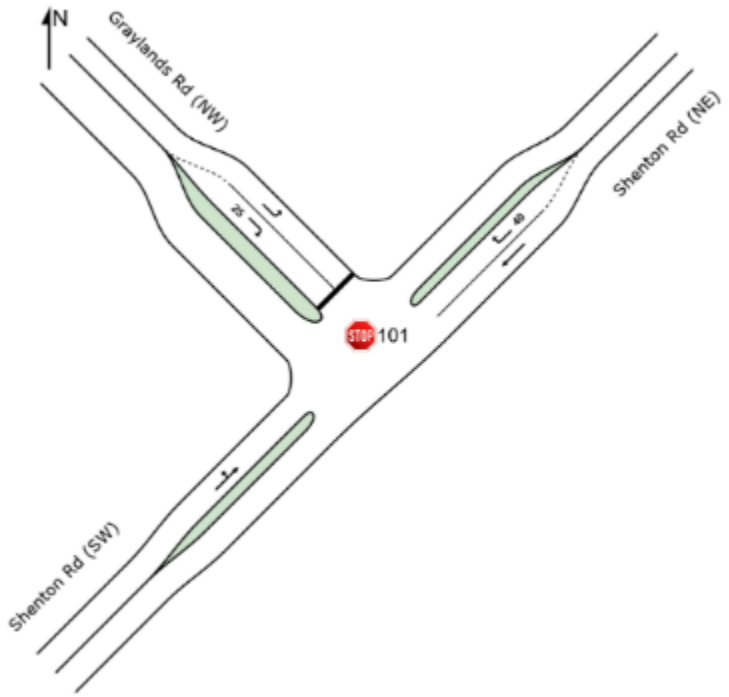


Table 8-2. Shenton Road / Graylands Road (Background 2025)

Intersection Approach		Background 2025 Weekday AM Peak				Background 2025 Weekday PM Peak			
		DOS	Delay (Sec)	LOS	95% Queue (m)	DOS	Delay (Sec)	LOS	95% Queue (m)
Northeast: Shenton Rd	T	0.085	0.0	A	0.0	0.138	0.0	A	0.0
	R	0.073	6.6	A	2.4	0.082	5.2	A	2.9
Northwest: Graylands Rd	L	0.144	10.3	B	4.4	0.035	8.5	A	1.1
	R	0.085	16.3	C	2.3	0.093	13.8	B	2.6
Southwest: Shenton Rd	L	0.238	4.7	A	0.0	0.100	4.6	A	0.0
	T	0.238	0.1	A	0.0	0.100	0.0	A	0.0
All Vehicles		**0.238**	**3.0**	**A**	**4.4**	**0.138**	**2.8**	**A**	**2.9**

8.1.1.2 Shenton Road / Davies Road

The following presents the results of the analysis of the Shenton Road / Davies Road intersection for both AM and PM peak hour periods. **Figure 8-2** illustrates the SIDRA layout of the intersection. **Table 8-3** shows the results of the analysis.

Figure 8-2. SIDRA Layout for Shenton Road / Davies Road

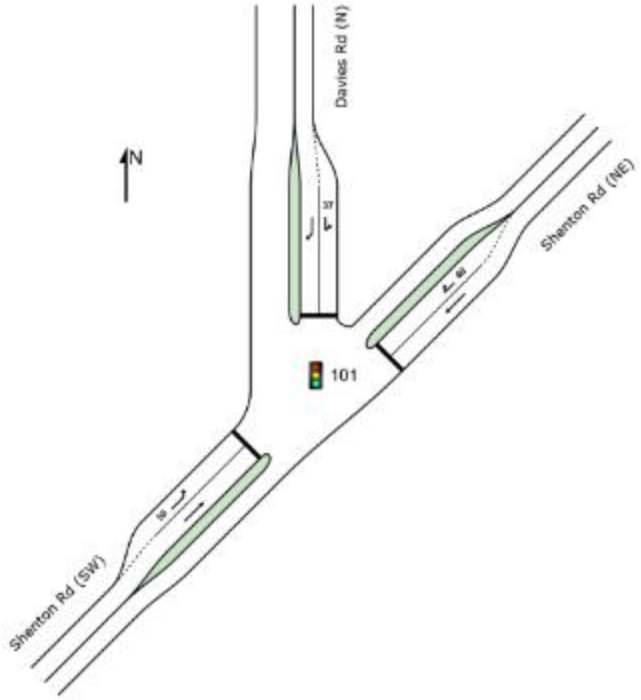


Table 8-3. Shenton Road / Davies Road (Background 2025)

Intersection Approach		Background 2025 Weekday AM Peak				Background 2025 Weekday PM Peak			
		DOS	Delay (Sec)	LOS	95% Queue (m)	DOS	Delay (Sec)	LOS	95% Queue (m)
Northeast: Shenton Rd	T	0.147	8.8	A	18.6	0.215	7.6	A	28.1
	R	*0.225	35.3	D	11.4	*0.223	30.3	C	16.0
North: Davies Rd	L	0.107	30.2	C	9.0	0.105	28.7	C	8.0
	R	*0.707	33.0	C	83.7	*0.647	30.7	C	67.4
Southwest: Shenton Rd	L	0.488	27.3	C	57.5	*0.648	29.1	C	74.6
	T	*0.751	25.0	C	96.3	0.298	21.7	C	31.3
All Vehicles		**0.751**	**26.5**	**C**	**96.3**	**0.648**	**24.1**	**C**	**74.6**

** Critical Movement (Signal Timing)*

8.1.1.3 Shenton Road / Gugeri Street

The following presents the results of the analysis of the Shenton Road / Gugeri Street intersection for both AM and PM peak hour periods. **Figure 8-3** shows the SIDRA layout representation of the intersection. **Table 8-4** summarises the results of the analysis.

Figure 8-3. SIDRA Layout for Shenton Road / Gugeri Street

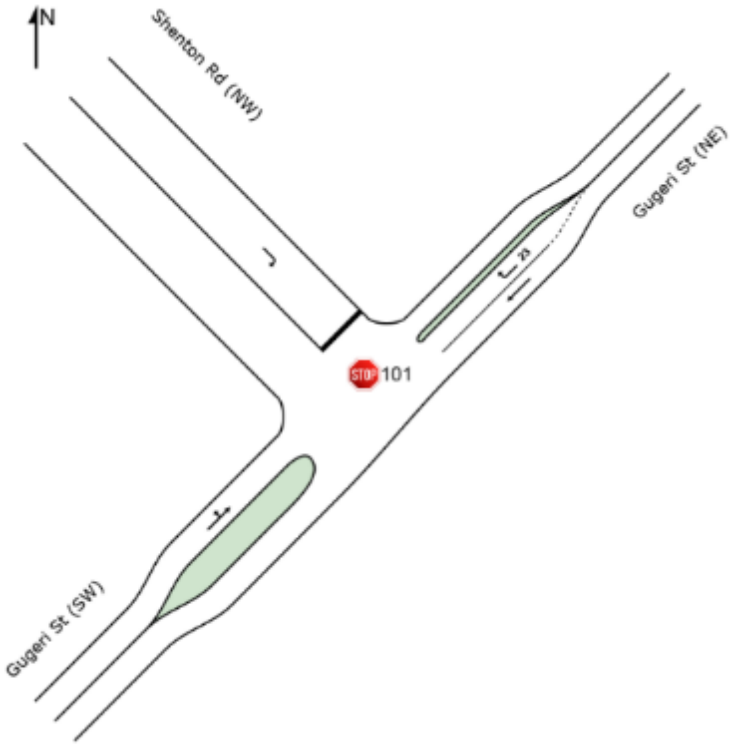


Table 8-4. Shenton Road / Gugeri Street (Background 2025)

Intersection Approach		Background 2025 Weekday AM Peak				Background 2025 Weekday PM Peak			
		DOS	Delay (Sec)	LOS	95% Queue (m)	DOS	Delay (Sec)	LOS	95% Queue (m)
Northeast: Gugeri St	T	0.452	0.2	A	0.0	0.841	4.4	A	93.9
	R	0.341	14.0	B	11.5	0.698	21.9	C	33.5
Northwest: Shenton Rd	R	0.257	25.4	A	6.1	0.216	34.0	D	4.5
Southwest: Gugeri St	L	0.450	5.8	D	0.0	0.483	5.8	A	0.0
	T	0.450	0.2	D	0.0	0.483	0.2	A	0.0
All Vehicles		**0.452**	**2.5**	**N/A**	**1.5**	**0.841**	**5.7**	**N/A**	**93.9**

8.1.2 Scenario 2: 2027 Traffic without Development

8.1.2.1 Shenton Road / Graylands Road

The following presents the results of the analysis of the Shenton Road / Graylands Road intersection for both AM and PM peak hour periods. **Table 8-5** summarises the results of the analysis.

Table 8-5. Shenton Road / Graylands Road (2027 Traffic without Development)

Intersection Approach		2027 Traffic without Development Weekday AM Peak				2027 Traffic without Development Weekday PM Peak			
		DOS	Delay (Sec)	LOS	95% Queue (m)	DOS	Delay (Sec)	LOS	95% Queue (m)
Northeast: Shenton Rd	T	0.091	0.0	A	0.0	0.146	0.0	A	0.0
	R	0.080	6.8	A	2.6	0.088	5.3	A	3.1
Northwest: Graylands Rd	L	0.158	10.5	B	4.8	0.038	8.5	A	1.1
	R	0.098	17.2	C	2.6	0.103	14.3	B	2.9
Southwest: Shenton Rd	L	0.252	4.7	A	0.0	0.106	4.6	A	0.0
	T	0.252	0.1	A	0.0	0.106	0.0	A	0.0
All Vehicles		**0.252**	**3.1**	**N/A**	**4.8**	**0.146**	**2.8**	**A**	**3.1**

8.1.2.2 Shenton Road / Davies Road

The following presents the results of the analysis of the Shenton Road / Davies Road intersection for both AM and PM peak hour periods. **Table 8-6** shows the results of the analysis.

Table 8-6. Shenton Road / Davies Road (2027 Traffic without Development)

Intersection Approach		2027 Traffic without Development Weekday AM Peak				2027 Traffic without Development Weekday PM Peak			
		DOS	Delay (Sec)	LOS	95% Queue (m)	DOS	Delay (Sec)	LOS	95% Queue (m)
Northeast: Shenton Rd	T	0.156	8.8	A	19.9	0.228	7.6	A	30.1
	R	*0.239	35.4	D	12.1	*0.238	30.4	C	17.1
North: Davies Rd	L	0.113	31.6	C	9.6	0.111	30.3	C	8.4
	R	*0.756	34.7	C	90.5	*0.693	32.6	C	72.3
Southwest: Shenton Rd	L	0.517	29.1	C	61.5	*0.688	29.5	C	80.3
	T	*0.840	27.4	C	106.1	0.315	21.8	C	33.3
All Vehicles		**0.840**	**28.2**	**C**	**106.1**	**0.693**	**24.8**	**C**	**80.3**

** Critical Movement (Signal Timing)*

8.1.2.3 Shenton Road / Gugeri Street

The following presents the results of the analysis of the Shenton Road / Gugeri Street intersection for both AM and PM peak hour periods. **Table 8-7** shows the results of the analysis.

Table 8-7. Shenton Road / Gugeri Street (2027 Traffic without Development)

Intersection Approach		2027 Traffic without Development Weekday AM Peak				2027 Traffic without Development Weekday PM Peak			
		DOS	Delay (Sec)	LOS	95% Queue (m)	DOS	Delay (Sec)	LOS	95% Queue (m)
Northeast: Gugeri St	T	0.479	0.2	A	0.0	1.021	77.0	F	640.0
	R	0.407	16.0	C	14.0	0.850	34.6	D	53.5
Northwest: Shenton Rd	R	0.317	29.5	D	7.5	0.283	41.6	E	5.9
Southwest: Gugeri St	L	0.477	5.8	A	0.0	0.512	5.8	A	0.0
	T	0.477	0.2	A	0.0	0.512	0.2	A	0.0
All Vehicles		**0.479**	**2.8**	**N/A**	**14.0**	**1.021**	**39.0**	**N/A**	**640.0**

8.1.3 Scenario 3: Opening Year of Development (2027)

8.1.3.1 Shenton Road / Graylands Road

The following presents the results of the analysis of the Shenton Road / Graylands Road intersection for both AM and PM peak hour periods. **Table 8-8** shows the results of the analysis.

Table 8-8. Shenton Road / Graylands Road (Opening Year of Development 2027)

Intersection Approach		Opening Year of Development (2027) Weekday AM Peak				Opening Year of Development (2027) Weekday PM Peak			
		DOS	Delay (Sec)	LOS	95% Queue (m)	DOS	Delay (Sec)	LOS	95% Queue (m)
Northeast: Shenton Rd	T	0.097	0.0	A	0.0	0.161	0.0	A	0.0
	R	0.088	7.3	A	2.8	0.093	5.5	A	3.3
Northwest: Graylands Rd	L	0.170	11.0	B	5.1	0.039	8.7	A	1.2
	R	0.130	19.2	C	3.4	0.167	15.9	C	4.7
Southwest: Shenton Rd	L	0.288	4.7	A	0.0	0.131	4.7	A	0.0
	T	0.288	0.1	A	0.0	0.131	0.0	A	0.0
All Vehicles		**0.288**	**3.2**	**N/A**	**5.1**	**0.167**	**3.1**	**N/A**	**4.7**

8.1.3.2 Shenton Road / Davies Road

The following presents the results of the analysis of the Shenton Road / Davies Road intersection for both AM and PM peak hour periods. **Table 8-9** summarises the results of the analysis.

Table 8-9. Shenton Road / Davies Road (Opening Year of Development 2027)

Intersection Approach		Opening Year of Development 2027 Weekday AM Peak				Opening Year of Development 2027 Weekday PM Peak			
		DOS	Delay (Sec)	LOS	95% Queue (m)	DOS	Delay (Sec)	LOS	95% Queue (m)
Northeast: Shenton Rd	T	0.176	8.6	A	22.7	0.240	7.4	A	31.9
	R	*0.314	35.0	C	16.2	*0.268	29.8	C	19.4
North: Davies Rd	L	0.138	31.1	C	11.8	0.148	29.8	B	11.4
	R	*0.763	36.5	D	97.2	*0.696	32.7	C	74.6
Southwest: Shenton Rd	L	0.517	29.6	C	61.5	*0.688	29.3	C	82.2
	T	*0.915	45.7	D	155.9	0.367	21.4	C	39.5
All Vehicles		**0.915**	**34.4**	**C**	**155.9**	**0.696**	**24.4**	**C**	**82.2**

** Critical Movement (Signal Timing)*

8.1.3.3 Shenton Road / Gugeri Street

The following presents the results of the analysis of the Shenton Road / Gugeri Street intersection for both AM and PM peak hour periods. **Table 8-10** shows the results of the analysis.

Table 8-10. Shenton Road / Gugeri Street (Opening Year of Development 2027)

Intersection Approach		Opening Year of Development 2027 Weekday AM Peak				Opening Year of Development 2027 Weekday PM Peak			
		DOS	Delay (Sec)	LOS	95% Queue (m)	DOS	Delay (Sec)	LOS	95% Queue (m)
Northeast: Gugeri St	T	0.479	0.2	A	0.0	1.058	157.1	F	1069.2
	R	0.434	16.4	C	2.0	0.944	55.3	F	97.5
Northwest: Shenton Rd	R	0.325	30.2	D	1.0	0.308	45.2	E	6.3
Southwest: Gugeri St	L	0.477	5.8	A	0.0	0.512	5.8	A	0.0
	T	0.477	0.2	A	0.0	0.512	0.2	A	0.0
All Vehicles		**0.479**	**2.9**	**N/A**	**2.0**	**1.058**	**76.2**	**N/A**	**1069.2**

8.1.3.4 Shenton Road / Site Access

The following presents the results of the analysis of the Shenton Road / Site Access intersection for both AM and PM peak hour periods. **Figure 8-4** illustrates the SIDRA layout of the intersection. **Table 8-11** summarises the results of the analysis.

