TRAFFIX
TRAFFIC AND TRANSPORT PLANNERS



TRAFFIC IMPACT ASSESSMENT

Proposed Industrial Development
49-61 Stephen Road, Banksmeadow (SSD-65924461)

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TRAFFIX

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1. EXECUTIVE SUMMARY

This Traffic Impact Assessment has been prepared by Traffix to accompany a detailed State Significant Development Application (**SSDA**) for a three-storey warehouse and distribution centre development proposal at 49-61 Stephen Road, Banksmeadow. The site is legally described as Lot A in Deposited Plan 190526, Lot 1 Deposited Plan 1095110, and Lot 1 Deposited Plan 311767.

This report has been prepared to address the Secretary's Environmental Assessment Requirements (**SEARs**) issued for the project (**SSD-65924461**).

This report concludes that the proposed three-storey warehouse and distribution centre is suitable and warrants approval subject noting the below.

- The site is easily accessible via multiple bus routes, with bus stops located along Botany Road and Swinbourne Street which provide connections to nearby points of interest.
- The development includes a total of 293 car parking spaces, with 243 spaces on the mezzanine level and 50 at-grade spaces. This is in line with the Council's DCP requirements, ensuring that the parking demand is adequately met on-site.
- The traffic impact of the development has been evaluated as a net change from current conditions, resulting in an increase of 86 vehicle trips per hour during the AM peak and 116 vehicle trips per hour during the PM peak.
- All traffic generated by the proposed development (over and above existing conditions) has been distributed across the surrounding road network. SIDRA Intersection analysis shows satisfactory outcomes for key intersections near the site, indicating no need for infrastructure upgrades or changes to signal timings.
- Vehicular access to the site will be provided via several driveways on Stephen Road and Coal Pier Road, with all truck movements to be confined to Coal Pier Road.

Additional information regarding each point is discussed in detail in the Traffic Impact Assessment below.

2. INTRODUCTION

TRAFFIX has been commissioned by ESR Australia to undertake a Traffic Impact Assessment (TIA) in support of a Concept State Development Application (SSDA) relating to a proposed industrial development at 49-61 Stephen Road, Banksmeadow. The development is located within the Bayside Council Local Government Area and has been assessed under that Council's controls.

As part of the application process, the Secretary's Environmental Assessment Requirements (SEARs) have been issued for the proposal (SSD-65924461). This TIA has been prepared to assess the traffic impacts of the proposal and respond to the relevant SEARs and Council/ TfNSW comments. The report is structured as follows:

- Section 2: Describes the site and its location
- Section 3: Summarises the relevant statutory policies and strategic plans
- Section 4: Outlines the SEARs and Council/TfNSW requirements
- Section 5: Documents existing traffic conditions
- Section 6: Describes the proposed development
- Section 7: Assesses the parking requirements
- Section 8: Assesses the traffic impacts
- Section 9: Describes the preliminary construction management arrangements
- Section 10: Discusses the sustainable travel measures
- Section 11: Discusses access and internal design aspects
- Section 12: Summaries the agency consultation
- Section 13: Presents the overall study conclusions

3. LOCATION AND SITE

The subject site is located at 49-61 Stephen Road, Banksmeadow, within the Bayside local government area (**LGA**). The site is legally described as Lot A in Deposited Plan 190526, Lot 1 Deposited Plan 1095110, and Lot 1 Deposited Plan 311767.

The site is located in the Banksmeadow Industrial Precinct, approximately 10km from Sydney CBD, 1.5 kilometres from Port Botany and 3km from Sydney Airport. The site is surrounded predominantly by a mix of industrial and warehouse and distribution uses to the north, east and south, and residential land uses to the west. The site is located in close proximity to existing employment and industrial areas including the Botany Port and Sydney Domestic and International Airports.

The site has been developed and currently accommodates the Allnex Resins manufacturing site. The site presents a two-storey office building towards the Stephen Road frontage, with 20 warehouse and ancillary use buildings as well as numerous chemical storage tanks.

Due to the existing and current use of the site and the handling and manufacturing of chemical products, the site is considered contaminated and is subject to Environmental Protection Agency (EPA) notification. As part of site contamination management, a stormwater retention/remediation treatment pond is located along the Coal Pier Road frontage along the eastern boundary.

Existing planted vegetation is located along the site's boundaries predominately along the western and northern setback areas assisting in screening the development from Stephen Road and the Southgate Industrial Estate development to the north. A cleared grassed area is located to the rear of the site beside a stormwater retention and treatment pond.

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



Figure 1: Location Plan



Figure 2: Site Plan

4. ASSESSMENT REQUIREMENTS

4.1 SEARs Requirements

The Planning Secretary's Environmental Assessment Requirements (SEARs) outlines the transport and accessibility requirements for the SSD as stated below in **Table 1**.

Table 1: SEARs Requirements and References

SEARs Requirements	Reference
Transport and Accessibility	
Details of all daily and peak traffic volumes likely to be generated during all key stages of construction and operation, including a description of key access / haul routes, vehicle types and potential queuing impacts.	**Refer to Section 7 and Preliminary Construction Traffic and Pedestrian Management Plan**
An assessment of the predicted impacts of this traffic on road safety and the capacity of the road network, including consideration of cumulative traffic impacts on existing performance levels of nearby intersections (including maximum queue length), using a calibrated and validated SIDRA (or similar) traffic model (see TfNSW comments in Attachment 2)	**Refer to Section 7**
Swept path diagrams demonstrating that the largest vehicle accessing the site can manoeuvre surrounding key intersections.	**Refer to Section 8**
Plans demonstrating how all vehicles likely to be generated during construction and operation and awaiting loading, unloading or servicing can be accommodated on the site to avoid queuing in the street network	**Refer to Section 8**
Details and plans of the proposed internal road network, loading docks, pedestrian and cycling facilities and on-site parking in accordance with the relevant Australian Standards	**Refer to Section 8**
Consideration of any parking that is required for a café use	**Refer to Section 6**
Details of the largest vehicle anticipated to access and move within the site, including swept path diagrams depicting vehicles entering, exiting and manoeuvring throughout the site	**Refer to Section 8**
Details of road upgrades, infrastructure works or new roads or access points required for the development if necessary.	**Refer to Section 7**

4.2 Council Requirements

The Bayside Council has reviewed the above SEARs and provides the comments outlined in **Table 2** below.

Table 2: Council Requirements and References

Council Requirements	Reference
Traffic, Parking and Access	
9. A Traffic Engineer shall prepare a Traffic Report and shall include the following, but not limited to: a. Details of site access, road signs, pedestrian safety etc. b. Signal/warning system and passing bay requirement at vehicle intersection areas. c. Parking & manoeuvring of vehicles. The report should address adequacy of site and parking layout for the largest vehicle and the passenger vehicle to be accessing the site. d. The Traffic Engineer shall certify the parking layout, aisle width and dead end aisle, ramp grades and access and visibility requirement for the proposed parking facility in accordance with the Australian Standards AS/NZS 2890.1:2004, AS2890.2:2018, AS2890.3:2015 & AS/NZS 2890.6:2009.e. Specify user class for the parking modules. e. Submit details of all heavy vehicular (truck) parking areas, turning circles and manoeuvring areas. f. Safe pedestrian pathways through the site. g. Proposed signage and line marking to safely direct all vehicles in and out of the site. h. Details of the Traffic consultant and author of the report must be included.	**Refer to Section 8**
10. All passenger vehicle (B99) access to be via Stephen Road and all heavy vehicular (truck) access to be via Coal Pier Road.	**Refer to Section 8**
11. Swept Path Analysis diagrams (using Autoturn software or similar) shall be prepared by a qualified Civil Engineer and provided for the passenger vehicle (B99) entering and exiting the site from Stephen Road in a forward motion.	**Refer to Section 8 and Appendix C**
12. Swept Path Analysis diagrams (using Autoturn software or similar) prepared by a qualified Civil Engineer shall be provided for the largest service vehicle (B-double 26m long) accessing the site and demonstrate the area required to manoeuvre vehicle around the site and exit in a forward direction.	**Refer to Section 8 and Appendix C**
13. An assessment and certificate from a qualified Traffic Engineer shall be provided demonstrating compliance with Australian Standards AS2890 series for parking facility design, layout and access to the site.	**Refer to Section 8**
14. A Longitudinal Driveway Profile for both vehicular access is to be prepared by a qualified Civil Engineer shall be submitted to Council for assessment. The profile shall start in the centre of the road and be along the critical edge (worst case) of the driveway. Gradients and transitions shall be in accordance with AS/NZS 2890.1&AS/NZS2890.2. The profile shall include all relevant levels, grades (%), headroom clearances and lengths. The existing boundary levels shall be clearly shown on the profile, any change to the existing boundary levels requires approval from Bayside Council.	**Refer to Section 8 and Appendix D**

Council Requirements		Reference
15.	A Longitudinal Section prepared by a qualified Civil Engineer plotting headroom clearance along the travel path of the B-double using the curved ramp vehicle to be provided. It must be demonstrated that a safe headroom clearance achieved along the entire travel path, parking and manoeuvring areas of the B-double within the site.	**Refer to Section 8 and Appendix D**
16.	An assessment to be provided demonstrating that the curved ramp is designed in compliance with AS/NZS2890.1&AS/NZS2890.2.	**Refer to Section 8**

5. EXISTING TRAFFIC CONDITIONS

5.1 Road Network

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

- Botany Road: a TfNSW Main Road (MR170) that traverses north-south between the Boundary Street in the north and Bunnerong Road at in the south. Within the vicinity of the site, it is subject to 50km/h speed zoning and generally accommodates a single lane of traffic in each direction. Botany Road generally permits unrestricted on-street parking on either side of the road.
- Foreshore Road: a TfNSW Main Road (MR617) that traverses northwest-southeast between the General Holmes Drive in the northwest and Botany Road in the southeast. Within the vicinity of the site, it is subject to 80km/h speed zoning and accommodates two (2) lanes of traffic in each direction. Parking is not permitted on both sides of the road.
- Stephen Road: an unclassified regional road (7044) that traverses north-south between the Ocean Street in the north and Botany Road in the south. Within the vicinity of the site, it is subject to 50km/h speed zoning and accommodates a single lane of traffic in each direction. Parking is generally permitted on both sides of the road. It is also noted that trucks are not permitted along this road.
- Swinbourne Street: a local road that traverses east-west between Pater Street in the east and William Street in the west. It is subject to 50km/h speed zoning and accommodates a single lane of traffic in each direction. Swinbourne Street generally permits on-street parking on either side of the road.

- Coal Pier Road: a local road that traverses north-south between McPherson Street in the south and ending in a cul-de-sac in the north. It is subject to 50km/h speed zoning and accommodates a single lane of traffic in each direction. Coal Pier Road generally permits on-street parking on either side of the road.
- McPherson Street: a local road that traverses east-west between Hill Street in the east and ending in a cul-de-sac in the west. It is subject to 50km/h speed zoning and is split into two sections by Excell Street. The eastern section between Hills Street and Excell Street accommodates a single lane of eastbound traffic, while remainder of McPherson Street accommodate a single lane of traffic in each direction McPherson Street generally permits on-street parking on either side of the road.
- Hill Street: a local road that traverses north-south between McPherson Street in the north and Botany Road in the south. It is subject to 50km/h speed zoning and accommodates a single lane of northbound traffic. Hill Street generally permits on-street parking on either side of the road.
- Excell Street: a local road that traverses north-south between McPherson Street in the north and Botany Road in the south. It is subject to 50km/h speed zoning and accommodates a single lane of southbound traffic. Exell Street generally permits on-street parking on either side of the road.

It can be seen from Figure 3 that the site is conveniently located with respect to the main arterial road serving the region. As such, traffic can effectively be distributed onto the wider road network, minimising traffic impacts.

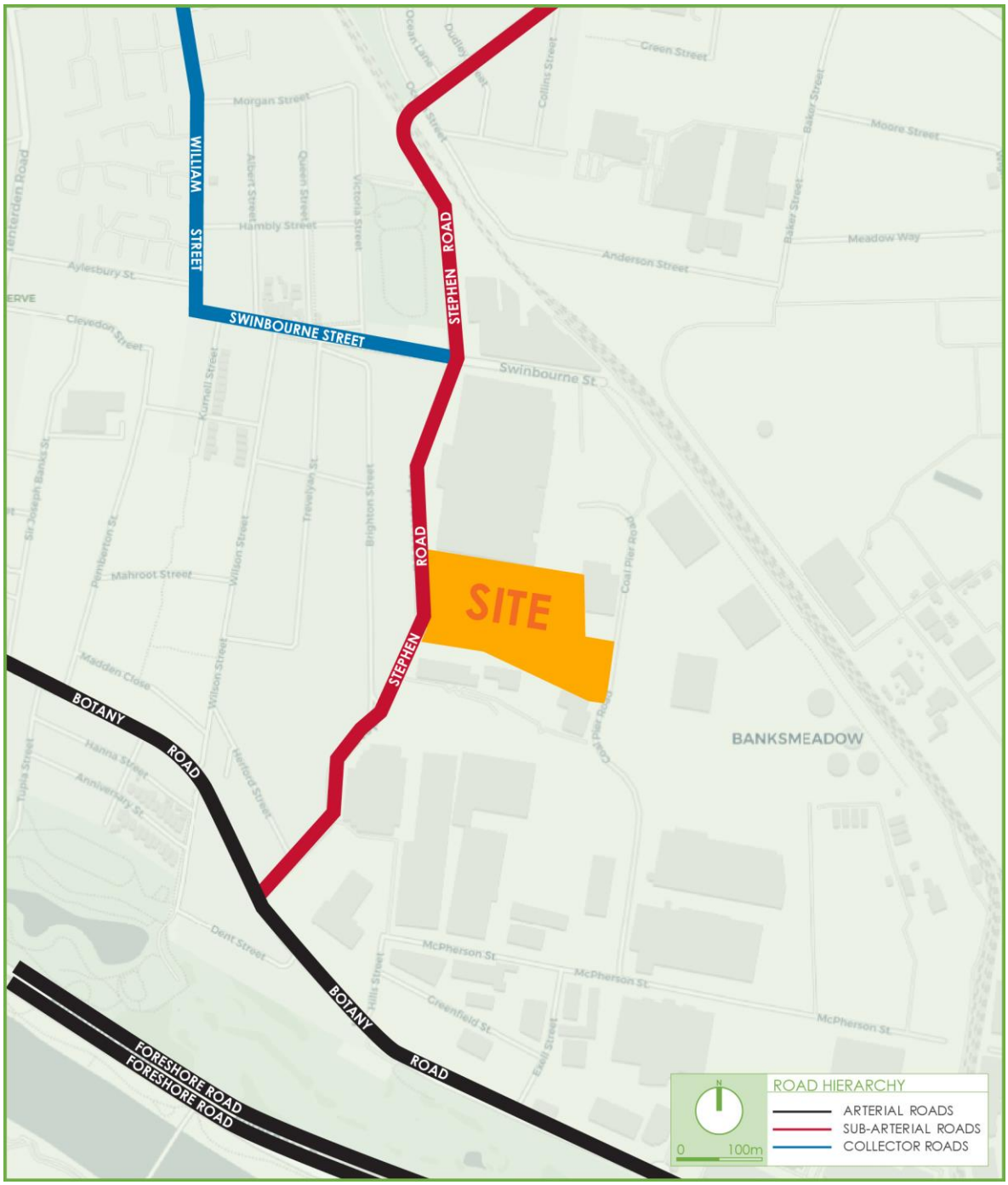


Figure 3: Road Hierarchy

Key Intersection

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

5.1.1 Foreshore Road, Botany Road and Penrhyn Road Intersection

It can be seen from **Figure 4** that this is a four-legged signalised intersection. The main attributes of each approach are outlined as follows:



Figure 4: Intersection of Foreshore Road, Botany Road and Penrhyn Road

- Botany Road (north)
  - The northern approach provides a total of three (3) lanes, comprising a single left-turn only lane, a single through lane and a single through lane with right-turns permitted.
- Penrhyn Road (south)
  - The southern approach provides a total of three (3) lanes, comprising a single left-turn only lane, a single through lane and a single right turn lane.

- Foreshore Road (west)
  - The eastern approach provides a total of four (4) lanes, comprising a single left-turn only lane, two (2) through lanes and a single right turn lane.
- Botany Road (east)
  - The western approach provides a total of five (5) lanes, comprising a single left-turn only lane, three (3) through lanes and a single right turn lane.

5.1.2 Botany Road and Exell Street Intersection

It can be seen from **Figure 5** that this is a three-legged priority intersection, noting no pedestrian crossing facilities. The main attributes of each approach are outlined as follows:



Figure 5: Intersection of Botany Road and Exell Street

- Exell Street (north)
  - The northern approach provides a single left-turn only lane.
- Botany Road (east - west)
  - The eastern and western approach provides a single through only with no access to Excell Street.

5.1.3 Botany Road and Hills Street Intersection

It can be seen from **Figure 6** that this is a three-legged priority intersection, noting no pedestrian crossing facilities. The main attributes of each approach are outlined as follows:



Figure 6: Intersection of Botany Road and Hills Street

- Hills Street (north)
  - The northern leg is an exit lane only.
- Botany Road (east - west)
  - The eastern approach provides a single through lane with left turns permitted.
  - The western approach provides a total of two (2) lanes, comprising a single through lane and a single right turn lane.

5.1.4 Botany Road and Stephen Road Intersection

It can be seen from **Figure 7** that this is a three-legged priority intersection, noting no pedestrian crossing facilities. The main attributes of each approach are outlined as follows:



Figure 7: Intersection of Botany Road and Stephen Road

- Botany Road (north - south)
  - The northern approach provides a single through lane with left turns permitted.
  - The southern approach provides a single through lane with right turns permitted.
- Stephen Road (west)
  - The western approach provides a single lane with left-turn and right-turn movements permitted.

5.1.5 McPherson Street and Coal Pier Road Intersection

It can be seen from **Figure 8** that this is a three-legged priority intersection, noting no pedestrian crossing facilities. The main attributes of each approach are outlined as follows:



Figure 8: Intersection of McPherson Street and Coal Pier Road

- Coal Pier Road (north)
  - The northern approach provides a single lane with left-turn and right-turn movements permitted.
- McPherson Street (east - west)
  - The eastern approach provides a single through lane with left turns permitted.
  - The western approach provides a single through lane with right turns permitted.

5.1.6 Stephen Road and Swinbourne Street Intersection

It can be seen from **Figure 9** that this is a four-legged signalised intersection. The main attributes of each approach are outlined as follows:



Figure 9: Intersection of Stephen Road and Swinbourne Street

- Stephen Road (north - south)
  - The northern approach provides a total of two (2) lanes, comprising a single through lane with left-turns permitted, and a single through lane with right-turns permitted.
  - The southern approach provides a total of two (2) lanes, comprising a single through lane with left-turns permitted, and a single through lane with right-turns permitted.

