TRAFFIC IMPACT ASSESSMENT

Development Application
164-170 Croatia Avenue, Edmondson Park

Reference: 20.210r02v02
Date: 18 June 2021

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1. INTRODUCTION

TRAFFIX has been commissioned by Super Star Holding Group Pty Ltd to undertake a traffic impact assessment (TIA) in support of a development application (DA) relating to a mixed-use development at 164-170 Croatia Avenue, Edmondson Park. The proposed development comprises of eight (8) buildings. The building accommodates a variety of uses including residential, retail and commercial. The development is located within the Liverpool City Council local government area and has been assessed under that Council's controls.

This report documents the findings of our investigations and should be read in the context of the Statement of Environmental Effects (SEE) prepared separately.

The report is structured as follows:

- Section 2: Describes the site and its location
- Section 3: Documents existing traffic conditions
- Section 4: Describes the proposed development
- Section 5: Assesses the parking requirements
- Section 6: Assesses traffic impacts
- Section 7: Discusses access and internal design aspects
- Section 8: Presents the overall study conclusions

2. LOCATION AND SITE

The subject site is known as 164-170 Croatia Avenue, Edmondson Park (Lot 25 and Lot 26 of DP228850) and is located south of Croatia Avenue and west of Soldiers Parade. It is also located about 275 metres northeast of Edmondson Park Railway Station and 7.9 kilometres southwest of Liverpool Town Centre.

Edmondson Park is a major land release area located in South West Sydney. The subject site is located within the Edmondson Park South Area which involves the development of the town centre including residential, commercial, business, retail and associated land uses.

The site has a total site area of 43,733m^2 and is currently a greenfield site. It has a south eastern boundary of 252 metres and an eastern boundary of 243 metres to undeveloped lots, a northern frontage of 88 metres to Croatia Avenue and a western frontage of 309 metres to an undeveloped lot and Soldiers Parade.

The site is a greenfield site and is currently not provided with any existing vehicular access.

A Location Plan is presented in **Figure 1**, with a Site Plan presented in **Figure 2**.

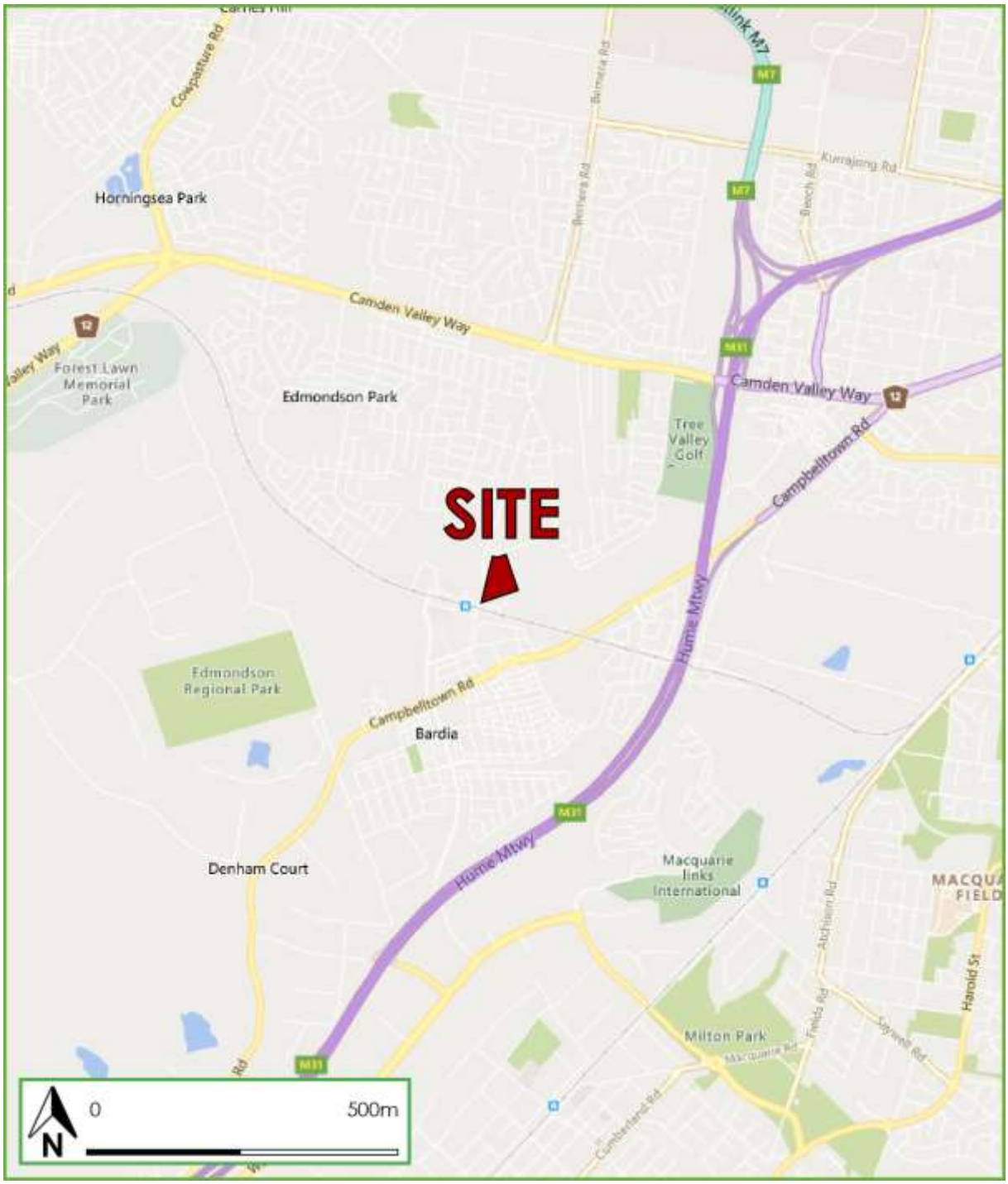

Figure 1: Location Plan

Figure 2: Site Plan

3. EXISTING TRAFFIC CONDITIONS

3.1 Road Network

The road hierarchy in the vicinity of the site is shown in **Figure 3** with the following roads of particular interest:

- Campbelltown Road: an RMS Main Road (MR 177) that generally traverses north-south between Hume Highway in the north and Moore Street in the south. Within the vicinity of the site, Campbelltown Road is subject to a speed zoning of 70km/h and carries a single lane of traffic in either direction. On-street parking is generally not permitted along Campbelltown Road.
- Soldiers Parade: a local road that traverses north-south between Camden Valley Way in the north and Campbelltown Road in the south. In the vicinity of the site, Soldiers Parade is subject to a 50km/h speed zoning and accommodates a single lane of traffic in either direction. On-street parking is permitted along either side of the road. The intersection of Soldiers Parade and Campbelltown Road is currently unsignalized however a signalised intersection with Campbelltown Road, Urban Street and Bernera Road are envisaged under the Concept Masterplan.
- Croatia Avenue: a local road that generally traverses north-south in a loop configuration off Soldiers Parade. In the vicinity of the site, Soldiers Parade is subject to a 60km/h speed zoning and accommodates a single lane of traffic in either direction. On-street parking is permitted along either side of the road.

Figure 3: Road Hierarchy

3.2 Key Intersections

The key intersections in the vicinity of the site are shown below and provide an understanding of the existing road geometry and alignment in the locality.

3.2.1 Croatia Avenue, Soldier Parade and Bernera Road

Figure 4: Intersection of Croatia Avenue, Soldier Parade and Bernera Road

It can be seen from **Figure 4** that the intersection of Croatia Avenue, Soldier Parade and Bernera Road is a three-legged priority intersection. The main attributes of each approach are outlined below.

- Bernera Road (northern leg):
  - The south bound approach provides two (2) through lanes.
- Soldiers Parade (southern leg):
  - The north bound approach provides two (2) through lanes and a short right turn lane.
- Croatia Avenue (eastern leg):
  - The west bound approach provides a single through lane.

3.2.2 Campbelltown Road, Soldiers Parade and Ray Simpson Avenue

Figure 5: Campbelltown Road, Soldiers Parade and Ray Simpson Avenue

It can be seen from **Figure 5** that the intersection of Campbelltown Road, Soldiers Parade and Ray Simpson Avenue is a four-legged signalised intersection. All legs provide signalised pedestrian crossings. The main attributes of each approach are outlined below.

- Campbelltown Road (north-east and south-west leg):
  - The north-east bound approach provides two (2) through lanes and a single short right turn lane.
  - The south-west bound approach provides two (2) through lanes and a single short right turn lane.
- Ray Simpson Avenue (southern leg):
  - The north bound approach provides a single through lane, a short left turn lane and a short right turn lane.
- Soldiers Parade (northern leg):
  - The south bound approach provides a single through lane, a short left turn lane and a short right turn lane.

3.2.3 Camden Valley Way and Bernera Road

Figure 6: Camden Valley Way and Bernera Road

It can be seen from **Figure 6** that the intersection of Camden Valley Way and Bernera Road is a four-legged signalised intersection. All legs provide signalised pedestrian crossings except for the slip lane on the westbound approach of Camden Valley Way which provides a marked pedestrian crossing. The main attributes of each approach are outlined below.

- Camden Valley Way (east and west legs):
  - The west bound approach provides two (2) through lanes, a short right turn lane and a short slip lane allowing for left turns and through movements for buses only.
  - The east bound approach provides two (2) through lanes, a short right turn lane and a short slip lane allowing for left turns and through movements for buses only.
- Bernera Road (north and south leg):
  - The north bound approach provides two (2) through lanes, two (2) short right turn lanes and a short slip lane allowing for left turns.
  - The south bound approach provides two (2) short right turn lanes one (1) through lane and a second through lane which also allows for left turns via a slip lane.

3.3 Public Transport

The existing bus services that operate in the locality are shown in **Figure 4**. It is evident that the development benefits from several bus services within walking distance of the site. These bus services provide a connection to Liverpool town centre and surrounding suburbs. It is envisaged that more bus services will become available as the area is further developed.

Edmondson Park Railway Station is located approximately 275 metres southwest of site. This station provides services on the T2 – Inner West and Leppington Line and the T5 – Cumberland line, connecting the site to the City, Strathfield, and the wider rail network.

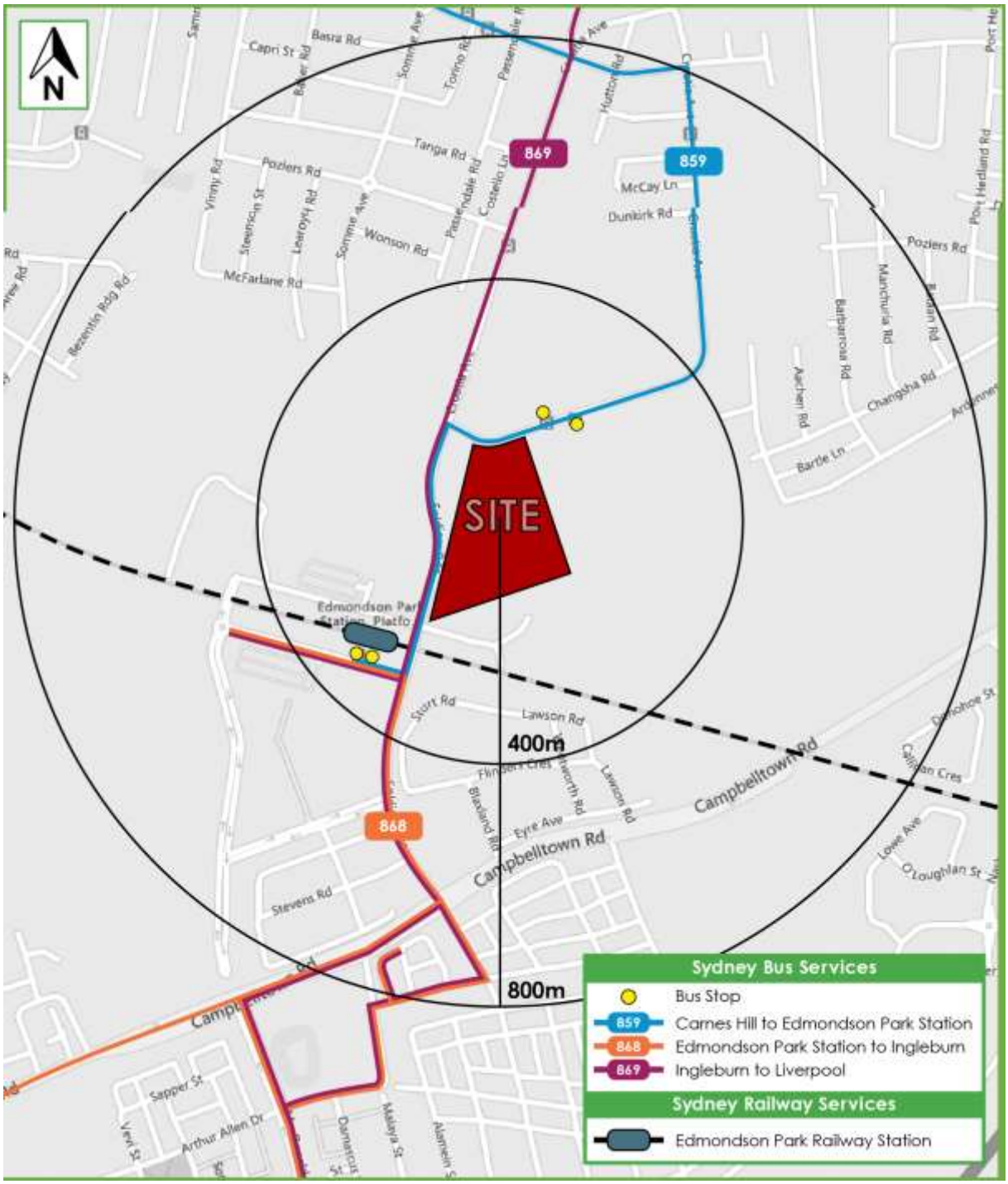

Figure 4: Public Transport

4. DESCRIPTION OF PROPOSED DEVELOPMENT

A detailed description of the proposed development is provided in the Statement of Environmental Effects prepared separately. In summary, the development for which approval is now sought is a mixed-use development comprising of 8 buildings and the following components:

- Building A
  - A total of 104 units made up of the following:
    - 24 x one-bedroom apartments
    - 75 x two-bedroom apartments; and
    - 5 x three-bedroom apartments.
- Building B
  - A total of 89 units made up of the following:
    - 14 x one-bedroom apartments
    - 66 x two-bedroom apartments; and
    - 9 x three-bedroom apartments.
- Buildings C
  - A total of 76 units made up of the following:
    - 16 x one-bedroom apartments
    - 47 x two-bedroom apartments; and
    - 13 x three-bedroom apartments.
  - 10 retail tenancies with a total of 802.4m^2 GFA
- Building D
  - A total of 83 units made up of the following:
    - 21 x one-bedroom apartments
    - 50 x two-bedroom apartments; and
    - 12 x three-bedroom apartments.
  - 4 retail tenancies with a total of 255.1m^2 GFA
- Building E
  - A total of 119 units made up of the following:
    - 28 x one-bedroom apartments

  - 73 x two-bedroom apartments; and
  - 18 x three-bedroom apartments.
- A commercial tenancy with a total of 280m^2 GFA

) Building F
- A total of 96 units made up of the following:
  - 26 x one-bedroom apartments
  - 58 x two-bedroom apartments; and
  - 12 x three-bedroom apartments.

) Building G
- A total of 63 units made up of the following:
  - 7 x one-bedroom apartments
  - 46 x two-bedroom apartments; and
  - 10 x three-bedroom apartments.
- Five (5) retail tenancies with a total of 645.3m^2 GFA

) Building H
- A total of 46 units made up of the following:
  - 18 x one-bedroom apartments
  - 28 x two-bedroom apartments; and
- Five (5) retail tenancies with a total of 475.4m^2 GFA

) Vehicular Accesses
- Building A and B (combined)
- Building C and D (combined)
- Building E and F (combined)
- Building G and H (combined)

) The construction of three (3) local roads

The parking and traffic impacts arising from the development are discussed in **Section 5** and **Section 6**. Reference should be made to the plans submitted separately to Council which are presented at reduced scale in **Appendix A**.

5. PARKING REQUIREMENTS

5.1 Car Parking

The subject site falls within the boundaries of the Liverpool City Council LGA and is located within 800 metres of Edmondson Park Railway Station. *The State Environmental Planning Policy No 65* (SEPP 65) states that an application for the modification of a development consent or a development application for the carrying out of development to which this policy applies satisfies the following design criteria, the consent authority must not refuse the application because of those matters:

> (a) If the car parking for the building will be equal to, or greater than, the recommended minimum amount of car parking specified in Part 3J of the Apartment Design Guide.

Objective 3J-1 of the Apartment Design Guide specifies that for developments on sites that are within 800 metres of a railway station in the Sydney Metropolitan area, the minimum car parking requirement for residents and visitors is set out in the RMS Guide to Traffic Generating Developments (RMS Guide), or the car parking requirement prescribed by the relevant council, whichever is less. It is noted that lesser rate of the two (2) is the RMS Guide for high density residential flat building within a metropolitan sub-regional centre and therefore has been adopted for the residential component.

In relation to the other uses of the site, the Edmondson Park South Development Control Plan 2012 is applicable to the site, however, does not provide car parking rates in relation to the subject site. Therefore, reference has been made to the Modification Request to the Edmondson Park South Concept Plan (Ref: MP10_0118 MOD4). This Environmental Assessment Report published by the NSW Government Department of Planning and Environment presents proposed parking rates which have been approved by Council for the land under which the development falls. The Edmondson Park South Concept Plan presents maximum parking rates which reflect the minimum parking control identified in either the Liverpool or Campbelltown DCP or RMS Guide to Traffic Generating Developments.

Therefore, the required parking provisions in accordance with the above document are summarised in **Tables 1-4** below:

Table 1: Parking Rates – Building A and B

Type	Area / Units	Parking Rate[2]	Spaces Permissible[3]	Spaces Provided
Residential (RMS Rate)				
One Bedroom	38	0.6 space per dwelling	169.3	**170**
Two Bedroom	141	0.9 spaces per dwelling		
Three Bedroom	14	1.4 spaces per dwelling		
Visitors	193	1 space per 5 dwellings	38.6	**39**
		Total	**207.9 (208)**	**209**

Table 2: Parking Rates – Building C and D

Type	Area / Units	Parking Rate[2]	Spaces Permissible[3]	Spaces Provided
Retail				
Retail	1057.5m^2 GFA (793.1m^2 GLFA)	4.1 space per 100m^2 GLFA	32.5	**28**
		Sub-Total	**32.5 (33)**	**28**
Residential				
One Bedroom	37	0.6 space per dwelling	144.5	**148**
Two Bedroom	97	0.9 spaces per dwelling		
Three Bedroom	25	1.4 spaces per dwelling		
Visitors	159	1 space per 5 dwellings	31.8	**32**
		Sub-Total	**176.3 (176)**	**177**
		Total	**209**	**208**

*GLFA assumed to be 75% of GFA as per the RMS Guide to Traffic Generation

Table 3: Parking Rates – Building E and F

Type	Area / Units	Parking Rate[2]	Spaces Permissible[3]	Spaces Provided
Commercial				
Commercial	280m² GFA (210m² GLFA)	4.1 space per 100m² GLFA	8.6	**7 (+2 shared spaces with residential visitors)**
		Sub-Total	**8.6 (9)**	**7**
Residential				
One Bedroom	54	0.6 space per dwelling	192.3	**194**
Two Bedroom	131	0.9 spaces per dwelling		
Three Bedroom	30	1.4 spaces per dwelling		
Visitors	215	1 space per 5 dwellings	43	**43**
		Sub-Total	**235.3 (235)**	**237**
		Total	**245**	244

Table 4: Parking Rates – Building G and H

Type	Area / Units	Parking Rate[2]	Spaces Permissible[3]	Spaces Provided
Retail				
Retail	1,120.7m² GFA (840.5m² GLFA)	4.1 space per 100m² GLFA	34.5	**32**
		Sub-Total	**34.5 (35)**	**32**
Residential				
One Bedroom	25	0.6 space per dwelling	95.6	**99**
Two Bedroom	74	0.9 spaces per dwelling		
Three Bedroom	10	1.4 spaces per dwelling		
Visitors	109	1 space per 5 dwellings	21.8	**22**
		Sub-Total	**117.4 (117)**	**121**
		Total	**153**	154

*GLFA assumed to be 75% of GFA as per the RMS Guide to Traffic Generation

Building A and B

Building A and B are required to provide 209 car parking spaces for the residential component in accordance with the SEPP65 requirements. In response, 209 parking spaces are provided for residential uses.

Building C and D

Building C and D are required to provide 178 car parking spaces for the residential component in accordance with SEPP 65. Additionally, the development is required to provide 32 spaces for the retail component in accordance with the Edmondson Park South Concept Plan. In response the development provides 28 parking spaces for retail uses and 177 parking spaces for residential uses. The 28 car parking spaces for retail is considered acceptable as the majority of the retail use will be for the local catchment.

Building E and F

Building E and F are required to provide 236 car parking spaces for the residential component in accordance with SEPP 65. Additionally, the development is required to provide nine (9) spaces for the commercial component in accordance with the Edmondson Park South Concept Plan. In response the development provides 237 spaces for the residential component and seven (7) allocated spaces for the commercial component. It is proposed that two (2) of the required commercial spaces would be shared with visitor parking and is considered acceptable.