Figure 8-4. SIDRA Layout for Shenton Road / Site Access

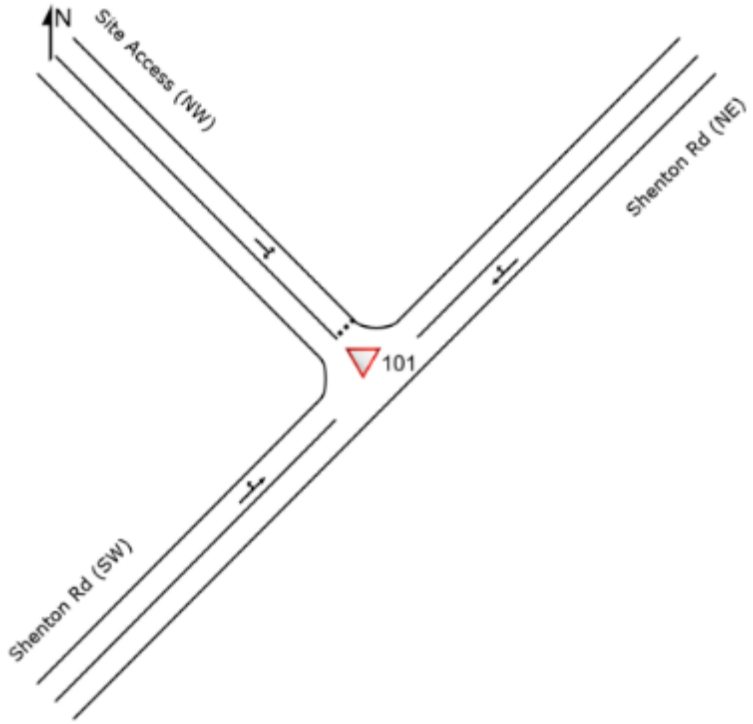


Table 8-11. Shenton Road / Site Access (Opening Year of Development 2027)

Intersection Approach		Opening Year of Development (2027) Weekday AM Peak				Opening Year of Development (2027) Weekday PM Peak			
		DOS	Delay (Sec)	LOS	95% Queue (m)	DOS	Delay (Sec)	LOS	95% Queue (m)
Northeast: Shenton Rd	T	0.121	0.2	A	1.1	0.204	0.0	A	2.9
	R	0.121	10.7	A	1.1	0.204	6.7	A	2.9
Northwest: Site Access	L	0.105	6.6	A	2.8	0.069	5.2	A	1.7
	R	0.105	8.7	A	2.8	0.069	7.5	A	1.7
Southwest: Shenton Rd	L	0.274	4.6	A	0.0	0.126	4.6	A	0.0
	T	0.274	0.1	A	0.0	0.126	0.0	A	0.0
All Vehicles		**0.274**	**1.2**	**A**	**2.8**	**0.204**	**1.3**	**N/A**	**0.4**

8.1.4 Scenario 4: 2037 Traffic without Development

8.1.4.1 Shenton Road / Graylands Road

The following presents the results of the analysis of the Shenton Road / Graylands Road intersection for both AM and PM peak hours. **Table 8-12** shows the results of the analysis.

Table 8-12. Shenton Road / Graylands Road (2037 Traffic without Development)

Intersection Approach		2037 Traffic without Development Weekday AM Peak				2037 Traffic without Development Weekday PM Peak			
		DOS	Delay (Sec)	LOS	95% Queue (m)	DOS	Delay (Sec)	LOS	95% Queue (m)
Northeast: Shenton Rd	T	0.117	0.0	A	0.0	0.188	0.0	A	0.0
	R	0.127	7.9	A	4.0	0.121	5.6	A	4.3
Northwest: Graylands Rd	L	0.247	12.1	B	7.8	0.050	8.7	A	1.5
	R	0.193	24.1	C	4.9	0.177	17.8	C	4.8
Southwest: Shenton Rd	L	0.324	4.7	A	0.0	0.136	4.7	A	0.0
	T	0.324	0.1	A	0.0	0.136	0.0	A	0.0
All Vehicles		**0.324**	**3.7**	**A**	**7.8**	**0.188**	**3.1**	**A**	**4.8**

8.1.4.2 Shenton Road / Davies Road

The following presents the results of the analysis of the Shenton Road / Davies Road intersection for both AM and PM peak hours. **Table 8-13** summarises the results of the analysis.

Table 8-13. Shenton Road / Davies Road (2037 Traffic without Development)

Intersection Approach		2037 Traffic without Development Weekday AM Peak				2037 Traffic without Development Weekday PM Peak			
		DOS	Delay (Sec)	LOS	95% Queue (m)	DOS	Delay (Sec)	LOS	95% Queue (m)
Northeast: Shenton Rd	T	0.200	9.1	A	26.2	0.292	8.0	A	40.3
	R	*0.309	35.8	D	15.9	*0.304	30.9	C	22.3
North: Davies Rd	L	0.147	37.3	D	12.6	0.142	36.6	D	11.0
	R	*1.001	75.2	E	200.3	*0.925	44.1	D	108.0
Southwest: Shenton Rd	L	0.664	36.3	D	83.5	*0.964	46.6	D	139.9
	T	*1.164	334.1	F	641.7	0.404	26.7	C	44.0
All Vehicles		**1.164**	**139.5**	**F**	**641.7**	**0.964**	**33.8**	**C**	**139.9**

** Critical Movement (Signal Timing)*

8.1.4.3 Shenton Road / Gugeri Street

The following presents the results of the analysis of the Shenton Road / Gugeri Street intersection for both AM and PM peak hours. **Table 8-14** indicates the results of the analysis.

Table 8-14. Shenton Road / Gugeri Street (2037 Traffic without Development)

Intersection Approach		2037 Traffic without Development Weekday AM Peak				2037 Traffic without Development Weekday PM Peak			
		DOS	Delay (Sec)	LOS	95% Queue (m)	DOS	Delay (Sec)	LOS	95% Queue (m)
Northeast: Gugeri St	T	1.254	506.5	F	2746.3	2.232	2254.3	F	7483.5
	R	1.143	317.4	F	335.0	2.839	3352.5	F	2646.3
Northwest: Shenton Rd	R	1.073	284.2	F	82.2	1.386	1.386	F	124.2
Southwest: Gugeri St	L	0.612	5.9	A	0.0	0.657	0.657	A	0.0
	T	0.612	0.3	A	0.0	0.657	0.657	A	0.0
All Vehicles		**1.254**	**249.7**	**N/A**	**2746.3**	**2.839**	**2.839**	**N/A**	**7483.5**

8.1.5 Scenario 5: Opening Year of Development + 10 Year Horizon (2037)

8.1.5.1 Shenton Road / Graylands Road

The following presents the results of the analysis of the Shenton Road / Graylands Road intersection for both AM and PM peak hour periods. **Table 8-15** summarises the results of the analysis.

Table 8-15. Shenton Road / Graylands Road (Opening Year of Development + 10 Year Horizon 2037)

Intersection Approach		Opening Year of Development + 10 Year Horizon 2037 (Weekday AM Peak)				Opening Year of Development + 10 Year Horizon 2037 (Weekday PM Peak)			
		DOS	Delay (Sec)	LOS	95% Queue (m)	DOS	Delay (Sec)	LOS	95% Queue (m)
Northeast: Shenton Rd	T	0.122	0.0	A	0.0	0.207	0.0	A	0.0
	R	0.143	8.7	A	4.4	0.127	5.8	A	4.5
Northwest: Graylands Rd	L	0.269	12.9	B	8.7	0.052	8.9	A	1.6
	R	0.254	28.7	D	6.6	0.268	21.0	C	7.9
Southwest: Shenton Rd	L	0.361	4.7	A	0.0	0.161	4.7	A	0.0
	T	0.361	0.1	A	0.0	0.161	0.0	A	0.0
All Vehicles		**0.361**	**4.0**	**N/A**	**8.7**	**0.268**	**3.5**	**N/A**	**7.9**

8.1.5.2 Shenton Road / Davies Road

The following presents the results of the analysis of the Shenton Road / Davies Road intersection for both AM and PM peak hours. **Table 8-16** shows the results of the analysis.

Table 8-16. Shenton Road / Davies Road (Opening year of Development + 10 Year Horizon 2037)

Intersection Approach		Opening Year of Development + 10 Year Horizon 2037 (Weekday AM Peak)				Opening Year of Development + 10 Year Horizon 2037 (Weekday PM Peak)			
		DOS	Delay (Sec)	LOS	95% Queue (m)	DOS	Delay (Sec)	LOS	95% Queue (m)
Northeast: Shenton Rd	T	0.220	8.9	A	29.2	0.304	7.7	A	42.4
	R	*0.380	35.3	D	19.8	*0.335	30.3	C	24.7
North: Davies Road	L	0.169	36.8	D	14.6	0.179	36.2	D	14.0
	R	*1.010	113.8	F	268.4	*0.937	61.3	E	140.8
Southwest: Shenton Rd	L	0.664	36.5	D	84.4	*0.976	76.8	E	195.7
	T	*1.206	418.5	F	792.7	0.456	26.3	C	50.55
All Vehicles		**1.206**	**176.7**	**F**	**792.7**	**0.976**	**46.0**	**D**	**195.7**

** Critical Movement (Signal Timing)*

8.1.5.3 Shenton Road / Gugeri Street

The following presents the results of the analysis of the Shenton Road / Gugeri Street intersection for both AM and PM peak hour periods. **Table 8-17** summarises the results of the analysis.

Table 8-17. Shenton Road / Gugeri Street (Opening Year of Development + 10 Year Horizon 2037)

Intersection Approach		Opening Year of Development + 10 Year Horizon 2037 (Weekday AM Peak)				Opening Year of Development + 10 Year Horizon 2037 (Weekday PM Peak)			
		DOS	Delay (Sec)	LOS	95% Queue (m)	DOS	Delay (Sec)	LOS	95% Queue (m)
Northeast: Gugeri St	T	1.281	553.7	F	2900.8	2.336	2441.5	F	7732.7
	R	1.196	405.1	F	436.5	3.083	3792.4	F	2994.8
Northwest: Shenton Rd	R	1.104	329.4	F	97.9	1.514	1060.6	F	147.5
Southwest: Gugeri St	L	0.612	5.9	A	0.0	0.657	6.0	A	0.0
	T	0.612	0.3	A	0.0	0.657	0.4	A	0.0
All Vehicles		**1.281**	**278.9**	**N/A**	**2900.8**	**3.083**	**1599.8**	**N/A**	**7732.7**

8.1.5.4 Shenton Road / Site Access

The following presents the results of the analysis of the Shenton Road / Site Access intersection for both AM and PM peak hours. **Table 8-18** shows the results of the analysis.

Table 8-18. Shenton Road / Site Access (Opening Year of Development + 10 Year Horizon 2037)

Intersection Approach		Opening Year of Development + 10 Year Horizon 2037 (Weekday AM Peak)				Opening Year of Development + 10 Year Horizon 2037 (Weekday PM Peak)			
		DOS	Delay (Sec)	LOS	95% Queue (m)	DOS	Delay (Sec)	LOS	95% Queue (m)
Northeast: Shenton Rd	T	0.155	0.0	A	1.4	0.257	0.0	A	3.4
	R	0.155	14.4	B	1.4	0.257	8.0	A	3.4
Northwest: Site Access	L	0.133	7.6	A	3.4	0.087	5.6	A	2.2
	R	0.133	11.1	B	3.4	0.087	9.4	A	2.2
Southwest: Shenton Rd	L	0.348	4.7	A	0.0	0.157	4.7	A	0.0
	T	0.348	0.1	A	0.0	0.157	0.0	A	0.0
All Vehicles		**0.348**	**1.1**	**N/A**	**0.5**	**0.257**	**1.2**	**N/A**	**3.4**

8.2 SIDRA Results Summary

8.2.1 Existing Year Performance

In general, the existing 2025 results indicate that all intersections assessed are operating at satisfactory levels during the peak hour periods. The analysis is summarised as follows:

- Shenton Road and Graylands Road intersection is expected to perform at an acceptable level of service with minimal delays and minor queuing for all peak hour periods.
- Shenton Road and Davies Road intersection is expected to operate satisfactorily during the peak hour periods.
- Shenton Road and Gugeri Street is expected to operate at satisfactory levels of service, with minimal delays and short queues.

8.2.2 Future Year Performance without Development

The SIDRA results for the future 2027 and 2037, without development, indicate that two of the key intersections are expected to perform unsatisfactorily as a result of the background traffic growth. The analysis is summarised as follows:

- Shenton Road and Graylands Road intersection is expected to perform at acceptable levels for both 2027 and 2037 design years.
- The Shenton Road and Davies Road intersection is expected to perform at adequate levels for the 2027 opening year. The right turn movement on Davies Road is expected to experience increased delays during the AM peak hour for the 2037 design year. Similarly, the right turn movement on Davies Road and the through movement on the Shenton Road southwest

approach is anticipated to operate at DOS 1.001 and 1.164 respectively which indicate that it is exceeded its practical capacity.

- For the Shenton Road and Gugeri Street intersection, both the right turn and through movements on the north-east approach of Gugeri Street is expected to operate at DOS 2.839 and 2.232 respectively during the PM peak hour period for the 2037 design year, indicating that this approach is exceeding capacity with extensive delays and queuing.

8.2.3 Future Year Performance with Development

The SIDRA results for the opening year of the development and the future 2037 with development scenarios indicate that two key intersections are expected to perform poorly which is attributed to the background traffic growth. The analysis is summarised as follows:

- Site Access and Shenton Road are expected to perform satisfactorily during the AM and PM peak hour periods for both the 2027 opening year and 2037 design year with minimal delays and minor queueing at the Site access.
- Shenton Road and Graylands Road intersection is anticipated to be able to accommodate the additional traffic generated by the proposed development for all scenarios assessed. All approaches perform satisfactorily with the level of service expected to be at LOS C or better for all scenarios.
- The northeast and northern approaches of the Shenton Road / Davies Road intersection are expected to perform satisfactorily in the 2027 opening year except for the southwest approach operating at DOS 0.915. The right turn movement on Davies Road and through movement on the Shenton Road southwest approach at the Shenton Road and Davies Road intersection is expected to operate at DOS of 1.010 and 1.206 respectively during the AM peak hour period for the 2037 design year. The intersection is expected to experience average delays of 176.7 seconds and queuing of around 792.7 m

  A comparison of the SIDRA results between the “with development” and “without development” 2027 and 2037 design year scenarios would indicate that the results are similar. It is concluded that the poor level of performance at this intersection could be attributed to the background traffic growth. To minimise further delays and improve the overall performance at this intersection, consideration could be given to optimising the traffic signal phasing and timings which would require consultation with Main Roads WA.
- Shenton Road and Gugeri Street intersection is expected to perform poorly in 2027 opening year and 2037 future year as significant delays, extensive queueing and oversaturated capacity are anticipated during the PM peak hour period. A comparison of the SIDRA results between the “with development” and “without development” scenarios would indicate that the results are similar, and it is concluded that the poor level of performance at this intersection can be attributed to the background traffic growth. Given this intersection is expected to operate poorly for the 2037 design year, primarily due to the high traffic growth rate used in the assessment although historical counts on adjacent roads actually show the traffic flows have been stable or declining despite increased development along the corridor, it is recommended that the Town/Main Roads WA consider investigating potential solutions to enhance traffic operations at this intersection in the future should this traffic growth be realised.

- The poor performance for the design year 2037 is heavily related to the high calculated growth rate based on the available historical traffic data. It is implied that, if the high growth rate assumed is realised then the intersection will operate poorly. It should be noted that the historical traffic data on the wider vicinity of the Site e.g. Claremont Crescent and Stubbs Terrace show lesser growth than the calculated growth rate despite increased development along the corridor.

9 Conclusions

This assessment has been prepared in accordance with the *Western Australian Planning Commission (WAPC) Transport Impact Assessment Guidelines Volume 4 – Individual Development* for lodgement with the development application. Specifically, this report aims to outline the transport aspects of the proposed redevelopment, with a focus on accessibility, traffic operation, circulation and car parking.

