



ptc.

11th February 2026

**100 Edinburgh Road, Castlecrag  
SSDA - 90134958**

**Conquest Group of Companies  
Transport Impact Assessment**



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# 1. Executive Summary

The subject site is located at 100 Edinburgh Road, Castlecrag and is situated within the E1 Local Centre zone, at the gateway to the Castlecrag peninsula and within a zone with potential to be developed into a town centre.

The proposed development involves the construction of a mixed-use development comprising up to 150 residential dwelling including 10 affordable apartments, with retail located on ground plane and basement parking for residents as well as retail visitors, allow for vibrant street activation and placemaking.

An assessment of the surrounding active and public transport facilities find that the site is generally well provisioned for, with adequate bus connectivity and pedestrian facilities given the mixed-use character of the area. Cycling amenities are relatively poor in the vicinity of the site, particularly to the west given the topography and existing road network. Active transport to and from the site to the east is more attractive, given the local nature of these roads when compared to the state road on the west (Eastern Valley Way). Overall, there is potential for improvements to public and active transport to support the vision of Council for the precinct.

The development seeks to provide basement car parking for residents and retail users, aligned with the target rates of the relevant guidelines and controls. Further allocation is made for bicycle parking, and motorcycle parking, providing for an alternate mode of transport other than private car.

The vehicular traffic expected to be generated by the proposed site has been assessed and found to have low impact to the existing road network conditions. The retail component of the site is anticipated to serve primarily as a local centre, attracting trips from predominantly within the Castlecrag suburb, by vehicles, pedestrians and cyclists. It is not expected that the proposed retail generates destination trips from the broader road network, and, given the position of the site at the gateway to Castlecrag, many of the vehicular trips generated are expected to be link trips which would already be passing by the site (trips already occurring in the network) or contained within the Castlecrag suburb. This assessment provides a robust and conservative evaluation of the potential traffic generation of the proposal, by not deducting the already approved traffic generation of the site DA. Subject to appropriate mitigation measures, the traffic conditions surrounding the development site are expected to be reasonable.

The proposed parking and basement trafficked areas have been found to comply, or be capable of being made to comply, with the relevant Australian Standards in relation to design.

The proposed development is supportable from a traffic engineering perspective, and provides facilities, both residential and retail, which are commensurate to the character of the site, being located in the town centre of the Castlecrag suburb.

## 2. Introduction

### 2.1. Project Summary

This SSDA seeks consent for the construction of a shop top housing development comprising of a 4-storey podium with ground floor specialty retail tenancies, two 11-storeys residential envelopes from the existing ground level with communal open space on the rooftop, and 5 levels of basement car parking with retail space. The proposal includes 150 dwellings and strata subdivision at 100 Edinburgh Road, Castlecrag.

### 2.2. Site Location

The subject site is situated at 100 Edinburgh Road, Castlecrag, legally identified as Lot 11 DP 611594 and Lot 1 DP 43691. The site was previously occupied by "Quadrangle Shopping Village," which comprised retail stores, post office, restaurants and health clinics on ground floor and parking at lower ground floor which was accessed via a driveway from Edinburgh Road opposite Raeburn Avenue. The location of site is illustrated in Figure 1.

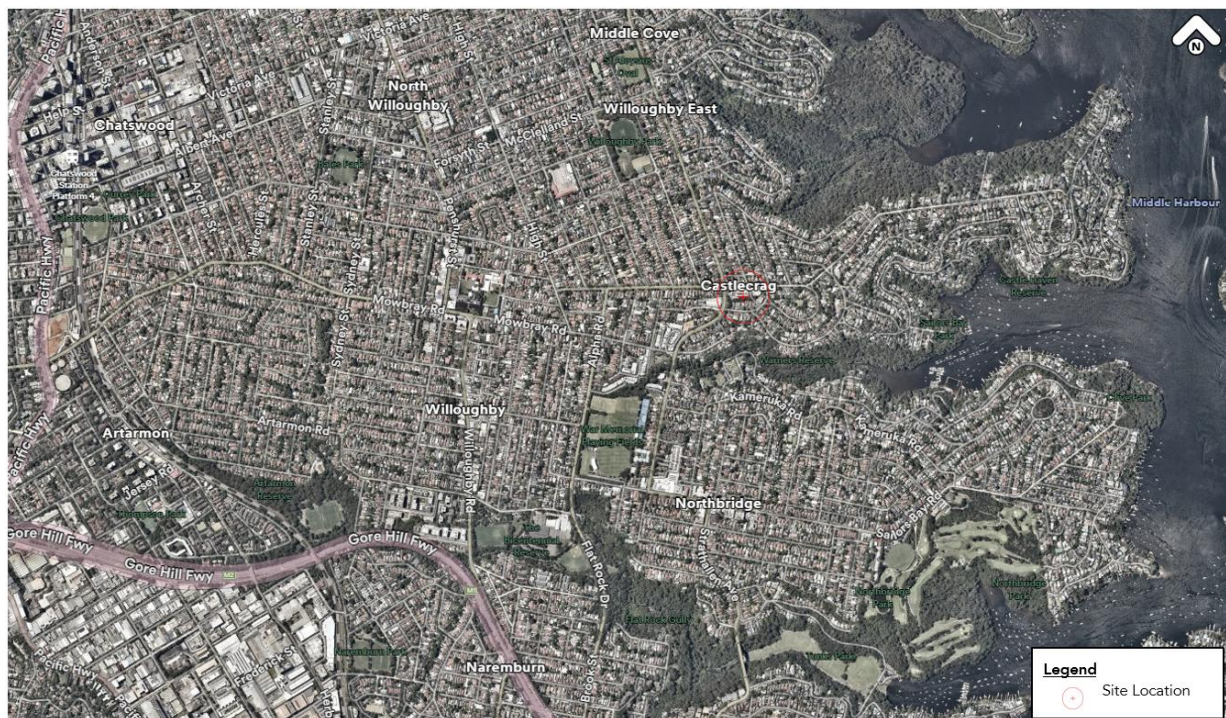


Figure 1: Site Location

The site has frontages to Edinburgh Road on the north and Eastern Valley Way on the east as illustrated in Figure 2.



Figure 2: Location of site and Frontage Roads

### 2.3. Surrounding Land Use and Characteristics

The proposed site is situated mostly within the E1 Local Centre Zone and partially bounded by RE1 Public Recreation Zone to the southeast. The surrounding areas are mainly zoned as R2 (Low Density Residential) towards north and R3 (Medium Density Residential) on the opposite side of Edinburgh Road as well as to the southwest.

The surrounding land use zones are presented in Figure 3.

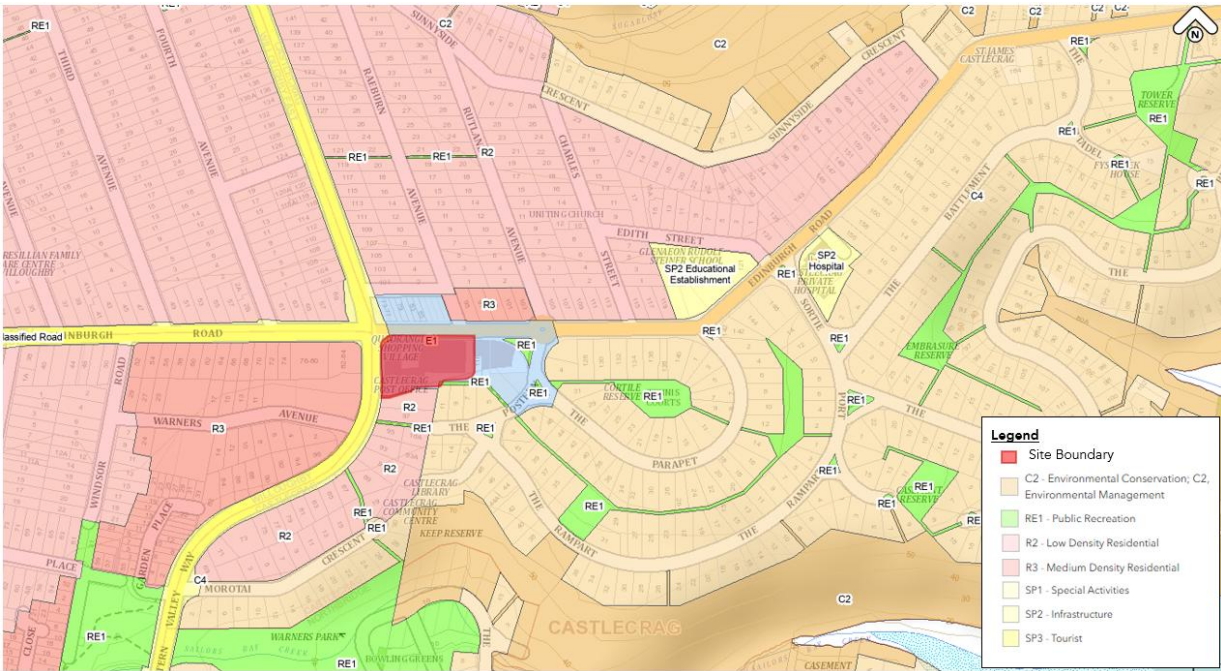


Figure 3: Local Land Use Map (Source: NSW ePlanning Spatial Viewer)

### 2.3.1. Local Planning Proposals

It is noted that the Willoughby Council *Draft Local Centres Strategy (2036)* proposes to create a precinct or town centre in the vicinity of the site, along Edinburgh Road between Eastern Valley Way and Raeburn Avenue. This document identifies several concerns and suggestions with developments in the Castlecrag area including but not limited to:

- traffic constraints in and out of the peninsula,
- improving pedestrian and cyclist conditions,
- changes to the road network, and
- a decreased prioritisation of private vehicles.

## 2.4. SEARS Requirements

Table 1: SEARS Requirements

Item	Description of Requirements	Section Reference
9	<p><b>Transport</b></p> <ul style="list-style-type: none"> <li>• Provide a Transport Impact Assessment (TIA) in accordance with the processes and methodology recommended in the Guide to Transport Impact Assessment (GITA) published by TfNSW.</li> <li>• If the construction of the development would cause interruptions to regular pedestrian and transport routes (including public transport, active transport or general traffic), a preliminary Construction Traffic (or Transport) Management Plan (CTMP) should be prepared as part of the TIA to mitigate any such impacts.</li> </ul>	<p>This Report</p> <p>Section 8</p>

## **2.5. Purpose of this Report**

The report presents the following consideration in relation to the Transport Impact Assessment of the proposed development.

Section 1	Introduction and brief description of the development;
Section 2	Description of the site context, development proposal and review of the background information;
Section 3	Review of the existing transport environment in vicinity of the site;
Section 4	Assessment of the proposed parking provision in the context of the relevant planning control requirements;
Section 5	Determination of the traffic activity associated with the development proposal, and the adequacy of the surrounding road network;
Section 6	Description of the access and car parking arrangements;
Section 7	Framework Green Travel Plan;
Section 8	Preliminary Construction Traffic Management Plan; and
Section 9	Conclusion

# 3. Transport Environment

## 3.1. Road Hierarchy

The subject site is located within the Willoughby Local Government Area (LGA) and is serviced by a mix of state, regional and local roads as shown in Figure 4.

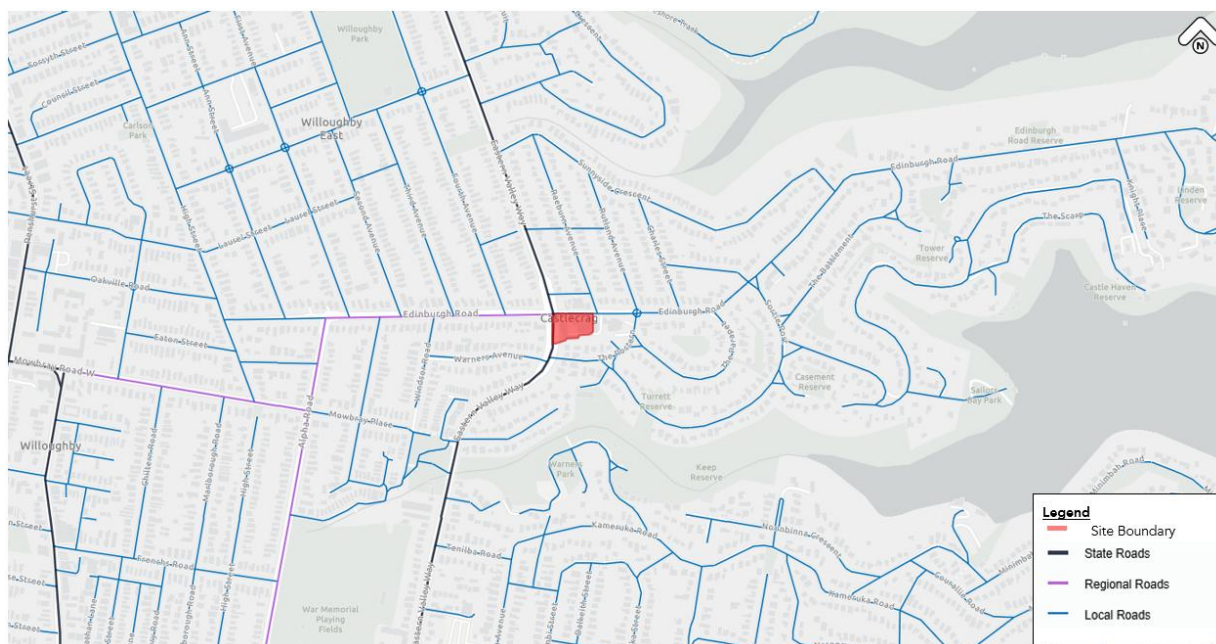


Figure 4: Road Classification (Road Network Classification Map (Source: TfNSW, 2025))

The NSW administrative road hierarchy comprises the following road classifications, which align with the generic road hierarchy:

- State Roads: Freeways and Primary Arterials (TfNSW managed);
- Regional Roads: Secondary or sub-arterials (Council managed, partly funded by the State);
- Local Roads: Collector and local access roads (Council managed).

Within the vicinity, the road network serving the site includes:

Table 2: Characteristics of Eastern Valley Way

<b>Eastern Valley Way</b>	
Road Classification	State Road
Alignment	North - South
Number of Lanes	Varies, typically 2 lanes each direction with short turn lanes at multiple sections
Carriageway Type	Undivided
Carriageway Width	11.5 meters minimum
Speed Limit	60 km/hr.
School Zone	No
Parking Controls	No Parking within the vicinity of the site Bus zones on both sides of the road towards north
Forms Site Frontage	Yes



Figure 5: Eastern Valley Way, Southbound (Source: Google Maps)

Table 3: Characteristics of Edinburgh Road

<b>Edinburgh Road</b>	
Road Classification	Mostly Local Road and partially Regional Road
Alignment	West – East
Number of Lanes	1 lane in each direction with short turn lanes at intersection
Carriageway Type	Undivided
Carriageway Width	11.5 metres within the vicinity of the site
Speed Limit	50 km/h near the vicinity and 60 km/hr beyond
School Zone	Yes

Parking Controls	Within the vicinity of the site, parking permitted on both sides of the road; '1P parking" applicable between 9:30am-6pm (Monday-Friday) & 8:30am-12:30pm (Saturday) on the side of the subject site however "1P parking" applicable between 8:30am-6pm (Monday-Friday) & 8:30am-12:30pm (Saturday) on opposite side of the road. Bus zones on one side of the road (other side of the subject site)
Forms Site Frontage	Yes



Figure 6: Edinburgh Road, Westbound (Source: Google Maps)

Table 4: Charactersits of Raeburn Avenue

<b>Raeburn Avenue</b>	
Road Classification	Local
Alignment	North-south
Number of Lanes	1 Lane shared in both directions
Carriageway Type	Undivided
Carriageway Width	6.5 metres
Speed Limit	50 km/hr
School Zone	No
Parking Controls	Time restricted parking on both sides of road; '1P parking' applicable between 8:30am-6pm (Monday-Friday) & 8:30am-12:30pm (Saturday) at the vicinity; '2P Parking' applicable between 8:30am-6pm (Monday-Saturday) further down the road and 'Unrestricted' parking towards rest section
Forms Site Frontage	No



Figure 7: Raeburn Avenue, Northbound (Source: Google Maps)

Table 5: Characteristics of Rutland Avenue

<b>Rutland Avenue</b>	
Road Classification	Local
Alignment	North-South
Number of Lanes	1 Lane shared in both directions
Carriageway Type	Undivided
Carriageway Width	6.5 metres
Speed Limit	50 km/hr
School Zone	No
Parking Controls	Time-unrestricted parking on both sides of the road
Forms Site Frontage	No



Figure 8: Rutland Avenue, Northbound (Source: Google Maps)

Table 6: Characteristics of The Postern

<b>The Postern</b>	
Road Classification	Local
Alignment	North-south (No through road)
Number of Lanes	1 Lane shared in both directions
Carriageway Type	Undivided
Carriageway Width	8 meters
Speed Limit	50 km/hr
School Zone	No
Parking Controls	Time-unrestricted parking on one side of road
Forms Site Frontage	No



Figure 9: The postern, Southbound (Source: Google Maps)

Table 7: Characteristics of Sunnyside Crescent

<b>Sunnyside Crescent</b>	
Road Classification	Local
Alignment	East-west
Number of Lanes	1 Lane shared in both directions
Carriageway Type	Undivided
Carriageway Width	8 meters
Speed Limit	50 km/hr
School Zone	No
Parking Controls	Time-unrestricted parking on one side of road
Forms Site Frontage	No



Figure 10: Sunnyside Crescent, Westbound (Source: Google Maps)

### 3.2. Public & Active Transport

The locality has been assessed in relation to the available public transport options that may serve the various users of the development. This assessment considered the *NSW Planning Guidelines for Walking and Cycling (2004)*, which suggests that a distance up to 800m is a walkable catchment and 1,500m is a suitable cycling catchment when the development is within proximity to public transport.

The walkable and cycling catchments respectively 800m and 1500m from the subject site for public transport is illustrated in Figure 11.



Figure 11: Walking and Cycling Catchment (Source: Nearmap, 2023)

#### 3.2.1. Bus

The nearest bus stops are located adjacent to the subject site along the Edinburgh Road and East Valley Way which are serviced by the bus routes 194, 203, 205, 206, 207, 208, 209, 260, and 275.

These bus routes mainly provide services from North Sydney to Chatswood. The approximate operation times and frequency are summarised in the table below.

Table 8: Bus Service Summary (Source: Transport NSW)

Bus Route	Coverage	Frequency (approximate)
194	St Ives to City QVB	Mon-Fri: 30 minutes intervals, between 9:37am and 11:22pm Sat-Sun: 30 minutes intervals, between 6:37am and 11:37pm
203	Castlecrag to North Sydney	Mon-Fri: 2 services in the morning, every 30 minutes between 2:17pm and 6:48pm
205	East Willoughby to City Bridge St via Freeway	Mon-Fri: 6-20 minutes intervals, between 7:02am and 8:59am
206	East Lindfield to City Bridge St via Freeway	Mon-Fri: 5-20 minutes intervals, between 4:01pm and 6:58pm
207	East Lindfield to City Bridge St via North Sydney	Mon-Fri: 10-30 minutes intervals, between 5:51am and 8:23pm Sat: 30 minutes intervals, between 9:29am and 6:37pm Sun: 60 minutes intervals, between 9:09am and 7:09pm
208	East Lindfield to City Bridge St via Northbridge & North Sydney	Mon-Fri: 1 service in the morning, 30-60 minutes intervals, between 7:40pm and 11:39pm Sat: 30 minutes intervals, between 5:51am and 11:37pm, no service between 8:11am and 5:29pm Sun: 3 services during morning peak, 5 services during evening peak
209	East Lindfield to Milsons Point via North Sydney	Mon-Fri: 5-10 minutes intervals, between 7:20am and 8:50am
260	Terrey Hills to North Sydney	Mon-Fri: 20-30 minutes intervals, between 7:20am and 9:05am
275	Chatswood to Castlecrag	Mon-Fri: 30-60 minutes intervals, between 6:55am and 6:56pm Sat: 60 minutes intervals, between 8:28am and 7:28pm Sun: 60 minutes intervals, between 9:37am and 6:33pm

The site is well serviced by buses with regular services and therefore provides an alternative mode share option for workers, subject to the availability of convenient bus stops close to their home location. Figure 12 shows the bus stops and the bus routes of bus route 275 and 267. The walking and cycling catchments respectively 800m and 1500m from the subject site for public transport is illustrated in Figure 11.

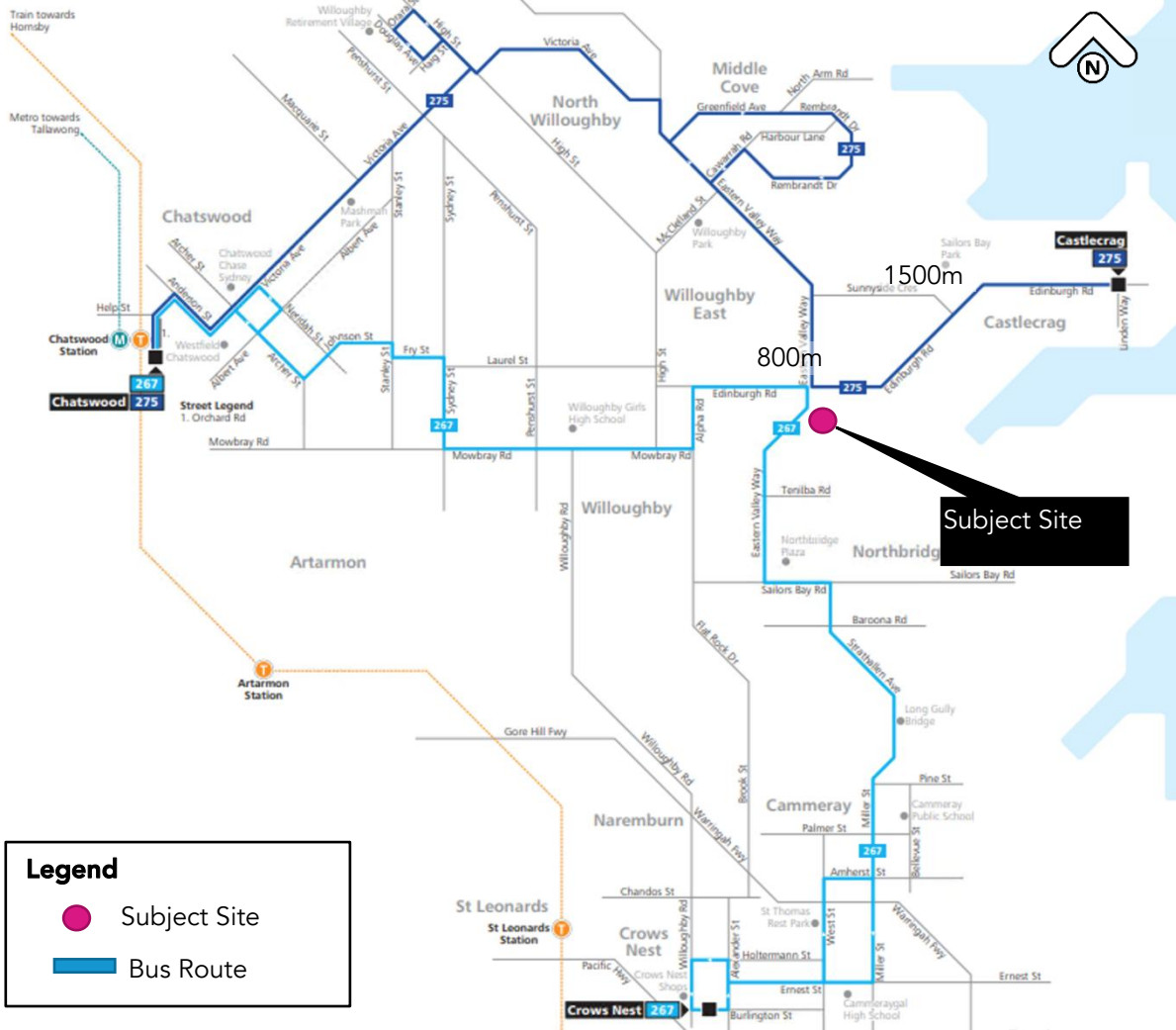


Figure 12: Bus Route 275 and 267 (Source: Transport NSW)

### 3.2.2. Cycling

A review of the local cycling infrastructure has been undertaken to determine the overall accessibility of the subject site by active transport.

Figure 13 shows the local bicycle network surrounding the subject site. There are currently limited cycling connections within the vicinity of the site. Therefore, the cycling facilities are considered to be underdeveloped near the site.

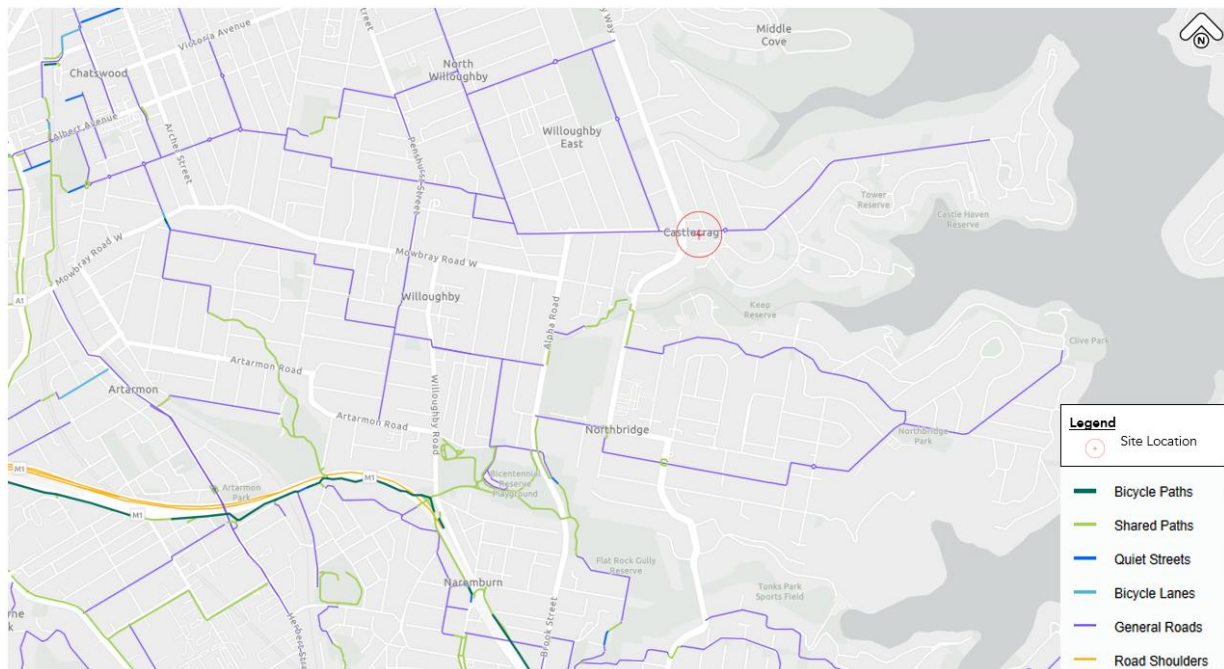


Figure 13: Cycling Network (Source: TfNSW Cycleway Finder, 2023)

### 3.2.3. Walking

Walking is a viable transport option for distances under one kilometre (approximately 15-20 minutes walking distance) and is often quicker for short trips door to door. Walking is also the most space efficient mode of transport for short trips and presents the highest benefits. Co-benefits where walking replaces a motorised trip include improved health for the individual, reduced congestion on the road network and reduced noise and emission pollution.

The nearby road network comprises state and local streets, and all of them have paved foot paths on both sides of the carriageway and proper pedestrian crossing at frequent location. Most of the footpaths are staggered with trees or storefronts.

Pedestrian infrastructure is relatively well developed in the vicinity of the subject site. There are signalised crossings at the intersection of Eastern Valley Way and Edinburg Road, and pram ramps are provided at intersection. Given the mixed-use character of the area, the pedestrian infrastructure is considered to be appropriate.

### 3.2.4. Summary of Public Transport

In summary the site has good access to public transport.

As per the public transport accessibility map, the site is ranked *“level 6 - very high accessibility with public transport”* as illustrated in Figure 14.

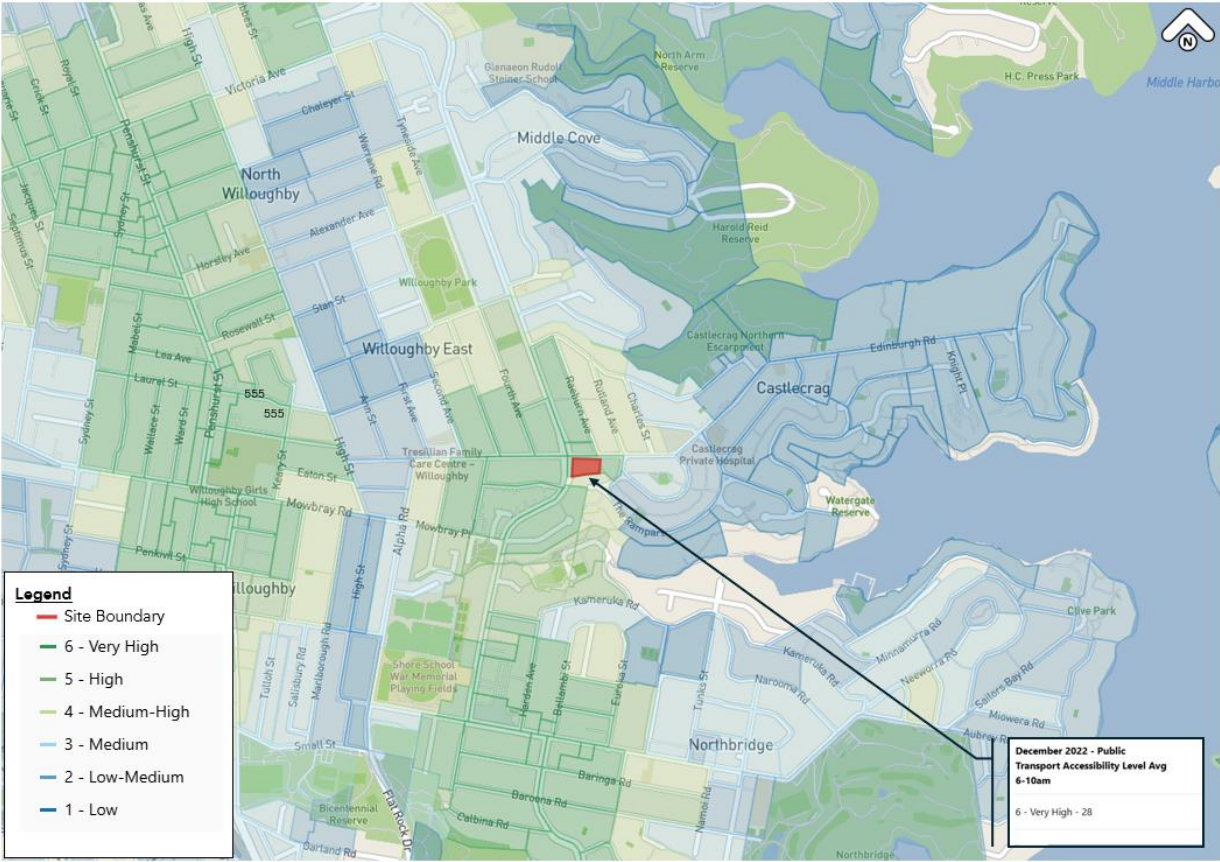


Figure 14: Public Transport Accessibility Map

## 4. Parking Assessment

### 4.1. Planning Policy

The development is located within the Willoughby Local Government Area, and as such, reference has been made to the DCP.

In addition, as the development is within the SSDA pathway, reference to relevant state planning controls has been made.

The following documents have been referred to in relation to parking provision:

- State Environmental Planning Policy (Housing) 2021
- TfNSW Guide to Transport Impact Assessment (TS00085 v1.1)
- Willoughby Development Control Plan (July 2025)

### 4.2. Proposed Parking Provision

#### 4.2.1. Residential Car Parking

##### TfNSW Residential Car Parking Rates

The site has been defined as Category 2 in accordance with Chapter 8, Section 8.5.1 of the TfNSW Guide to Transport Impact Assessment (GTIA). The Statistical Areas Level 2 (SA2) scale is based on key indicators that influence parking demand, and the site is situated within SA2-121011683 (Castle Cove – Northbridge).

The TfNSW car parking reference rates per dwelling (high density residential developments) is extracted from the GTIA and presented below. These rates are identified as “target” car parking numbers, rather than minimum or maximum.

Table 9: TfNSW Car Parking Rates per Dwelling

Category	Studio/1bed	2bed	3+bed	Visitor
2	0.6	0.9	1.4	1 per 5 dwellings

##### SEPP Housing (2021) Affordable Car Parking Rates

In relation to the proposed affordable housing, the SEPP Housing (2021) states the following minimum requirement in Chapter 2, Division 1, Clause 19 (e):

Table 10: SEPP Housing Car Parking Rates per Dwelling

	Studio/1bed	2bed	3+bed
Affordable Housing	0.4	0.5	1

Based on the above rates, the car parking target requirement for the development, compared against the proposed parking, is summarised in Table 11.

Table 11: Residential Car Parking Quantum Assessment

Land Use	Quantum	Rate	Target	Proposed Provision
<b>Residential Component</b>				
1 - bedroom	0	0.6 car space per unit	0	
2 - bedroom	78	0.9 car space per unit	70	
3 - bedroom	54	1.4 car space per unit	76	
Penthouse	8	1.4 car space per unit	12	
Subtotal			158	
<b>Affordable Housing Component</b>				
1 – bedroom	3	0.4 car space per unit	1.2	
2 – bedroom	7	0.5 car space per unit	3.5	
3 – bedroom	0	1 car space per unit	0	
Subtotal			5	
<b>Residential Subtotal</b>	<b>150</b>		<b>163</b>	
Visitor	150 dwellings	1 car space per 5 units	30	
<b>Total</b>			<b>193</b>	<b>204</b>

The development proposes residential (including affordable) car parking in close alignment with the relevant control document, being the TfNSW GTIA. The deviation of 11 car spaces from the target is offset by the shortfall in the overall parking provision against the target rate.

#### 4.2.2. Retail Car Parking

##### TfNSW Retail Car Parking Rates

The TfNSW car parking reference rates for retail/shopping centre land use is extracted from the GTIA and presented below, alongside the target parking provision.

Table 12: TfNSW Car Parking Rates for Retail

Land Use	Area (sqm NLA)	Rate	Target	Proposed Provision
Supermarket	1,956	6.1 spaces per 100sqm NLA/GLFA	120	
Retail	1,183	6.1 spaces per 100sqm NLA/GLFA	73	
<b>Total</b>	<b>3,139</b>		<b>193</b>	<b>172</b>

#### 4.2.3. Total Car Parking

The development site proposes 204 residential car parking spaces, including 24 accessible spaces, and 172 retail car parking spaces, including 4 accessible spaces. Thus, the development proposes 376

car parking spaces total, which falls 10 short of the target rates set out by the TfNSW GTIA. This is deemed to be a reasonable approach, supported by the provision of adequate bicycle parking.

#### 4.2.4. Accessible Parking

24 car spaces are identified as residential accessible car parking.

4 car spaces are identified as retail accessible car parking.

#### 4.2.5. Bicycle Parking

The proposed bicycle parking for various users of the site is summarised in Table 13.

Table 13: Bicycle Parking Provision

Land Use		Quantum	Rate	Required	Provided	Notes	
Residential	Resi	150 units	1 Space per 20 units	8	16	Provided as bicycle rails within the secure basement retail levels	
	Visitor		1 Space per 20 units	8			
Retail	Staff	3,467m <sup>2</sup> GFA, and 172 car parking spaces	1 space per 20 car parking spaces	9	10		
	Visitor		Minimum 1 bicycle space or 1 space per 20 Class A or B bicycle spaces, whichever is the greater	1			
Total				26	26		

The site provision of bicycle parking is found to meet the requirements of the relevant planning controls, being the DCP, or be capable of meeting these requirements.

#### 4.2.6. Motorcycle Parking

The proposed bicycle parking for various users of the site is summarised below.

Table 14: Motorcycle Parking Provision

Land Use		Quantum	Rate	Required	Provided	Notes
Residential	Resi	204 car spaces	1 space per 20 car spaces	11	12	
	Visitor		1 space per 10 motorcycle spaces	2		
Retail	Staff	3,467m <sup>2</sup> GFA	minimum 1	1	9	
	Visitor		minimum 1	1		
Total				15	21	

The site provision of motorcycle parking is found to meet the requirements of the relevant planning controls, being the DCP, or be capable of meeting these requirements.

#### 4.2.7. Parking Summary

The proposed development parking has been assessed and found to meet the required quantum based on the relevant planning controls, or be capable of meeting these requirements.

# 5. Transport Impact Assessment

## 5.1. Key Intersections

The following key intersections surrounding the development site have been considered for traffic intersection surveys:

1. Edinburgh Road / Eastern Valley Way
2. Edinburgh Road / Reaburn Avenue
3. Edinburgh Road / Rutland Avenue / The Postern
4. Edinburgh Road / Sunnyside Crescent
5. Eastern Valley Way / Sunnyside Crescent

The intersections are illustrated in Figure 15 below.

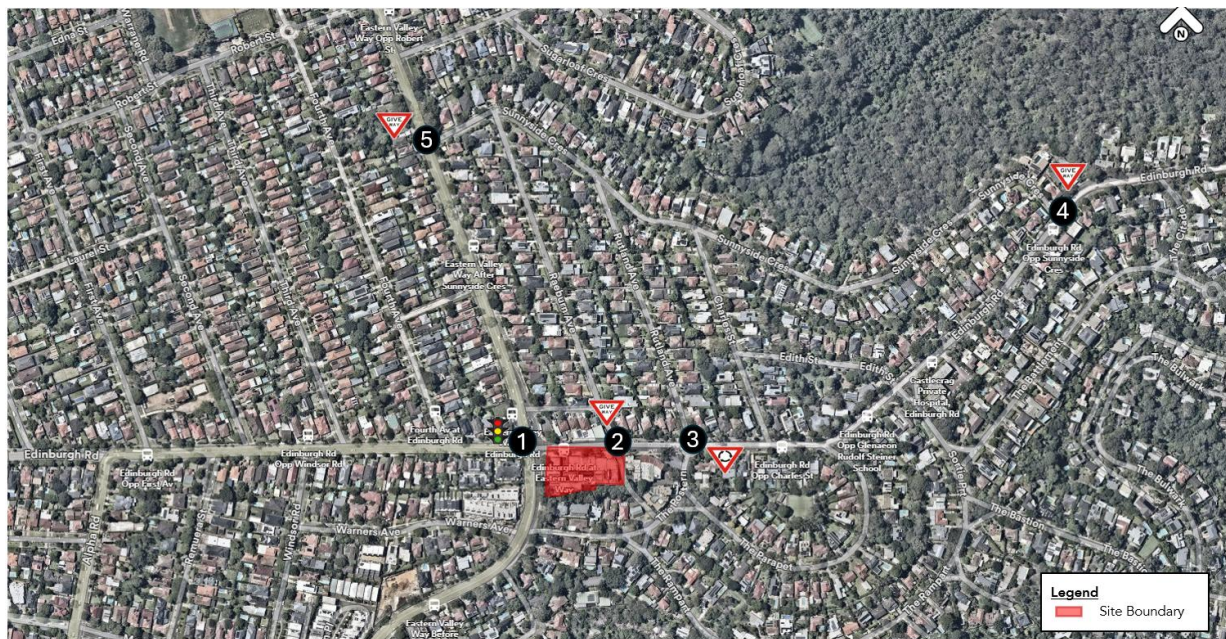


Figure 15: Surveyed Intersections

## 5.2. Existing Network Traffic

Traffic count survey was undertaken on Thursday 16<sup>th</sup> October 2025 (outside of school holiday period) between 7:00am – 10:00am and 3:00pm – 7:00pm at the key intersections mentioned above. Survey data indicates the following peak period:

- Network AM Peak Hour: 7:45am – 8:45am
- Network PM Peak Hour: 3:00pm – 4:00pm

The existing network traffic volumes during the surveyed peak hours as mentioned above are presented in Figure 16 and Figure 17

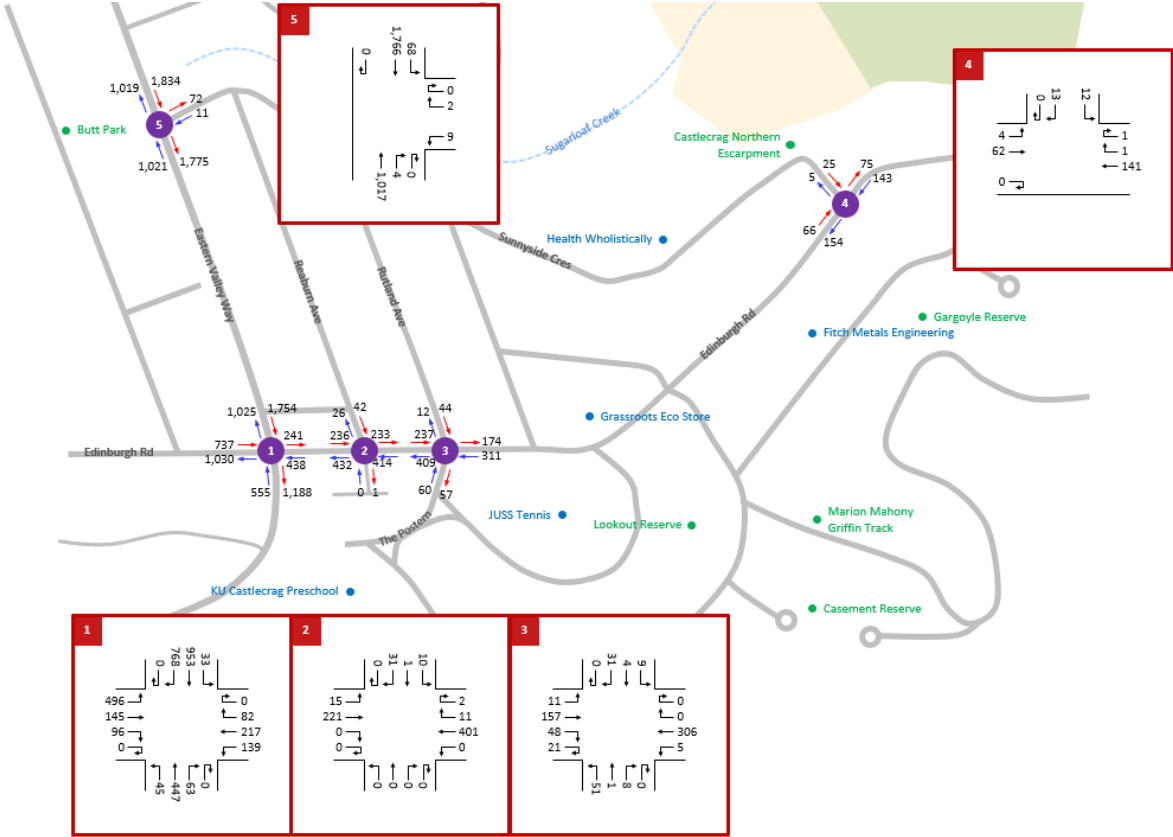


Figure 16: Existing Network Traffic Volumes at AM Peak hour.