Building G and H

Building G and H are required to provide 117 car parking spaces for the residential component in accordance with SEPP 65. Additionally, the development is required to provide a minimum of 35 spaces for the retail component in accordance with the Edmondson Park South Concept Plan. In response the development provides 32 parking spaces for retail uses and 121 spaces for residential uses. The 32 car parking spaces for retail is considered acceptable as the majority of the retail use will be for the local catchment.

Summary

The parking allocation is therefore considered acceptable for the needs of the site, responding to the optimal location of the site with respect to the railway station.

5.2 Accessible Parking

AS 4299 requires that the development provide an accessible space for every adaptable dwelling within the scheme.

The Edmondson Park South planning documents do not provide a rate for accessible parking, therefore, reference is made to the Liverpool Development Control Plan (2008) (DCP) which requires that accessible parking for retail land uses be provided at a rate of 1 per 100 spaces.

A summary of the accessible parking requirements and provision for each use within each building is presented in **Table 5** below:

Table 5: Accessible Parking Requirement and Provision

Type	No Adaptable Units/Parking Spaces	Parking Rate[2]	Spaces Required	Spaces Provided
Building A-and B				
Residential	20	1 space per adaptable unit	20	**21 (1 accessible visitor space)**
		Sub-Total	**20**	**21**
Building C and D				
Retail	28	1 space per 100 parking spaces	1	**2**
Residential	18	1 space per adaptable unit	18	**19 (1 accessible visitor space)**
		Sub-Total	**19**	**21**
Building E and F				
Commercial	7	1 space per 100 parking spaces	1	**Shared with residential visitors**
Residential	22	1 space per adaptable unit	22	**24 (2 accessible visitor spaces)**
		Sub-Total	**23**	**24**
Building G and H				
Retail	33	1 space per 100 parking spaces	1	**1**
Residential	13	1 space per adaptable unit	13	**13**
		Sub-Total	**14**	**14**
		Total	76	80

As seen in the above table, the development largely meets the requirements for accessible parking excluding the allocation for commercial use with Building E and F. However, with

regards to accessible parking for the commercial component, it is proposed that two (2) residential visitor spaces will be shared with commercial uses. This is considered supportable as there are two (2) accessible spaces and is envisaged to meet the needs of both components.

5.3 Bicycle Parking

The Edmondson Park South Plan proposed minimum bicycle parking rates to assist in achieving a 5% modal split for bicycles for trips less than 10 kilometres. The bicycle parking rates presented by this document are as follows:

- Residential Flat Buildings: 1 space per dwelling (can be provided within a storage cage allocated to that dwelling or within a shared facility)
- Non-Residential Uses (staff and visitor): 1 space per 500m^2 of GFA

The required quantum of bicycle parking within each building is detailed in **Table 6** below:

Table 6: Bicycle Parking Requirement

Type	No of Dwellings/Areas	Parking Rate[2]	Spaces Required	Spaces Provided
Building A and B				
Residential	193	1 space per dwelling (storage cage acceptable)	193	**30 in rails** **194 storage cages**
		Sub-Total	193	224
Building C and D				
Retail	1057.5m^2 GFA	1 space per 500m^2 of GFA	2	18 in rails 160 storage cages
Residential	159	1 space per dwelling (storage cage acceptable)	159	
		Sub-Total	161	178
Building E and F				
Commercial	280m^2 GFA	1 space per 500m^2 of GFA	1	**12 in rails** **222 storage cages**
Residential	215	1 space per dwelling (storage cage acceptable)	215	
		Sub-Total	216	**234**
Building G and H				

Retail	1,120.7m² GFA	1 space per 500m² of GFA	2	26 in rails 113 storage cages
Residential	109	1 space per dwelling (storage cage acceptable)	109	
		Sub-Total	111	139
		Total	681	775

It can be seen from Table 6 that the proposed development as a whole is required to provide a minimum of 681 bicycle parking spaces. In response, each building provides a surplus of bicycle parking spaces therefore satisfying the minimum requirements of Council's DCP.

5.4 Motorcycle Parking

The report 'Edmondson Park South – Concept Plan MOD 5' published on 14 August 2018 and prepared by AECOM presents a Transport Management and Accessibility Plan to support proposed modifications to the Edmondson Park South Concept Plan. The report proposes the following motorcycle parking rates which are used for Edmondson Park Town Centre North.

Residential Flat Building: 1 space per 20 car spaces

Building A and B

Building A and B provide 209 car parking spaces for the residential component and as such 11 motorcycle parking spaces are required. In response the development proposes 14 motorcycle parking spaces within Building A and B, satisfying this requirement.

Building C and D

Building C and D provide 208 car parking spaces for the residential component and as such 10 motorcycle parking spaces are required. In response the development proposes 11 motorcycle parking spaces within Building C and D, satisfying this requirement.

Building E and F

Building E and F provide 244 car parking spaces for the residential component and as such 12 motorcycle parking spaces are required. In response the development proposes 21 motorcycle parking spaces within Building E and F, satisfying this requirement.

Building G and H

Building G and H provide 154 car parking spaces for the residential component and as such eight (8) motorcycle parking spaces are required. In response the development proposes 8 motorcycle parking spaces within Building G and H, satisfying this requirement.

5.5 Refuse Collection and Servicing

It is proposed that all waste collection be conducted on-site within the basement level. All waste collection areas are designed to accommodate Council's waste collection vehicle, being a 9.9m long truck, providing a minimum loading bay width of 3.5m. All vehicles will enter and exit the development in a forward direction.

A swept path analysis has been conducted of Council's Waste Collection vehicle. This is presented in **Appendix B** and shows satisfactory movements.

6. TRAFFIC AND TRANSPORT IMPACTS

6.1 Existing Site Generation

The subject site is currently greenfield land and therefore does not generate any traffic.

6.2 Development Trip Generation

The impacts of the proposed development on the external road network have been assessed having regard for the yield scenarios as summarised in **Section 4** above. This assessment has been undertaken in accordance with the requirements of the RMS Guideline to Traffic Generating Developments (2002) and as such, the traffic generation rates published in the RMS Guide have been adopted for each individual land use. The result of this assessment is summarised below.

6.2.1 Residential

In August 2013, RMS released Technical Direction TDT 2013/04a, which provides revised trip generation advice for a number of land uses based on survey data obtained since 2009. One of the land uses covered by TDT 2013/04a is high density residential development. The average Sydney weekday trip rates provided by TDT 2013/04a have been adopted for assessing the traffic generating potential of the subject development. The relevant trip rates are as follows:

- 0.19 vehicle trips per unit during the morning peak hour; and
- 0.15 vehicle trips per unit during the evening peak hour.

Application of these trip rates to the 680 residential units proposed, and adopting an 80:20 split, results in the following predicted trip generation volumes:

- 129 vehicle trips per hour during the morning peak period (26 in, 103 out); and
- 102 vehicle trips per hour during the evening peak period (82 in, 20 out);

6.2.2 Retail

This component attracts a trip rate of 4.6 trips per 100m^2 of GLFA in the Thursday evening peak period based on RMS trip rates for 'specialty retail' uses such as corner shops, cafes and restaurants. It is assumed that morning traffic generation is primarily associated with staff arrivals, being approximately 20% of the evening peak period. The evening traffic generation has been discounted by 40% to account for the local and linked trips that are anticipated. It is emphasised that the retail units within the development will not be primary attractors and therefore this reduced traffic generation rate is appropriate.

The application of this rate to the 2,231.8m^2 GFA and assuming 75% leasable floor area (i.e. 1,673.85m^2 of GLFA) predicts the following generation:

- 15 vehicle trips per hour during the morning peak period (15 in, 0 out); and
- 46 vehicle trips per hour during the evening peak period (23 in, 23 out);

6.2.3 Commercial

The RMS Technical Direction TDT 2013/04a, provides revised trip generation advice for a number of land uses based on survey data obtained since 2009. One of the land uses covered by TDT 2013/04a is office block developments. The average Sydney weekday trip rates provided by TDT 2013/04a have been adopted for assessing the traffic generating potential of the subject development. The relevant trip rates are as follows:

- 1.6 vehicle trips per 100m^2 GFA during the morning peak hour; and
- 1.2 vehicle trips per 100m^2 GFA during the evening peak hour.

Application of these trip rates to the 280m^2 of commercial area, and adopting an 80:20 split, results in the following predicted trip generation volumes:

- 5 vehicle trips per hour during the morning peak period (4 in, 1 out); and
- 3 vehicle trips per hour during the evening peak period (1 in, 2 out);

6.2.4 Combined Generation

The combined generation of the residential, retail and commercial components can be summarised as follows:

- 149 vehicle trips per hour during the morning peak period (45 in, 104 out); and
- 151 vehicle trips per hour during the evening peak period (106 in, 45 out);

6.3 Traffic Distribution

Journey to work data from the 2016 Census for the Edmondson Park SA2 area has been used to determine the future distribution of traffic to and from the residential component of the proposed development. In this regard the localised distribution of residential traffic onto the surrounding road network is summarised in **Table 7 and Table 8** below.

Table 7: Residential Traffic Distributions

Direction	Inbound Movements	Outbound Movements	Locations (To/From)
North East via Camden Valley Way	31%	31%	Sydney
North West via Camden Valley Way	1%	1%	Austral, Greendale
South East via Campbelltown Road	20%	20%	Liverpool
South West via Campbelltown Road	12%	12%	Casula
North via Bernera Rd	36%	36%	Prestons, Edmondson Park, Parramatta

Traffic distribution for the retail/commercial components have been allocated evenly in all directions to account for a larger number of local trips. It is assumed that local trips from the south would preferentially use Garfield Street to approach the site from the south over Cumberland Road. These trip distributions are summarised in **Table 6** below.

Table 8: Commercial/Retail Traffic Distributions

Direction	Inbound Movements	Outbound Movements	Locations (To/From)
North East via Camden Valley Way	31%	31%	Sydney
North West via Camden Valley Way	11%	11%	Austral, Greendale
South East via Campbelltown Road	15%	15%	Liverpool
South West via Campbelltown Road	0%	0%	Casula
North via Bernera Rd	43%	43%	Prestons, Edmondson Park, Parramatta

Based on the above, the **Figure 5** and **Figure 6** below show the distributions of the traffic generated by the proposed development in the vicinity of the site in the morning and evening peak hours.

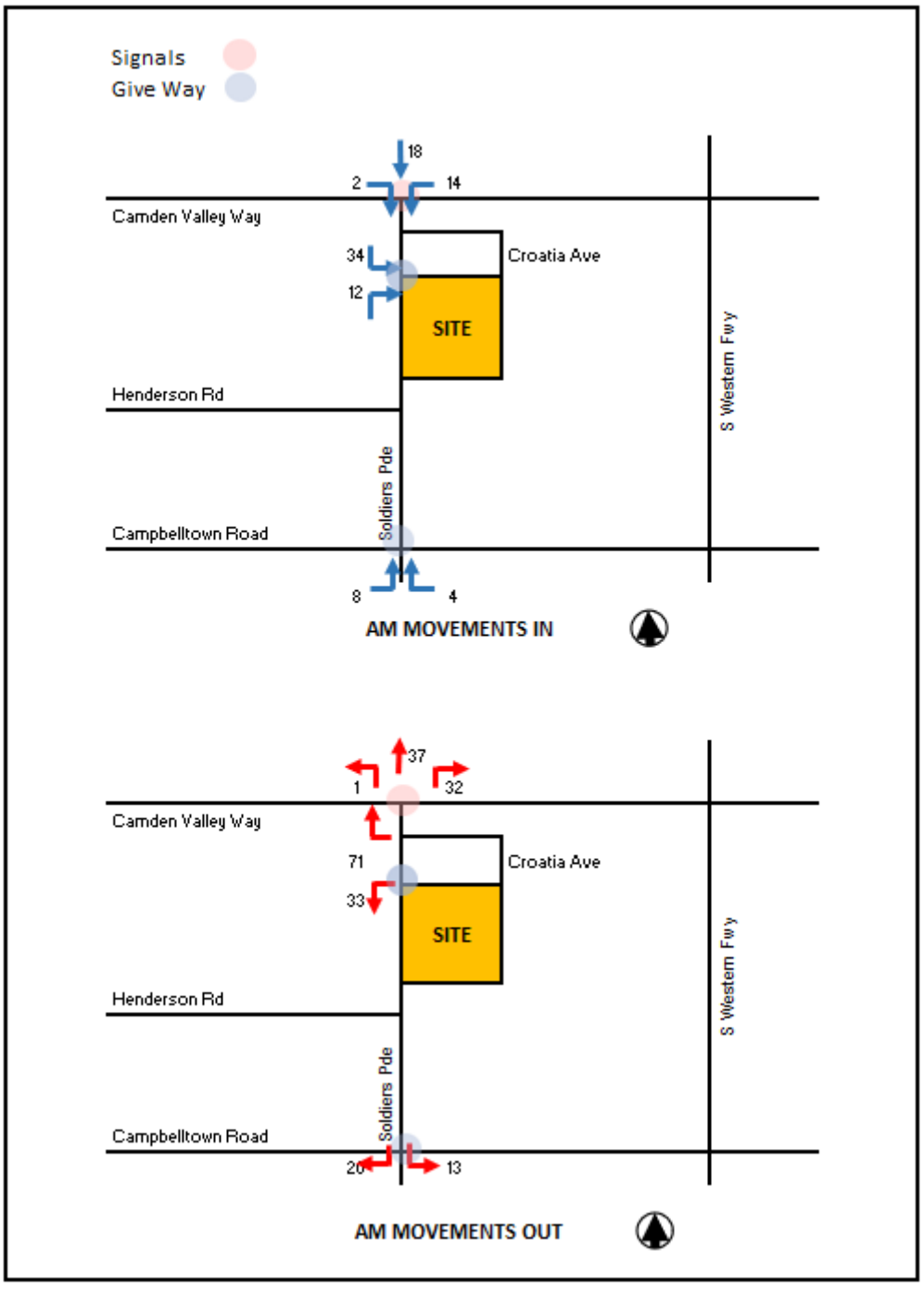

Figure 5: AM Peak Traffic Distribution

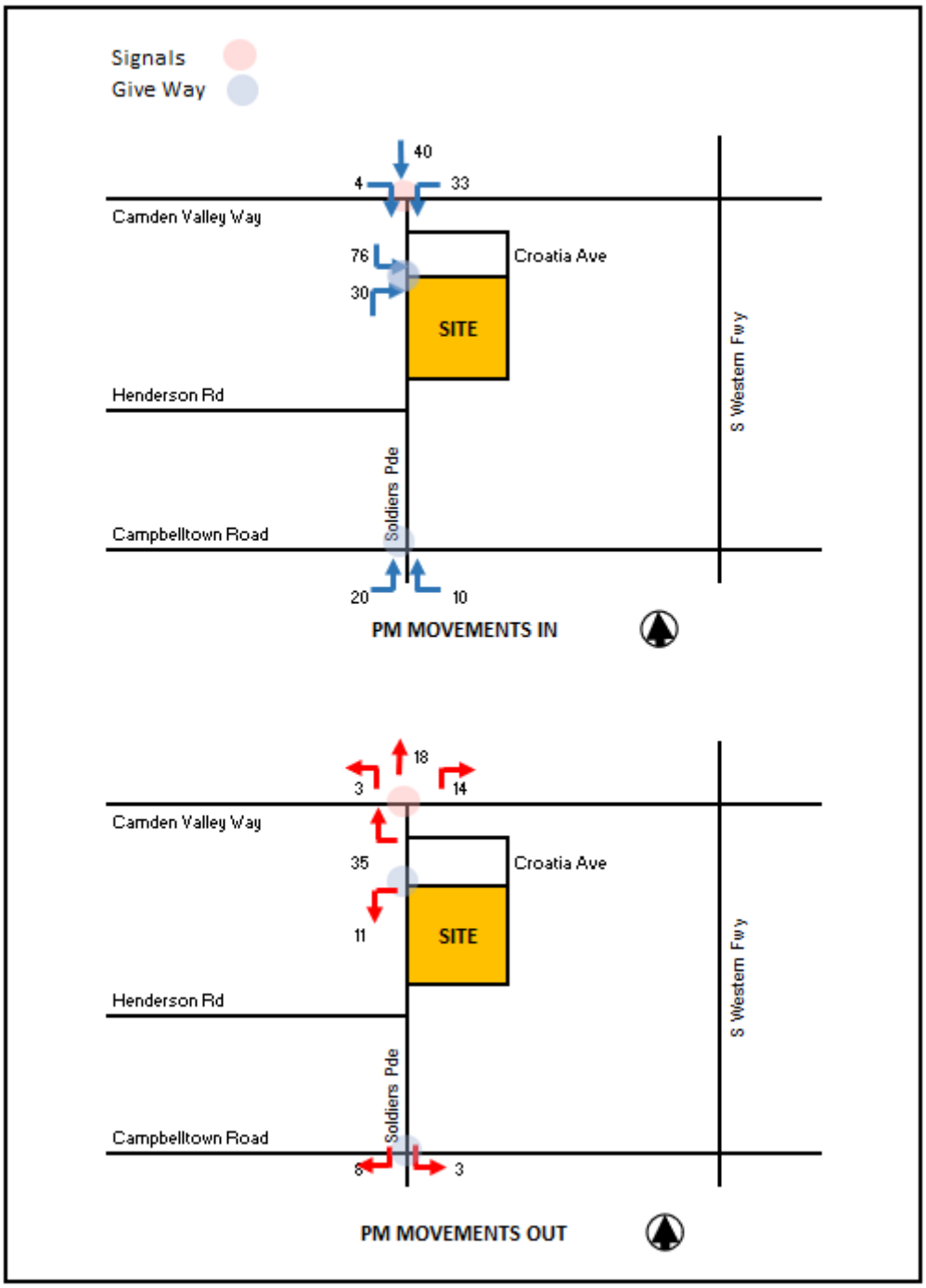

Figure 6: PM Peak Traffic Distribution

As can be seen from the above traffic distributions, it is anticipated that the traffic generated by this development will be spread across the network, It is also anticipated that all vehicles

exiting the site and travelling north would travel northbound along Croatia Avenue and use the intersection of Dalmatia Avenue and Bernera Road which provides a short right turn lane.

6.4 Peak Hour Intersection Performance

Traffic surveys were undertaken of the intersections mentioned in **Section 3.2**, which are considered to be most critical in relation to the site. These counts were undertaken on 1 June 2021 in the morning peak period between 7:00am and 9:00am and the evening peak period between 4:00pm and 6:00pm.

The Edmondson Park South – Concept Plan MOD 5 report prepared by AECOM provides future traffic volumes along the intersection of Campbelltown Road, Soldiers Parade and Ray Simpson Avenue. This is indicative of the volumes that are expected on major and minor legs of this road once full development of this area is completed. These volumes were compared to survey data to determine a growth rate for minor and major roads respectively during both the morning and evening peak periods. This analysis showed that the current survey results showed larger volumes than those indicated within AECOM's report for the 2026 scenario for all minor legs and for major legs in the morning peak period. A growth rate of 10% was determined to be applicable to major legs in the evening peak. This growth rate was applied to both legs of Camden Valley Way and Campbelltown Road in the evening peak period. Survey data without factoring was used for all minor legs and the major legs during the morning peak period.

The traffic volumes in these surveys formed the base case volumes for software modelling undertaken to assess intersection performance characteristics under existing traffic conditions. The SIDRA Intersection 9 model produces a range of outputs, the most useful of which are the Degree of Saturation (DoS) and Average Vehicle Delay per vehicle (AVD). The AVD is in turn related to a level of service (LoS) criteria. These performance measures can be interpreted using the following explanations:

DoS - the DoS is a measure of the operational performance of individual intersections. As both queue length and delay increase rapidly as DoS approaches 1, it is usual to attempt to keep DoS to less than 0.9. When DoS exceeds 0.9 residual queues can be anticipated, as occurs at many major intersections throughout the metropolitan area during peak periods. In this regard, a practical limit at 1.1 can be assumed. For intersections controlled by roundabout or give

way/stop control, satisfactory intersection operation is generally indicated by a DoS of 0.8 or less.

AVD - the AVD for individual intersections provides a measure of the operational performance of an intersection. In general, levels of acceptability of AVD for individual intersections depend on the time of day (motorists generally accept higher delays during peak commuter periods) and the road system being modelled (motorists are more likely to accept longer delays on side streets than on the main road system).

LoS - this is a comparative measure which provides an indication of the operating performance of an intersection.

Table 9: RMS Level of Service Criteria for Intersections

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	<14	Good Operation	**Good Operation**
B	15 to 28	Good with acceptable delays and spare capacity	**Acceptable delays and 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 will cause excessive delays** **Roundabouts require other control mode**	**At capacity, requires other control mode**

The traffic impacts arising from the proposed development during the morning and evening peak period have been assessed by loading the distributed traffic volumes into the SIDRA Intersection model. The results of this software modelling are summarised in **Table 10** below, with detailed outputs provided in **Appendix C** for individual lanes and approaches.

Table 10: Existing and Proposed Intersection Performance

Intersection	Control	Period	Scenario	Degree of Saturation (DoS)	Average Delay	Level of Service
Intersection of Croatia Avenue, Soldier Parade and Bernera Road	Priority*	AM	Existing	0.300	48.6	D
			Existing + Development	0.312	52.9	D
		PM	Existing	0.250	43.2	D
			Existing + Development	0.277	48.8	D
Intersection of Campbelltown Road, Soldiers Parade and Ray Simpson Avenue	Signal	AM	Existing	0.891	50.1	D
			Existing + Development	0.912	53.2	D
		PM	Existing	0.874	42.3	C
			Existing + Development	0.813	43.7	D
Intersection of Camden Valley Way and Bernera Road	Signals	AM	Existing	1.032	77.9	F
			Existing + Development	1.051	85.9	F
		PM	Existing	1.002	68.7	E
			Existing + Development	1.002	69.3	E

* LoS for priority intersections based on the worst performing movement in accordance with RMS Guide to Traffic Generating Development.