The following is concluded:

- The Stage 2 proposal is a residential development:
    - » 61 residential apartment units
    - » 59 sqm of residential amenity space (at ground level)
    - » 12sqm managers office
- The Stage 2 development Site will have a peak traffic generation of approximately 50 vehicle trips in the AM peak and 50 vehicle trips in the PM peak hour (arrivals plus departures).
- The Shenton Road / Davies Road and Shenton Road / Gugeri Street intersections are expected to experience an increase in overall delay and DOS performance, leading to a further decline in the intersection's performance particularly during the 2037 horizon. A comparison of the SIDRA results between the “with development” and “without development” scenarios would indicate that the results are similar, and it is concluded that the poor level of performance at these intersections can be attributed to the background traffic growth and not the proposed development.
- The addition of 28 parking bays has been provided to address market requirements. Larger apartments, which the development has a greater portion of, have been allocated two bays. These additional bays are primarily provided in a tandem arrangement.
- Site access is proposed via a single crossover located on Tiger Way. Access and egress will be full movement.
- A swept path analysis has been undertaken for a 7.4m rear-lift and 8.6m bulk waste truck entering and exiting the Stage 1 Site access which will also service the Stage 2 development. This analysis shows that the refuse collection vehicle can effectively access and egress the Stage 1 site in forward gear.
- The Site has excellent access to the existing pedestrian and cycling network with the Fremantle Railway PSP located within walking distance.
- The public transport amenity within the vicinity of the Site is excellent with a high frequency of bus and trains services within walking distance from the Site.

Overall, the proposed development is not expected to have any material impact on traffic operations and safety on the surrounding road network.

Appendices

Appendix A WAPC Checklist

Item	Section	Comments/Proposals
Introduction/Background	Section 1	
Name of applicant and consultant	Section 1	
Development location and context	Section 2	
Key issues	N/A	
Background information	Section 1	
Existing situation		
existing site uses (if any)	Section 2	
existing parking and demand (if appropriate)	Section 2	
existing access arrangements	N/A	
surrounding land uses	Section 2	
surrounding road network	Section 2	
existing site traffic	Section 2	
traffic management on frontage roads	Section 2	
traffic flows on surrounding roads (usually AM and PM peak hours)	Section 2	
traffic flows at major intersections (usually AM and PM peak hours)	Section 6	
operation of surrounding intersections	Section 6	
existing pedestrian/cycle networks	Section 2	
existing public transport services surrounding the development	Section 2	
crash data	Section 2	
Development proposal		
regional context	Section 3	
proposed land uses	Section 3	
table of land uses and quantities	Section 3	
access arrangements	Section 3	
parking provision	Section 3	
end of trip facilities	Section 3	
any specific issues	Section 6	
road network	Section 5	
intersection layout and controls	Section 3	
pedestrian/cycle network and crossing facilities	Section 5	
public transport services	Section 5	
Integration with surrounding area	Section 5	
surrounding major attractors/generators	Section 5	
committed developments and transport proposals	Section 5	
proposed changes to land uses within 1200 metres	N/A	
travel desire lines from development to these attractors/generators	N/A	
adequacy of existing transport networks	N/A	

deficiencies in existing transport networks	N/A
remedial measures to address deficiencies	N/A
Analysis of transport networks	
assessment years	Section 7
time periods	Section 7
development generated traffic	Section 7
distribution of generated traffic	Section 7
parking supply & demand	Section 4
base and "with development" traffic flows	Section 7
analysis of development accesses	Section 7
impact on surrounding roads	Section 7
impact on intersections	Section 7
impact on neighbouring areas	Section 7
road safety	N/A
public transport access	N/A
pedestrian access / amenity	N/A
cycle access / amenity	N/A
analysis of pedestrian / cycle networks	N/A
safe walk/cycle to school (for residential and school site developments only)	N/A
Traffic management plan (where appropriate)	N/A

Appendix B

Proposed Site Layout Plans

CLAREMONT TERRACES
- STAGE 2
JOHN NORUP

HILLAM ARCHITECTS

SCALE @ A1
1 : 100
0 1 2 3 4 m

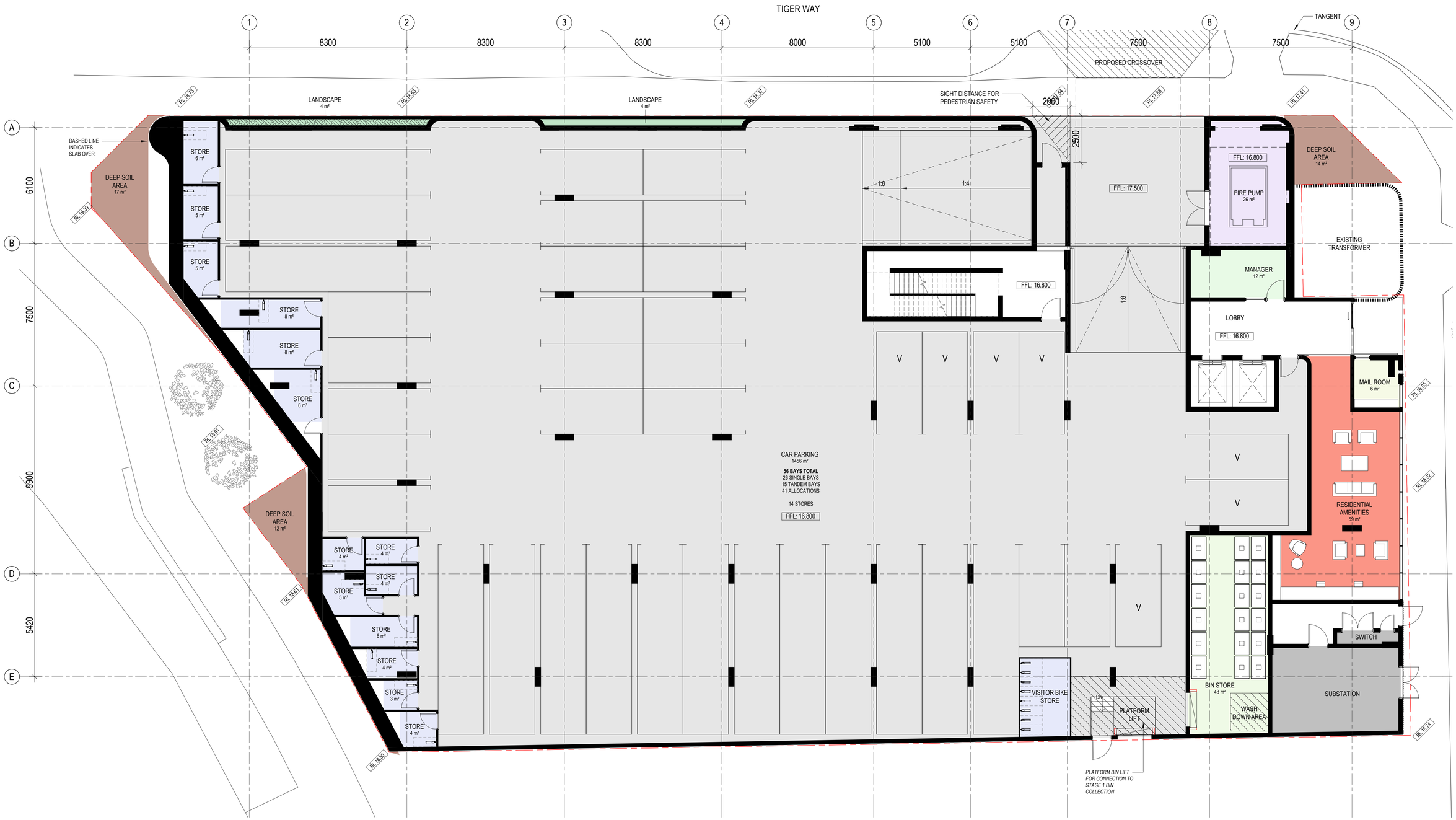
PROJECT NO.
2509

REV	DATE	ISSUED	DESCRIPTION

DRAWING TITLE
BASEMENT PLAN

DRAWING NO.
SK01-01

REV



CLAREMONT TERRACES
- STAGE 2
JOHN NORUP

HILLAM ARCHITECTS

SCALE @ A1
1 : 100
0 1 2 3 4 m

PROJECT NO.
2509

REV	DATE	ISSUED	DESCRIPTION

DRAWING TITLE
GROUND FLOOR PLAN

DRAWING NO.
SK01-02

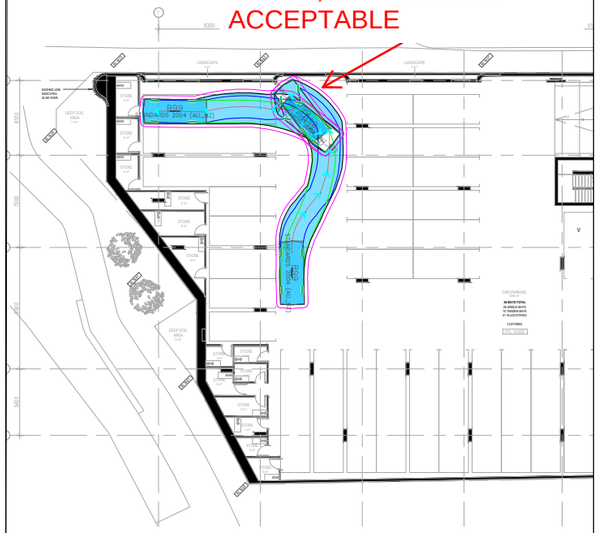
REV

Appendix C

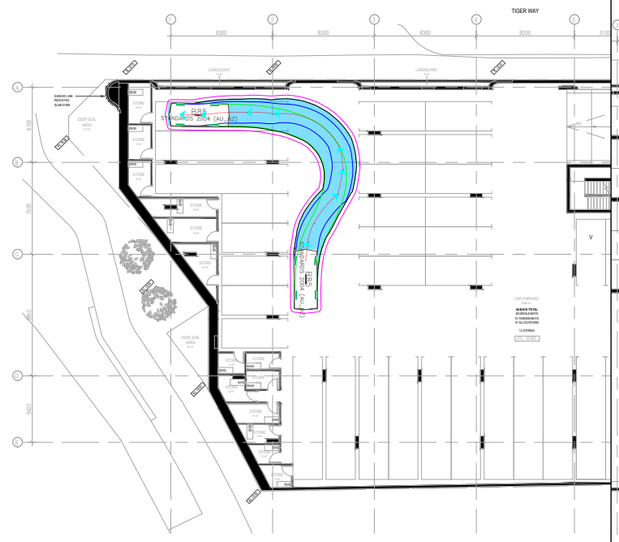
Swept Path Analysis

INGRESS

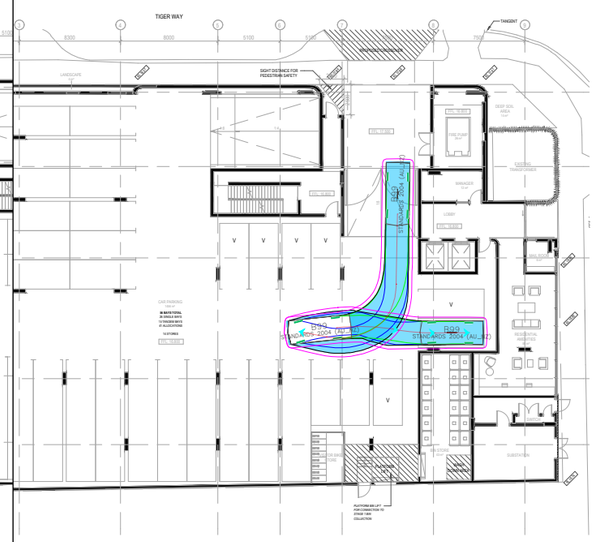
B99 REQUIRES MULTIPLE MANOEUVRES TO ENTER SPACE, CONSIDERED ACCEPTABLE



INSET 1



INSET 2



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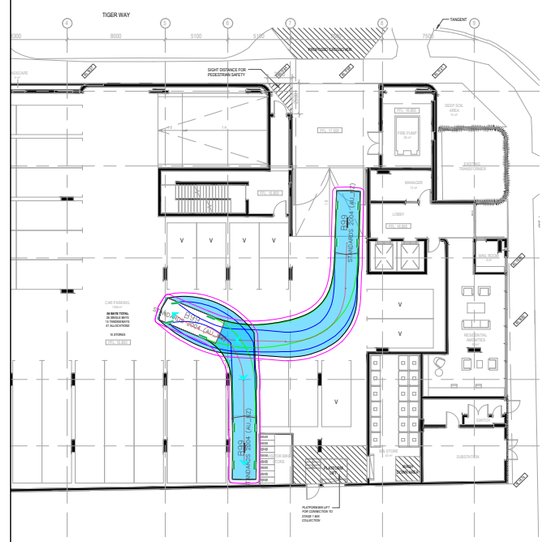
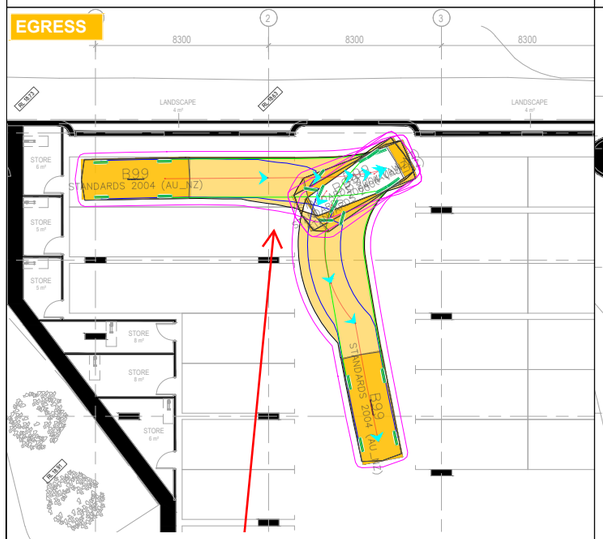


INSET 4

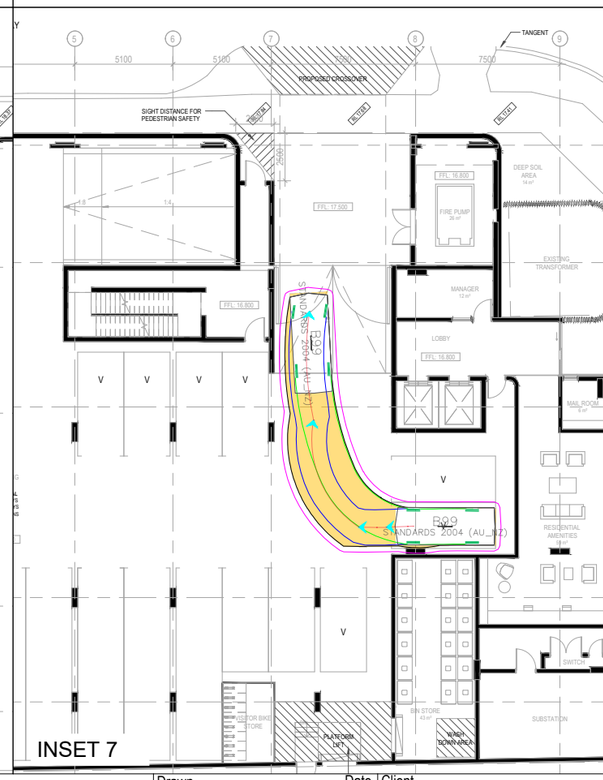
EGRESS



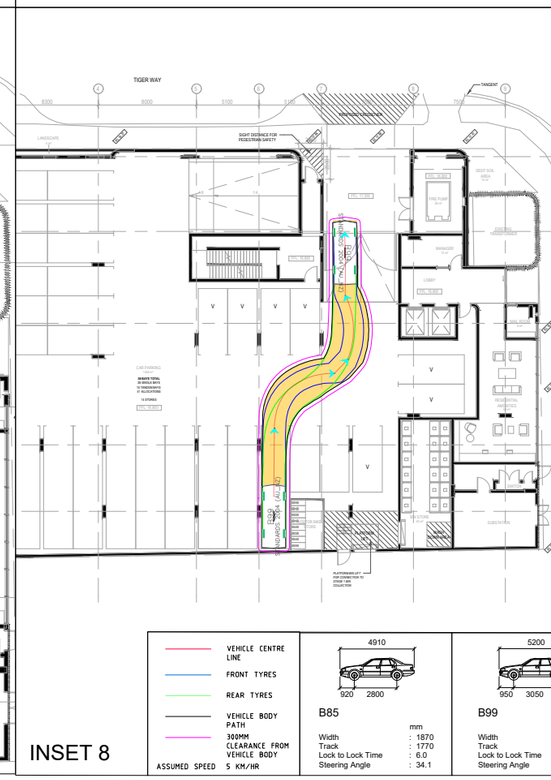
B99 REQUIRES MULTIPLE MANOEUVRES TO EXIT SPACE, CONSIDERED ACCEPTABLE

INSET 5

INSET 6



INSET 7

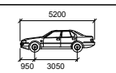


INSET 8

VEHICLE CENTRE LINE
FRONT TYRES
REAR TYRES
VEHICLE BODY PATH
300MM CLEARANCE FROM VEHICLE BODY
ASSUMED SPEED 5 KM/HR

B85

	mm
Width	: 1870
Track	: 1770
Lock to Lock Time	: 6.0
Steering Angle	: 34.1



B99

	mm
Width	: 1940
Track	: 1840
Lock to Lock Time	: 6.0
Steering Angle	: 33.9

Rev	Date	Description	Des.	Verif.	Appd.