- Swinbourne Street (east - west)
  - The eastern approach provides a total of two (2) lanes, comprising a single through lane with left-turns permitted, and a single through lane with right-turns permitted.
  - The western approach provides a total of two (2) lanes, comprising a single through lane with left-turns permitted, and a single through lane with right-turns permitted.

5.2 Existing Intersection Volumes

5.2.1 Peak Hour Volumes

Intersection surveys were conducted at six (6) key intersections surrounding the site on Thursday 16th November 2023. From this, traffic volume data was obtained regarding the existing peak hour conditions in the morning and evening. The total traffic volumes through each key intersection in the critical AM and PM peak hours are summarised below.

- Foreshore Road, Botany Road and Penrhyn Road
  - 3,301 vehicles in the AM peak hour; and
  - 3,271 vehicles in the PM peak hour.
- Botany Road and Excell Street
  - 1,284 vehicles in the AM peak hour; and
  - 1,346 vehicles in the PM peak hour.
- Botany Road and Hill Street
  - 1,155 vehicles in the AM peak hour; and
  - 1,090 vehicles in the PM peak hour.
- Botany Road and Stephen Road
  - 1,132 vehicles in the AM peak hour; and
  - 1,207 vehicles in the PM peak hour.
- McPherson Street and Coal Pier Road
  - 317 vehicles in the AM peak hour; and
  - 410 vehicles in the PM peak hour.
- Stephen Road and Swinbourne Street
  - 1,443 vehicles in the AM peak hour; and
  - 1,450 vehicles in the PM peak hour.

5.2.2 Daily Volumes

No recent TfNSW traffic volume counters are available in the vicinity of the site and the intersection surveys were conducted for the critical morning and evening peak periods only. It should be noted that in accordance with *Austroads Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings Management*, peak hour volumes are

approximately 8 to 10% of the Average Annual Daily Traffic (AADT) for urban situations. Therefore, the following daily volumes (estimates) can be derived from the peak hour (greater of AM and PM volumes) surveys:

- Foreshore Road, Botany Road and Penrhyn Road 33,010 to 41,263 vehicles/day
- Botany Road and Excell Street 13,460 to 16,825 vehicles/day
- Botany Road and Hill Street 11,550 to 14,438 vehicles/day
- Botany Road and Stephen Road 12,070 to 15,088 vehicles/day
- McPherson Street and Coal Pier Road 4,100 to 5,125 vehicles/day
- Stephen Road and Swinbourne Street 14,500 to 18,125 vehicles/day

It is noteworthy that daily traffic volumes are not a relevant consideration for the assessment of the traffic network, which is based on intersection performance during peak (hourly) periods.

5.3 Public Transport

The subject site is within 800m walking distance of several bus stops operating along Swinbourne Street and Foreshore Road. These bus services are presented in **Figure 10**, with the service frequencies outlined in **Table 3**.

Table 3: Bus Routes and Service Frequencies

Bus No.	Bus Route	Service Frequency	
		Weekdays	Weekends
307	Eastgardens to Mascot Station (Loop Service)	Every 20 minutes	Every 20 minutes
309	Port Botany to Redfern	Every 5-10 minutes	Every 10 minutes
310	Botany to Central Railway Square	Limited Services	Limited Services

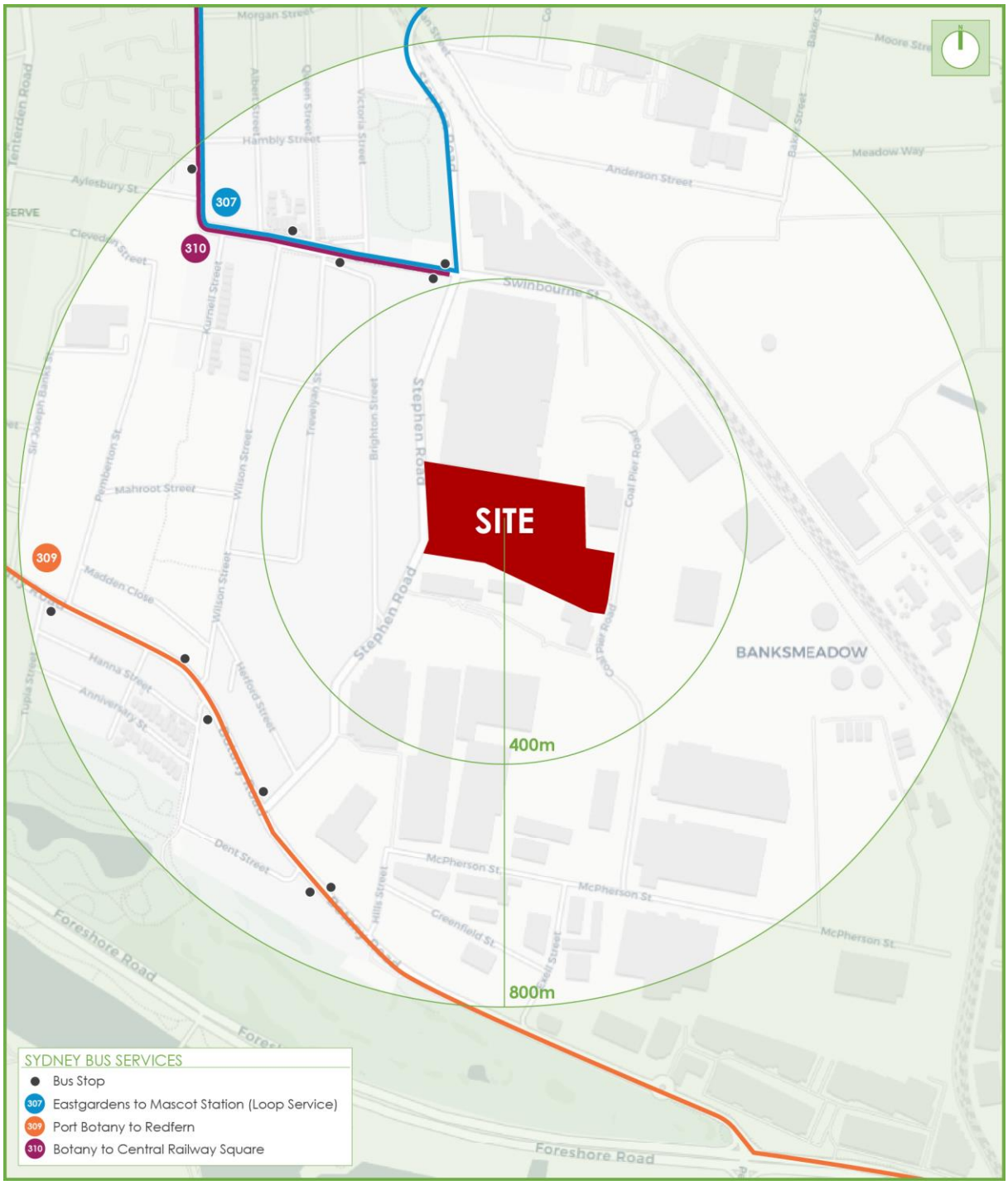


Figure 10: Public Transport

6. DESCRIPTION OF PROPOSED DEVELOPMENT

This report has been prepared to accompany an SSDA seeking consent for the construction and operation of a three-storey warehouse and distribution centre development at 49-61 Stephen Road, Banksmeadow (**SSD-65924461**).

Specifically, the project comprises:

- Demolition of all existing built form.
- Site preparation works, bulk earthworks and infrastructure/service provisions and/or augmentation.
- Removal of 90 trees on site.
- Extensive remediation of the site.
- Construction and operation of two three-storey warehouse and distribution centre buildings including the following key components:
  - Approximately 57,034m^2 of total GFA comprising:
    - 51,195m^2 of warehouse area.
    - 4,775m^2 of office area.
    - 964m^2 of lobby space.
    - 100m^2 café.
  - Two warehouse buildings of three storeys containing:
    - Twelve (12) units within Warehouse A (3 levels).
    - Twelve (12) units within Warehouse B (3 levels).
- 243 car spaces provided on the ground floor mezzanine carparking area.
- 50 ground floor carpark spaces off Coal Pier Road.
- 20 motorbike parking spaces.
- End of trip facilities.
- Site landscaping works totalling 5,327m^2 (11.06% of the site), and
- Provision of building/business identification signage.

The parking and traffic impacts arising from the development in its entirety are discussed in **Section 6** and **Section 7**. Reference should be made to the architectural plans submitted

separately to the Department of Planning and Environment which are presented at reduced scale in **Appendix A**.

7. PARKING REQUIREMENTS

7.1 Car Parking

7.1.1 Bayside DCP Assessment

The Bayside Council DCP (2022) provides parking requirements for warehouse/distribution, ancillary office and cafes as outlined in **Table 4** below:

Table 4: Bayside Council DCP Rates

Type	Yield	Parking Rate	Required Parking
Warehouse/Distribution	51,195m^2	1 space per 300m^2 GFA	170.65 (171)
Ancillary Office	4,775m^2	1 space per 40m^2 GFA	119.4 (119)
Cafe	100m^2	1 space per 40m^2 GFA	2.5 (3)
		TOTAL	**293**

As can be seen from Table 4 above, under the Bayside Council DCP, the industrial development component is nominally required to provide a total of 293 car parking spaces. In response, the development proposes a total of 293 car parking spaces which is compliant with the parking requirements of the council DCP.

7.2 Accessible Parking

The Bayside Council DCP (2022) advises the below accessible parking rates for warehouse/distribution developments;

- One accessible space per 50 car parking spaces provided.

The application of the above parking rate on the proposed 293 car parking spaces, the proposed development is nominally required to provide six (6) accessible parking spaces. The development proposes a total of six (6) accessible parking spaces which is compliant with the parking requirements of the council DCP.

7.3 Motorcycle Parking

The Bayside Council DCP (2022) advises the below motorcycle parking rates for warehouse/distribution developments;

- One motorcycle space per 15 car parking spaces provided.

The application of the above parking rate on the proposed 293 car parking spaces, the proposed development is nominally required to provide 20 motorcycle parking spaces. The development proposes a total of 20 motorcycle parking spaces which is compliant with the parking requirements of the council DCP.

7.4 Bicycle Parking

The Bayside Council DCP (2022) advises the below bicycle parking rates for warehouse/distribution and café developments; outlined in **Table 5** below:

Table 5: Bayside Council DCP Rates

Type	Yield	Parking Rate	Required Parking
Warehouse/Distribution and ancillary Office	55,970m^2	1 space per 600m^2 GFA	93.3 (93)
Café Staff	100m^2	1 space per 150m^2 GFA	0.7 (1)
Café Visitors	100m^2	1 space per 400m^2 GFA	0
		TOTAL	**94**

As can be seen from Table 5 above, under the Bayside Council DCP, the industrial development component is nominally required to provide a total of 94 bicycle parking spaces. The development proposes a total of 114 bicycle parking spaces which is compliant with the parking requirements of the council DCP.

7.5 Waste Collection and Servicing

The Bayside Council DCP (2022) advises the below servicing facility requirements for warehouse/distribution developments;

- Ten (10) service bays (for MRVs or larger) for the first 8,000m^2 and 1 service bay for every additional 1,000m^2 warehouse/distribution GFA.
- One van space for retail spaces less than 199m^2 GFA.

The application of the above servicing requirements, the proposed development is nominally required to provide 53 service bays and one van space. As the development consists of 24 warehouses which accommodate 20.0m AV each, and as such are all capable of accommodating any servicing requirements for the warehouse/distribution units, as well as the ancillary office spaces and ancillary cafe.

8. TRAFFIC AND TRANSPORT IMPACTS

8.1 Existing Trip Generation

Tube counts were undertaken at the access driveways of the existing warehouse development on between Thursday 16th May to Wednesday 22nd May 2024, which resulted in the following weekday traffic generation for the existing warehouse development:

- 14 vehicle trips in the AM site peak hour (7 in, 7 out);
- 12 vehicle trips in the PM site peak hour (6 in, 6 out);
- 11 vehicle trips in the AM network peak hour (6 in, 5 out);
- 4 vehicle trips in the PM network peak hour (2 in, 2 out); and
- 95 vehicle trips per day (48 in, 47 out).

8.2 Development Trip Generation

8.2.1 Large Format Warehousing

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 TfNSW GTIA and as such, the traffic generation rates published in the TfNSW GTIA have been adopted for large format warehouses between 10,000m2 and 100,000m2 of GFA, which are as follows:

- 0.26 vehicles trips per 100m2 of GFA during the AM site peak hour;
- 0.23 vehicles trips per 100m2 of GFA during the PM site peak hour;
- 0.17 vehicles trips per 100m2 of GFA during the AM network peak hour;
- 0.21 vehicles trips per 100m2 of GFA during the PM network peak hour; and
- 2.83 vehicles trips per 100m2 of GFA each day.

The proposed development includes a total 57,034m2 GFA of warehouse and ancillary office area. Application of the above rate and assumptions to the proposed area results in the following traffic generation for the proposed warehouse.

- 148 vehicle trips in the AM site peak hour (118 in, 30 out);
- 131 vehicle trips in the PM site peak hour (26 in, 105 out);
- 97 vehicle trips in the AM network peak hour (78 in, 19 out);
- 120 vehicle trips in the PM network peak hour (24 in, 96 out); and
- 1614 vehicle trips per day (807 in, 807 out).

The TfNSW GTIA also provides a vehicle classification breakdown for the proposed vehicle trips, summarised in the extract reproduced in **Figure 11** below:

	Sydney				
Classification (entry : exit)	**All vehicles Class 1-11**	**Light Class 1**	**Medium Class 2-5**	**Long Class 6-9**	**Double Combo Class 10-11**
Site peak hour	100% (58% : 42%)	77% (44% : 33%)	15.5% (9.5% : 6%)	6% (3.5% : 2.5%)	1.5% (1% : 0.5%)
Site AM peak hour	100% (62% : 38%)	69% (49% : 20%)	21.5% (7.5% : 14%)	7.5% (4% : 3.5%)	2% (1.5% : 0.5%)
Site PM peak hour	100% (34.5% : 66.5%)	72.5% (17.5% : 55%)	20% (13% : 7%)	5.5% (3% : 2.5%)	2% (1% : 1%)
Network AM peak hour	100% (70% : 30%)	68% (53.5% : 14.5%)	20.5% (11% : 9.5%)	9.5% (4.5% : 5%)	2% (1% : 1%)
Network PM peak hour	100% (34% : 66%)	70% (16.5% : 53.5%)	21% (13% : 8%)	7% (3.5% : 3.5%)	2% (1% : 1%)
Daily	100% (50% : 50%)	68% (34% : 34%)	20% (10% : 10%)	9% (4.5% : 4.5%)	3% (1.5% : 1.5%)

Figure 11: Vehicle Classification

The application of the vehicle classification breakdown results in the below light, medium, long and double combo vehicle trips;

- Light Vehicle (Class 1)
  - 102 vehicle trips in the AM site peak (52 in, 14 out);
  - 95 vehicle trips in the PM site peak (52 in, 14 out);
  - 66 vehicle trips in the AM peak hour (52 in, 14 out);
  - 84 vehicle trips in the PM peak hour (20 in, 64 out); and
  - 1098 vehicle trips per day (549 in, 549 out).
- Medium Vehicle (Class 2-5)
  - 32 vehicle trips in the AM site peak (52 in, 14 out);
  - 26 vehicle trips in the PM site peak (52 in, 14 out);

- 20 vehicle trips in the AM peak hour (11 in, 9 out);
- 25 vehicle trips in the PM peak hour (16 in, 10 out); and
- 324 vehicle trips per day (162 in, 162 out).

- Long Vehicle (Class 6-9)
  - 11 vehicle trips in the AM site peak (52 in, 14 out);
  - 7 vehicle trips in the PM site peak (52 in, 14 out);
  - 9 vehicle trips in the AM peak hour (4 in, 5 out);
  - 9 vehicle trips in the PM peak hour (4 in, 5 out); and
  - 144 vehicle trips per day (72 in, 72 out).
- Double Combo Vehicle (Class 10-11)
  - 3 vehicle trips in the AM site peak (52 in, 14 out);
  - 3 vehicle trips in the PM site peak (52 in, 14 out);
  - 2 vehicle trips in the AM peak hour (1 in, 1 out);
  - 2 vehicle trips in the PM peak hour (1 in, 1 out); and
  - 48 vehicle trips per day (24 in, 24 out).

It is noted that the development does not service vehicles classified as 'Double Combo Vehicles (Class 10-11)', as such, for the purpose of a traffic and intersection performance assessment on the development, all vehicles classes 2 or above, have been grouped as 'Heavy Vehicles'.

8.3 Net Traffic Generation

Taking into account the existing approved warehouse on site which is to be demolished, the net traffic generation resultant due to the proposed development can be summarised as follows:

- +86 vehicle trips in the AM network peak hour (+72 in, +14 out); and
- +116 vehicle trips in the PM network peak hour (+22 in, +94 out).

8.4 Intersection Performance

8.4.1 Traffic Surveys

For the purposes of assessing the traffic impacts of this development, surveys were undertaken of the most critical intersections within proximity of the site. These surveys were performed during the network peak periods between 7:00am to 9:00am and 2:30pm to 6:00pm on Thursday, 16th November 2023, at the following key intersections:

- Foreshore Road, Botany Road and Penrhyn Road
- Botany Road and Excell Street
- Botany Road and Hill Street
- Botany Road and Stephen Road
- McPherson Street and Coal Pier Road
- Stephen Road and Swinbourne Street

8.4.2 Network Distribution

In order to approximate the net impacts on the surrounding key intersections, the below splits were applied to the net traffic generation. As a conservative assessment, the proposed vehicle trips have been distributed across the network:

- Network Peak Traffic Generation
  - 97 vehicle trips per hour during the AM peak; and, (68 in, 29 out)
  - 120 vehicle trips per hour during the PM peak (41 in, 79 out)

Comprising of the following:

- Stephen Road Access:
  - Light Vehicles (Class 1)
    - 55 vehicle trips per hour during the AM peak; and, (43 in, 12 out)
    - 70 vehicle trips per hour during the PM peak. (17 in, 53 out)
- Coal Pier Road Access:
  - Light Vehicles (Class 1)
    - 11 vehicle trips per hour during the AM peak; and, (9 in, 2 out)
    - 14 vehicle trips per hour during the PM peak. (3 in, 11 out)

- Heavy Vehicles (Class 2+)
  - 31 vehicle trips per hour during the AM peak; and, (16 in, 15 out)
  - 36 vehicle trips per hour during the PM peak. (21 in, 15 out)

The distribution of traffic into the adjacent road network is influenced by the following factors:

- Journey to work data for residents and employees;
- Turning restrictions within the existing road network;
- Convenient connections to/from arterial roads; and
- Location of access entry and exit points.