It can be seen from **Table 10** that the intersection of Croatia Avenue, Soldier Parade and Bernera Road remains at a LoS D in the morning and evening peak periods for both existing and development scenarios. It should be noted that the LoS for a priority intersection is based on the worst performing movement which corresponds to the right turn from Croatia Avenue onto Bernera Road. It is noted that in the model it is assumed that all vehicles from the development travelling northbound would travel north along Croatia Avenue and use the intersection of Dalmatia Avenue and Bernera Road which provides a short right turn lane. This is in favour of a priority intersection across a four-lane roadway. The intersection experiences an increase in the average delay of 4.3 seconds in the morning development scenario and an increase in the average delay of 5.6 seconds in the evening development scenarios and operates with spare capacity in all scenarios.

The intersection of Campbelltown Road and Soldiers Parade operates at a LoS D in the morning of both the existing and development scenarios. It experiences an increase in the average delay in the morning of 3.1 seconds which is considered a minor impact and able to be accommodated by the intersection without any upgrades. In the evening, the intersection operates at a LoS C in the existing scenario and a LoS D under the development scenario, however it is noted that the average delay only increases by 1.4 seconds, this is considered a minor addition to the delay and can be readily accommodated by the intersection which operates with spare capacity.

As seen above, the intersection of Camden Valley Way and Bernera Road does not operate satisfactorily either presently, or under future conditions, with a level of service F and E in both cases and during morning and evening peaks, respectively. It is noted that as the intersection is already a LoS F and E and the model is considered to be unstable. This means that the addition of small volumes will cause disproportional delays due to the existing condition of the intersection. It is emphasised that the proposed development traffic represents a minimal proportion of the traffic 'throughput' at this intersection, equating to approximately 3% of the total volumes that would travel through the intersection in the morning peak and evening peak periods.

As such, the proposed development will have minimal impacts on key intersections which will continue to operate as presently occurs and with similar delays.

7. ACCESS AND INTERNAL DESIGN ASPECTS

7.1 Road Arrangements

The road arrangement is to be designed in accordance with the requirements of AS 2890.5 (2020) and Edmondson Park South DCP, with the following characteristics noteworthy:

- All on-street car parking spaces are to comply with AS 2890.5.
- Sufficient 'No Stopping' signage on the approach to pedestrian crossings.
- Typical parking bay spaces are to be 2.3 metres wide.

The below internal road geometry is proposed within the site with detailed sections provided in **Appendix D**.

7.1.1 Section F

Section F provides a road reserve of 18.1 metres and a travel way of 6.0 metres, traversing east-west between Building C and Building F. This local road provides on-street parking on either side of the roadway, sufficient space for two-way flow of vehicles, footpaths, landscaping and a cycle lane along the northern side of the road

7.1.2 Section G

Section G provides a road reserve of 16.2 metres and a paved shared way of 6.0 metres, traversing east-west between Building D and Building B. This local road provides indented on street parking on either side of the roadway, sufficient space for two-way flow of vehicles, footpaths and landscaping.

7.1.3 Section H

Section H provides a road reserve of 17.0 metres and a travel way of 8.5 metres (including cycleway), traversing south to northwest between Building E and Building A. This local road provides on-street parking along the northern side of the road, sufficient space for two-way flow of vehicles, footpaths, landscaping and a cycle lane in either direction.

7.2 Site Vehicular Accesses

All vehicular accesses are designed in accordance with AS2890.1 (2004) and AS2890.2 (2018). All accesses primarily cater to residential parking spaces, being Class 1A with less than 300 spaces each. All proposed internal roadways are local roads and therefore all accesses are required to be Category 2 driveways under AS 2890.1 (2004), being combined entry and exit widths 6.0 to 9.0 metres. In response, driveway widths of 6.4 metres with 300mm kerbs on either side is provided for each building. Therefore, complying with the requirements of AS 2890.1.

In addition, all vehicular accesses accommodate the largest size vehicle being a 9.9m long waste collection vehicle. Swept path analysis is provided in **Appendix B** and shows satisfactory movements.

7.3 Pedestrian Crossings

The RMS Technical Direction TDT 2002/12c Stopping and Parking Restrictions at Intersections and Crossings requires that 20 metres of 'No Stopping 'restrictions are provided on the approach to a pedestrian crossing and 10 metres provided on the departure from a pedestrian crossing. However, where kerb extensions are provided with a width greater than 2.5 metres, this distance is reduced to 7.5 metres on approach. All crossings within the development are required to provide 7.5m of 'No stopping' restrictions on approach.

7.4 Internal Design

The internal car park is to comply with the requirements of AS 2890.1 (2004), AS 2890.2 (2018) and AS 2890.6 (2009), with the following characteristics noteworthy:

- All retail car parking spaces are designed in accordance with User Class 3 parking. These spaces are provided with a minimum space length of 5.4m, a minimum width of 2.6m and a minimum aisle width of 5.8m.
- All residential and commercial car parking spaces are designed in accordance with User Class 1A parking. These spaces are provided with a minimum space length of 5.4m, a minimum width of 2.4m and a minimum aisle width of 5.8m.

- All spaces located adjacent to obstructions of greater than 150mm in height are provided with an additional width of 300mm.
- Dead-end aisles are provided with the required 1.0m aisle extension in accordance with **Figure 2.3** of AS2890.1 (2004).
- All accessible parking spaces have been designed in accordance with AS 2890.6 (2009), being 2.4m wide, 5.4m long and situated immediately adjacent to a dedicated shared area or the circulating aisle.

7.4.1 Ramps

- Sufficient ramp grades are provided at the accesses in accordance with AS 2890.1 (2004) and AS 2890.2 (2018) noting that a 9.9m long waste collection vehicle will be accommodated from Ground Floor to Basement 1 with all other level basements provided in accordance with AS2890.1 (2004) for light vehicles only.
- The internal ramp has a maximum gradient of 5% (1 in 20) for the first 6.0m inside the property boundary, in accordance with Section 3.3 (a) of AS 2890.1 (2004).
- The internal ramps between the ground floor and basement 1 levels have a maximum gradient of 1:6.5 (15.4%).
- The internal ramps have a maximum gradient of 25% (1 in 4) with sag and summit transitions of 12.5% (1:8) respectively. These provisions satisfy the requirements of AS 2890.1 (2004).

7.4.2 Clear Head Heights

- A minimum clear head height 4.5m is to be provided throughout all areas traversed by a truck.
- A minimum clear head height of 2.2m is required to be provided for all areas within the basement car park as required by AS 2890.1 (2004).
- A minimum clear head height of 2.5m is to be provided above all accessible spaces in accordance with AS 2890.6 (2009).

7.4.3 Loading

- Loading bay areas are designed to accommodate Council's 9.9m Waste Collection Vehicle, providing a minimum space width of 3.5m and a length of 9.9m.
- A minimum head height clearance of 4.5 m is to be provided throughout all loading areas.
- A loading dock management plan can be developed to ensure efficient use of the proposed loading areas.

7.4.4 Other Considerations

- All columns are located outside of the parking space design envelope shown in **Figure 5.2** of AS 2890.1 (2004).
- Visual splay has been provided at the access driveways in accordance with **Figure 3.3** of AS 2890.1 (2004).

7.5 Summary

In summary, the internal configuration of the car parks and loading areas has been designed in accordance with AS 2890.1 (2004), AS 2890.2 (2018) and AS 2890.6 (2009). It is however envisaged that a condition of consent would be imposed requiring compliance with these standards and as such any minor amendments considered necessary (if any) can be dealt with prior to the release of a Construction Certificate.

8. CONCLUSIONS

In summary:

- The proposal seeks approval to construct a total of eight (8) buildings at 164-170 Croatia Avenue, Edmondson Park, containing residential, retail and commercial uses and four (4) basement carparks.
- The subject site is well connected to the public transport network with reliable access to regular bus and rail services. These ensure the site is ideally situated for a high-density residential development as it provides a good opportunity to encourage future tenants / visitors to use sustainable transport modes.
- The proposed development provides a total of 209 residential parking spaces within Building A and B; 28 retail and 177 residential parking spaces within Building C and D; seven (7) commercial (and an additional two spaces shared with residential visitors) and 237 residential parking spaces within Building E and F, and 33 retail and 121 residential parking spaces within Building G and H in accordance with the Edmondson Park South Concept Plan and SEPP 65 requirements.
- The traffic generation arising from the development has been assessed and equates to an additional 149 vehicle trips per hour during the morning peak period and an additional 151 vehicle trips in the evening peak period. SIDRA 9 Intersection modelling has been conducted of the three key intersections described in Section 3.2. The SIDRA modelling shows that the intersection of Croatia Avenue and Bernera Road, while experiencing a LoS D in all scenarios, this is due to the LoS for priority intersections being based on the worst performing leg. Overall, it experiences minimal increases in average delays and continues to operate with spare capacity.

  The intersection of Campbelltown Road and Soldiers Parade experiences a minor increase in average delay of 3.1 seconds in the morning and continues to operate at a LoS D. In the evening the LoS in decreases from a C to a D, however it is noted that the change in average delay is only 1.4 seconds and therefore considered minimal. It is noted that this intersection operates with spare capacity.

  The intersection of Camden Valley Way and Bernera Road does not operate satisfactorily either presently, or under future conditions, with a level of service F and E in both cases and

during morning and evening peaks, respectively. It is emphasised that the addition of traffic from the proposed development equates to approximately 3% of total throughput in the morning and evening peaks.

As such, the proposed development will have minimal impacts on key intersections which will continue to operate as presently occurs and with similar delays.

- The road arrangement is to be designed in accordance with the requirements of AS 2890.5 (2020) and Edmondson Park South DCP.
- The basement car park has been assessed to comply with the requirements of AS 2890.1 (2004), AS 2890.2 (2002) and AS 2890.6 (2009), thereby ensuring safe and efficient operation.

This traffic impact assessment therefore demonstrates that the subject application is supportable on traffic planning grounds. TRAFFIX anticipates an ongoing involvement during the development approval process.

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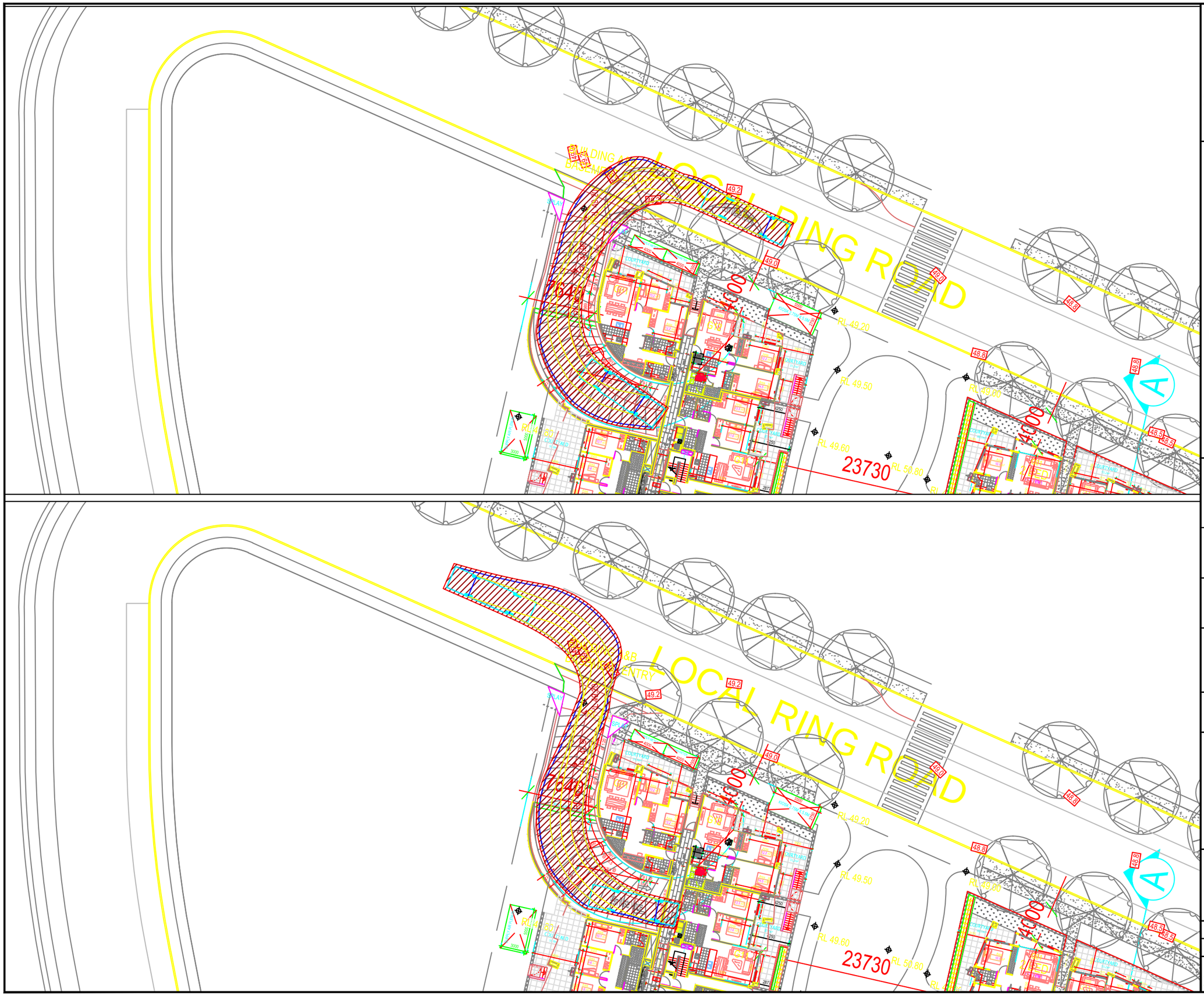
APPENDIX A

Reduced Plans

APPENDIX B

Swept Path Analysis



Notes:

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Rev.	Revision Note	By.	Date
A	Design Review	SW	20-11-20
B	Design Review	SW	25-02-21

Swept Path Legend

- Wheel Path
- Vehicle Body Envelope
- Clearance Envelope (300mm)

Architect
Tony Owen Partners
12-16 Queen Street
CHIPPENDALE NSW 2008

Client
Super Star Holding Group Pty Ltd

Scale / Plan Orientation

0 4 8 12 16m
1:400 @ A3

Project Description
164-170 Croatia Avenue
EDMONDSON PARK NSW 2174

Drawing Prepared By

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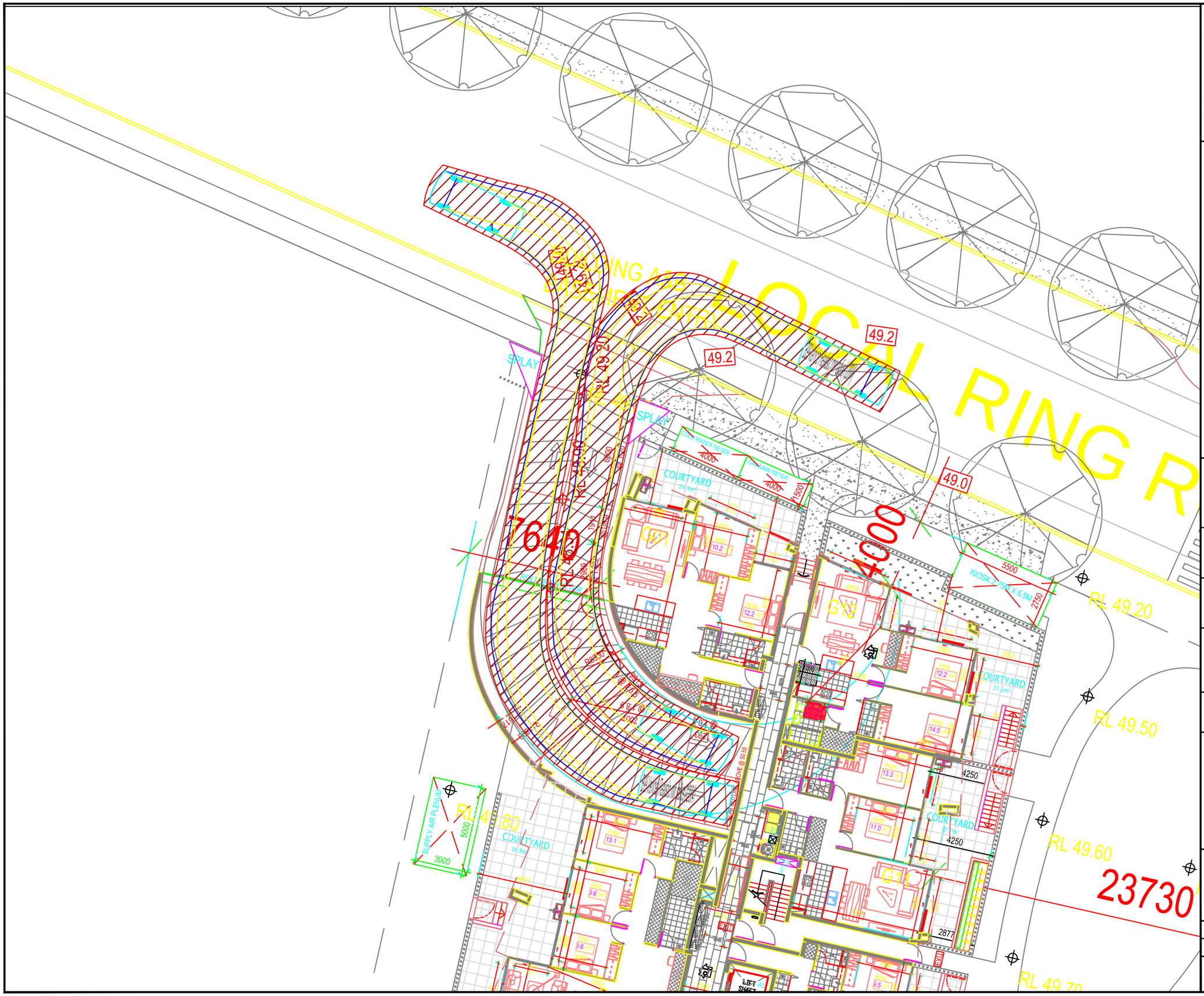
Drawing Title
9.9m Waste Collection Vehicle
Building A & B
Ground Floor
Top: Entry Movement Entry: Exit Movement

Drawn:	Checked:	Date:
SW	VD	20-11-20

20.210d10v01 TRAFFIX [210225 Plans] Design Review.dwg

Project No.	Drawing Phase	Drawing No.	Rev.
20.210	DA	TX.01	B



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Swept Path Legend

—	Wheel Path
—	Vehicle Body Envelope
▨	Clearance Envelope (300mm)

Architect
Tony Owen Partners
12-16 Queen Street
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Client
Super Star Holding Group Pty Ltd

Scale / Plan Orientation
0 2 4 6 8m
1:200 @ A3

Project Description
164-170 Croatia Avenue
EDMONDSON PARK NSW 2174

Drawing Prepared By

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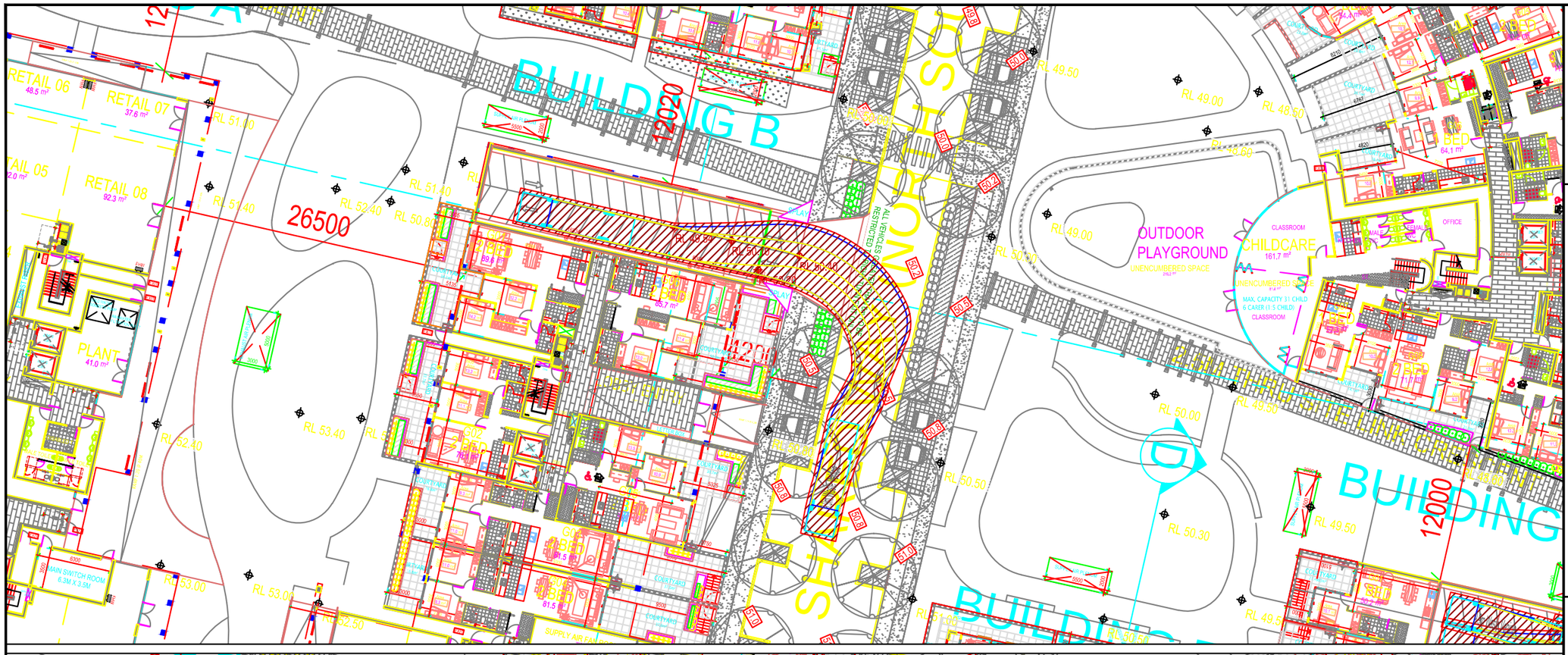
Drawing Title
B99 Design Vehicle
Building A & B
Ground Floor
Entry and Exit Movements