Stantec Australia Pty Ltd | ABN 17 007 820 322
Ground Floor, 226 Adelaide Terrace
Perth WA 6000
Tel: 08 6222 7000
Web: www.stantec.com/au

Drawn	SG	11/12/2025 Date
Checked		Date
Designed		Date
Verified		Date
Approved		Date

Client: HILLAM

Project: CLAREMONT STAGE 2

Title: SWEPT PATH ANALYSIS

Status: FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Scale: NTS

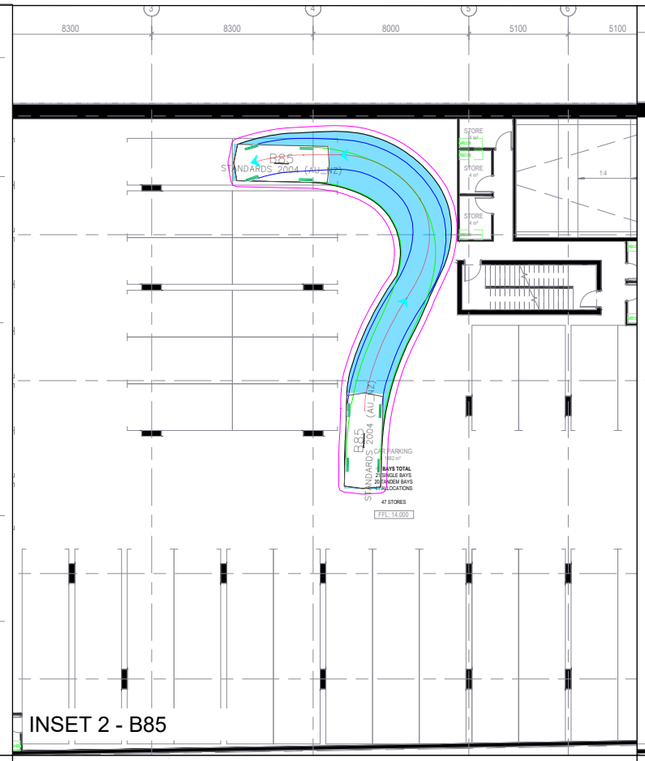
Size: A3

Drawing Number: 301252508-DR003

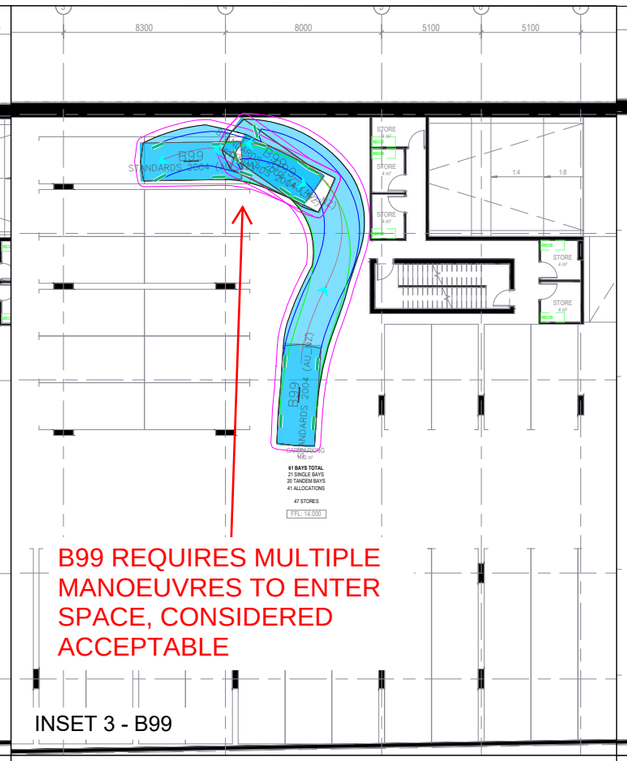
Revision: 4

INGRESS

INSET 1 - B99



INSET 2 - B85



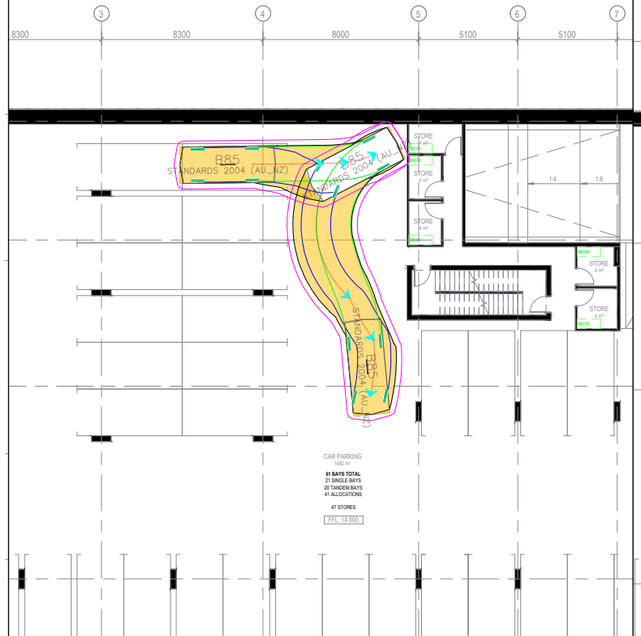
B99 REQUIRES MULTIPLE MANOEUVRES TO ENTER SPACE, CONSIDERED ACCEPTABLE

INSET 3 - B99

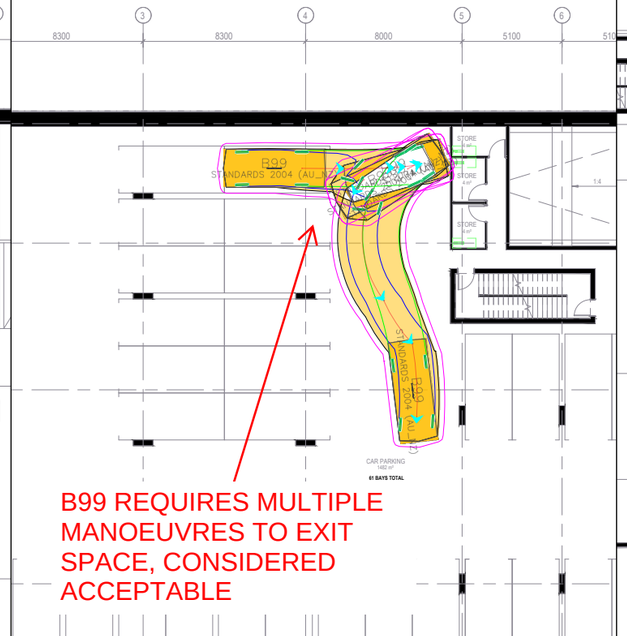
INSET 4 - B99

EGRESS

INSET 5

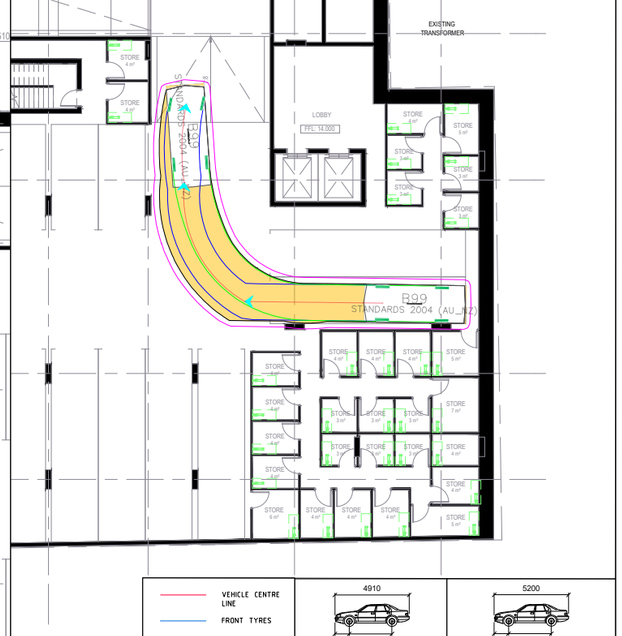


INSET 6



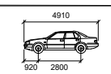
B99 REQUIRES MULTIPLE MANOEUVRES TO EXIT SPACE, CONSIDERED ACCEPTABLE

INSET 7



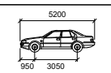
INSET 8

VEHICLE CENTRE LINE
FRONT TYRES
REAR TYRES
VEHICLE BODY PATH
300MM CLEARANCE FROM VEHICLE BODY
ASSUMED SPEED 5 KM/HR



B85

	mm
Width	: 1870
Track	: 1770
Lock to Lock Time	: 6.0
Steering Angle	: 34.1



B99

	mm
Width	: 1940
Track	: 1840
Lock to Lock Time	: 6.0
Steering Angle	: 33.9

Rev	Date	Description	Des.	Verif.	Appd.

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Drawn	SG	Date 11/12/2025
Checked		Date
Designed		Date
Verified		Date
Approved		Date

Client: HILLAM

Project: CLAREMONT STAGE 2

Title: SWEPT PATH ANALYSIS

Status: FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

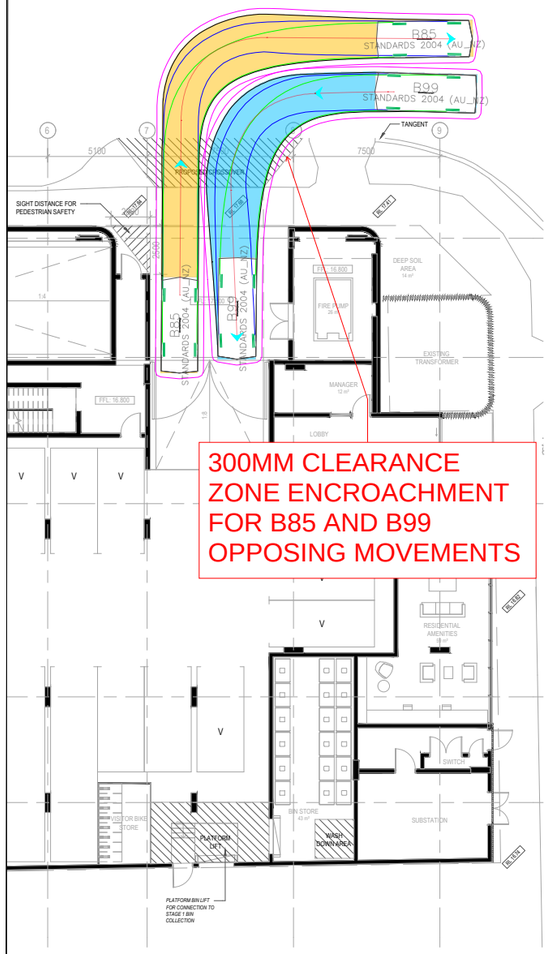
Scale: NTS

Size: A3

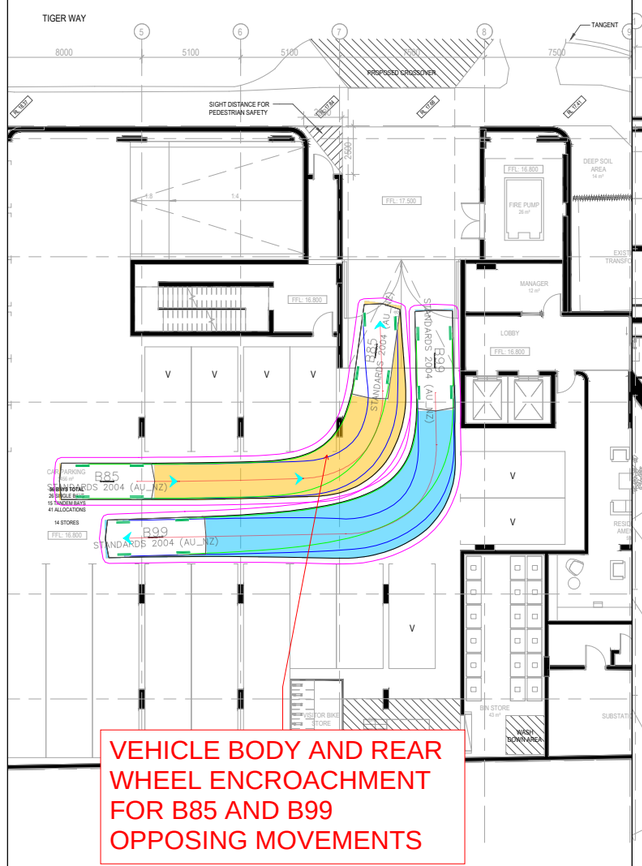
Drawing Number: 301252508-DR005

Revision: 4

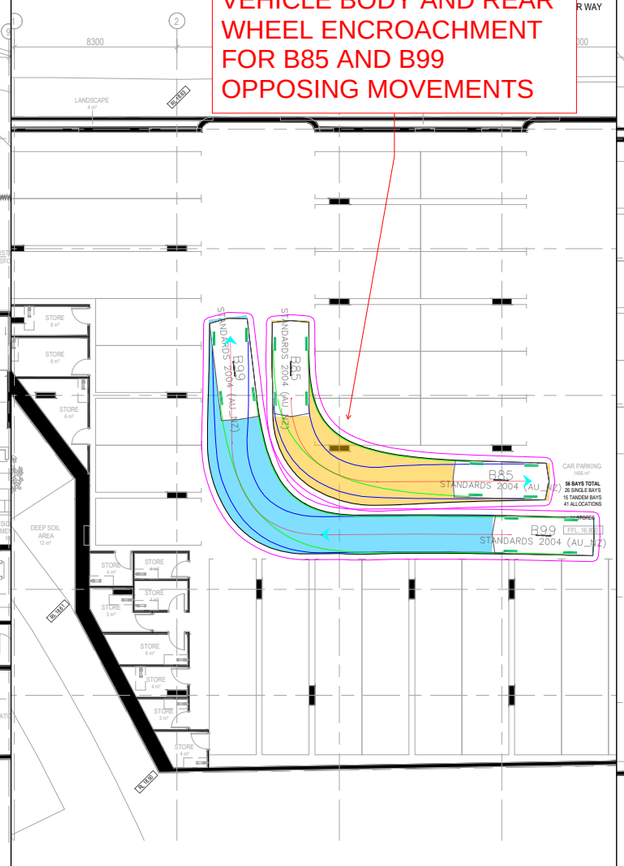
INGRESS EGRESS



INSET 1



INSET 2



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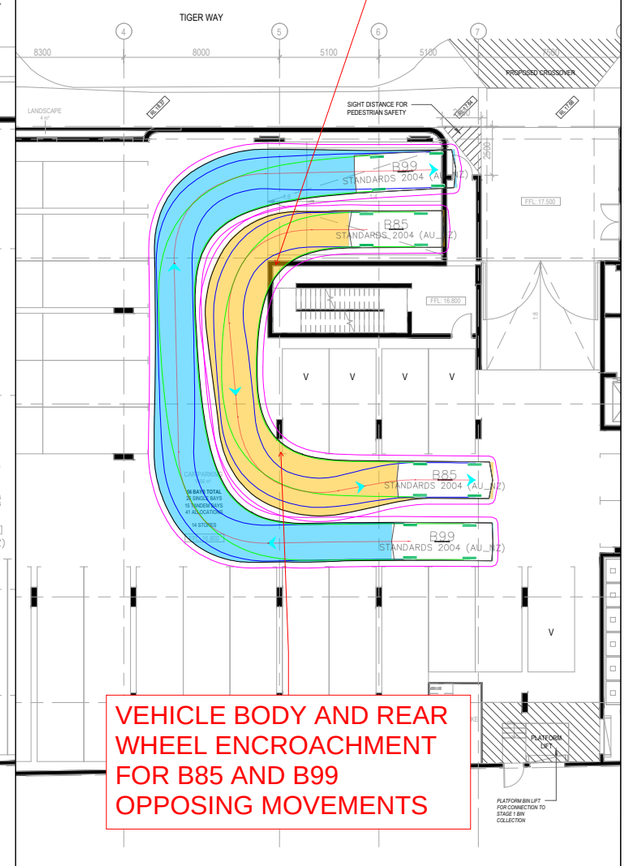
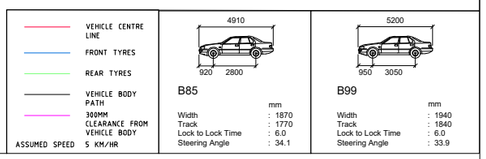


INSET 4



Rev	Date	Description	Des.	Verif.	Appd.