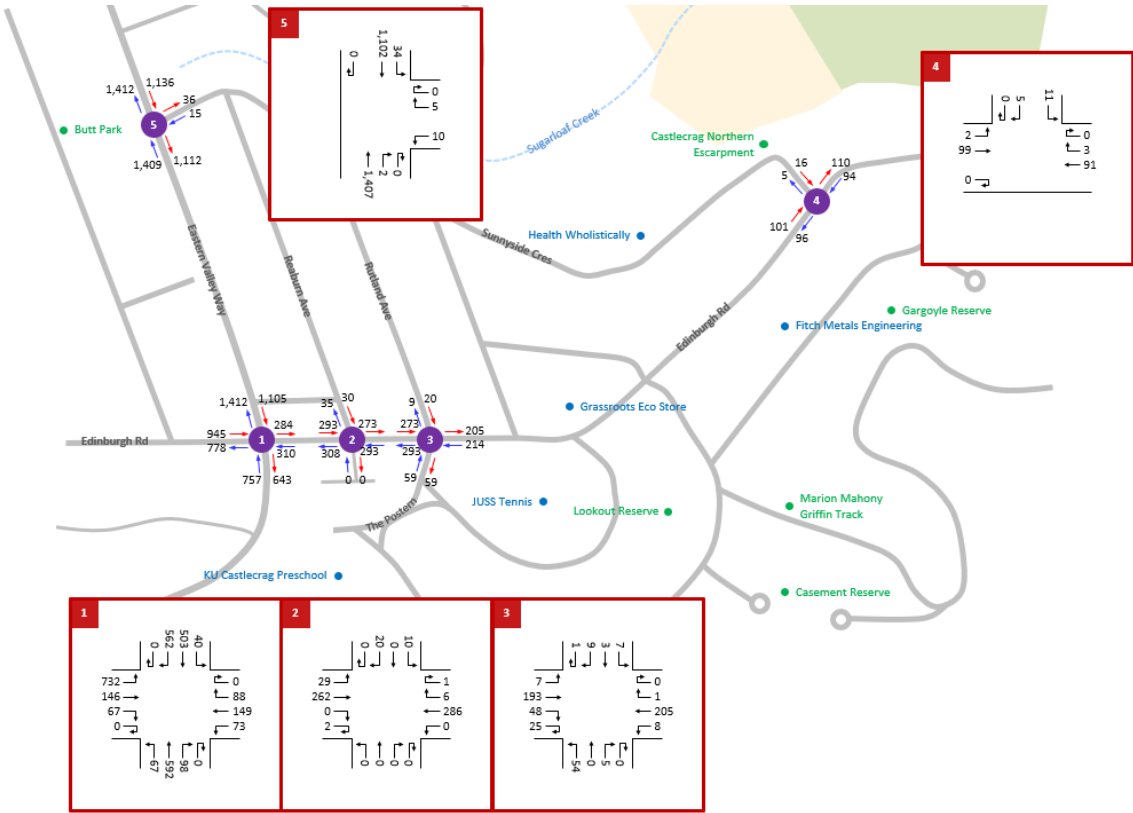


Figure 17: Existing Network Traffic Volumes at PM Peak Hour

### 5.3. Existing Network Assessment

#### 5.3.1. Modelling Scenarios

The following scenarios have been assessed in this report for both the existing subject site and the proposed development site:

- **Scenario 1A – Existing AM Peak** – The existing road network with the existing AM peak traffic volumes as observed in the traffic survey.
- **Scenario 1B – Existing PM Peak** – The existing road network with the existing PM peak traffic volumes as observed in the traffic survey.
- **Scenario 2A – 10 Years Future AM Scenario** – The existing road network with 10 years future growth AM peak traffic volumes.
- **Scenario 2B – 10 Years Future PM Scenario** – The existing road network with 10 years future growth PM peak traffic volumes.
- **Scenario 3A – Development AM Peak** – The existing road network with Development AM peak traffic volumes.
- **Scenario 3B – Development PM Peak** – The existing road network with Development PM Peak traffic volumes.

- **Scenario 4A – 10 Years Future & Development AM Peak** – The existing road network with 10 years future growth and Development AM peak traffic volumes.
- **Scenario 4B – 10 Years Future & Development PM Peak** – The existing road network with 10 years future growth and Development PM Peak traffic volumes.

### 5.3.2. Data Validation and Calibration

Following receipt of the survey data, ptc. undertake a review of the supplied video footage to confirm the accuracy of the counted volumes.

After developing the existing network model in SIDRA, validation of the data and the correctness of the SIDRA model is undertaken by comparing the queue lengths and delay times of the existing SIDRA network outputs to the video footage taken on the day of survey.

These steps are taken to ensure that a robust and valid modelling assessment is prepared and presented in this Transport Impact Assessment.

The intersection of Edinburgh Road and Eastern Valley Way is designed for heavy vehicles, light vehicles, and pedestrian. The TCS phases of this intersection is presented in the Figure 18 below. As per the SCATS data obtained from TfNSW, the intersection is operating with phase A (through vehicles movement along Eastern Valley Way and Pedestrian movement across Edinburgh Road), phase D (Right turn movements from Edinburgh Road and left turn movement from Eastern Valley Way), phase G (Right turn movement from Eastern Valley Way and left turn movement from Edinburgh Road) and phase E (through vehicle movement along Edinburgh Road with pedestrian movement across Eastern Valley Way).

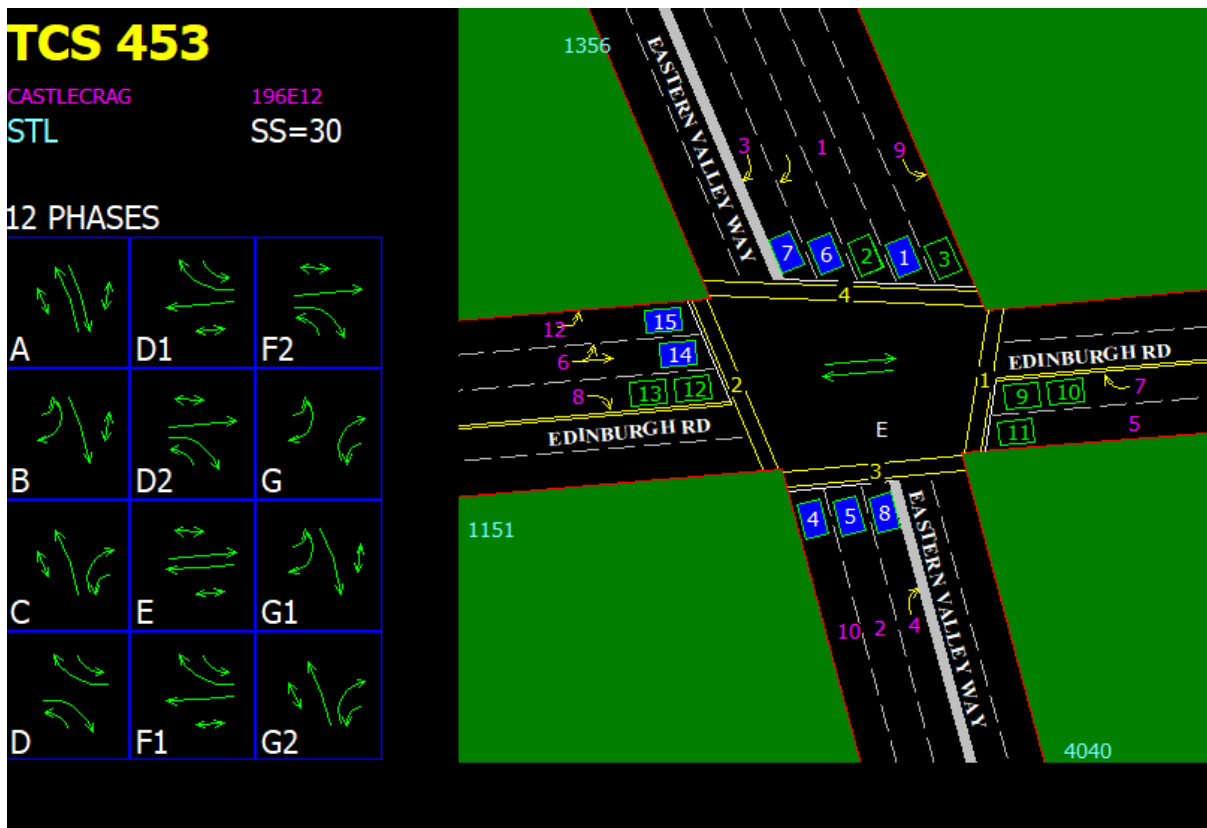


Figure 18: Edinburgh Road / Eastern Valley Way TCS phase (Source: TfNSW)

### 5.3.3. SIDRA Analysis

A volume analysis has been performed using the SIDRA Intersection 9.1 software, a micro-analytical tool for individual intersection and whole-network modelling. The models are based on the collected traffic survey data. SIDRA provides a number of performance indicators outlined below:

- **Degree of Saturation** – The total usage of the intersection expressed as a factor of 1 with 1 representing 100% use/saturation. (e.g. 0.8=80% saturation)
- **Average Delay** – The average delay encountered by all vehicles passing through the intersection. It is often important to review the average delay of each approach as a side road could have a long delay time, while the large free flowing major traffic will provide an overall low average delay.
- **95% Queue Lengths (Q95)** – is defined to be the queue length in metres that has only a 5-percent probability of being exceeded during the analysis time period. It transforms the average delay into measurable distance units.
- **Level of Service (LoS)** – This is a categorization of average delay, intended for simple reference. It is a good indicator of overall performance for individual intersections. TfNSW adopts the following bands:

Table 15: Intersection Performance - Levels of Service

Level of Service	Average Delay (secs/vehicle)	Traffic Signals, Roundabout	Give Way & Stop Signs
A	<14	Good operation	
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity. At signals, incidents would cause excessive delays. Roundabouts require other control mode	At capacity, requires other control mode
F	>70	Extra capacity required	Extreme delay, major treatment required

### 5.3.4. Existing Network Analysis

Table 16: Existing Intersection Performance Summary

Intersection	Scenario	LoS	Average Delay (s) <sup>1</sup>	DoS (v/c)	Q95 (m)
Edinburgh Road / Eastern Valley Way	Scenario 1A	F	95.6	1.122	428.7
	Scenario 1B	C	38.6	0.709	195.4
Edinburgh Road / Raeburn Avenue	Scenario 1A	A	10.2	0.125	3.7
	Scenario 1B	A	9.3	0.058	1.1
Edinburgh Road / Rutland Avenue / The Postern	Scenario 1A	A	11.4	0.030	1.0
	Scenario 1B	A	11.2	0.022	0.8
Edinburgh Road / Sunnyside Crescent	Scenario 1A	A	6.2	0.021	0.5
	Scenario 1B	A	6.2	0.013	0.3
Eastern Valley Way / Sunnyside Crescent	Scenario 1A	F	253.1	0.677	11.7
	Scenario 1B	F	388.3	0.614	11.8

It should be noted that the existing modelling of Eastern Valley Way and Edinburgh Road has been undertaken by using total cycle time which allows SIDRA to optimize the signal phasing.

Analysis of SIDRA output finds that the right turn into Edinburgh Road from the southbound direction of travel on Eastern Valley Way is a high demand movement. This traffic movement is unrelated to the site and traffic generation of the proposed site is not anticipated to make use of this movement.

Due to the unsignalised nature of the intersection of Eastern Valley Way and Sunnyside Crescent, a long average delay is observed, which is expected for a minor road adjoining a high-volume major road.

Critically, all other intersections immediately surrounding the development site have been found to operate with spare capacity and acceptable delay.

The detailed SIDRA results presented in Appendix 3.

### 5.4. Future Network Assessment

A background traffic growth of 1 % per annum has been derived from the Traffic Volume Viewer from TfNSW and applied to the 10 years background traffic growth. This annual growth is generally considered to account for ongoing development and population growth in the area.

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<sup>1</sup> For signalised intersections, the average performance indicators have been reported. For priority and roundabout intersections, the average delay of the worst movement is used to determine the LoS.

The summary of the intersection performance with application of future growth rates after a 10 year period is illustrated in Table 17 and the detailed SIDRA results presented in Appendix 3.

Table 17: 10 Years Future Intersection Performance Summary

Intersection	Scenario	LoS	Average Delay (s)	DoS (v/c)	Q95 (m)
Edinburgh Road / Eastern Valley Way	Scenario 2A	F	181.8	1.272	596.4
	Scenario 2B	D	42.7	0.808	221.7
Edinburgh Road / Raeburn Avenue	Scenario 2A	A	10.7	0.146	28.9
	Scenario 2B	A	9.8	0.077	1.3
Edinburgh Road / Rutland Avenue / The Postern	Scenario 2A	A	11.9	0.157	21.4
	Scenario 2B	A	11.4	0.025	0.9
Edinburgh Road / Sunnyside Crescent	Scenario 2A	A	6.3	0.024	0.6
	Scenario 2B	A	6.2	0.015	0.4
Eastern Valley Way / Sunnyside Crescent	Scenario 2A	F	498.2	1.221	26.6
	Scenario 2B	F	505.0	1.182	30.7

When compared to the existing scenario (provided in Table 16), the application of the 10-year growth factor to the network traffic results in an expected degradation to intersection performance. Notably, the PM Peak Hour at intersection 1 is found to be operating near capacity.

Intersections already operating at LoS F in the existing scenarios remain as such, however any figures produced by SIDRA related to delay or queue length should not be considered representative, as SIDRA model intersections can become unstable in LoS F condition.

## 5.5. Development Traffic Generation

### 5.5.1. Trip Generation

The Guide to Transport Impact Assessment outlines the trip generation for several land use. The different rates for trips generation for the proposed mixed-use development are presented below.

- *The rate for retail, if defining the supermarket and the retail premise as "Small Suburban Shopping Centre" for typical Thursday would be:*
  - *0.066A + 126 vehicle trips for AM peak*
  - *0.089A + 170 vehicle trips for PM peak*

*Where A = GLFA*
- *The rate for high density residential dwelling in high public transport accessibility would be:*
  - *For AM peak: 0.19 per dwelling*
  - *For PM Peak: 0.15 per dwelling*

The Net Leasable Area (NLA) equivalent to Gross Leasable Floor Area (GLFA) of the retail premises is 3,139m<sup>2</sup>.

Under the Section 3.6.2 of Guide to Traffic Generating Developments (2002), 25% discount is applied on GLFA for linked/multi-purpose trips. This equates the trip generating NLA to 2,354m<sup>2</sup>.

Based on the above NLAs of the proposed development as presented above, the trip generation of the proposed development is detailed below in Table 18.

Table 18: Proposed Traffic Generation

Land Use	Quantum	Total	Parking Provided	Peak Hour	Trip Gen Rate <sup>1</sup>	Trip Generation <sup>2</sup>
<b>Residential <sup>3</sup></b>						
2 Bed	78 units	150	203	AM	0.19 per unit	29
3 Bed	54 units			PM	0.15 per unit	23
Affordable Unit	8 unit					
Penthouse	8					
<b>Non-residential</b>						
Supermarket <sup>4</sup>		2,354m <sup>2</sup> NLA	175	AM	0.066A + 126	282
Retail				PM	0.089A + 170	380
<b>Total Peak Hour Trip Generation</b>				<b>AM</b>		<b>311 trips</b>
				<b>PM</b>		<b>403 trips</b>

The following assumptions have been made regarding the development site:

1. Trip Gen Rate refers to the Weekday AM and PM Peak Hour trip generation.
2. The upper limit of the peak hour trip generation has been taken as a robust and conservative measure.
3. The residential units are classified as high density and the according rate from the Guide to Transport Impact Assessment has been used.
4. Supermarket and Retail is classified as Shopping Centre, with the Thursday peak hour rate utilised as per Section 5.6.5 of Guide to Transport Impact Assessment. The NLA has been used for trip generation to exclude back of house areas which do not generate trips.

### 5.5.2. Zone of Influence

A review of the surrounding retail and supermarket stores, and evaluation of the local road networks, has led to the definition of “zones of influence” for each of these surrounding retail/grocery shops. The purpose of this definition is to estimate the likely shops utilised by residents of the neighbouring suburbs and evaluate where users of the proposed site are likely to travel to and from.

The nearby suburbs and surrounding residential area are divided into zones on the basis of the location of the major retail and supermarket premises as illustrated in Figure 19.

On the basis of the above zoning, the development site serves the Castlecrag area, which is made up of Castlecrag East and Castlecrag West, separated by Eastern Valley Way. The predominant volume of site visitors is expected to originate from the east of the site, within the Castlecrag peninsular. The development site is not considered as a major destination that attracts trips from other areas (given that they are served by their own similar scale, or larger, retail hubs) and will serve the local suburb.

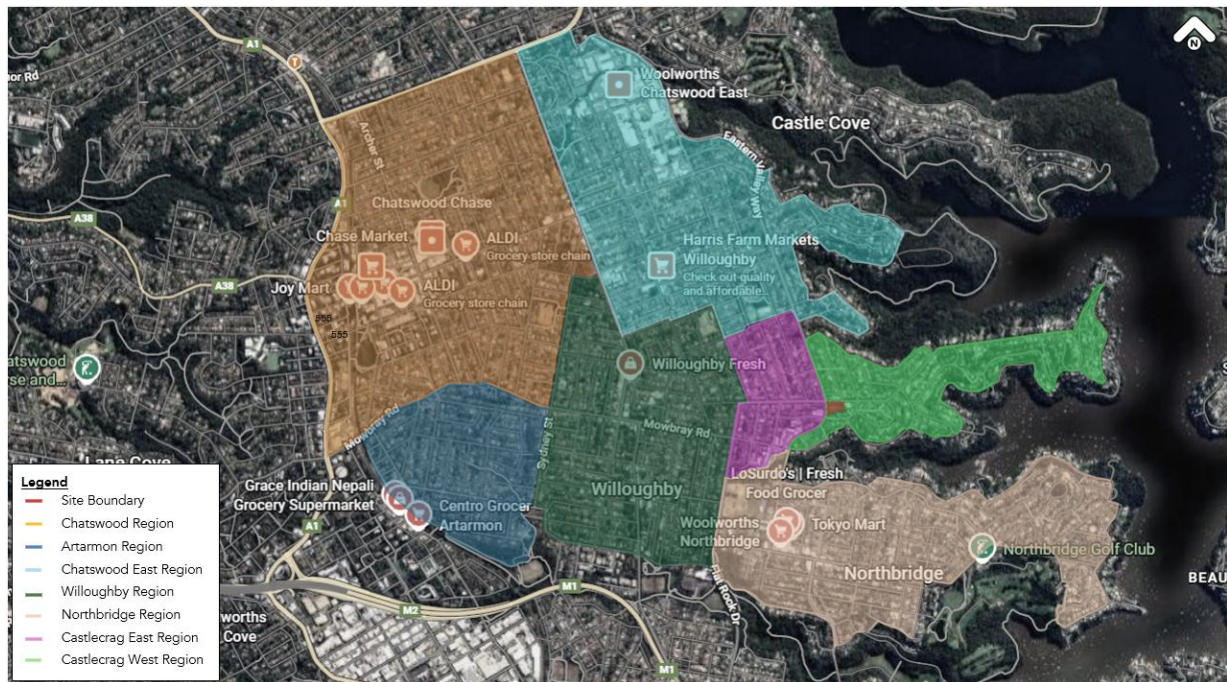


Figure 19: Zone of Influence on the basis of Location of Major Retail Premises

On the basis of the catchment area, approximately 75% of the area is occupied by the Castlecrag East Region (shown in green) and 25% by Castlecrag West Region (shown in pink). As such the following assumptions can be made.

- 75% of the trip generated by the non-residential component (retail and supermarket) of the development comes from east and returns east, not utilizing the intersection of Eastern Valley Way and Castlecrag Road.
- 25% of the trip generated by the non-residential component (retail and supermarket) of the development comes from west and return west via Eastern Valley Way and Castlecrag Road intersection.

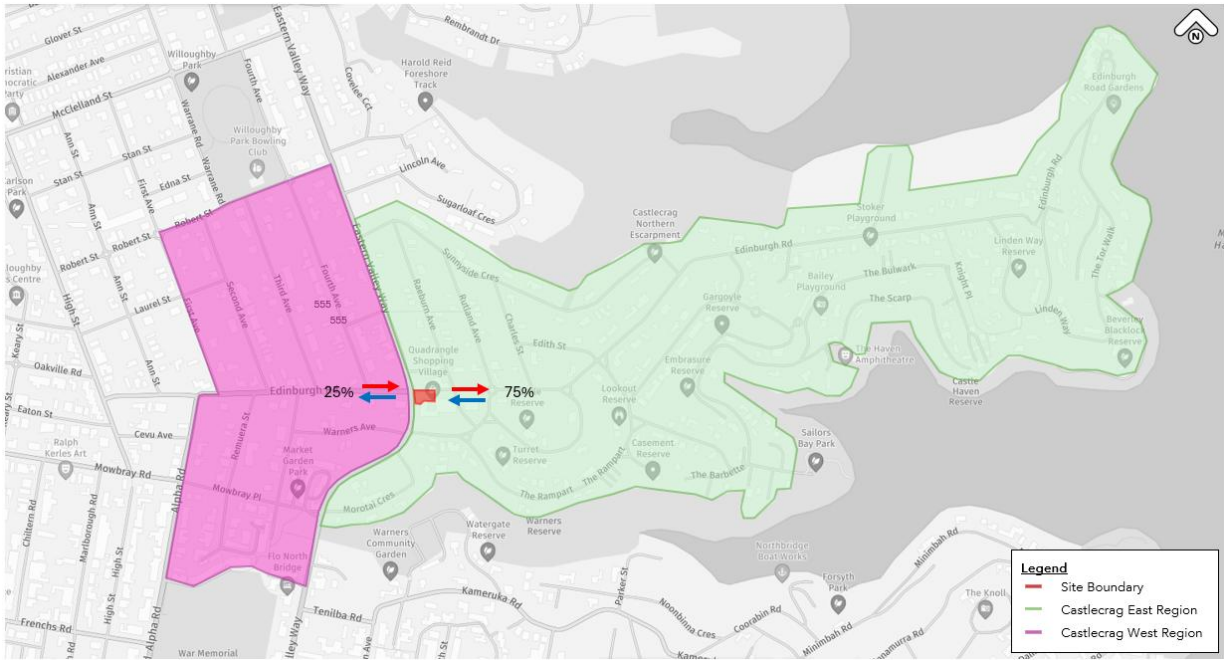


Figure 20: Percentage Trip Distribution

The trip distribution on the surrounding road network is detailed in overleaf.

### 5.6. Proposed Trip Distribution

The development trip generation for residential and non-residential are distributed to the surrounding road network in the following proportion as illustrated in Figure 21 and Figure 22 below.



Figure 21: Percentage Trip Distribution for Residential Component



Figure 22: Percentage Trip Distribution for Non-Residential Component

On the basis of the above trip distribution percentage, development trip generation has been assigned to surrounding road network.

### 5.6.1. Morning Peak Hour Directional Distribution

Table 19: Morning Peak Hour Trip Distribution

Land Use	Morning Trips	Outbound %	Inbound %	Outbound Trip	Inbound Trip
Residential	29	80%	20%	23	6
Supermarket/Retail	282	50%	50%	141	141
Total	311			164	147



Figure 23: Morning Peak Hour Development Trip Distribution

**5.6.2. Evening Peak Hour Directional Distribution**

Table 20: Evening Peak Hour Trip Distribution

Land Use	Morning Trips	Outbound %	Inbound %	Outbound Trip	Inbound Trip
Residential	23	20%	80%	5	18
Supermarket/Retail	380	50%	50%	190	190
Total	403			195	208



Figure 24: Morning Peak Hour Development Trip Distribution

## 5.7. Development SIDRA Analysis

A summary of the existing intersection performance with the traffic generated from the proposed development is provided in Table 21.

Table 21: Existing Intersection Performance Summary with Development Traffic

Intersection	Scenario	LoS	Average Delay (s)	DoS (v/c)	Q95 (m)
1. Edinburgh Road / Eastern Valley Way	Scenario 3A	F	136.5	1.167	455.3
	Scenario 3B	C	41.2	0.756	194.0
2. Edinburgh Road / Raeburn Avenue	Scenario 3A	A	10.6	0.152	24.3
	Scenario 3B	A	9.3	0.101	1.7
3. Edinburgh Road / Rutland Avenue / The Postern	Scenario 3A	A	12.1	0.706	94.7
	Scenario 3B	A	12.1	0.049	1.8
4. Edinburgh Road / Sunnyside Crescent	Scenario 3A	A	6.9	0.029	0.7
	Scenario 3B	A	7.1	0.019	0.5
5. Eastern Valley Way / Sunnyside Crescent	Scenario 3A	F	326.7	0.830	14.8
	Scenario 3B	F	400.1	0.628	12.1

A summary of the intersection performance with 10 year background growth applied, in addition to the expected traffic generated from the proposed development, is provided in Table 22.

Table 22: Intersection Performance Summary with 10 Years Future Growth and Development Traffic

Intersection	Scenario	LoS	Average Delay (s)	DoS (v/c)	Q95 (m)
1. Edinburgh Road / Eastern Valley Way	Scenario 4A	F	201.7	1.305	622.2
	Scenario 4B	D	46.1	0.861	219.1
2. Edinburgh Road / Raeburn Avenue	Scenario 4A	A	11.5	0.177	33.6
	Scenario 4B	A	10.4	0.463	13.3
3. Edinburgh Road / Rutland Avenue / The Postern	Scenario 4A	A	13.0	0.767	180.5
	Scenario 4B	A	12.4	0.053	1.9
4. Edinburgh Road / Sunnyside Crescent	Scenario 4A	A	7.0	0.032	0.7
	Scenario 4B	A	7.2	0.022	0.5
5. Eastern Valley Way / Sunnyside Crescent	Scenario 4A	F	675.5	1.455	34.4
	Scenario 4B	F	492.8	1.182	30.7

The application of development traffic generation onto the existing or 10-year network models does not create degradation to the recorded LoS of any of the intersections surrounding the site (comparing Table 16 to Table 21, and Table 17 to Table 22).

Intersections 2, 3, and 4 continue to operate with spare capacity and appropriate LoS in all modelled scenarios, including those with the additional of traffic from the proposed development.

For further details of intersection performance, refer to Appendix 3.

## 5.8. Summary of Development Traffic Modelling

From the above traffic analysis undertaken with SIDRA, the following summary is derived.

- No change to the Level of Service of any modelled intersection is found as a result of development traffic, despite not reducing the net traffic generation of the SSDA proposal due to the site trips already approved under DA2024/13.
- The application of a typical annual network traffic growth rate over a 10-year period finds that the PM Peak Hour begins to operate near capacity in the 10-year horizon scenario. No changes are noted to the Level of Service to other intersections when comparing the existing and 10-year scenarios.
- The nature of the road network, and the positioning of the site at the gateway to the Castlecrag peninsula, lends it to serve the local community and suburb, primarily those living to the east of Eastern Valley Way. In such a way, the development site is not expected to be a main attractor of

new vehicular trips from the wider road network, and is expected to attract linked trips in a similar manner to the previous site.

- A limited proportion of the new network trips generated by the site are expected to make use of the signalised intersection at Edinburgh Road and Eastern Valley Way. The majority of site users, particularly retail, are expected to make linked trips to the site, meaning these trips already pass through the major signalised intersection of Eastern Valley Way.

### **5.8.1. Mitigation Measures**

- It is recommended, for improved vehicle safety, that the relevant authority provide clear linemarking at the intersection of Sunnyside Crescent and Eastern Valley Way. This may provide improvement to any traffic delay at this intersection.
- It is recommended that improvements to active and public transport facilities, are recommended to reduce future reliance on private vehicles. The provision of increased public transport services to better connect the local area to key economic and recreational destinations, and the Council led vision for a Castlecrag town centre, are expected to result in a reduction in private vehicle use not only to and from the site, but also by those living in the wider suburb. This may alleviate congestion and create more capacity in the surrounding intersections.
- As part of the ongoing operation of the development, it is advised that the Green Travel Plan strategies are implemented and the goals sought to be achieved. Such strategies and goals are expected to reduce dependency on private vehicle use, or increase efficiency of use through link trips, car pool, car share, etc.

## 6. Car Park Design Assessment

The development has been assessed against the requirements of the AS2890 suite of standards.

### 6.1. Vehicular Access

Access to the site is provided via Edinburgh Road, by way of a combined entryway. The width of this entry driveway is 12 metres at the kerb, and 8 metres at the boundary. This is determined by the vehicular swept paths and allow for two-way passing of vehicles or suitable intervisibility to stop at a point to give way to an oncoming vehicle.

Refer to Appendix 2 for detailed swept path assessment.

### 6.2. Sight Distances

The frontage road has a straight alignment and there are no obstructions noted which would block sight lines for exiting vehicles.

A pedestrian sight splay is provided at the exit side of the driveway.

### 6.3. Car and Service Vehicle Parking Requirements

#### 6.3.1. Typical Requirements

The parking associated with the development is classified as Class 1A (Residential, Domestic and Employee Parking) and Class 3A (Short Term / Shopping Centre) as per table 1.1 of AS2890.1.

The minimum parking space dimensions and associated aisle width requirements for the Class 1A parking are as follows:

- **Class 1A Space:** 2.4m x 5.4m
- **Class 1A Aisle Widths:** 5.8m (plus an additional 300mm to any vertical obstructions greater than 150mm in height including, but not limited to, walls, bollards etc.)

The minimum parking space dimensions and associated aisle width requirements for the Class 3A parking are as follows:

- **Class 3A Space:** 2.6m x 5.4m
- **Class 3A Aisle Widths:** 6.6m (plus an additional 300mm to any vertical obstructions greater than 150mm in height including, but not limited to, walls, bollards etc.)

#### 6.3.2. Accessible Parking

Accessible parking spaces are to satisfy minimum dimensions 2.4m x 5.4m, and an adjacent shared bay of equal dimensions. Shared bays and accessible spaces shall be installed in accordance with AS2890.6:2022, including the installation of bollards and relevant pavement markings.

#### 6.3.3. Headroom Requirements

A minimum height clearance of 2.2m shall be maintained in all vehicular circulation areas (including motorcycle and bicycle access paths) and above all car parking bays.

A minimum height clearance of 2.5m shall be maintained above all accessible and shared bays.

Wherever access is required by heavy vehicles, a minimum clear headroom of 4.5m shall be provided (i.e. within the loading dock and along the entire heavy vehicle access paths). This clear headroom is to be measured to the underside of any overhead obstructions including, but not limited to, utilities, mechanical ducts, sprinklers, lighting or any other overhead fixtures, etc.).

## 6.4. Service Vehicle Requirements

### 6.4.1. Loading Bay Requirement

Two 10.5m long x 3.5m wide service vehicle loading bays are provided within the basement loading dock. These are intended to serve as the primary delivery and waste collection location.

A turntable is provided to assist with vehicle manoeuvring in and out of the loading dock bays.

In the event that the turntable malfunctions, it is possible for the dock to continue operating with a single vehicle at any time, which can enter and exit without the assistance of the turntable.

Furthermore, to assist in the overall servicing of the site, four courier bays are proposed on level B1.

Refer to Appendix 2 for detailed assessment.

### 6.4.2. Waste Collection

Waste collection is proposed to be undertaken by the Waringah Council 10.5m refuse vehicle.

This aligns with Council requirements.

Refer to Appendix 2 for detailed assessment, including swept path.

## 6.5. Typical Grade Requirements

In terms of driveway grades, AS2890.1 and AS2890.2 has the following grade requirements:

- A 1:20 maximum grade for the first 6m into the site measured from the property boundary (or to the wheelbase of the largest vehicle likely to use the driveway, whichever is greater);
- Maximum ramp grade of 1:5 for ramps up to 20m in length (for B99 vehicle access only) given that the site is accessible to the public;
- Maximum ramp grade of 1:6 for ramps greater than 20m in length (for B99 vehicle access only);
- Transition grades of typically 1:8 over a length of 2 metres (for B99 vehicle access only);
- Maximum ramp grades of 1:6.5 (for heavy vehicle access); and
- Maximum transition grades of 1:16 running for at least 7m (for heavy vehicle access).
  - Note that there is a departure from this maximum rate of grade change on the entry ramp. A grade change of 1:13 occurs, however, this has been assessed and found to perform to a satisfactory level, with no vehicle underbody scraping detected. Refer to Appendix 2.

Where access is required by heavy vehicles, all grades are to comply with the provisions of Table 3.2 of *AS2890.2: 2018 Off-street Commercial Vehicle Facilities*. All access within the loading dock and ramp is to be designed for the largest design vehicle (considered to be the 10.5m Heavy Rigid or Council Refuse Vehicle).

In terms of standard car parking spaces, grades shall be limited to the following as per AS2890.1:2004:

- A maximum of 1:20 (5%) measured parallel to the angle of parking; and
- A maximum of 1:16 (6.25%) measured in any other direction.

Accessible parking bays and shared bays shall be limited to a maximum grade of 1:40 in any direction, or a maximum of 1:33 if the surface is a bituminous seal and the parking space is outdoors.

Loading and service bays shall be limited to a maximum of 1:25 (4%) in any direction.

## **6.6. Bicycle Parking**

Bicycle parking shall comply with the requirements of AS2890.3, which states the following parking dimensions:

- Horizontal bicycle parking: 1.8m long x 0.5m wide x 1.2m high, aisle requirement of 1.5m
- Vertical bicycle parking: 1.2m long x 0.5m wide x 1.8m high, aisle requirement of 1.5m

All bicycle parking proposed has been assessed and found to meet the above criteria.

## **6.7. Motorcycle Parking**

Motorcycle parking shall comply with the requirements of AS2890.1, which states the following parking dimensions:

- 1.2m wide x 2.5m long

All motorcycle parking proposed has been assessed and found to meet the above criteria.

## 7. Framework Green Travel Plan

It is expected that the details in this section will be developed further as the project progresses, with a view to implementation of a formalised monitoring and evaluation process to achieve the maximum benefits of a Green Travel Plan (GTP).

### 7.1. What is a Green Travel Plan?

A Green Travel Plan (GTP) is a document that outlines how a development intends to make travel to and from the site safer and more sustainable for occupants and their visitors. The GTP addresses local traffic issues around the site and encourages active, safe and sustainable travel methods, such as walking, cycling, scooting, public transport or car sharing. A GTP correlates with the development's overall aspirations and is a document that is monitored and reviewed regularly.

A GTP is not just the installation of bike racks or provision of end-of-trip facilities. An effective GTP aims to promote and maximise the use of more sustainable modes of travel via a range of actions, promotional campaigns and incentives. The plan includes site management tools that encourage staff and visitors to make more sustainable transport choices. A GTP requires ongoing implementation, monitoring and review. As such, nominating an individual or a team to oversee the implementation of a travel plan is a crucial component of success.

An effective GTP can offer many benefits, such as less congestion on public road networks, as well as health and environmental benefits.

### 7.2. Why is a Green Travel Plan required?

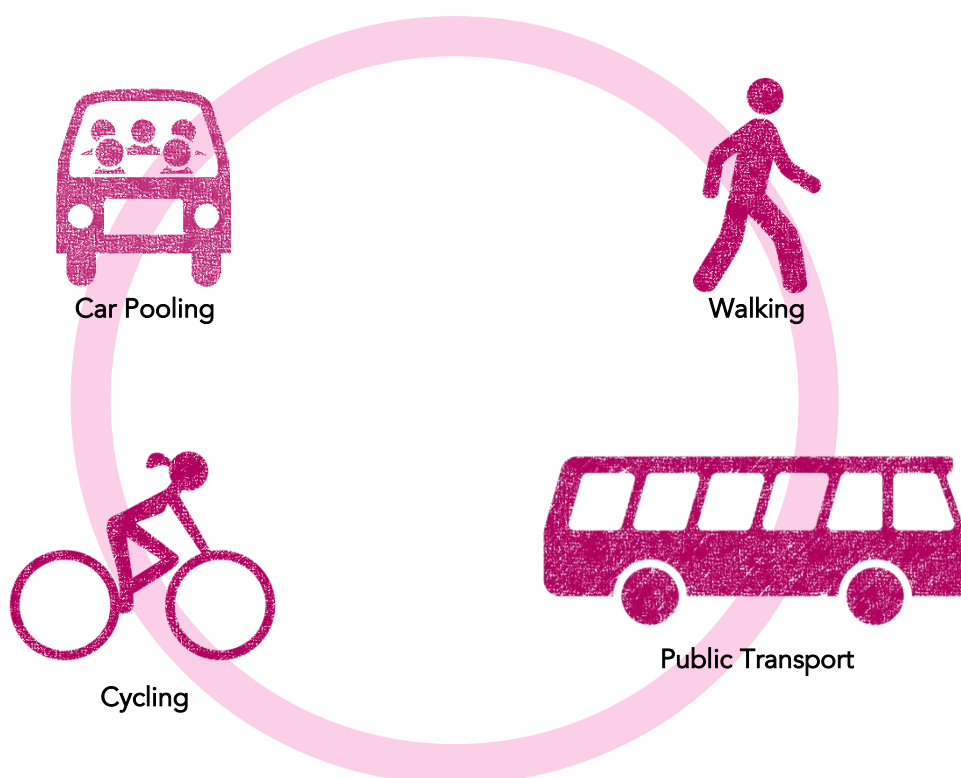
The implementation of a GTP is generally accepted as one of the best ways to increase active travel to and from the subject site. A successful GTP offers many benefits for the community, including:

- Building confidence and improving social interaction by walking and/or cycling;
- Assists in the implementation of health, fitness and well-being programs.
- Improving social interaction with others to be more interested and involved with the precinct as they walk or cycle;
- Improving safety by reducing traffic and local road congestion;
- Improving the environment by reducing air pollution from private vehicles;
- Creating opportunities for healthier lifestyles and more vibrant, cohesive and accessible communities;

It is likely that occupants with a good understanding of active and sustainable modes of transport will follow a healthy and active lifestyle, care about the environment and prioritise location and lifestyle over car ownership.

### 7.3. The Purpose of Green Travel Plan

The purpose of the GTP is to provide a package of measures with the aim of promoting and reducing the reliance on private car usage and encouraging and supporting the uptake of daily business in a more sustainable way. This may be achieved through the review of existing policies and identifying programmes to encourage occupants and visitors to adopt more active and sustainable forms of transport.



This document identifies the following:

- Review of existing public transport infrastructure and future transport options;
- Assessment of existing travel patterns within the area;
- A modal share target for the development;
- A framework to identify and respond to travel demand from the development and surrounding area;
- Strategies to implement prior to and during occupancy and
- The monitoring strategy to track the performance of the GTP.

## **7.4. Relevant Priorities from the NSW State Plan**

- Increase walking and cycling,
- Increase the number of people participating in physical activity,
- Improve health in the community,
- Increase the share of journey-to-work trips on a safe and reliable public transport system,
- Improve the efficiency of the road network,
- Increase the number of jobs closer to home,
- Tackle climate change,
- Improve air quality.

## **7.5. Potential Outcomes**

- Successful negotiations with private transport providers (if necessary) to provide increased public transport services to the precinct.
- Improvements to cycling and walking infrastructure, if required.
- Recommendations for any relevant policy changes will be made to management (e.g. flexible work and work-from-home/hub policies).
- A campaign promoting the health and other benefits of non-car modes of travel will be implemented.
- Monitoring and Evaluation
  - Carpooling use (number of new users)
  - Private car-park usage
  - Feedback from public transport providers
  - Patronage on any new commuter public transport services

## 7.6. Steps to Set Up a Green Travel Plan

To develop a GTP, there are five key steps to follow to commence its operation, as illustrated in Figure 25.