Having regard for the above, the following distributions have been assumed:

- Light Vehicles
  - 44% of traffic will depart/arrive from the north vis Stephen Road;
  - 30% of traffic will depart/arrive from the west via Botany Road; and
  - 26% of traffic will depart/arrive from the west via Foreshore Road.
- Heavy Vehicles
  - 90% of traffic will depart/arrive from the west via Foreshore Road; and
  - 10% of traffic will depart/arrive from the south via Penrhyn Road;

The resultant net traffic impacts are presented in **Figure 12** and **Figure 13** below.

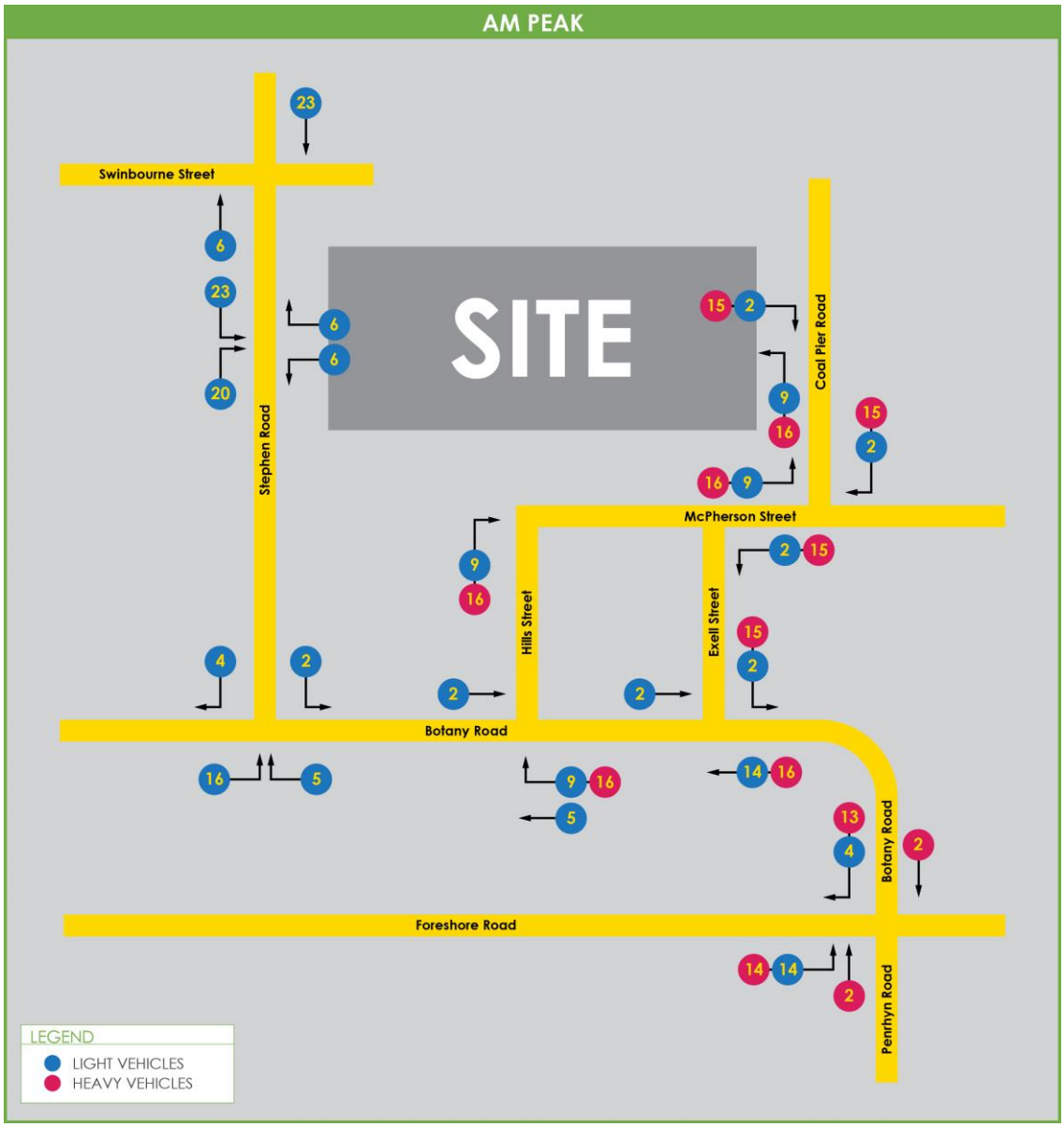


Figure 12: AM Net Traffic Trips

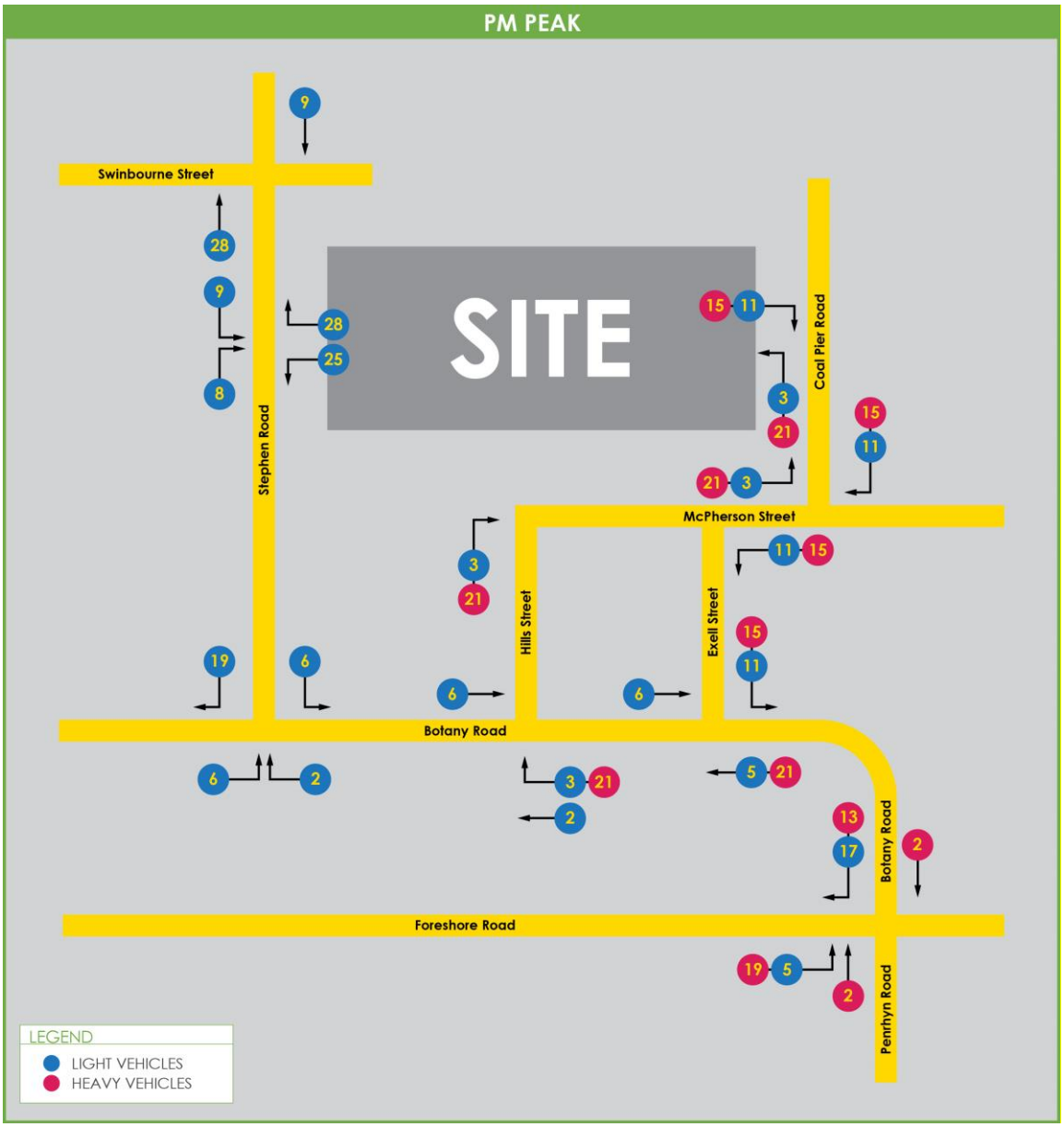


Figure 13: PM Net Traffic Trips

8.4.3 Modelling Scenarios

In order to assess the potential traffic impacts of a proposed development, the following scenarios were identified. These scenarios were undertaken in response to feedback from TfNSW during agency consultation.

- Base Case
- Base Case plus Development

8.4.4 SIDRA Intersection Analysis

The surveys were analysed using the SIDRA Intersection 9 computer program to determine their performance characteristics under existing traffic conditions. The SIDRA 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 as shown in **Table 6**.

Table 6: Intersection Performance Indicators (TfNSW)

Level of Service (LoS)	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	less than 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 and accident study required
E	57 to 70	At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode	At capacity and requires other control mode
F	More than 70	Unsatisfactory and requires additional capacity.	Unsatisfactory and requires other control mode or major treatment.

A summary of the modelled results is provided in **Tables 7 - 8**. Reference should also be made to the SIDRA outputs provided in **Appendix B** which provide detailed results for each movement.

8.4.5 Base Case Scenario

Table 7: Base Case Scenario

Intersection	Control Type	Period	Degree of Saturation	Intersection Delay	Level of Service
Foreshore Road, Botany Road and Penrhyn Road	Signalised	AM	0.879	29.2	C
		PM	0.858	23.5	B
Botany Road and Excell Street	Priority	AM	0.441	12.0	A
		PM	0.408	7.8	A
Botany Road and Hills Street	Priority	AM	0.443	14.8	B
		PM	0.286	9.3	A
Botany Road and Stephen Road	Priority	AM	0.439	15.3	B
		PM	0.481	14.0	A
McPherson Street and Coal Pier Road	Priority	AM	0.121	6.7	A
		PM	0.145	6.5	A
Stephen Road and Swinbourne Street	Signalised	AM	0.842	32.8	C
		PM	0.824	36.8	C

It can be seen from Table 7 that the key intersections in the vicinity of the site currently operate at LoS 'B' or better in the AM and PM peak hour periods, with the exception of Foreshore Road, Botany Road and Penrhyn Road which operates at a LoS 'C' in the AM peak, and Stephen Road and Swinbourne Street which operates at a LoS 'C' in both AM and PM peaks.

8.4.6 Base Case plus Development Scenario

Table 8: Base Case + Development Scenario

Intersection	Control Type	Period	Degree of Saturation	Intersection Delay	Level of Service
Foreshore Road, Botany Road and Penrhyn Road	Signalised	AM	0.879	29.5	C
		PM	0.858	24.0	B
Botany Road and Excell Street	Priority	AM	0.479	12.6	A
		PM	0.449	8.3	A
Botany Road and Hills Street	Priority	AM	0.505	16.1	B
		PM	0.254	10.1	A
Botany Road and Stephen Road	Priority	AM	0.450	15.7	B
		PM	0.521	14.7	B
McPherson Street and Coal Pier Road	Priority	AM	0.149	7.0	A
		PM	0.187	7.2	A
Stephen Road and Swinbourne Street	Signalised	AM	0.879	34.4	C
		PM	0.837	38.1	C

It can be seen from Table 8 that the key intersections in the vicinity of the site will continue to operate at the same LoS with only minor increases in intersection delay for all intersections. It is noted the exception of Botany Road and Stephen Road which has a reduced LoS 'B' in the PM peak, however it is important to consider that the intersection only sees an increased intersection delay of less than one (1) second.

8.4.7 Summary

In summary, it is evident that all intersections will continue to operate at satisfactorily, with the development only increasing the intersection delay across all key intersection by a very minor amount. Based on the above results, no infrastructure upgrades or signal timing adjustments are considered necessary to facilitate the proposed development. These results are expected noting the moderate increase in traffic associated with developments of this nature (large format warehouse), and the distribution of traffic through the local network.

8.5 Cumulative Impacts Scenario

8.5.1 Nearby Approved Developments

In order to assess the cumulative impacts of nearby approved developments, the DA traffic reports/Council's Assessment Reports of the following developments were analysed in **Table 9** below.

Table 9: Nearby Approved Developments

Address	Proposed Development Description	Traffic Generation	Impacts
2 – 8 Baker Street, Banksmeadow SSD-48411467	Multi-Level Warehouse	Max increase of 9 vehicle trips per hour	Minor impacts to intersections near subject site, modelled traffic does not pass any of the intersections near subject site
Orica Southlands SSD-9691	Warehouse Estate	AM – 113 trips/hour (79 in, 34 out) PM – 122 trips (37 in, 85 out)	Under construction during surveys. Included in cumulative assessment
9 Coal Pier Road, Banksmeadow DA-2020/417	Warehouse development with eight (8) tenancies	AM – 94 trips/hour (71 in, 22 out) PM – 63 trips/hour (19 in, 44 out)	Under construction during surveys. Included in cumulative assessment

It is noted that the traffic volumes from Orica Southlands and 9 Coal Pier Road, Banksmeadow has been assessed with traffic movements traveling through the key intersections of the proposed development. The traffic generated by the above approved and under construction developments, equates to the following:

- An additional 207 vehicles per hour in AM peak traveling on the key intersections; and
- An additional 185 vehicles per hour in PM peak traveling on the key intersections;

The assumptions within each traffic report listed above have been adopted in the cumulative modelling scenario for consistency. The trip distribution of traffic onto the surrounding road network is summarised in **Figure 11** and **Figure 12** below.