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Drawn	SG	11/12/2025
Checked		
Designed		
Verified		
Approved		

Client: HILLAM

Project: CLAREMONT STAGE 2

Title: SWEPT PATH ANALYSIS

Status: FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Scale: NTS

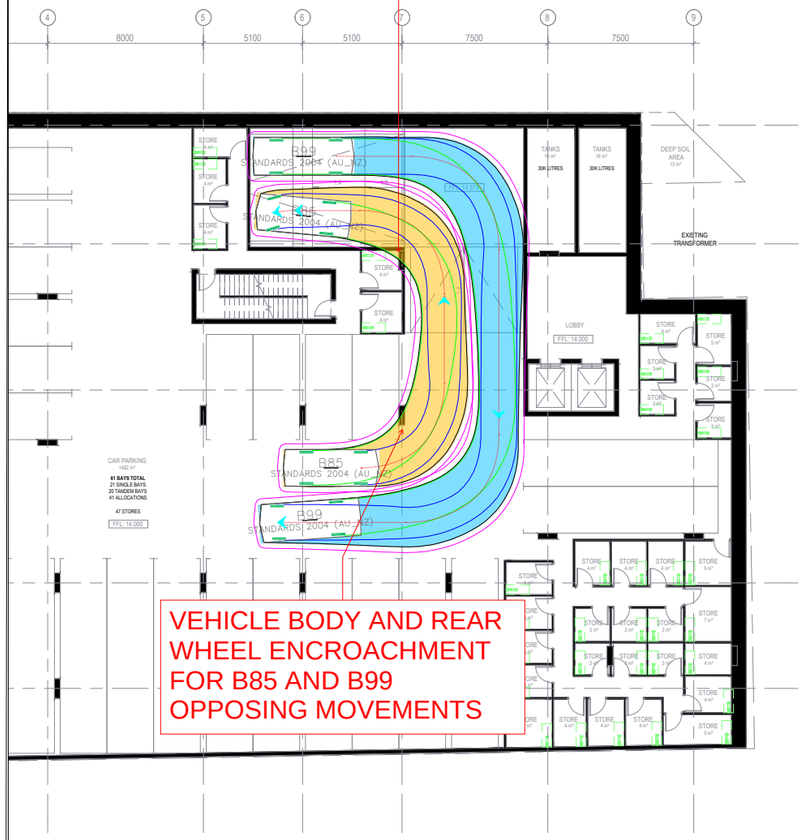
Size: A3

Drawing Number: 301252508-DR004

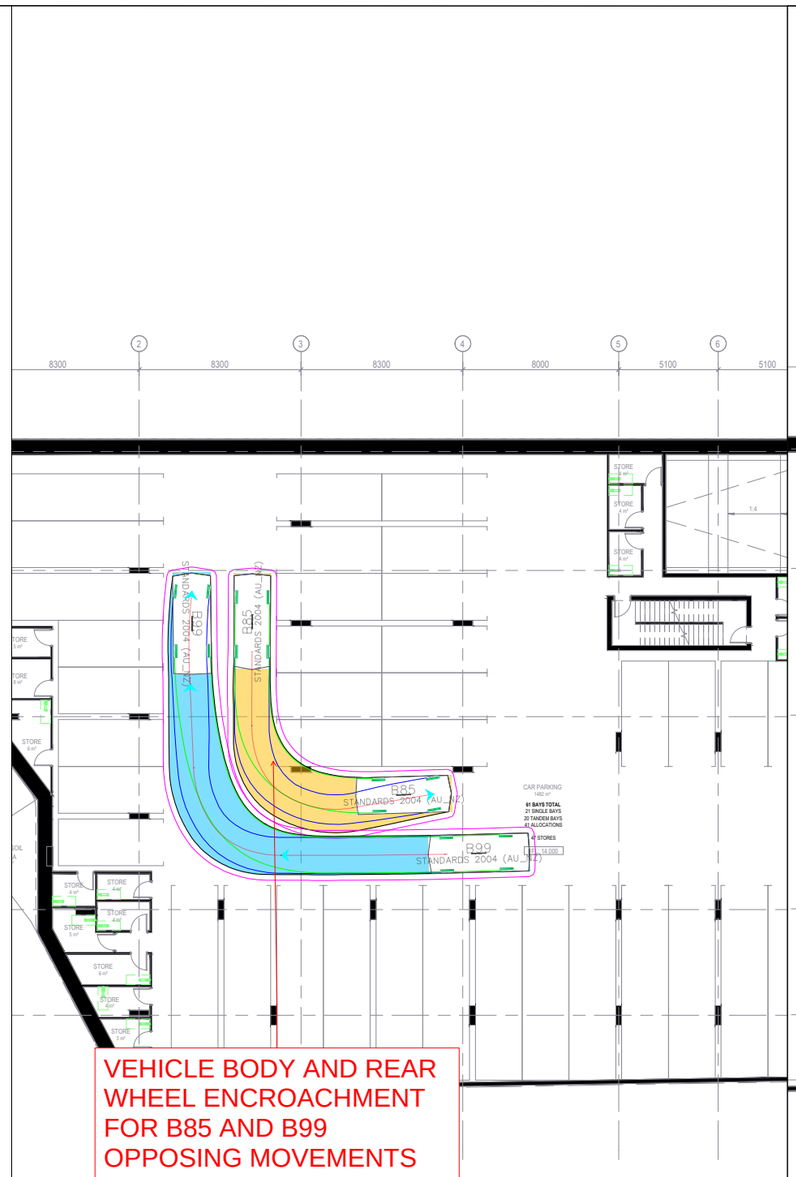
Revision: 4

INGRESS EGRESS

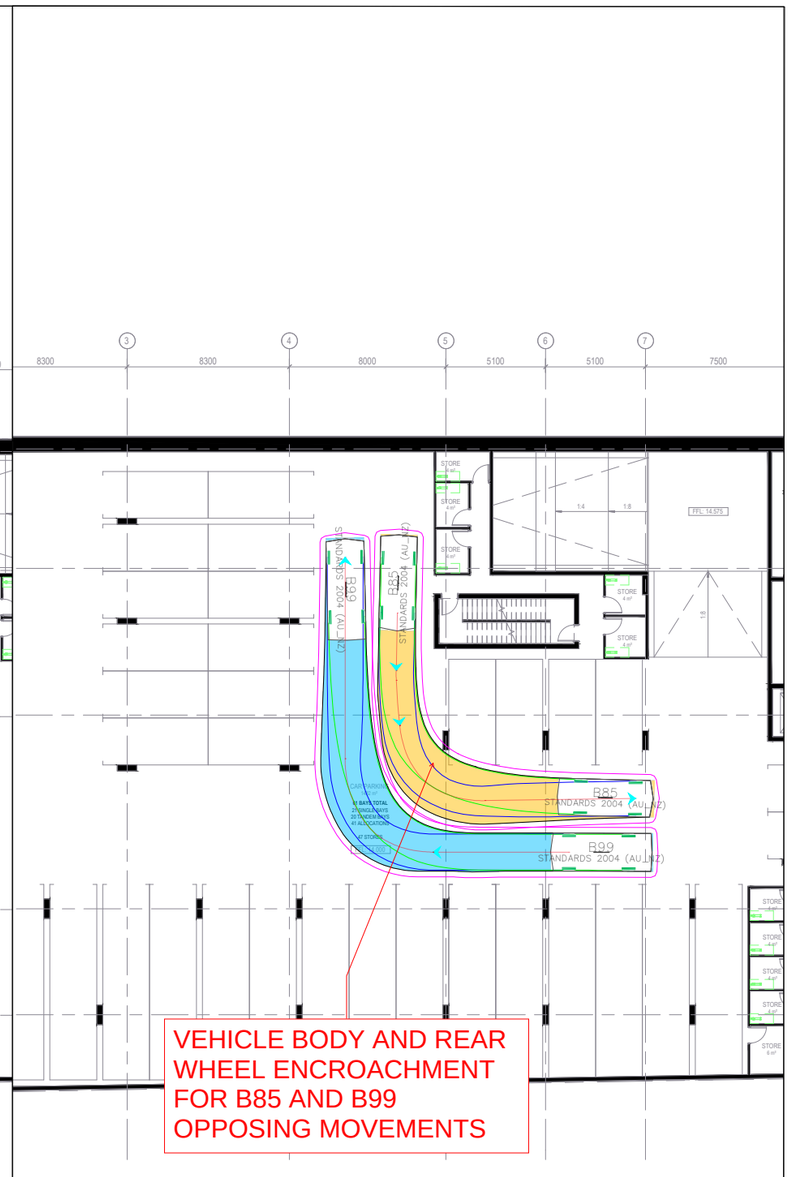
VEHICLE BODY AND REAR WHEEL ENCROACHMENT FOR B85 AND B99 OPPOSING MOVEMENTS



INSET 1

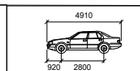


INSET 2



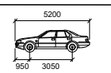
INSET 3

VEHICLE CENTRE LINE
FRONT TYRES
REAR TYRES
VEHICLE BODY PATH
300MM CLEARANCE FROM VEHICLE BODY
ASSUMED SPEED 5 KM/HR



B85

	mm
Width	: 1870
Track	: 1770
Lock to Lock Time	: 6.0
Steering Angle	: 34.1



B99

	mm
Width	: 1940
Track	: 1840
Lock to Lock Time	: 6.0
Steering Angle	: 33.9

Rev	Date	Description	Des.	Verif.	Appd.

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Drawn	SG	Date 11/12/2025
Checked		Date
Designed		Date
Verified		Date
Approved		Date

Client: HILLAM

Project: CLAREMONT STAGE 2

Title: SWEPT PATH ANALYSIS

Status: FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Scale: NTS

Size: A3

Drawing Number: 301252508-DR006

Revision: 4

Appendix D

SIDRA Results

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Graylands Rd AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Shenton Rd (NE)															
25	T1	All MCs	162	6.0	162	6.0	0.085	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
26	R2	All MCs	77	6.0	77	6.0	0.073	6.6	LOS A	0.3	2.4	0.50	0.64	0.50	36.3
Approach			239	6.0	239	6.0	0.085	2.1	NA	0.3	2.4	0.16	0.20	0.16	45.2
NorthWest: Graylands Rd (NW)															
27	L2	All MCs	124	6.0	124	6.0	0.144	10.3	LOS B	0.6	4.4	0.49	0.94	0.49	34.7
29	R2	All MCs	32	6.0	32	6.0	0.085	16.3	LOS C	0.3	2.3	0.66	1.01	0.66	35.6
Approach			156	6.0	156	6.0	0.144	11.5	LOS B	0.6	4.4	0.53	0.96	0.53	35.0
SouthWest: Shenton Rd (SW)															
30	L2	All MCs	48	6.0	48	6.0	0.238	4.7	LOS A	0.0	0.0	0.00	0.06	0.00	46.1
31	T1	All MCs	414	6.0	414	6.0	0.238	0.1	LOS A	0.0	0.0	0.00	0.06	0.00	49.1
Approach			462	6.0	462	6.0	0.238	0.5	NA	0.0	0.0	0.00	0.06	0.00	48.7
All Vehicles			857	6.0	857	6.0	0.238	3.0	NA	0.6	4.4	0.14	0.26	0.14	44.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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.

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Graylands Rd PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Shenton Rd (NE)															
25	T1	All MCs	262	6.0	262	6.0	0.138	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
26	R2	All MCs	119	6.0	119	6.0	0.082	5.2	LOS A	0.4	2.9	0.32	0.51	0.32	37.2
Approach			381	6.0	381	6.0	0.138	1.6	NA	0.4	2.9	0.10	0.16	0.10	45.7
NorthWest: Graylands Rd (NW)															
27	L2	All MCs	42	6.0	42	6.0	0.035	8.5	LOS A	0.1	1.1	0.25	0.90	0.25	36.0
29	R2	All MCs	45	6.0	45	6.0	0.093	13.8	LOS B	0.3	2.6	0.57	0.99	0.57	37.0
Approach			87	6.0	87	6.0	0.093	11.2	LOS B	0.3	2.6	0.42	0.94	0.42	36.7
SouthWest: Shenton Rd (SW)															
30	L2	All MCs	52	6.0	52	6.0	0.100	4.6	LOS A	0.0	0.0	0.00	0.15	0.00	45.4
31	T1	All MCs	141	6.0	141	6.0	0.100	0.0	LOS A	0.0	0.0	0.00	0.15	0.00	48.1
Approach			193	6.0	193	6.0	0.100	1.3	NA	0.0	0.0	0.00	0.15	0.00	47.1
All Vehicles			661	6.0	661	6.0	0.138	2.8	NA	0.4	2.9	0.11	0.26	0.11	44.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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.

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Davies Rd AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Signals - Actuated Isolated Cycle Time = 66 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Shenton Rd (NE)															
25	T1	All MCs	146	6.0	146	6.0	0.147	8.8	LOS A	2.4	18.6	0.52	0.43	0.52	43.6
26b	R3	All MCs	48	6.0	48	6.0	* 0.225	35.3	LOS D	1.5	11.4	0.90	0.73	0.90	29.2
Approach			194	6.0	194	6.0	0.225	15.3	LOS B	2.4	18.6	0.62	0.50	0.62	39.2
North: Davies Rd (N)															
7b	L3	All MCs	48	6.0	48	6.0	0.107	30.2	LOS C	1.2	9.0	0.75	0.72	0.75	35.5
9a	R1	All MCs	362	6.0	362	6.0	* 0.707	33.0	LOS C	10.7	83.7	0.93	0.83	0.93	37.1
Approach			410	6.0	410	6.0	0.707	32.7	LOS C	10.7	83.7	0.91	0.82	0.91	36.9
SouthWest: Shenton Rd (SW)															
30a	L1	All MCs	273	6.0	273	6.0	0.488	27.3	LOS C	7.4	57.5	0.85	0.80	0.85	38.5
31	T1	All MCs	414	6.0	414	6.0	* 0.751	25.0	LOS C	12.4	96.3	0.94	0.81	0.94	40.5
Approach			687	6.0	687	6.0	0.751	25.9	LOS C	12.4	96.3	0.90	0.80	0.90	39.6
All Vehicles			1291	6.0	1291	6.0	0.751	26.5	LOS C	12.4	96.3	0.86	0.76	0.86	38.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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.