Drawn: SW	Checked: VD	Date: 20-11-20

20.210d10v01 TRAFFIX [210225 Plans] Design Review.dwg

Project No.	Drawing Phase	Drawing No.	Rev.
20.210	DA	TX.02	B



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Swept Path Legend

- Wheel Path
- Vehicle Body Envelope
- Clearance Envelope (300mm)

Architect
Tony Owen Partners
12-16 Queen Street
CHIPPENDALE NSW 2008

Client
Super Star Holding Group Pty Ltd

Scale / Plan Orientation

0 4 8 12 16m
1:400 @ A3

Project Description
164-170 Croatia Avenue
EDMONDSON PARK NSW 2174

Drawing Prepared By

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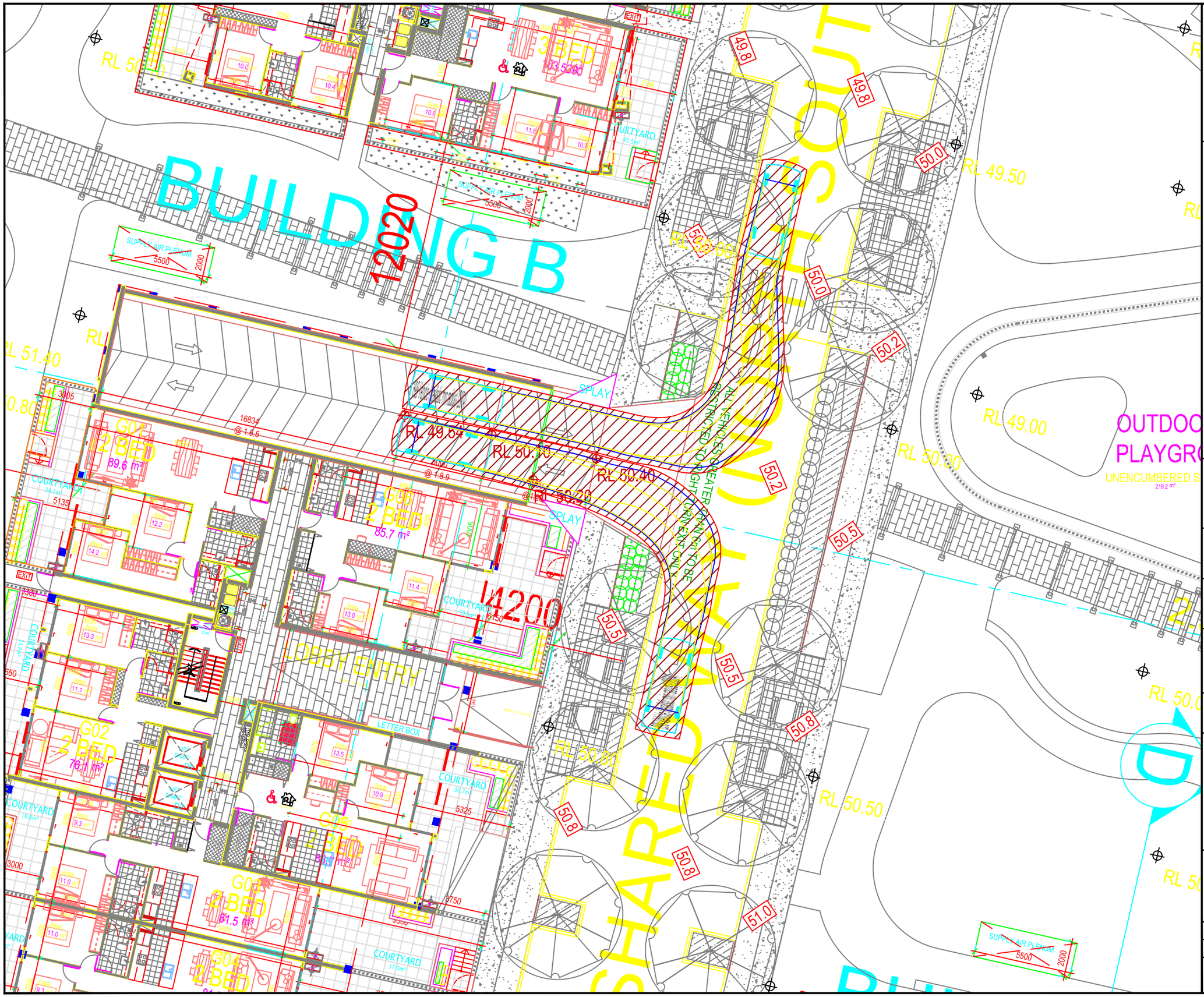
Drawing Title
9.9m Waste Collection Vehicle
Building C & D
Ground Floor
Top: Entry Movement Entry: Exit Movement

Drawn:	Checked:	Date:
SW	VD	20-11-20

20.210d10v01 TRAFFIX [210225 Plans] Design Review.dwg

Project No.	Drawing Phase	Drawing No.	Rev.
20.210	DA	TX.03	B



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Swept Path Legend

- Wheel Path
- Vehicle Body Envelope
- Clearance Envelope (300mm)

Architect
Tony Owen Partners
12-16 Queen Street
CHIPPENDALE NSW 2008

Client
Super Star Holding Group Pty Ltd

Scale / Plan Orientation

0 2 4 6 8m

1:200 @ A3

Project Description
164-170 Croatia Avenue
EDMONDSON PARK NSW 2174

Drawing Prepared By

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Drawing Title
B99 Design Vehicle
Building C & D
Ground Floor
Entry and Exit Movements

Drawn:	Checked:	Date:
SW	VD	20-11-20

20.210d10v01 TRAFFIX [210225 Plans] Design Review.dwg

Project No.	Drawing Phase	Drawing No.	Rev.
20.210	DA	TX.04	B

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Swept Path Legend

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CHIPPENDALE NSW 2008

Client
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Scale / Plan Orientation

0 4 8 12 16m
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164-170 Croatia Avenue
EDMONDSON PARK NSW 2174

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Drawing Title
9.9m Waste Collection Vehicle
Building E & F
Ground Floor
Top: Entry Movement Entry: Exit Movement

Drawn:	Checked:	Date:
SW	VD	20-11-20

20.210d10v01 TRAFFIX [210225 Plans] Design Review.dwg

Project No.	Drawing Phase	Drawing No.	Rev.
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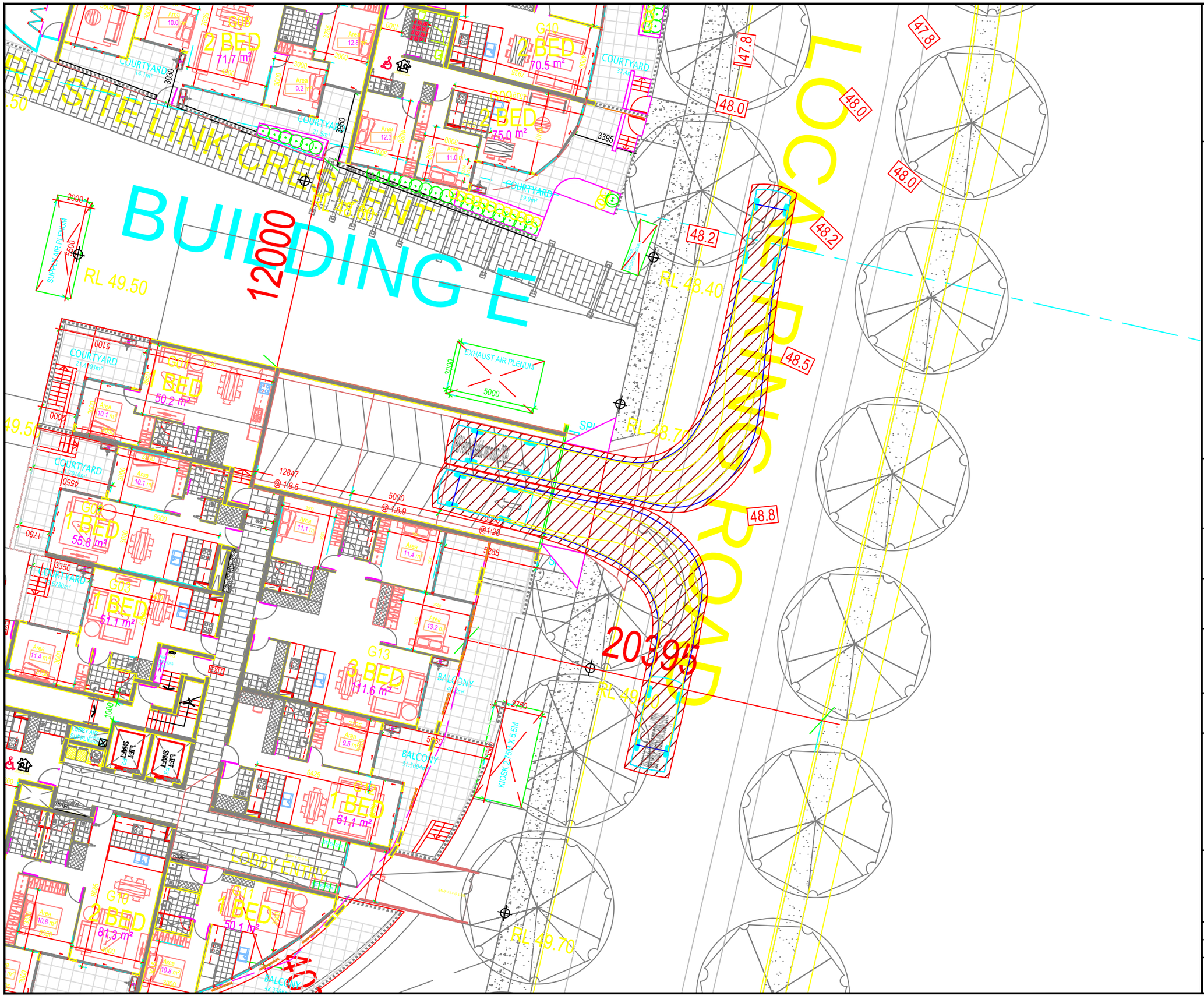

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B	Design Review	SW	25-02-21

Swept Path Legend

- Wheel Path
- Vehicle Body Envelope
- Clearance Envelope (300mm)

Architect
Tony Owen Partners
12-16 Queen Street
CHIPPENDALE NSW 2008

Client
Super Star Holding Group Pty Ltd

Scale / Plan Orientation

0 4 8 12 16m
1:400 @ A3

Project Description
164-170 Croatia Avenue
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Drawing Prepared By
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Drawing Title
B99 Design Vehicle
Building E & F
Ground Floor
Entry and Exit Movements

Drawn:	Checked:	Date:
SW	VD	20-11-20

20.210d10v01 TRAFFIX [210225 Plans] Design Review.dwg

Project No.	Drawing Phase	Drawing No.	Rev.
20.210	DA	TX.06	B

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Swept Path Legend

- Wheel Path
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Architect
Tony Owen Partners
12-16 Queen Street
CHIPPENDALE NSW 2008

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0 4 8 12 16m

1:400 @ A3

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Drawing Title
9.9m Waste Collection Vehicle
Building G & H
Ground Floor
Top: Entry Movement Entry: Exit Movement

Drawn:	Checked:	Date:
SW	VD	20-11-20

20.210d10v01 TRAFFIX [210225 Plans] Design Review.dwg

Project No.	Drawing Phase	Drawing No.	Rev.
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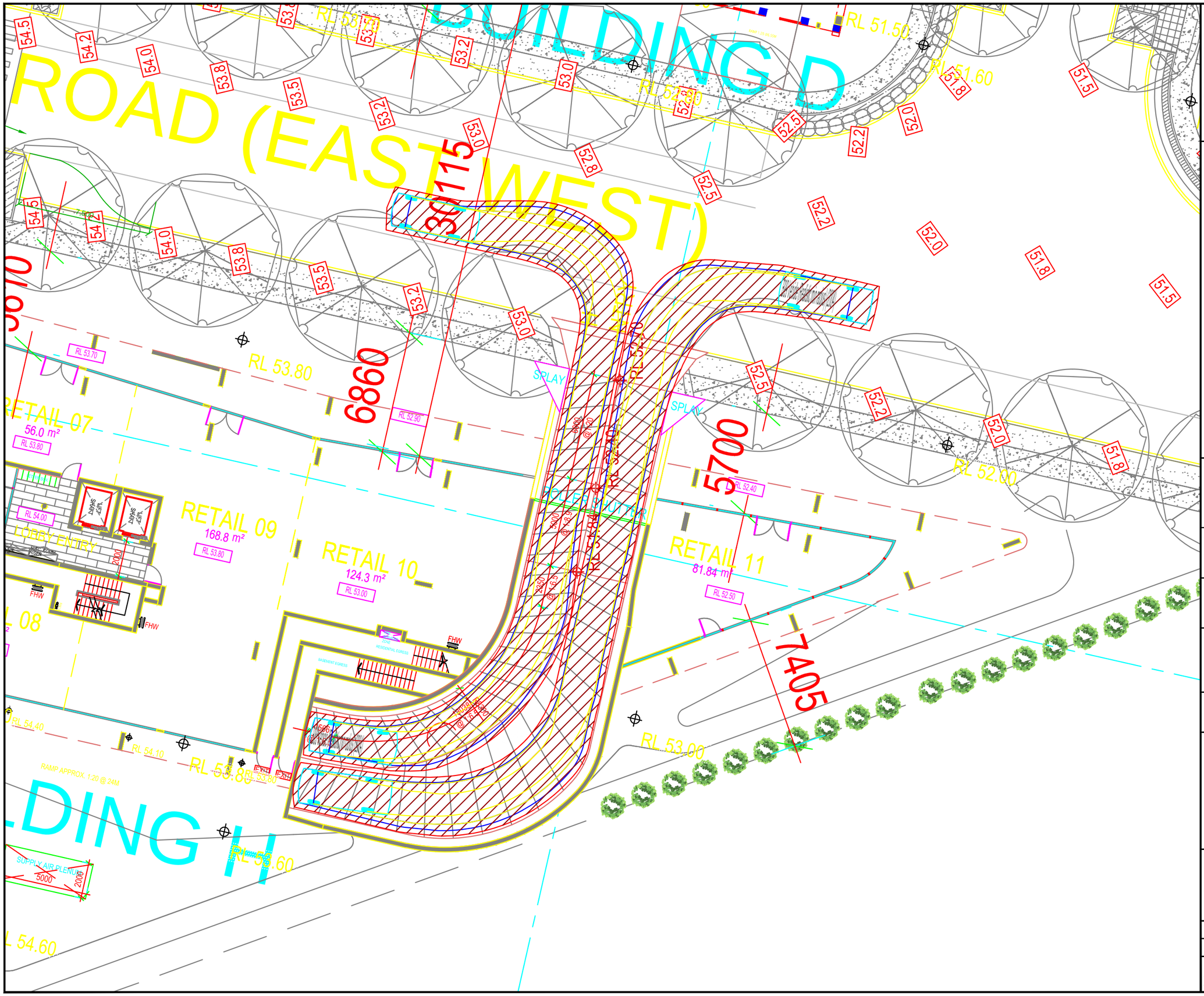

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Swept Path Legend

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CHIPPENDALE NSW 2008

Client
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Scale / Plan Orientation
0 2 4 6 8m
1:200 @ A3

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EDMONDSON PARK NSW 2174

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Building G & H
Ground Floor
Entry and Exit Movements

Drawn:	Checked:	Date:
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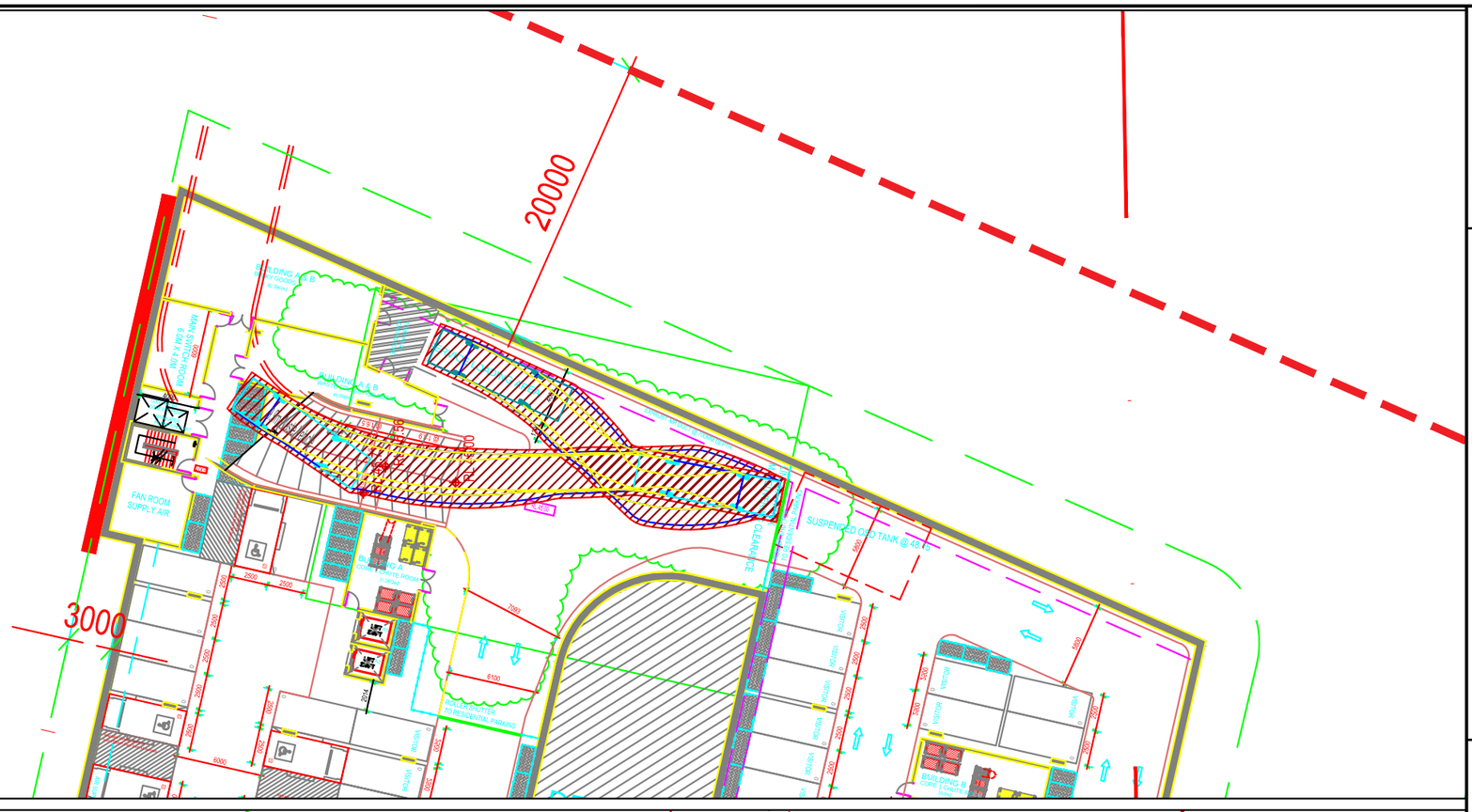
20.210d10v01 TRAFFIX [210225 Plans] Design Review.dwg

Project No.	Drawing Phase	Drawing No.	Rev.
20.210	DA	TX.08	B



Notes:

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TRAFFIX is responsible for vehicle swept path diagrams and/or drawing mark-ups only. Base drawing prepared by others.

Vehicle swept path diagrams prepared using computer generated turning path software and associated CAD drawing platforms. Vehicle data based upon relevant Australian Standards (*AS/NZS 2890.1:2004 Parking facilities - Off-street car parking*, and/or *AS2890.2:2002 Parking facilities - Off-street commercial vehicle facilities*). These standards embody a degree of tolerance, however the vehicle characteristics in these standards represent a suitable design vehicle and do not account for all variations in vehicle dimensions / specifications and/or driver ability or behaviour.