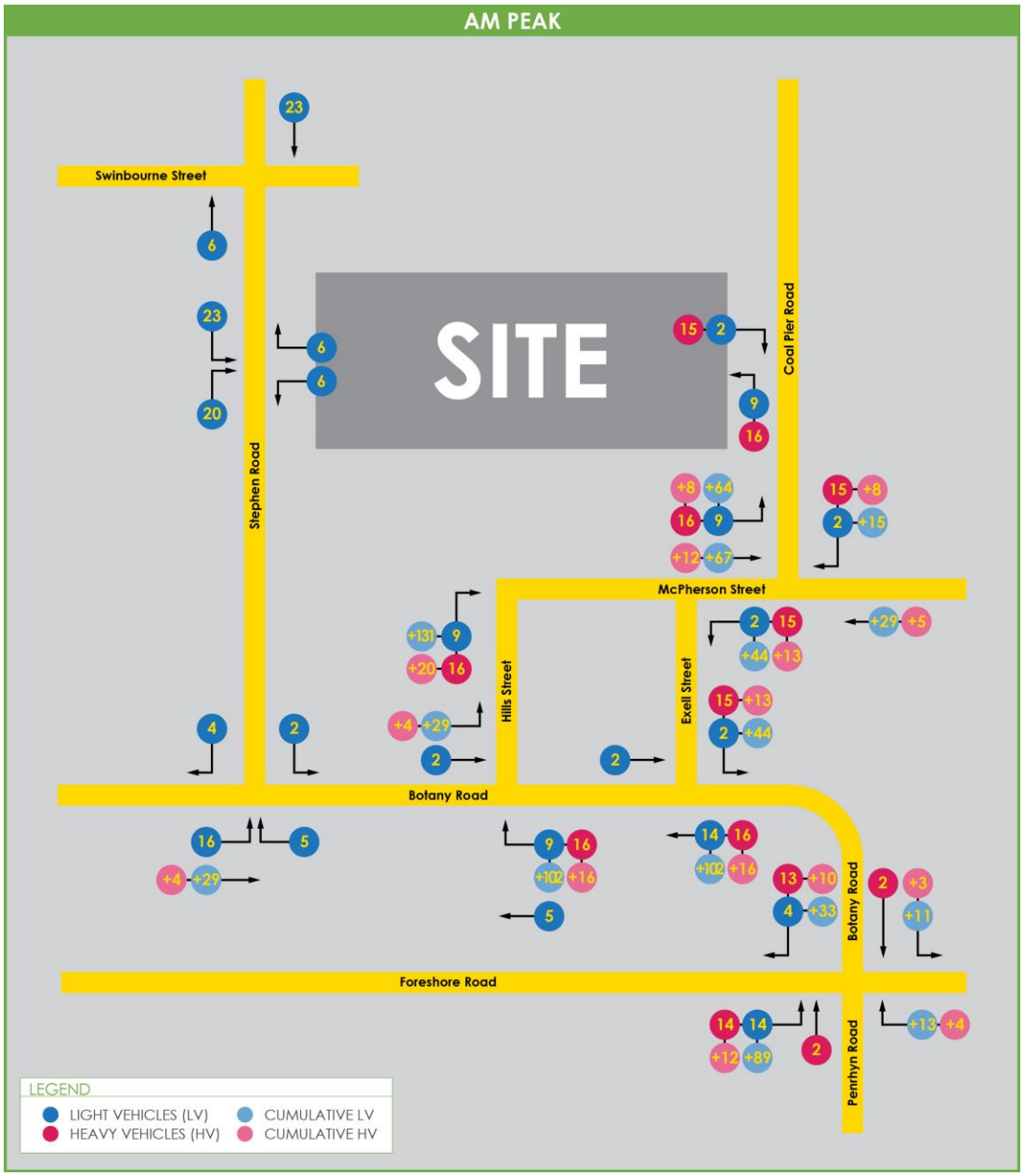


Figure 11: AM Peak Hour Traffic Distribution including Approved Developments

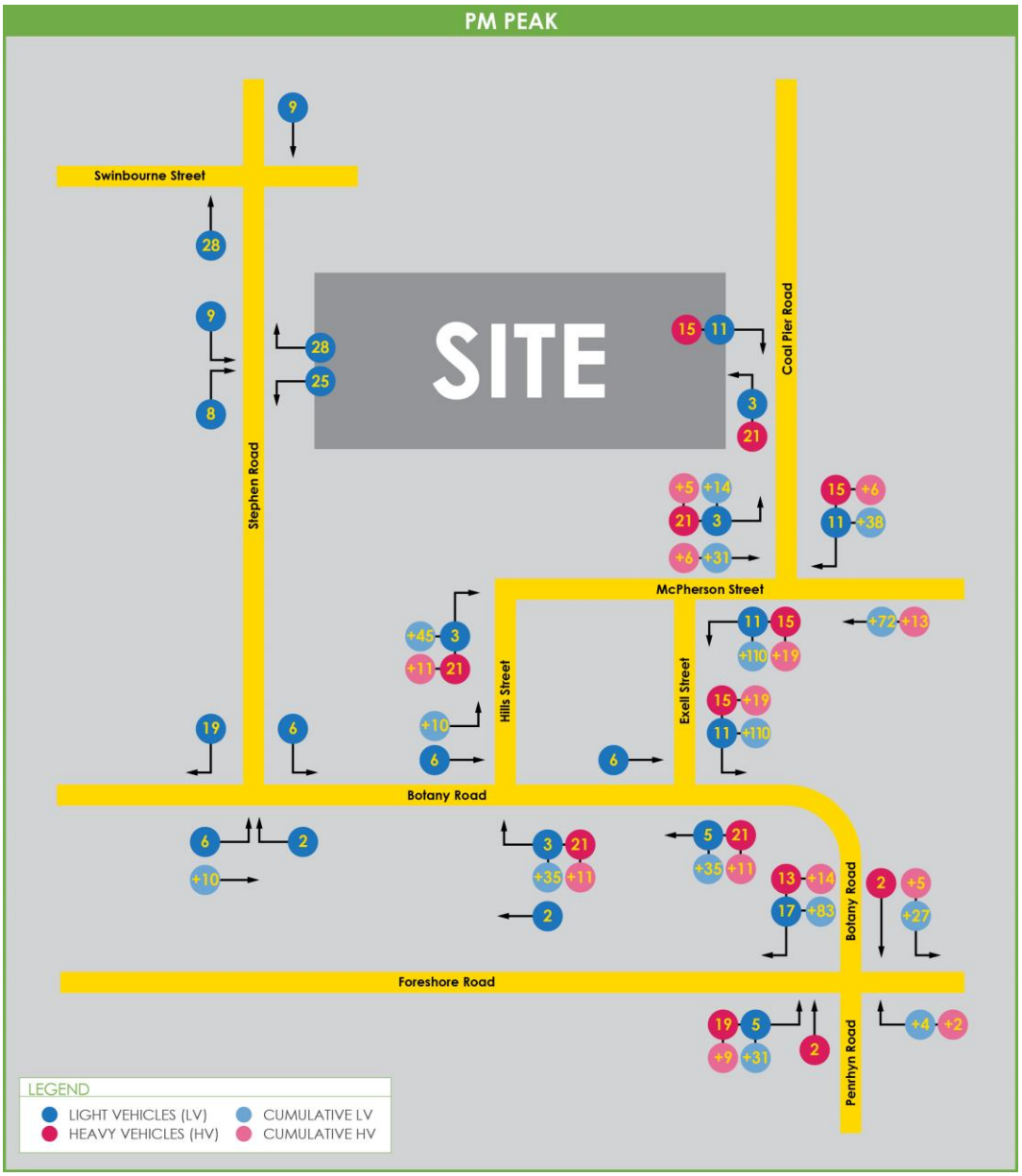


Figure 12: PM Peak Hour Traffic Distribution including Approved Developments

8.5.2 Existing Plus Development Plus Approved Developments Scenario

Table 10: Existing Plus Development Plus Approved Developments Scenario

Intersection	Control Type	Period	Degree of Saturation	Intersection Delay	Level of Service
Foreshore Road, Botany Road and Penrhyn Road	Signalised	AM	0.901	32.1	C
		PM	0.898	30.7	C
Botany Road and Excell Street	Priority	AM	0.558	13.4	A
		PM	0.489	9.9	A
Botany Road and Hills Street	Priority	AM	0.739	21.3	B
		PM	0.319	10.8	A
Botany Road and Stephen Road	Priority	AM	0.466	16.7	B
		PM	0.527	15.0	B
McPherson Street and Coal Pier Road	Priority	AM	0.233	8.8	A
		PM	0.284	8.2	A
Stephen Road and Swinbourne Street	Signalised	AM	0.842	32.8	C
		PM	0.824	36.8	C

*LoS of Priority intersections based on worst performing movement

It can be seen from Table 10 that the key intersections in the vicinity of the site will continue to operate at the same LoS with only minor increases in intersection delay for all intersections. It is noted the exception of the Foreshore Road, Botany Road and Penrhyn Road intersection which has a reduced LoS 'C' in the PM peak, however it is important to consider that the intersection only sees an increased intersection delay of six (6) seconds once all the nearby developments are operating.

8.6 Construction Traffic Impacts

Construction traffic generation of approximately 50 vehicles per day is anticipated at the peak of the works, with 40 of these vehicles to be heavy vehicles and 10 light vehicles. It is anticipated that a peak of 10 two-way truck movements may occur during a peak one hour period.

Given the anticipated construction traffic volumes being approximately half of the vehicle trips expected to be generated by the development during operation, it is therefore

reasonable to conclude the surrounding road network can satisfactorily accommodate this volume of traffic.

Furthermore, trips generated by construction staff will typically be outside of the main road network peaks. The impact of construction traffic volumes on the external network is therefore expected to be inconsequential.

9. ACCESS AND INTERNAL DESIGN ASPECTS

9.1 Vehicular Access

9.1.1 Northern Stephen Road Access (Light vehicles only)

The proposed northern vehicular access via Stephen Road will provide access to mezzanine car parking to 243 car parking spaces. The proposed access will therefore require a Category 1A driveway under AS2890.1 (2004), being a combined access providing an entry and exit with a width of minimum 3.0 to 5.5. In response, the development provides a driveway width of 7.6 metres. Reference is made to the swept path analysis presented in **Appendix C.**

9.1.2 Southern Stephen Road Access (Fire only)

The proposed southern vehicular access via Stephen Road will provide access for fire brigade. The proposed access has been designed to accommodate a 12.5m Heavy Rigid Vehicle (HRV) to enter and exit the site. In response, the development provides a driveway width of 5.0m.

9.1.3 Coal Pier Road Access (Light vehicles only)

The proposed vehicular access via Coal Pier Road will provide access to basement car parking to 50 car parking spaces. The proposed access will therefore require a Category 1A driveway under AS2890.1 (2004), being a combined access providing an entry and exit with a width of minimum 3.0 to 5.5. In response, the development provides a driveway width of 6.2 metres.

9.1.4 Southern Coal Pier Road Access (Ingres and Egress)

The proposed southern heavy vehicular access via Coal Pier Road will provide access to all the warehouses across all three levels, as well as egress for all warehouses on level 1 and 2. The proposed access has been designed to accommodate two (2) 20.0m Articulated Vehicles (AV) to simultaneous enter and exit the site. In response, the development provides a driveway width of 10.0m. Reference is made to the swept path analysis presented in **Appendix C.**

9.1.5 Northern Coal Pier Road Access (Egress Only)

The proposed northern heavy vehicular access via Coal Pier Road will provide egress for all warehouses on the ground floor. The proposed access has been designed to accommodate an AV to exit the site. In response, the development provides a driveway width of 7.5m. Reference is made to the swept path analysis presented in **Appendix C.**

9.2 Internal Design

The carpark areas are to be designed in accordance with AS2890.1 (2004), AS2890.2 (2018) and AS2890.6 (2009), with the following characteristics noteworthy:

9.2.1 Parking Modules

- All staff car parking spaces are designed in accordance with AS2890.1 (2004) User Class 1A, being a minimum width of 2.4 metres and length of 5.4 metres.
- All accessible parking spaces are designed in accordance with AS2890.6 (2009), being a minimum width of 2.4 metres, length of 5.4 metres and provided an adjacent shared area with the same dimensions.
- All loading bays are to be designed in accordance with AS2890.2 (2018).
- All spaces located adjacent obstructions of greater than 150mm in height are to be provided with an additional width of 300mm.

9.2.2 Clear Head Heights

- A minimum clear head height of 2.2 metres is to be provided for all trafficable areas within the carpark areas, as required under AS2890.1 (2004).
- A minimum clear head height of 2.5 metres is to be provided for all accessible spaces, as required under AS2890.6 (2022).
- Minimum clear head height clearances within dock areas/truck travel paths are to be in accordance with AS2890.2 (2018).

9.2.3 Light Vehicle Ramps

- All vehicular accesses are to be designed in accordance with AS2890.1 (2004) and provide a maximum gradient of 1 in 20 (5%) for the initial 6.0 metres from the property boundary.
- All light vehicle ramps are designed in accordance with AS2890.1 (2004), being a maximum gradient of 1 in 4 (25%).
- All light vehicle ramps are to provide sag/summit transitions with a maximum change of grade of 1 in 8 (12.5%) over a minimum of 2.0m, as required under AS2890.1 (2004).

9.2.4 Heavy Vehicle Ramps

- All vehicular accesses are to be designed in accordance with AS2890.1 (2004) and provide a maximum gradient of 1 in 20 (5%) for the initial 6.0 metres from the property boundary.
- All heavy vehicle vehicle ramps are designed in accordance with AS2890.2 (2018), being a maximum gradient of 1 in 6.5 (15.4%).
- All heavy vehicle ramps are to provide sag/summit transitions with a maximum change of grade of 1 in 16 (6.25%) over a minimum of 10.0m, as required under AS2890.2 (2018).

9.2.5 Other Considerations

- All columns are to be located outside of the parking space design envelope, as required under AS2890.1 (2004), Figure 5.2.
- All dead-end aisles are to provide the required 1.0 metre aisle extension, as required under AS2890.1 (2004), Figure 2.3.
- Appropriate visual sight splays are to be provided at all vehicular accesses, as required under AS2890.1 (2004), Figure 3.3.
- All motorcycle parking spaces are designed in accordance with AS2890.1 (2004) being a minimum width of 1.2 metres and length of 2.5 metres.
- All bicycle parking spaces are designed in accordance with AS2890.3 (2015) being a minimum width of 0.5 metres and length of 1.8 metres.

9.3 Summary

In summary, the internal configuration of the carpark areas are designed in accordance with AS2890.1 (2004), AS2890.2 (2018), AS2890.3 (2015) and AS2890.6 (2022). It is however envisaged that a standard condition of consent would be imposed requiring compliance with these standards.

10. CONCLUSIONS

The following is noteworthy:

- The proposal seeks approval to construct a large format warehouse development at 49-61 Stephen Road, Banksmeadow, consisting of two (2) industrial complexes with a total of, 51,195m^2 GFA of warehouse floor space, 964m^2 GFA lobby space, 4,775m^2 GFA of ancillary office floor space and 100m^2 GFA of ancillary café floor space.
- The site has convenient access to multiple bus routes with bus stops along Botany Road and Swinbourne Street. These public transport services provide connections to areas such as Eastgardens, Mascot and the Sydney CBD.
- The development provides a total of 293 car parking spaces comprising 243 car spaces located on the mezzanine level and 50 at grade car parking which is in accordance with the requirements of Council's DCP, and all nominal car parking demands will be satisfactorily accommodated on site.
- The traffic generation arising from the development has been assessed as a net change over existing conditions and equates to an additional 86 vehicle trips per hour during the AM peak and 116 vehicle trips per hour in the PM peak.
- All traffic associated with the proposed development (over and above existing conditions) have been distributed across the adjacent road network and the SIDRA Intersection results demonstrate satisfactory results for key intersections in the vicinity of the site, hence no infrastructure upgrades or signal timing adjustments are considered necessary.
- Vehicular access to the site is to be provided via multiple driveways off Stephen Road and Coal Pier Road noting all truck movements are to be contained on Coal Pier Road. In addition, all driveways have been assessed to operate satisfactorily for the design vehicle.
- The off-street parking and loading areas have been assessed to generally comply with the requirements of AS 2890.1 (2004), AS 2890.2 (2018), AS 2890.3 (2015) and AS 2890.6 (2022).

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.

APPENDIX A

Architectural Plans

GENERAL LEGEND:

COL-C - CONCRETE COLUMN
COL-S - STEEL COLUMN
RSD - ROLLER SHUTTER DOOR
DP - DOWNPIPES
RW - RETAINING WALL

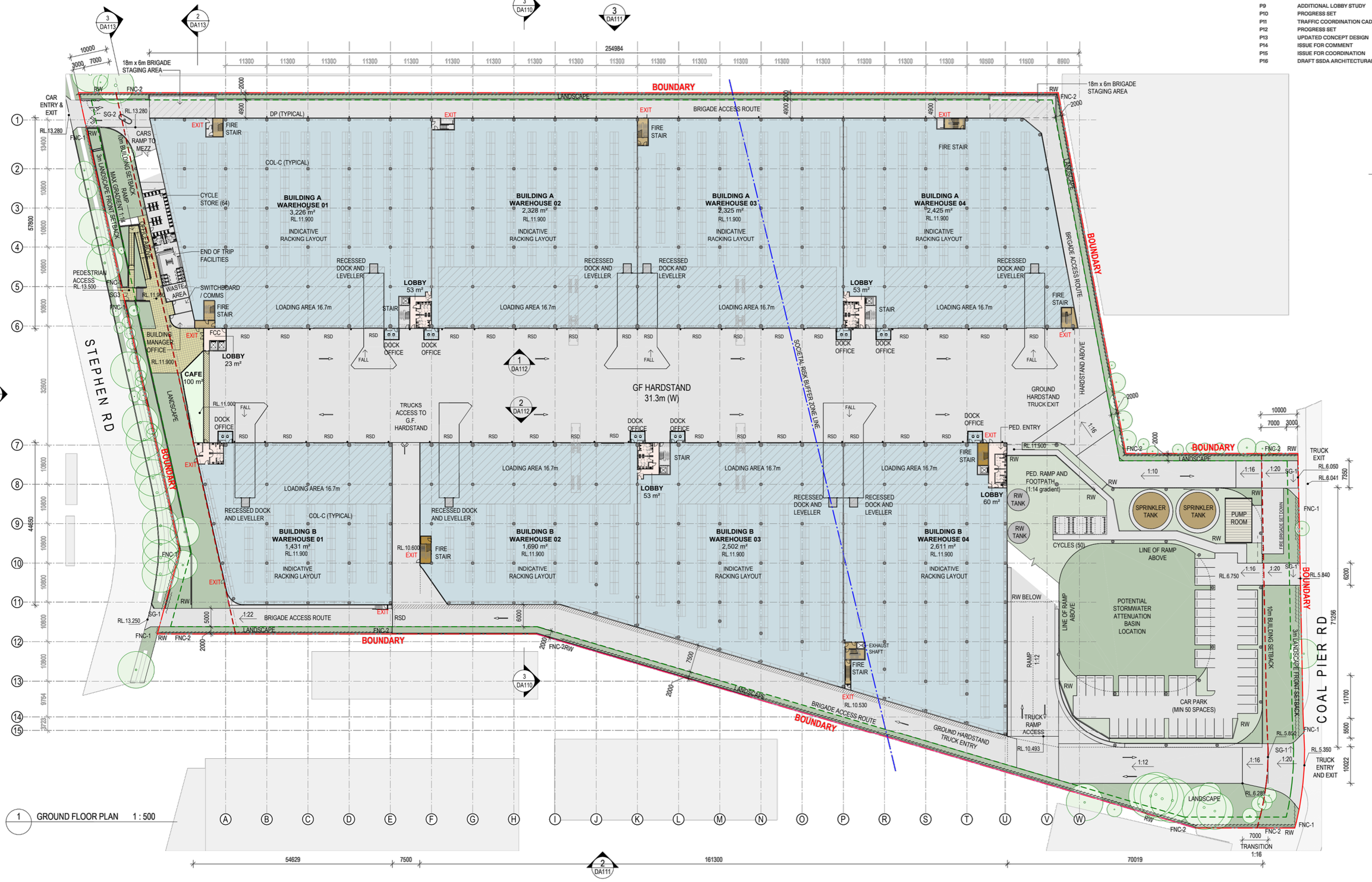
GEF - GROUND EXHAUST FAN
SEF - SMOKE EXHAUST FAN
SG1 - SLIDING GATE
SG2 - SWING GATE
SG3 - PEDESTRIAN SWING GATE

SITE BOUNDARY
BUILDING SETBACK
LANDSCAPE SETBACK
SOCIETAL RISK BUFFER ZONE
FNC-1 - PALISADE FENCE 2.4M (H)
FNC-2 - CHAINWIRE FENCE (2.1m H) + BARB

OFFICE AREA
WAREHOUSE AREA
FIRE SERVICES
LANDSCAPE AREA
LOBBY AREA
EXISTING TREES TO BE RETAINED

REVISIONS

REV	DESCRIPTION	DATE
P2	ISSUE FOR INFORMATION	24/07/2023
P3	CONCEPT 2 - FOR REVIEW	03/08/2023
P4	CONCEPT 3 - FOR REVIEW	17/08/2023
P5	CONCEPT 4 - FOR REVIEW	11/12/2023
P6	PRELIMINARY PLANS	16/02/2024
P7	PROGRESS SET	08/04/2024
P8	RAMP COORDINATION	02/05/2024
P9	ADDITIONAL LOBBY STUDY	10/05/2024
P10	PROGRESS SET	31/05/2021
P11	TRAFFIC COORDINATION CAD	11/06/2024
P12	PROGRESS SET	01/07/2024
P13	UPDATED CONCEPT DESIGN	07/08/2024
P14	ISSUE FOR COMMENT	23/08/2024
P15	ISSUE FOR COORDINATION	17/10/2024
P16	DRAFT SSDA ARCHITECTURAL	18/10/2024



1 GROUND FLOOR PLAN 1 : 500

GENERAL LEGEND:

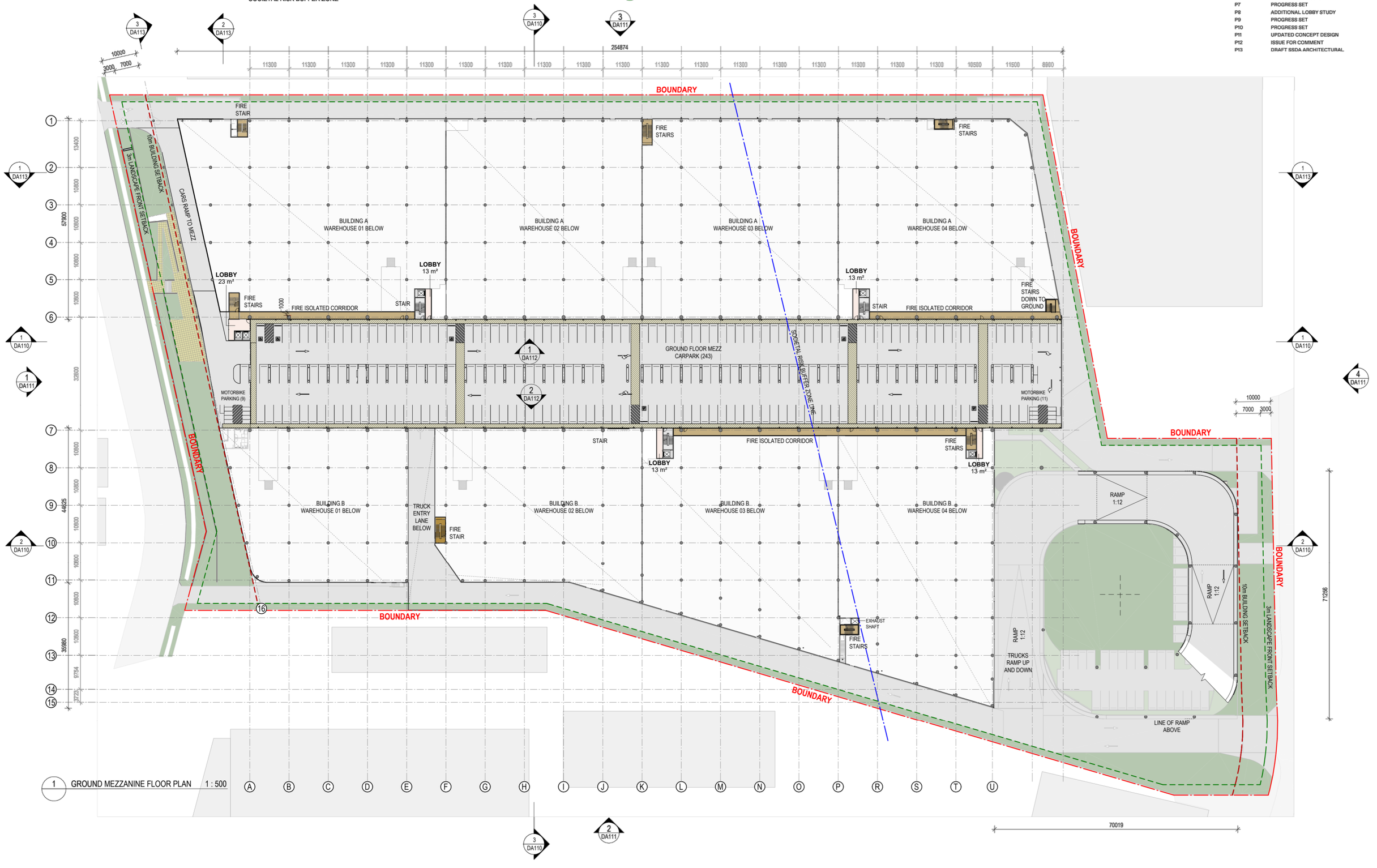
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FNC-1 - PALISADE FENCE 2.4M (H)
FNC-2 - CHAINWIRE FENCE (2.1m H) + BARB

OFFICE AREA
WAREHOUSE AREA
FIRE SERVICES
LANDSCAPE AREA
LOBBY AREA
EXISTING TREES TO BE RETAINED

REVISIONS		
REV	DESCRIPTION	DATE
P1	ISSUE FOR INFORMATION	21/06/2023
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P3	CONCEPT 2 - FOR REVIEW	03/08/2023
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P5	CONCEPT 4 - FOR REVIEW	11/12/2023
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P8	ADDITIONAL LOBBY STUDY	10/05/2024
P9	PROGRESS SET	31/05/2021
P10	PROGRESS SET	01/07/2024
P11	UPDATED CONCEPT DESIGN	07/08/2024
P12	ISSUE FOR COMMENT	23/08/2024
P13	DRAFT SSDA ARCHITECTURAL	18/10/2024



1 GROUND MEZZANINE FLOOR PLAN 1 : 500

GENERAL LEGEND:

COL-C - CONCRETE COLUMN
COL-S - STEEL COLUMN
RSD - ROLLER SHUTTER DOOR
DP - DOWNPIPES
RW - RETAINING WALL

GEF - GROUND EXHAUST FAN
SEF - SMOKE EXHAUST FAN
SG1 - SLIDING GATE
SG2 - SWING GATE
SG3 - PEDESTRIAN SWING GATE

SITE BOUNDARY
BUILDING SETBACK
LANDSCAPE SETBACK
SOCIETAL RISK BUFFER ZONE

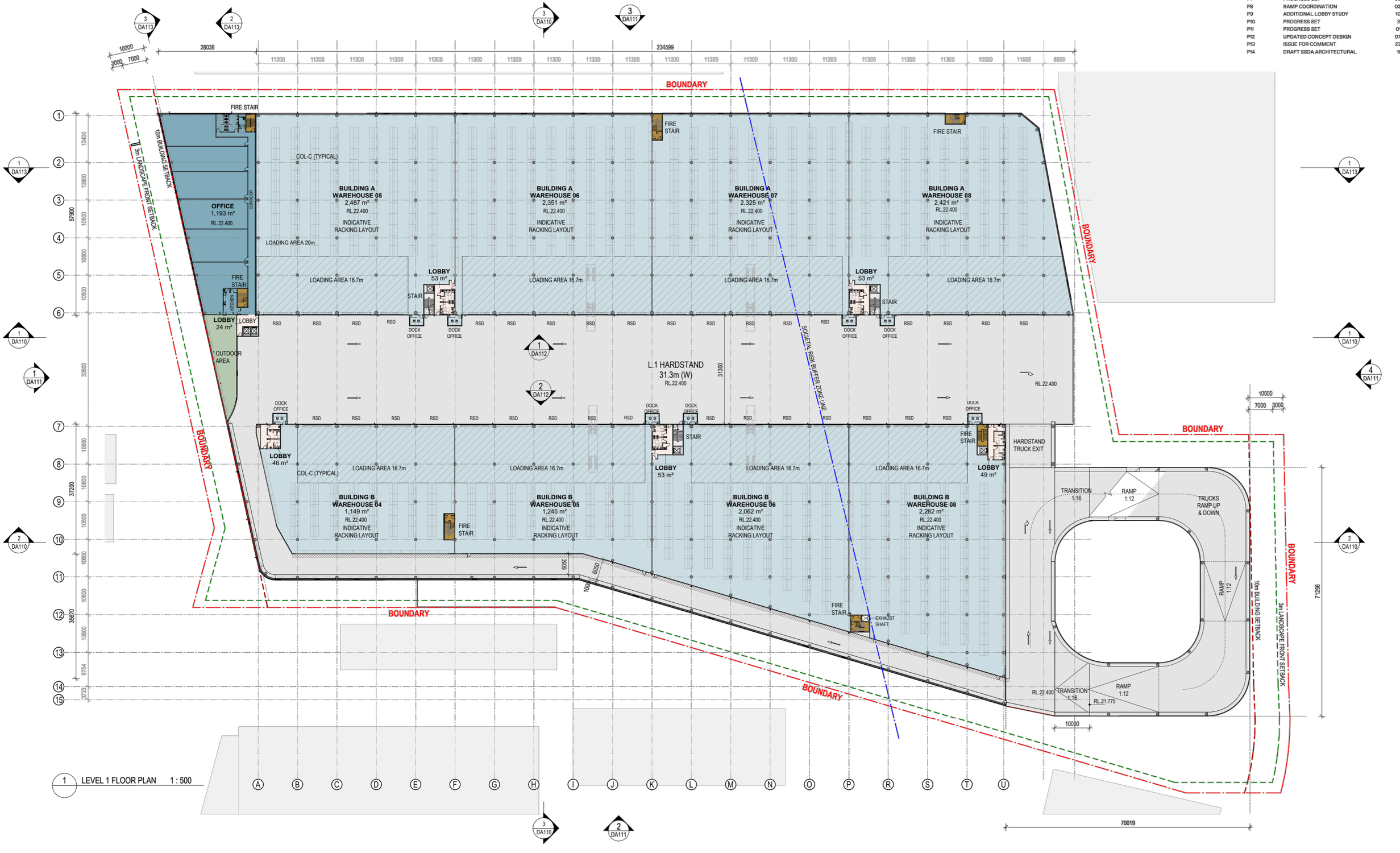
FNC-1 - PALISADE FENCE 2.4M (H)
FNC-2 - CHAINWIRE FENCE (2.1m H) + BARB

OFFICE AREA
WAREHOUSE AREA
FIRE SERVICES

LANDSCAPE AREA
LOBBY AREA
EXISTING TREES TO BE RETAINED

REVISIONS

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P7	PROGRESS SET	08/04/2024
P8	RAMP COORDINATION	02/05/2024
P9	ADDITIONAL LOBBY STUDY	10/05/2024
P10	PROGRESS SET	31/05/2024
P11	PROGRESS SET	01/07/2024
P12	UPDATED CONCEPT DESIGN	07/08/2024
P13	ISSUE FOR COMMENT	23/08/2024
P14	DRAFT SSDA ARCHITECTURAL	18/10/2024



1 LEVEL 1 FLOOR PLAN 1 : 500

GENERAL LEGEND:

COL-C - CONCRETE COLUMN
COL-S - STEEL COLUMN
RSD - ROLLER SHUTTER DOOR
DP - DOWNPIPES
RW - RETAINING WALL

GEF - GROUND EXHAUST FAN
SEF - SMOKE EXHAUST FAN
SG1 - SLIDING GATE
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SITE BOUNDARY
BUILDING SETBACK
LANDSCAPE SETBACK
SOCIETAL RISK BUFFER ZONE

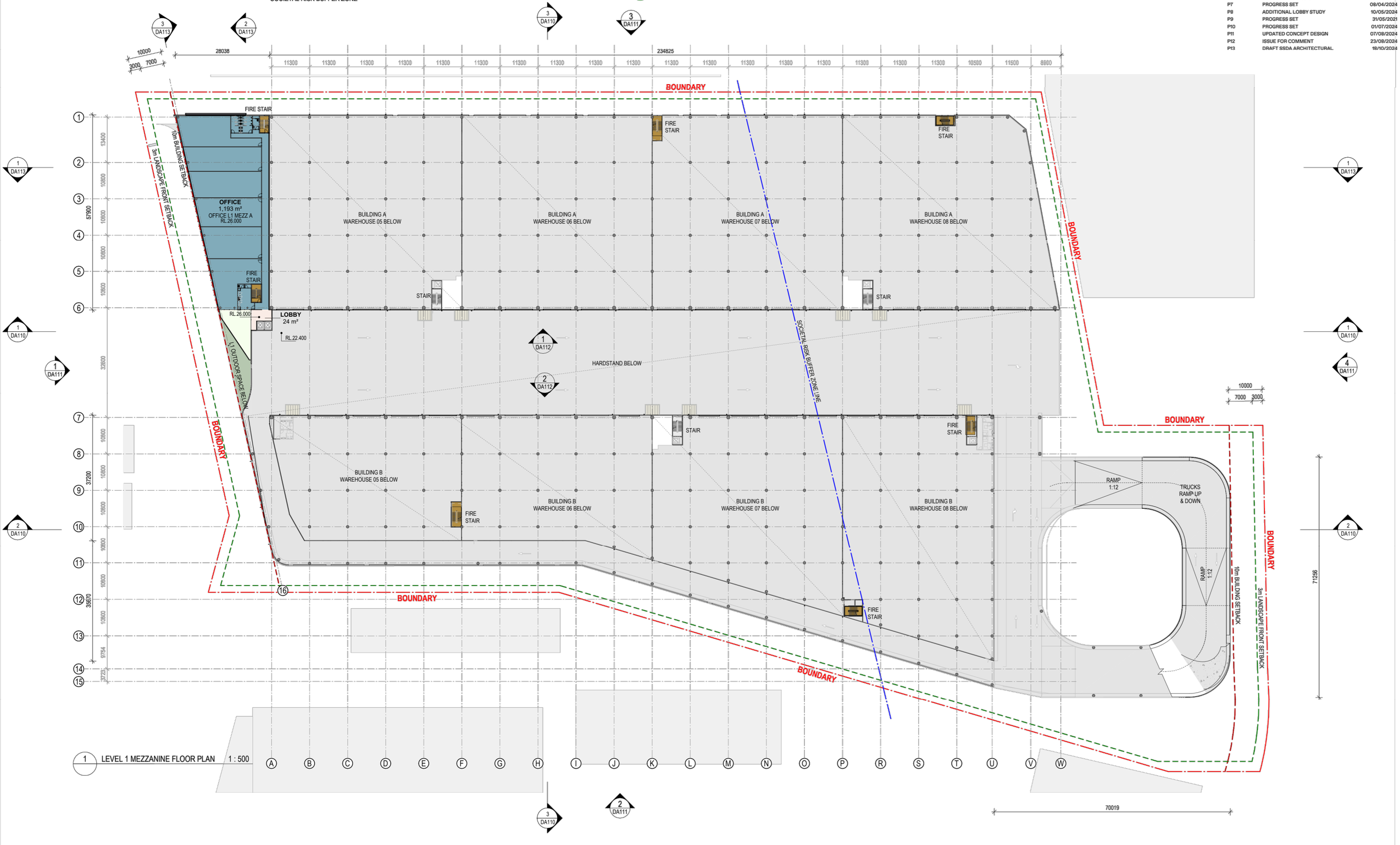
FNC-1 - PALISADE FENCE 2.4M (H)
FNC-2 - CHAINWIRE FENCE (2.1m H) + BARB

OFFICE AREA
WAREHOUSE AREA
FIRE SERVICES

LANDSCAPE AREA
LOBBY AREA
EXISTING TREES TO BE RETAINED

REVISIONS

REV	DESCRIPTION	DATE
P1	ISSUE FOR INFORMATION	21/06/2023
P2	ISSUE FOR INFORMATION	24/07/2023
P3	CONCEPT 2 - FOR REVIEW	03/08/2023
P4	CONCEPT 3 - FOR REVIEW	17/08/2023
P5	CONCEPT 4 - FOR REVIEW	11/12/2023
P6	PRELIMINARY PLANS	16/02/2024
P7	PROGRESS SET	08/04/2024
P8	ADDITIONAL LOBBY STUDY	10/05/2024
P9	PROGRESS SET	31/05/2021
P10	PROGRESS SET	01/07/2024
P11	UPDATED CONCEPT DESIGN	07/08/2024
P12	ISSUE FOR COMMENT	23/08/2024
P13	DRAFT SSDA ARCHITECTURAL	18/10/2024



1 LEVEL 1 MEZZANINE FLOOR PLAN 1 : 500

GENERAL LEGEND:

COL-C - CONCRETE COLUMN
COL-S - STEEL COLUMN
RSD - ROLLER SHUTTER DOOR
DP - DOWNPIPES
RW - RETAINING WALL

GEF - GROUND EXHAUST FAN
SEF - SMOKE EXHAUST FAN
SG1 - SLIDING GATE
SG2 - SWING GATE
SG3 - PEDESTRIAN SWING GATE

SITE BOUNDARY
BUILDING SETBACK
LANDSCAPE SETBACK
SOCIETAL RISK BUFFER ZONE

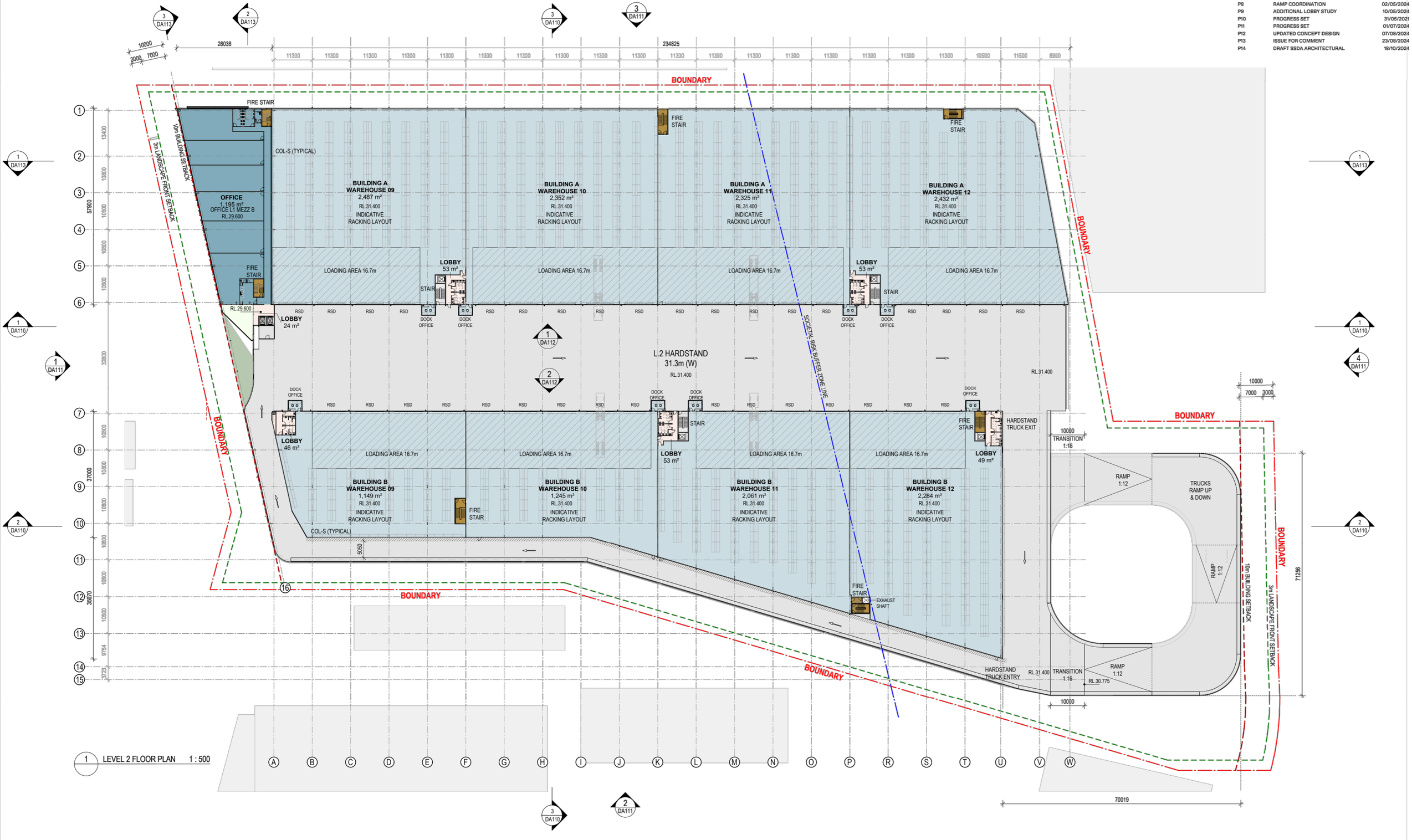
FNC-1 - PALISADE FENCE 2.4M (H)
FNC-2 - CHAINWIRE FENCE (2.1m H) + BARB

OFFICE AREA
WAREHOUSE AREA
FIRE SERVICES

LANDSCAPE AREA
LOBBY AREA
EXISTING TREES TO BE RETAINED

REVISIONS

REV	DESCRIPTION	DATE
P1	ISSUE FOR INFORMATION	21/06/2023
P2	ISSUE FOR INFORMATION	24/07/2023
P3	CONCEPT 2 - FOR REVIEW	03/08/2023
P4	CONCEPT 3 - FOR REVIEW	17/08/2023
P5	CONCEPT 4 - FOR REVIEW	11/12/2023
P6	PRELIMINARY PLANS	16/02/2024
P7	PROGRESS SET	08/04/2024
P8	RAMP COORDINATION	02/05/2024
P9	ADDITIONAL LOBBY STUDY	10/05/2024
P10	PROGRESS SET	31/05/2024
P11	PROGRESS SET	01/07/2024
P12	UPDATED CONCEPT DESIGN	07/08/2024
P13	ISSUE FOR COMMENT	23/08/2024
P14	DRAFT SSDA ARCHITECTURAL	18/10/2024