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Davies Rd PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Signals - Actuated Isolated Cycle Time = 66 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Shenton Rd (NE)															
25	T1	All MCs	232	6.0	232	6.0	0.215	7.6	LOS A	3.6	28.1	0.50	0.42	0.50	44.4
26b	R3	All MCs	74	6.0	74	6.0	* 0.223	30.3	LOS C	2.0	16.0	0.84	0.74	0.84	30.9
Approach			306	6.0	306	6.0	0.223	13.1	LOS B	3.6	28.1	0.58	0.50	0.58	40.5
North: Davies Rd (N)															
7b	L3	All MCs	40	6.0	40	6.0	0.105	28.7	LOS C	1.0	8.0	0.79	0.72	0.79	34.3
9a	R1	All MCs	288	6.0	288	6.0	* 0.647	30.7	LOS C	8.6	67.4	0.93	0.82	0.93	36.3
Approach			328	6.0	328	6.0	0.647	30.5	LOS C	8.6	67.4	0.91	0.81	0.91	36.1
SouthWest: Shenton Rd (SW)															
30a	L1	All MCs	326	6.0	326	6.0	* 0.648	29.1	LOS C	9.6	74.6	0.92	0.82	0.92	37.2
31	T1	All MCs	154	6.0	154	6.0	0.298	21.7	LOS C	4.0	31.3	0.81	0.66	0.81	41.8
Approach			480	6.0	480	6.0	0.648	26.7	LOS C	9.6	74.6	0.88	0.77	0.88	38.5
All Vehicles			1114	6.0	1114	6.0	0.648	24.1	LOS C	9.6	74.6	0.81	0.71	0.81	38.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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.

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Gugeri St AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Gugeri Rd (NE)															
25	T1	All MCs	853	6.0	853	6.0	0.452	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
26	R2	All MCs	175	6.0	175	6.0	0.341	14.0	LOS B	1.5	11.5	0.78	0.96	0.97	44.1
Approach			1028	6.0	1028	6.0	0.452	2.5	NA	1.5	11.5	0.13	0.16	0.17	56.3
North: Dummy leg															
9a	R1	All MCs	55	6.0	55	6.0	0.085	8.4	LOS A	0.3	2.1	0.62	0.79	0.62	50.2
Approach			55	6.0	55	6.0	0.085	8.4	LOS A	0.3	2.1	0.62	0.79	0.62	50.2
NorthWest: Shenton Rd (NW)															
29	R2	All MCs	55	6.0	55	6.0	0.257	25.4	LOS D	0.8	6.1	0.84	1.04	0.94	38.7
Approach			55	6.0	55	6.0	0.257	25.4	LOS D	0.8	6.1	0.84	1.04	0.94	38.7
SouthWest: Gugeri Rd (SW)															
30	L2	All MCs	84	6.0	84	6.0	0.450	5.8	LOS A	0.0	0.0	0.00	0.06	0.00	54.7
31	T1	All MCs	800	6.0	800	6.0	0.450	0.2	LOS A	0.0	0.0	0.00	0.06	0.00	59.2
Approach			884	6.0	884	6.0	0.450	0.7	NA	0.0	0.0	0.00	0.06	0.00	58.7
All Vehicles			2022	6.0	2022	6.0	0.452	2.5	NA	1.5	11.5	0.11	0.16	0.13	56.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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.

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Gugeri St PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Gugeri Rd (NE)															
25	T1	All MCs	1006	6.0	1006	6.0	0.841	4.4	LOS A	12.0	93.9	0.86	0.79	1.44	56.0
26	R2	All MCs	308	6.0	308	6.0	0.698	21.9	LOS C	4.3	33.5	0.90	1.23	1.83	40.3
Approach			1314	6.0	1314	6.0	0.841	8.5	NA	12.0	93.9	0.87	0.89	1.53	51.3
North: Dummy leg															
9a	R1	All MCs	30	6.0	30	6.0	0.062	10.2	LOS B	0.2	1.4	0.71	0.84	0.71	49.0
Approach			30	6.0	30	6.0	0.062	10.2	LOS B	0.2	1.4	0.71	0.84	0.71	49.0
NorthWest: Shenton Rd (NW)															
29	R2	All MCs	30	6.0	30	6.0	0.216	34.0	LOS D	0.6	4.5	0.89	1.02	0.95	35.5
Approach			30	6.0	30	6.0	0.216	34.0	LOS D	0.6	4.5	0.89	1.02	0.95	35.5
SouthWest: Gugeri Rd (SW)															
30	L2	All MCs	103	6.0	103	6.0	0.483	5.8	LOS A	0.0	0.0	0.00	0.06	0.00	54.6
31	T1	All MCs	846	6.0	846	6.0	0.483	0.2	LOS A	0.0	0.0	0.00	0.06	0.00	59.1
Approach			949	6.0	949	6.0	0.483	0.8	NA	0.0	0.0	0.00	0.06	0.00	58.5
All Vehicles			2323	6.0	2323	6.0	0.841	5.7	NA	12.0	93.9	0.51	0.55	0.89	53.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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.

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Graylands Rd AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Shenton Rd (NE)															
25	T1	All MCs	172	6.0	172	6.0	0.091	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
26	R2	All MCs	81	6.0	81	6.0	0.080	6.8	LOS A	0.3	2.6	0.52	0.65	0.52	36.2
Approach			253	6.0	253	6.0	0.091	2.2	NA	0.3	2.6	0.17	0.21	0.17	45.2
NorthWest: Graylands Rd (NW)															
27	L2	All MCs	131	6.0	131	6.0	0.158	10.5	LOS B	0.6	4.8	0.51	0.95	0.51	34.5
29	R2	All MCs	34	6.0	34	6.0	0.098	17.2	LOS C	0.3	2.6	0.68	1.01	0.68	35.1
Approach			165	6.0	165	6.0	0.158	11.9	LOS B	0.6	4.8	0.55	0.96	0.55	34.7
SouthWest: Shenton Rd (SW)															
30	L2	All MCs	51	6.0	51	6.0	0.252	4.7	LOS A	0.0	0.0	0.00	0.06	0.00	46.1
31	T1	All MCs	439	6.0	439	6.0	0.252	0.1	LOS A	0.0	0.0	0.00	0.06	0.00	49.1
Approach			490	6.0	490	6.0	0.252	0.5	NA	0.0	0.0	0.00	0.06	0.00	48.7
All Vehicles			908	6.0	908	6.0	0.252	3.1	NA	0.6	4.8	0.15	0.26	0.15	44.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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.

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Graylands Rd PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Shenton Rd (NE)															
25	T1	All MCs	277	6.0	277	6.0	0.146	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
26	R2	All MCs	126	6.0	126	6.0	0.088	5.3	LOS A	0.4	3.1	0.33	0.52	0.33	37.1
Approach			403	6.0	403	6.0	0.146	1.7	NA	0.4	3.1	0.10	0.16	0.10	45.7
NorthWest: Graylands Rd (NW)															
27	L2	All MCs	45	6.0	45	6.0	0.038	8.5	LOS A	0.1	1.1	0.26	0.89	0.26	36.0
29	R2	All MCs	47	6.0	47	6.0	0.103	14.3	LOS B	0.4	2.9	0.59	1.00	0.59	36.7
Approach			92	6.0	92	6.0	0.103	11.5	LOS B	0.4	2.9	0.43	0.95	0.43	36.4
SouthWest: Shenton Rd (SW)															
30	L2	All MCs	55	6.0	55	6.0	0.106	4.6	LOS A	0.0	0.0	0.00	0.15	0.00	45.4
31	T1	All MCs	150	6.0	150	6.0	0.106	0.0	LOS A	0.0	0.0	0.00	0.15	0.00	48.1
Approach			205	6.0	205	6.0	0.106	1.3	NA	0.0	0.0	0.00	0.15	0.00	47.1
All Vehicles			700	6.0	700	6.0	0.146	2.8	NA	0.4	3.1	0.12	0.26	0.12	44.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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.

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Davies Rd AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Signals - Actuated Isolated Cycle Time = 66 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Shenton Rd (NE)															
25	T1	All MCs	155	6.0	155	6.0	0.156	8.8	LOS A	2.5	19.9	0.53	0.43	0.53	43.6
26b	R3	All MCs	51	6.0	51	6.0	* 0.239	35.4	LOS D	1.6	12.1	0.91	0.74	0.91	29.2
Approach			206	6.0	206	6.0	0.239	15.4	LOS B	2.5	19.9	0.62	0.51	0.62	39.2
North: Davies Rd (N)															
7b	L3	All MCs	51	6.0	51	6.0	0.113	31.6	LOS C	1.2	9.6	0.75	0.72	0.75	35.5
9a	R1	All MCs	384	6.0	384	6.0	* 0.756	34.7	LOS C	11.6	90.5	0.95	0.84	0.95	36.9
Approach			435	6.0	435	6.0	0.756	34.4	LOS C	11.6	90.5	0.92	0.83	0.92	36.7
SouthWest: Shenton Rd (SW)															
30a	L1	All MCs	289	6.0	289	6.0	0.517	29.1	LOS C	7.9	61.5	0.86	0.80	0.86	38.3
31	T1	All MCs	439	6.0	439	6.0	* 0.840	27.4	LOS C	13.6	106.1	0.97	0.84	0.98	40.0
Approach			728	6.0	728	6.0	0.840	28.1	LOS C	13.6	106.1	0.93	0.83	0.93	39.3
All Vehicles			1369	6.0	1369	6.0	0.840	28.2	LOS C	13.6	106.1	0.88	0.78	0.88	38.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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.

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Davies Rd PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Signals - Actuated Isolated Cycle Time = 66 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Shenton Rd (NE)															
25	T1	All MCs	246	6.0	246	6.0	0.228	7.6	LOS A	3.9	30.1	0.50	0.43	0.50	44.3
26b	R3	All MCs	79	6.0	79	6.0	* 0.238	30.4	LOS C	2.2	17.1	0.85	0.75	0.85	30.9
Approach			325	6.0	325	6.0	0.238	13.2	LOS B	3.9	30.1	0.59	0.50	0.59	40.4
North: Davies Rd (N)															
7b	L3	All MCs	42	6.0	42	6.0	0.111	30.3	LOS C	1.1	8.4	0.79	0.72	0.79	34.3
9a	R1	All MCs	305	6.0	305	6.0	* 0.693	32.6	LOS C	9.3	72.3	0.94	0.83	0.94	36.2
Approach			347	6.0	347	6.0	0.693	32.3	LOS C	9.3	72.3	0.92	0.81	0.92	36.0
SouthWest: Shenton Rd (SW)															
30a	L1	All MCs	346	6.0	346	6.0	* 0.688	29.5	LOS C	10.3	80.3	0.93	0.83	0.93	37.0
31	T1	All MCs	163	6.0	163	6.0	0.315	21.8	LOS C	4.3	33.3	0.82	0.66	0.82	41.7
Approach			509	6.0	509	6.0	0.688	27.0	LOS C	10.3	80.3	0.89	0.78	0.89	38.3
All Vehicles			1181	6.0	1181	6.0	0.693	24.8	LOS C	10.3	80.3	0.82	0.71	0.82	38.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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.

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Gugeri St AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Gugeri Rd (NE)															
25	T1	All MCs	904	6.0	904	6.0	0.479	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
26	R2	All MCs	185	6.0	185	6.0	0.407	16.0	LOS C	1.8	14.0	0.82	1.00	1.10	43.1
Approach			1089	6.0	1089	6.0	0.479	2.9	NA	1.8	14.0	0.14	0.17	0.19	56.0
North: Dummy leg															
9a	R1	All MCs	58	6.0	58	6.0	0.098	9.0	LOS A	0.3	2.3	0.66	0.81	0.66	49.8
Approach			58	6.0	58	6.0	0.098	9.0	LOS A	0.3	2.3	0.66	0.81	0.66	49.8
NorthWest: Shenton Rd (NW)															
29	R2	All MCs	58	6.0	58	6.0	0.317	29.5	LOS D	1.0	7.5	0.87	1.05	1.03	37.1
Approach			58	6.0	58	6.0	0.317	29.5	LOS D	1.0	7.5	0.87	1.05	1.03	37.1
SouthWest: Gugeri Rd (SW)															
30	L2	All MCs	89	6.0	89	6.0	0.477	5.8	LOS A	0.0	0.0	0.00	0.06	0.00	54.7
31	T1	All MCs	848	6.0	848	6.0	0.477	0.2	LOS A	0.0	0.0	0.00	0.06	0.00	59.1
Approach			937	6.0	937	6.0	0.477	0.7	NA	0.0	0.0	0.00	0.06	0.00	58.7
All Vehicles			2142	6.0	2142	6.0	0.479	2.8	NA	1.8	14.0	0.11	0.16	0.14	56.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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.

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Gugeri St PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Gugeri Rd (NE)															
25	T1	All MCs	1066	6.0	1066	6.0	1.021	77.0	LOS F	82.1	640.0	1.00	0.96	8.57	26.6
26	R2	All MCs	326	6.0	326	6.0	0.850	34.6	LOS D	6.9	53.5	0.96	1.54	2.92	35.6
Approach			1392	6.0	1392	6.0	1.021	67.5	NA	82.1	640.0	0.99	1.10	7.24	28.3
North: Dummy leg															
9a	R1	All MCs	32	6.0	32	6.0	0.076	11.3	LOS B	0.2	1.7	0.75	0.86	0.75	48.2
Approach			32	6.0	32	6.0	0.076	11.3	LOS B	0.2	1.7	0.75	0.86	0.75	48.2
NorthWest: Shenton Rd (NW)															
29	R2	All MCs	32	6.0	32	6.0	0.283	41.6	LOS E	0.8	5.9	0.91	1.04	1.03	33.1
Approach			32	6.0	32	6.0	0.283	41.6	LOS E	0.8	5.9	0.91	1.04	1.03	33.1
SouthWest: Gugeri Rd (SW)															
30	L2	All MCs	109	6.0	109	6.0	0.512	5.8	LOS A	0.0	0.0	0.00	0.06	0.00	54.6
31	T1	All MCs	896	6.0	896	6.0	0.512	0.2	LOS A	0.0	0.0	0.00	0.06	0.00	59.0
Approach			1005	6.0	1005	6.0	0.512	0.8	NA	0.0	0.0	0.00	0.06	0.00	58.5
All Vehicles			2461	6.0	2461	6.0	1.021	39.0	NA	82.1	640.0	0.58	0.67	4.12	36.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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.

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Graylands Rd AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Shenton Rd (NE)															
25	T1	All MCs	221	6.0	221	6.0	0.117	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
26	R2	All MCs	105	6.0	105	6.0	0.127	7.9	LOS A	0.5	4.0	0.59	0.75	0.59	35.2
Approach			326	6.0	326	6.0	0.127	2.6	NA	0.5	4.0	0.19	0.24	0.19	44.7
NorthWest: Graylands Rd (NW)															
27	L2	All MCs	169	6.0	169	6.0	0.247	12.1	LOS B	1.0	7.8	0.59	1.01	0.63	33.2
29	R2	All MCs	44	6.0	44	6.0	0.193	24.1	LOS C	0.6	4.9	0.81	1.02	0.84	31.7
Approach			213	6.0	213	6.0	0.247	14.6	LOS B	1.0	7.8	0.64	1.01	0.67	32.7
SouthWest: Shenton Rd (SW)															
30	L2	All MCs	66	6.0	66	6.0	0.324	4.7	LOS A	0.0	0.0	0.00	0.06	0.00	46.0
31	T1	All MCs	563	6.0	563	6.0	0.324	0.1	LOS A	0.0	0.0	0.00	0.06	0.00	49.1
Approach			629	6.0	629	6.0	0.324	0.6	NA	0.0	0.0	0.00	0.06	0.00	48.6
All Vehicles			1168	6.0	1168	6.0	0.324	3.7	NA	1.0	7.8	0.17	0.28	0.18	44.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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.