Rev.	Revision Note	By.	Date
A	Design Review	SW	20-11-20
B	Design Review	SW	25-02-21

Swept Path Legend

- Wheel Path
- Vehicle Body Envelope
- Clearance Envelope (300mm)

Architect
Tony Owen Partners
12-16 Queen Street
CHIPPENDALE NSW 2008

Client
Super Star Holding Group Pty Ltd

Scale / Plan Orientation

0 4 8 12 16m
1:400 @ A3

Project Description
164-170 Croatia Avenue
EDMONDSON PARK NSW 2174

Drawing Prepared By

TRAFFIX
TRAFFIC & TRANSPORT PLANNERS
Suite 2.08, 50 Holt Street
Surry Hills, NSW 2010
PO Box 1124
Strawberry Hills, NSW 2012
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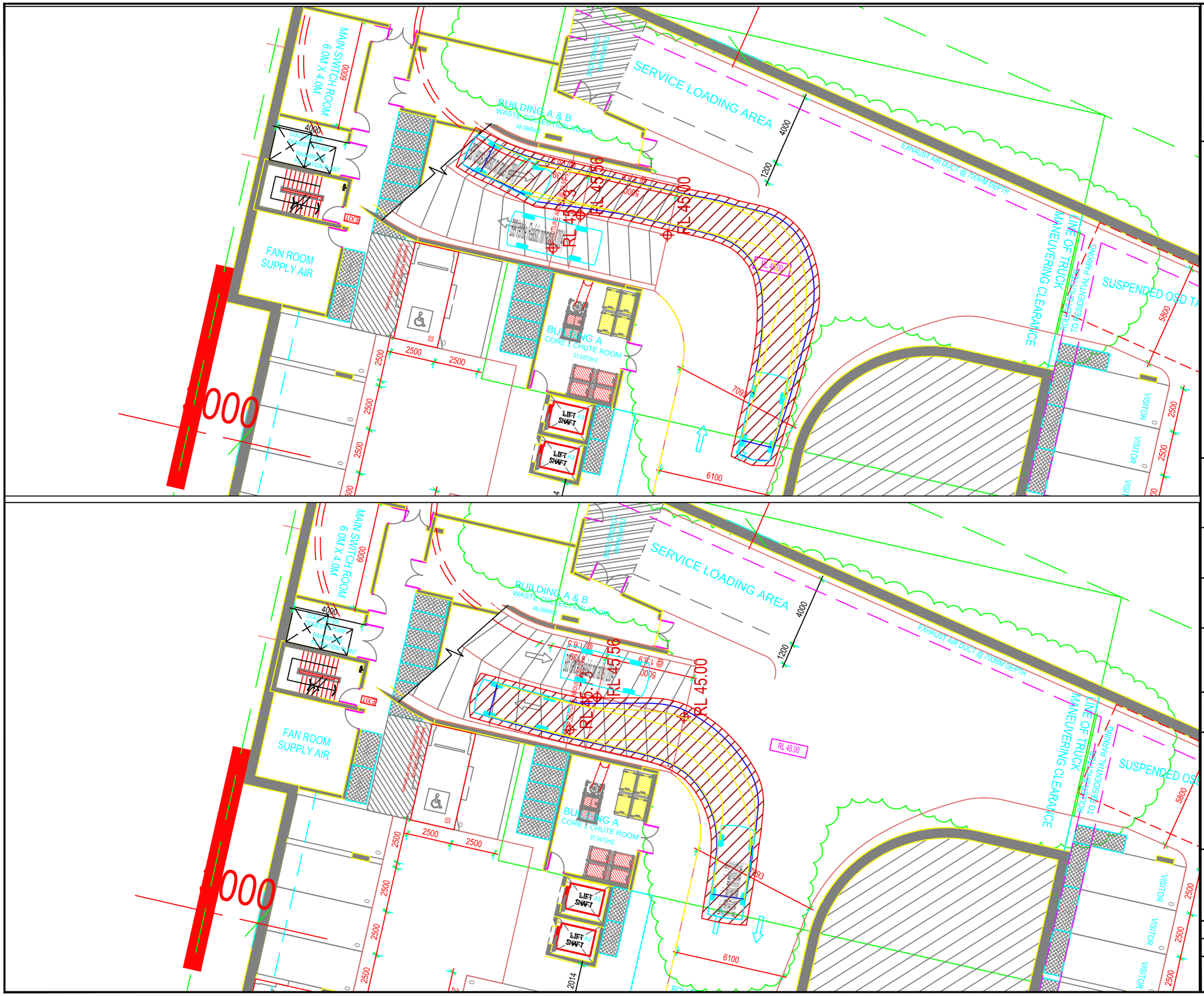
f: +61 2 9830 4481
w: www.traffix.com.au

Drawing Title
9.9m Waste Collection Vehicle
Building A & B
Basement 1
Top: Entry Movement Entry: Exit Movement

Drawn:	Checked:	Date:
SW	VD	20-11-20

20.210d10v01 TRAFFIX [210225 Plans] Design Review.dwg

Project No.	Drawing Phase	Drawing No.	Rev.
20.210	DA	TX.09	B



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Rev.	Revision Note	By.	Date
A	Design Review	SW	20-11-20
B	Design Review	SW	25-02-21

Swept Path Legend

- Wheel Path
- Vehicle Body Envelope
- Clearance Envelope (300mm)

Architect
Tony Owen Partners
12-16 Queen Street
CHIPPENDALE NSW 2008

Client
Super Star Holding Group Pty Ltd

Scale / Plan Orientation

0 2 4 6 8m
1:200 @ A3

Project Description
164-170 Croatia Avenue
EDMONDSON PARK NSW 2174

Drawing Prepared By

TRAFFIX
TRAFFIC & TRANSPORT PLANNERS
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Surry Hills, NSW 2010
PO Box 1124
Strawberry Hills, NSW 2012
t: +61 2 8324 8700
f: +61 2 9830 4481
w: www.traffix.com.au

Drawing Title
B85 and 99 Design Vehicles
Building A & B
Basement 1
Top: Entry Movement Bottom: Exit Movement

Drawn:	Checked:	Date:
SW	VD	20-11-20

20.210d10v01 TRAFFIX [210225 Plans] Design Review.dwg

Project No.	Drawing Phase	Drawing No.	Rev.
20.210	DA	TX.10	B

Notes:

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Rev.	Revision Note	By.	Date
A	Design Review	SW	20-11-20
B	Design Review	SW	25-02-21

Swept Path Legend

- Wheel Path
- Vehicle Body Envelope
- Clearance Envelope (300mm)

Architect
Tony Owen Partners
12-16 Queen Street
CHIPPENDALE NSW 2008

Client
Super Star Holding Group Pty Ltd

Scale / Plan Orientation

0 4 8 12 16m

1:400 @ A3

Project Description
164-170 Croatia Avenue
EDMONDSON PARK NSW 2174

Drawing Prepared By

TRAFFIX
TRAFFIC & TRANSPORT PLANNERS

Suite 2.08, 50 Holt Street
Surry Hills, NSW 2010
PO Box 1124
Strawberry Hills, NSW 2012

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f: +61 2 9830 4481
w: www.traffix.com.au

Drawing Title
9.9m Waste Collection Vehicle
Building C & D
Basement 1
Top: Entry Movement Entry: Exit Movement

Drawn:	Checked:	Date:
SW	VD	20-11-20

20.210d10v01 TRAFFIX [210225 Plans] Design Review.dwg

Project No.	Drawing Phase	Drawing No.	Rev.
20.210	DA	TX.11	B

Notes:

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Rev.	Revision Note	By.	Date
A	Design Review	SW	20-11-20
B	Design Review	SW	25-02-21

Swept Path Legend

- Wheel Path
- Vehicle Body Envelope
- Clearance Envelope (300mm)

Architect
Tony Owen Partners
12-16 Queen Street
CHIPPENDALE NSW 2008

Client
Super Star Holding Group Pty Ltd

Scale / Plan Orientation

0 4 8 12 16m
1:400 @ A3

Project Description
164-170 Croatia Avenue
EDMONDSON PARK NSW 2174

Drawing Prepared By

TRAFFIX
TRAFFIC & TRANSPORT PLANNERS

Suite 2.08, 50 Holt Street
Surry Hills, NSW 2010
PO Box 1124
Strawberry Hills, NSW 2012

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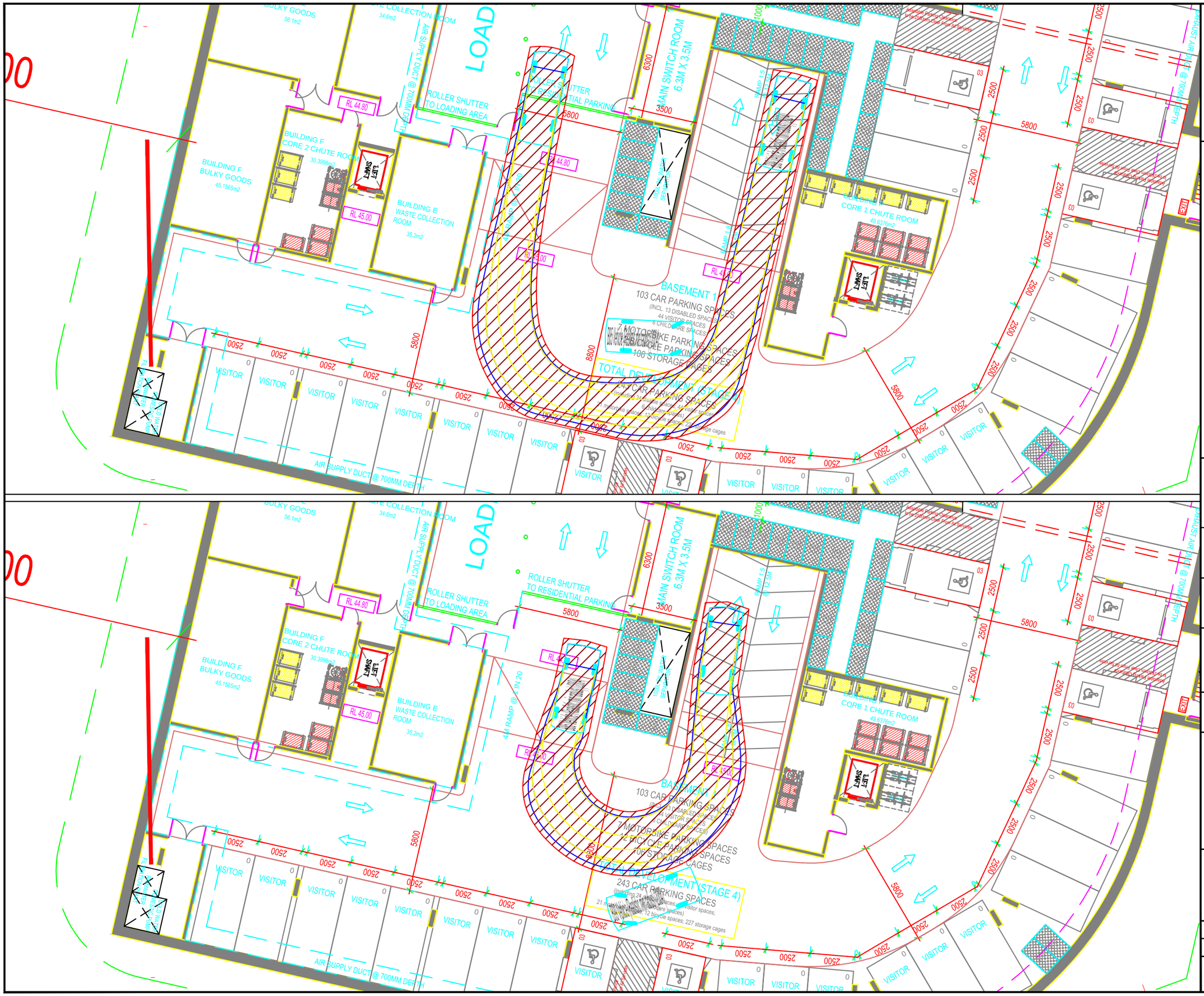
w: www.traffix.com.au

Drawing Title
9.9m Waste Collection Vehicle
Building E & F
Basement 1
Top: Entry Movement Entry: Exit Movement

Drawn:	Checked:	Date:
SW	VD	20-11-20

20.210d10v01 TRAFFIX [210225 Plans] Design Review.dwg

Project No.	Drawing Phase	Drawing No.	Rev.
20.210	DA	TX.12	B



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Rev.	Revision Note	By.	Date
A	Design Review	SW	20-11-20
B	Design Review	SW	25-02-21

Swept Path Legend

- Wheel Path
- Vehicle Body Envelope
- Clearance Envelope (300mm)

Architect
Tony Owen Partners
12-16 Queen Street
CHIPPENDALE NSW 2008

Client
Super Star Holding Group Pty Ltd

Scale / Plan Orientation

0 2 4 6 8m
1:200 @ A3

Project Description
164-170 Croatia Avenue
EDMONDSON PARK NSW 2174

Drawing Prepared By

TRAFFIX
TRAFFIC & TRANSPORT PLANNERS

Suite 2.08, 50 Holt Street
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PO Box 1124
Strawberry Hills, NSW 2012

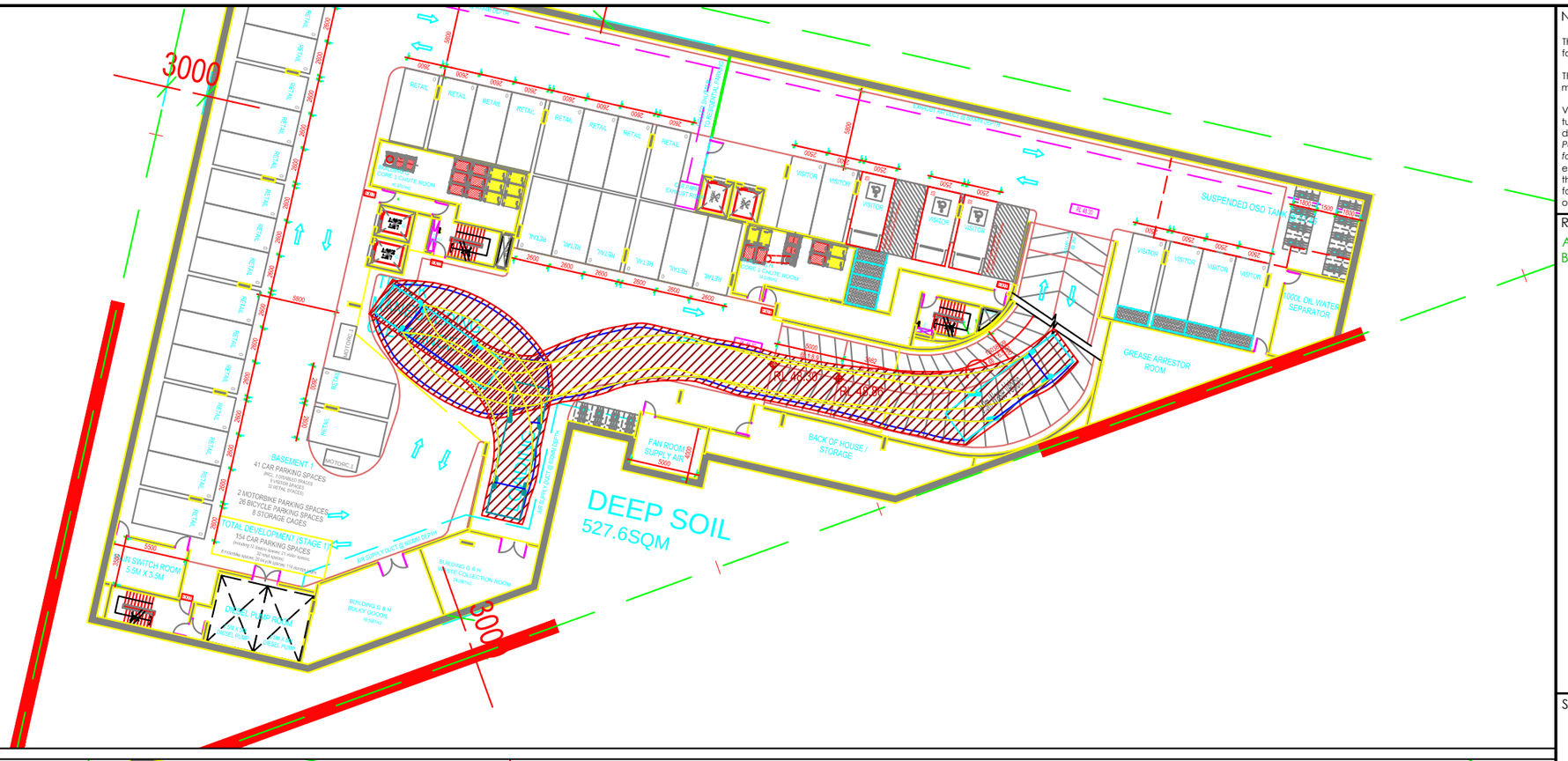
t: +61 2 8324 8700
f: +61 2 9830 4481
w: www.traffix.com.au

Drawing Title
B85 and B99 Design Vehicles
Building E & F
Basement 1
Top: Entry Movement
Bottom: Exit Movements

Drawn:	Checked:	Date:
SW	VD	20-11-20

20.210d10v01 TRAFFIX [210225 Plans] Design Review.dwg

Project No.	Drawing Phase	Drawing No.	Rev.
20.210	DA	TX.13	B



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Rev.	Revision Note	By.	Date
A	Design Review	SW	20-11-20
B	Design Review	SW	25-02-21

Swept Path Legend

- Wheel Path
- Vehicle Body Envelope
- Clearance Envelope (300mm)

Architect
Tony Owen Partners
12-16 Queen Street
CHIPPENDALE NSW 2008

Client
Super Star Holding Group Pty Ltd

Scale / Plan Orientation

0 4 8 12 16m
1:400 @ A3

Project Description
164-170 Croatia Avenue
EDMONDSON PARK NSW 2174

Drawing Prepared By
TRAFFIX
TRAFFIC & TRANSPORT PLANNERS
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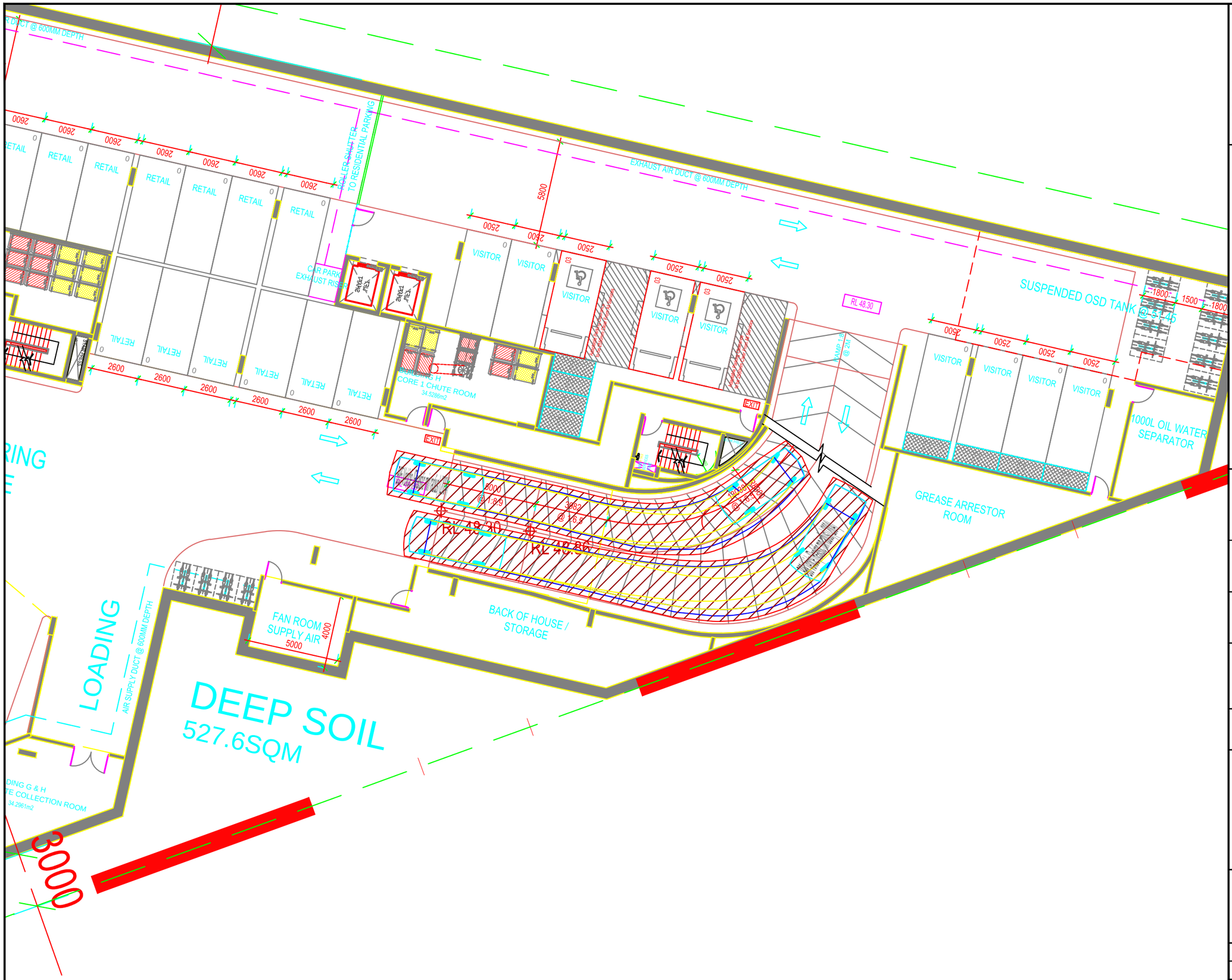
Surry Hills, NSW 2010
PO Box 1124
Strawberry Hills, NSW 2012
t: +61 2 8324 8700
f: +61 2 9830 4481
w: www.traffix.com.au