1 LEVEL 2 FLOOR PLAN 1 : 500

sba
PROPOSED MULTI-LEVEL INDUSTRIAL DEVELOPMENT
49 STEPHEN RD, BANKSMEADOW. NSW 2019

0m 6 13 25 m

LEVEL 2 FLOOR PLAN

Date 18/10/2024 Scale 1:500@A1, 1:1000@A3 Project No 23176 DA104 P14

APPENDIX B

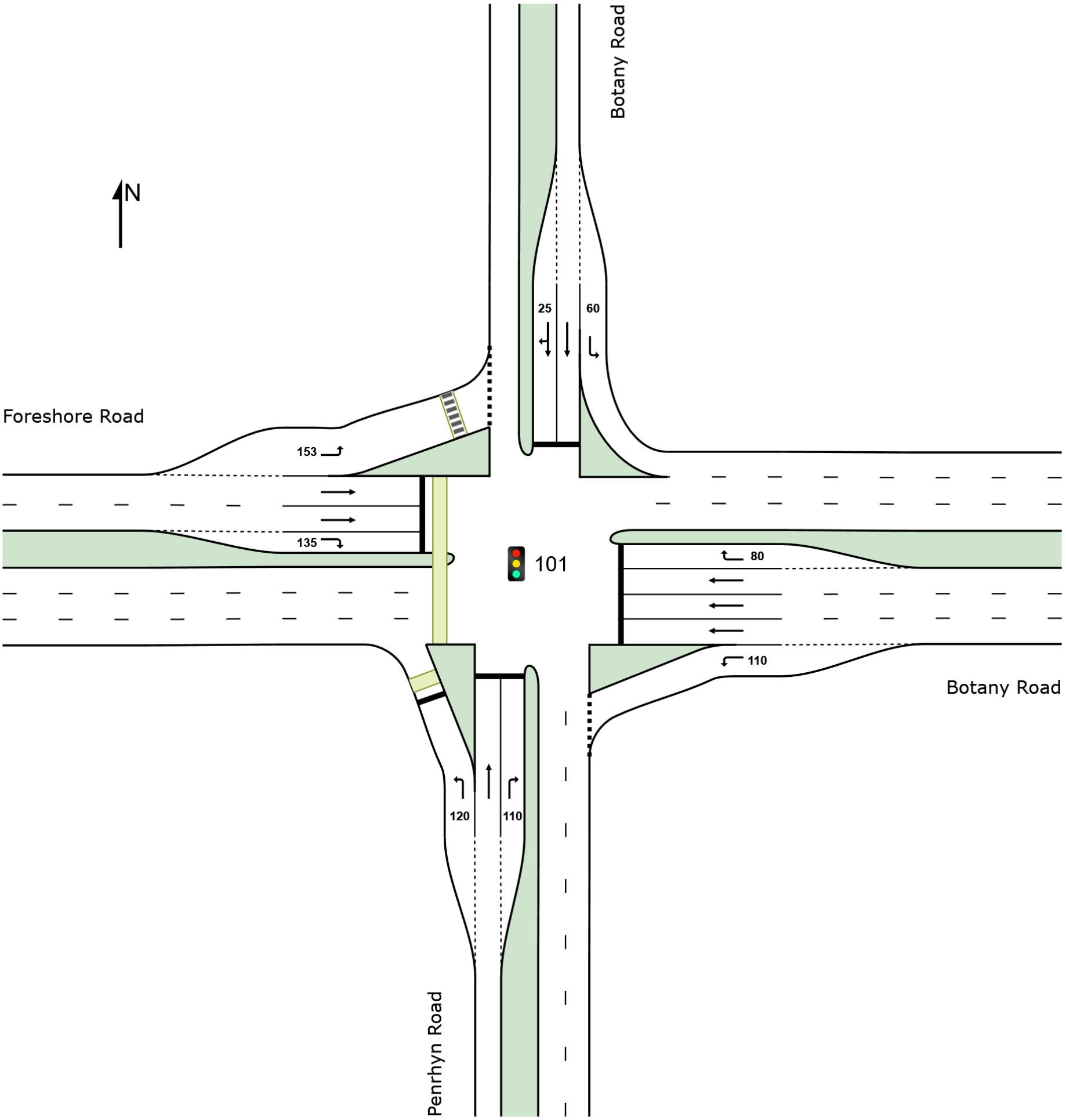
SIDRA Outputs

SITE LAYOUT

Site: 101 [101 Foreshore Rd x Botany Rd x Penrhyn Rd EX AM (Site Folder: Existing)]

Intersection: Foreshore Road x Botany Road x Penrhyn Road
Exisiting AM Peak
7:45am - 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.



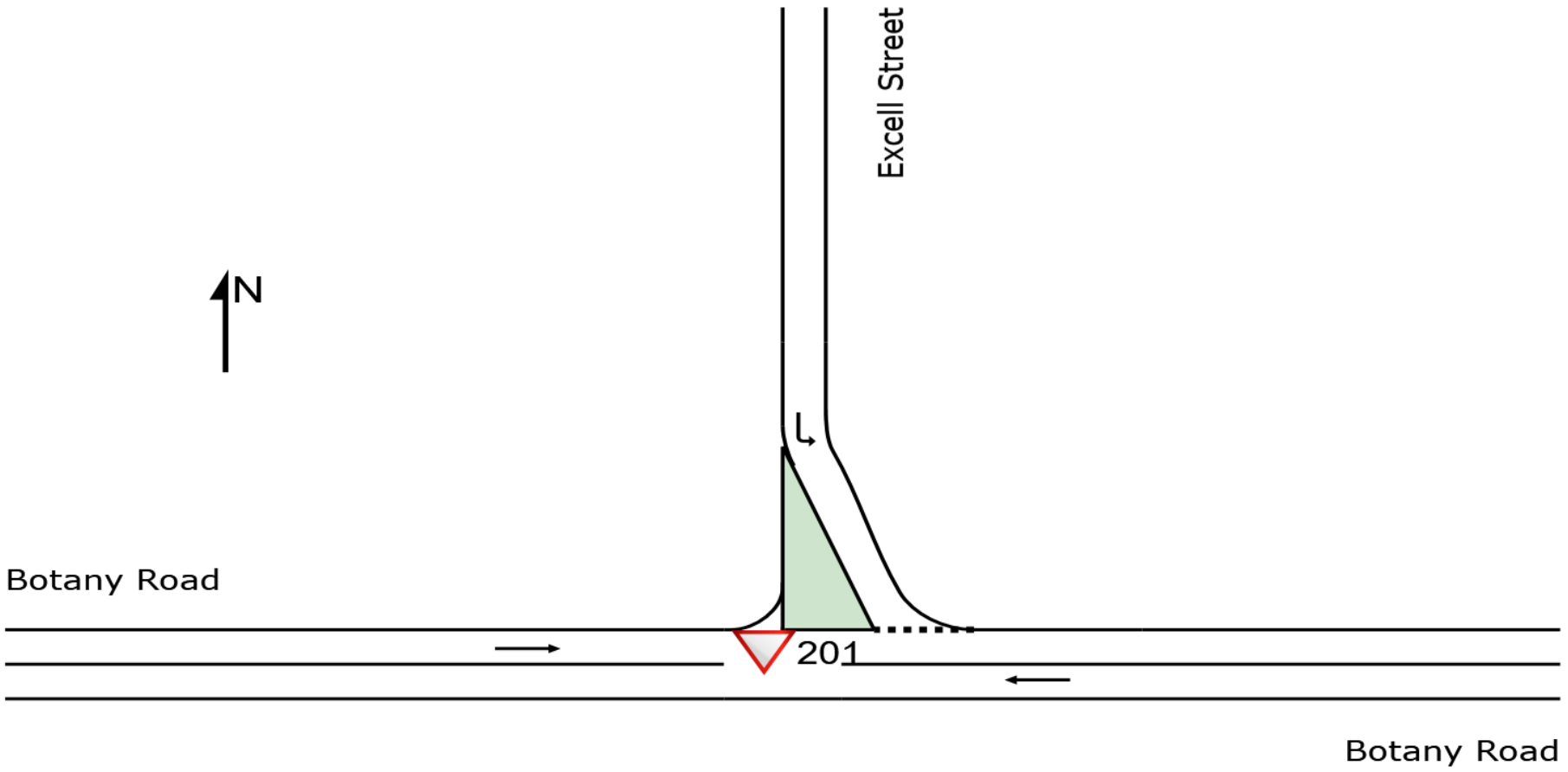
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SITE LAYOUT

Site: 201 [201 Botany Rd x Excell St EX AM (Site Folder: Existing)]

Intersection: Botany Road x Excell Street
Exisiting AM Peak
7:45am - 8:45am
Site Category: (None)
Give-Way (Two-Way)

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



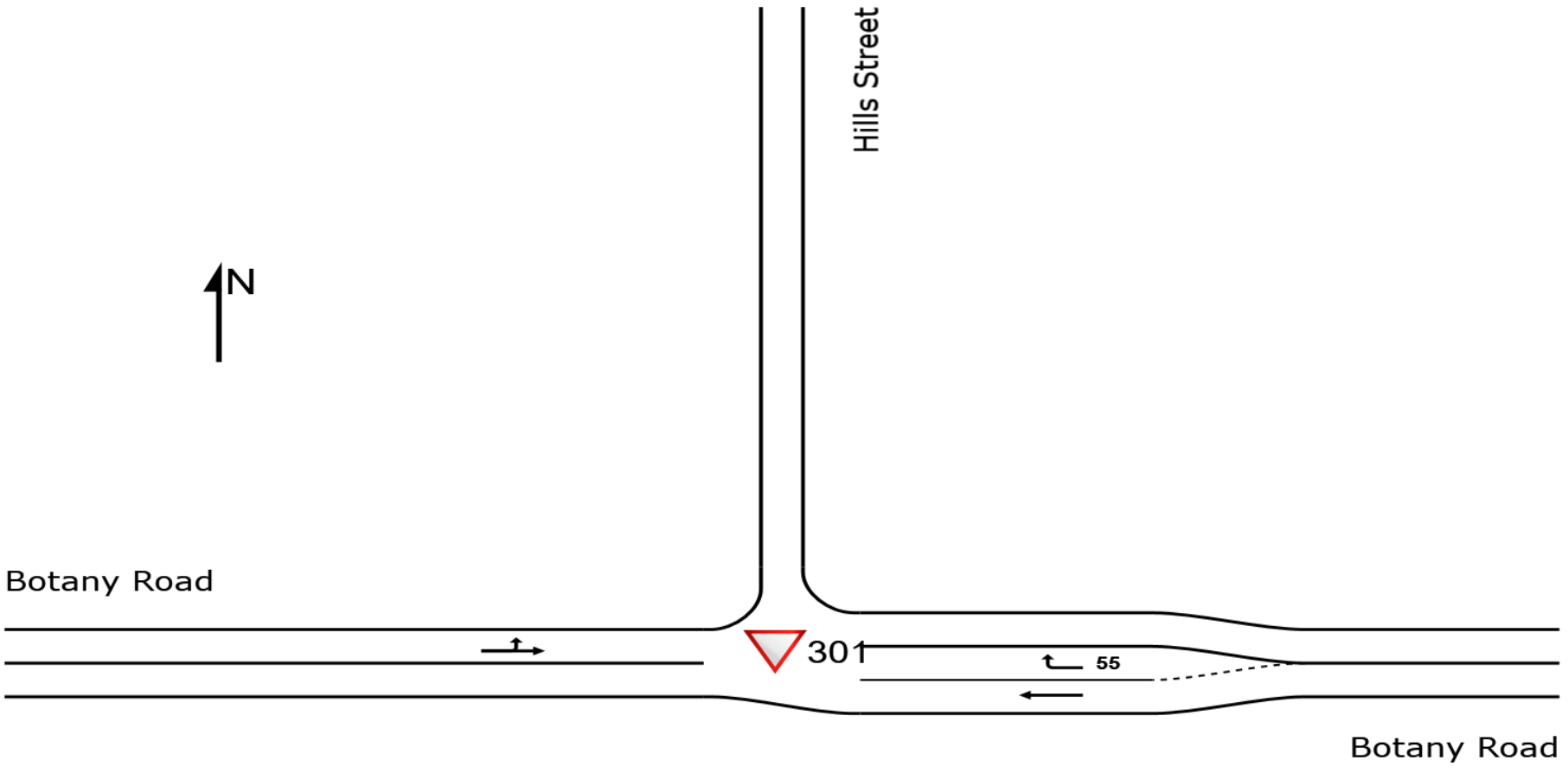
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SITE LAYOUT

Site: 301 [301 Botany Rd x Hills St EX AM (Site Folder: Existing)]

Intersection: Botany Road x Hills Street
Existing AM Peak
7:45am - 8:45am
Site Category: (None)
Give-Way (Two-Way)

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



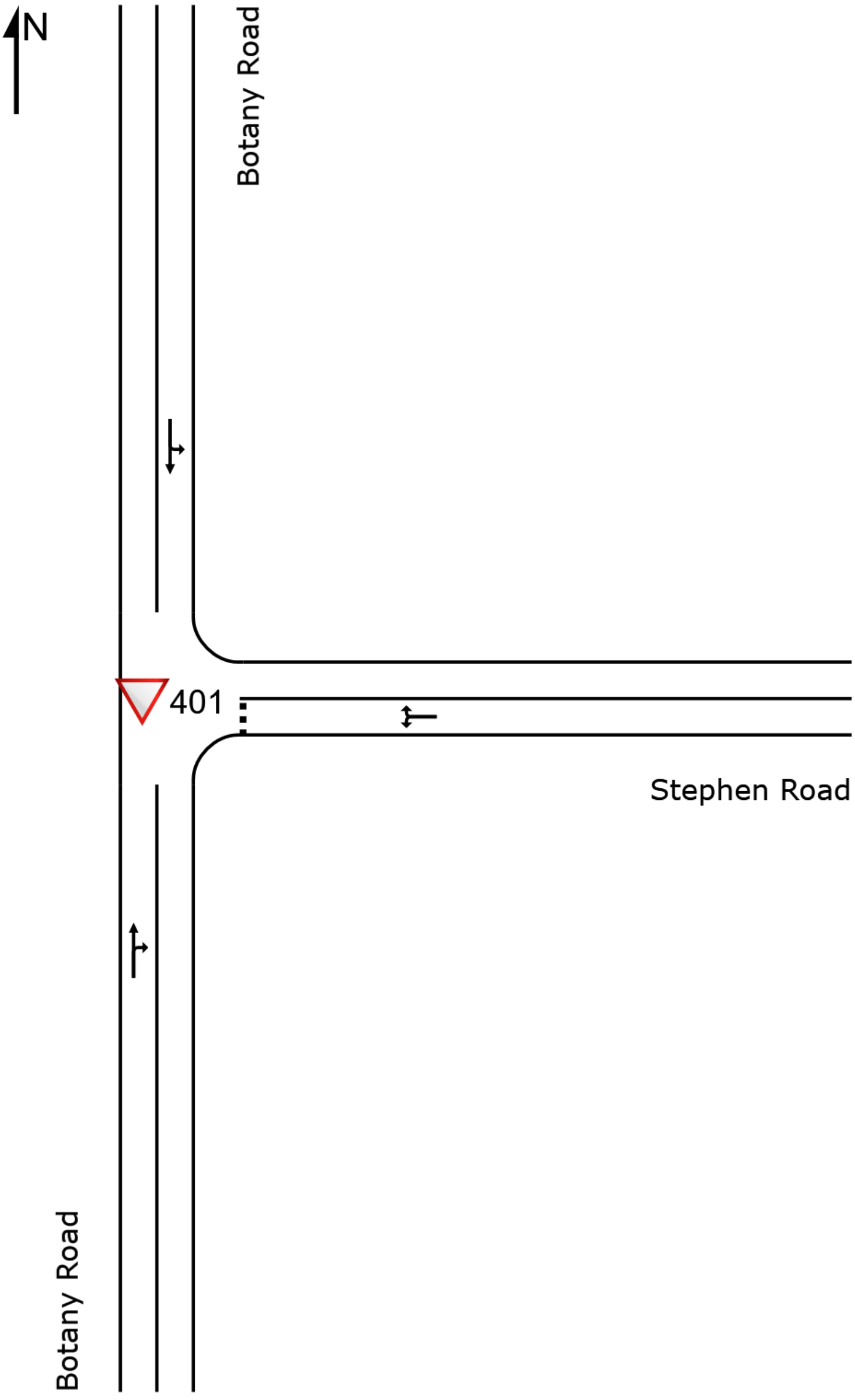
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SITE LAYOUT

Site: 401 [401 Botany Rd x Stephen Rd EX AM (Site Folder: Existing)]

Intersection: Botany Road x Stephen Road
Existing AM Peak
7:45am - 8:45am
Site Category: (None)
Give-Way (Two-Way)