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Graylands Rd PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Shenton Rd (NE)															
25	T1	All MCs	356	6.0	356	6.0	0.188	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
26	R2	All MCs	162	6.0	162	6.0	0.121	5.6	LOS A	0.6	4.3	0.38	0.55	0.38	36.9
Approach			518	6.0	518	6.0	0.188	1.8	NA	0.6	4.3	0.12	0.17	0.12	45.5
NorthWest: Graylands Rd (NW)															
27	L2	All MCs	57	6.0	57	6.0	0.050	8.7	LOS A	0.2	1.5	0.31	0.89	0.31	35.9
29	R2	All MCs	61	6.0	61	6.0	0.177	17.8	LOS C	0.6	4.8	0.71	1.01	0.71	34.8
Approach			118	6.0	118	6.0	0.177	13.4	LOS B	0.6	4.8	0.51	0.95	0.51	35.2
SouthWest: Shenton Rd (SW)															
30	L2	All MCs	71	6.0	71	6.0	0.136	4.7	LOS A	0.0	0.0	0.00	0.15	0.00	45.4
31	T1	All MCs	192	6.0	192	6.0	0.136	0.0	LOS A	0.0	0.0	0.00	0.15	0.00	48.0
Approach			263	6.0	263	6.0	0.136	1.3	NA	0.0	0.0	0.00	0.15	0.00	47.1
All Vehicles			899	6.0	899	6.0	0.188	3.1	NA	0.6	4.8	0.14	0.27	0.14	44.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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.

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Davies Rd AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Signals - Actuated Isolated Cycle Time = 66 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Shenton Rd (NE)															
25	T1	All MCs	199	6.0	199	6.0	0.200	9.1	LOS A	3.4	26.2	0.54	0.45	0.54	43.4
26b	R3	All MCs	66	6.0	66	6.0	* 0.309	35.8	LOS D	2.0	15.9	0.92	0.75	0.92	29.0
Approach			265	6.0	265	6.0	0.309	15.7	LOS B	3.4	26.2	0.63	0.53	0.63	39.0
North: Davies Rd (N)															
7b	L3	All MCs	66	6.0	66	6.0	0.147	37.3	LOS D	1.6	12.6	0.76	0.74	0.76	35.4
9a	R1	All MCs	492	6.0	492	6.0	* 1.001	75.2	LOS E	25.7	200.3	1.00	1.22	1.70	26.4
Approach			558	6.0	558	6.0	1.001	70.7	LOS E	25.7	200.3	0.97	1.16	1.59	27.1
SouthWest: Shenton Rd (SW)															
30a	L1	All MCs	371	6.0	371	6.0	0.664	36.3	LOS D	10.7	83.5	0.91	0.83	0.91	37.8
31	T1	All MCs	563	6.0	563	6.0	* 1.164	334.1	LOS F	82.3	641.7	1.00	3.31	4.94	7.9
Approach			934	6.0	934	6.0	1.164	215.8	LOS F	82.3	641.7	0.96	2.32	3.34	11.9
All Vehicles			1757	6.0	1757	6.0	1.164	139.5	LOS F	82.3	641.7	0.92	1.68	2.38	16.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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.

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Davies Rd PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Signals - Actuated Isolated Cycle Time = 66 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Shenton Rd (NE)															
25	T1	All MCs	315	6.0	315	6.0	0.292	8.0	LOS A	5.2	40.3	0.53	0.45	0.53	44.1
26b	R3	All MCs	101	6.0	101	6.0	* 0.304	30.9	LOS C	2.9	22.3	0.86	0.76	0.86	30.7
Approach			416	6.0	416	6.0	0.304	13.5	LOS B	5.2	40.3	0.61	0.53	0.61	40.2
North: Davies Rd (N)															
7b	L3	All MCs	54	6.0	54	6.0	0.142	36.6	LOS D	1.4	11.0	0.80	0.73	0.80	34.2
9a	R1	All MCs	391	6.0	391	6.0	* 0.925	44.1	LOS D	13.9	108.0	1.00	0.93	1.14	34.1
Approach			445	6.0	445	6.0	0.925	43.2	LOS D	13.9	108.0	0.98	0.90	1.09	34.1
SouthWest: Shenton Rd (SW)															
30a	L1	All MCs	444	6.0	444	6.0	* 0.964	46.6	LOS D	17.9	139.9	1.00	1.03	1.32	32.3
31	T1	All MCs	209	6.0	209	6.0	0.404	26.7	LOS C	5.6	44.0	0.84	0.69	0.84	41.3
Approach			653	6.0	653	6.0	0.964	40.2	LOS D	17.9	139.9	0.95	0.92	1.16	34.6
All Vehicles			1514	6.0	1514	6.0	0.964	33.8	LOS C	17.9	139.9	0.86	0.81	0.99	35.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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.

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Gugeri St AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Gugeri Rd (NE)															
25	T1	All MCs	1160	6.0	1160	6.0	1.254	506.5	LOS F	352.4	2746.3	1.00	0.99	23.38	6.5
26	R2	All MCs	238	6.0	238	6.0	1.143	317.4	LOS F	43.0	335.0	1.00	4.53	14.65	9.6
Approach			1398	6.0	1398	6.0	1.254	476.6	NA	352.4	2746.3	1.00	1.59	21.89	6.9
North: Dummy leg															
9a	R1	All MCs	74	6.0	74	6.0	0.221	14.6	LOS B	0.6	5.0	0.82	0.92	0.90	46.3
Approach			74	6.0	74	6.0	0.221	14.6	LOS B	0.6	5.0	0.82	0.92	0.90	46.3
NorthWest: Shenton Rd (NW)															
29	R2	All MCs	74	6.0	74	6.0	1.073	284.2	LOS F	10.5	82.2	1.00	2.23	5.57	10.4
Approach			74	6.0	74	6.0	1.073	284.2	LOS F	10.5	82.2	1.00	2.23	5.57	10.4
SouthWest: Gugeri Rd (SW)															
30	L2	All MCs	115	6.0	115	6.0	0.612	5.9	LOS A	0.0	0.0	0.00	0.06	0.00	54.5
31	T1	All MCs	1088	6.0	1088	6.0	0.612	0.3	LOS A	0.0	0.0	0.00	0.06	0.00	58.9
Approach			1203	6.0	1203	6.0	0.612	0.9	NA	0.0	0.0	0.00	0.06	0.00	58.4
All Vehicles			2749	6.0	2749	6.0	1.254	249.7	NA	352.4	2746.3	0.56	0.92	11.31	11.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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.

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Gugeri St PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Gugeri Rd (NE)															
25	T1	All MCs	1368	6.0	1368	6.0	2.232	2254.3	LOS F	960.2	7483.5	1.00	1.00	43.74	1.6
26	R2	All MCs	418	6.0	418	6.0	2.839	3352.5	LOS F	339.5	2646.3	1.00	13.40	50.65	1.1
Approach			1786	6.0	1786	6.0	2.839	2516.4	NA	960.2	7483.5	1.00	3.90	45.36	1.4
North: Dummy leg															
9a	R1	All MCs	40	6.0	40	6.0	0.241	25.6	LOS D	0.6	4.7	0.91	0.97	0.99	40.6
Approach			40	6.0	40	6.0	0.241	25.6	LOS D	0.6	4.7	0.91	0.97	0.99	40.6
NorthWest: Shenton Rd (NW)															
29	R2	All MCs	40	6.0	40	6.0	1.386	833.9	LOS F	15.9	124.2	1.00	2.67	7.51	4.1
Approach			40	6.0	40	6.0	1.386	833.9	LOS F	15.9	124.2	1.00	2.67	7.51	4.1
SouthWest: Gugeri Rd (SW)															
30	L2	All MCs	140	6.0	140	6.0	0.657	6.0	LOS A	0.0	0.0	0.00	0.06	0.00	54.4
31	T1	All MCs	1150	6.0	1150	6.0	0.657	0.4	LOS A	0.0	0.0	0.00	0.06	0.00	58.7
Approach			1290	6.0	1290	6.0	0.657	1.0	NA	0.0	0.0	0.00	0.06	0.00	58.2
All Vehicles			3156	6.0	3156	6.0	2.839	1432.5	NA	960.2	7483.5	0.59	2.28	25.78	2.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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.

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Graylands Rd AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Shenton Rd (NE)															
25	T1	All MCs	183	6.0	183	6.0	0.097	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
26	R2	All MCs	81	6.0	81	6.0	0.088	7.3	LOS A	0.4	2.8	0.55	0.69	0.55	35.8
Approach			264	6.0	264	6.0	0.097	2.2	NA	0.4	2.8	0.17	0.21	0.17	45.2
NorthWest: Graylands Rd (NW)															
27	L2	All MCs	131	6.0	131	6.0	0.170	11.0	LOS B	0.7	5.1	0.54	0.97	0.54	34.1
29	R2	All MCs	39	6.0	39	6.0	0.130	19.2	LOS C	0.4	3.4	0.73	1.01	0.73	34.1
Approach			170	6.0	170	6.0	0.170	12.9	LOS B	0.7	5.1	0.58	0.98	0.58	34.1
SouthWest: Shenton Rd (SW)															
30	L2	All MCs	73	6.0	73	6.0	0.288	4.7	LOS A	0.0	0.0	0.00	0.07	0.00	45.9
31	T1	All MCs	487	6.0	487	6.0	0.288	0.1	LOS A	0.0	0.0	0.00	0.07	0.00	48.9
Approach			560	6.0	560	6.0	0.288	0.7	NA	0.0	0.0	0.00	0.07	0.00	48.4
All Vehicles			994	6.0	994	6.0	0.288	3.2	NA	0.7	5.1	0.14	0.26	0.14	44.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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.

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Graylands Rd PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Shenton Rd (NE)															
25	T1	All MCs	313	6.0	313	6.0	0.165	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
26	R2	All MCs	126	6.0	126	6.0	0.093	5.5	LOS A	0.4	3.3	0.37	0.54	0.37	36.9
Approach			439	6.0	439	6.0	0.165	1.6	NA	0.4	3.3	0.11	0.16	0.11	45.9
NorthWest: Graylands Rd (NW)															
27	L2	All MCs	45	6.0	45	6.0	0.039	8.7	LOS A	0.2	1.2	0.30	0.89	0.30	35.9
29	R2	All MCs	67	6.0	67	6.0	0.167	15.9	LOS C	0.6	4.7	0.65	1.01	0.65	35.8
Approach			112	6.0	112	6.0	0.167	13.0	LOS B	0.6	4.7	0.51	0.96	0.51	35.8
SouthWest: Shenton Rd (SW)															
30	L2	All MCs	70	6.0	70	6.0	0.131	4.7	LOS A	0.0	0.0	0.00	0.15	0.00	45.3
31	T1	All MCs	183	6.0	183	6.0	0.131	0.0	LOS A	0.0	0.0	0.00	0.15	0.00	48.0
Approach			253	6.0	253	6.0	0.131	1.3	NA	0.0	0.0	0.00	0.15	0.00	47.0
All Vehicles			804	6.0	804	6.0	0.167	3.1	NA	0.6	4.7	0.13	0.27	0.13	44.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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.

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Davies Rd AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 66 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Shenton Rd (NE)															
25	T1	All MCs	175	6.0	175	6.0	0.176	8.6	LOS A	2.9	22.7	0.55	0.45	0.55	43.7
26b	R3	All MCs	67	6.0	67	6.0	* 0.314	35.0	LOS C	2.1	16.2	0.94	0.75	0.94	29.3
Approach			242	6.0	242	6.0	0.314	15.9	LOS B	2.9	22.7	0.66	0.54	0.66	38.9
North: Davies Rd (N)															
7b	L3	All MCs	62	6.0	62	6.0	0.138	31.1	LOS C	1.5	11.8	0.78	0.74	0.78	35.7
9a	R1	All MCs	384	6.0	384	6.0	* 0.763	36.5	LOS D	12.5	97.2	0.97	0.91	1.11	36.2
Approach			446	6.0	446	6.0	0.763	35.8	LOS D	12.5	97.2	0.94	0.88	1.06	36.1
SouthWest: Shenton Rd (SW)															
30a	L1	All MCs	289	6.0	289	6.0	0.517	29.6	LOS C	7.9	61.5	0.88	0.81	0.88	38.7
31	T1	All MCs	462	6.0	462	6.0	* 0.915	45.7	LOS D	20.0	155.9	1.00	1.23	1.55	32.6
Approach			751	6.0	751	6.0	0.915	39.5	LOS D	20.0	155.9	0.95	1.07	1.29	34.9
All Vehicles			1439	6.0	1439	6.0	0.915	34.4	LOS C	20.0	155.9	0.90	0.92	1.11	35.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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.

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Davies Rd PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 66 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Shenton Rd (NE)															
25	T1	All MCs	259	6.0	259	6.0	0.240	7.4	LOS A	4.1	31.9	0.52	0.44	0.52	44.5
26b	R3	All MCs	89	6.0	89	6.0	* 0.268	29.8	LOS C	2.5	19.4	0.87	0.76	0.87	31.1
Approach			348	6.0	348	6.0	0.268	13.1	LOS B	4.1	31.9	0.61	0.52	0.61	40.4
North: Davies Rd (N)															
7b	L3	All MCs	56	6.0	56	6.0	0.148	29.8	LOS C	1.5	11.4	0.82	0.74	0.82	34.5
9a	R1	All MCs	305	6.0	305	6.0	* 0.696	32.7	LOS C	9.6	74.6	0.97	0.87	1.04	36.1
Approach			361	6.0	361	6.0	0.696	32.2	LOS C	9.6	74.6	0.94	0.85	1.01	35.9
SouthWest: Shenton Rd (SW)															
30a	L1	All MCs	346	6.0	346	6.0	* 0.688	29.3	LOS C	10.6	82.2	0.95	0.86	1.00	37.1
31	T1	All MCs	190	6.0	190	6.0	0.367	21.4	LOS C	5.1	39.5	0.85	0.70	0.85	41.9
Approach			536	6.0	536	6.0	0.688	26.5	LOS C	10.6	82.2	0.92	0.80	0.95	38.6
All Vehicles			1245	6.0	1245	6.0	0.696	24.4	LOS C	10.6	82.2	0.84	0.74	0.87	38.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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.

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Gugeri St AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Gugeri Rd (SW)															
25	T1	All MCs	904	6.0	904	6.0	0.479	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
26	R2	All MCs	197	6.0	197	6.0	0.434	16.4	LOS C	2.0	15.3	0.83	1.02	1.15	42.9
Approach			1101	6.0	1101	6.0	0.479	3.1	NA	2.0	15.3	0.15	0.18	0.21	55.7
North: Dummy leg															
9a	R1	All MCs	58	6.0	58	6.0	0.098	9.0	LOS A	0.3	2.3	0.66	0.81	0.66	49.8
Approach			58	6.0	58	6.0	0.098	9.0	LOS A	0.3	2.3	0.66	0.81	0.66	49.8
NorthWest: Shenton Rd (NW)															
29	R2	All MCs	58	6.0	58	6.0	0.325	30.2	LOS D	1.0	7.7	0.87	1.05	1.04	36.9
Approach			58	6.0	58	6.0	0.325	30.2	LOS D	1.0	7.7	0.87	1.05	1.04	36.9
SouthWest: Gugeri Rd (SW)															
30	L2	All MCs	89	6.0	89	6.0	0.477	5.8	LOS A	0.0	0.0	0.00	0.06	0.00	54.7
31	T1	All MCs	848	6.0	848	6.0	0.477	0.2	LOS A	0.0	0.0	0.00	0.06	0.00	59.1
Approach			937	6.0	937	6.0	0.477	0.7	NA	0.0	0.0	0.00	0.06	0.00	58.7
All Vehicles			2154	6.0	2154	6.0	0.479	2.9	NA	2.0	15.3	0.12	0.17	0.15	56.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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.

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Gugeri St PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Gugeri Rd (SW)															
25	T1	All MCs	1066	6.0	1066	6.0	1.058	157.1	LOS F	137.2	1069.2	1.00	0.97	14.39	16.8
26	R2	All MCs	362	6.0	362	6.0	0.944	55.3	LOS F	12.5	97.5	0.98	2.12	4.98	29.7
Approach			1428	6.0	1428	6.0	1.058	131.8	NA	137.2	1069.2	1.00	1.26	12.00	18.9
North: Dummy leg															
9a	R1	All MCs	32	6.0	32	6.0	0.076	11.3	LOS B	0.2	1.7	0.75	0.86	0.75	48.2
Approach			32	6.0	32	6.0	0.076	11.3	LOS B	0.2	1.7	0.75	0.86	0.75	48.2
NorthWest: Shenton Rd (NW)															
29	R2	All MCs	32	6.0	32	6.0	0.308	45.2	LOS E	0.8	6.3	0.92	1.04	1.05	32.1
Approach			32	6.0	32	6.0	0.308	45.2	LOS E	0.8	6.3	0.92	1.04	1.05	32.1
SouthWest: Gugeri Rd (SW)															
30	L2	All MCs	109	6.0	109	6.0	0.512	5.8	LOS A	0.0	0.0	0.00	0.06	0.00	54.6
31	T1	All MCs	896	6.0	896	6.0	0.512	0.2	LOS A	0.0	0.0	0.00	0.06	0.00	59.0
Approach			1005	6.0	1005	6.0	0.512	0.8	NA	0.0	0.0	0.00	0.06	0.00	58.5
All Vehicles			2497	6.0	2497	6.0	1.058	76.2	NA	137.2	1069.2	0.59	0.77	6.89	26.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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.