Drawing Title
9.9m Waste Collection Vehicle
Building G & H
Ground Floor
Top: Entry Movement Entry: Exit Movement

Drawn:	Checked:	Date:
SW	VD	20-11-20

20.210d10v01 TRAFFIX [210225 Plans] Design Review.dwg

Project No.	Drawing Phase	Drawing No.	Rev.
20.210	DA	TX.14	B



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Rev.	Revision Note	By.	Date
A	Design Review	SW	20-11-20
B	Design Review	SW	25-02-21

Swept Path Legend

- Wheel Path
- Vehicle Body Envelope
- Clearance Envelope (300mm)

Architect
Tony Owen Partners
12-16 Queen Street
CHIPPENDALE NSW 2008

Client
Super Star Holding Group Pty Ltd

Scale / Plan Orientation

0 2 4 6 8m

1:200 @ A3

Project Description
164-170 Croatia Avenue
EDMONDSON PARK NSW 2174

Drawing Prepared By

TRAFFIX
TRAFFIC & TRANSPORT PLANNERS

Suite 2.08, 50 Holt Street
Surry Hills, NSW 2010
PO Box 1124
Strawberry Hills, NSW 2012

t: +61 2 8324 8700
f: +61 2 9830 4481
w: www.traffix.com.au

Drawing Title
B85 and B99 Design Vehicle
Building G & H
Basement 1
Entry and Exit Movements

Drawn:	Checked:	Date:
SW	VD	20-11-20

20.210d10v01 TRAFFIX [210225 Plans] Design Review.dwg

Project No.	Drawing Phase	Drawing No.	Rev.
20.210	DA	TX.15	B

APPENDIX C

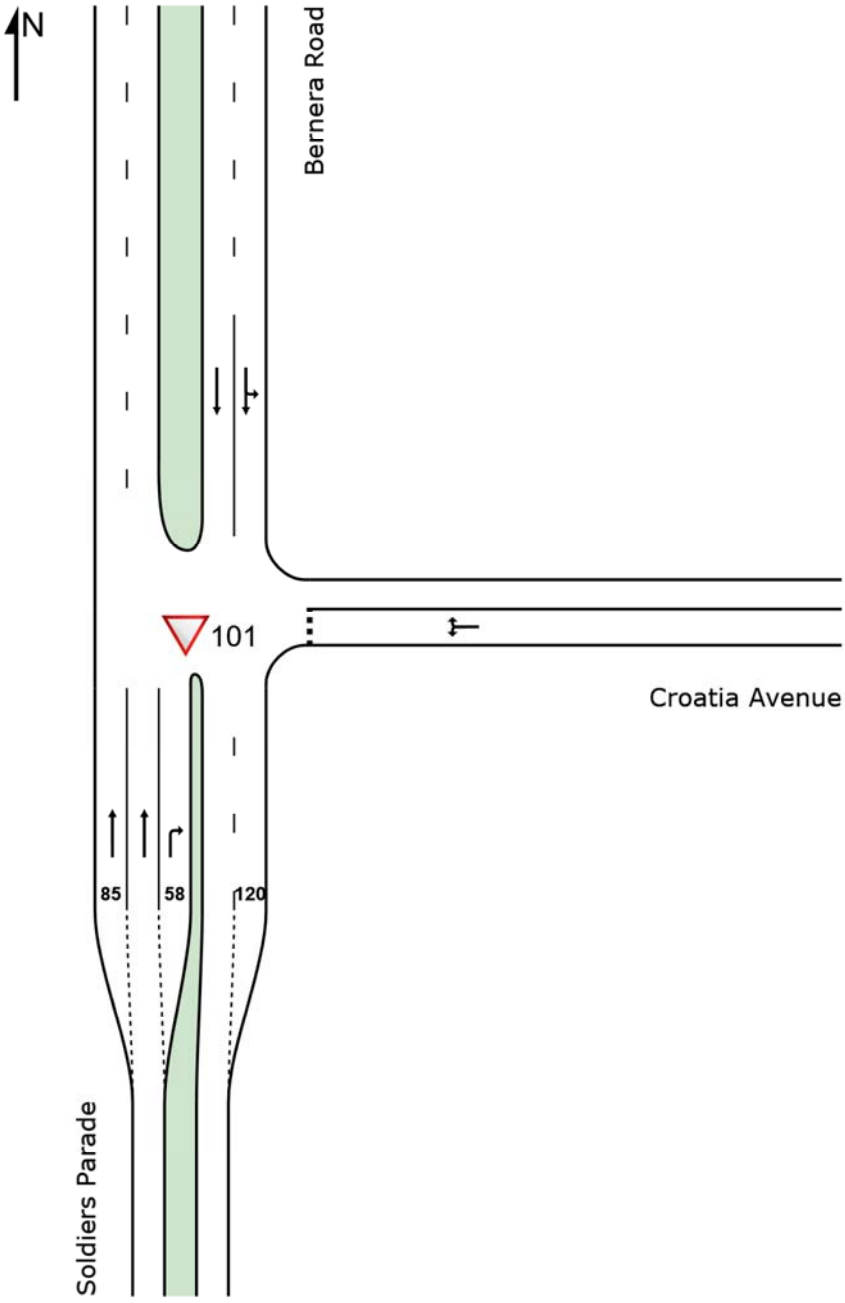
SIDRA Outputs

SITE LAYOUT

Site: 101 [101_EXAM_Croatia Ave, Soldiers Pde & Bernera Rd (Site Folder: General)]

Croatia Ave, Soldiers Pde and Bernera Rd
Existing Scenario - AM Peak
7:30-8:30am
Site Category: (None)
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



USER REPORT FOR SITE

All Movement Classes

Project: 20.210m01v01_164 Croatia Ave, Edmondson Park **Template: Movement Summaries**

Site: 101 [101_EXAM_Croatia Ave, Soldiers Pde & Bernera Rd (Site Folder: General)]

Croatia Ave, Soldiers Pde and Bernera Rd
Existing Scenario - AM Peak
7:30-8:30am
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Soldiers Parade														
2	T1	860	27	905	3.1	0.238	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	57	4	60	7.0	0.107	11.1	LOS A	0.4	2.8	0.67	0.86	0.67	48.2
Approach		917	31	965	3.4	0.238	0.7	NA	0.4	2.8	0.04	0.05	0.04	58.8
East: Croatia Avenue														
4	L2	63	2	66	3.2	0.127	8.6	LOS A	0.4	2.9	0.49	0.67	0.49	49.4
6	R2	5	0	5	0.0	0.127	48.6	LOS D	0.4	2.9	0.49	0.67	0.49	48.4
Approach		68	2	72	2.9	0.127	11.5	LOS A	0.4	2.9	0.49	0.67	0.49	49.3
North: Bernera Road														
7	L2	48	0	51	0.0	0.187	5.6	LOS A	0.0	0.0	0.00	0.08	0.00	57.0
8	T1	832	31	876	3.7	0.300	0.6	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
Approach		880	31	926	3.5	0.300	0.9	NA	0.0	0.0	0.00	0.03	0.00	59.3
All Vehicles		1865	64	1963	3.4	0.300	1.2	NA	0.4	2.9	0.04	0.07	0.04	58.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 102 [102_PRAM_Croatia Ave, Soldiers Pde & Bernera Rd (Site Folder: General)]

Croatia Ave, Soldiers Pde and Bernera Rd
Development Scenario - AM Peak
7:30-8:30am
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Soldiers Parade														
2	T1	860	27	905	3.1	0.238	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	69	4	73	5.8	0.134	11.4	LOS A	0.5	3.5	0.69	0.87	0.69	48.1
Approach		929	31	978	3.3	0.238	0.9	NA	0.5	3.5	0.05	0.06	0.05	58.6
East: Croatia Avenue														
4	L2	96	2	101	2.1	0.162	8.6	LOS A	0.5	3.9	0.45	0.65	0.45	50.1
6	R2	5	0	5	0.0	0.162	52.9	LOS D	0.5	3.9	0.45	0.65	0.45	49.1
Approach		101	2	106	2.0	0.162	10.8	LOS A	0.5	3.9	0.45	0.65	0.45	50.1
North: Bernera Road														
7	L2	81	0	85	0.0	0.194	5.6	LOS A	0.0	0.0	0.00	0.14	0.00	56.5
8	T1	832	31	876	3.7	0.312	0.7	LOS A	0.0	0.0	0.00	0.04	0.00	59.3
Approach		913	31	961	3.4	0.312	1.1	NA	0.0	0.0	0.00	0.05	0.00	59.0
All Vehicles		1943	64	2045	3.3	0.312	1.5	NA	0.5	3.9	0.05	0.09	0.05	58.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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.
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Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 103 [103_EXPM_Croatia Ave, Soldiers Pde & Bernera Rd (Site Folder: General)]

Croatia Ave, Soldiers Pde and Bernera Rd
Existing Scenario - PM Peak
5:00-6:00pm
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Soldiers Parade														
2	T1	857	18	902	2.1	0.236	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	49	2	52	4.1	0.076	9.5	LOS A	0.3	2.0	0.59	0.80	0.59	49.4
Approach		906	20	954	2.2	0.236	0.6	NA	0.3	2.0	0.03	0.04	0.03	59.0
East: Croatia Avenue														
4	L2	43	2	45	4.7	0.206	8.0	LOS A	0.6	4.6	0.61	0.73	0.61	45.1
6	R2	15	1	16	6.7	0.206	43.2	LOS D	0.6	4.6	0.61	0.73	0.61	43.8
Approach		58	3	61	5.2	0.206	17.1	LOS B	0.6	4.6	0.61	0.73	0.61	44.8
North: Bernera Road														
7	L2	8	0	8	0.0	0.156	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	57.8
8	T1	733	17	772	2.3	0.250	0.5	LOS A	0.0	0.0	0.00	0.01	0.00	59.8
Approach		741	17	780	2.3	0.250	0.5	NA	0.0	0.0	0.00	0.01	0.00	59.8
All Vehicles		1705	40	1795	2.3	0.250	1.1	NA	0.6	4.6	0.04	0.05	0.04	58.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 104 [104_PRPM_Croatia Ave, Soldiers Pde & Bernera Rd (Site Folder: General)]

Croatia Ave, Soldiers Pde and Bernera Rd
Development Scenario - PM Peak
5:00-6:00pm
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Soldiers Parade														
2	T1	857	18	902	2.1	0.236	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	79	2	83	2.5	0.131	10.2	LOS A	0.5	3.4	0.63	0.85	0.63	49.0
Approach		936	20	985	2.1	0.236	0.9	NA	0.5	3.4	0.05	0.07	0.05	58.5
East: Croatia Avenue														
4	L2	54	2	57	3.7	0.236	7.9	LOS A	0.7	5.2	0.57	0.69	0.57	45.4
6	R2	15	1	16	6.7	0.236	48.8	LOS D	0.7	5.2	0.57	0.69	0.57	44.1
Approach		69	3	73	4.3	0.236	16.8	LOS B	0.7	5.2	0.57	0.69	0.57	45.2
North: Bernera Road														
7	L2	84	0	88	0.0	0.173	5.6	LOS A	0.0	0.0	0.00	0.16	0.00	56.3
8	T1	733	17	772	2.3	0.277	0.5	LOS A	0.0	0.0	0.00	0.05	0.00	59.2
Approach		817	17	860	2.1	0.277	1.0	NA	0.0	0.0	0.00	0.06	0.00	58.9
All Vehicles		1822	40	1918	2.2	0.277	1.5	NA	0.7	5.2	0.05	0.09	0.05	57.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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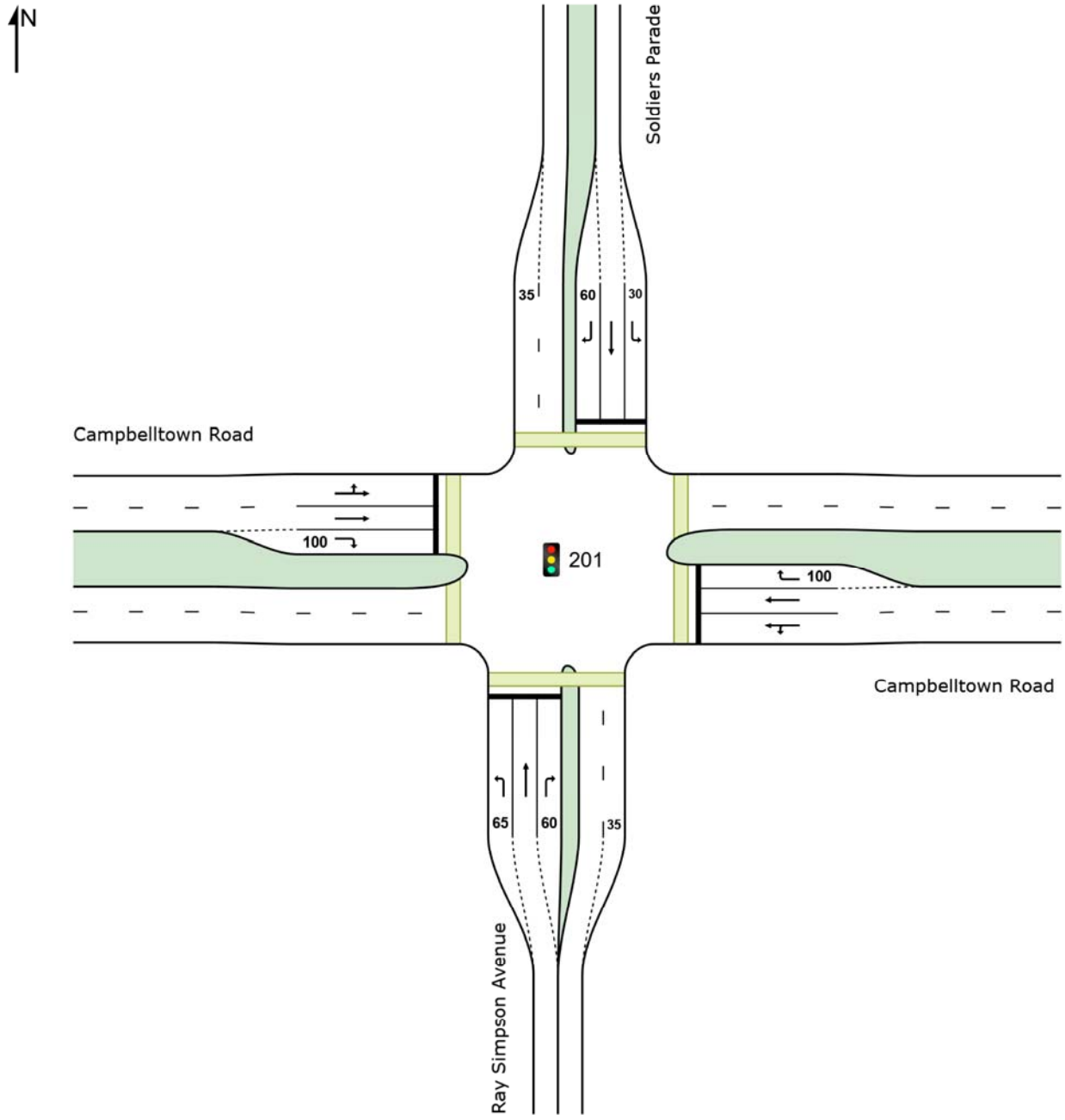
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

Site: 201 [201_EXAM_Campbelltown Rd & Soldiers Pde (Site Folder: General)]

Campbelltown Rd & Soldiers Pde
Existing Scenario - AM Peak
7:45-8:45am
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



Site: 201 [201_EXAM_Campbelltown Rd & Soldiers Pde (Site Folder: General)]

Campbelltown Rd & Soldiers Pde
Existing Scenario - AM Peak
7:45-8:45am
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 140 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Survey Video
Reference Phase: Phase A
Input Phase Sequence: A, D, D2, E, G
Output Phase Sequence: A, D, D2, E, G

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Ray Simpson Avenue														
1	L2	82	1	86	1.2	0.224	55.2	LOS D	4.9	34.7	0.87	0.76	0.87	28.1
2	T1	135	1	142	0.7	* 0.846	76.7	LOS F	10.5	74.2	1.00	0.94	1.27	20.6
3	R2	19	6	20	31.6	0.122	41.8	LOS C	0.9	7.9	0.93	0.70	0.93	29.7
Approach		236	8	248	3.4	0.846	66.4	LOS E	10.5	74.2	0.95	0.86	1.11	23.7
East: Campbelltown Road														
4	L2	38	3	40	7.9	0.247	36.7	LOS C	8.7	62.6	0.71	0.64	0.71	35.8
5	T1	319	9	336	2.8	0.247	30.6	LOS C	8.7	62.6	0.72	0.62	0.72	34.5
6	R2	117	4	123	3.4	* 0.856	85.0	LOS F	9.3	66.7	1.00	0.92	1.32	13.7
Approach		474	16	499	3.4	0.856	44.5	LOS D	9.3	66.7	0.79	0.69	0.87	27.1
North: Soldiers Parade														
7	L2	175	6	184	3.4	0.254	31.2	LOS C	7.7	55.3	0.66	0.75	0.66	26.0
8	T1	203	9	214	4.4	0.470	38.7	LOS C	11.0	80.2	0.81	0.68	0.81	30.5
9	R2	378	17	398	4.5	0.832	47.9	LOS D	22.9	166.7	0.95	0.89	1.06	22.7
Approach		756	32	796	4.2	0.832	41.5	LOS C	22.9	166.7	0.85	0.80	0.90	25.6
West: Campbelltown Road														
10	L2	459	18	483	3.9	* 0.891	56.8	LOS E	50.6	366.2	1.00	0.96	1.11	21.1
11	T1	843	32	887	3.8	0.891	52.3	LOS D	50.6	366.2	1.00	0.99	1.12	25.3
12	R2	13	4	14	30.8	0.113	73.8	LOS F	0.9	8.0	0.96	0.69	0.96	24.5
Approach		1315	54	1384	4.1	0.891	54.1	LOS D	50.6	366.2	1.00	0.98	1.11	23.9
All Vehicles		2781	110	2927	4.0	0.891	50.1	LOS D	50.6	366.2	0.92	0.87	1.01	24.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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 (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 202 [202_PRAM_Campbelltown Rd & Soldiers Pde (Site Folder: General)]

Campbelltown Rd & Soldiers Pde
Development Scenario - AM Peak
7:45-8:45am
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 140 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Survey Video
Reference Phase: Phase A
Input Phase Sequence: A, D, D2, E, G
Output Phase Sequence: A, D, D2, E, G

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Ray Simpson Avenue														
1	L2	82	1	86	1.2	0.224	55.2	LOS D	4.9	34.7	0.87	0.76	0.87	28.1
2	T1	135	1	142	0.7	*0.846	76.7	LOS F	10.5	74.2	1.00	0.94	1.27	20.6
3	R2	19	6	20	31.6	0.122	41.5	LOS C	0.9	7.8	0.93	0.70	0.93	29.8
Approach		236	8	248	3.4	0.846	66.4	LOS E	10.5	74.2	0.95	0.86	1.11	23.7
East: Campbelltown Road														
4	L2	38	3	40	7.9	0.251	37.5	LOS C	8.8	63.3	0.72	0.64	0.72	35.4
5	T1	319	9	336	2.8	0.251	31.3	LOS C	8.8	63.3	0.73	0.62	0.73	34.1
6	R2	121	4	127	3.3	*0.884	87.5	LOS F	9.8	70.4	1.00	0.94	1.38	13.4
Approach		478	16	503	3.3	0.884	46.0	LOS D	9.8	70.4	0.79	0.71	0.89	26.5
North: Soldiers Parade														
7	L2	188	6	198	3.2	0.285	30.7	LOS C	8.2	59.0	0.66	0.75	0.66	26.2
8	T1	203	9	214	4.4	0.467	37.9	LOS C	10.9	79.3	0.80	0.67	0.80	30.9
9	R2	398	17	419	4.3	0.861	51.3	LOS D	25.3	183.9	0.95	0.92	1.10	21.7
Approach		789	32	831	4.1	0.861	43.0	LOS D	25.3	183.9	0.84	0.81	0.92	25.0
West: Campbelltown Road														
10	L2	467	18	492	3.9	*0.912	62.3	LOS E	53.8	389.3	1.00	0.98	1.15	19.7
11	T1	843	32	887	3.8	0.912	57.8	LOS E	53.8	389.3	1.00	1.02	1.16	23.8
12	R2	13	4	14	30.8	0.113	73.8	LOS F	0.9	8.0	0.96	0.69	0.96	24.5
Approach		1323	54	1393	4.1	0.912	59.5	LOS E	53.8	389.3	1.00	1.01	1.16	22.4
All Vehicles		2826	110	2975	3.9	0.912	53.2	LOS D	53.8	389.3	0.92	0.89	1.04	23.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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 (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 203 [203_EXPM_Campbelltown Rd & Soldiers Pde (Site Folder: General)]

Campbelltown Rd & Soldiers Pde
Existing Scenario - PM Peak
4:30-5:30pm
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 140 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Survey Video
Reference Phase: Phase A
Input Phase Sequence: A, D, D2, E, G, G1
Output Phase Sequence: A, D, D2, E, G, G1