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



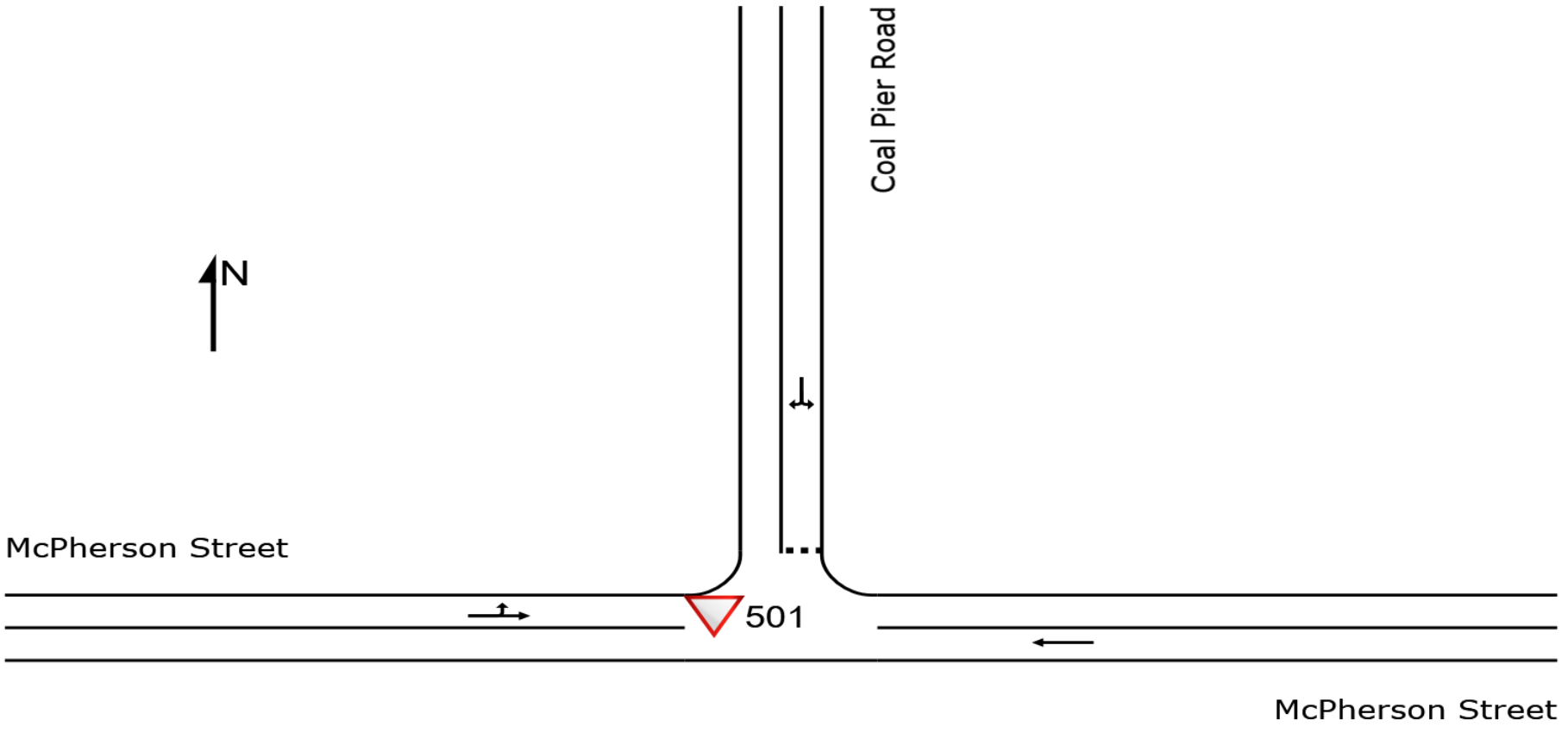
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SITE LAYOUT

Site: 501 [501 McPherson St x Coal Pier Rd EX AM (Site Folder: Existing)]

Intersection: McPherson Street x Coal Pier Road
Existing AM Peak
7:45am - 8:45am
Site Category: (None)
Give-Way (Two-Way)

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



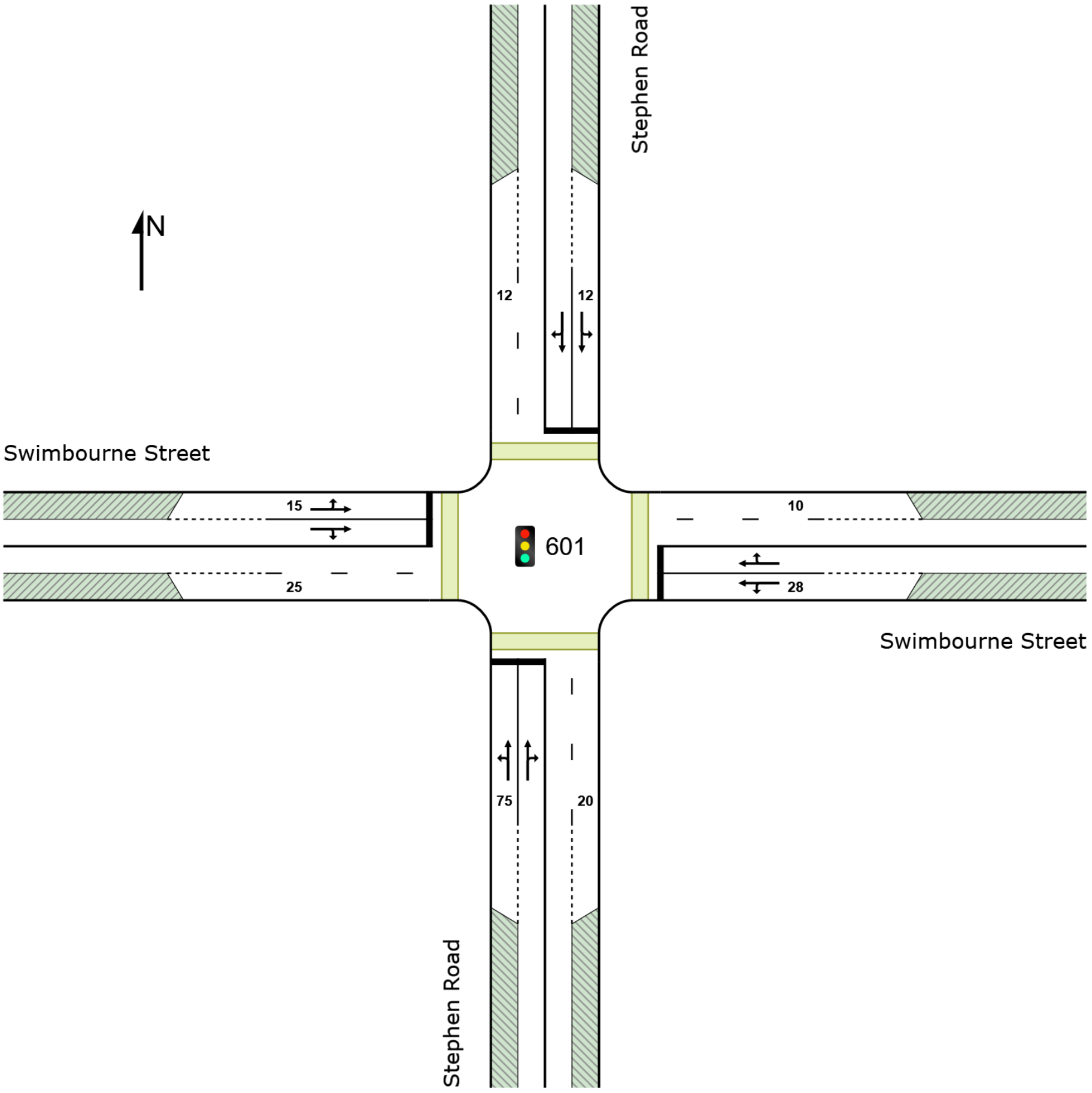
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SITE LAYOUT

Site: 601 [601 Stephen Rd x Swimbourne St EX AM (Site Folder: Existing)]

Intersection: Stephen Road x Swimbourne Street
Exisiting AM Peak
7:45am - 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.



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Organisation: TRAFFIX PTY LTD | Licence: NETWORK / 1PC | Created: Wednesday, 6 November 2024 2:38:58 PM
Project: T:\Synergy\Projects\23\23.255\Modelling\23.255m01v01 TRAFFIX 49 Stephen Road, Banksmeadow.sip9

MOVEMENT SUMMARY

Site: 101 [101 Foreshore Rd x Botany Rd x Penrhyn Rd EX AM (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Foreshore Road x Botany Road x Penrhyn Road
Exisiting AM Peak
7:45am - 8:45am
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Penrhyn Road															
1	L2	All MCs	35	93.9	35	93.9	0.120	34.2	LOS C	1.3	16.5	0.81	0.69	0.81	37.3
2	T1	All MCs	16	46.7	16	46.7	0.050	34.2	LOS C	0.6	6.1	0.83	0.59	0.83	23.0
3	R2	All MCs	27	53.8	27	53.8	0.109	39.9	LOS C	1.1	11.3	0.84	0.70	0.84	25.2
Approach			78	70.3	78	70.3	0.120	36.2	LOS C	1.3	16.5	0.82	0.67	0.82	31.1
East: Botany Road															
4	L2	All MCs	46	52.3	46	52.3	0.040	8.0	LOS A	0.2	2.4	0.17	0.61	0.17	47.4
5	T1	All MCs	756	24.2	756	24.2	0.313	17.6	LOS B	7.6	64.4	0.66	0.56	0.66	56.0
6	R2	All MCs	284	25.6	284	25.6	* 0.853	57.1	LOS E	15.4	131.3	1.00	0.97	1.25	24.3
Approach			1086	25.8	1086	25.8	0.853	27.5	LOS B	15.4	131.3	0.73	0.67	0.79	46.8
North: Botany Road															
7	L2	All MCs	497	18.4	497	18.4	0.295	4.6	LOS A	0.0	0.0	0.00	0.45	0.00	44.3
8	T1	All MCs	15	50.0	15	50.0	0.048	47.5	LOS D	0.6	5.8	0.83	0.63	0.83	21.3
9	R2	All MCs	139	61.4	139	61.4	* 0.583	56.5	LOS D	6.4	68.1	0.95	0.80	0.95	34.9
Approach			651	28.3	651	28.3	0.583	16.6	LOS B	6.4	68.1	0.22	0.53	0.22	40.3
West: Foreshore Road															
10	L2	All MCs	302	22.3	302	22.3	0.366	12.2	LOS A	5.1	42.8	0.44	0.71	0.44	53.9
11	T1	All MCs	1299	14.0	1299	14.0	* 0.879	39.4	LOS C	34.4	270.1	1.00	1.01	1.16	44.8
12	R2	All MCs	59	46.4	59	46.4	0.307	50.7	LOS D	2.7	26.5	0.94	0.76	0.94	34.7
Approach			1660	16.7	1660	16.7	0.879	34.8	LOS C	34.4	270.1	0.89	0.95	1.02	45.6
All Vehicles			3475	22.9	3475	22.9	0.879	29.2	LOS C	34.4	270.1	0.71	0.78	0.79	44.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Penrhyn Road												
P1B	Slip/Bypass	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
West: Foreshore Road												
P4	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
All Pedestrians		100	105	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT SUMMARY

Site: 201 [201 Botany Rd x Excell St EX AM (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Botany Road x Excell Street
Exisiting AM Peak
7:45am - 8:45am
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Botany Road															
5	T1	All MCs	577	28.6	577	28.6	0.351	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	49.8
Approach			577	28.6	577	28.6	0.351	0.1	NA	0.0	0.0	0.00	0.00	0.00	49.8
North: Excell Street															
7	L2	All MCs	261	58.5	261	58.5	0.441	12.0	LOS A	2.4	25.6	0.67	0.94	0.96	35.9
Approach			261	58.5	261	58.5	0.441	12.0	LOS A	2.4	25.6	0.67	0.94	0.96	35.9
West: Botany Road															
11	T1	All MCs	514	11.1	514	11.1	0.282	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach			514	11.1	514	11.1	0.282	0.1	NA	0.0	0.0	0.00	0.00	0.00	49.9
All Vehicles			1352	27.7	1352	27.7	0.441	2.4	NA	2.4	25.6	0.13	0.18	0.18	46.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Organisation: TRAFFIX PTY LTD | Licence: NETWORK / 1PC | Processed: Wednesday, 10 January 2024 2:30:33 PM
Project: T:\Synergy\Projects\23\23.255\Modelling\23.255m01v01 TRAFFIX 49 Stephen Road, Banksmeadow.sip9

MOVEMENT SUMMARY

Site: 301 [301 Botany Rd x Hills St EX AM (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Botany Road x Hills Street
Existing AM Peak
7:45am - 8:45am
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Botany Road															
5	T1	All MCs	331	18.8	331	18.8	0.190	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
6	R2	All MCs	225	46.7	225	46.7	0.443	14.8	LOS B	2.3	22.8	0.75	1.03	1.09	29.7
Approach			556	30.1	556	30.1	0.443	6.0	NA	2.3	22.8	0.30	0.42	0.44	40.5
West: Botany Road															
10	L2	All MCs	141	13.4	141	13.4	0.369	4.7	LOS A	0.0	0.0	0.00	0.11	0.00	44.0
11	T1	All MCs	519	11.2	519	11.2	0.369	0.1	LOS A	0.0	0.0	0.00	0.11	0.00	48.6
Approach			660	11.6	660	11.6	0.369	1.1	NA	0.0	0.0	0.00	0.11	0.00	47.8
All Vehicles			1216	20.1	1216	20.1	0.443	3.3	NA	2.3	22.8	0.14	0.25	0.20	44.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 401 [401 Botany Rd x Stephen Rd EX AM (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Botany Road x Stephen Road
Existing AM Peak
7:45am - 8:45am
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Botany Road															
2	T1	All MCs	131	11.3	131	11.3	0.439	0.2	LOS A	3.1	24.1	0.48	0.57	0.52	47.9
3	R2	All MCs	477	12.8	477	12.8	0.439	6.8	LOS A	3.1	24.1	0.48	0.57	0.52	45.9
Approach			607	12.5	607	12.5	0.439	5.3	NA	3.1	24.1	0.48	0.57	0.52	46.5
East: Stephen Road															
4	L2	All MCs	240	19.3	240	19.3	0.401	6.1	LOS A	2.0	16.3	0.33	0.54	0.33	50.3
6	R2	All MCs	104	14.1	104	14.1	0.401	15.3	LOS B	2.0	16.3	0.33	0.54	0.33	55.3
Approach			344	17.7	344	17.7	0.401	8.9	LOS A	2.0	16.3	0.33	0.54	0.33	52.5
North: Botany Road															
7	L2	All MCs	187	9.6	187	9.6	0.137	5.8	LOS A	0.0	0.0	0.00	0.45	0.00	57.0
8	T1	All MCs	53	14.0	53	14.0	0.137	0.1	LOS A	0.0	0.0	0.00	0.45	0.00	57.5
Approach			240	10.5	240	10.5	0.137	4.5	NA	0.0	0.0	0.00	0.45	0.00	57.1
All Vehicles			1192	13.6	1192	13.6	0.439	6.2	NA	3.1	24.1	0.34	0.54	0.36	50.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 501 [501 McPherson St x Coal Pier Rd EX AM (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: McPherson Street x Coal Pier Road
Existing AM Peak
7:45am - 8:45am
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: McPherson Street															
2	T1	All MCs	61	46.6	61	46.6	0.041	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach			61	46.6	61	46.6	0.041	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
North: Coal Pier Road															
4	L2	All MCs	5	20.0	5	20.0	0.119	5.0	LOS A	0.4	4.2	0.32	0.60	0.32	46.3
6	R2	All MCs	88	58.3	88	58.3	0.119	6.7	LOS A	0.4	4.2	0.32	0.60	0.32	45.1
Approach			94	56.2	94	56.2	0.119	6.6	LOS A	0.4	4.2	0.32	0.60	0.32	45.2
West: McPherson Street															
7	L2	All MCs	112	46.2	112	46.2	0.121	5.0	LOS A	0.0	0.0	0.00	0.33	0.00	47.1
8	T1	All MCs	67	29.7	67	29.7	0.121	0.0	LOS A	0.0	0.0	0.00	0.33	0.00	48.1
Approach			179	40.0	179	40.0	0.121	3.1	NA	0.0	0.0	0.00	0.33	0.00	47.4
All Vehicles			334	45.7	334	45.7	0.121	3.5	NA	0.4	4.2	0.09	0.34	0.09	47.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 601 [601 Stephen Rd x Swimbourne St EX AM (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Stephen Road x Swimbourne Street
Exisiting AM Peak
7:45am - 8:45am
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 70 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Stephen Road															
1	L2	All MCs	27	19.2	27	19.2	0.109	32.9	LOS C	0.9	6.9	0.88	0.70	0.88	40.3
2	T1	All MCs	180	8.8	180	8.8	* 0.547	29.0	LOS C	6.0	45.6	0.95	0.78	0.95	42.2
3	R2	All MCs	6	50.0	6	50.0	0.547	34.0	LOS C	6.0	45.6	0.95	0.78	0.95	36.3
Approach			214	11.3	214	11.3	0.547	29.7	LOS C	6.0	45.6	0.94	0.77	0.94	41.9
East: Swimbourne Street															
4	L2	All MCs	8	37.5	8	37.5	0.014	7.2	LOS A	0.1	1.4	0.55	0.59	0.55	42.6
5	T1	All MCs	7	42.9	7	42.9	0.061	31.5	LOS C	0.3	2.7	0.87	0.63	0.87	36.9
6	R2	All MCs	3	0.0	3	0.0	0.061	44.8	LOS D	0.3	2.7	0.92	0.64	0.92	37.1
Approach			19	33.3	19	33.3	0.061	22.9	LOS B	0.3	2.7	0.74	0.62	0.74	39.2
North: Stephen Road															
7	L2	All MCs	25	0.0	25	0.0	0.182	39.8	LOS C	2.7	20.3	0.74	0.62	0.74	41.6
8	T1	All MCs	201	8.9	201	8.9	* 0.842	41.6	LOS C	16.1	121.0	0.88	0.84	1.02	42.6
9	R2	All MCs	313	8.1	313	8.1	0.842	52.2	LOS D	16.1	121.0	0.99	1.00	1.24	40.7
Approach			539	8.0	539	8.0	0.842	47.7	LOS D	16.1	121.0	0.93	0.92	1.13	41.4
West: Swimbourne Street															
10	L2	All MCs	656	2.4	656	2.4	0.657	20.9	LOS B	14.5	103.6	0.70	0.79	0.70	45.5
11	T1	All MCs	35	9.1	35	9.1	* 0.377	32.7	LOS C	3.0	22.0	0.94	0.76	0.94	36.2
12	R2	All MCs	57	5.6	57	5.6	0.377	43.3	LOS D	3.0	22.0	0.94	0.76	0.94	40.2
Approach			747	3.0	747	3.0	0.657	23.1	LOS B	14.5	103.6	0.73	0.78	0.73	44.7
All Vehicles			1519	6.3	1519	6.3	0.842	32.8	LOS C	16.1	121.0	0.83	0.83	0.90	43.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Stephen Road												
P1	Full	50	53	29.3	LOS C	0.1	0.1	0.92	0.92	183.2	200.0	1.09
East: Swimbourne Street												
P2	Full	50	53	29.3	LOS C	0.1	0.1	0.92	0.92	183.2	200.0	1.09
North: Stephen Road												
P3	Full	50	53	29.3	LOS C	0.1	0.1	0.92	0.92	183.2	200.0	1.09
West: Swimbourne Street												
P4	Full	50	53	29.3	LOS C	0.1	0.1	0.92	0.92	183.2	200.0	1.09
All Pedestrians		200	211	29.3	LOS C	0.1	0.1	0.92	0.92	183.2	200.0	1.09