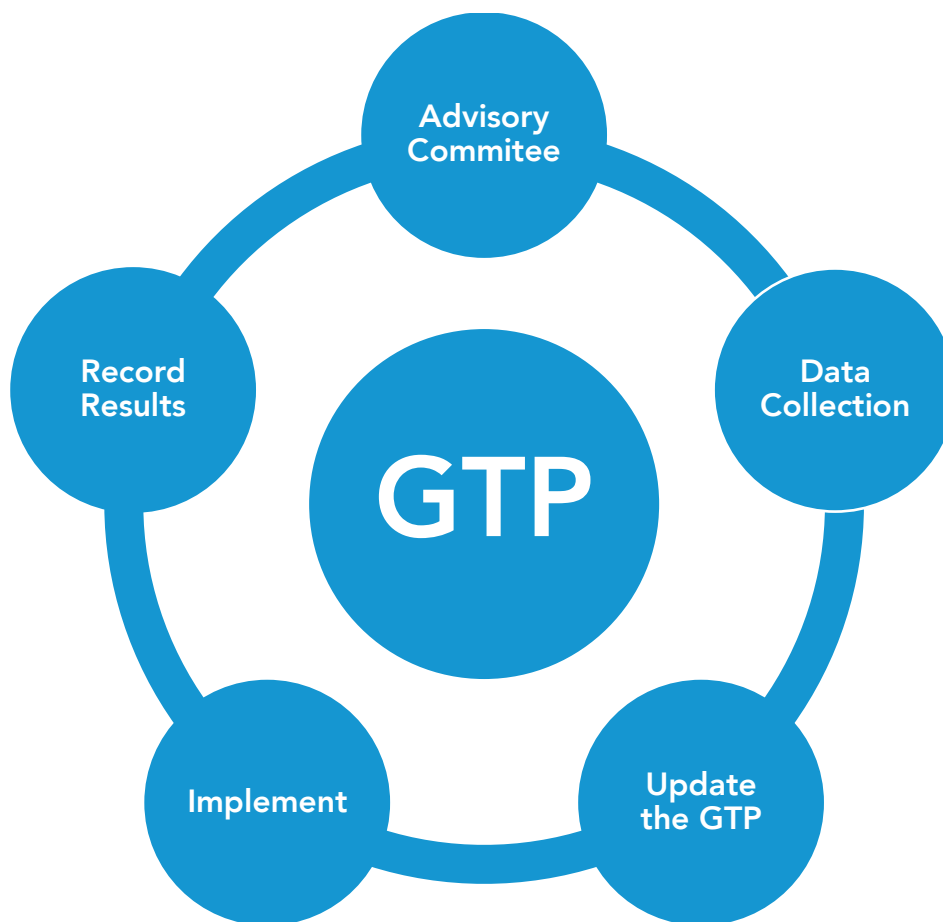


Figure 25: Steps in developing a GTP

### 7.6.1. Step 1 – Set up an Advisory Committee

- Appoint an individual to coordinate specific actions and to track the progress of this work;
- Develop a working group that involves representatives from residents within the development;
- Identify ways in which residents will be involved and informed of the work (e.g. regular articles / social media).

### 7.6.2. Step 2 – Data Collection and Review Existing Situation

As part of the development, it is expected that there will be new residents, employees and visitors travelling to and from the site on a daily basis. To identify how residents and tenants in the development travel to and from the site for work, an initial survey should be conducted to identify the travel behaviour of employees and visitors within six months of the occupation of the development. This may be conducted as an online survey or an intercept survey of those accessing the site.

As a minimum, the following questions should be considered:

- Are you a resident, employee or visitor to the site?

- Did you park on-site today? If so, where?

#### **Tenant Only Questions**

- If you are a resident, do you have an allocated parking space within the site?
- How do you currently travel to work, and the distance to their travel?
- Based on the availability of public transport and other sustainable travel options, which would be their preferred mode of travel?
  - Walk/Run
  - Bicycle
  - Train/Metro
  - Bus
  - Drive car
  - Passenger in car
  - Other
- Is your place of work in an area that is not currently serviced by any of the identified transport options?
- Do you need to drive to work for another reason? Why and how often this would occur (i.e. shift work).

#### **Visitors Only Questions**

- If you are a visitor, where did you travel from today?
- What mode of transport did you use?
- Why did you use this particular mode of transport?

#### **All Users**

- Have you heard of car share? If this was readily available to you, would you use car share if car parking was unavailable?
- If not, what are the barriers to you using car share to travel to and from the site?
- What would make you consider using car share to access the site?
- Do you have any suggestions/recommendations to encourage the uptake of sustainable modes of transport, etc.?

Once the survey findings are available, methods to achieve specific targets can be identified with proposed time frames.

### **7.6.3. Step 3 – Prepare the Green Travel Plan**

Based on the data, an overall vision for the travel modes should be considered with clear objectives. The GTP should be prepared based on these objectives, notably:

- Build a culture that supports active travel by motivating and encouraging the community to get involved.
- Set specific SMART (Specific, Measurable, Achievable, Relevant, Timed) targets.
- Develop an action plan that lists activities and strategies to eliminate the community’s barriers to active travel and meet the objectives.
- Estimate the budget required to meet the objectives, identify funding sources, and develop implementation strategies.
- Review and consult with the community.

#### 7.6.4. Step 4 – Deliver and Implement

Once developed, launch the GTP and carry out regular monitoring (every 12 months is recommended) as part of the implementation strategy. Travel mode data should be collected and reviewed each quarter.

#### 7.6.5. Step 5 – Recognise Progress

The successes of the GTP should be celebrated regularly, for example, at key community events. The plan should regularly be reviewed and include new ideas, targets, and benchmarks.

### 7.7. Proposed Action Items

In developing the GTP, it may not be possible to implement all action items at the same time. Therefore, a staged implementation should be considered. There may be some crucial actions that can be implemented immediately, while others might take longer to plan and develop.

Before implementing any actions, relevant stakeholders must be consulted to approve the changes.

The following travel mode hierarchy is proposed for this GTP:



Figure 26: Mode Hierarchy

There are several actions that can be employed to encourage non-car modes of transport to and from the site. The following sections outline the potential strategies that can be adopted to achieve future transport targets.

#### 7.7.1. Walking

Walking is the most space-efficient mode of transport for short trips and presents the highest benefits. The co-benefits of walking when replacing a motorised trip include improved health for the individual, reduced congestion on the road network, and reduced noise and emission pollution. The following action items could be implemented to increase walking amongst residents in the development:

- Residents and staff living within 1km of their place of work could be targeted to walk to work for their commuting journey;
- A working partnership could be established with Council to determine whether there are opportunities to improve the pedestrian connectivity to the site;
- Residents and staff could be encouraged to implement the '*10,000 steps per day initiative*' to measure their daily step count as a way of promoting a healthy lifestyle and
- Residents and staff could be encouraged to participate in '*Walk to Work*' day on an annual basis.

### **7.7.2. Cycling**

The site has poor surrounding cycling infrastructure, being bound by a major road with no dedicated cycling facilities, combined with undulating and steep grades.

To promote the future bike usage by residents and visitors, the development will include bicycle parking provisions as outlined in Section 4.2.5. The provision of visitor bicycle parking at grade is expected to be a valuable way to encourage short distance local trips to and from the retail premises by residents living in the surrounding suburb.

### **7.7.3. Public Transport**

The public transport options surrounding the site are well-established. Bus stops are located around the site within walking distance with a wide range of services available.

A review of the public transport available in the vicinity of the site is outlined in Section 3.2.

## **7.8. Promotion and Marketing Strategy**

Once the plan has been adopted, it is essential to maintain interest in the scheme. Each new initiative in the plan will need to be publicised with effective marketing. Actions are the core of a GTP. Therefore, the GTP needs to have a variety of actions that guide strategies relating to promotion, facilities, and policies to create incentives for sustainable travel behaviour. If actions are to be staged, a staging strategy should be outlined in the plan.

Strategic promotion of travel plans and associated initiatives tend to result in higher uptake of sustainable travel modes. It is imperative to ensure that all users are aware of the initiatives. From time to time, assistance should be sought from Council, Bicycle NSW, Pedestrian Council Australia, TfNSW and other stakeholders.

Another way to promote non-vehicle modes of transport is to print a map on the back of business cards or brochures. Best practice suggests that the information should be as concise, simple and site-specific as possible. If instructions are too complex, they are likely to be ignored.

## **7.9. Monitoring and Evaluation**

A travel plan should not simply be a list of actions. Monitoring and reviewing of a travel plan are one of the most critical components of the travel planning process. It is crucial to understand whether and how the travel plan is having an impact on the mode share. An annual review of the GTP is recommended to identify how mode share has changed over time. This will assist in understanding whether progress is being made.

The monitoring strategy should ensure that the GTP is achieving the desired benefits. As stated in Section 7.6.2, it is essential to undertake the initial data collection of the existing mode share to establish targets and overall goals. Surveys will help to identify which actions are having an impact on occupant's travel behaviour and whether some are more effective than others. It may also help to identify ongoing or unresolved issues and barriers that are preventing greater improvement.

The overall success of the GTP will depend on good communication. It will be necessary to explain the reason for adopting the plan, promote benefits and provide information about alternatives to driving. It will also be necessary to provide feedback to occupants to ensure that they can see the benefits of sustainable transport.

Once data are updated, the targets and actions of the travel plan will need to be reviewed. The review should consider:

- Are the targets still realistic? Are they still ambitious? Should they be updated?
- Are residents and visitors struggling to achieve particular targets? What are the likely reasons for this?
- Are there any gaps with regard to actions?
- What is preventing further improvement in mode share, and how can this be addressed?

The GTP Coordinator will be responsible for ensuring that annual performance reports are provided to the Council for at least the first five years from occupation of the development. Consultation with the Council during the monitoring and evaluation process will ensure that the targets are still achievable and allow for any existing strategies to be adjusted or developed to achieve the outlined mode share targets.

The steps outlined above should not be considered as a linear process but rather be an ongoing cycle. Travel planning requires regular review and adjustment, which may reveal the need to reconsider objectives or targets or add new actions to create greater incentives for the uptake of sustainable transport choices.

## **7.10. Travel Access Guide**

To encourage residents, employees and visitors to adopt alternative sustainable transport options, a Transport Access Guide (TAG) should be developed to summarise available transport options identified. A TAG is a concise presentation of how to reach the site using low-energy, sustainable and active forms of transport.

The aim of a TAG is to make sure people know how to get to the subject development by walking, cycling or public transport (as well as by car).

A TAG can take many forms; TAGs may be incorporated into stationery, brochures and provided electronically on social media. An electronic version can be kept on a computer and produced as needed.

TAGs should be included in Green Travel Plans and should comply with TfNSW guidelines.

## 8. Preliminary Construction Traffic Management Plan

The following sections outline the preliminary traffic management arrangements and considerations for the delivery of the project. Noting that this TIA has been written to support a State Significant Development Application for the Site, a detailed CTMP will need to be prepared to support the subsequent detailed Development Application prior to Subdivision Works Certification which outlines the specific site requirements and scope upon the appointment of a Principal Contractor.

### 8.1. Key Standards and Guidelines

Reference has been made to the following Standards and guidelines:

- *TfNSW Traffic Control at Works Sites (TCAWS) Technical Manual Issue 6.1*
- *AS1742.3:2009 Manual of Uniform Traffic Control Devices Part 3: Traffic Control Devices for Works on Roads*

### 8.2. Objective

The traffic management plan associated with the construction activity aims to ensure the safety of all workers and road users within the vicinity of the construction site and the following are the primary objectives:

- To minimise the impact of the construction vehicle traffic on the overall operation of the road network;
- To ensure continuous, safe and efficient movement of traffic for both the general public and construction workers;
- Installation of appropriate advance warning signs to inform users of the changed traffic conditions;
- To provide a description of the construction vehicles and the volume of these construction vehicles accessing the construction site;
- To provide information regarding the changed access arrangement and also a description of the proposed external routes for vehicles including the construction vehicles accessing the site; and
- Establishment of a safe pedestrian environment in the vicinity of the site.

### 8.3. General Requirements

In accordance with the Standards and guidelines outlined in Section 8.1, all vehicles transporting loose materials will have the entire load covered and/or secured to prevent any large items, excess dust or dirt particles depositing onto the roadway during travel to and from the site.

All subcontractors must be inducted by the lead contractor to ensure that the procedures are met for all vehicles entering and exiting the construction site. The lead contractors will monitor the roads leading to and from the site and take all necessary steps to rectify any road deposits caused by site vehicles.

Vehicles operating to, from and within the site shall do so in a manner, which does not create unreasonable or unnecessary noise or vibration. No tracked vehicles will be permitted or required on any paved roads. Public roads and access points will not be obstructed by any materials, vehicles, refuse skips or the like, under any circumstances.

## 8.4. Staging and Program

The staging and phasing of the construction works will be outlined subsequently in the detailed Construction Traffic Management Plan once the lead contractor is appointed for the delivery of the proposed development.

## 8.5. Site Plans

Detailed construction site plans, showing site fencing, hoarding locations, tower crane location, vehicle access points, site offices, amenities, tool and material storage areas and on-street Works Zones will be included in the detailed CTMP post SSSA approval. However, it is anticipated that all site access will take place from Edinburgh Road, and a Work Zone will likely be provisioned along Edinburgh Road along the site frontage, outside of clearway hours.

The site establishment plan will be provided in the detailed CTMP.

## 8.6. Hours of Work

All works associated with the proposed development will be restricted to the time periods outlined within the Conditions of Consent upon approval of the SSSA. Until this is available, it has been assumed the indicative hours of work will be as follows:

- Mon-Fri 7:00am – 6:00pm
- Sat 8:00am – 1:00pm
- Sunday & Public Holidays No works to be carried out

## 8.7. Construction Vehicle Types

The construction of the development will involve the use of several different vehicle types in relation to the various stages and tasks involved. The proposed works are envisaged to be carried out using a mix of commercial small to heavy rigid vehicles.

Construction vehicles are expected to include 19.0m Truck & Dogs (T&D) and AV, 12.5m Heavy Rigid Vehicles (HRV), and 8.8m Medium Rigid Vehicle (MRV). Smaller trucks, utes and vans are also expected.

Based on similar sized construction projects, it is expected that the peak construction heavy vehicle activity will result in up to 35 trucks to and from the site per day.

It is noted that this is only indicative at this stage and will be reassessed as part of the detailed CTMP, post SSSA approval.

The delivery of materials to and from the site will result in minimal generated traffic activity associated with the works, lesser than that assessed for the post-development traffic, which caused minimal impact to the local Castlecrag road network. All deliveries are recommended to be scheduled outside of the peak commuter periods to minimise impact and risk.

## 8.8. Special Deliveries

Any oversized vehicle that is required to travel to the project into the vicinity of the site will be dealt with separately, with the submission of required permits to and subsequent approval by TfNSW and Council prior to any delivery being undertaken.

Any road closures associated with the use of a mobile crane must be applied to Council in advance as it requires Local Traffic Committee approval.

All Oversize Over Mass (OSOM) applications must be submitted via the National Heavy Vehicle Regulator (NHVR) portal.

## 8.9. Indicative Construction Vehicle Routes

All vehicle routes are constrained to existing public roads that have the physical geometry to accommodate the turning movements. Approaching the site, some vehicle movements may require the assistance of Traffic Controllers.

No queuing or marshalling of trucks is permitted on any public road and all loading and unloading of materials will be undertaken either within the site or within the Works Zones.

All access gates to the site will be managed by gate controllers to ensure the safe management of the access and egress to the site and its interaction with non-construction traffic on the road network.

Appropriate Traffic Guidance Schemes (TGSs) will need to be prepared as part of the detailed CTMP to outline the traffic management measures required for the project.

Details of any Work Zones, if required, will be finalised in the detailed Construction Traffic Management Plan upon the approval of SSDA.

The ingress and egress routes for construction vehicles at this site have been identified and analysed further, as outlined in the following subsections. The site is located in a unique location where the primary road access (Edinburgh Road) does not permit vehicles to access the southern side of the road where the site is situated, without use of a minor side street or a turning manoeuvre at the eastern end of Edinburgh Road.

### 8.9.1. Access Route for Construction Vehicles

Construction vehicles travelling from the north along Eastern Valley Way shall

- Turn left into Sunnyside Crescent, then
- Turn right into Rutland Avenue and travel south, then
- Turn right into Edinburgh Road to access site as illustrated in Figure 27.

It is also advised that smaller construction vehicles make use of Chandler Lane via a left turn from Eastern Valley Way and then a right turn into Raeburn Avenue before accessing the site, to minimise impact to residential streets.

### 8.9.2. Egress Route for Construction Vehicles

After completing loading / unloading, construction vehicle shall depart the site or Work Zone onto Edinburgh Road, before proceeding to Eastern Valley Way or continuing along Edinburgh Road, as illustrated in Figure 27.

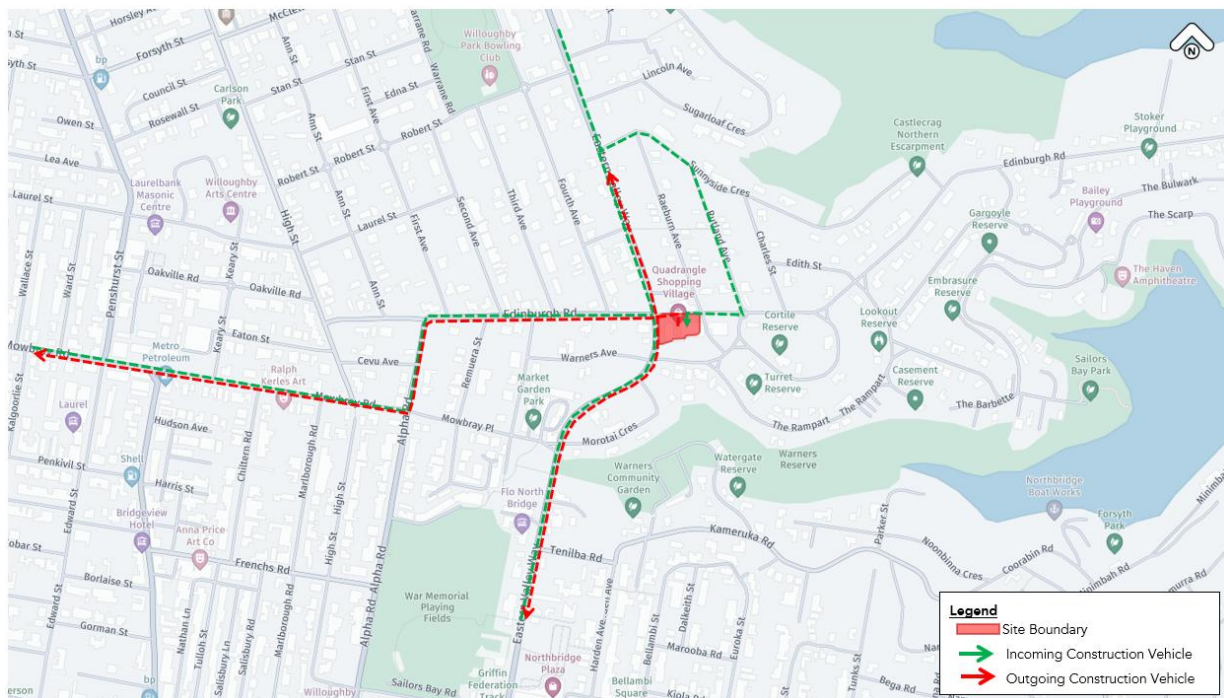


Figure 27: Construction Vehicle Routes

Swept path assessment of the construction vehicles approaching, accessing and leaving site is presented in Appendix 3, noting that this will be detailed further in a future CTMP once a contractor is appointed and construction methodology is finalised.

### 8.10. Site Access Arrangements

All construction vehicles accessing the Work Zone will need to approach from the east along Edinburgh Road, either by traveling along Rutland or Raeburn Avenues, or performing a u-turn in the turn bay at the eastern end of Edinburgh Road.

No vehicular access to the site shall be permitted from Eastern Valley Way, without prior consent from TfNSW. Any construction vehicles that require site access shall do so via Edinburgh Road.

### 8.11. Staff Parking

Construction workers will likely rely on private vehicles to travel to and from the site, given the location of the site.

There is unrestricted parking along nearby streets (Raeburn Avenue, Rutland Avenue) which the construction staff and workers may utilise. Once basement construction has been completed, workers may use this on-site parking to reduce impact to local streets.

### 8.12. Work Site Security

To provide security to the works site and protection to the general public, it is proposed that temporary fencing is to be erected along the construction site boundary by the Lead Contractor. The B-Class hoarding shall be established along any street frontage over which goods are being craned, or overhead works are being undertaken, for the safety of pedestrians. This fencing will define the extent of the works site. All access points are to be securely locked when construction activities are not in progress. The exact location of this fence is to be agreed on site, prior to commencement of the works.

A Traffic Controller will supervise the Work Zone at all times during the work hours for the safety of general vehicles and pedestrian.

### 8.13. Staff Induction

All staff and subcontractors engaged on site will be required to undergo a site induction. The induction will include permitted access routes to and from the construction site for all vehicles, as well as standard environmental, OH&S, driver protocols and emergency procedures. Additionally, the Lead Contractor will discuss TMP requirements regularly as a part of toolbox talks and advise workers of public transport and car-pooling opportunities.

### 8.14. Parking Impact

Edinburgh Road has time restricted parking on both sides of the road. The site has an existing access driveway which will be used for the construction vehicles site access where construction phasing permits. A Work Zone is likely to be required along the site frontage, outside of clearway hours.



Figure 28: Location of On-Street Parking

### 8.15. Public Transport Impact

The construction activities are not expected to impact existing public transport services near the site.

### 8.16. Emergency Vehicle Access

Any emergency vehicles requiring access into the site will do so via Edinburgh Road. In the event that an emergency vehicle is required to access the site, all construction work will be stopped.

Traffic controllers shall not, under any circumstances, stop emergency vehicles to allow trucks to enter or leave the site.

### 8.17. Access to Adjoining Properties

Access to all adjoining properties will be maintained or managed throughout the works.

## **8.18. Occupational Health and Safety**

Any workers required to undertake works or traffic control within the public domain shall be suitably trained and will be covered by adequate and appropriate insurances. All traffic control personnel will be required to hold the appropriate SafeWork NSW accreditation in accordance with the Standards and guidelines outlined in Section 8.1.

## **8.19. Method of Communicating Traffic Changes**

Traffic Guidance Schemes (TGSs) in accordance with the Standards and guidelines outlined in Section 8.1 will advise motorists of upcoming changes in the road network.

During construction, the contractor shall each morning, prior to work commencing, ensure all signage is erected in accordance with the TGS and clearly visible. Each evening, upon completion of work, the contractor is to ensure signage is either covered or removed as required. Sign size is to be size "A".

No deviation from the approved TGS shall be permitted, unless otherwise approved by Council and certified by SafeWork NSW accredited personnel.

The associated TGS road signage will inform drivers of works activities in the area including truck movements in operation.

The TGSs will be formalised in the detailed Construction Traffic Management Plan.

Prior to commencement of works on site, the contractor is to inform neighbouring properties of proposed works and provide site contact information by means of a letter box distribution.

## **8.20. Contact Details for On-site Enquiries and Site Access**

Details of the nominated site contact would be included in the future detailed CTMP prior to the commencement of construction.

## 9. Conclusion

The State Significant Development Application proposed at 100 Edinburgh Road has been assessed from a parking design compliance and traffic generation perspective. **ptc.** find that the proposed development satisfies the requirements outlined in the relevant planning controls and guidelines, as well as the intent of the relevant Australian Standards for design of car parking facilities.

The provision of parking within the proposal largely aligns with the target requirements of the relevant planning controls and parking guidance, and are found to be appropriate.

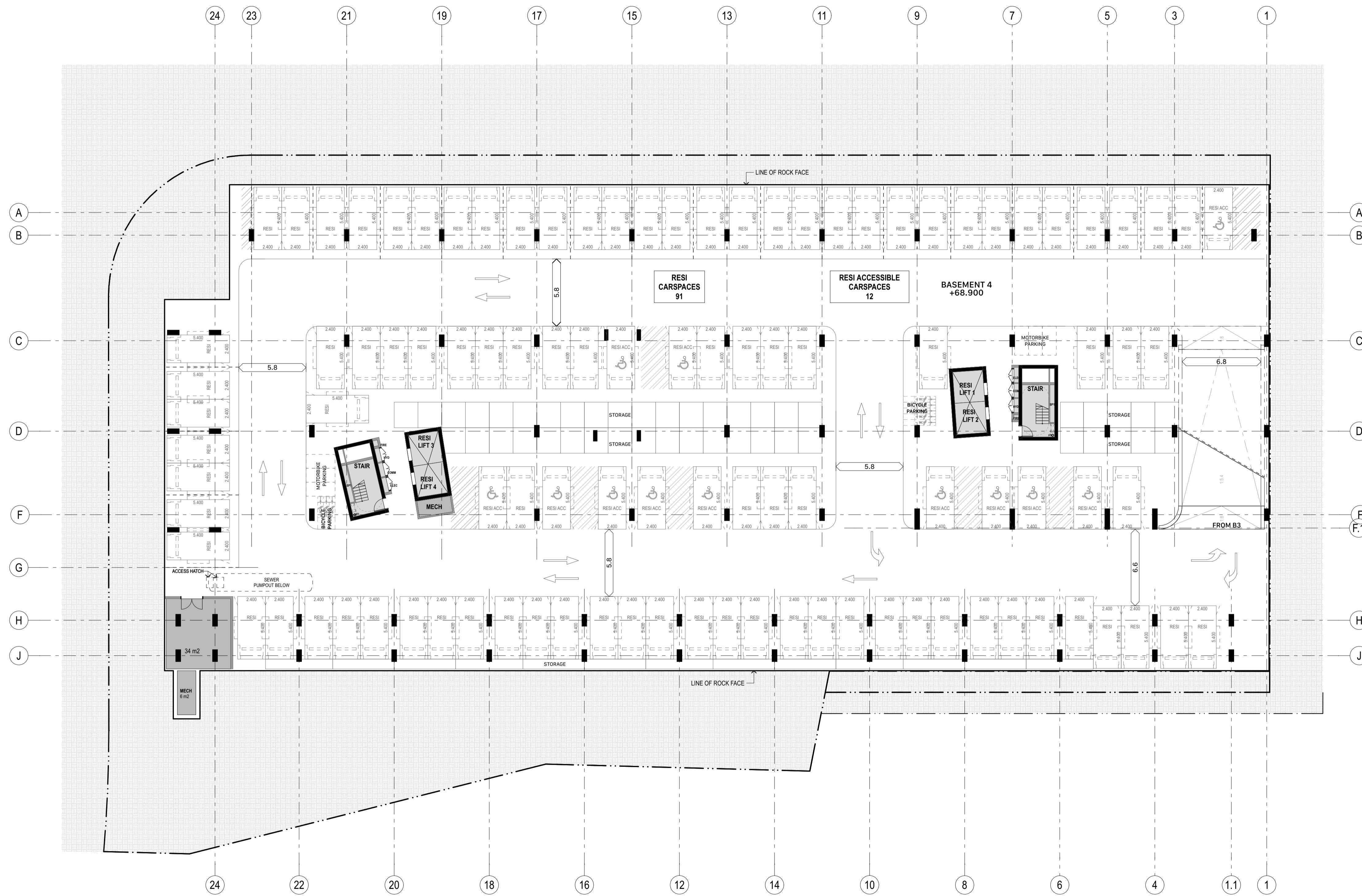
It is important to note that this development is expected to serve as a local amenity for the Castlecrag suburb, and as such it is expected that there is relatively few new dedicated vehicle trips made through the signalised intersection of Edinburgh Road and Eastern Valley Way. The primary volume of trips attracted to the proposed site are expected to originate within the suburb of Castlecrag.

Subject to appropriate mitigation measures, the traffic conditions in the network surrounding the site are expected to be reasonable when compared to the existing network operation.

The design of the carpark has been assessed and found to comply, or capable of being made to comply, with relevant Australian Standards being AS2890.1 (2004), AS2890.2 (2018), AS2890.3 (2015) and AS2890.6 (2009) in relation to car parking, circulation, service vehicle access, bicycle and motorcycle parking.

The development is deemed to be supportable from a parking and traffic perspective.

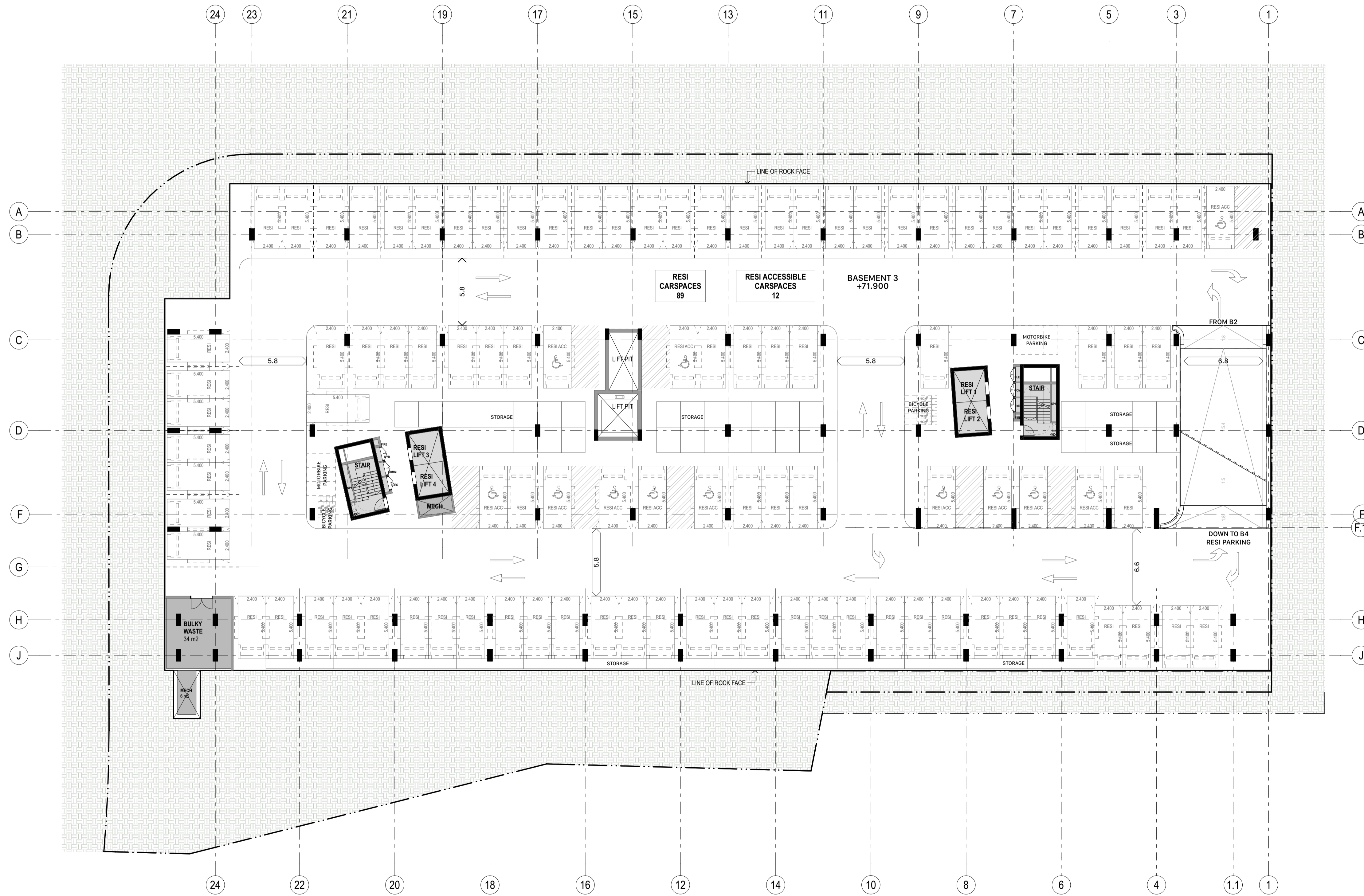
# Appendix 1. Architectural Plan



**B4 PARKING SUMMARY**

Residential	103
(includes 12 accessible parking spots)	

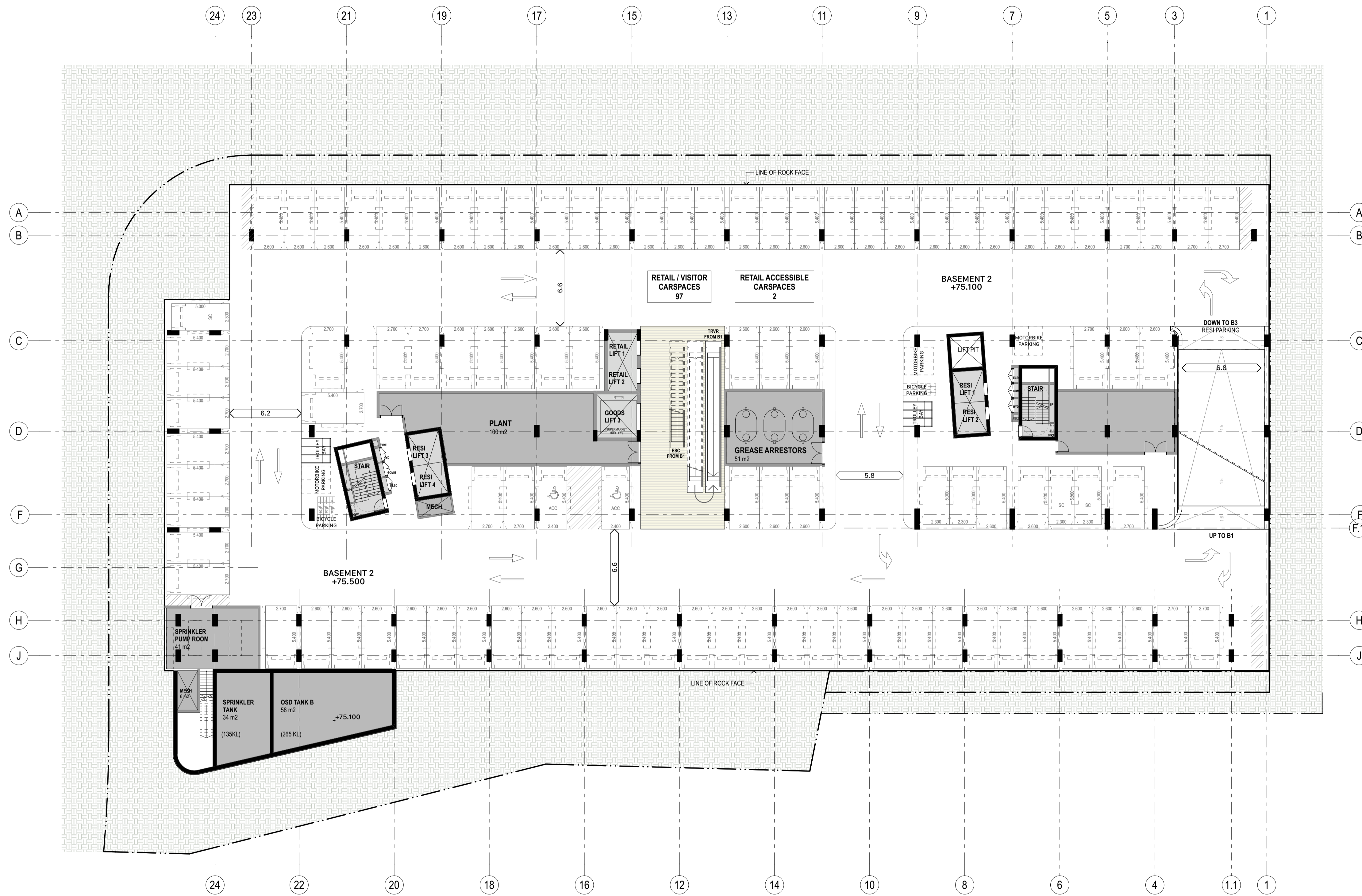
Motorbike 6



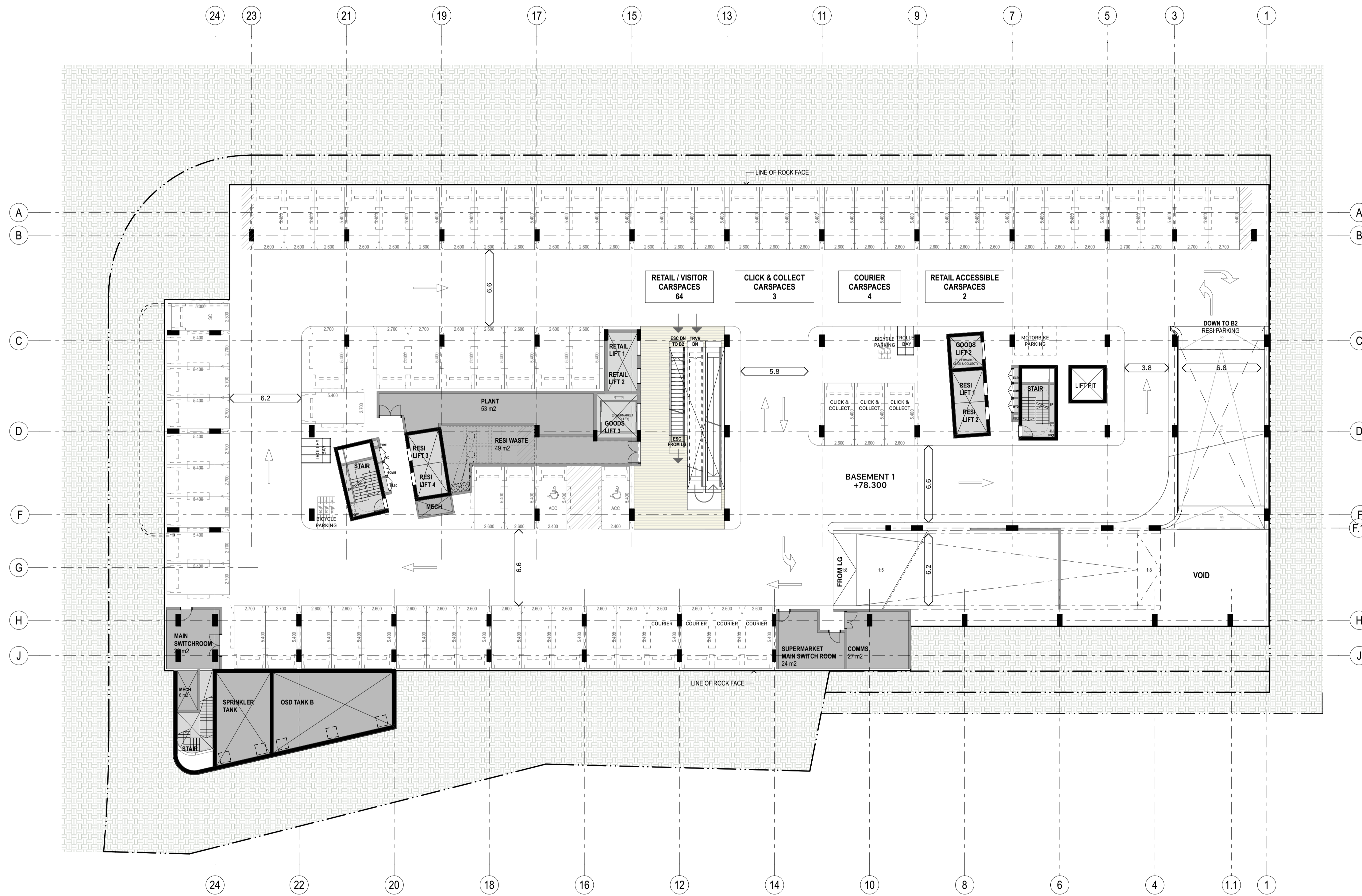
**B3 PARKING SUMMARY**

Residential 101  
(includes 12 accessible parking spots)

Motorbike 6



B2 PARKING SUMMARY	
Retail	97
Retail - Accessible	2
<b>Total</b>	<b>99</b>
Motorbike	6



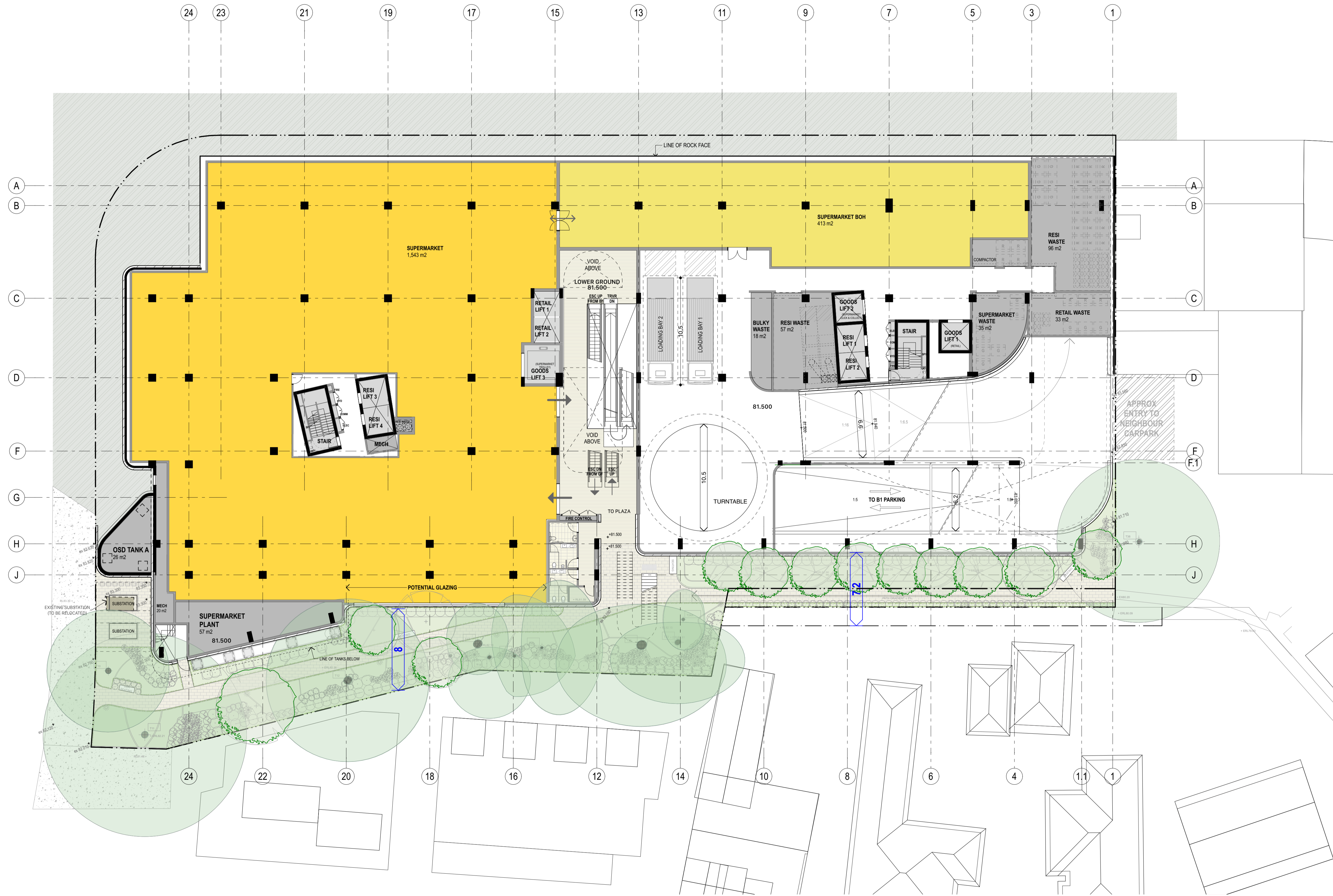
B1 PARKING SUMMARY	
Retail	64
Retail - Accessible	2
Retail - Click & Collect	3
Retail - Courier	4
<b>Total</b>	<b>73</b>
Motorbike	3