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Ray Simpson Avenue														
1	L2	30	2	32	6.7	0.107	59.3	LOS E	1.8	13.6	0.88	0.72	0.88	27.0
2	T1	86	0	91	0.0	*0.585	70.2	LOS E	6.2	43.5	1.00	0.78	1.01	21.9
3	R2	7	1	7	14.3	0.043	39.4	LOS C	0.3	2.3	0.92	0.66	0.92	31.2
Approach		123	3	129	2.4	0.585	65.8	LOS E	6.2	43.5	0.97	0.76	0.97	23.6
East: Campbelltown Road														
4	L2	54	1	57	1.9	0.596	42.2	LOS C	25.1	178.5	0.85	0.76	0.85	33.7
5	T1	818	14	861	1.7	0.596	36.2	LOS C	25.1	178.5	0.85	0.76	0.85	31.8
6	R2	144	1	152	0.7	0.874	85.0	LOS F	11.5	80.9	1.00	0.93	1.33	13.7
Approach		1016	16	1069	1.6	0.874	43.4	LOS D	25.1	178.5	0.87	0.78	0.92	28.1
North: Soldiers Parade														
7	L2	102	1	107	1.0	0.119	25.7	LOS B	3.9	27.2	0.57	0.71	0.57	29.0
8	T1	179	2	188	1.1	0.303	34.0	LOS C	9.0	63.8	0.75	0.63	0.75	32.5
9	R2	394	13	415	3.3	0.702	36.5	LOS C	20.3	146.2	0.89	0.83	0.89	26.7
Approach		675	16	711	2.4	0.702	34.2	LOS C	20.3	146.2	0.80	0.76	0.80	28.7
West: Campbelltown Road														
10	L2	538	22	566	4.1	*0.775	42.6	LOS D	37.0	267.6	0.92	0.87	0.92	25.0
11	T1	549	12	578	2.2	0.775	43.8	LOS D	37.0	267.6	0.96	0.86	0.96	28.4
12	R2	10	0	11	0.0	*0.131	79.7	LOS F	0.7	5.1	0.99	0.67	0.99	23.6
Approach		1097	34	1155	3.1	0.775	43.5	LOS D	37.0	267.6	0.94	0.87	0.94	26.7
All Vehicles		2911	69	3064	2.4	0.874	42.3	LOS C	37.0	267.6	0.89	0.81	0.90	27.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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 (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 204 [204_PRPM_Campbelltown Rd & Soldiers Pde (Site Folder: General)]

Campbelltown Rd & Soldiers Pde
Development Scenario - PM Peak
4:30-5:30pm
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 140 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Survey Video
Reference Phase: Phase A
Input Phase Sequence: A, D, D2, E, G, G1
Output Phase Sequence: A, D, D2, E, G, G1

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Ray Simpson Avenue														
1	L2	30	2	32	6.7	0.099	57.3	LOS E	1.8	13.3	0.87	0.72	0.87	27.5
2	T1	86	0	91	0.0	*0.585	70.3	LOS E	6.2	43.5	1.00	0.78	1.01	21.9
3	R2	7	1	7	14.3	0.043	39.4	LOS C	0.3	2.3	0.92	0.66	0.92	31.2
Approach		123	3	129	2.4	0.585	65.4	LOS E	6.2	43.5	0.96	0.76	0.97	23.7
East: Campbelltown Road														
4	L2	54	1	57	1.9	0.623	44.0	LOS D	26.0	184.6	0.87	0.78	0.87	33.0
5	T1	818	14	861	1.7	0.623	37.9	LOS C	26.0	184.6	0.87	0.77	0.87	31.0
6	R2	154	1	162	0.6	*0.810	78.7	LOS F	11.7	82.4	1.00	0.89	1.19	14.6
Approach		1026	16	1080	1.6	0.810	44.3	LOS D	26.0	184.6	0.89	0.79	0.92	27.7
North: Soldiers Parade														
7	L2	105	1	111	1.0	0.119	24.6	LOS B	3.9	27.3	0.55	0.71	0.55	29.7
8	T1	179	2	188	1.1	0.305	34.0	LOS C	9.0	63.8	0.75	0.63	0.75	32.5
9	R2	402	13	423	3.2	0.719	36.7	LOS C	20.9	150.0	0.89	0.84	0.89	26.6
Approach		686	16	722	2.3	0.719	34.1	LOS C	20.9	150.0	0.80	0.76	0.80	28.7
West: Campbelltown Road														
10	L2	558	22	587	3.9	*0.813	45.0	LOS D	39.7	287.1	0.95	0.89	0.96	24.1
11	T1	549	12	578	2.2	0.813	47.9	LOS D	39.7	287.1	0.98	0.90	1.02	26.9
12	R2	10	0	11	0.0	0.098	76.4	LOS F	0.7	5.0	0.98	0.68	0.98	24.2
Approach		1117	34	1176	3.0	0.813	46.7	LOS D	39.7	287.1	0.96	0.90	0.99	25.5
All Vehicles		2952	69	3107	2.3	0.813	43.7	LOS D	39.7	287.1	0.90	0.82	0.92	26.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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 (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

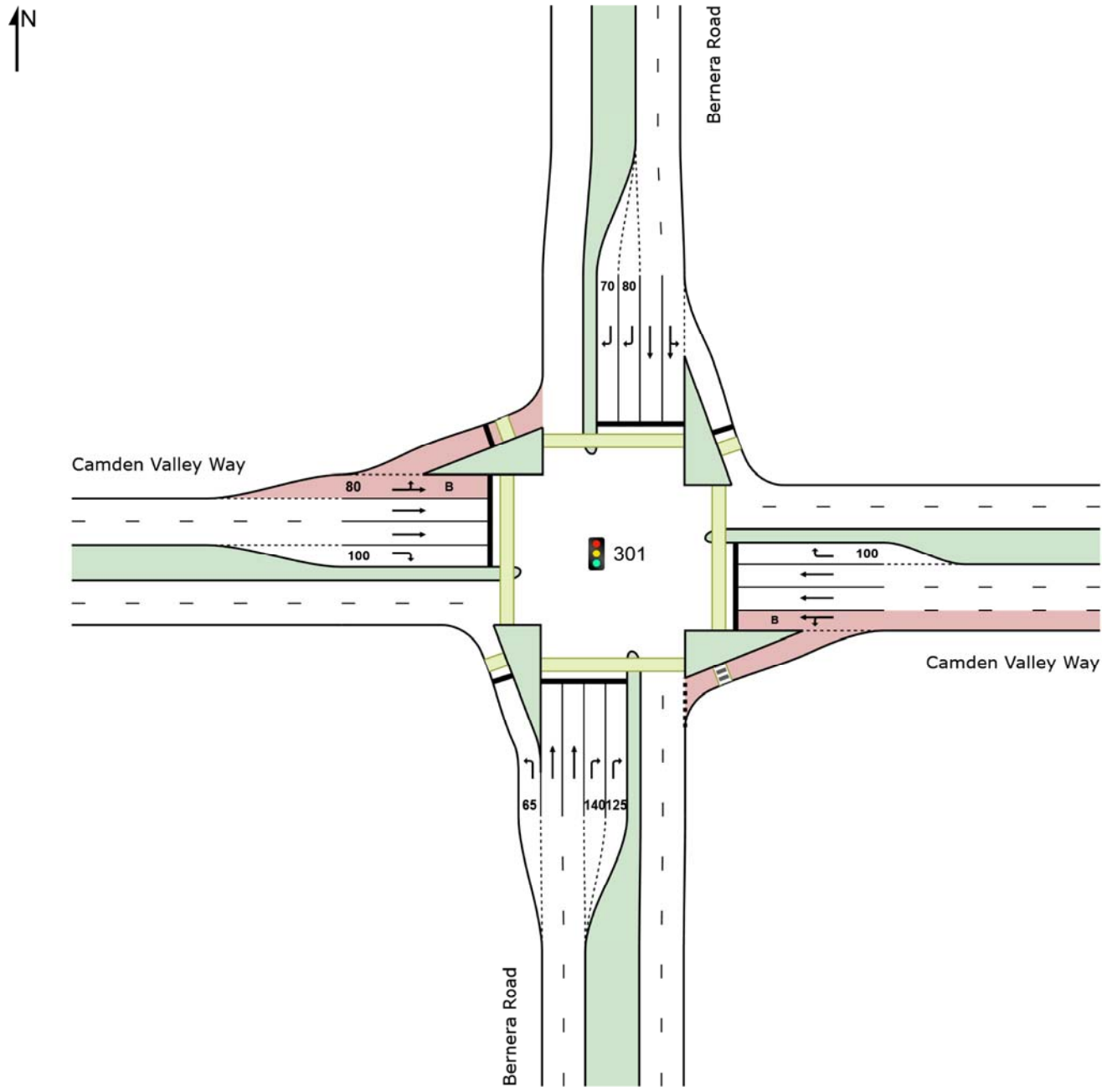
* Critical Movement (Signal Timing)

SITE LAYOUT

Site: 301 [301_EXAM_Camden Valley Way & Bernera Rd (Site Folder: General)]

Camden Valley Way & Bernera Rd
Existing Scenario - AM Peak
7:45-8:45am
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



Site: 301 [301_EXAM_Camden Valley Way & Bernera Rd (Site Folder: General)]

Camden Valley Way & Bernera Rd
Existing Scenario - AM Peak
7:45-8:45am
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 150 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Survey Video
Reference Phase: Phase A
Input Phase Sequence: A, D, E, G, G2
Output Phase Sequence: A, D, E, G, G2

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Bernera Road														
1	L2	144	7	152	4.9	0.152	17.0	LOS B	4.4	31.9	0.46	0.68	0.46	47.6
2	T1	540	12	568	2.2	*1.032	115.0	LOS F	51.7	368.5	0.97	1.24	1.47	20.7
3	R2	330	4	347	1.2	*1.016	131.0	LOS F	17.6	124.8	1.00	1.13	1.70	19.2
Approach		1014	23	1067	2.3	1.032	106.3	LOS F	51.7	368.5	0.91	1.12	1.40	21.9
East: Camden Valley Way														
4	L2	121	6	127	5.0	0.099	11.1	LOS A	2.3	16.7	0.29	0.65	0.29	53.4
5	T1	899	78	946	8.7	0.677	37.7	LOS C	30.4	228.5	0.86	0.76	0.86	40.8
6	R2	245	16	258	6.5	*0.991	118.4	LOS F	25.2	186.3	1.00	1.07	1.55	20.9
Approach		1265	100	1332	7.9	0.991	50.8	LOS D	30.4	228.5	0.83	0.81	0.94	35.1
North: Bernera Road														
7	L2	430	23	453	5.3	0.590	39.0	LOS C	21.9	159.9	0.79	0.95	0.79	37.2
8	T1	301	11	317	3.7	0.590	51.2	LOS D	21.9	159.9	0.92	0.82	0.92	32.5
9	R2	168	24	177	14.3	0.565	78.4	LOS F	6.4	50.5	1.00	0.78	1.00	26.0
Approach		899	58	946	6.5	0.590	50.5	LOS D	21.9	159.9	0.87	0.87	0.87	33.0
West: Camden Valley Way														
10	L2	259	9	273	3.5	0.274	24.9	LOS B	10.1	73.3	0.57	0.75	0.57	44.5
11	T1	1162	45	1223	3.9	*1.020	115.7	LOS F	69.9	505.4	1.00	1.30	1.51	21.8
12	R2	106	5	112	4.7	0.621	78.8	LOS F	8.1	59.0	1.00	0.80	1.01	27.0
Approach		1527	59	1607	3.9	1.020	97.7	LOS F	69.9	505.4	0.93	1.17	1.32	24.2
All Vehicles		4705	240	4953	5.1	1.032	77.9	LOS F	69.9	505.4	0.89	1.01	1.15	27.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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 (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 302 [302_PRAM_Camden Valley Way & Bernera Rd (Site Folder: General)]

Camden Valley Way & Bernera Rd
Development Scenario - AM Peak
7:45-8:45am
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 150 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Survey Video
Reference Phase: Phase A
Input Phase Sequence: A, D, E, G, G2
Output Phase Sequence: A, D, E, G, G2

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Bernera Road														
1	L2	145	7	153	4.8	0.155	17.5	LOS B	4.5	32.9	0.47	0.68	0.47	47.3
2	T1	577	12	607	2.1	*1.051	124.1	LOS F	57.8	411.7	0.97	1.28	1.52	19.6
3	R2	362	4	381	1.1	*1.039	144.2	LOS F	20.5	145.1	1.00	1.16	1.77	17.8
Approach		1084	23	1141	2.1	1.051	116.6	LOS F	57.8	411.7	0.91	1.16	1.46	20.5
East: Camden Valley Way														
4	L2	135	6	142	4.4	0.111	11.3	LOS A	2.6	19.2	0.30	0.65	0.30	53.0
5	T1	899	78	946	8.7	0.705	39.5	LOS C	31.4	236.1	0.88	0.78	0.88	40.0
6	R2	245	16	258	6.5	*1.038	144.2	LOS F	28.1	207.8	1.00	1.14	1.72	18.0
Approach		1279	100	1346	7.8	1.038	56.6	LOS E	31.4	236.1	0.84	0.83	0.98	33.1
North: Bernera Road														
7	L2	430	23	453	5.3	0.586	38.3	LOS C	21.8	159.4	0.78	0.94	0.78	37.5
8	T1	318	11	335	3.5	0.586	49.6	LOS D	21.8	159.4	0.91	0.82	0.91	33.0
9	R2	168	24	177	14.3	0.527	77.1	LOS F	6.4	49.9	0.99	0.78	0.99	26.3
Approach		916	58	964	6.3	0.586	49.4	LOS D	21.8	159.4	0.87	0.87	0.87	33.3
West: Camden Valley Way														
10	L2	259	9	273	3.5	0.277	25.7	LOS B	10.3	74.2	0.58	0.75	0.58	44.1
11	T1	1162	45	1223	3.9	*1.045	132.2	LOS F	73.3	529.9	1.00	1.37	1.61	19.7
12	R2	108	5	114	4.6	0.678	80.9	LOS F	8.4	61.3	1.00	0.82	1.06	26.6
Approach		1529	59	1609	3.9	1.045	110.5	LOS F	73.3	529.9	0.93	1.23	1.40	22.2
All Vehicles		4808	240	5061	5.0	1.051	85.9	LOS F	73.3	529.9	0.89	1.04	1.20	25.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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 (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 303 [303_EXPM_Camden Valley Way & Bernera Rd (Site Folder: General)]

Camden Valley Way & Bernera Rd
Existing Scenario - PM Peak
4:00-5:00pm
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Survey Video
Reference Phase: Phase A
Input Phase Sequence: A, C, D, E, G
Output Phase Sequence: A, C, D, E, G

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Bernera Road														
1	L2	167	11	176	6.6	0.303	42.5	LOS D	8.3	61.2	0.79	0.85	0.79	35.6
2	T1	300	10	316	3.3	*0.901	68.8	LOS E	19.1	137.2	0.98	0.98	1.25	28.3
3	R2	158	3	166	1.9	0.456	67.1	LOS E	5.2	36.6	0.99	0.77	0.99	29.0
Approach		625	24	658	3.8	0.901	61.3	LOS E	19.1	137.2	0.93	0.89	1.06	30.2
East: Camden Valley Way														
4	L2	212	2	223	0.9	0.192	12.6	LOS A	4.5	31.9	0.36	0.67	0.36	52.4
5	T1	1586	80	1669	5.0	*1.002	89.7	LOS F	84.7	618.2	1.00	1.27	1.45	25.9
6	R2	270	8	284	3.0	*0.967	70.3	LOS E	15.2	108.8	1.00	1.06	1.52	28.8
Approach		2068	90	2177	4.4	1.002	79.3	LOS F	84.7	618.2	0.93	1.18	1.34	27.7
North: Bernera Road														
7	L2	297	13	313	4.4	0.664	24.0	LOS B	18.0	130.2	0.84	0.81	0.84	44.8
8	T1	341	8	359	2.3	0.664	39.6	LOS C	18.0	130.2	0.93	0.82	0.94	35.9
9	R2	339	12	357	3.5	*0.990	107.5	LOS F	15.3	110.1	1.00	1.13	1.68	22.0
Approach		977	33	1028	3.4	0.990	58.4	LOS E	18.0	130.2	0.93	0.92	1.17	31.0
West: Camden Valley Way														
10	L2	148	18	156	12.2	0.145	15.3	LOS B	3.6	28.0	0.45	0.69	0.45	50.1
11	T1	1099	37	1157	3.4	0.944	67.5	LOS E	44.7	322.0	0.99	1.11	1.30	30.7
12	R2	126	10	133	7.9	0.892	83.3	LOS F	9.6	71.8	1.00	0.97	1.42	26.1
Approach		1373	65	1445	4.7	0.944	63.3	LOS E	44.7	322.0	0.93	1.05	1.22	31.5
All Vehicles		5043	212	5308	4.2	1.002	68.7	LOS E	84.7	618.2	0.93	1.06	1.24	29.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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 (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 304 [304_PRPM_Camden Valley Way & Bernera Rd (Site Folder: General)]

Camden Valley Way & Bernera Rd
Development Scenario - PM Peak
4:00-5:00pm
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Survey Video
Reference Phase: Phase A
Input Phase Sequence: A, C, D, E, G
Output Phase Sequence: A, C, D, E, G

Vehicle Movement Performance

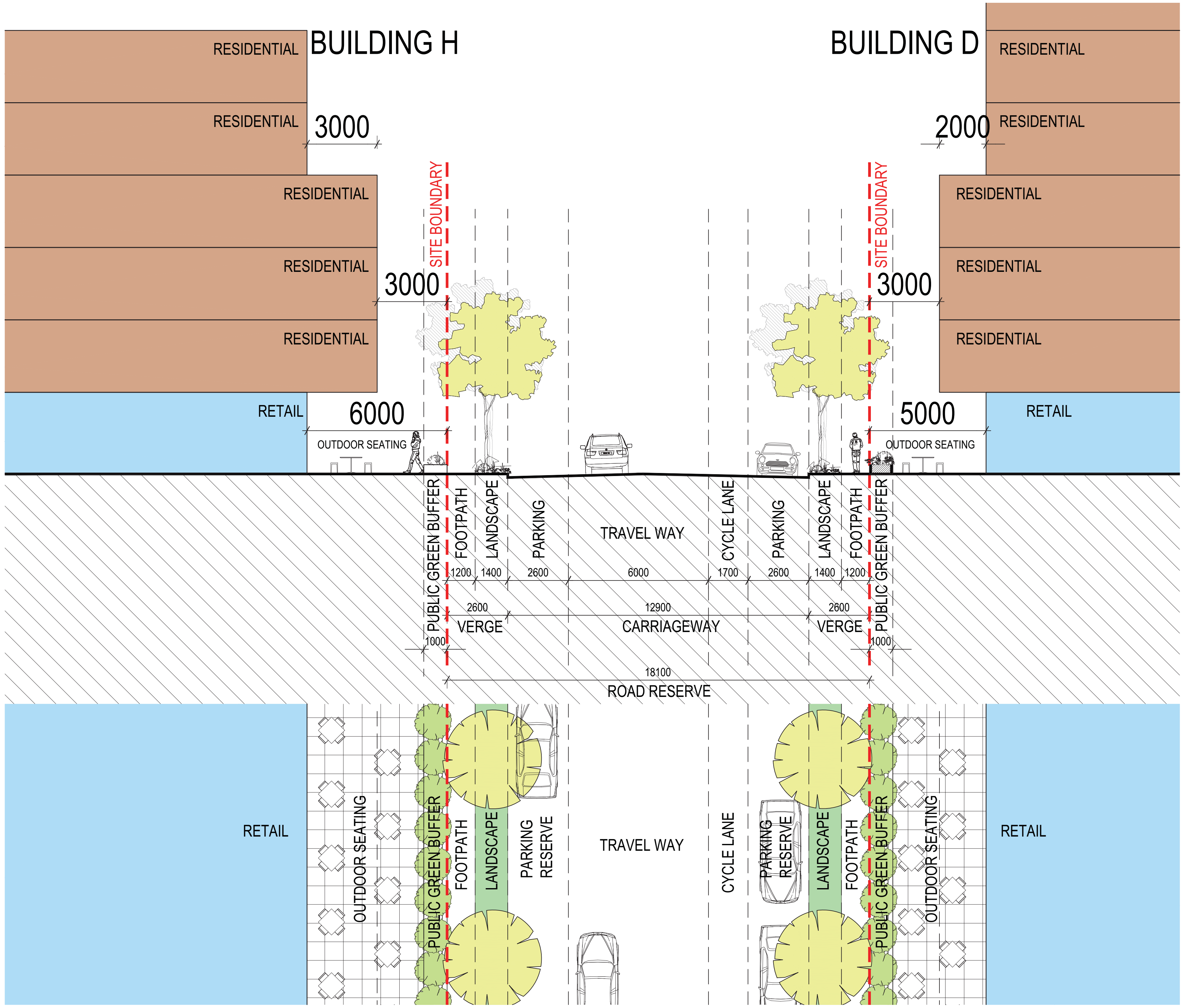
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Bernera Road														
1	L2	170	11	179	6.5	0.307	42.6	LOS D	8.4	62.2	0.79	0.85	0.79	35.6
2	T1	318	10	335	3.1	* 0.954	79.3	LOS F	22.2	159.4	0.98	1.06	1.38	26.2
3	R2	172	3	181	1.7	0.496	67.4	LOS E	5.6	40.0	0.99	0.78	0.99	28.9
Approach		660	24	695	3.6	0.954	66.8	LOS E	22.2	159.4	0.94	0.93	1.13	28.9
East: Camden Valley Way														
4	L2	245	2	258	0.8	0.225	13.0	LOS A	5.6	39.3	0.38	0.67	0.38	51.7
5	T1	1586	80	1669	5.0	* 1.002	89.7	LOS F	84.7	618.2	1.00	1.27	1.45	25.9
6	R2	270	8	284	3.0	* 0.967	70.3	LOS E	15.2	108.8	1.00	1.06	1.52	28.8
Approach		2101	90	2212	4.3	1.002	78.3	LOS F	84.7	618.2	0.93	1.18	1.33	27.9
North: Bernera Road														
7	L2	297	13	313	4.4	0.727	27.3	LOS B	18.5	133.5	0.89	0.87	0.89	43.2
8	T1	381	8	401	2.1	0.727	41.7	LOS C	18.5	133.5	0.95	0.87	0.98	35.2
9	R2	339	12	357	3.5	* 0.990	107.5	LOS F	15.3	110.1	1.00	1.13	1.68	22.0
Approach		1017	33	1071	3.2	0.990	59.4	LOS E	18.5	133.5	0.95	0.96	1.19	30.7
West: Camden Valley Way														
10	L2	148	18	156	12.2	0.147	16.1	LOS B	3.8	29.3	0.46	0.69	0.46	49.6
11	T1	1099	37	1157	3.4	0.945	67.9	LOS E	44.8	322.6	0.99	1.12	1.30	30.6
12	R2	130	10	137	7.7	0.919	87.1	LOS F	10.2	76.2	1.00	1.00	1.49	25.4
Approach		1377	65	1449	4.7	0.945	64.2	LOS E	44.8	322.6	0.94	1.06	1.23	31.3
All Vehicles		5155	212	5426	4.1	1.002	69.3	LOS E	84.7	618.2	0.94	1.07	1.25	29.4