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Site Access AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Shenton Rd (NE)															
25	T1	All MCs	206	6.0	206	6.0	0.121	0.0	LOS A	0.1	1.1	0.08	0.10	0.08	49.6
26	R2	All MCs	13	0.0	13	0.0	0.121	10.7	LOS B	0.1	1.1	0.08	0.10	0.08	48.1
Approach			219	5.6	219	5.6	0.121	0.6	NA	0.1	1.1	0.08	0.10	0.08	49.5
NorthWest: Site Access (NW)															
27	L2	All MCs	61	0.0	61	0.0	0.105	6.6	LOS A	0.4	2.8	0.51	0.72	0.51	44.5
29	R2	All MCs	26	0.0	26	0.0	0.105	8.7	LOS A	0.4	2.8	0.51	0.72	0.51	44.3
Approach			87	0.0	87	0.0	0.105	7.2	LOS A	0.4	2.8	0.51	0.72	0.51	44.4
SouthWest: Shenton Rd (SW)															
30	L2	All MCs	30	0.0	30	0.0	0.274	4.6	LOS A	0.0	0.0	0.00	0.03	0.00	48.5
31	T1	All MCs	490	6.0	490	6.0	0.274	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	49.7
Approach			520	5.7	520	5.7	0.274	0.4	NA	0.0	0.0	0.00	0.03	0.00	49.6
All Vehicles			826	5.1	826	5.1	0.274	1.2	NA	0.4	2.8	0.08	0.12	0.08	49.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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.

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Site Access PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Shenton Rd (NE)															
25	T1	All MCs	325	6.0	325	6.0	0.204	0.0	LOS A	0.4	2.9	0.11	0.13	0.11	49.3
26	R2	All MCs	47	0.0	47	0.0	0.204	6.7	LOS A	0.4	2.9	0.11	0.13	0.11	47.9
Approach			372	5.2	372	5.2	0.204	0.8	NA	0.4	2.9	0.11	0.13	0.11	49.1
NorthWest: Site Access (NW)															
27	L2	All MCs	25	0.0	25	0.0	0.069	5.2	LOS A	0.2	1.7	0.41	0.61	0.41	44.8
29	R2	All MCs	36	0.0	36	0.0	0.069	7.5	LOS A	0.2	1.7	0.41	0.61	0.41	44.7
Approach			61	0.0	61	0.0	0.069	6.6	LOS A	0.2	1.7	0.41	0.61	0.41	44.7
SouthWest: Shenton Rd (SW)															
30	L2	All MCs	33	0.0	33	0.0	0.126	4.6	LOS A	0.0	0.0	0.00	0.08	0.00	48.3
31	T1	All MCs	205	6.0	205	6.0	0.126	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	49.5
Approach			238	5.2	238	5.2	0.126	0.7	NA	0.0	0.0	0.00	0.08	0.00	49.3
All Vehicles			671	4.7	671	4.7	0.204	1.3	NA	0.4	2.9	0.10	0.15	0.10	48.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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.

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Graylands Rd AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Shenton Rd (NE)															
25	T1	All MCs	232	6.0	232	6.0	0.122	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
26	R2	All MCs	105	6.0	105	6.0	0.143	8.7	LOS A	0.6	4.4	0.62	0.80	0.62	34.5
Approach			337	6.0	337	6.0	0.143	2.7	NA	0.6	4.4	0.19	0.25	0.19	44.5
NorthWest: Graylands Rd (NW)															
27	L2	All MCs	169	6.0	169	6.0	0.269	12.9	LOS B	1.1	8.7	0.62	1.04	0.69	32.5
29	R2	All MCs	49	6.0	49	6.0	0.254	28.7	LOS D	0.8	6.6	0.85	1.04	0.95	29.7
Approach			218	6.0	218	6.0	0.269	16.5	LOS C	1.1	8.7	0.67	1.04	0.75	31.5
SouthWest: Shenton Rd (SW)															
30	L2	All MCs	88	6.0	88	6.0	0.361	4.7	LOS A	0.0	0.0	0.00	0.07	0.00	45.9
31	T1	All MCs	612	6.0	612	6.0	0.361	0.1	LOS A	0.0	0.0	0.00	0.07	0.00	48.9
Approach			700	6.0	700	6.0	0.361	0.7	NA	0.0	0.0	0.00	0.07	0.00	48.4
All Vehicles			1255	6.0	1255	6.0	0.361	4.0	NA	1.1	8.7	0.17	0.29	0.18	43.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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.

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Graylands Rd PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Shenton Rd (NE)															
25	T1	All MCs	392	6.0	392	6.0	0.207	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
26	R2	All MCs	162	6.0	162	6.0	0.127	5.8	LOS A	0.6	4.5	0.42	0.58	0.42	36.7
Approach			554	6.0	554	6.0	0.207	1.7	NA	0.6	4.5	0.12	0.17	0.12	45.7
NorthWest: Graylands Rd (NW)															
27	L2	All MCs	57	6.0	57	6.0	0.052	8.9	LOS A	0.2	1.6	0.34	0.89	0.34	35.8
29	R2	All MCs	80	6.0	80	6.0	0.268	21.0	LOS C	1.0	7.9	0.77	1.05	0.88	33.1
Approach			137	6.0	137	6.0	0.268	16.0	LOS C	1.0	7.9	0.59	0.98	0.65	33.9
SouthWest: Shenton Rd (SW)															
30	L2	All MCs	85	6.0	85	6.0	0.161	4.7	LOS A	0.0	0.0	0.00	0.15	0.00	45.3
31	T1	All MCs	225	6.0	225	6.0	0.161	0.0	LOS A	0.0	0.0	0.00	0.15	0.00	48.0
Approach			310	6.0	310	6.0	0.161	1.3	NA	0.0	0.0	0.00	0.15	0.00	47.0
All Vehicles			1001	6.0	1001	6.0	0.268	3.5	NA	1.0	7.9	0.15	0.27	0.16	43.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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.

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Davies Rd AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 66 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Shenton Rd (NE)															
25	T1	All MCs	219	6.0	219	6.0	0.220	8.9	LOS A	3.7	29.2	0.56	0.47	0.56	43.5
26b	R3	All MCs	81	6.0	81	6.0	* 0.380	35.3	LOS D	2.5	19.8	0.95	0.76	0.95	29.2
Approach			300	6.0	300	6.0	0.380	16.0	LOS B	3.7	29.2	0.67	0.55	0.67	38.8
North: Davies Rd (N)															
7b	L3	All MCs	76	6.0	76	6.0	0.169	36.8	LOS D	1.9	14.6	0.78	0.75	0.78	35.6
9a	R1	All MCs	492	6.0	492	6.0	* 1.010	113.8	LOS F	34.4	268.4	1.00	1.58	2.47	20.1
Approach			568	6.0	568	6.0	1.010	103.5	LOS F	34.4	268.4	0.97	1.47	2.25	21.1
SouthWest: Shenton Rd (SW)															
30a	L1	All MCs	371	6.0	371	6.0	0.664	36.5	LOS D	10.8	84.4	0.93	0.84	0.95	38.0
31	T1	All MCs	586	6.0	586	6.0	* 1.206	418.5	LOS F	101.7	792.7	1.00	3.93	5.94	6.5
Approach			957	6.0	957	6.0	1.206	270.4	LOS F	101.7	792.7	0.97	2.73	4.00	9.8
All Vehicles			1825	6.0	1825	6.0	1.206	176.7	LOS F	101.7	792.7	0.92	1.98	2.91	13.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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.

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Davies Rd PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 66 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Shenton Rd (NE)															
25	T1	All MCs	329	6.0	329	6.0	0.304	7.7	LOS A	5.4	42.4	0.55	0.47	0.55	44.3
26b	R3	All MCs	111	6.0	111	6.0	* 0.335	30.3	LOS C	3.2	24.7	0.89	0.77	0.89	30.9
Approach			440	6.0	440	6.0	0.335	13.4	LOS B	5.4	42.4	0.63	0.55	0.63	40.3
North: Davies Rd (N)															
7b	L3	All MCs	68	6.0	68	6.0	0.179	36.2	LOS D	1.8	14.0	0.83	0.75	0.83	34.4
9a	R1	All MCs	391	6.0	391	6.0	* 0.937	61.3	LOS E	18.1	140.8	1.00	1.22	1.74	28.9
Approach			459	6.0	459	6.0	0.937	57.6	LOS E	18.1	140.8	0.97	1.15	1.61	29.5
SouthWest: Shenton Rd (SW)															
30a	L1	All MCs	444	6.0	444	6.0	* 0.976	76.8	LOS E	25.1	195.7	1.00	1.38	2.06	24.9
31	T1	All MCs	236	6.0	236	6.0	0.456	26.3	LOS C	6.5	50.5	0.88	0.73	0.88	41.6
Approach			680	6.0	680	6.0	0.976	59.3	LOS E	25.1	195.7	0.96	1.16	1.65	28.6
All Vehicles			1579	6.0	1579	6.0	0.976	46.0	LOS D	25.1	195.7	0.87	0.98	1.36	31.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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.

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Gugeri St AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Gugeri Rd (SW)															
25	T1	All MCs	1160	6.0	1160	6.0	1.281	553.7	LOS F	372.2	2900.8	1.00	0.99	24.76	6.0
26	R2	All MCs	249	6.0	249	6.0	1.196	405.1	LOS F	56.0	436.5	1.00	5.39	17.95	7.8
Approach			1409	6.0	1409	6.0	1.281	529.7	NA	372.2	2900.8	1.00	1.77	23.56	6.2
North: Dummy leg															
9a	R1	All MCs	74	6.0	74	6.0	0.221	14.7	LOS B	0.6	5.0	0.82	0.93	0.90	46.0
Approach			74	6.0	74	6.0	0.221	14.7	LOS B	0.6	5.0	0.82	0.93	0.90	46.0
NorthWest: Shenton Rd (NW)															
29	R2	All MCs	74	6.0	74	6.0	1.104	329.4	LOS F	12.6	97.9	1.00	2.43	6.31	9.2
Approach			74	6.0	74	6.0	1.104	329.4	LOS F	12.6	97.9	1.00	2.43	6.31	9.2
SouthWest: Gugeri Rd (SW)															
30	L2	All MCs	115	6.0	115	6.0	0.612	5.9	LOS A	0.0	0.0	0.00	0.06	0.00	54.5
31	T1	All MCs	1088	6.0	1088	6.0	0.612	0.3	LOS A	0.0	0.0	0.00	0.06	0.00	58.9
Approach			1203	6.0	1203	6.0	0.612	0.9	NA	0.0	0.0	0.00	0.06	0.00	58.4
All Vehicles			2760	6.0	2760	6.0	1.281	278.9	NA	372.2	2900.8	0.56	1.02	12.22	10.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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.

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Gugeri St PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Gugeri Rd (SW)															
25	T1	All MCs	1368	6.0	1368	6.0	2.336	2441.5	LOS F	992.1	7732.7	1.00	1.00	45.21	1.5
26	R2	All MCs	454	6.0	454	6.0	3.083	3792.4	LOS F	384.2	2994.8	1.00	13.93	52.78	1.0
Approach			1822	6.0	1822	6.0	3.083	2783.2	NA	992.1	7732.7	1.00	4.22	47.09	1.3
North: Dummy leg															
9a	R1	All MCs	40	6.0	40	6.0	0.241	25.7	LOS D	0.6	4.7	0.91	0.97	0.99	40.4
Approach			40	6.0	40	6.0	0.241	25.7	LOS D	0.6	4.7	0.91	0.97	0.99	40.4
NorthWest: Shenton Rd (NW)															
29	R2	All MCs	40	6.0	40	6.0	1.514	1060.6	LOS F	18.9	147.5	1.00	2.83	8.17	3.2
Approach			40	6.0	40	6.0	1.514	1060.6	LOS F	18.9	147.5	1.00	2.83	8.17	3.2
SouthWest: Gugeri Rd (SW)															
30	L2	All MCs	140	6.0	140	6.0	0.657	6.0	LOS A	0.0	0.0	0.00	0.06	0.00	54.4
31	T1	All MCs	1150	6.0	1150	6.0	0.657	0.4	LOS A	0.0	0.0	0.00	0.06	0.00	58.7
Approach			1290	6.0	1290	6.0	0.657	1.0	NA	0.0	0.0	0.00	0.06	0.00	58.2
All Vehicles			3192	6.0	3192	6.0	3.083	1599.8	NA	992.1	7732.7	0.59	2.48	27.00	2.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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.

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Site Access AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Shenton Rd (NE)															
25	T1	All MCs	265	6.0	265	6.0	0.155	0.0	LOS A	0.2	1.4	0.08	0.10	0.08	49.5
26	R2	All MCs	13	0.0	13	0.0	0.155	14.4	LOS B	0.2	1.4	0.08	0.10	0.08	48.1
Approach			278	5.7	278	5.7	0.155	0.7	NA	0.2	1.4	0.08	0.10	0.08	49.5
NorthWest: Site Access (NW)															
27	L2	All MCs	61	0.0	61	0.0	0.133	7.6	LOS A	0.5	3.4	0.59	0.81	0.59	43.7
29	R2	All MCs	26	0.0	26	0.0	0.133	11.1	LOS B	0.5	3.4	0.59	0.81	0.59	43.6
Approach			87	0.0	87	0.0	0.133	8.7	LOS A	0.5	3.4	0.59	0.81	0.59	43.7
SouthWest: Shenton Rd (SW)															
30	L2	All MCs	30	0.0	30	0.0	0.348	4.7	LOS A	0.0	0.0	0.00	0.02	0.00	48.5
31	T1	All MCs	629	6.0	629	6.0	0.348	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	49.7
Approach			659	5.7	659	5.7	0.348	0.3	NA	0.0	0.0	0.00	0.02	0.00	49.6
All Vehicles			1024	5.2	1024	5.2	0.348	1.1	NA	0.5	3.4	0.07	0.11	0.07	49.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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.

MOVEMENT SUMMARY

Site: 101 [Shenton Rd/Site Access PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Shenton Rd (NE)															
25	T1	All MCs	417	6.0	417	6.0	0.257	0.0	LOS A	0.4	3.4	0.11	0.13	0.11	49.4
26	R2	All MCs	47	6.0	47	6.0	0.257	8.0	LOS A	0.4	3.4	0.11	0.13	0.11	47.6
Approach			464	6.0	464	6.0	0.257	0.8	NA	0.4	3.4	0.11	0.13	0.11	49.2
NorthWest: Site Access (NW)															
27	L2	All MCs	25	6.0	25	6.0	0.087	5.6	LOS A	0.3	2.2	0.49	0.67	0.49	43.9
29	R2	All MCs	36	6.0	36	6.0	0.087	9.4	LOS A	0.3	2.2	0.49	0.67	0.49	43.7
Approach			61	6.0	61	6.0	0.087	7.8	LOS A	0.3	2.2	0.49	0.67	0.49	43.8
SouthWest: Shenton Rd (SW)															
30	L2	All MCs	33	6.0	33	6.0	0.157	4.7	LOS A	0.0	0.0	0.00	0.06	0.00	48.1
31	T1	All MCs	263	6.0	263	6.0	0.157	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	49.6
Approach			296	6.0	296	6.0	0.157	0.6	NA	0.0	0.0	0.00	0.06	0.00	49.4
All Vehicles			821	6.0	821	6.0	0.257	1.2	NA	0.4	3.4	0.10	0.14	0.10	48.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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.

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