0  
05/11/2025

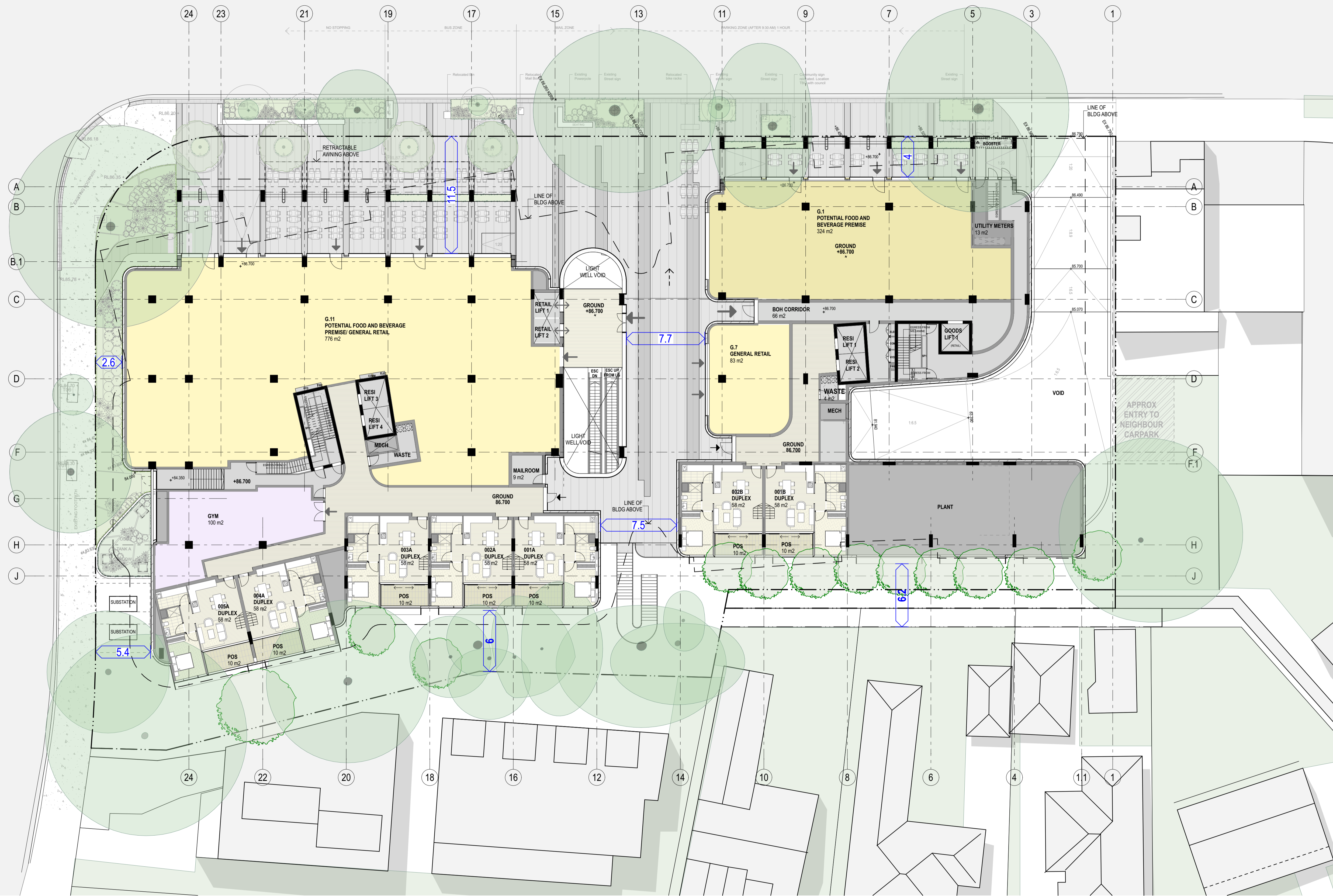
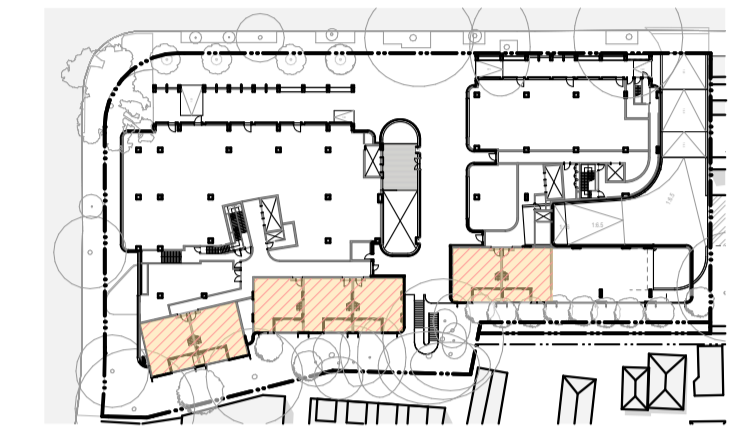
2003 — GA Plans - Basement 1  
Conquest — The Quadrangle - Castlecrag

Scale  
1:200 @ A1

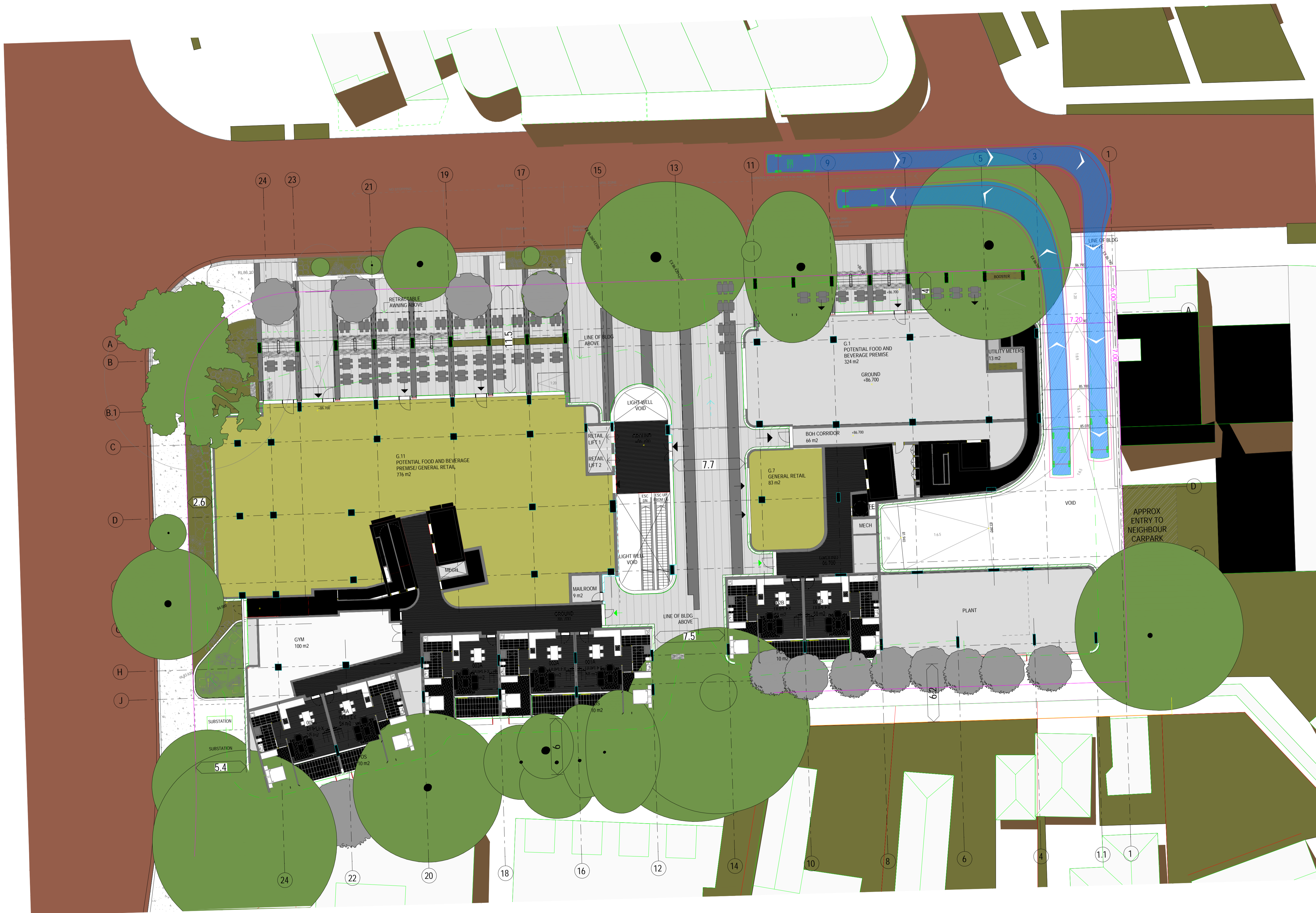




- Legend**
- Multi-Level Unit
  - Affordable Housing



## **Appendix 2. ptc. Assessment**

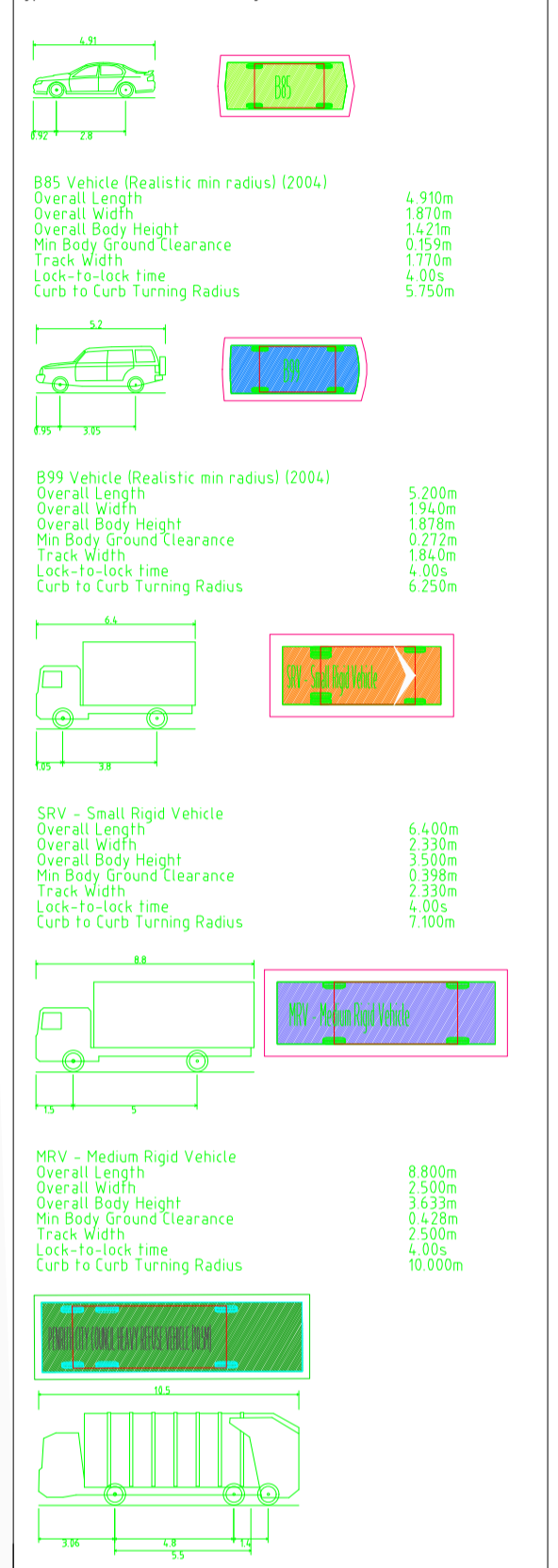


**AIRIAL IMAGERY / SCALED PDF**  
 This swept path assessment has been completed utilising aerial imagery/scaled pdf in the absence of detailed survey. It should be noted that aerial imagery/scaled pdf can have an element of error, and all swept paths are preliminary and shall be verified using survey data or site validation. It is the responsibility of the contractor to ensure that the proposed vehicle routes and accesses are suitable for the anticipated vehicles. All swept paths performed by ptc using aerial imagery/scaled pdf are indicative and should be used for preliminary purposes only.

**NOT FOR CONSTRUCTION**  
 These drawings have been prepared for information only and are not issued for construction.

- TRAFFIC GUIDANCE SCHEMES**
- All signs to be clearly visible throughout the works and monitored.
  - Signs can be mounted if required on posts to be visible above parked cars. Signs to be coordinated on site to ensure they are clearly visible.
  - All signs to be size A.
  - All signs to be visible when workers are in the area and covered when workers are not present.
  - Signs to be in accordance with RMS Traffic Control at Worksites (TCAWS) Manual and AS1742 Traffic Control for Works on roads.
  - RMS/Council approval to be obtained prior to implementation.
  - This TCS is based on TCAWS Manual and is to be set up by qualified traffic controllers (Yellow card). Any alterations on site to this TCS is to be documented and re-recorded by qualified personnel with a Red/Orange card.

**SWEEP PATHS**  
 The turning paths illustrated in this drawing have been prepared using the Autodesk vehicle modelling software in conjunction with AutoCAD. The vehicle model was prepared by Analytics Pty Ltd based upon vehicle data provided by Austroads. While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.



REV	DATE	DESCRIPTION	DRAWN	REVIEWED
X	X	X	x	x
X	X	X	x	x
5	19.11.25	FOR INFORMATION	JJ	SW
4	14.11.25	FOR INFORMATION	JJ	SW/JJ
3	23.10.25	FOR INFORMATION	JJ	SW
2	15.10.25	FOR INFORMATION	JJ	SW
1	29.09.25	FOR INFORMATION	JJ	DP

**PROJECT**  
 100 EDINBURGH ROAD,  
 CASTLECRAG

**DRAWING TITLE**  
 TRAFFIC & PARKING ASSESSMENT  
 GROUND FLOOR

**CLIENT** CONQUEST

**DRAWING #** 0G-1

**PROJECT #** 23-0668

**SCALE**  
 1 : 200 @ A1  
 1 : 400 @ A3

SSDA

**ptc.** Suite 502, 1 James Place  
 North Sydney NSW 2060  
 t +61 2 8920 0800  
 ptcconsultants.co

**CLIENT** CONQUEST

**DRAWING #** 0G-1

**PROJECT #** 23-0668

**SCALE**  
 1 : 200 @ A1  
 1 : 400 @ A3

SSDA

**REV 5**

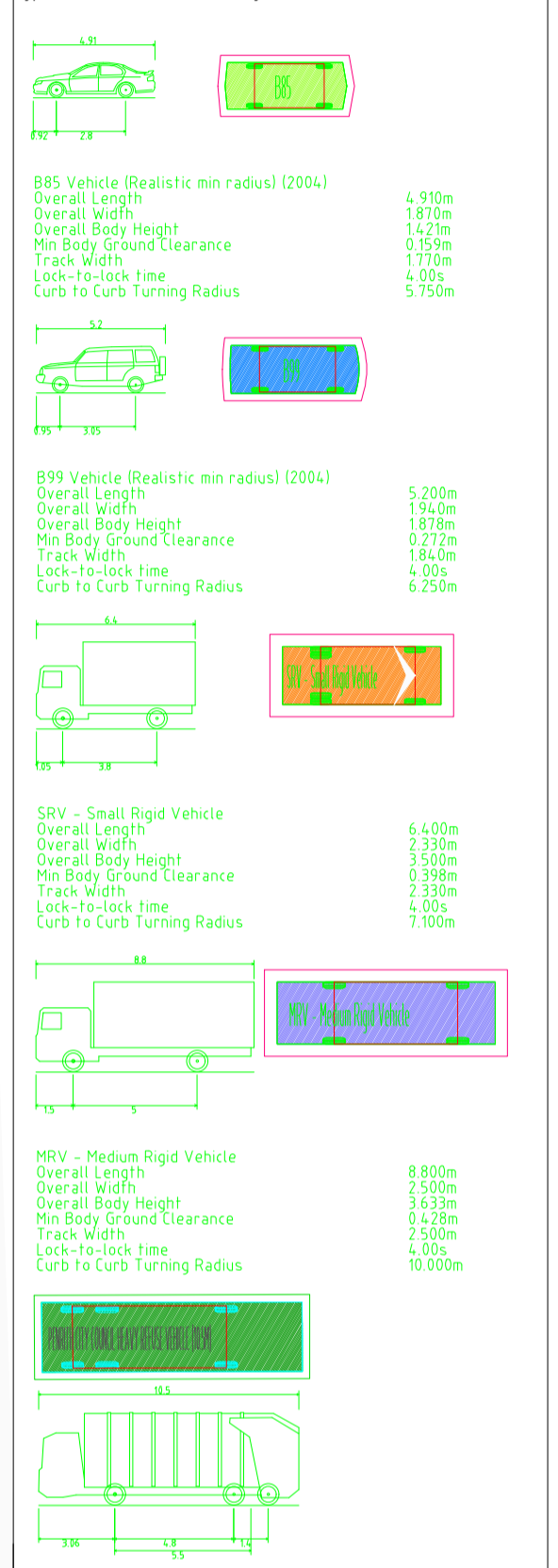


**AIRIAL IMAGERY / SCALED PDF**  
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REV	DATE	DESCRIPTION	DRAWN	REVIEWED
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X	X	X	x	x
5	19.11.25	FOR INFORMATION	JJ	SW
4	14.11.25	FOR INFORMATION	JJ	SW/JJ
3	23.10.25	FOR INFORMATION	JJ	SW
2	15.10.25	FOR INFORMATION	JJ	SW
1	29.09.25	FOR INFORMATION	JJ	DP

REV	DATE	DESCRIPTION	DRAWN	REVIEWED
X	X	X	x	x
X	X	X	x	x
5	19.11.25	FOR INFORMATION	JJ	SW
4	14.11.25	FOR INFORMATION	JJ	SW/JJ
3	23.10.25	FOR INFORMATION	JJ	SW
2	15.10.25	FOR INFORMATION	JJ	SW
1	29.09.25	FOR INFORMATION	JJ	DP

**PROJECT**  
 100 EDINBURGH ROAD,  
 CASTLECRAG

**DRAWING TITLE**  
 TRAFFIC & PARKING ASSESSMENT  
 GROUND FLOOR

**ptc.** Suite 502, 1 James Place  
 North Sydney NSW 2060  
 t +61 2 8920 0800  
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**CLIENT** CONQUEST  
**DRAWING #** 0G-1  
**PROJECT #** 23-0668  
**SCALE** 1 : 200 @ A1  
 1 : 400 @ A3  
 SSSA

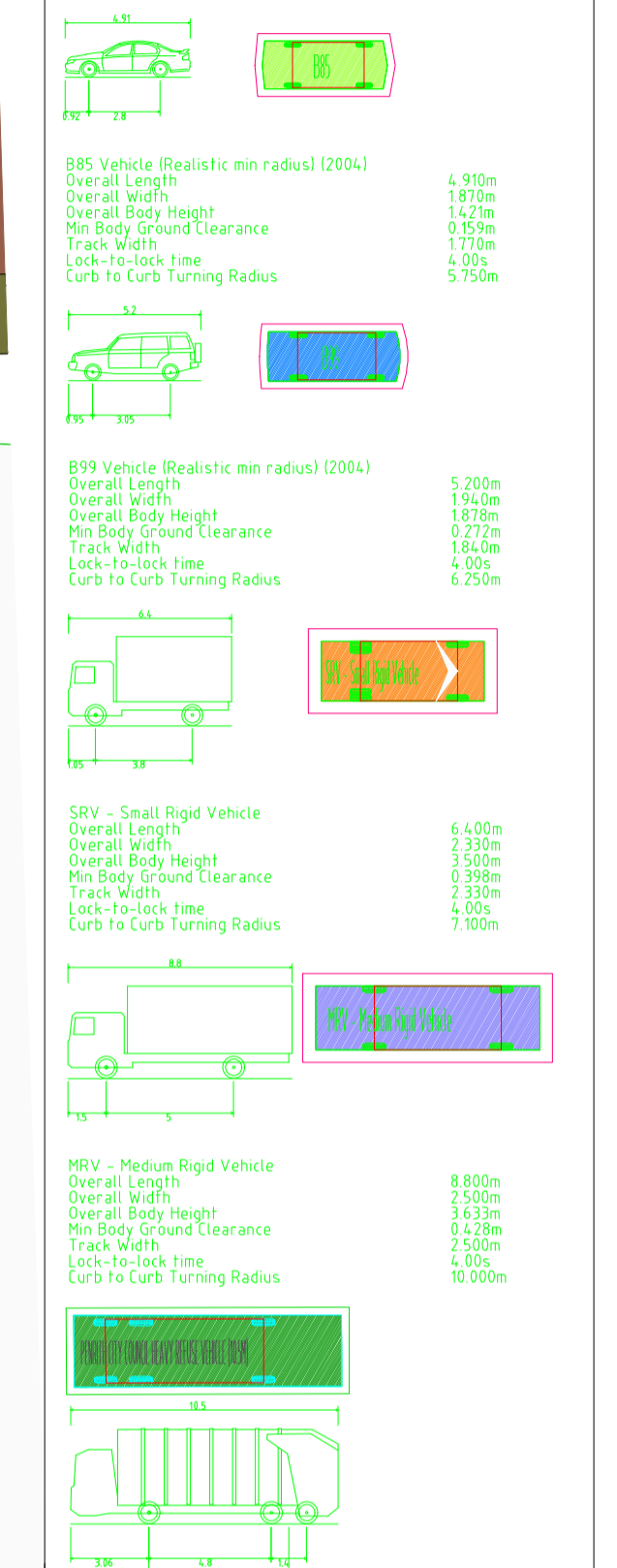
**REV 5**

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X	X	X		x	x
X	X	X		x	x
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2	15.10.25	FOR INFORMATION	JJ	SW	
1	29.09.25	FOR INFORMATION	JJ	DP	
REV	DATE	DESCRIPTION	DRAWN	REVIEWED	

PROJECT	
100 EDINBURGH ROAD, CASTLECRAG	
DRAWING TITLE	
TRAFFIC & PARKING ASSESSMENT GROUND FLOOR	

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CLIENT	CONQUEST
DRAWING #	OG-3
PROJECT #	23-0668
SCALE	1 : 200 @ A1 1 : 400 @ A3
SSDA	

**REV 5**



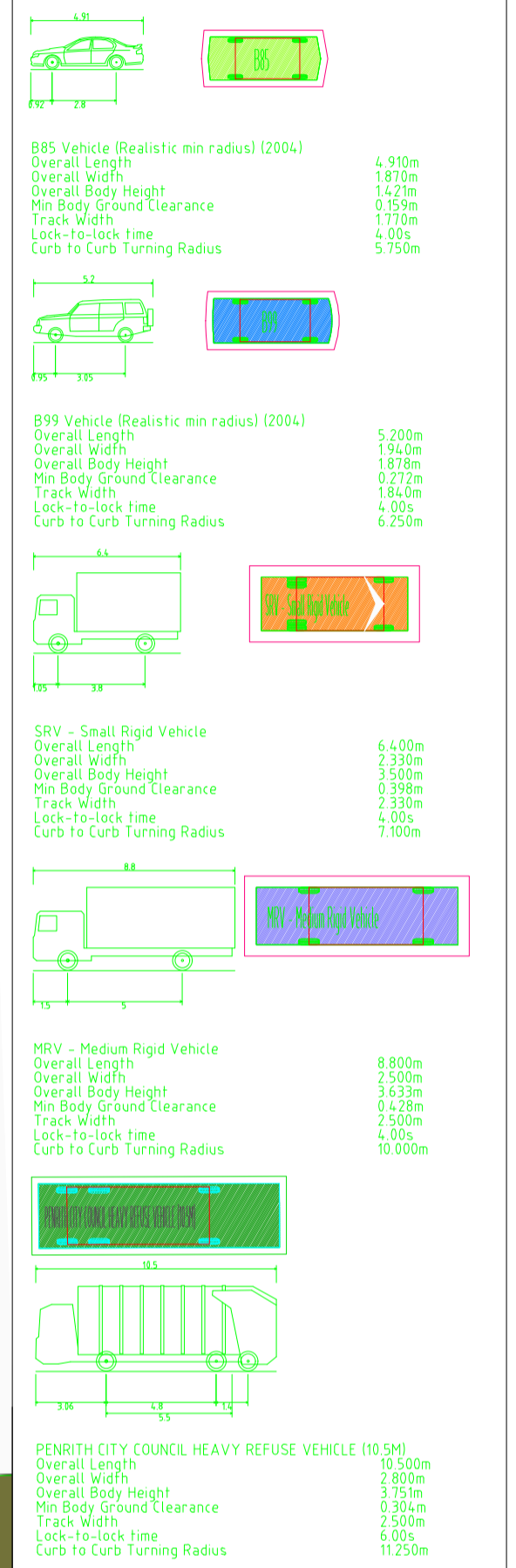


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X	X	X		x	x
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2	15.10.25	FOR INFORMATION	JJ	SW	
1	29.09.25	FOR INFORMATION	JJ	DP	
REV	DATE	DESCRIPTION	DRAWN	REVIEWED	

**PROJECT**  
 100 EDINBURGH ROAD,  
 CASTLECRAG

**DRAWING TITLE**  
 TRAFFIC & PARKING ASSESSMENT  
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**CLIENT** CONQUEST  
**DRAWING #** 0G-4  
**PROJECT #** 23-0668  
**SCALE** 1 : 200 @ A1  
 1 : 400 @ A3

SSDA  
**REV 5**

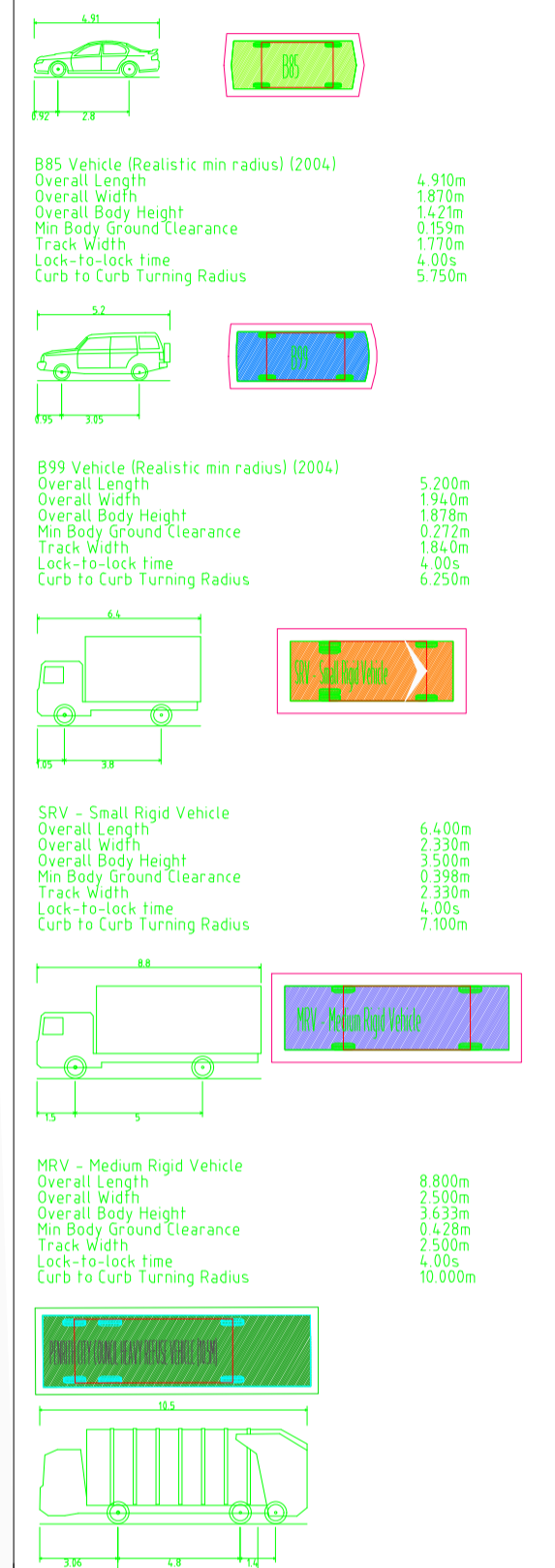


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REV	DATE	DESCRIPTION	DRAWN	REVIEWED	

**PROJECT**  
 100 EDINBURGH ROAD,  
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**DRAWING TITLE**  
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**SCALE** 1 : 200 @ A1  
 1 : 400 @ A3  
 SSSA

**REV 5**



RECOMMEND 2.5m CLEAR SPACE BEHIND TRUCKS FOR UNLOADING / GOODS MOVEMENT ETC

RAMP WIDTH INSUFFICIENT TO PERMIT WAITING BAY AND PASSING. RECOMMEND PROVISION OF TRAFFIC SIGNALS TO CONTROL HEAVY VEHICLE MOVEMENTS IN AND OUT OF DOCK

SERVICE VEHICLES TO GIVE WAY TO ONE ANOTHER. UNLIKELY THAT THIS CIRCUMSTANCE WOULD OCCUR. CONVEX MIRRORS PROVIDED TO ASSIST. LOADING DOCK MANAGEMENT PLAN AND BOOKING SYSTEM EXPECTED TO BE IN PLACE.

TRAFFIC SIGNAL REQUIRED. PAIRED WITH SIGNAL ON B1. LOOP OR BEAM DETECTORS REQUIRED TO TRIGGER SIGNAL WHEN TRUCK MOVES TO LEAVE DOCK. AT THIS TIME, CARS WILL BE HELD ON B1 BEFORE RAMP STARTS. TRUCKS THEN PROCEED TO LEAVE.

CONVEX MIRROR FOR SAFETY, TO ALLOW VEHICLES LEAVING DOCK TO SEE ANY APPROACHING CARS FROM BELOW (VICE VERSA)

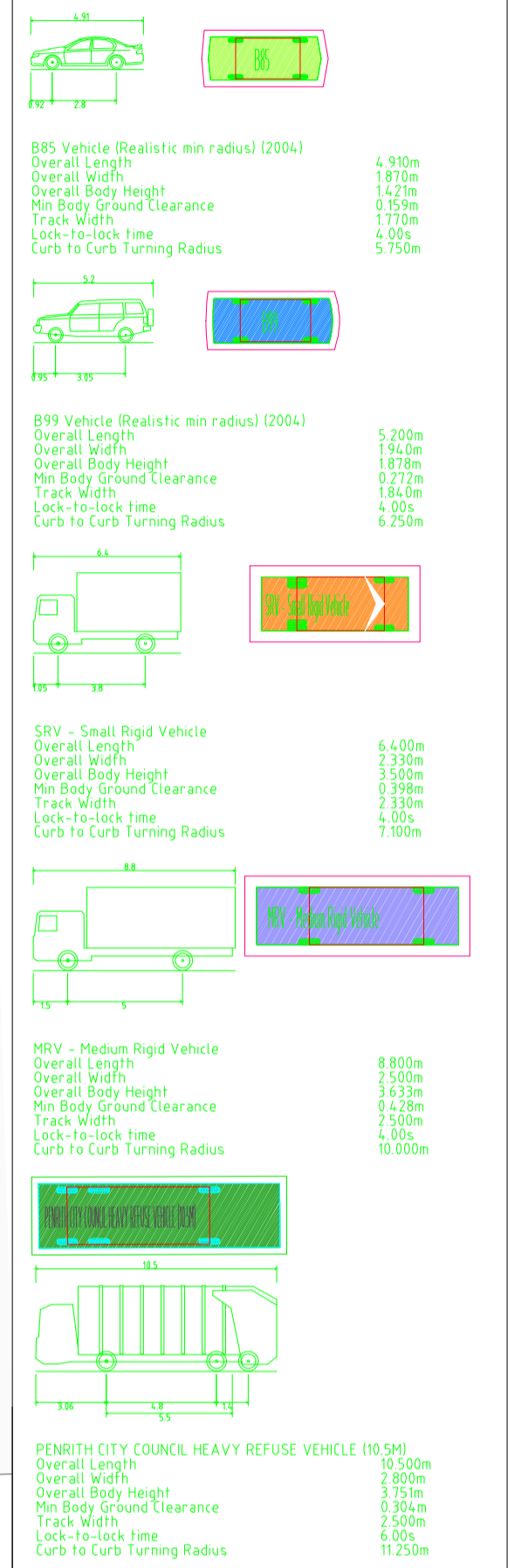
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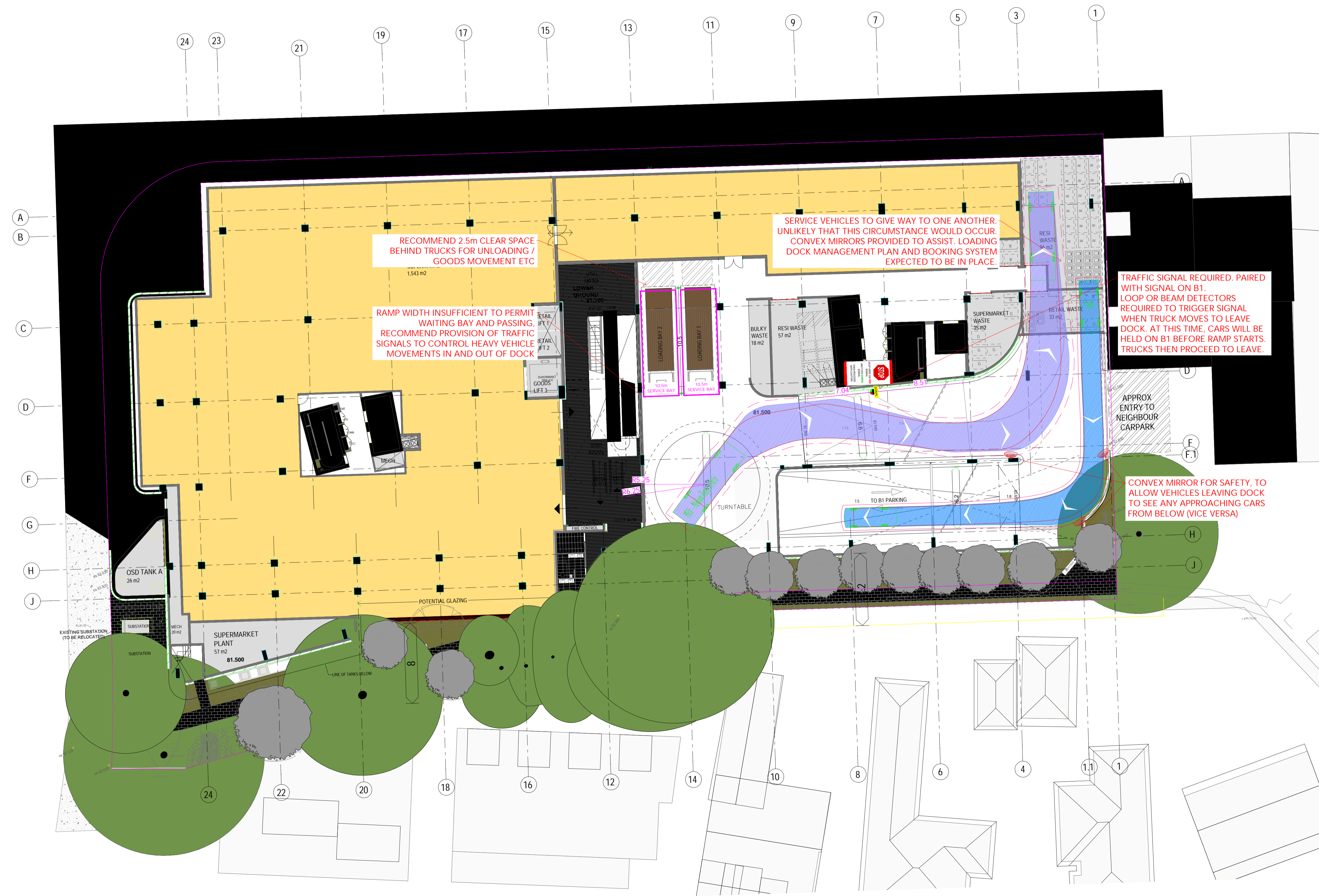
**PROJECT**  
100 EDINBURGH ROAD,  
CASTLECRAG

**DRAWING TITLE**  
TRAFFIC & PARKING ASSESSMENT  
LOWER GROUND

**ptc.** Suite 502, 1 James Place  
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+61 2 8920 0800  
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**CLIENT** CONQUEST  
**DRAWING #** LG-1  
**PROJECT #** 23-0668  
**SCALE** 1 : 200 @ A1  
1 : 400 @ A3  
SSDA

**REV 5**



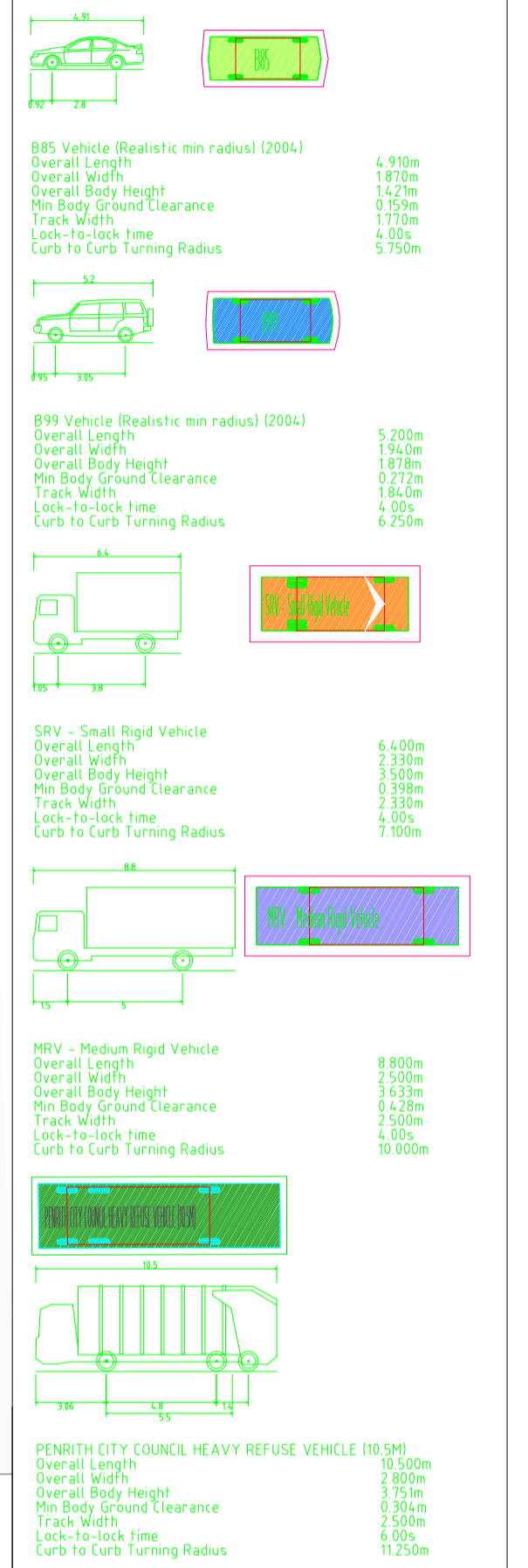
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X	X	X		x	x
X	X	X		x	x
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3	23.10.25	FOR INFORMATION	JJ	SW	
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1	29.09.25	FOR INFORMATION	JJ	DP	
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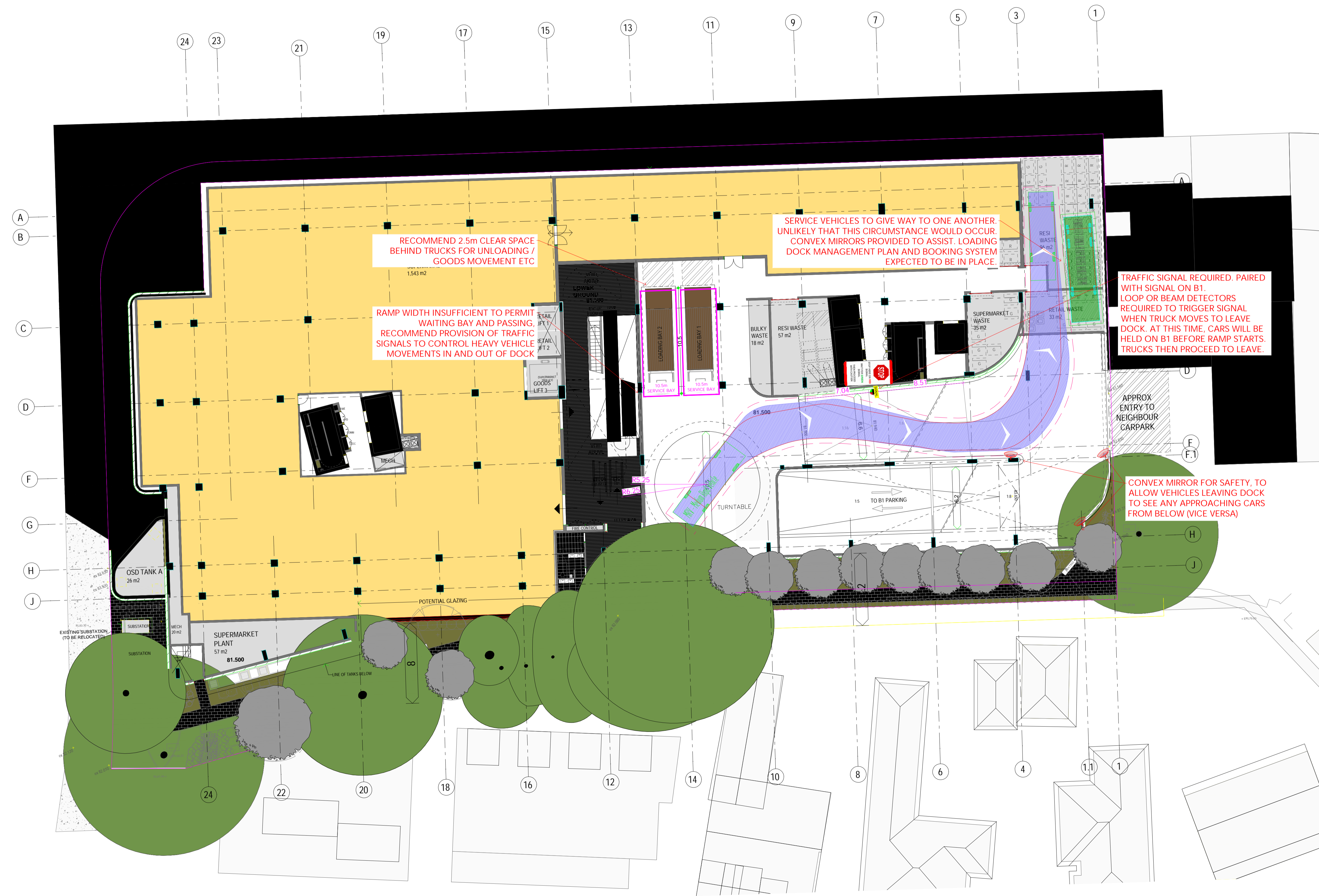
**PROJECT**  
 100 EDINBURGH ROAD,  
 CASTLECRAG