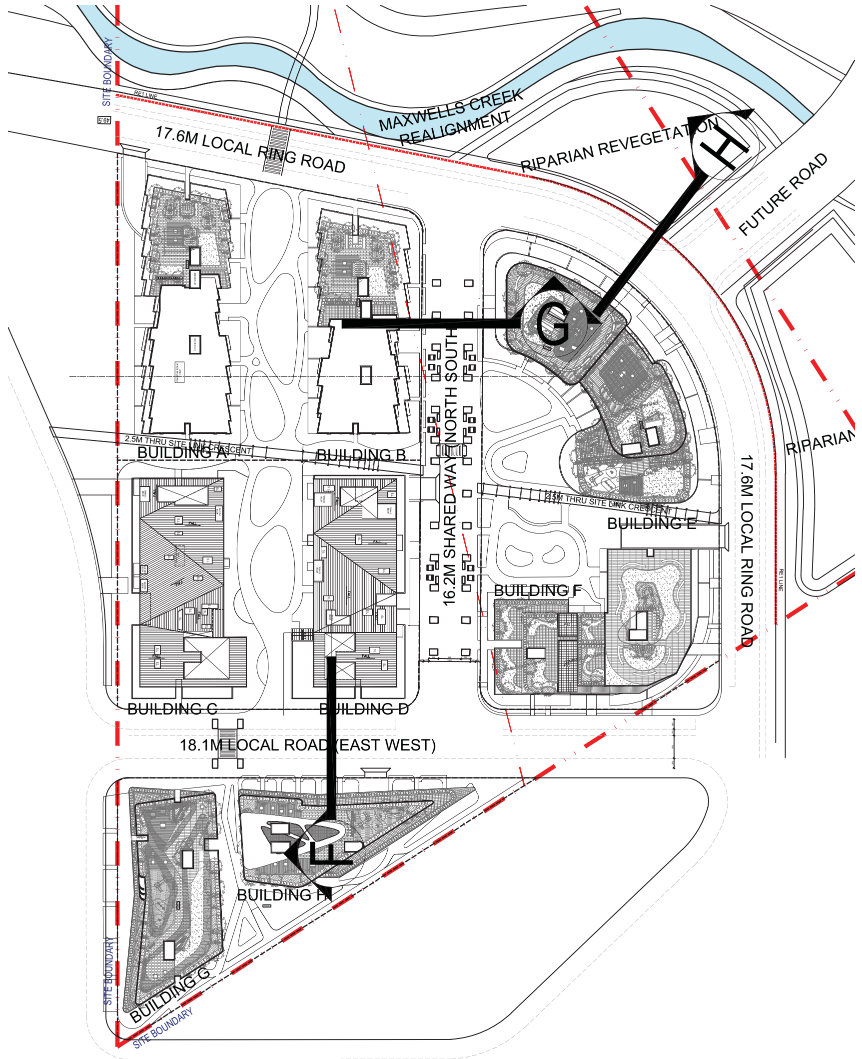
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

APPENDIX D

Street Sections





STREETSCAPE SECTION - SECTION F

Rev.	Description	By	Date
A	FOR INFORMATION		MAY 2020
B	FOR INFORMATION		JUN 2020

Disclaimer

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Notes

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WHERE ANY DISCREPANCY EXISTS BETWEEN FIGURED AND SCALED DIMENSIONS. THE FIGURED DIMENSIONS SHALL PREVAIL

BUILDER TO CHECK ALL SITE DIMENSIONS PRIOR TO FABRICATION OF FITMENTS

Legend

DRAWING LABEL

STREETSCAPE SECTION
SECTION F

Client
Super Star Holding Group Pty. Ltd.

Architects
tony owen ptnrs
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P 6122 9698 2900
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E info@tonyowen.com.au

Project
EDMONDSON PARK

Project address
164-170 Croatia Avenue, Edmondson Park

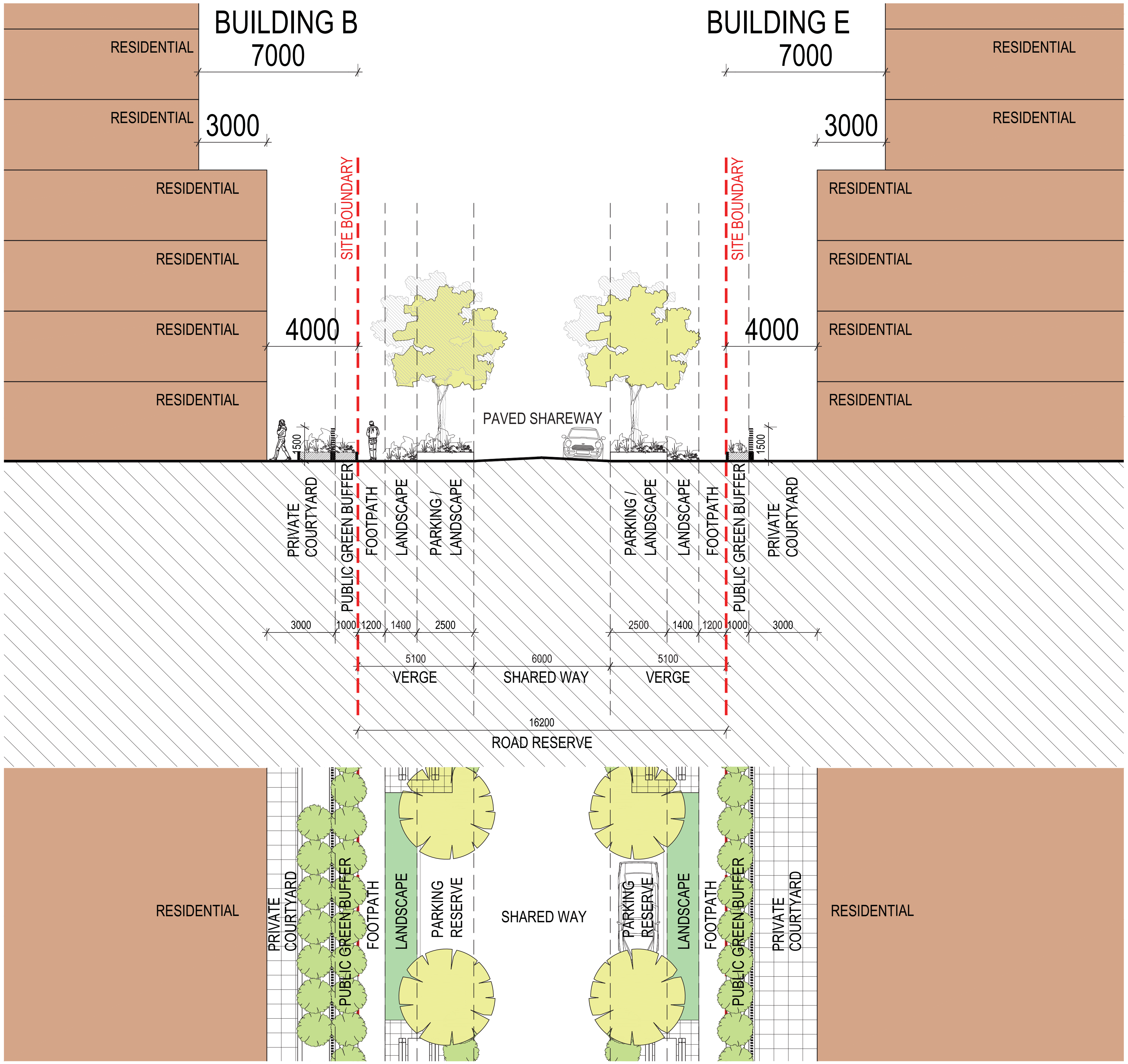
Key plan

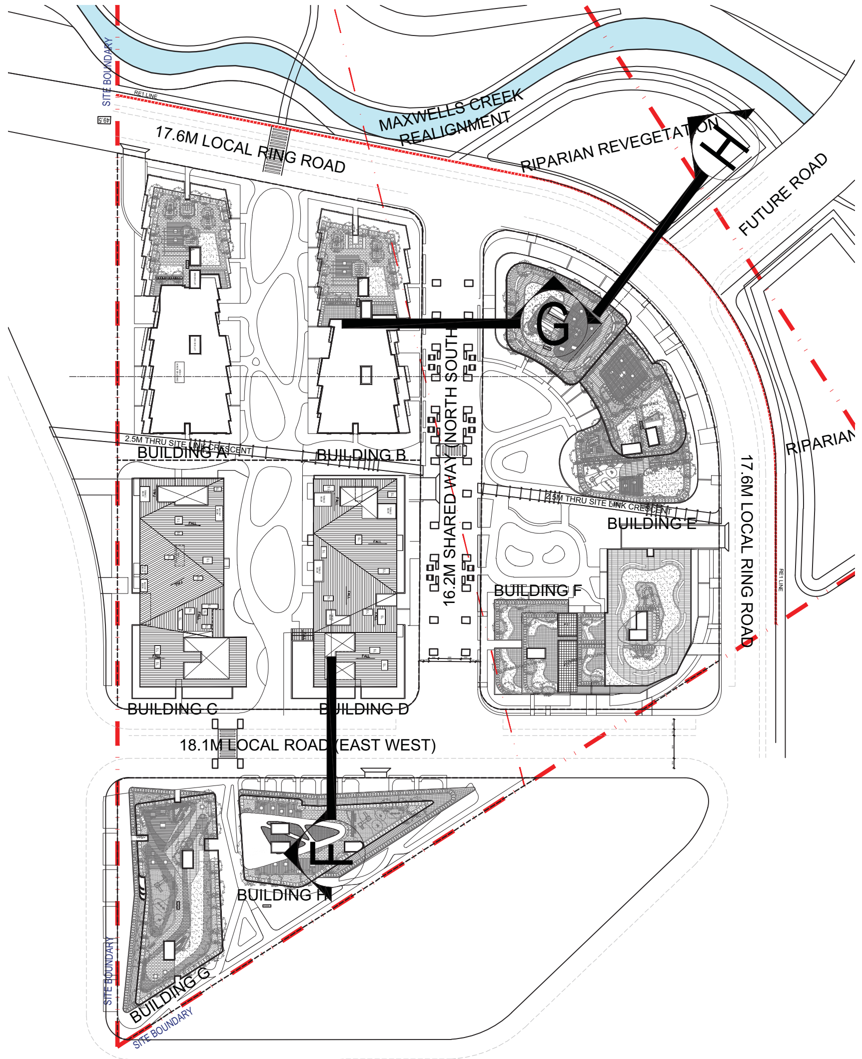
Scale 1:300 @ A1 1:600 @ A3
0 5 10 15 20 25
©1992-2005
Date JUN 2020

Drawing title
STREETSCAPE SECTION

Project no. 1008
Drawing no. A350
Drawn TL, DL

Drawing status





STREETSCAPE SECTION - SECTION G

Rev.	Description	By	Date
A	FOR INFORMATION		MAY 2020
B	FOR INFORMATION		JUN 2020

Disclaimer

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Notes

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BUILDER TO CHECK ALL SITE DIMENSIONS PRIOR TO FABRICATION OF FITMENTS

Legend

DRAWING LABEL

STREETSCAPE SECTION
SECTION G

Client
Super Star Holding Group Pty. Ltd.

Architects
tony owen ptnrs
Level 2
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Chippendale NSW 2008
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E info@tonyowen.com.au

Project
EDMONDSON PARK

Project address
164-170 Croatia Avenue, Edmondson Park

Key plan

Scale 1:300 @ A1 1:600 @ A3
0 5 10 15 20 25
©1992-2005

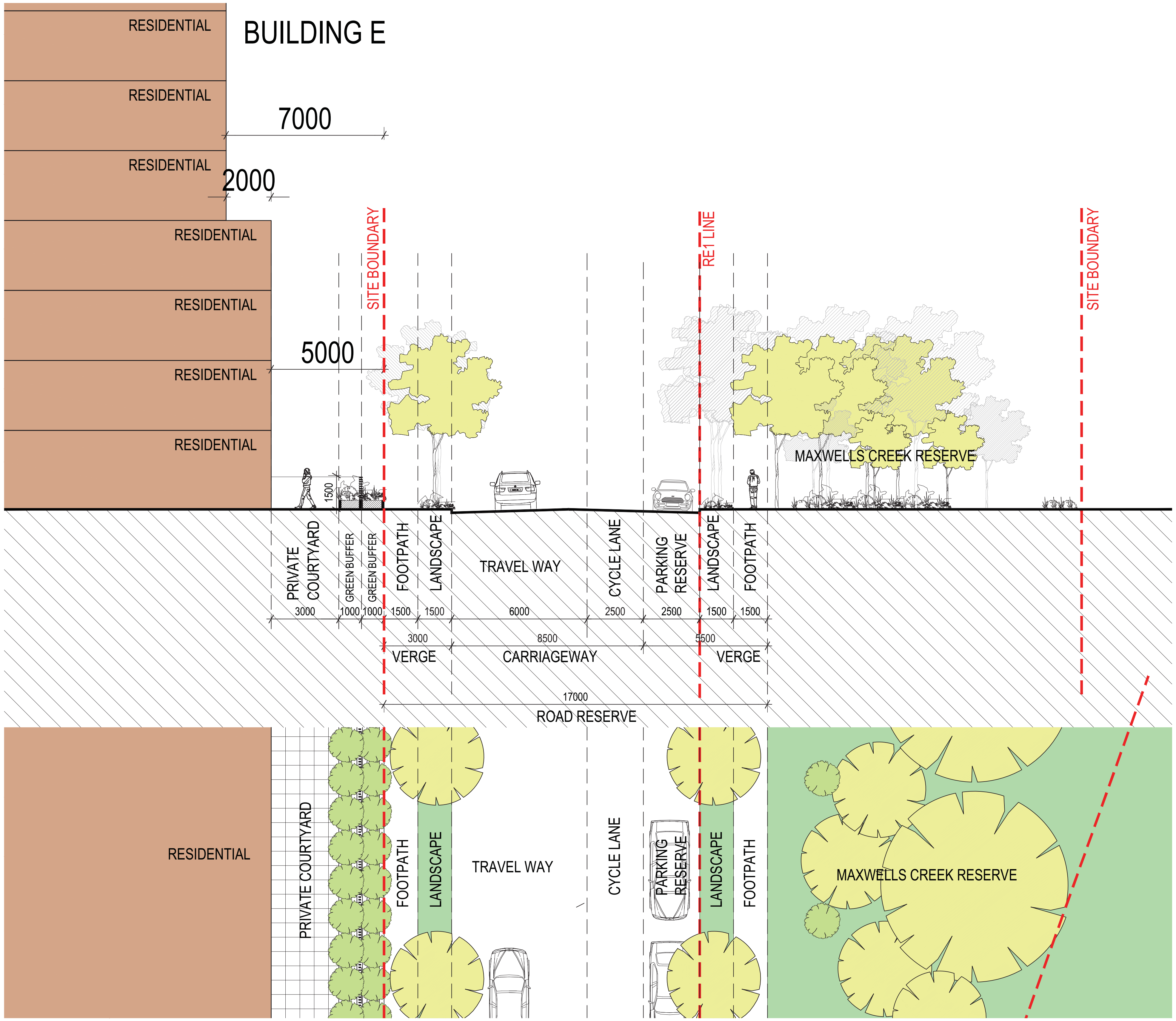
Date JUN 2020

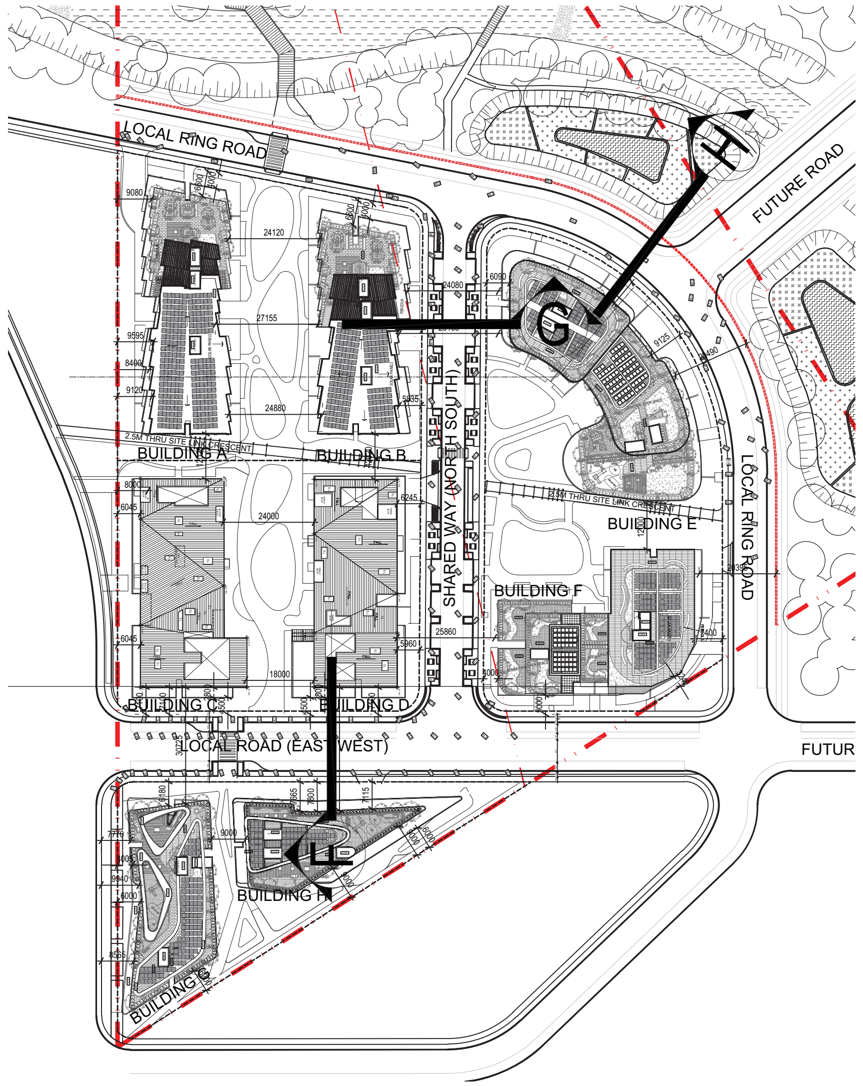
Drawing title
STREETSCAPE SECTION

Project no. 1008 Drawing no. A351

Drawn TL, DL

Drawing status





STREETSCAPE 3 - SECTION H

Rev.	Description	By	Date
A	FOR INFORMATION		MAY 2020
B	FOR INFORMATION		JUN 2020
C	FOR COORDINATION		NOV 2020
D	FOR COORDINATION		DEC 2020
E	FOR DETAILED DESIGN COORDINATION		FEB 2021

Notes
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WHERE ANY DISCREPANCY EXISTS BETWEEN FIGURED AND SCALED DIMENSIONS. THE FIGURED DIMENSIONS SHALL PREVAIL

BUILDER TO CHECK ALL SITE DIMENSIONS PRIOR TO FABRICATION OF FITMENTS

Legend

DRAWING LABEL
STREETSCAPE 3
SECTION H

Client
Super Star Holding Group Pty. Ltd.

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E info@tonyowen.com.au

Project
EDMONDSON PARK

Project address
164-170 Croatia Avenue, Edmondson Park

Key plan

Scale 1:100 @ A1 1:200 @ A3
0 5 10 15 20 25
Date FEB 2021

Drawing title
STREETSCAPE 3

Project no. 1008 Drawing no. CP312
Drawn TL, DL

Drawing status
FOR DETAILED DESIGN COORDINATION