**DRAWING TITLE**  
 TRAFFIC & PARKING ASSESSMENT  
 LOWER GROUND

**ptc.** Suite 502, 1 James Place  
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**CLIENT** CONQUEST  
**DRAWING #** LG-2  
**PROJECT #** 23-0668  
**SCALE** 1 : 200 @ A1  
 1 : 400 @ A3  
 SDA

**REV 5**



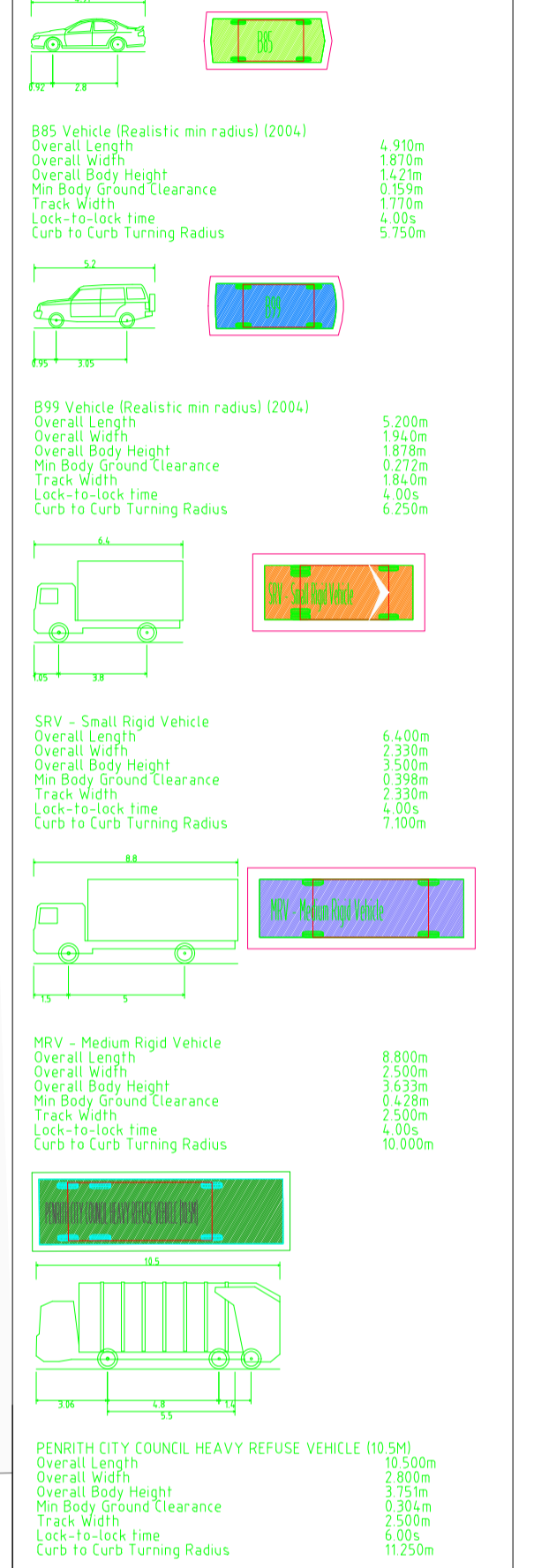
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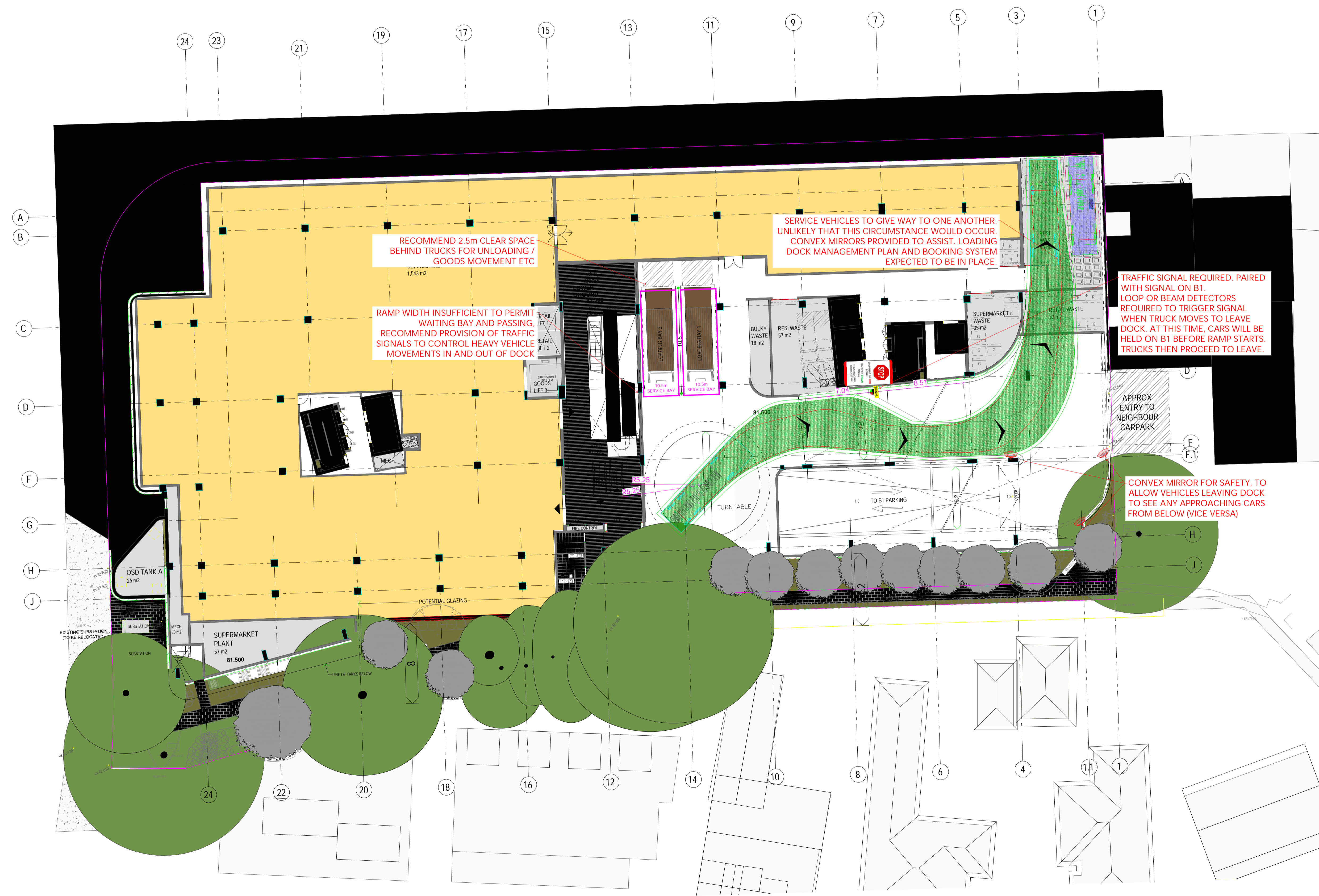
**PROJECT**  
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 CASTLECRAG

**DRAWING TITLE**  
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**CLIENT** CONQUEST  
**DRAWING #** LG-3  
**PROJECT #** 23-0668  
**SCALE** 1 : 200 @ A1  
 1 : 400 @ A3  
 SDA

**REV 5**



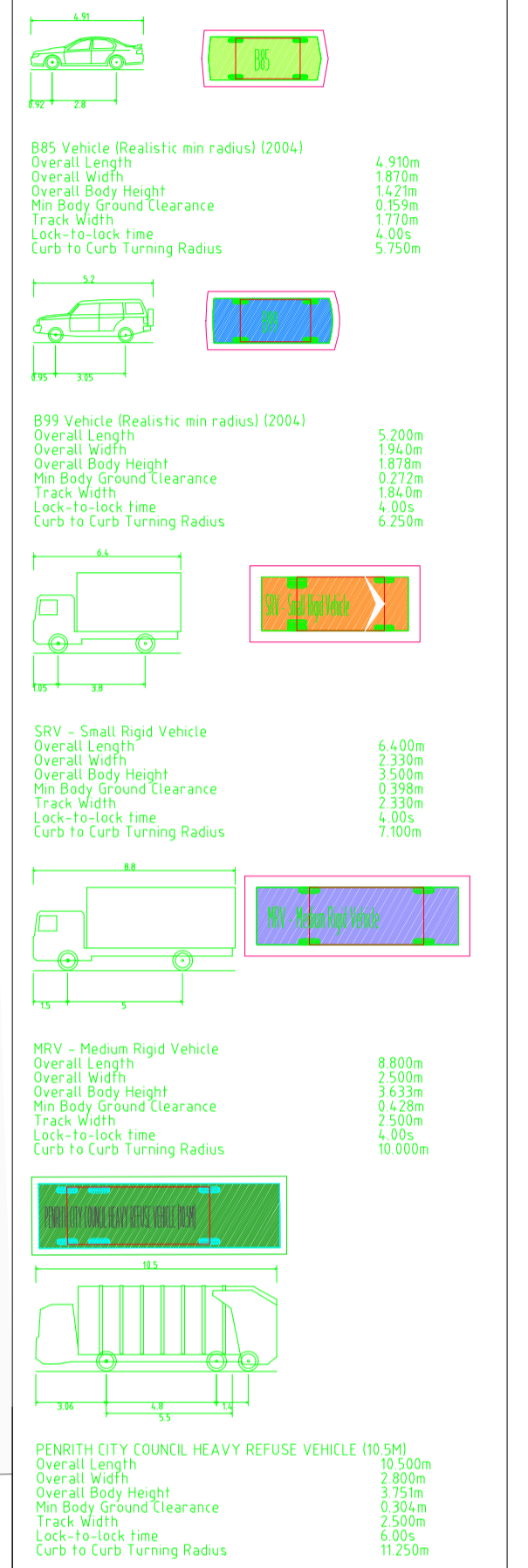
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X	X	X		x	x
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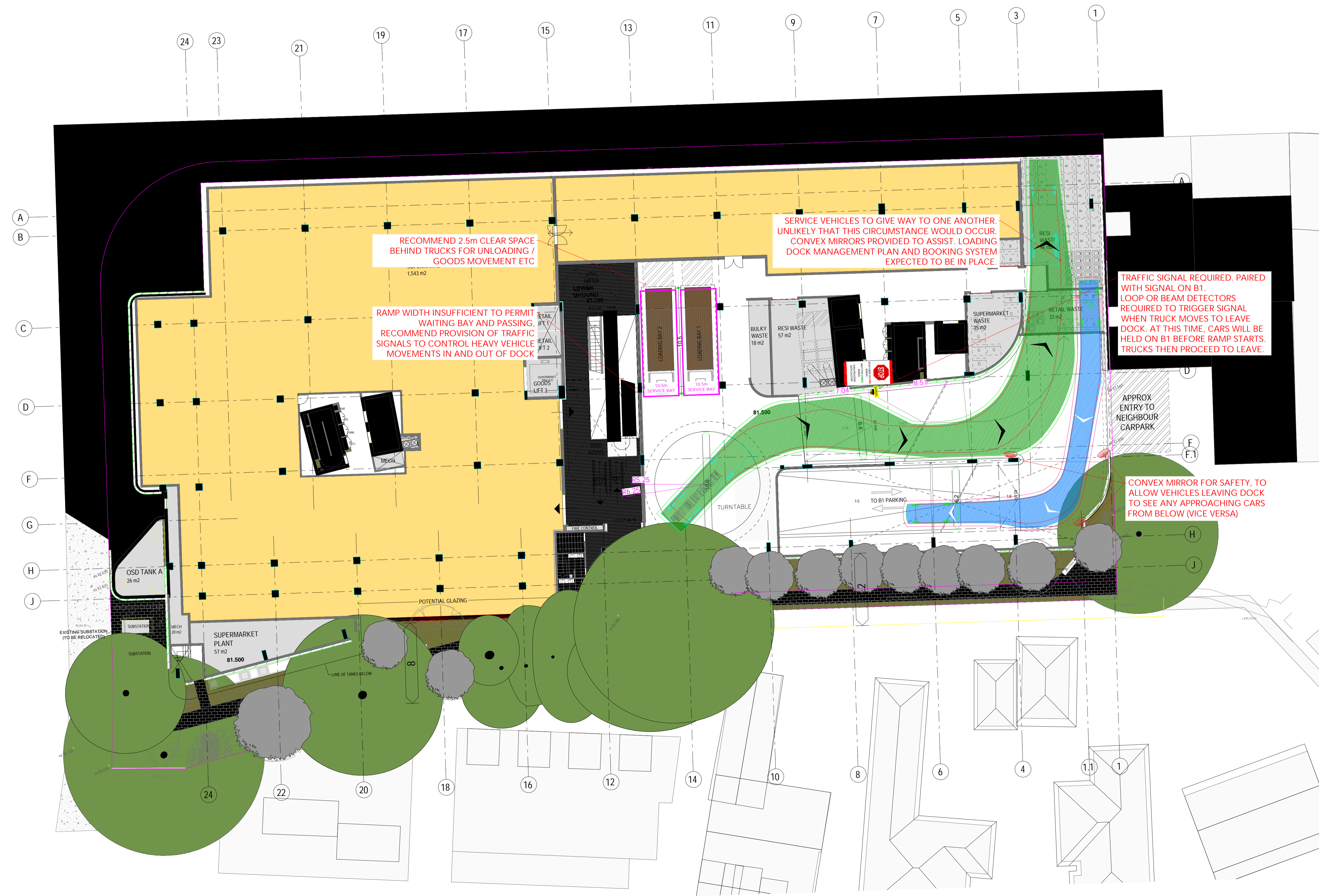
**PROJECT**  
 100 EDINBURGH ROAD,  
 CASTLECRAG

**DRAWING TITLE**  
 TRAFFIC & PARKING ASSESSMENT  
 LOWER GROUND

**ptc.** Suite 502, 1 James Place  
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**CLIENT** CONQUEST  
**DRAWING #** LG-4  
**PROJECT #** 23-0668  
**SCALE** 1 : 200 @ A1  
 1 : 400 @ A3  
 SDA

**REV 5**



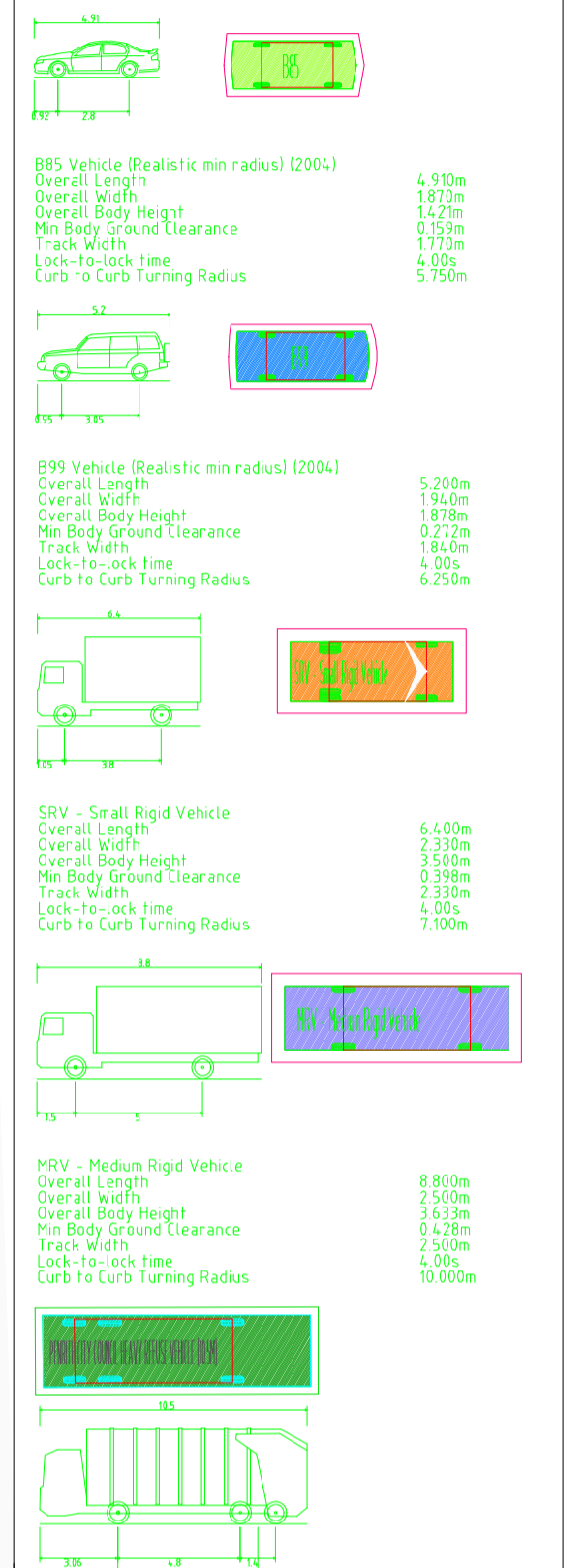
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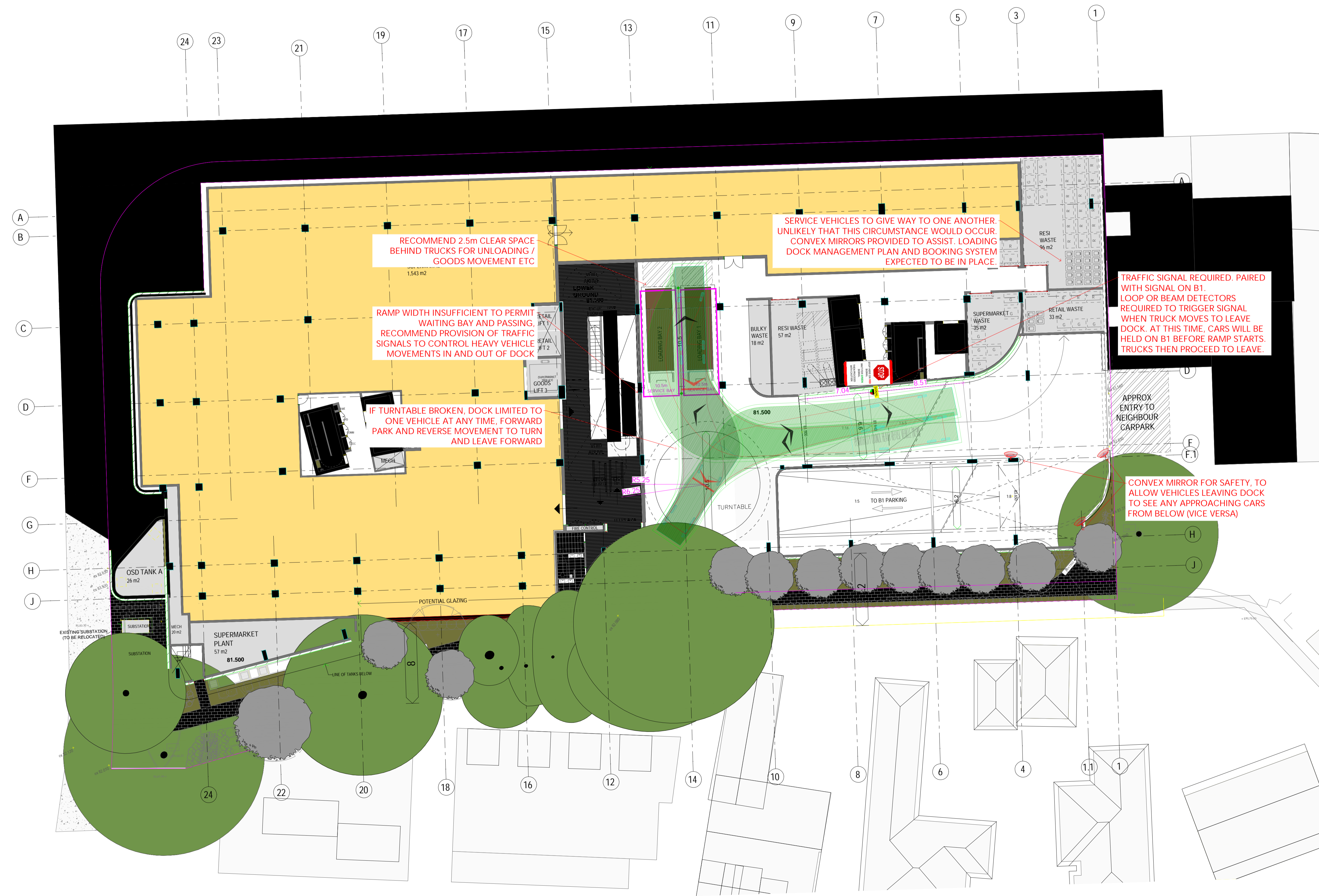
**PROJECT**  
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 SDA

**REV 5**



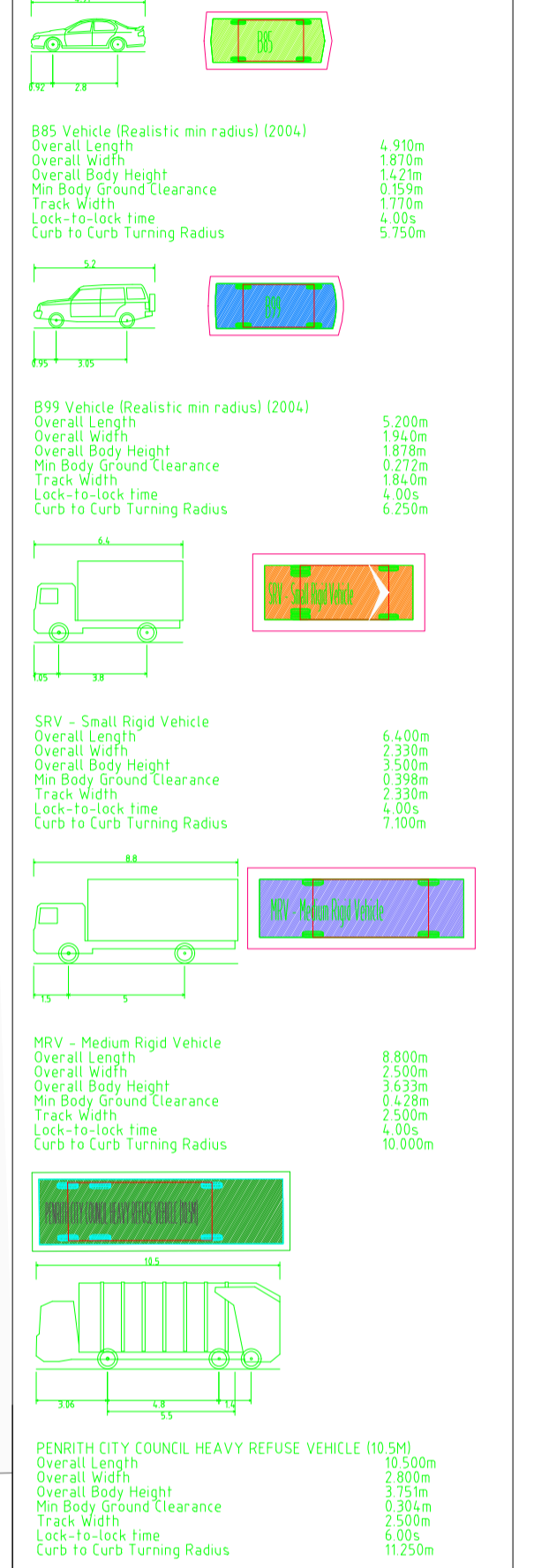
**AIRIAL IMAGERY / SCALED PDF**  
 This sweep path assessment has been completed utilising aerial imagery/scaled pdf in the absence of detailed survey. It should be noted that aerial imagery/scaled pdf can have an element of error, and all sweep paths are preliminary and shall be verified using survey data or site validation. It is the responsibility of the contractor to ensure that the proposed vehicle routes and access are suitable for the anticipated vehicles. All sweep paths performed by ptc using aerial imagery/scaled pdf are indicative and should be used for preliminary purposes only.

**NOT FOR CONSTRUCTION**  
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**TRAFFIC GUIDANCE SCHEMES**

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- Signs can be mounted if required on posts to be visible above parked cars. Signs to be coordinated on site to ensure they are clearly visible.
- All signs to be size A.
- All signs to be visible when workers are in the area and covered when workers are not present.
- Signs to be in accordance with RMS Traffic Control at Worksites (TCAWS) Manual and AS1742 Traffic Control for Works on roads.
- RMS/Council approval to be obtained prior to implementation.
- This TCS is based on TCAWS Manual and is to be set up by qualified traffic controllers (Yellow card). Any alterations on site to this TCS is to be documented and re-recorded by qualified personnel with a Red/Change card.

**SWEEP PATHS**  
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X	X	X		x	x
X	X	X		x	x
5	19.11.25	FOR INFORMATION	JJ	SW	JJ
4	14.11.25	FOR INFORMATION	JJ	SW	JJ
3	23.10.25	FOR INFORMATION	JJ	SW	JJ
2	15.10.25	FOR INFORMATION	JJ	SW	JJ
1	29.09.25	FOR INFORMATION	JJ	DP	JJ
REV	DATE	DESCRIPTION	DRAWN	REVIEWED	

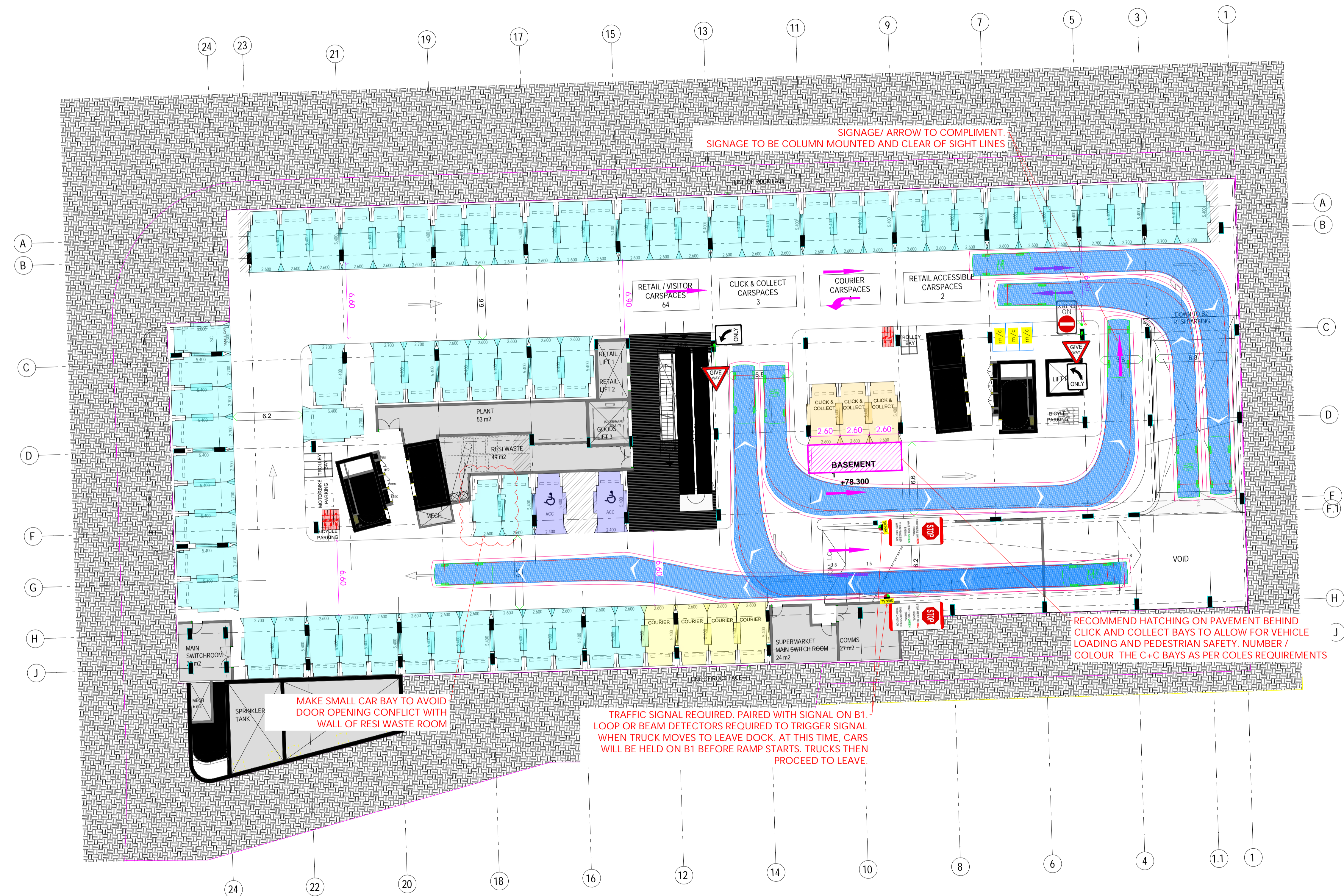
**PROJECT**  
 100 EDINBURGH ROAD,  
 CASTLECRAG

**DRAWING TITLE**  
 TRAFFIC & PARKING ASSESSMENT  
 LOWER GROUND

**ptc.** Suite 502, 1 James Place  
 North Sydney NSW 2060  
 t +61 2 8920 0800  
 ptcconsultants.co

**CLIENT** CONQUEST  
**DRAWING #** LG-6  
**PROJECT #** 23-0668  
**SCALE** 1 : 200 @ A1  
 1 : 400 @ A3  
 SDA

**REV 5**



**AIRIAL IMAGERY / SCALED PDF**  
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**SWEEP PATHS**  
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	<b>B85 Vehicle (Realistic min radius) (2004)</b>	Overall Length: 4.930m
		Overall Width: 1.815m
		Overall Body Height: 1.427m
		Min Body Ground Clearance: 0.750m
		Track Width: 1.710m
		Lock-to-Lock Time: 4.055s
		Curb to Curb Turning Radius: 5.750m
	<b>B99 Vehicle (Realistic min radius) (2004)</b>	Overall Length: 5.370m
		Overall Width: 1.940m
		Overall Body Height: 1.875m
		Min Body Ground Clearance: 0.717m
		Track Width: 1.840m
		Lock-to-Lock Time: 4.005s
		Curb to Curb Turning Radius: 6.250m
	<b>SRV - Small Rigid Vehicle</b>	Overall Length: 6.400m
		Overall Width: 2.250m
		Overall Body Height: 3.500m
		Min Body Ground Clearance: 0.750m
		Track Width: 2.350m
		Lock-to-Lock Time: 4.050s
		Curb to Curb Turning Radius: 7.100m
	<b>MRV - Medium Rigid Vehicle</b>	Overall Length: 8.800m
		Overall Width: 2.500m
		Overall Body Height: 4.000m
		Min Body Ground Clearance: 0.750m
		Track Width: 2.600m
		Lock-to-Lock Time: 4.050s
		Curb to Curb Turning Radius: 10.000m
	<b>PENRITH CITY COUNCIL HEAVY REFUSE VEHICLE (10.5M)</b>	Overall Length: 10.500m
		Overall Width: 2.800m
		Overall Body Height: 3.750m
		Min Body Ground Clearance: 0.750m
		Track Width: 2.900m
		Lock-to-Lock Time: 4.050s
		Curb to Curb Turning Radius: 11.250m

X	X	X		x	x
X	X	X		x	x
5	19.11.25	FOR INFORMATION	JJ	SW	
4	14.11.25	FOR INFORMATION	JJ	SW/JJ	
3	23.10.25	FOR INFORMATION	JJ	SW	
2	15.10.25	FOR INFORMATION	JJ	SW	
1	29.09.25	FOR INFORMATION	JJ	DP	
REV	DATE	DESCRIPTION	DRAWN	REVIEWED	

**PROJECT**  
 100 EDINBURGH ROAD,  
 CASTLECRAG

**DRAWING TITLE**  
 TRAFFIC & PARKING ASSESSMENT  
 BASEMENT LEVEL 1

**ptc.** Suite 502, 1 James Place  
 North Sydney NSW 2060  
 t +61 2 8920 0800  
 ptcconsultants.co

**CLIENT** CONQUEST

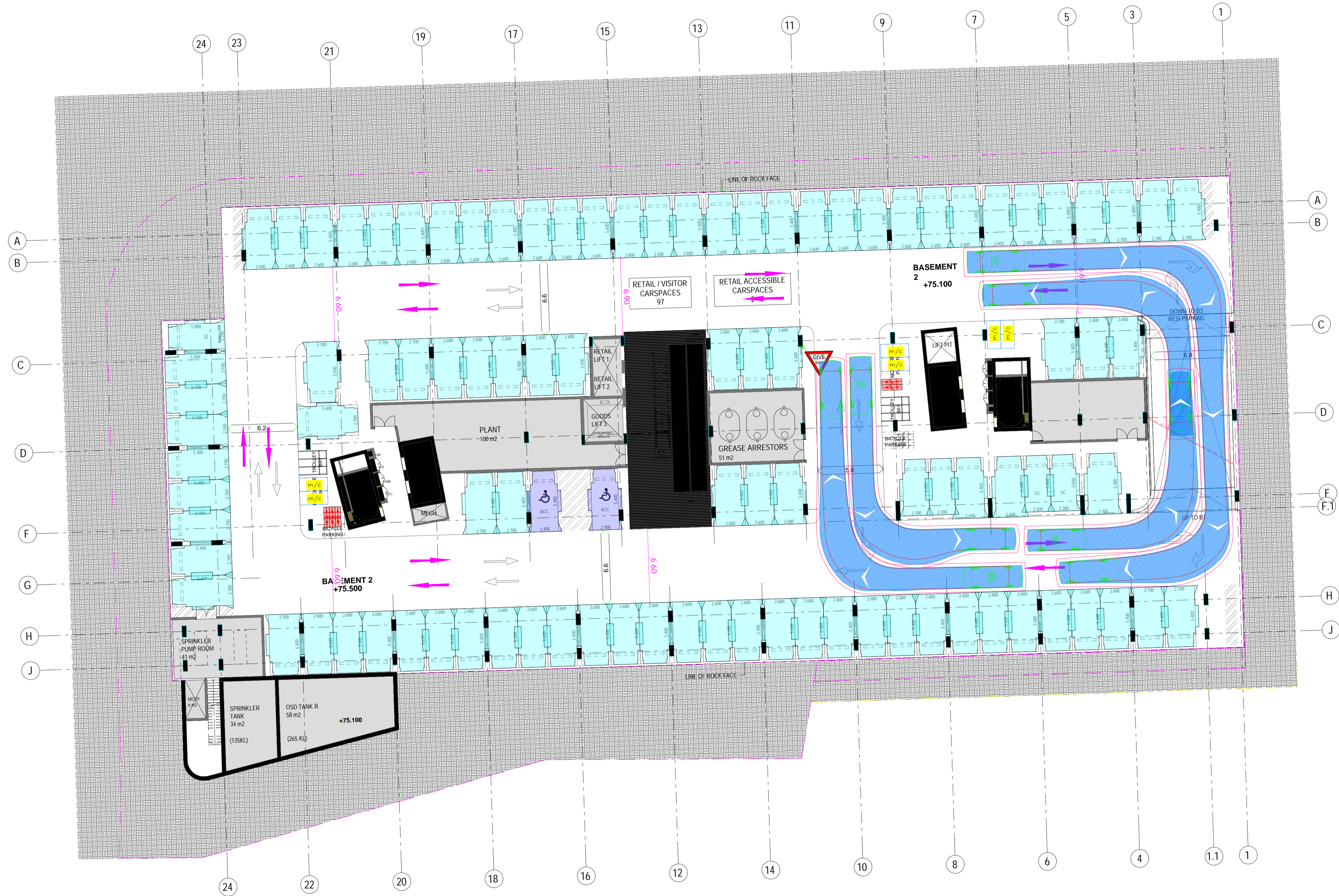
**DRAWING #** B1-1

**PROJECT #** 23-0668

**SCALE** 1 : 200 @ A1  
 1 : 400 @ A3

SSDA

**REV 5**

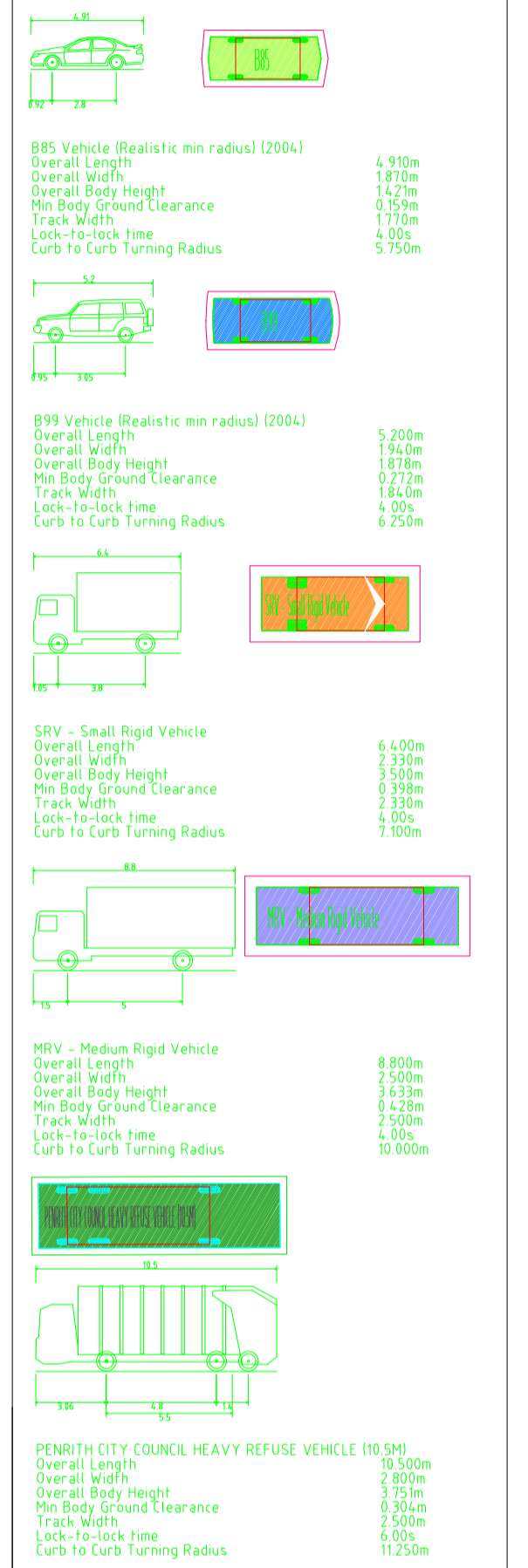


**AIRIAL IMAGERY / SCALED PDF**  
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REV	DATE	DESCRIPTION	DRAWN	REVIEWED
X	X	X	x	x
X	X	X	x	x
5	19.11.25	FOR INFORMATION	JJ	SW
4	14.11.25	FOR INFORMATION	JJ	SW/JJ
3	23.10.25	FOR INFORMATION	JJ	SW
2	15.10.25	FOR INFORMATION	JJ	SW
1	29.09.25	FOR INFORMATION	JJ	DP

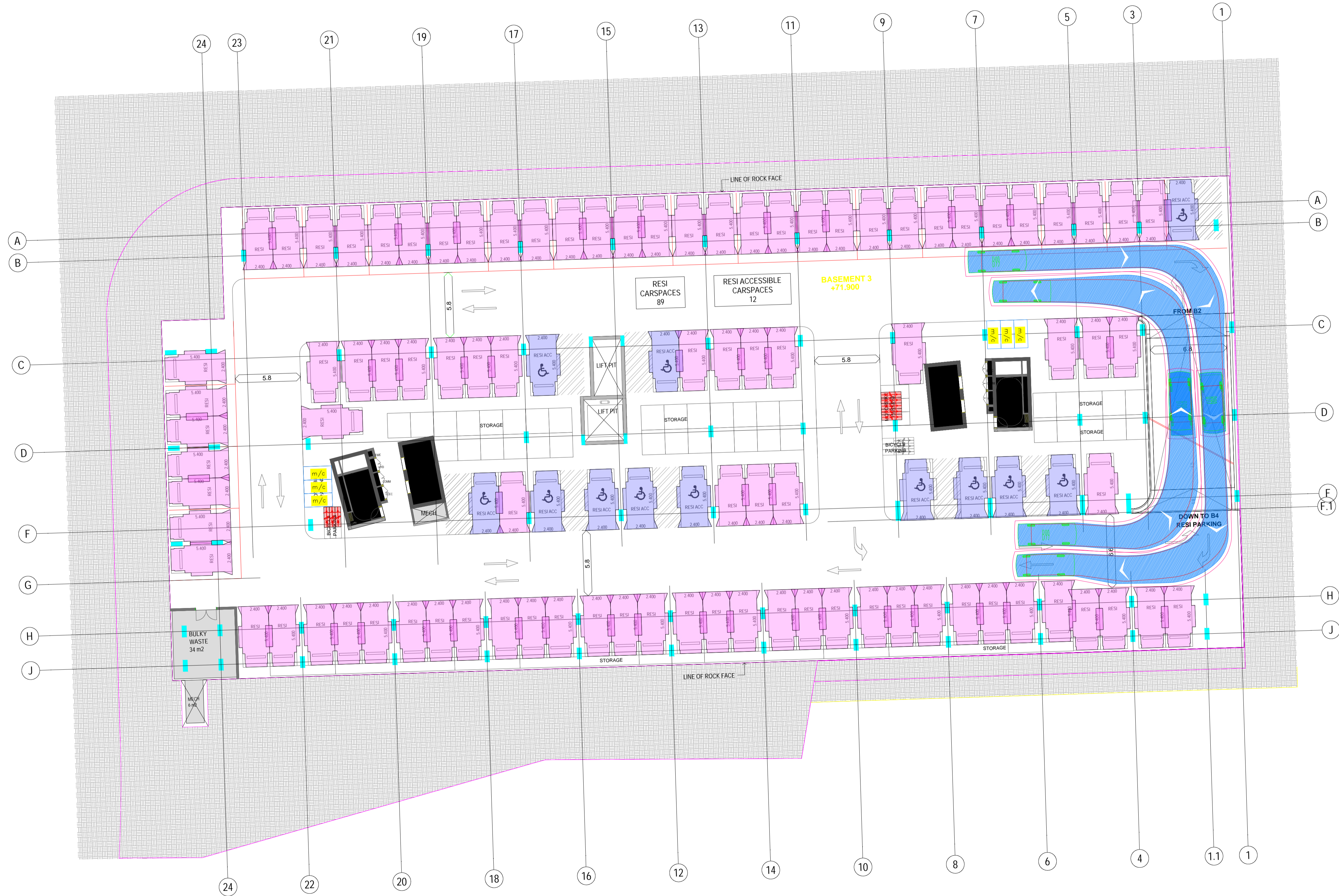
**PROJECT**  
 100 EDINBURGH ROAD,  
 CASTLECRAG

**DRAWING TITLE**  
 TRAFFIC & PARKING ASSESSMENT  
 BASEMENT LEVEL 2

**ptc.** Suite 502, 1 James Place  
 North Sydney NSW 2060  
 t +61 2 8920 0800  
 ptcconsultants.co

**CLIENT** CONQUEST  
**DRAWING #** B2-1  
**PROJECT #** 23-0668  
**SCALE** 1 : 200 @ A1  
 1 : 400 @ A3

SSDA  
**REV 5**

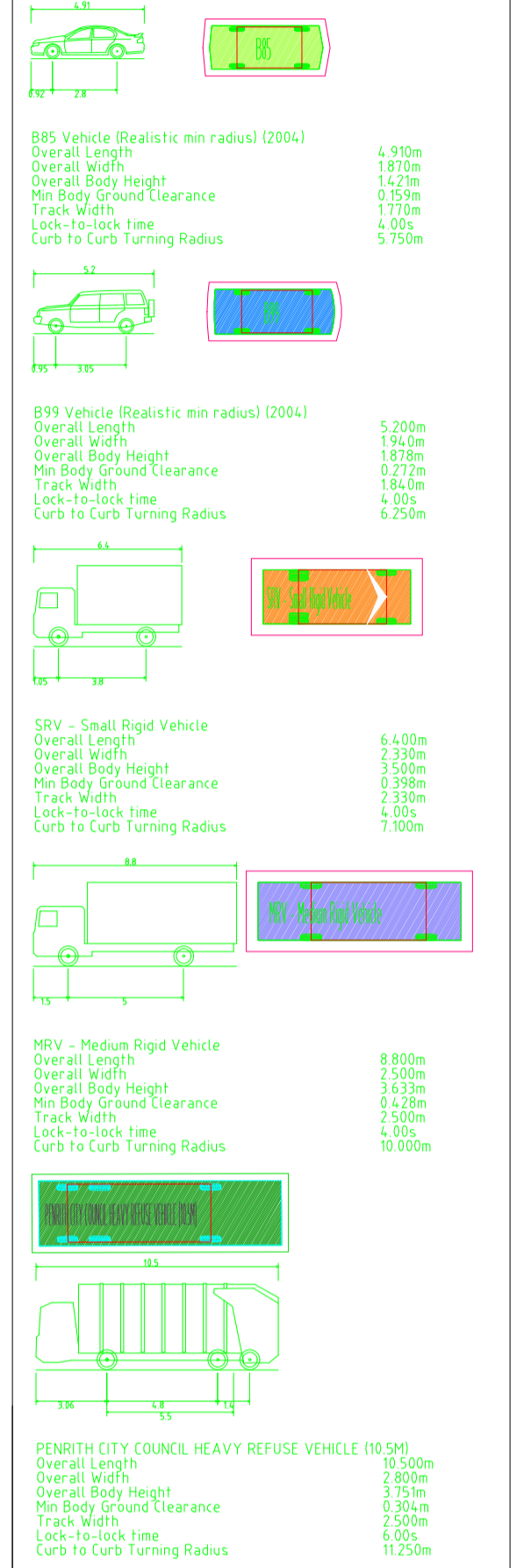


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REV	DATE	DESCRIPTION	DRAWN	REVIEWED
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X	X	X	x	x
5	19.11.25	FOR INFORMATION	JJ	SW
4	14.11.25	FOR INFORMATION	JJ	SW/JJ
3	23.10.25	FOR INFORMATION	JJ	SW
2	15.10.25	FOR INFORMATION	JJ	SW
1	29.09.25	FOR INFORMATION	JJ	DP

**PROJECT**  
 100 EDINBURGH ROAD,  
 CASTLECRAG

**DRAWING TITLE**  
 TRAFFIC & PARKING ASSESSMENT  
 BASEMENT LEVEL 3

**ptc.** Suite 502, 1 James Place  
 North Sydney NSW 2060  
 1 + 61 2 8920 0800  
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**CLIENT** CONQUEST  
**DRAWING #** B3-1  
**PROJECT #** 23-0668  
**SCALE** 1 : 200 @ A1  
 1 : 400 @ A3  
 SDA

**REV 5**

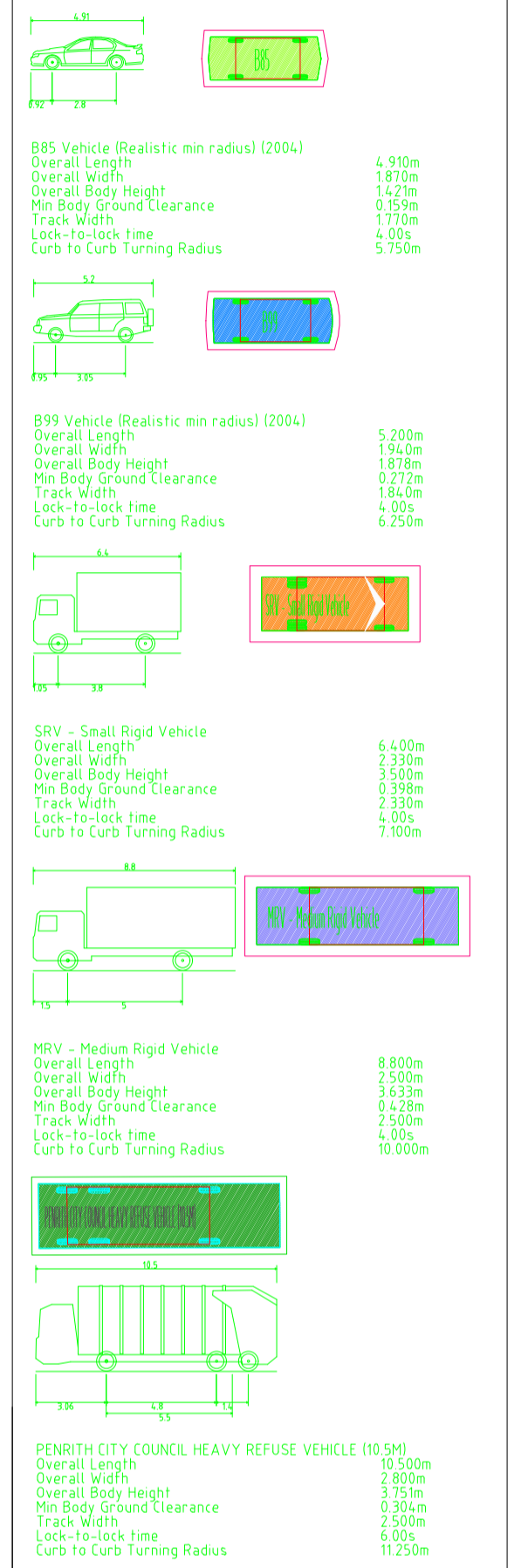


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REV	DATE	DESCRIPTION	DRAWN	REVIEWED
X	X	X	x	x
5	19.11.25	FOR INFORMATION	JJ	SW
4	14.11.25	FOR INFORMATION	JJ	SW/JJ
3	23.10.25	FOR INFORMATION	JJ	SW
2	15.10.25	FOR INFORMATION	JJ	SW
1	29.09.25	FOR INFORMATION	JJ	DP

**PROJECT**  
 100 EDINBURGH ROAD,  
 CASTLECRAG

**DRAWING TITLE**  
 TRAFFIC & PARKING ASSESSMENT  
 BASEMENT LEVEL 4

**ptc.** Suite 502, 1 James Place  
 North Sydney NSW 2060  
 1 + 61 2 8920 0800  
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**CLIENT** CONQUEST  
**DRAWING #** B4-1  
**PROJECT #** 23-0668  
**SCALE** 1 : 200 @ A1  
 1 : 400 @ A3  
 SDA

**REV 5**

# Appendix 3. Traffic Modelling

# MOVEMENT SUMMARY

Site: 0453 [1. Edinburgh Road/Esatern Valley Way - AM (Site Folder: Existing AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing AM Peak (Network Folder: Existing Network)]

Existing

Site Category: Existing Design

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 135 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	Dist ] m				
South: Eastern Valley Way															
1	L2	All MCs	47	6.7	47	6.7	0.325	84.6	LOS F	7.3	53.7	0.87	0.74	0.87	18.4
2	T1	All MCs	471	5.6	471	5.6	* 1.101	180.0	LOS F	42.7	313.0	0.98	1.40	1.71	10.4
3	R2	All MCs	66	4.8	66	4.8	0.563	89.2	LOS F	4.5	32.7	1.00	0.78	1.02	17.5
Approach			584	5.6	584	5.6	1.101	161.9	LOS F	42.7	313.0	0.97	1.28	1.56	9.7
East: Edinburgh Road															
4	L2	All MCs	146	2.9	146	2.9	0.818	71.7	LOS F	17.2	122.4	0.99	0.93	1.08	23.0
5	T1	All MCs	228	1.4	228	1.4	0.818	82.4	LOS F	17.2	122.4	0.99	0.93	1.08	9.5
6	R2	All MCs	86	4.9	86	4.9	1.000	143.2	LOS F	7.9	57.5	1.00	1.16	1.75	2.8
Approach			461	2.5	461	2.5	1.000	90.4	LOS F	17.2	122.4	0.99	0.97	1.21	9.6
North: Eastern Valley Way															
7	L2	All MCs	35	12.1	35	12.1	0.041	37.5	LOS C	1.1	8.7	0.53	0.67	0.53	34.2
8	T1	All MCs	1003	3.0	1003	3.0	0.547	31.3	LOS C	22.3	160.2	0.73	0.65	0.73	43.2
9	R2	All MCs	808	3.6	808	3.6	* 1.103	151.1	LOS F	59.4	428.7	0.94	1.16	1.51	12.9
Approach			1846	3.5	1846	3.5	1.103	83.9	LOS F	59.4	428.7	0.82	0.87	1.07	22.1
West: Edinburgh Road															
10	L2	All MCs	522	7.1	522	7.1	0.841	34.6	LOS C	26.4	194.4	0.68	0.81	0.74	8.5
11	T1	All MCs	153	4.8	153	4.8	0.841	122.1	LOS F	26.4	194.4	0.99	0.94	1.11	5.5
12	R2	All MCs	101	6.3	101	6.3	* 1.122	225.5	LOS F	11.5	84.6	1.00	1.26	2.14	8.9
Approach			776	6.5	776	6.5	1.122	76.7	LOS F	26.4	194.4	0.79	0.89	0.99	6.6
All Vehicles			3667	4.3	3667	4.3	1.122	95.6	LOS F	59.4	428.7	0.86	0.95	1.15	15.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
					[ Ped ped	Dist ] m					
South: Eastern Valley Way											
P3	Full	18	60.7	LOS F	0.1	0.1	0.95	0.95	214.6	200.0	0.93

East: Edinburgh Road											
P1	Full	12	58.8	LOS E	0.0	0.0	0.93	0.93	212.7	200.0	0.94
North: Eastern Valley Way											
P4	Full	79	60.9	LOS F	0.3	0.3	0.95	0.95	214.7	200.0	0.93
West: Edinburgh Road											
P2	Full	19	61.7	LOS F	0.1	0.1	0.96	0.96	215.5	200.0	0.93
All Pedestrians		127	60.8	LOS F	0.3	0.3	0.95	0.95	214.6	200.0	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Organisation: PARKING AND TRAFFIC CONSULTANTS | Licence: NETWORK / 1PC | Processed: Tuesday, 11 November 2025 8:44:58 AM

Project: P:\Projects\_2023\0668\_LXCN\_100 Edinburgh Rd, Castlecrag\03 WIP\07 SIDRA\SSDA\231114-0688-100 Edinburgh Road, Castlecrag.sip9

# MOVEMENT SUMMARY

Site: 101 [2. Edinburgh Road/Raeburn Avenue/Driveway - AM  
(Site Folder: Existing AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing AM  
Peak (Network Folder: Existing  
Network)]

Existing  
Site Category: Existing Design  
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	Dist ] m				
South: Driveway															
1	L2	All MCs	1	0.0	1	0.0	0.006	1.4	LOS A	0.0	0.1	0.50	0.34	0.50	7.1
2	T1	All MCs	1	0.0	1	0.0	0.006	3.3	LOS A	0.0	0.1	0.50	0.34	0.50	36.4
3	R2	All MCs	1	0.0	1	0.0	0.006	4.1	LOS A	0.0	0.1	0.50	0.34	0.50	7.1
Approach			3	0.0	3	0.0	0.006	2.9	LOS A	0.0	0.1	0.50	0.34	0.50	27.1
East: Edinburgh Road															
4	L2	All MCs	1	0.0	1	0.0	0.229	8.8	LOS A	6.7	48.0	0.03	0.03	0.03	36.7
5	T1	All MCs	422	2.7	422	2.7	0.229	0.0	LOS A	6.7	48.0	0.03	0.03	0.03	48.0
6	R2	All MCs	12	0.0	12	0.0	0.229	5.3	LOS A	6.7	48.0	0.03	0.03	0.03	46.9
Approach			435	2.7	435	2.7	0.229	0.2	NA	6.7	48.0	0.03	0.03	0.03	47.8
North: Raeburn Avenue															
7	L2	All MCs	11	0.0	11	0.0	0.125	5.4	LOS A	0.5	3.7	0.52	0.70	0.52	39.3
8	T1	All MCs	1	0.0	1	0.0	0.125	10.2	LOS A	0.5	3.7	0.52	0.70	0.52	37.3
9	R2	All MCs	33	3.2	33	3.2	0.125	9.5	LOS A	0.5	3.7	0.52	0.70	0.52	39.3
Approach			44	2.4	44	2.4	0.125	8.5	LOS A	0.5	3.7	0.52	0.70	0.52	39.2
West: Edinburgh Road															
10	L2	All MCs	16	6.7	16	6.7	0.134	4.6	LOS A	0.0	0.1	0.01	0.04	0.01	47.0
11	T1	All MCs	233	5.9	233	5.9	0.134	0.0	LOS A	0.0	0.1	0.01	0.04	0.01	47.4
12	R2	All MCs	1	0.0	1	0.0	0.134	7.2	LOS A	0.0	0.1	0.01	0.04	0.01	35.9
Approach			249	5.9	249	5.9	0.134	0.3	NA	0.0	0.1	0.01	0.04	0.01	47.2
All Vehicles			732	3.7	732	3.7	0.229	0.8	NA	6.7	48.0	0.05	0.07	0.05	45.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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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Project: P:\Projects\_2023\0668\_LXCN\_100 Edinburgh Rd, Castlecrag\03 WIP\07 SIDRA\SSDA\231114-0688-100 Edinburgh Road, Castlecrag.sip9

# MOVEMENT SUMMARY

**Site: 101 [3. Edinburgh Road/Rutland Avenue/The Postern - AM (Site Folder: Existing AM Peak)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

**Network: N101 [Existing AM Peak (Network Folder: Existing Network)]**

New Site  
Site Category: Existing Design  
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	Dist ] m				
South: The Postern															
1	L2	All MCs	16	0.0	16	0.0	0.030	5.7	LOS A	0.1	1.0	0.49	0.61	0.49	33.5
2	T1	All MCs	1	0.0	1	0.0	0.030	5.5	LOS A	0.1	1.0	0.49	0.61	0.49	41.4
3	R2	All MCs	8	0.0	8	0.0	0.030	8.7	LOS A	0.1	1.0	0.49	0.61	0.49	33.5
3u	U	All MCs	1	0.0	1	0.0	0.030	11.4	LOS A	0.1	1.0	0.49	0.61	0.49	38.7
Approach			26	0.0	26	0.0	0.030	6.9	LOS A	0.1	1.0	0.49	0.61	0.49	34.5
East: Edinburgh Road															
4	L2	All MCs	5	0.0	5	0.0	0.281	4.6	LOS A	1.8	12.8	0.35	0.45	0.35	43.9
5	T1	All MCs	322	3.6	322	3.6	0.281	4.4	LOS A	1.8	12.8	0.35	0.45	0.35	43.9
6	R2	All MCs	1	0.0	1	0.0	0.281	7.5	LOS A	1.8	12.8	0.35	0.45	0.35	44.7
6u	U	All MCs	1	0.0	1	0.0	0.281	10.2	LOS A	1.8	12.8	0.35	0.45	0.35	43.9
Approach			329	3.5	329	3.5	0.281	4.4	LOS A	1.8	12.8	0.35	0.45	0.35	43.9
North: Rutland Road															
7	L2	All MCs	9	11.1	9	11.1	0.050	5.5	LOS A	0.3	1.8	0.44	0.61	0.44	39.1
8	T1	All MCs	4	0.0	4	0.0	0.050	5.2	LOS A	0.3	1.8	0.44	0.61	0.44	40.9
9	R2	All MCs	33	0.0	33	0.0	0.050	8.4	LOS A	0.3	1.8	0.44	0.61	0.44	39.1
9u	U	All MCs	1	0.0	1	0.0	0.050	11.0	LOS A	0.3	1.8	0.44	0.61	0.44	44.6
Approach			47	2.2	47	2.2	0.050	7.6	LOS A	0.3	1.8	0.44	0.61	0.44	39.5
West: Edinburgh Road															
10	L2	All MCs	12	0.0	12	0.0	0.171	3.8	LOS A	1.2	8.8	0.11	0.49	0.11	41.4
11	T1	All MCs	165	8.3	165	8.3	0.171	3.7	LOS A	1.2	8.8	0.11	0.49	0.11	29.6
12	R2	All MCs	51	0.0	51	0.0	0.171	6.8	LOS A	1.2	8.8	0.11	0.49	0.11	36.7
12u	U	All MCs	22	0.0	22	0.0	0.171	9.1	LOS A	1.2	8.8	0.11	0.49	0.11	29.6
Approach			249	5.5	249	5.5	0.171	4.8	LOS A	1.2	8.8	0.11	0.49	0.11	33.2
All Vehicles			653	4.0	653	4.0	0.281	4.9	LOS A	1.8	12.8	0.27	0.48	0.27	41.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

Site: 101 [4. Edinburgh Road / Sunnyside Crescent - AM (Site Folder: Existing AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing AM Peak (Network Folder: Existing Network)]

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	Dist ] m				
NorthEast: Edinburgh Road															
25	T1	All MCs	148	5.0	148	5.0	0.079	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
26	R2	All MCs	1	0.0	1	0.0	0.079	5.5	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			149	4.9	149	4.9	0.079	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
NorthWest: Sunnyside Crescent															
27	L2	All MCs	13	0.0	13	0.0	0.021	5.7	LOS A	0.1	0.5	0.19	0.55	0.19	52.4
29	R2	All MCs	14	0.0	14	0.0	0.021	6.2	LOS A	0.1	0.5	0.19	0.55	0.19	49.9
Approach			26	0.0	26	0.0	0.021	6.0	LOS A	0.1	0.5	0.19	0.55	0.19	51.5
SouthWest: Edinburgh Road															
30	L2	All MCs	4	0.0	4	0.0	0.039	5.5	LOS A	0.0	0.0	0.00	0.04	0.00	59.2
31	T1	All MCs	65	12.9	65	12.9	0.039	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	59.6
Approach			69	12.1	69	12.1	0.039	0.3	NA	0.0	0.0	0.00	0.04	0.00	59.6
All Vehicles			245	6.4	245	6.4	0.079	0.8	NA	0.1	0.5	0.02	0.07	0.02	58.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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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# MOVEMENT SUMMARY

Site: 101 [5. Eastern Valley Way / Sunnyside Crescent - AM  
(Site Folder: Existing AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing AM  
Peak (Network Folder: Existing  
Network)]

New Site  
Site Category: Existing Design  
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	Dist ] m				
South: Eastern Valley Way															
2	T1	All MCs	1071	6.3	1036	6.3	0.613	2.1	LOS A	17.1	126.4	0.52	0.17	0.52	57.8
3	R2	All MCs	4	0.0	4	0.0	0.145	120.6	LOS F	0.3	2.2	0.98	0.99	0.98	12.3
Approach			1075	6.3	1040	6.3	0.613	3.7	NA	17.1	126.4	0.52	0.17	0.52	56.3
East: Sunnyside Crescent															
4	L2	All MCs	9	0.0	9	0.0	0.677	158.1	LOS F	1.7	11.7	0.99	1.02	1.10	9.0
6	R2	All MCs	2	0.0	2	0.0	0.677	253.1	LOS F	1.7	11.7	0.99	1.02	1.10	15.3
Approach			12	0.0	12	0.0	0.677	175.4	NA	1.7	11.7	0.99	1.02	1.10	10.3
North: Eastern Valley Way															
7	L2	All MCs	72	2.9	72	2.9	0.507	5.8	LOS A	0.0	0.0	0.00	0.04	0.00	58.8
8	T1	All MCs	1859	3.5	1859	3.5	0.507	0.2	LOS A	0.0	0.0	0.00	0.02	0.00	59.2
Approach			1931	3.4	1931	3.4	0.507	0.4	NA	0.0	0.0	0.00	0.02	0.00	59.2
All Vehicles			3017	4.4	2982	4.5	0.677	1.9	NA	17.1	126.4	0.19	0.08	0.19	56.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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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# MOVEMENT SUMMARY

Site: 0453 [1. Edinburgh Road/Esatern Valley Way - PM (Site Folder: Existing PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing PM Peak (Network Folder: Existing Network)]

Existing

Site Category: Existing Design

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 131 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	Dist ] m				
South: Eastern Valley Way															
1	L2	All MCs	71	1.5	71	1.5	* 0.704	52.5	LOS D	20.2	147.5	0.96	0.83	0.96	18.6
2	T1	All MCs	623	6.1	623	6.1	0.704	47.8	LOS D	20.2	147.5	0.96	0.83	0.96	24.2
3	R2	All MCs	103	6.1	103	6.1	0.406	65.9	LOS E	6.1	45.1	0.95	0.78	0.95	20.1
Approach			797	5.7	797	5.7	0.704	50.6	LOS D	20.2	147.5	0.96	0.82	0.96	22.3
East: Edinburgh Road															
4	L2	All MCs	77	2.7	77	2.7	0.705	55.8	LOS D	14.2	102.6	0.98	0.85	1.02	22.7
5	T1	All MCs	157	4.0	157	4.0	* 0.705	76.0	LOS F	14.2	102.6	0.98	0.85	1.02	9.3
6	R2	All MCs	93	9.1	93	9.1	0.662	84.4	LOS F	6.1	46.1	1.00	0.84	1.08	4.5
Approach			326	5.2	326	5.2	0.705	73.6	LOS F	14.2	102.6	0.99	0.85	1.03	10.0
North: Eastern Valley Way															
7	L2	All MCs	42	7.5	42	7.5	0.048	22.4	LOS B	1.3	9.8	0.52	0.68	0.52	34.8
8	T1	All MCs	529	5.8	529	5.8	0.427	20.1	LOS B	15.9	116.8	0.64	0.55	0.64	45.3
9	R2	All MCs	592	6.2	592	6.2	* 0.709	26.4	LOS B	13.4	98.6	0.89	0.82	0.89	33.3
Approach			1163	6.1	1163	6.1	0.709	23.3	LOS B	15.9	116.8	0.76	0.69	0.76	39.6
West: Edinburgh Road															
10	L2	All MCs	771	3.8	771	3.8	0.627	21.8	LOS B	27.0	195.4	0.70	0.80	0.70	11.2
11	T1	All MCs	154	3.4	154	3.4	0.627	80.1	LOS F	13.2	95.1	0.96	0.82	0.96	6.0
12	R2	All MCs	71	3.0	71	3.0	0.682	86.9	LOS F	4.8	34.3	1.00	0.84	1.13	18.9
Approach			995	3.7	995	3.7	0.682	35.4	LOS C	27.0	195.4	0.76	0.81	0.77	10.6
All Vehicles			3281	5.2	3281	5.2	0.709	38.6	LOS C	27.0	195.4	0.83	0.77	0.84	24.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
					[ Ped ped	Dist ] m					
South: Eastern Valley Way											
P3	Full	18	58.7	LOS E	0.1	0.1	0.95	0.95	212.6	200.0	0.94

East: Edinburgh Road											
P1	Full	12	56.8	LOS E	0.0	0.0	0.93	0.93	210.7	200.0	0.95
North: Eastern Valley Way											
P4	Full	79	58.9	LOS E	0.3	0.3	0.95	0.95	212.7	200.0	0.94
West: Edinburgh Road											
P2	Full	19	59.7	LOS E	0.1	0.1	0.95	0.95	213.5	200.0	0.94
All Pedestrians		127	58.8	LOS E	0.3	0.3	0.95	0.95	212.6	200.0	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Project: P:\Projects\_2023\0668\_LXCN\_100 Edinburgh Rd, Castlecrag\03 WIP\07 SIDRA\SSDA\231114-0688-100 Edinburgh Road, Castlecrag.sip9

# MOVEMENT SUMMARY

Site: 101 [2. Edinburgh Road/Raeburn Avenue/Driveway - PM  
(Site Folder: Existing PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing PM  
Peak (Network Folder: Existing  
Network)]

Existing  
Site Category: Existing Design  
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	Dist ] m				
South: Driveway															
1	L2	All MCs	1	0.0	1	0.0	0.005	0.9	LOS A	0.0	0.1	0.45	0.27	0.45	7.6
2	T1	All MCs	1	0.0	1	0.0	0.005	2.6	LOS A	0.0	0.1	0.45	0.27	0.45	37.0
3	R2	All MCs	1	0.0	1	0.0	0.005	3.2	LOS A	0.0	0.1	0.45	0.27	0.45	7.6
Approach			3	0.0	3	0.0	0.005	2.2	LOS A	0.0	0.1	0.45	0.27	0.45	28.0
East: Edinburgh Road															
4	L2	All MCs	1	0.0	1	0.0	0.247	9.0	LOS A	0.1	0.6	0.03	0.03	0.03	36.8
5	T1	All MCs	301	5.6	301	5.6	0.247	0.0	LOS A	0.1	0.6	0.03	0.03	0.03	48.2
6	R2	All MCs	6	0.0	6	0.0	0.247	5.4	LOS A	0.1	0.6	0.03	0.03	0.03	46.9
Approach			308	5.5	308	5.5	0.247	0.2	NA	0.1	0.6	0.03	0.03	0.03	48.0
North: Raeburn Avenue															
7	L2	All MCs	11	0.0	11	0.0	0.058	5.5	LOS A	0.2	1.1	0.46	0.64	0.46	40.5
8	T1	All MCs	1	0.0	1	0.0	0.058	9.3	LOS A	0.2	1.1	0.46	0.64	0.46	38.4
9	R2	All MCs	21	0.0	21	0.0	0.058	8.0	LOS A	0.2	1.1	0.46	0.64	0.46	40.5
Approach			33	0.0	33	0.0	0.058	7.3	LOS A	0.2	1.1	0.46	0.64	0.46	40.5
West: Edinburgh Road															
10	L2	All MCs	31	0.0	31	0.0	0.164	4.6	LOS A	0.0	0.1	0.00	0.06	0.00	46.9
11	T1	All MCs	276	6.1	276	6.1	0.164	0.0	LOS A	0.0	0.1	0.00	0.06	0.00	46.1
12	R2	All MCs	1	0.0	1	0.0	0.164	6.9	LOS A	0.0	0.1	0.00	0.06	0.00	35.3
Approach			307	5.5	307	5.5	0.164	0.5	NA	0.0	0.1	0.00	0.06	0.00	46.4
All Vehicles			652	5.2	652	5.2	0.247	0.7	NA	0.2	1.1	0.04	0.07	0.04	45.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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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Project: P:\Projects\_2023\0668\_LXCN\_100 Edinburgh Rd, Castlecrag\03 WIP\07 SIDRA\SSDA\231114-0688-100 Edinburgh Road, Castlecrag.sip9

# MOVEMENT SUMMARY

**Site: 101 [3. Edinburgh Road/Rutland Avenue/The Postern - PM (Site Folder: Existing PM Peak)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

**Network: N101 [Existing PM Peak (Network Folder: Existing Network)]**

New Site  
Site Category: Existing Design  
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	Dist ] m				
South: The Postern															
1	L2	All MCs	57	0.0	57	0.0	0.066	5.1	LOS A	0.3	2.2	0.41	0.56	0.41	35.4
2	T1	All MCs	1	0.0	1	0.0	0.066	4.9	LOS A	0.3	2.2	0.41	0.56	0.41	42.5
3	R2	All MCs	5	0.0	5	0.0	0.066	8.1	LOS A	0.3	2.2	0.41	0.56	0.41	35.4
3u	U	All MCs	1	0.0	1	0.0	0.066	10.8	LOS A	0.3	2.2	0.41	0.56	0.41	40.1
Approach			64	0.0	64	0.0	0.066	5.5	LOS A	0.3	2.2	0.41	0.56	0.41	35.8
East: Edinburgh Road															
4	L2	All MCs	8	0.0	8	0.0	0.194	4.4	LOS A	1.1	8.2	0.29	0.44	0.29	44.1
5	T1	All MCs	216	7.3	216	7.3	0.194	4.3	LOS A	1.1	8.2	0.29	0.44	0.29	44.2
6	R2	All MCs	1	0.0	1	0.0	0.194	7.3	LOS A	1.1	8.2	0.29	0.44	0.29	44.9
6u	U	All MCs	1	0.0	1	0.0	0.194	10.0	LOS A	1.1	8.2	0.29	0.44	0.29	44.2
Approach			226	7.0	226	7.0	0.194	4.3	LOS A	1.1	8.2	0.29	0.44	0.29	44.2
North: Rutland Road															
7	L2	All MCs	7	0.0	7	0.0	0.022	5.5	LOS A	0.1	0.8	0.46	0.58	0.46	39.7
8	T1	All MCs	3	0.0	3	0.0	0.022	5.3	LOS A	0.1	0.8	0.46	0.58	0.46	41.4
9	R2	All MCs	9	0.0	9	0.0	0.022	8.6	LOS A	0.1	0.8	0.46	0.58	0.46	39.7
9u	U	All MCs	1	0.0	1	0.0	0.022	11.2	LOS A	0.1	0.8	0.46	0.58	0.46	45.0
Approach			21	0.0	21	0.0	0.022	7.1	LOS A	0.1	0.8	0.46	0.58	0.46	40.4
West: Edinburgh Road															
10	L2	All MCs	7	0.0	7	0.0	0.192	3.8	LOS A	1.3	9.8	0.09	0.49	0.09	41.6
11	T1	All MCs	203	6.7	203	6.7	0.192	3.6	LOS A	1.3	9.8	0.09	0.49	0.09	30.0
12	R2	All MCs	51	2.1	51	2.1	0.192	6.8	LOS A	1.3	9.8	0.09	0.49	0.09	36.8
12u	U	All MCs	26	4.0	26	4.0	0.192	9.1	LOS A	1.3	9.8	0.09	0.49	0.09	30.0
Approach			287	5.5	287	5.5	0.192	4.7	LOS A	1.3	9.8	0.09	0.49	0.09	32.8
All Vehicles			599	5.3	599	5.3	0.194	4.7	LOS A	1.3	9.8	0.21	0.48	0.21	40.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

Site: 101 [4. Edinburgh Road / Sunnyside Crescent - PM (Site Folder: Existing PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing PM Peak (Network Folder: Existing Network)]

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	Dist ] m				
NorthEast: Edinburgh Road															
25	T1	All MCs	96	9.9	96	9.9	0.054	0.0	LOS A	0.0	0.2	0.02	0.02	0.02	59.5
26	R2	All MCs	3	0.0	3	0.0	0.054	5.6	LOS A	0.0	0.2	0.02	0.02	0.02	59.5
Approach			99	9.6	99	9.6	0.054	0.2	NA	0.0	0.2	0.02	0.02	0.02	59.5
NorthWest: Sunnyside Crescent															
27	L2	All MCs	12	0.0	12	0.0	0.013	5.8	LOS A	0.0	0.3	0.21	0.54	0.21	52.3
29	R2	All MCs	5	0.0	5	0.0	0.013	6.2	LOS A	0.0	0.3	0.21	0.54	0.21	49.8
Approach			17	0.0	17	0.0	0.013	5.9	LOS A	0.0	0.3	0.21	0.54	0.21	51.8
SouthWest: Edinburgh Road															
30	L2	All MCs	2	0.0	2	0.0	0.058	5.6	LOS A	0.0	0.0	0.00	0.01	0.00	59.7
31	T1	All MCs	104	9.1	104	9.1	0.058	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.9
Approach			106	8.9	106	8.9	0.058	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.9
All Vehicles			222	8.5	222	8.5	0.058	0.6	NA	0.0	0.3	0.02	0.06	0.02	59.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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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Project: P:\Projects\_2023\0668\_LXCN\_100 Edinburgh Rd, Castlecrag\03 WIP\07 SIDRA\SSDA\231114-0688-100 Edinburgh Road, Castlecrag.sip9

# MOVEMENT SUMMARY

Site: 101 [5. Eastern Valley Way / Sunnyside Crescent - PM  
(Site Folder: Existing PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing PM Peak (Network Folder: Existing Network)]

New Site  
Site Category: Existing Design  
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	Dist ] m				
South: Eastern Valley Way															
2	T1	All MCs	1481	5.1	1481	5.1	0.400	0.4	LOS A	0.3	2.4	0.01	0.01	0.01	59.5
3	R2	All MCs	2	0.0	2	0.0	0.400	34.7	LOS C	0.3	2.4	0.02	0.02	0.02	58.6
Approach			1483	5.1	1483	5.1	0.400	0.4	NA	0.3	2.4	0.01	0.01	0.01	59.5
East: Sunnyside Crescent															
4	L2	All MCs	11	10.0	11	10.0	0.614	98.4	LOS F	1.6	11.8	0.99	1.04	1.20	8.3
6	R2	All MCs	5	0.0	5	0.0	0.614	388.3	LOS F	1.6	11.8	0.99	1.04	1.20	14.3
Approach			16	6.7	16	6.7	0.614	195.1	NA	1.6	11.8	0.99	1.04	1.20	10.5
North: Eastern Valley Way															
7	L2	All MCs	36	0.0	36	0.0	0.106	5.6	LOS A	0.0	0.0	0.00	0.11	0.00	58.0
8	T1	All MCs	1160	6.0	1160	6.0	0.531	0.8	LOS A	0.0	0.0	0.00	0.02	0.00	59.3
Approach			1196	5.8	1196	5.8	0.531	1.0	NA	0.0	0.0	0.00	0.02	0.00	59.3
All Vehicles			2695	5.4	2695	5.4	0.614	1.8	NA	1.6	11.8	0.01	0.02	0.01	58.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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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# MOVEMENT SUMMARY

Site: 0453 [1. Edinburgh Road/Esatern Valley Way - AM (Site Folder: 10 Years Future AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [10 Years Future AM Peak (Network Folder: 10 Years Future Network)]

Existing

Site Category: Existing Design

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 135 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	[ Dist ] m				
South: Eastern Valley Way															
1	L2	All MCs	52	6.1	52	6.1	0.367	69.0	LOS E	7.5	54.9	0.88	0.76	0.88	19.6
2	T1	All MCs	518	5.7	518	5.7	* 1.241	275.0	LOS F	58.5	429.6	0.98	1.69	2.15	6.9
3	R2	All MCs	73	4.3	73	4.3	0.158	66.2	LOS E	3.7	26.7	0.81	0.75	0.81	23.9
Approach			642	5.6	642	5.6	1.241	234.8	LOS F	58.5	429.6	0.95	1.51	1.89	7.0
East: Edinburgh Road															
4	L2	All MCs	161	2.6	161	2.6	1.205	267.3	LOS F	17.2	122.4	1.00	1.80	2.31	7.2
5	T1	All MCs	251	1.3	250	1.3	1.205	309.4	LOS F	17.2	122.4	1.00	1.80	2.31	2.3
6	R2	All MCs	95	4.4	94	4.5	0.692	87.2	LOS F	5.2	37.6	1.00	0.81	1.10	6.0
Approach			506	2.3	505	2.3	1.205	254.5	LOS F	17.2	122.4	1.00	1.62	2.08	3.9
North: Eastern Valley Way															
7	L2	All MCs	38	11.1	38	11.1	0.056	68.0	LOS E	1.5	11.5	0.64	0.70	0.64	29.6
8	T1	All MCs	1103	3.1	1102	3.1	1.033	142.3	LOS F	56.2	403.7	1.00	1.41	1.56	20.8
9	R2	All MCs	889	3.7	889	3.7	* 1.272	218.1	LOS F	82.6	596.4	0.96	1.37	2.00	8.1
Approach			2031	3.5	2028	3.5	1.272	174.2	LOS F	82.6	596.4	0.98	1.38	1.74	12.8
West: Edinburgh Road															
10	L2	All MCs	575	7.1	575	7.1	1.138	99.5	LOS F	51.2	377.6	0.80	1.09	1.31	2.8
11	T1	All MCs	168	5.0	168	5.0	* 1.138	200.6	LOS F	51.2	377.6	1.00	1.42	2.02	1.6
12	R2	All MCs	112	6.6	112	6.6	* 0.827	83.0	LOS F	6.4	47.3	1.00	0.88	1.25	22.1
Approach			855	6.7	855	6.7	1.138	117.2	LOS F	51.2	377.6	0.87	1.13	1.44	3.8
All Vehicles			4034	4.3	4030	4.3	1.272	181.8	LOS F	82.6	596.4	0.95	1.38	1.74	9.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
					[ Ped ped	[ Dist ] m					
South: Eastern Valley Way											
P3	Full	18	60.7	LOS F	0.1	0.1	0.95	0.95	214.6	200.0	0.93

East: Edinburgh Road											
P1	Full	12	58.8	LOS E	0.0	0.0	0.93	0.93	212.7	200.0	0.94
North: Eastern Valley Way											
P4	Full	79	60.9	LOS F	0.3	0.3	0.95	0.95	214.7	200.0	0.93
West: Edinburgh Road											
P2	Full	19	61.7	LOS F	0.1	0.1	0.96	0.96	215.5	200.0	0.93
All Pedestrians		127	60.8	LOS F	0.3	0.3	0.95	0.95	214.6	200.0	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Project: P:\Projects\_2023\0668\_LXCN\_100 Edinburgh Rd, Castlecrag\03 WIP\07 SIDRA\SSDA\231114-0688-100 Edinburgh Road, Castlecrag.sip9

# MOVEMENT SUMMARY

Site: 101 [2. Edinburgh Road/Raeburn Avenue/Driveway - AM  
(Site Folder: 10 Years Future AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [10 Years  
Future AM Peak (Network  
Folder: 10 Years Future  
Network)]

Existing  
Site Category: Existing Design  
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	[ Dist ] m				
South: Driveway															
1	L2	All MCs	1	0.0	1	0.0	0.006	1.6	LOS A	0.1	0.5	0.52	0.37	0.52	6.9
2	T1	All MCs	1	0.0	1	0.0	0.006	3.7	LOS A	0.1	0.5	0.52	0.37	0.52	36.1
3	R2	All MCs	1	0.0	1	0.0	0.006	4.6	LOS A	0.1	0.5	0.52	0.37	0.52	6.9
Approach			3	0.0	3	0.0	0.006	3.3	LOS A	0.1	0.5	0.52	0.37	0.52	26.6
East: Edinburgh Road															
4	L2	All MCs	1	0.0	1	0.0	0.251	8.9	LOS A	18.2	130.6	0.03	0.03	0.03	36.7
5	T1	All MCs	464	2.7	463	2.7	0.251	0.0	LOS A	18.2	130.6	0.03	0.03	0.03	48.0
6	R2	All MCs	13	0.0	13	0.0	0.251	5.3	LOS A	18.2	130.6	0.03	0.03	0.03	46.9
Approach			478	2.6	476	2.7	0.251	0.2	NA	18.2	130.6	0.03	0.03	0.03	47.8
North: Raeburn Avenue															
7	L2	All MCs	12	0.0	12	0.0	0.146	5.4	LOS A	4.0	28.9	0.55	0.71	0.55	38.8
8	T1	All MCs	1	0.0	1	0.0	0.146	10.7	LOS A	4.0	28.9	0.55	0.71	0.55	36.8
9	R2	All MCs	36	2.9	36	2.9	0.146	10.1	LOS A	4.0	28.9	0.55	0.71	0.55	38.8
Approach			48	2.2	48	2.2	0.146	9.0	LOS A	4.0	28.9	0.55	0.71	0.55	38.7
West: Edinburgh Road															
10	L2	All MCs	17	6.3	16	6.3	0.136	4.6	LOS A	0.0	0.1	0.01	0.04	0.01	47.0
11	T1	All MCs	256	5.8	237	5.8	0.136	0.0	LOS A	0.0	0.1	0.01	0.04	0.01	47.5
12	R2	All MCs	1	0.0	1	0.0	0.136	7.2	LOS A	0.0	0.1	0.01	0.04	0.01	35.9
Approach			274	5.8	254	5.8	0.136	0.3	NA	0.0	0.1	0.01	0.04	0.01	47.3
All Vehicles			803	3.7	781	3.8	0.251	0.8	NA	18.2	130.6	0.06	0.08	0.06	45.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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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# MOVEMENT SUMMARY

**Site: 101 [3. Edinburgh Road/Rutland Avenue/The Postern - AM (Site Folder: 10 Years Future AM Peak)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

**Network: N101 [10 Years Future AM Peak (Network Folder: 10 Years Future Network)]**

New Site  
Site Category: Existing Design  
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	[ Dist ] m				
South: The Postern															
1	L2	All MCs	59	0.0	59	0.0	0.157	6.2	LOS A	3.1	21.4	0.57	0.63	0.57	33.5
2	T1	All MCs	1	0.0	1	0.0	0.157	6.0	LOS A	3.1	21.4	0.57	0.63	0.57	41.5
3	R2	All MCs	9	0.0	9	0.0	0.157	9.2	LOS A	3.1	21.4	0.57	0.63	0.57	33.5
3u	U	All MCs	1	0.0	1	0.0	0.157	11.9	LOS A	3.1	21.4	0.57	0.63	0.57	38.8
Approach			71	0.0	71	0.0	0.157	6.7	LOS A	3.1	21.4	0.57	0.63	0.57	33.9
East: Edinburgh Road															
4	L2	All MCs	6	0.0	6	0.0	0.613	5.4	LOS A	18.4	132.8	0.57	0.47	0.58	43.1
5	T1	All MCs	355	3.6	355	3.6	0.613	5.2	LOS A	18.4	132.8	0.57	0.47	0.58	42.8
6	R2	All MCs	1	0.0	1	0.0	0.613	8.3	LOS A	18.4	132.8	0.57	0.47	0.58	44.1
6u	U	All MCs	1	0.0	1	0.0	0.613	11.0	LOS A	18.4	132.8	0.57	0.47	0.58	42.8
Approach			363	3.5	363	3.5	0.613	5.2	LOS A	18.4	132.8	0.57	0.47	0.58	42.8
North: Rutland Road															
7	L2	All MCs	11	10.0	11	10.0	0.092	5.6	LOS A	1.9	13.2	0.46	0.62	0.46	38.9
8	T1	All MCs	4	0.0	4	0.0	0.092	5.3	LOS A	1.9	13.2	0.46	0.62	0.46	40.8
9	R2	All MCs	36	0.0	36	0.0	0.092	8.5	LOS A	1.9	13.2	0.46	0.62	0.46	38.9
9u	U	All MCs	1	0.0	1	0.0	0.092	11.1	LOS A	1.9	13.2	0.46	0.62	0.46	44.5
Approach			52	2.0	52	2.0	0.092	7.7	LOS A	1.9	13.2	0.46	0.62	0.46	39.3
West: Edinburgh Road															
10	L2	All MCs	13	0.0	12	0.0	0.192	3.8	LOS A	1.3	9.4	0.12	0.49	0.12	41.3
11	T1	All MCs	181	8.1	169	8.2	0.192	3.7	LOS A	1.3	9.4	0.12	0.49	0.12	29.5
12	R2	All MCs	56	0.0	52	0.0	0.192	6.8	LOS A	1.3	9.4	0.12	0.49	0.12	36.6
12u	U	All MCs	24	0.0	23	0.0	0.192	9.2	LOS A	1.3	9.4	0.12	0.49	0.12	29.5
Approach			274	5.4	255	5.4	0.192	4.8	LOS A	1.3	9.4	0.12	0.49	0.12	33.1
All Vehicles			759	3.7	740	3.8	0.613	5.4	LOS A	18.4	132.8	0.41	0.50	0.41	40.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

Site: 101 [4. Edinburgh Road / Sunnyside Crescent - AM  
(Site Folder: 10 Years Future AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [10 Years  
Future AM Peak (Network  
Folder: 10 Years Future  
Network)]

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	[ Dist ] m				
NorthEast: Edinburgh Road															
25	T1	All MCs	163	5.2	163	5.2	0.097	0.0	LOS A	0.0	0.1	0.00	0.00	0.00	59.9
26	R2	All MCs	1	0.0	1	0.0	0.097	5.5	LOS A	0.0	0.1	0.00	0.00	0.00	59.9
Approach			164	5.1	164	5.1	0.097	0.0	NA	0.0	0.1	0.00	0.00	0.00	59.9
NorthWest: Sunnyside Crescent															
27	L2	All MCs	14	0.0	14	0.0	0.024	5.7	LOS A	0.1	0.6	0.20	0.55	0.20	52.3
29	R2	All MCs	15	0.0	15	0.0	0.024	6.3	LOS A	0.1	0.6	0.20	0.55	0.20	49.9
Approach			28	0.0	28	0.0	0.024	6.0	LOS A	0.1	0.6	0.20	0.55	0.20	51.4
SouthWest: Edinburgh Road															
30	L2	All MCs	4	0.0	4	0.0	0.040	5.5	LOS A	0.0	0.0	0.00	0.03	0.00	59.3
31	T1	All MCs	72	13.2	67	13.2	0.040	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.6
Approach			76	12.5	71	12.5	0.040	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.6
All Vehicles			268	6.7	264	6.8	0.097	0.8	NA	0.1	0.6	0.02	0.07	0.02	58.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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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Project: P:\Projects\_2023\0668\_LXCN\_100 Edinburgh Rd, Castlecrag\03 WIP\07 SIDRA\SSDA\231114-0688-100 Edinburgh Road, Castlecrag.sip9

# MOVEMENT SUMMARY

Site: 101 [5. Eastern Valley Way / Sunnyside Crescent - AM  
(Site Folder: 10 Years Future AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [10 Years  
Future AM Peak (Network  
Folder: 10 Years Future  
Network)]

New Site  
Site Category: Existing Design  
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	[ Dist ] m				
South: Eastern Valley Way															
2	T1	All MCs	1177	6.3	1062	6.3	0.671	22.3	LOS B	50.2	370.2	0.99	0.27	0.99	43.9
3	R2	All MCs	4	0.0	4	0.0	0.253	237.2	LOS F	0.5	3.6	0.99	1.00	1.02	7.0
Approach			1181	6.2	1066	6.3	0.671	28.3	NA	50.2	370.2	0.99	0.27	0.99	40.9
East: Sunnyside Crescent															
4	L2	All MCs	11	0.0	10	0.0	1.221	498.2	LOS F	3.8	26.6	1.00	1.15	1.71	3.6
6	R2	All MCs	2	0.0	2	0.0	1.221	456.3	LOS F	3.8	26.6	1.00	1.15	1.71	6.6
Approach			13	0.0	12	0.0	1.221	491.3	NA	3.8	26.6	1.00	1.15	1.71	4.1
North: Eastern Valley Way															
7	L2	All MCs	79	2.7	79	2.7	0.558	5.8	LOS A	0.0	0.0	0.00	0.04	0.00	58.7
8	T1	All MCs	2045	3.4	2045	3.4	0.558	0.3	LOS A	0.0	0.0	0.00	0.02	0.00	59.1
Approach			2124	3.4	2124	3.4	0.558	0.5	NA	0.0	0.0	0.00	0.02	0.00	59.1
All Vehicles			3318	4.4	3202	4.6	1.221	9.9	NA	50.2	370.2	0.33	0.11	0.33	46.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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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# MOVEMENT SUMMARY

Site: 0453 [1. Edinburgh Road/Esatern Valley Way - PM (Site Folder: 10 Years Future PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [10 Years Future PM Peak (Network Folder: 10 Years Future Network)]

Existing

Site Category: Existing Design

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 131 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	[ Dist ] m				
South: Eastern Valley Way															
1	L2	All MCs	78	1.4	78	1.4	*0.808	58.9	LOS E	24.7	180.9	1.00	0.92	1.07	17.6
2	T1	All MCs	686	6.1	686	6.1	0.808	56.6	LOS E	24.7	180.9	1.00	0.93	1.08	22.4
3	R2	All MCs	114	6.5	114	6.5	0.426	69.7	LOS E	6.7	49.6	0.95	0.79	0.95	20.2
Approach			878	5.8	878	5.8	0.808	58.5	LOS E	24.7	180.9	0.99	0.91	1.06	20.4
East: Edinburgh Road															
4	L2	All MCs	84	2.5	84	2.5	0.737	57.7	LOS E	15.8	114.0	0.99	0.87	1.04	22.8
5	T1	All MCs	173	4.3	173	4.3	0.737	78.9	LOS F	15.8	114.0	0.99	0.87	1.04	9.3
6	R2	All MCs	102	9.3	102	9.3	0.765	90.6	LOS F	7.0	52.6	1.00	0.91	1.18	4.3
Approach			359	5.3	359	5.3	0.765	77.2	LOS F	15.8	114.0	0.99	0.88	1.08	9.6
North: Eastern Valley Way															
7	L2	All MCs	46	6.8	46	6.8	0.055	24.1	LOS B	1.5	11.2	0.55	0.69	0.55	33.8
8	T1	All MCs	582	5.8	581	5.8	0.505	25.3	LOS B	18.9	138.6	0.69	0.60	0.69	43.9
9	R2	All MCs	652	6.3	651	6.3	*0.799	29.2	LOS C	16.0	118.0	0.92	0.85	0.95	32.0
Approach			1280	6.1	1278	6.1	0.799	27.3	LOS B	18.9	138.6	0.80	0.73	0.82	37.5
West: Edinburgh Road															
10	L2	All MCs	847	3.9	847	3.9	0.676	22.5	LOS B	30.7	221.7	0.72	0.81	0.72	11.1
11	T1	All MCs	169	3.7	169	3.7	0.676	81.6	LOS F	14.9	107.4	0.96	0.83	0.96	6.2
12	R2	All MCs	78	2.7	78	2.7	*0.772	92.6	LOS F	5.4	38.8	1.00	0.89	1.23	18.5
Approach			1095	3.8	1095	3.8	0.772	36.6	LOS C	30.7	221.7	0.78	0.82	0.80	10.4
All Vehicles			3612	5.2	3610	5.2	0.808	42.7	LOS D	30.7	221.7	0.86	0.82	0.90	23.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
					[ Ped ped	[ Dist ] m					
South: Eastern Valley Way											
P3	Full	18	58.7	LOS E	0.1	0.1	0.95	0.95	212.6	200.0	0.94

East: Edinburgh Road											
P1	Full	12	56.8	LOS E	0.0	0.0	0.93	0.93	210.7	200.0	0.95
North: Eastern Valley Way											
P4	Full	79	58.9	LOS E	0.3	0.3	0.95	0.95	212.7	200.0	0.94
West: Edinburgh Road											
P2	Full	19	59.7	LOS E	0.1	0.1	0.95	0.95	213.5	200.0	0.94
All Pedestrians		127	58.8	LOS E	0.3	0.3	0.95	0.95	212.6	200.0	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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# MOVEMENT SUMMARY

Site: 101 [2. Edinburgh Road/Raeburn Avenue/Driveway - PM  
(Site Folder: 10 Years Future PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [10 Years  
Future PM Peak (Network  
Folder: 10 Years Future  
Network)]

Existing  
Site Category: Existing Design  
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	[ Dist ] m				
South: Driveway															
1	L2	All MCs	1	0.0	1	0.0	0.005	1.1	LOS A	0.0	0.1	0.48	0.30	0.48	7.4
2	T1	All MCs	1	0.0	1	0.0	0.005	3.0	LOS A	0.0	0.1	0.48	0.30	0.48	36.7
3	R2	All MCs	1	0.0	1	0.0	0.005	3.7	LOS A	0.0	0.1	0.48	0.30	0.48	7.4
Approach			3	0.0	3	0.0	0.005	2.6	LOS A	0.0	0.1	0.48	0.30	0.48	27.5
East: Edinburgh Road															
4	L2	All MCs	1	0.0	1	0.0	0.319	9.3	LOS A	0.1	0.7	0.03	0.03	0.03	36.7
5	T1	All MCs	332	5.7	332	5.7	0.319	0.0	LOS A	0.1	0.7	0.03	0.03	0.03	48.0
6	R2	All MCs	7	0.0	7	0.0	0.319	5.8	LOS A	0.1	0.7	0.03	0.03	0.03	46.9
Approach			340	5.6	340	5.6	0.319	0.2	NA	0.1	0.7	0.03	0.03	0.03	47.9
North: Raeburn Avenue															
7	L2	All MCs	12	0.0	12	0.0	0.077	5.6	LOS A	0.2	1.3	0.49	0.67	0.49	40.1
8	T1	All MCs	1	0.0	1	0.0	0.077	9.8	LOS A	0.2	1.3	0.49	0.67	0.49	38.0
9	R2	All MCs	23	0.0	23	0.0	0.077	8.6	LOS A	0.2	1.3	0.49	0.67	0.49	40.1
Approach			36	0.0	36	0.0	0.077	7.7	LOS A	0.2	1.3	0.49	0.67	0.49	40.0
West: Edinburgh Road															
10	L2	All MCs	34	0.0	34	0.0	0.181	4.6	LOS A	0.0	0.1	0.00	0.06	0.00	46.9
11	T1	All MCs	304	6.2	304	6.2	0.181	0.0	LOS A	0.0	0.1	0.00	0.06	0.00	46.1
12	R2	All MCs	1	0.0	1	0.0	0.181	6.9	LOS A	0.0	0.1	0.00	0.06	0.00	35.3
Approach			339	5.6	339	5.6	0.181	0.5	NA	0.0	0.1	0.00	0.06	0.00	46.4
All Vehicles			718	5.3	718	5.3	0.319	0.7	NA	0.2	1.3	0.04	0.08	0.04	45.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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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# MOVEMENT SUMMARY

**Site: 101 [3. Edinburgh Road/Rutland Avenue/The Postern - PM (Site Folder: 10 Years Future PM Peak)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

**Network: N101 [10 Years Future PM Peak (Network Folder: 10 Years Future Network)]**

New Site  
Site Category: Existing Design  
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	[ Dist ] m				
South: The Postern															
1	L2	All MCs	62	0.0	62	0.0	0.073	5.2	LOS A	0.3	2.4	0.42	0.57	0.42	35.3
2	T1	All MCs	1	0.0	1	0.0	0.073	5.0	LOS A	0.3	2.4	0.42	0.57	0.42	42.5
3	R2	All MCs	6	0.0	6	0.0	0.073	8.2	LOS A	0.3	2.4	0.42	0.57	0.42	35.3
3u	U	All MCs	1	0.0	1	0.0	0.073	10.8	LOS A	0.3	2.4	0.42	0.57	0.42	40.1
Approach			71	0.0	71	0.0	0.073	5.5	LOS A	0.3	2.4	0.42	0.57	0.42	35.7
East: Edinburgh Road															
4	L2	All MCs	9	0.0	9	0.0	0.201	4.5	LOS A	1.2	8.6	0.30	0.44	0.30	44.0
5	T1	All MCs	218	8.2	218	8.2	0.201	4.3	LOS A	1.2	8.6	0.30	0.44	0.30	44.1
6	R2	All MCs	1	0.0	1	0.0	0.201	7.4	LOS A	1.2	8.6	0.30	0.44	0.30	44.9
6u	U	All MCs	1	0.0	1	0.0	0.201	10.1	LOS A	1.2	8.6	0.30	0.44	0.30	44.1
Approach			229	7.8	229	7.8	0.201	4.4	LOS A	1.2	8.6	0.30	0.44	0.30	44.1
North: Rutland Road															
7	L2	All MCs	8	0.0	8	0.0	0.025	5.7	LOS A	0.1	0.9	0.48	0.59	0.48	39.4
8	T1	All MCs	3	0.0	3	0.0	0.025	5.5	LOS A	0.1	0.9	0.48	0.59	0.48	41.2
9	R2	All MCs	11	0.0	11	0.0	0.025	8.8	LOS A	0.1	0.9	0.48	0.59	0.48	39.4
9u	U	All MCs	1	0.0	1	0.0	0.025	11.4	LOS A	0.1	0.9	0.48	0.59	0.48	44.9
Approach			23	0.0	23	0.0	0.025	7.3	LOS A	0.1	0.9	0.48	0.59	0.48	40.1
West: Edinburgh Road															
10	L2	All MCs	8	0.0	8	0.0	0.211	3.8	LOS A	1.5	11.1	0.10	0.48	0.10	41.5
11	T1	All MCs	223	6.6	223	6.6	0.211	3.6	LOS A	1.5	11.1	0.10	0.48	0.10	29.9
12	R2	All MCs	56	1.9	56	1.9	0.211	6.8	LOS A	1.5	11.1	0.10	0.48	0.10	36.8
12u	U	All MCs	28	3.7	28	3.7	0.211	9.1	LOS A	1.5	11.1	0.10	0.48	0.10	29.9
Approach			316	5.3	316	5.3	0.211	4.7	LOS A	1.5	11.1	0.10	0.48	0.10	32.8
All Vehicles			639	5.4	639	5.4	0.211	4.8	LOS A	1.5	11.1	0.22	0.48	0.22	40.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: P:\Projects\_2023\0668\_LXCN\_100 Edinburgh Rd, Castlecrag\03 WIP\07 SIDRA\SSDA\231114-0688-100 Edinburgh Road, Castlecrag.sip9

# MOVEMENT SUMMARY

Site: 101 [4. Edinburgh Road / Sunnyside Crescent - PM (Site Folder: 10 Years Future PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [10 Years Future PM Peak (Network Folder: 10 Years Future Network)]

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	Dist ] m				
NorthEast: Edinburgh Road															
25	T1	All MCs	105	10.0	105	10.0	0.059	0.0	LOS A	0.0	0.2	0.02	0.02	0.02	59.5
26	R2	All MCs	3	0.0	3	0.0	0.059	5.6	LOS A	0.0	0.2	0.02	0.02	0.02	59.5
Approach			108	9.7	108	9.7	0.059	0.2	NA	0.0	0.2	0.02	0.02	0.02	59.5
NorthWest: Sunnyside Crescent															
27	L2	All MCs	13	0.0	13	0.0	0.015	5.9	LOS A	0.1	0.4	0.23	0.55	0.23	52.2
29	R2	All MCs	6	0.0	6	0.0	0.015	6.2	LOS A	0.1	0.4	0.23	0.55	0.23	49.7
Approach			19	0.0	19	0.0	0.015	6.0	LOS A	0.1	0.4	0.23	0.55	0.23	51.7
SouthWest: Edinburgh Road															
30	L2	All MCs	2	0.0	2	0.0	0.063	5.6	LOS A	0.0	0.0	0.00	0.01	0.00	59.8
31	T1	All MCs	115	9.2	115	9.2	0.063	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.9
Approach			117	9.0	117	9.0	0.063	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.9
All Vehicles			244	8.6	244	8.6	0.063	0.6	NA	0.1	0.4	0.02	0.06	0.02	59.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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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# MOVEMENT SUMMARY

Site: 101 [5. Eastern Valley Way / Sunnyside Crescent - PM  
(Site Folder: 10 Years Future PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [10 Years  
Future PM Peak (Network  
Folder: 10 Years Future  
Network)]

New Site  
Site Category: Existing Design  
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	[ Dist ] m				
South: Eastern Valley Way															
2	T1	All MCs	1627	5.1	1627	5.1	0.442	0.6	LOS A	0.6	4.1	0.01	0.01	0.01	59.3
3	R2	All MCs	2	0.0	2	0.0	0.442	46.6	LOS D	0.6	4.1	0.03	0.03	0.03	57.8
Approach			1629	5.1	1629	5.1	0.442	0.7	NA	0.6	4.1	0.01	0.01	0.01	59.3
East: Sunnyside Crescent															
4	L2	All MCs	12	9.1	12	9.1	1.182	329.9	LOS F	4.2	30.7	1.00	1.21	1.95	4.4
6	R2	All MCs	6	0.0	6	0.0	1.182	505.0	LOS F	4.2	30.7	1.00	1.21	1.95	8.1
Approach			18	5.9	18	5.9	1.182	391.7	NA	4.2	30.7	1.00	1.21	1.95	5.8
North: Eastern Valley Way															
7	L2	All MCs	39	0.0	39	0.0	0.117	5.6	LOS A	0.0	0.0	0.00	0.11	0.00	58.0
8	T1	All MCs	1277	6.0	1277	6.0	0.584	1.1	LOS A	0.0	0.0	0.00	0.01	0.00	59.2
Approach			1316	5.8	1316	5.8	0.584	1.2	NA	0.0	0.0	0.00	0.02	0.00	59.2
All Vehicles			2963	5.4	2963	5.4	1.182	3.3	NA	4.2	30.7	0.01	0.02	0.02	56.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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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Project: P:\Projects\_2023\0668\_LXCN\_100 Edinburgh Rd, Castlecrag\03 WIP\07 SIDRA\SSDA\231114-0688-100 Edinburgh Road, Castlecrag.sip9

# MOVEMENT SUMMARY

Site: 0453 [1. Edinburgh Road/Esatern Valley Way - AM (Site Folder: Existing with Development AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing with Development AM Peak (Network Folder: Existing with Development Network)]

Existing

Site Category: Existing Design

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 135 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	Dist ] m				
South: Eastern Valley Way															
1	L2	All MCs	47	6.7	47	6.7	0.343	66.8	LOS E	6.7	49.1	0.88	0.75	0.88	19.7
2	T1	All MCs	471	5.6	471	5.6	* 1.162	219.6	LOS F	47.1	345.6	0.98	1.52	1.90	8.6
3	R2	All MCs	76	4.2	76	4.2	0.169	63.4	LOS E	3.9	28.2	0.82	0.75	0.82	23.6
Approach			594	5.5	594	5.5	1.162	187.5	LOS F	47.1	345.6	0.95	1.36	1.68	8.5
East: Edinburgh Road															
4	L2	All MCs	161	2.6	161	2.6	* 1.167	234.6	LOS F	17.2	122.4	1.00	1.71	2.15	8.1
5	T1	All MCs	262	1.2	262	1.2	1.167	275.1	LOS F	17.2	122.4	1.00	1.71	2.15	2.6
6	R2	All MCs	98	4.3	98	4.3	0.716	86.1	LOS F	5.3	38.3	1.00	0.82	1.12	6.0
Approach			521	2.2	521	2.2	1.167	227.1	LOS F	17.2	122.4	1.00	1.54	1.96	4.2
North: Eastern Valley Way															
7	L2	All MCs	43	9.8	43	9.8	0.065	66.7	LOS E	1.7	13.2	0.65	0.70	0.65	29.3
8	T1	All MCs	1003	3.0	1003	3.0	0.951	99.2	LOS F	41.6	298.7	1.00	1.17	1.30	26.9
9	R2	All MCs	808	3.6	808	3.6	* 1.160	151.8	LOS F	63.1	455.3	0.96	1.24	1.71	10.7
Approach			1855	3.5	1855	3.5	1.160	121.4	LOS F	63.1	455.3	0.97	1.19	1.46	16.5
West: Edinburgh Road															
10	L2	All MCs	522	7.1	522	7.1	1.035	59.5	LOS E	40.0	294.1	0.79	1.00	1.09	4.2
11	T1	All MCs	178	4.1	178	4.1	1.035	119.6	LOS F	40.0	294.1	1.00	1.25	1.61	2.5
12	R2	All MCs	101	6.3	101	6.3	* 0.747	76.1	LOS F	5.5	40.7	1.00	0.82	1.15	23.5
Approach			801	6.3	801	6.3	1.035	74.9	LOS F	40.0	294.1	0.86	1.03	1.21	5.2
All Vehicles			3771	4.2	3770	4.2	1.167	136.5	LOS F	63.1	455.3	0.95	1.23	1.51	11.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
					[ Ped ped	Dist ] m					
		ped/h	sec					sec	m	m/sec	
South: Eastern Valley Way											
P3	Full	18	60.7	LOS F	0.1	0.1	0.95	0.95	214.6	200.0	0.93

East: Edinburgh Road											
P1	Full	12	58.8	LOS E	0.0	0.0	0.93	0.93	212.7	200.0	0.94
North: Eastern Valley Way											
P4	Full	79	60.9	LOS F	0.3	0.3	0.95	0.95	214.7	200.0	0.93
West: Edinburgh Road											
P2	Full	19	61.7	LOS F	0.1	0.1	0.96	0.96	215.5	200.0	0.93
All Pedestrians		127	60.8	LOS F	0.3	0.3	0.95	0.95	214.6	200.0	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Project: P:\Projects\_2023\0668\_LXCN\_100 Edinburgh Rd, Castlecrag\03 WIP\07 SIDRA\SSDA\231114-0688-100 Edinburgh Road, Castlecrag.sip9

# MOVEMENT SUMMARY

Site: 101 [2. Edinburgh Road/Raeburn Avenue/Driveway - AM  
(Site Folder: Existing with Development AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing with Development AM Peak  
(Network Folder: Existing with Development Network)]

Existing  
Site Category: Existing Design  
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	[ Dist ] m				
South: Driveway															
1	L2	All MCs	61	0.0	61	0.0	0.394	4.9	LOS A	4.2	29.4	0.64	0.82	0.83	8.1
2	T1	All MCs	9	0.0	9	0.0	0.394	7.4	LOS A	4.2	29.4	0.64	0.82	0.83	42.9
3	R2	All MCs	105	0.0	105	0.0	0.394	9.5	LOS A	4.2	29.4	0.64	0.82	0.83	8.1
Approach			176	0.0	176	0.0	0.394	7.8	LOS A	4.2	29.4	0.64	0.82	0.83	14.6
East: Edinburgh Road															
4	L2	All MCs	105	0.0	105	0.0	0.285	5.3	LOS A	18.3	130.6	0.03	0.14	0.03	40.4
5	T1	All MCs	422	2.7	422	2.7	0.285	0.0	LOS A	18.3	130.6	0.03	0.14	0.03	43.2
6	R2	All MCs	12	0.0	12	0.0	0.285	5.4	LOS A	18.3	130.6	0.03	0.14	0.03	46.0
Approach			539	2.1	538	2.2	0.285	1.2	NA	18.3	130.6	0.03	0.14	0.03	42.9
North: Raeburn Avenue															
7	L2	All MCs	11	0.0	11	0.0	0.152	5.4	LOS A	3.4	24.3	0.57	0.72	0.57	39.2
8	T1	All MCs	8	0.0	8	0.0	0.152	9.5	LOS A	3.4	24.3	0.57	0.72	0.57	38.8
9	R2	All MCs	33	3.2	33	3.2	0.152	10.6	LOS A	3.4	24.3	0.57	0.72	0.57	39.2
Approach			52	2.0	52	2.0	0.152	9.4	LOS A	3.4	24.3	0.57	0.72	0.57	39.1
West: Edinburgh Road															
10	L2	All MCs	16	6.7	15	6.7	0.172	6.7	LOS A	0.4	3.1	0.20	0.27	0.20	45.2
11	T1	All MCs	233	5.9	228	5.9	0.172	0.7	LOS A	0.4	3.1	0.20	0.27	0.20	38.4
12	R2	All MCs	44	0.0	43	0.0	0.172	7.3	LOS A	0.4	3.1	0.20	0.27	0.20	35.8
Approach			293	5.0	287	5.1	0.172	2.0	NA	0.4	3.1	0.20	0.27	0.20	39.5
All Vehicles			1059	2.6	1053	2.6	0.394	2.9	NA	18.3	130.6	0.21	0.32	0.24	36.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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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# MOVEMENT SUMMARY

**Site: 101 [3. Edinburgh Road/Rutland Avenue/The Postern - AM (Site Folder: Existing with Development AM Peak)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

**Network: N101 [Existing with Development AM Peak (Network Folder: Existing with Development Network)]**

New Site  
Site Category: Existing Design  
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	[ Dist ] m				
South: The Postern															
1	L2	All MCs	23	0.0	23	0.0	0.074	6.7	LOS A	0.8	5.3	0.59	0.67	0.59	33.2
2	T1	All MCs	1	0.0	1	0.0	0.074	6.2	LOS A	0.8	5.3	0.59	0.67	0.59	41.3
3	R2	All MCs	8	0.0	8	0.0	0.074	9.4	LOS A	0.8	5.3	0.59	0.67	0.59	33.2
3u	U	All MCs	1	0.0	1	0.0	0.074	12.1	LOS A	0.8	5.3	0.59	0.67	0.59	38.6
Approach			34	0.0	34	0.0	0.074	7.6	LOS A	0.8	5.3	0.59	0.67	0.59	34.0
East: Edinburgh Road															
4	L2	All MCs	5	0.0	5	0.0	0.706	6.5	LOS A	13.2	94.7	0.72	0.51	0.76	43.5
5	T1	All MCs	404	2.9	404	2.9	0.706	6.5	LOS A	13.2	94.7	0.72	0.51	0.76	43.3
6	R2	All MCs	1	0.0	1	0.0	0.706	9.4	LOS A	13.2	94.7	0.72	0.51	0.76	44.4
6u	U	All MCs	1	0.0	1	0.0	0.706	12.1	LOS A	13.2	94.7	0.72	0.51	0.76	43.3
Approach			412	2.8	412	2.8	0.706	6.5	LOS A	13.2	94.7	0.72	0.51	0.76	43.3
North: Rutland Road															
7	L2	All MCs	9	11.1	9	11.1	0.124	6.3	LOS A	1.5	11.0	0.53	0.65	0.53	39.1
8	T1	All MCs	4	0.0	4	0.0	0.124	5.9	LOS A	1.5	11.0	0.53	0.65	0.53	41.0
9	R2	All MCs	47	0.0	47	0.0	0.124	9.4	LOS A	1.5	11.0	0.53	0.65	0.53	39.1
9u	U	All MCs	1	0.0	1	0.0	0.124	11.7	LOS A	1.5	11.0	0.53	0.65	0.53	44.7
Approach			62	1.7	62	1.7	0.124	8.8	LOS A	1.5	11.0	0.53	0.65	0.53	39.5
West: Edinburgh Road															
10	L2	All MCs	26	0.0	26	0.0	0.248	4.4	LOS A	1.8	13.2	0.12	0.49	0.12	44.0
11	T1	All MCs	247	5.5	244	5.5	0.248	4.0	LOS A	1.8	13.2	0.12	0.49	0.12	30.1
12	R2	All MCs	58	0.0	57	0.0	0.248	7.0	LOS A	1.8	13.2	0.12	0.49	0.12	37.3
12u	U	All MCs	22	0.0	22	0.0	0.248	9.1	LOS A	1.8	13.2	0.12	0.49	0.12	30.1
Approach			354	3.9	349	3.9	0.248	4.8	LOS A	1.8	13.2	0.12	0.49	0.12	34.4
All Vehicles			861	3.1	856	3.1	0.706	6.1	LOS A	13.2	94.7	0.46	0.52	0.48	40.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

Site: 101 [4. Edinburgh Road / Sunnyside Crescent - AM (Site Folder: Existing with Development AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing with Development AM Peak (Network Folder: Existing with Development Network)]

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	Dist ] m				
NorthEast: Edinburgh Road															
25	T1	All MCs	227	3.2	227	3.2	0.135	0.0	LOS A	0.0	0.1	0.00	0.00	0.00	59.9
26	R2	All MCs	1	0.0	1	0.0	0.135	5.5	LOS A	0.0	0.1	0.00	0.00	0.00	59.9
Approach			228	3.2	228	3.2	0.135	0.0	NA	0.0	0.1	0.00	0.00	0.00	59.9
NorthWest: Sunnyside Crescent															
27	L2	All MCs	13	0.0	13	0.0	0.029	6.0	LOS A	0.1	0.7	0.30	0.58	0.30	52.0
29	R2	All MCs	17	0.0	17	0.0	0.029	6.9	LOS A	0.1	0.7	0.30	0.58	0.30	49.3
Approach			29	0.0	29	0.0	0.029	6.5	LOS A	0.1	0.7	0.30	0.58	0.30	50.9
SouthWest: Edinburgh Road															
30	L2	All MCs	7	0.0	7	0.0	0.080	5.6	LOS A	0.0	0.0	0.00	0.03	0.00	59.4
31	T1	All MCs	144	5.8	143	5.8	0.080	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.7
Approach			152	5.6	150	5.5	0.080	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.7
All Vehicles			409	3.9	408	3.9	0.135	0.6	NA	0.1	0.7	0.02	0.05	0.02	59.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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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Project: P:\Projects\_2023\0668\_LXCN\_100 Edinburgh Rd, Castlecrag\03 WIP\07 SIDRA\SSDA\231114-0688-100 Edinburgh Road, Castlecrag.sip9

# MOVEMENT SUMMARY

Site: 101 [5. Eastern Valley Way / Sunnyside Crescent - AM  
(Site Folder: Existing with Development AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing with Development AM Peak  
(Network Folder: Existing with Development Network)]

New Site  
Site Category: Existing Design  
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	[ Dist ] m				
South: Eastern Valley Way															
2	T1	All MCs	1082	6.2	1021	6.2	0.604	1.7	LOS A	16.4	121.1	0.50	0.16	0.50	57.9
3	R2	All MCs	4	0.0	4	0.0	0.141	120.1	LOS F	0.3	2.1	0.98	0.99	0.98	12.3
Approach			1086	6.2	1025	6.2	0.604	3.2	NA	16.4	121.1	0.50	0.16	0.50	56.5
East: Sunnyside Crescent															
4	L2	All MCs	9	0.0	9	0.0	0.830	209.7	LOS F	2.1	14.8	1.00	1.04	1.19	6.9
6	R2	All MCs	3	0.0	3	0.0	0.830	326.7	LOS F	2.1	14.8	1.00	1.04	1.19	12.1
Approach			13	0.0	13	0.0	0.830	239.0	NA	2.1	14.8	1.00	1.04	1.19	8.3
North: Eastern Valley Way															
7	L2	All MCs	72	2.9	72	2.9	0.507	5.8	LOS A	0.0	0.0	0.00	0.04	0.00	58.8
8	T1	All MCs	1859	3.5	1859	3.5	0.507	0.2	LOS A	0.0	0.0	0.00	0.02	0.00	59.2
Approach			1931	3.4	1931	3.4	0.507	0.4	NA	0.0	0.0	0.00	0.02	0.00	59.2
All Vehicles			3029	4.4	2968	4.5	0.830	2.0	NA	16.4	121.1	0.18	0.08	0.18	56.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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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Project: P:\Projects\_2023\0668\_LXCN\_100 Edinburgh Rd, Castlecrag\03 WIP\07 SIDRA\SSDA\231114-0688-100 Edinburgh Road, Castlecrag.sip9

# MOVEMENT SUMMARY

**Site: 0453 [1. Edinburgh Road/Esatern Valley Way - PM (Site Folder: Existing with Development PM Peak)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

**Network: N101 [Existing with Development PM Peak (Network Folder: Existing with Development Network)]**

Existing

Site Category: Existing Design

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 131 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	[ Dist ] m				
South: Eastern Valley Way															
1	L2	All MCs	71	1.5	71	1.5	*0.748	55.8	LOS D	21.1	154.5	0.98	0.87	1.01	18.1
2	T1	All MCs	623	6.1	623	6.1	0.748	51.5	LOS D	21.1	154.5	0.98	0.87	1.01	23.2
3	R2	All MCs	118	5.4	118	5.4	0.418	65.0	LOS E	6.9	50.5	0.95	0.79	0.95	20.5
Approach			812	5.6	812	5.6	0.748	53.8	LOS D	21.1	154.5	0.97	0.86	1.00	21.4
East: Edinburgh Road															
4	L2	All MCs	88	2.4	88	2.4	0.756	58.0	LOS E	17.0	122.4	0.99	0.88	1.05	23.0
5	T1	All MCs	189	3.3	189	3.3	0.756	79.9	LOS F	17.0	122.4	0.99	0.88	1.05	9.5
6	R2	All MCs	104	8.1	104	8.1	0.644	86.5	LOS F	6.7	50.5	1.00	0.83	1.05	4.7
Approach			382	4.4	382	4.4	0.756	76.7	LOS F	17.0	122.4	0.99	0.87	1.05	9.7
North: Eastern Valley Way															
7	L2	All MCs	55	5.8	55	5.8	0.067	25.9	LOS B	1.9	13.9	0.58	0.69	0.58	32.7
8	T1	All MCs	529	5.8	529	5.8	0.474	25.3	LOS B	17.5	128.3	0.70	0.61	0.70	43.2
9	R2	All MCs	592	6.2	592	6.2	*0.743	27.4	LOS B	13.1	96.4	0.91	0.83	0.91	32.8
Approach			1176	6.0	1176	6.0	0.743	26.4	LOS B	17.5	128.3	0.80	0.72	0.80	37.9
West: Edinburgh Road															
10	L2	All MCs	771	3.8	771	3.8	0.626	20.6	LOS B	26.8	194.0	0.67	0.80	0.67	12.0
11	T1	All MCs	194	2.7	194	2.7	0.626	72.2	LOS F	14.3	103.0	0.95	0.81	0.95	6.4
12	R2	All MCs	71	3.0	71	3.0	*0.701	89.3	LOS F	4.8	34.6	1.00	0.85	1.15	18.8
Approach			1035	3.6	1035	3.6	0.701	35.0	LOS C	26.8	194.0	0.75	0.80	0.76	10.7
All Vehicles			3404	5.0	3404	5.0	0.756	41.2	LOS C	26.8	194.0	0.85	0.80	0.86	23.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
					[ Ped ped	[ Dist ] m					
South: Eastern Valley Way											
P3	Full	18	58.7	LOS E	0.1	0.1	0.95	0.95	212.6	200.0	0.94

East: Edinburgh Road											
P1	Full	12	56.8	LOS E	0.0	0.0	0.93	0.93	210.7	200.0	0.95
North: Eastern Valley Way											
P4	Full	79	58.9	LOS E	0.3	0.3	0.95	0.95	212.7	200.0	0.94
West: Edinburgh Road											
P2	Full	19	59.7	LOS E	0.1	0.1	0.95	0.95	213.5	200.0	0.94
All Pedestrians		127	58.8	LOS E	0.3	0.3	0.95	0.95	212.6	200.0	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Project: P:\Projects\_2023\0668\_LXCN\_100 Edinburgh Rd, Castlecrag\03 WIP\07 SIDRA\SSDA\231114-0688-100 Edinburgh Road, Castlecrag.sip9

# MOVEMENT SUMMARY

Site: 101 [2. Edinburgh Road/Raeburn Avenue/Driveway - PM  
(Site Folder: Existing with Development PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing with Development PM Peak  
(Network Folder: Existing with Development Network)]

Existing  
Site Category: Existing Design  
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	[ Dist ] m				
South: Driveway															
1	L2	All MCs	57	0.0	57	0.0	0.431	4.5	LOS A	1.8	12.3	0.64	0.80	0.86	7.9
2	T1	All MCs	12	0.0	12	0.0	0.431	7.3	LOS A	1.8	12.3	0.64	0.80	0.86	43.0
3	R2	All MCs	142	0.0	142	0.0	0.431	9.2	LOS A	1.8	12.3	0.64	0.80	0.86	7.9
Approach			211	0.0	211	0.0	0.431	7.8	LOS A	1.8	12.3	0.64	0.80	0.86	14.6
East: Edinburgh Road															
4	L2	All MCs	141	0.0	141	0.0	0.241	5.2	LOS A	0.1	0.7	0.02	0.20	0.02	38.5
5	T1	All MCs	301	5.6	301	5.6	0.241	0.0	LOS A	0.1	0.7	0.02	0.20	0.02	40.9
6	R2	All MCs	6	0.0	6	0.0	0.241	5.4	LOS A	0.1	0.7	0.02	0.20	0.02	45.5
Approach			448	3.8	448	3.8	0.241	1.7	NA	0.1	0.7	0.02	0.20	0.02	40.4
North: Raeburn Avenue															
7	L2	All MCs	11	0.0	11	0.0	0.101	5.5	LOS A	0.2	1.7	0.53	0.70	0.53	40.8
8	T1	All MCs	12	0.0	12	0.0	0.101	8.9	LOS A	0.2	1.7	0.53	0.70	0.53	40.4
9	R2	All MCs	21	0.0	21	0.0	0.101	9.3	LOS A	0.2	1.7	0.53	0.70	0.53	40.8
Approach			43	0.0	43	0.0	0.101	8.3	LOS A	0.2	1.7	0.53	0.70	0.53	40.7
West: Edinburgh Road															
10	L2	All MCs	31	0.0	31	0.0	0.224	6.2	LOS A	0.6	4.7	0.21	0.30	0.21	45.1
11	T1	All MCs	276	6.1	276	6.1	0.224	0.7	LOS A	0.6	4.7	0.21	0.30	0.21	37.2
12	R2	All MCs	69	0.0	69	0.0	0.224	6.9	LOS A	0.6	4.7	0.21	0.30	0.21	34.9
Approach			376	4.5	376	4.5	0.224	2.3	NA	0.6	4.7	0.21	0.30	0.21	39.1
All Vehicles			1078	3.1	1078	3.1	0.431	3.4	NA	1.8	12.3	0.23	0.37	0.27	35.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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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# MOVEMENT SUMMARY

**Site: 101 [3. Edinburgh Road/Rutland Avenue/The Postern - PM (Site Folder: Existing with Development PM Peak)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

**Network: N101 [Existing with Development PM Peak (Network Folder: Existing with Development Network)]**

New Site  
 Site Category: Existing Design  
 Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	[ Dist ] m				
South: The Postern															
1	L2	All MCs	67	0.0	67	0.0	0.087	6.1	LOS A	0.4	3.0	0.51	0.62	0.51	34.6
2	T1	All MCs	1	0.0	1	0.0	0.087	5.7	LOS A	0.4	3.0	0.51	0.62	0.51	42.2
3	R2	All MCs	5	0.0	5	0.0	0.087	8.9	LOS A	0.4	3.0	0.51	0.62	0.51	34.6
3u	U	All MCs	1	0.0	1	0.0	0.087	11.6	LOS A	0.4	3.0	0.51	0.62	0.51	39.6
Approach			75	0.0	75	0.0	0.087	6.4	LOS A	0.4	3.0	0.51	0.62	0.51	35.0
East: Edinburgh Road															
4	L2	All MCs	8	0.0	8	0.0	0.294	4.7	LOS A	1.9	13.6	0.37	0.47	0.37	45.3
5	T1	All MCs	326	4.8	326	4.8	0.294	4.9	LOS A	1.9	13.6	0.37	0.47	0.37	45.8
6	R2	All MCs	1	0.0	1	0.0	0.294	7.6	LOS A	1.9	13.6	0.37	0.47	0.37	45.9
6u	U	All MCs	1	0.0	1	0.0	0.294	10.3	LOS A	1.9	13.6	0.37	0.47	0.37	45.8
Approach			337	4.7	337	4.7	0.294	4.9	LOS A	1.9	13.6	0.37	0.47	0.37	45.8
North: Rutland Road															
7	L2	All MCs	7	0.0	7	0.0	0.049	6.4	LOS A	0.3	1.8	0.55	0.67	0.55	39.9
8	T1	All MCs	3	0.0	3	0.0	0.049	6.3	LOS A	0.3	1.8	0.55	0.67	0.55	41.5
9	R2	All MCs	29	0.0	29	0.0	0.049	10.2	LOS A	0.3	1.8	0.55	0.67	0.55	39.9
9u	U	All MCs	1	0.0	1	0.0	0.049	12.1	LOS A	0.3	1.8	0.55	0.67	0.55	45.2
Approach			41	0.0	41	0.0	0.049	9.3	LOS A	0.3	1.8	0.55	0.67	0.55	40.3
West: Edinburgh Road															
10	L2	All MCs	27	0.0	27	0.0	0.278	4.3	LOS A	2.2	15.9	0.10	0.49	0.10	44.9
11	T1	All MCs	314	4.4	314	4.4	0.278	4.0	LOS A	2.2	15.9	0.10	0.49	0.10	30.5
12	R2	All MCs	61	1.7	61	1.7	0.278	7.0	LOS A	2.2	15.9	0.10	0.49	0.10	37.6
12u	U	All MCs	26	4.0	26	4.0	0.278	9.1	LOS A	2.2	15.9	0.10	0.49	0.10	30.5
Approach			428	3.7	428	3.7	0.278	4.8	LOS A	2.2	15.9	0.10	0.49	0.10	34.4
All Vehicles			881	3.6	881	3.6	0.294	5.2	LOS A	2.2	15.9	0.26	0.50	0.26	41.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

Site: 101 [4. Edinburgh Road / Sunnyside Crescent - PM (Site Folder: Existing with Development PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing with Development PM Peak (Network Folder: Existing with Development Network)]

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	[ Dist ] m				
NorthEast: Edinburgh Road															
25	T1	All MCs	202	4.7	202	4.7	0.109	0.0	LOS A	0.0	0.2	0.01	0.01	0.01	59.7
26	R2	All MCs	3	0.0	3	0.0	0.109	5.7	LOS A	0.0	0.2	0.01	0.01	0.01	59.7
Approach			205	4.6	205	4.6	0.109	0.1	NA	0.0	0.2	0.01	0.01	0.01	59.7
NorthWest: Sunnyside Crescent															
27	L2	All MCs	12	0.0	12	0.0	0.019	6.2	LOS A	0.1	0.5	0.33	0.58	0.33	51.9
29	R2	All MCs	9	0.0	9	0.0	0.019	7.1	LOS A	0.1	0.5	0.33	0.58	0.33	49.2
Approach			21	0.0	21	0.0	0.019	6.6	LOS A	0.1	0.5	0.33	0.58	0.33	51.1
SouthWest: Edinburgh Road															
30	L2	All MCs	6	0.0	6	0.0	0.115	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	59.6
31	T1	All MCs	211	4.5	211	4.5	0.115	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.8
Approach			217	4.4	217	4.4	0.115	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.8
All Vehicles			443	4.3	443	4.3	0.115	0.4	NA	0.1	0.5	0.02	0.04	0.02	59.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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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Project: P:\Projects\_2023\0668\_LXCN\_100 Edinburgh Rd, Castlecrag\03 WIP\07 SIDRA\SSDA\231114-0688-100 Edinburgh Road, Castlecrag.sip9

# MOVEMENT SUMMARY

Site: 101 [5. Eastern Valley Way / Sunnyside Crescent - PM  
(Site Folder: Existing with Development PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing with Development PM Peak  
(Network Folder: Existing with Development Network)]

New Site  
Site Category: Existing Design  
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ]	%	[ Total HV ]	%	v/c	sec		[ Veh. veh	Dist ]				km/h
			veh/h		veh/h					veh	m				
South: Eastern Valley Way															
2	T1	All MCs	1493	5.1	1493	5.1	0.403	0.4	LOS A	0.3	2.4	0.01	0.01	0.01	59.5
3	R2	All MCs	2	0.0	2	0.0	0.403	34.8	LOS C	0.3	2.4	0.02	0.02	0.02	58.6
Approach			1495	5.1	1495	5.1	0.403	0.4	NA	0.3	2.4	0.01	0.01	0.01	59.5
East: Sunnyside Crescent															
4	L2	All MCs	11	10.0	11	10.0	0.628	102.4	LOS F	1.6	12.1	0.99	1.05	1.21	8.1
6	R2	All MCs	5	0.0	5	0.0	0.628	400.1	LOS F	1.6	12.1	0.99	1.05	1.21	13.9
Approach			16	6.7	16	6.7	0.628	201.6	NA	1.6	12.1	0.99	1.05	1.21	10.2
North: Eastern Valley Way															
7	L2	All MCs	37	0.0	37	0.0	0.106	5.6	LOS A	0.0	0.0	0.00	0.11	0.00	57.9
8	T1	All MCs	1160	6.0	1160	6.0	0.532	0.8	LOS A	0.0	0.0	0.00	0.02	0.00	59.3
Approach			1197	5.8	1197	5.8	0.532	1.0	NA	0.0	0.0	0.00	0.02	0.00	59.3
All Vehicles			2707	5.4	2707	5.4	0.628	1.8	NA	1.6	12.1	0.01	0.02	0.01	58.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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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Project: P:\Projects\_2023\0668\_LXCN\_100 Edinburgh Rd, Castlecrag\03 WIP\07 SIDRA\SSDA\231114-0688-100 Edinburgh Road, Castlecrag.sip9

# MOVEMENT SUMMARY

Site: 0453 [1. Edinburgh Road/Esatern Valley Way - AM (Site Folder: 10 Years Future with Development AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [10 Years Future with Development AM Peak (Network Folder: 10 Years Future with Development Network)]

Existing

Site Category: Existing Design

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 135 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	[ Dist ] m				
South: Eastern Valley Way															
1	L2	All MCs	52	6.1	52	6.1	0.377	70.1	LOS E	7.5	55.4	0.89	0.76	0.89	19.4
2	T1	All MCs	518	5.7	518	5.7	* 1.278	302.1	LOS F	61.6	451.9	0.98	1.76	2.26	6.3
3	R2	All MCs	82	3.8	82	3.8	0.183	67.9	LOS E	4.2	30.5	0.82	0.75	0.82	23.5
Approach			652	5.5	652	5.5	1.278	254.2	LOS F	61.6	451.9	0.95	1.55	1.97	6.6
East: Edinburgh Road															
4	L2	All MCs	176	2.4	175	2.4	* 1.261	317.1	LOS F	17.2	122.4	1.00	1.95	2.52	6.2
5	T1	All MCs	283	1.1	282	1.1	1.261	357.7	LOS F	17.2	122.4	1.00	1.95	2.52	2.0
6	R2	All MCs	106	4.0	106	4.0	0.774	89.3	LOS F	5.8	42.2	1.00	0.84	1.18	5.9
Approach			565	2.0	564	2.1	1.261	294.6	LOS F	17.2	122.4	1.00	1.74	2.27	3.3
North: Eastern Valley Way															
7	L2	All MCs	46	9.1	46	9.1	0.069	69.3	LOS E	1.9	14.1	0.65	0.70	0.65	29.2
8	T1	All MCs	1103	3.1	1101	3.1	1.066	165.5	LOS F	59.7	428.7	1.00	1.51	1.70	18.4
9	R2	All MCs	889	3.7	888	3.7	* 1.305	239.3	LOS F	86.2	622.2	0.97	1.40	2.09	7.6
Approach			2039	3.5	2036	3.5	1.305	195.5	LOS F	86.2	622.2	0.98	1.44	1.84	11.7
West: Edinburgh Road															
10	L2	All MCs	575	7.1	575	7.1	1.136	97.9	LOS F	53.9	396.5	0.80	1.09	1.29	2.9
11	T1	All MCs	194	4.3	194	4.3	1.136	196.9	LOS F	53.9	396.5	1.00	1.42	2.01	1.6
12	R2	All MCs	112	6.6	112	6.6	* 0.827	82.5	LOS F	6.3	46.4	1.00	0.88	1.25	22.4
Approach			880	6.5	880	6.5	1.136	117.8	LOS F	53.9	396.5	0.87	1.13	1.45	3.7
All Vehicles			4136	4.2	4131	4.2	1.305	201.7	LOS F	86.2	622.2	0.95	1.44	1.84	8.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
					[ Ped ped	[ Dist ] m					
South: Eastern Valley Way											

P3 Full	18	60.7	LOS F	0.1	0.1	0.95	0.95	214.6	200.0	0.93
East: Edinburgh Road										
P1 Full	12	58.8	LOS E	0.0	0.0	0.93	0.93	212.7	200.0	0.94
North: Eastern Valley Way										
P4 Full	79	60.9	LOS F	0.3	0.3	0.95	0.95	214.7	200.0	0.93
West: Edinburgh Road										
P2 Full	19	61.7	LOS F	0.1	0.1	0.96	0.96	215.5	200.0	0.93
All Pedestrians	127	60.8	LOS F	0.3	0.3	0.95	0.95	214.6	200.0	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Project: P:\Projects\_2023\0668\_LXCN\_100 Edinburgh Rd, Castlecrag\03 WIP\07 SIDRA\SSDA\231114-0688-100 Edinburgh Road, Castlecrag.sip9

# MOVEMENT SUMMARY

Site: 101 [2. Edinburgh Road/Raeburn Avenue/Driveway - AM  
(Site Folder: 10 Years Future with Development AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [10 Years  
Future with Development AM  
Peak (Network Folder: 10 Years  
Future with Development  
Network)]

Existing  
Site Category: Existing Design  
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	[ Dist ] m				
South: Driveway															
1	L2	All MCs	61	0.0	61	0.0	0.423	5.4	LOS A	5.3	37.1	0.67	0.86	0.89	7.4
2	T1	All MCs	9	0.0	9	0.0	0.423	8.3	LOS A	5.3	37.1	0.67	0.86	0.89	42.0
3	R2	All MCs	105	0.0	105	0.0	0.423	10.6	LOS A	5.3	37.1	0.67	0.86	0.89	7.4
Approach			176	0.0	176	0.0	0.423	8.7	LOS A	5.3	37.1	0.67	0.86	0.89	13.6
East: Edinburgh Road															
4	L2	All MCs	105	0.0	105	0.0	0.307	5.3	LOS A	18.3	130.6	0.03	0.13	0.03	40.6
5	T1	All MCs	464	2.7	463	2.7	0.307	0.0	LOS A	18.3	130.6	0.03	0.13	0.03	43.4
6	R2	All MCs	13	0.0	13	0.0	0.307	5.4	LOS A	18.3	130.6	0.03	0.13	0.03	46.0
Approach			582	2.2	580	2.2	0.307	1.1	NA	18.3	130.6	0.03	0.13	0.03	43.2
North: Raeburn Avenue															
7	L2	All MCs	12	0.0	12	0.0	0.177	5.4	LOS A	4.7	33.6	0.59	0.74	0.60	38.5
8	T1	All MCs	8	0.0	8	0.0	0.177	10.2	LOS A	4.7	33.6	0.59	0.74	0.60	38.1
9	R2	All MCs	36	2.9	36	2.9	0.177	11.5	LOS A	4.7	33.6	0.59	0.74	0.60	38.5
Approach			56	1.9	56	1.9	0.177	10.0	LOS A	4.7	33.6	0.59	0.74	0.60	38.4
West: Edinburgh Road															
10	L2	All MCs	17	6.3	16	6.3	0.177	6.9	LOS A	0.4	3.2	0.20	0.27	0.20	45.2
11	T1	All MCs	256	5.8	237	5.8	0.177	0.7	LOS A	0.4	3.2	0.20	0.27	0.20	38.3
12	R2	All MCs	44	0.0	41	0.0	0.177	7.6	LOS A	0.4	3.2	0.20	0.27	0.20	35.7
Approach			317	5.0	294	5.0	0.177	2.0	NA	0.4	3.2	0.20	0.27	0.20	39.4
All Vehicles			1131	2.6	1106	2.7	0.423	3.0	NA	18.3	130.6	0.21	0.32	0.24	36.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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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Project: P:\Projects\_2023\0668\_LXCN\_100 Edinburgh Rd, Castlecrag\03 WIP\07 SIDRA\SSDA\231114-0688-100 Edinburgh Road, Castlecrag.sip9

# MOVEMENT SUMMARY

Site: 101 [3. Edinburgh Road/Rutland Avenue/The Postern - AM (Site Folder: 10 Years Future with Development AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [10 Years Future with Development AM Peak (Network Folder: 10 Years Future with Development Network)]

New Site  
Site Category: Existing Design  
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	[ Dist ] m				
South: The Postern															
1	L2	All MCs	66	0.0	66	0.0	0.198	7.1	LOS A	3.8	26.8	0.67	0.68	0.67	32.6
2	T1	All MCs	1	0.0	1	0.0	0.198	6.8	LOS A	3.8	26.8	0.67	0.68	0.67	41.0
3	R2	All MCs	9	0.0	9	0.0	0.198	10.0	LOS A	3.8	26.8	0.67	0.68	0.67	32.6
3u	U	All MCs	1	0.0	1	0.0	0.198	12.6	LOS A	3.8	26.8	0.67	0.68	0.67	38.2
Approach			78	0.0	78	0.0	0.198	7.5	LOS A	3.8	26.8	0.67	0.68	0.67	33.0
East: Edinburgh Road															
4	L2	All MCs	6	0.0	6	0.0	0.767	7.4	LOS A	25.2	180.5	0.84	0.54	0.91	43.0
5	T1	All MCs	437	2.9	437	2.9	0.767	7.5	LOS A	25.2	180.5	0.84	0.54	0.91	42.7
6	R2	All MCs	1	0.0	1	0.0	0.767	10.3	LOS A	25.2	180.5	0.84	0.54	0.91	44.0
6u	U	All MCs	1	0.0	1	0.0	0.767	13.0	LOS A	25.2	180.5	0.84	0.54	0.91	42.7
Approach			445	2.8	445	2.8	0.767	7.5	LOS A	25.2	180.5	0.84	0.54	0.91	42.7
North: Rutland Road															
7	L2	All MCs	11	10.0	11	10.0	0.133	6.4	LOS A	2.9	20.7	0.54	0.65	0.54	39.0
8	T1	All MCs	4	0.0	4	0.0	0.133	6.0	LOS A	2.9	20.7	0.54	0.65	0.54	40.8
9	R2	All MCs	51	0.0	51	0.0	0.133	9.5	LOS A	2.9	20.7	0.54	0.65	0.54	39.0
9u	U	All MCs	1	0.0	1	0.0	0.133	11.8	LOS A	2.9	20.7	0.54	0.65	0.54	44.5
Approach			66	1.6	66	1.6	0.133	8.8	LOS A	2.9	20.7	0.54	0.65	0.54	39.3
West: Edinburgh Road															
10	L2	All MCs	27	0.0	27	0.0	0.257	4.4	LOS A	1.9	14.1	0.13	0.49	0.13	44.0
11	T1	All MCs	263	5.6	251	5.5	0.257	4.0	LOS A	1.9	14.1	0.13	0.49	0.13	29.9
12	R2	All MCs	63	0.0	59	0.0	0.257	7.0	LOS A	1.9	14.1	0.13	0.49	0.13	37.2
12u	U	All MCs	24	0.0	23	0.0	0.257	9.2	LOS A	1.9	14.1	0.13	0.49	0.13	29.9
Approach			378	3.9	359	3.8	0.257	4.9	LOS A	1.9	14.1	0.13	0.49	0.13	34.2
All Vehicles			967	2.9	949	3.0	0.767	6.6	LOS A	25.2	180.5	0.53	0.54	0.57	40.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

Site: 101 [4. Edinburgh Road / Sunnyside Crescent - AM (Site Folder: 10 Years Future with Development AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [10 Years Future with Development AM Peak (Network Folder: 10 Years Future with Development Network)]

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ]	%	[ Total HV ]	%	v/c	sec		[ Veh. veh	Dist ]				km/h
			veh/h		veh/h					veh	m				
NorthEast: Edinburgh Road															
25	T1	All MCs	242	3.5	242	3.5	0.144	0.0	LOS A	0.0	0.1	0.00	0.00	0.00	59.9
26	R2	All MCs	1	0.0	1	0.0	0.144	5.5	LOS A	0.0	0.1	0.00	0.00	0.00	59.9
Approach			243	3.5	243	3.5	0.144	0.0	NA	0.0	0.1	0.00	0.00	0.00	59.9
NorthWest: Sunnyside Crescent															
27	L2	All MCs	14	0.0	14	0.0	0.032	6.0	LOS A	0.1	0.7	0.31	0.58	0.31	52.0
29	R2	All MCs	18	0.0	18	0.0	0.032	7.0	LOS A	0.1	0.7	0.31	0.58	0.31	49.3
Approach			32	0.0	31	0.0	0.032	6.6	LOS A	0.1	0.7	0.31	0.58	0.31	50.9
SouthWest: Edinburgh Road															
30	L2	All MCs	7	0.0	7	0.0	0.082	5.6	LOS A	0.0	0.0	0.00	0.03	0.00	59.4
31	T1	All MCs	151	6.3	146	6.1	0.082	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.7
Approach			158	6.0	153	5.8	0.082	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.7
All Vehicles			433	4.1	428	4.2	0.144	0.6	NA	0.1	0.7	0.02	0.05	0.02	59.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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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Project: P:\Projects\_2023\0668\_LXCN\_100 Edinburgh Rd, Castlecrag\03 WIP\07 SIDRA\SSDA\231114-0688-100 Edinburgh Road, Castlecrag.sip9

# MOVEMENT SUMMARY

Site: 101 [5. Eastern Valley Way / Sunnyside Crescent - AM  
(Site Folder: 10 Years Future with Development AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [10 Years Future with Development AM Peak (Network Folder: 10 Years Future with Development Network)]

New Site  
Site Category: Existing Design  
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ]	%	[ Total HV ]	%	v/c	sec		[ Veh. veh	Dist ]	m			km/h
South: Eastern Valley Way															
2	T1	All MCs	1188	6.2	1065	6.2	0.672	21.8	LOS B	50.0	368.4	0.98	0.26	0.98	44.1
3	R2	All MCs	4	0.0	4	0.0	0.251	236.7	LOS F	0.5	3.5	0.99	1.00	1.02	7.0
Approach			1193	6.2	1068	6.2	0.672	27.7	NA	50.0	368.4	0.98	0.27	0.98	41.2
East: Sunnyside Crescent															
4	L2	All MCs	11	0.0	10	0.0	1.455	675.5	LOS F	4.9	34.4	1.00	1.21	2.00	2.7
6	R2	All MCs	3	0.0	3	0.0	1.455	627.9	LOS F	4.9	34.4	1.00	1.21	2.00	5.0
Approach			14	0.0	13	0.0	1.455	664.5	NA	4.9	34.4	1.00	1.21	2.00	3.2
North: Eastern Valley Way															
7	L2	All MCs	79	2.7	79	2.7	0.558	5.8	LOS A	0.0	0.0	0.00	0.04	0.00	58.7
8	T1	All MCs	2045	3.4	2045	3.4	0.558	0.3	LOS A	0.0	0.0	0.00	0.02	0.00	59.1
Approach			2124	3.4	2124	3.4	0.558	0.5	NA	0.0	0.0	0.00	0.02	0.00	59.1
All Vehicles			3331	4.4	3206	4.6	1.455	10.6	NA	50.0	368.4	0.33	0.11	0.33	46.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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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Project: P:\Projects\_2023\0668\_LXCN\_100 Edinburgh Rd, Castlecrag\03 WIP\07 SIDRA\SSDA\231114-0688-100 Edinburgh Road, Castlecrag.sip9

# MOVEMENT SUMMARY

Site: 0453 [1. Edinburgh Road/Esatern Valley Way - PM (Site Folder: 10 Years Future with Development PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [10 Years Future with Development PM Peak (Network Folder: 10 Years Future with Development Network)]

Existing

Site Category: Existing Design

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 131 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	[ Dist ] m				
South: Eastern Valley Way															
1	L2	All MCs	78	1.4	78	1.4	* 0.861	65.5	LOS E	26.7	194.9	1.00	0.99	1.15	16.7
2	T1	All MCs	686	6.1	686	6.1	0.861	63.7	LOS E	26.7	194.9	1.00	1.00	1.15	20.7
3	R2	All MCs	128	5.7	128	5.7	0.479	71.1	LOS F	7.7	56.3	0.96	0.80	0.96	20.1
Approach			893	5.7	893	5.7	0.861	64.9	LOS E	26.7	194.9	0.99	0.97	1.13	19.0
East: Edinburgh Road															
4	L2	All MCs	96	2.2	96	2.2	0.779	60.4	LOS E	17.0	122.4	0.99	0.90	1.07	23.0
5	T1	All MCs	205	3.6	205	3.6	0.779	81.4	LOS F	17.0	122.4	0.99	0.90	1.07	9.5
6	R2	All MCs	114	8.3	114	8.3	0.730	91.1	LOS F	7.6	56.9	1.00	0.88	1.13	4.5
Approach			415	4.6	415	4.6	0.779	79.2	LOS F	17.0	122.4	0.99	0.90	1.09	9.5
North: Eastern Valley Way															
7	L2	All MCs	59	5.4	59	5.4	0.073	26.6	LOS B	2.1	15.1	0.59	0.70	0.59	32.3
8	T1	All MCs	582	5.8	581	5.8	0.544	29.7	LOS C	20.1	147.3	0.73	0.64	0.73	42.4
9	R2	All MCs	652	6.3	651	6.3	* 0.838	32.2	LOS C	16.4	121.2	0.94	0.87	1.01	30.6
Approach			1293	6.0	1291	6.0	0.838	30.8	LOS C	20.1	147.3	0.83	0.76	0.86	35.8
West: Edinburgh Road															
10	L2	All MCs	847	3.9	847	3.9	0.672	21.3	LOS B	30.3	219.1	0.70	0.81	0.70	11.7
11	T1	All MCs	209	3.0	209	3.0	0.672	76.3	LOS F	16.2	116.5	0.96	0.83	0.96	6.5
12	R2	All MCs	78	2.7	78	2.7	* 0.794	95.6	LOS F	5.5	39.2	1.00	0.90	1.26	18.4
Approach			1135	3.6	1135	3.6	0.794	36.5	LOS C	30.3	219.1	0.77	0.82	0.79	10.3
All Vehicles			3735	5.0	3733	5.0	0.861	46.1	LOS D	30.3	219.1	0.87	0.84	0.93	22.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
					[ Ped ped	[ Dist ] m					
South: Eastern Valley Way											

P3 Full	18	58.7	LOS E	0.1	0.1	0.95	0.95	212.6	200.0	0.94
East: Edinburgh Road										
P1 Full	12	56.8	LOS E	0.0	0.0	0.93	0.93	210.7	200.0	0.95
North: Eastern Valley Way										
P4 Full	79	58.9	LOS E	0.3	0.3	0.95	0.95	212.7	200.0	0.94
West: Edinburgh Road										
P2 Full	19	59.7	LOS E	0.1	0.1	0.95	0.95	213.5	200.0	0.94
All Pedestrians	127	58.8	LOS E	0.3	0.3	0.95	0.95	212.6	200.0	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Project: P:\Projects\_2023\0668\_LXCN\_100 Edinburgh Rd, Castlecrag\03 WIP\07 SIDRA\SSDA\231114-0688-100 Edinburgh Road, Castlecrag.sip9

# MOVEMENT SUMMARY

Site: 101 [2. Edinburgh Road/Raeburn Avenue/Driveway - PM  
(Site Folder: 10 Years Future with Development PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [10 Years  
Future with Development PM  
Peak (Network Folder: 10 Years  
Future with Development  
Network)]

Existing  
Site Category: Existing Design  
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ] veh/h	%	[ Total HV ] veh/h	%				[ Veh. veh	[ Dist ] m				
South: Driveway															
1	L2	All MCs	57	0.0	57	0.0	0.463	4.9	LOS A	1.9	13.3	0.67	0.85	0.94	7.2
2	T1	All MCs	12	0.0	12	0.0	0.463	8.2	LOS A	1.9	13.3	0.67	0.85	0.94	42.0
3	R2	All MCs	142	0.0	142	0.0	0.463	10.4	LOS A	1.9	13.3	0.67	0.85	0.94	7.2
Approach			211	0.0	211	0.0	0.463	8.8	LOS A	1.9	13.3	0.67	0.85	0.94	13.5
East: Edinburgh Road															
4	L2	All MCs	141	0.0	141	0.0	0.258	5.2	LOS A	1.4	10.4	0.03	0.19	0.03	38.8
5	T1	All MCs	332	5.7	332	5.7	0.258	0.0	LOS A	1.4	10.4	0.03	0.19	0.03	41.2
6	R2	All MCs	7	0.0	7	0.0	0.258	5.7	LOS A	1.4	10.4	0.03	0.19	0.03	45.5
Approach			480	3.9	480	3.9	0.258	1.7	NA	1.4	10.4	0.03	0.19	0.03	40.7
North: Raeburn Avenue															
7	L2	All MCs	12	0.0	12	0.0	0.117	5.7	LOS A	0.3	2.0	0.56	0.72	0.56	40.2
8	T1	All MCs	12	0.0	12	0.0	0.117	9.5	LOS A	0.3	2.0	0.56	0.72	0.56	39.8
9	R2	All MCs	23	0.0	23	0.0	0.117	10.0	LOS A	0.3	2.0	0.56	0.72	0.56	40.2
Approach			46	0.0	46	0.0	0.117	8.8	LOS A	0.3	2.0	0.56	0.72	0.56	40.1
West: Edinburgh Road															
10	L2	All MCs	34	0.0	34	0.0	0.244	6.4	LOS A	0.7	5.0	0.21	0.30	0.21	45.1
11	T1	All MCs	304	6.2	304	6.2	0.244	0.7	LOS A	0.7	5.0	0.21	0.30	0.21	37.2
12	R2	All MCs	69	0.0	69	0.0	0.244	7.1	LOS A	0.7	5.0	0.21	0.30	0.21	34.8
Approach			407	4.7	407	4.7	0.244	2.3	NA	0.7	5.0	0.21	0.30	0.21	39.2
All Vehicles			1144	3.3	1144	3.3	0.463	3.5	NA	1.9	13.3	0.23	0.37	0.28	35.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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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# MOVEMENT SUMMARY

**Site: 101 [3. Edinburgh Road/Rutland Avenue/The Postern - PM (Site Folder: 10 Years Future with Development PM Peak)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

**Network: N101 [10 Years Future with Development PM Peak (Network Folder: 10 Years Future with Development Network)]**

New Site  
Site Category: Existing Design  
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ]	%	[ Total HV ]	%				[ Veh. veh	Dist ]				
South: The Postern															
1	L2	All MCs	73	0.0	73	0.0	0.095	6.1	LOS A	0.5	3.3	0.52	0.62	0.52	34.5
2	T1	All MCs	1	0.0	1	0.0	0.095	5.8	LOS A	0.5	3.3	0.52	0.62	0.52	42.1
3	R2	All MCs	6	0.0	6	0.0	0.095	9.0	LOS A	0.5	3.3	0.52	0.62	0.52	34.5
3u	U	All MCs	1	0.0	1	0.0	0.095	11.7	LOS A	0.5	3.3	0.52	0.62	0.52	39.5
Approach			81	0.0	81	0.0	0.095	6.4	LOS A	0.5	3.3	0.52	0.62	0.52	34.8
East: Edinburgh Road															
4	L2	All MCs	9	0.0	9	0.0	0.301	4.8	LOS A	1.9	14.1	0.39	0.47	0.39	45.3
5	T1	All MCs	328	5.4	328	5.4	0.301	5.0	LOS A	1.9	14.1	0.39	0.47	0.39	45.7
6	R2	All MCs	1	0.0	1	0.0	0.301	7.7	LOS A	1.9	14.1	0.39	0.47	0.39	45.9
6u	U	All MCs	1	0.0	1	0.0	0.301	10.4	LOS A	1.9	14.1	0.39	0.47	0.39	45.7
Approach			340	5.3	340	5.3	0.301	5.0	LOS A	1.9	14.1	0.39	0.47	0.39	45.7
North: Rutland Road															
7	L2	All MCs	8	0.0	8	0.0	0.053	6.6	LOS A	0.3	1.9	0.56	0.68	0.56	39.6
8	T1	All MCs	3	0.0	3	0.0	0.053	6.5	LOS A	0.3	1.9	0.56	0.68	0.56	41.3
9	R2	All MCs	31	0.0	31	0.0	0.053	10.4	LOS A	0.3	1.9	0.56	0.68	0.56	39.6
9u	U	All MCs	1	0.0	1	0.0	0.053	12.4	LOS A	0.3	1.9	0.56	0.68	0.56	44.9
Approach			43	0.0	43	0.0	0.053	9.4	LOS A	0.3	1.9	0.56	0.68	0.56	39.9
West: Edinburgh Road															
10	L2	All MCs	28	0.0	28	0.0	0.297	4.3	LOS A	2.4	17.4	0.11	0.48	0.11	44.7
11	T1	All MCs	334	4.4	334	4.4	0.297	4.0	LOS A	2.4	17.4	0.11	0.48	0.11	30.4
12	R2	All MCs	66	1.6	66	1.6	0.297	7.0	LOS A	2.4	17.4	0.11	0.48	0.11	37.5
12u	U	All MCs	28	3.7	28	3.7	0.297	9.1	LOS A	2.4	17.4	0.11	0.48	0.11	30.4
Approach			457	3.7	457	3.7	0.297	4.8	LOS A	2.4	17.4	0.11	0.48	0.11	34.2
All Vehicles			921	3.8	921	3.8	0.301	5.2	LOS A	2.4	17.4	0.27	0.50	0.27	41.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

Site: 101 [4. Edinburgh Road / Sunnyside Crescent - PM (Site Folder: 10 Years Future with Development PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [10 Years Future with Development PM Peak (Network Folder: 10 Years Future with Development Network)]

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ]	%	[ Total HV ]	%	v/c	sec		[ Veh. veh	Dist ]				km/h
			veh/h		veh/h					veh	m				
NorthEast: Edinburgh Road															
25	T1	All MCs	212	5.0	212	5.0	0.114	0.0	LOS A	0.0	0.2	0.01	0.01	0.01	59.7
26	R2	All MCs	3	0.0	3	0.0	0.114	5.7	LOS A	0.0	0.2	0.01	0.01	0.01	59.7
Approach			215	4.9	215	4.9	0.114	0.1	NA	0.0	0.2	0.01	0.01	0.01	59.7
NorthWest: Sunnyside Crescent															
27	L2	All MCs	13	0.0	13	0.0	0.022	6.2	LOS A	0.1	0.5	0.34	0.59	0.34	51.9
29	R2	All MCs	11	0.0	11	0.0	0.022	7.2	LOS A	0.1	0.5	0.34	0.59	0.34	49.1
Approach			23	0.0	23	0.0	0.022	6.7	LOS A	0.1	0.5	0.34	0.59	0.34	51.0
SouthWest: Edinburgh Road															
30	L2	All MCs	3	0.0	3	0.0	0.119	5.6	LOS A	0.0	0.0	0.00	0.01	0.00	59.8
31	T1	All MCs	221	4.8	221	4.8	0.119	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.9
Approach			224	4.7	224	4.7	0.119	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.9
All Vehicles			462	4.6	462	4.6	0.119	0.4	NA	0.1	0.5	0.02	0.04	0.02	59.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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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Project: P:\Projects\_2023\0668\_LXCN\_100 Edinburgh Rd, Castlecrag\03 WIP\07 SIDRA\SSDA\231114-0688-100 Edinburgh Road, Castlecrag.sip9

# MOVEMENT SUMMARY

Site: 101 [5. Eastern Valley Way / Sunnyside Crescent - PM  
(Site Folder: 10 Years Future with Development PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [10 Years  
Future with Development PM  
Peak (Network Folder: 10 Years  
Future with Development  
Network)]

New Site  
Site Category: Existing Design  
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[ Total HV ]	%	[ Total HV ]	%	v/c	sec		[ Veh. veh	Dist ]				km/h
			veh/h		veh/h					veh	m				
South: Eastern Valley Way															
2	T1	All MCs	1639	5.1	1639	5.1	0.445	0.6	LOS A	0.6	4.1	0.01	0.01	0.01	59.3
3	R2	All MCs	2	0.0	2	0.0	0.445	46.8	LOS D	0.6	4.1	0.03	0.03	0.03	57.8
Approach			1641	5.1	1641	5.1	0.445	0.7	NA	0.6	4.1	0.01	0.01	0.01	59.3
East: Sunnyside Crescent															
4	L2	All MCs	12	9.1	12	9.1	1.182	327.3	LOS F	4.2	30.7	1.00	1.21	1.95	4.5
6	R2	All MCs	6	0.0	6	0.0	1.182	492.8	LOS F	4.2	30.7	1.00	1.21	1.95	8.2
Approach			18	5.9	18	5.9	1.182	385.7	NA	4.2	30.7	1.00	1.21	1.95	5.9
North: Eastern Valley Way															
7	L2	All MCs	40	0.0	40	0.0	0.117	5.6	LOS A	0.0	0.0	0.00	0.11	0.00	57.9
8	T1	All MCs	1277	6.0	1277	6.0	0.585	1.1	LOS A	0.0	0.0	0.00	0.02	0.00	59.2
Approach			1317	5.8	1317	5.8	0.585	1.3	NA	0.0	0.0	0.00	0.02	0.00	59.2
All Vehicles			2976	5.4	2976	5.4	1.182	3.2	NA	4.2	30.7	0.01	0.02	0.02	56.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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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Project: P:\Projects\_2023\0668\_LXCN\_100 Edinburgh Rd, Castlecrag\03 WIP\07 SIDRA\SSDA\231114-0688-100 Edinburgh Road, Castlecrag.sip9

# **Appendix 4. Construction Vehicle Swept Paths**



**TYPICAL DISCLAIMERS**

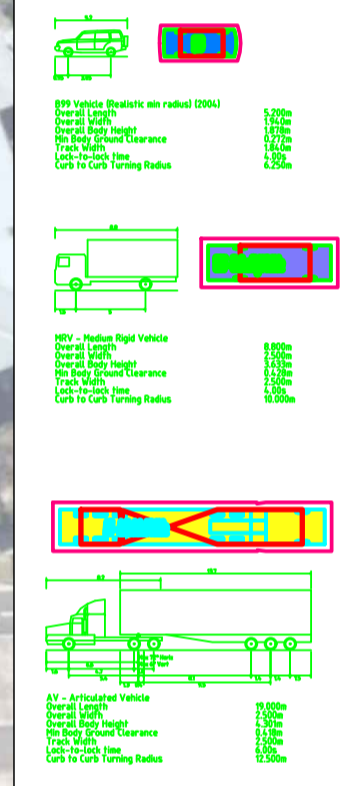
**AERIAL IMAGERY**  
 This swept path assessment has been completed utilising aerial imagery in the absence of detailed survey. It should be noted that aerial imagery can have an element of error, and all swept paths are preliminary and shall be verified using survey data or site validation.

It is the responsibility of the contractor to ensure that the proposed vehicle routes and accesses are suitable for the anticipated vehicles.

All swept paths performed by ptc. using aerial imagery are indicative and should be used for preliminary purposes only.

**NOT FOR CONSTRUCTION**  
 These drawings have been prepared for information only and are not issue for construction

**SWEPT PATHS**  
 The turning paths illustrated in this drawing have been prepared using the Autotrack vehicle modelling software in conjunction with AutoCAD. The vehicle model was prepared by Analytico Pty Ltd based upon vehicle data provided by Austroads. While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.



**DRAWING KEY**

REV	DATE	DESCRIPTION	CP	IAJ
P1	11.11.25	FOR INFORMATION	CP	IAJ

**PROJECT**  
 100 EDINBURGH ROAD,  
 CASTLECRAG

**DRAWING TITLE**  
 SWEEP PATH ASSESSMENT  
 19.0m Articulated Vehicle Accessing  
 Work Zone

**ptc.** Suite 502, 1 James Place  
 North Sydney NSW 2060  
 +61 2 8920 0800  
 ptcconsultants.co

**CLIENT** CONQUEST GROUP  
**DRAWING #** PTC-0001  
**PROJECT #** 23-0668  
**SCALE** 1 : 500 @ A1  
 1 : 1000 @ A3  
 PRELIMINARY

**REV P1**



**TYPICAL DISCLAIMERS**

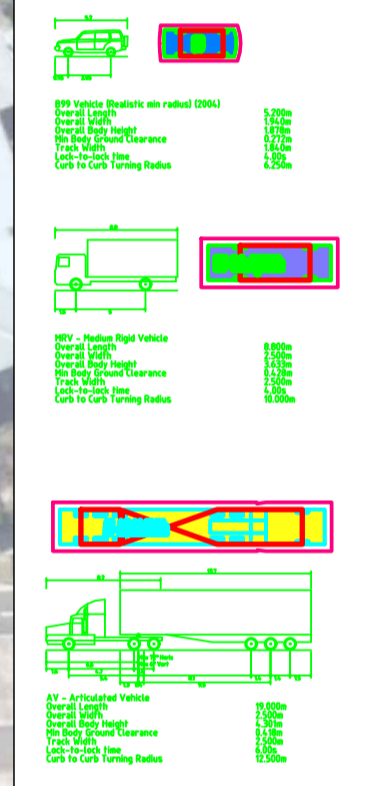
**AERIAL IMAGERY**  
 This swept path assessment has been completed utilising aerial imagery in the absence of detailed survey. It should be noted that aerial imagery can have an element of error, and all swept paths are preliminary and shall be verified using survey data or site validation.

It is the responsibility of the contractor to ensure that the proposed vehicle routes and accesses are suitable for the anticipated vehicles.

All swept paths performed by ptc. using aerial imagery are indicative and should be used for preliminary purposes only.

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**SWEPT PATHS**  
 The turning paths illustrated in this drawing have been prepared using the Autotrack vehicle modelling software in conjunction with AutoCAD. The vehicle model was prepared by Analytico Pty Ltd based upon vehicle data provided by Austroads. While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.



**DRAWING KEY**

REV	DATE	DESCRIPTION	CP	IAJ
P1	11.11.25	FOR INFORMATION	CP	IAJ

**PROJECT**  
 100 EDINBURGH ROAD,  
 CASTLECRAG

**DRAWING TITLE**  
 SWEEP PATH ASSESSMENT  
 8.8m Medium Rigid Vehicle  
 Accessing Work Zone

**ptc.** Suite 502, 1 James Place  
 North Sydney NSW 2060  
 +61 2 8920 0800  
 ptcconsultants.co

**CLIENT** CONQUEST GROUP  
**DRAWING #** PTC-0002  
**PROJECT #** 23-0668  
**SCALE** 1 : 500 @ A1  
 1 : 1000 @ A3  
 PRELIMINARY

**REV P1**

# **Appendix 5. Indicative Traffic Guidance Scheme**