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT SUMMARY

Site: 102 [102 Foreshore Rd x Botany Rd x Penrhyn Rd EX PM (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Foreshore Road x Botany Road x Penrhyn Road
Exisiting PM Peak
3:00pm - 4:00pm
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 70 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Penrhyn Road															
1	L2	All MCs	58	63.6	58	63.6	0.206	26.8	LOS B	1.6	17.2	0.87	0.72	0.87	41.2
2	T1	All MCs	11	30.0	11	30.0	0.025	21.1	LOS B	0.3	2.4	0.77	0.53	0.77	29.0
3	R2	All MCs	37	77.1	37	77.1	0.125	27.1	LOS B	1.0	11.7	0.80	0.69	0.80	27.2
Approach			105	65.0	105	65.0	0.206	26.3	LOS B	1.6	17.2	0.83	0.69	0.83	35.7
East: Botany Road															
4	L2	All MCs	54	90.2	54	90.2	0.057	8.6	LOS A	0.2	2.8	0.22	0.61	0.22	46.9
5	T1	All MCs	1348	10.1	1348	10.1	0.604	18.1	LOS B	12.4	94.0	0.85	0.74	0.85	55.6
6	R2	All MCs	331	15.9	331	15.9	* 0.858	43.6	LOS D	13.1	104.0	1.00	1.01	1.33	28.3
Approach			1733	13.7	1733	13.7	0.858	22.7	LOS B	13.1	104.0	0.86	0.78	0.92	50.5
North: Botany Road															
7	L2	All MCs	422	8.7	422	8.7	0.235	4.5	LOS A	0.0	0.0	0.00	0.46	0.00	44.4
8	T1	All MCs	13	58.3	13	58.3	0.035	28.5	LOS B	0.3	3.5	0.77	0.59	0.77	26.2
9	R2	All MCs	224	23.9	224	23.9	* 0.630	36.3	LOS C	7.2	60.6	0.94	0.83	0.97	41.1
Approach			659	14.9	659	14.9	0.630	15.8	LOS B	7.2	60.6	0.33	0.59	0.35	42.5
West: Foreshore Road															
10	L2	All MCs	143	32.4	143	32.4	0.182	11.1	LOS A	1.6	14.1	0.43	0.68	0.43	54.6
11	T1	All MCs	765	19.1	765	19.1	* 0.830	32.8	LOS C	14.5	118.3	1.00	0.99	1.23	47.7
12	R2	All MCs	38	88.9	38	88.9	0.396	44.3	LOS D	1.4	17.0	0.98	0.74	0.98	36.8
Approach			946	23.9	946	23.9	0.830	30.0	LOS C	14.5	118.3	0.91	0.93	1.10	48.0
All Vehicles			3443	18.3	3443	18.3	0.858	23.5	LOS B	14.5	118.3	0.77	0.79	0.86	48.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Penrhyn Road												
P1B	Slip/Bypass	50	53	29.3	LOS C	0.1	0.1	0.92	0.92	183.2	200.0	1.09
West: Foreshore Road												
P4	Full	50	53	29.3	LOS C	0.1	0.1	0.92	0.92	183.2	200.0	1.09
All Pedestrians		100	105	29.3	LOS C	0.1	0.1	0.92	0.92	183.2	200.0	1.09

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT SUMMARY

Site: 202 [202 Botany Rd x Excell St EX PM (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Botany Road x Excell Street
Exisiting PM Peak
3:00pm - 4:00pm
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Botany Road															
5	T1	All MCs	631	17.7	631	17.7	0.361	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	49.8
Approach			631	17.7	631	17.7	0.361	0.1	NA	0.0	0.0	0.00	0.00	0.00	49.8
North: Excell Street															
7	L2	All MCs	392	17.7	392	17.7	0.408	7.8	LOS A	2.4	19.5	0.56	0.76	0.70	39.6
Approach			392	17.7	392	17.7	0.408	7.8	LOS A	2.4	19.5	0.56	0.76	0.70	39.6
West: Botany Road															
11	T1	All MCs	395	9.6	395	9.6	0.215	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach			395	9.6	395	9.6	0.215	0.0	NA	0.0	0.0	0.00	0.00	0.00	49.9
All Vehicles			1417	15.5	1417	15.5	0.408	2.2	NA	2.4	19.5	0.16	0.21	0.19	46.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 302 [302 Botany Rd x Hills St EX PM (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Botany Road x Hills Street
Existing PM Peak
3:00pm - 4:00pm
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Botany Road															
5	T1	All MCs	482	10.3	482	10.3	0.264	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
6	R2	All MCs	148	39.0	148	39.0	0.204	9.3	LOS A	0.8	7.9	0.60	0.78	0.60	33.8
Approach			631	17.0	631	17.0	0.264	2.2	NA	0.8	7.9	0.14	0.18	0.14	45.7
West: Botany Road															
10	L2	All MCs	126	10.8	126	10.8	0.286	4.7	LOS A	0.0	0.0	0.00	0.13	0.00	44.2
11	T1	All MCs	391	9.7	391	9.7	0.286	0.1	LOS A	0.0	0.0	0.00	0.13	0.00	48.5
Approach			517	10.0	517	10.0	0.286	1.2	NA	0.0	0.0	0.00	0.13	0.00	47.6
All Vehicles			1147	13.9	1147	13.9	0.286	1.8	NA	0.8	7.9	0.08	0.16	0.08	46.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 402 [402 Botany Rd x Stephen Rd EX PM (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Botany Road x Stephen Road
Existing PM Peak
3:00pm - 4:00pm
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Botany Road															
2	T1	All MCs	106	6.9	106	6.9	0.365	0.0	LOS A	2.1	16.0	0.49	0.57	0.49	47.9
3	R2	All MCs	386	10.4	386	10.4	0.365	6.7	LOS A	2.1	16.0	0.49	0.57	0.49	46.0
Approach			493	9.6	493	9.6	0.365	5.2	NA	2.1	16.0	0.49	0.57	0.49	46.5
East: Stephen Road															
4	L2	All MCs	378	11.1	378	11.1	0.481	7.2	LOS A	3.6	27.4	0.47	0.63	0.55	51.1
6	R2	All MCs	109	7.7	109	7.7	0.481	14.0	LOS A	3.6	27.4	0.47	0.63	0.55	55.4
Approach			487	10.4	487	10.4	0.481	8.7	LOS A	3.6	27.4	0.47	0.63	0.55	52.6
North: Botany Road															
7	L2	All MCs	142	6.7	142	6.7	0.157	5.7	LOS A	0.0	0.0	0.00	0.29	0.00	57.7
8	T1	All MCs	148	2.1	148	2.1	0.157	0.1	LOS A	0.0	0.0	0.00	0.29	0.00	58.4
Approach			291	4.3	291	4.3	0.157	2.9	NA	0.0	0.0	0.00	0.29	0.00	58.0
All Vehicles			1271	8.7	1271	8.7	0.481	6.0	NA	3.6	27.4	0.37	0.53	0.40	51.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 502 [502 McPherson St x Coal Pier Rd EX PM (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: McPherson Street x Coal Pier Road
Existing PM Peak
3:00pm - 4:00pm
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: McPherson Street															
2	T1	All MCs	117	10.8	117	10.8	0.068	0.0	LOS A	0.0	0.3	0.03	0.03	0.03	49.8
3	R2	All MCs	4	25.0	4	25.0	0.068	6.5	LOS A	0.0	0.3	0.03	0.03	0.03	48.5
Approach			121	11.3	121	11.3	0.068	0.2	NA	0.0	0.3	0.03	0.03	0.03	49.7
North: Coal Pier Road															
4	L2	All MCs	5	20.0	5	20.0	0.145	5.1	LOS A	0.5	4.2	0.35	0.61	0.35	46.3
6	R2	All MCs	124	22.0	124	22.0	0.145	6.2	LOS A	0.5	4.2	0.35	0.61	0.35	45.6
Approach			129	22.0	129	22.0	0.145	6.2	LOS A	0.5	4.2	0.35	0.61	0.35	45.6
West: McPherson Street															
7	L2	All MCs	94	31.5	94	31.5	0.110	4.9	LOS A	0.0	0.0	0.00	0.27	0.00	47.5
8	T1	All MCs	87	12.0	87	12.0	0.110	0.0	LOS A	0.0	0.0	0.00	0.27	0.00	48.4
Approach			181	22.1	181	22.1	0.110	2.5	NA	0.0	0.0	0.00	0.27	0.00	47.9
All Vehicles			432	19.0	432	19.0	0.145	3.0	NA	0.5	4.2	0.11	0.31	0.11	47.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 602 [602 Stephen Rd x Swimbourne St EX PM (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Stephen Road x Swimbourne Street
Exisiting PM Peak
3:00pm - 4:00pm
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Stephen Road															
1	L2	All MCs	37	8.6	37	8.6	0.158	44.4	LOS D	1.5	11.1	0.92	0.72	0.92	38.0
2	T1	All MCs	216	2.0	216	2.0	* 0.750	42.7	LOS D	10.1	72.5	1.00	0.91	1.13	39.3
3	R2	All MCs	6	50.0	6	50.0	0.750	47.7	LOS D	10.1	72.5	1.00	0.91	1.13	32.6
Approach			259	4.1	259	4.1	0.750	43.1	LOS D	10.1	72.5	0.99	0.89	1.10	39.0
East: Swimbourne Street															
4	L2	All MCs	3	33.3	3	33.3	0.053	5.6	LOS A	0.6	4.3	0.85	0.62	0.85	36.7
5	T1	All MCs	33	3.2	33	3.2	* 0.228	36.5	LOS C	1.6	11.4	0.91	0.67	0.91	34.9
6	R2	All MCs	19	0.0	19	0.0	0.228	51.7	LOS D	1.6	11.4	0.96	0.72	0.96	34.3
Approach			55	3.8	55	3.8	0.228	40.0	LOS C	1.6	11.4	0.92	0.69	0.92	34.8
North: Stephen Road															
7	L2	All MCs	6	16.7	6	16.7	0.178	39.4	LOS C	3.6	26.1	0.61	0.51	0.61	42.8
8	T1	All MCs	189	2.8	189	2.8	0.824	37.0	LOS C	25.2	185.4	0.70	0.62	0.72	44.5
9	R2	All MCs	545	6.2	545	6.2	* 0.824	50.9	LOS D	25.2	185.4	0.93	0.92	1.03	41.2
Approach			741	5.4	741	5.4	0.824	47.3	LOS D	25.2	185.4	0.87	0.84	0.95	42.0
West: Swimbourne Street															
10	L2	All MCs	440	1.7	440	1.7	0.363	14.4	LOS A	7.9	56.2	0.45	0.69	0.45	46.3
11	T1	All MCs	1	100.0	1	100.0	0.174	37.6	LOS C	1.2	8.6	0.94	0.72	0.94	32.8
12	R2	All MCs	27	0.0	27	0.0	0.174	49.0	LOS D	1.2	8.6	0.94	0.72	0.94	37.5
Approach			468	1.8	468	1.8	0.363	16.5	LOS B	7.9	56.2	0.48	0.69	0.48	45.7
All Vehicles			1523	4.0	1523	4.0	0.824	36.8	LOS C	25.2	185.4	0.77	0.79	0.83	42.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Stephen Road												
P1	Full	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	193.1	200.0	1.04
East: Swimbourne Street												
P2	Full	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	193.1	200.0	1.04
North: Stephen Road												
P3	Full	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	193.1	200.0	1.04
West: Swimbourne Street												
P4	Full	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	193.1	200.0	1.04
All Pedestrians		200	211	39.3	LOS D	0.1	0.1	0.94	0.94	193.1	200.0	1.04

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT SUMMARY

Site: 103 [103 Foreshore Rd x Botany Rd x Penrhyn Rd EX+DEV AM (Site Folder: Existing + Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Foreshore Road x Botany Road x Penrhyn Road
Exisiting + Development AM Peak
7:45am - 8:45am
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Penrhyn Road															
1	L2	All MCs	35	93.9	35	93.9	0.128	35.3	LOS C	1.3	16.9	0.82	0.69	0.82	36.9
2	T1	All MCs	18	52.9	18	52.9	0.058	34.4	LOS C	0.7	7.2	0.83	0.60	0.83	23.0
3	R2	All MCs	27	53.8	27	53.8	0.109	39.9	LOS C	1.1	11.3	0.84	0.70	0.84	25.2
Approach			80	71.1	80	71.1	0.128	36.7	LOS C	1.3	16.9	0.83	0.67	0.83	30.7
East: Botany Road															
4	L2	All MCs	46	52.3	46	52.3	0.040	8.0	LOS A	0.2	2.4	0.17	0.61	0.17	47.4
5	T1	All MCs	756	24.2	756	24.2	0.313	17.6	LOS B	7.6	64.4	0.66	0.56	0.66	56.0
6	R2	All MCs	284	25.6	284	25.6	* 0.853	57.1	LOS E	15.4	131.3	1.00	0.97	1.25	24.3
Approach			1086	25.8	1086	25.8	0.853	27.5	LOS B	15.4	131.3	0.73	0.67	0.79	46.8
North: Botany Road															
7	L2	All MCs	497	18.4	497	18.4	0.295	4.6	LOS A	0.0	0.0	0.00	0.45	0.00	44.3
8	T1	All MCs	17	43.8	17	43.8	0.053	51.2	LOS D	0.7	6.4	0.83	0.63	0.83	21.3
9	R2	All MCs	157	63.1	157	63.1	* 0.673	62.5	LOS E	7.6	81.5	0.97	0.86	1.05	34.2
Approach			671	29.5	671	29.5	0.673	19.3	LOS B	7.6	81.5	0.25	0.55	0.27	39.6
West: Foreshore Road															
10	L2	All MCs	332	24.8	332	24.8	0.406	12.6	LOS A	5.9	50.1	0.46	0.72	0.46	53.7
11	T1	All MCs	1299	14.0	1299	14.0	* 0.879	39.4	LOS C	34.4	270.1	1.00	1.01	1.16	44.8
12	R2	All MCs	59	46.4	59	46.4	0.307	50.7	LOS D	2.7	26.5	0.94	0.76	0.94	34.7
Approach			1689	17.3	1689	17.3	0.879	34.5	LOS C	34.4	270.1	0.89	0.95	1.01	45.7
All Vehicles			3526	23.4	3526	23.4	0.879	29.5	LOS C	34.4	270.1	0.72	0.78	0.80	44.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Penrhyn Road												
P1B	Slip/Bypass	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
West: Foreshore Road												
P4	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
All Pedestrians		100	105	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Project: T:\Synergy\Projects\23\23.255\Modelling\23.255m01v01 TRAFFIX 49 Stephen Road, Banksmeadow.sip9

MOVEMENT SUMMARY

Site: 201 [203 Botany Rd x Excell St EX+DEV AM (Site Folder: Existing + Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Botany Road x Excell Street
Exisiting + Development AM Peak
7:45am - 8:45am
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Botany Road															
5	T1	All MCs	608	29.9	608	29.9	0.373	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	49.8
Approach			608	29.9	608	29.9	0.373	0.1	NA	0.0	0.0	0.00	0.00	0.00	49.8
North: Excell Street															
7	L2	All MCs	279	60.4	279	60.4	0.479	12.6	LOS A	2.8	29.6	0.68	0.98	1.03	35.5
Approach			279	60.4	279	60.4	0.479	12.6	LOS A	2.8	29.6	0.68	0.98	1.03	35.5
West: Botany Road															
11	T1	All MCs	516	11.0	516	11.0	0.283	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach			516	11.0	516	11.0	0.283	0.1	NA	0.0	0.0	0.00	0.00	0.00	49.9
All Vehicles			1403	29.0	1403	29.0	0.479	2.6	NA	2.8	29.6	0.14	0.19	0.20	46.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: T:\Synergy\Projects\23\23.255\Modelling\23.255m01v01 TRAFFIX 49 Stephen Road, Banksmeadow.sip9

MOVEMENT SUMMARY

Site: 303 [303 Botany Rd x Hills St EX+DEV AM (Site Folder: Existing + Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Botany Road x Hills Street
Existing + Development AM Peak
7:45am - 8:45am
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Botany Road															
5	T1	All MCs	336	18.5	336	18.5	0.193	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
6	R2	All MCs	252	48.5	252	48.5	0.505	16.1	LOS B	2.9	28.3	0.78	1.08	1.22	29.3
Approach			587	31.4	587	31.4	0.505	6.9	NA	2.9	28.3	0.33	0.46	0.52	39.7
West: Botany Road															
10	L2	All MCs	141	13.4	141	13.4	0.370	4.7	LOS A	0.0	0.0	0.00	0.11	0.00	44.1
11	T1	All MCs	521	11.1	521	11.1	0.370	0.1	LOS A	0.0	0.0	0.00	0.11	0.00	48.7
Approach			662	11.6	662	11.6	0.370	1.1	NA	0.0	0.0	0.00	0.11	0.00	47.8
All Vehicles			1249	20.9	1249	20.9	0.505	3.8	NA	2.9	28.3	0.16	0.28	0.25	43.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 403 [403 Botany Rd x Stephen Rd EX+DEV AM (Site Folder: Existing + Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Botany Road x Stephen Road
Existing + Development AM Peak
7:45am - 8:45am
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Botany Road															
2	T1	All MCs	131	11.3	131	11.3	0.450	0.3	LOS A	3.4	26.3	0.50	0.60	0.56	47.9
3	R2	All MCs	482	12.7	482	12.7	0.450	7.0	LOS A	3.4	26.3	0.50	0.60	0.56	45.9
Approach			613	12.4	613	12.4	0.450	5.6	NA	3.4	26.3	0.50	0.60	0.56	46.4
East: Stephen Road															
4	L2	All MCs	242	19.1	242	19.1	0.416	6.1	LOS A	2.1	17.0	0.34	0.53	0.34	50.2
6	R2	All MCs	108	13.6	108	13.6	0.416	15.7	LOS B	2.1	17.0	0.34	0.53	0.34	55.2
Approach			351	17.4	351	17.4	0.416	9.1	LOS A	2.1	17.0	0.34	0.53	0.34	52.4
North: Botany Road															
7	L2	All MCs	204	8.8	204	8.8	0.146	5.7	LOS A	0.0	0.0	0.00	0.46	0.00	57.0
8	T1	All MCs	53	14.0	53	14.0	0.146	0.1	LOS A	0.0	0.0	0.00	0.46	0.00	57.5
Approach			257	9.8	257	9.8	0.146	4.6	NA	0.0	0.0	0.00	0.46	0.00	57.1
All Vehicles			1220	13.3	1220	13.3	0.450	6.4	NA	3.4	26.3	0.35	0.55	0.38	50.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 503 [503 McPherson St x Coal Pier Rd EX+DEV AM (Site Folder: Existing + Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: McPherson Street x Coal Pier Road
Existing + Development AM Peak
7:45am - 8:45am
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: McPherson Street															
2	T1	All MCs	61	46.6	61	46.6	0.041	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach			61	46.6	61	46.6	0.041	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
North: Coal Pier Road															
4	L2	All MCs	5	20.0	5	20.0	0.149	5.0	LOS A	0.5	5.5	0.35	0.62	0.35	46.1
6	R2	All MCs	106	63.4	106	63.4	0.149	7.0	LOS A	0.5	5.5	0.35	0.62	0.35	44.9
Approach			112	61.3	112	61.3	0.149	6.9	LOS A	0.5	5.5	0.35	0.62	0.35	45.0
West: McPherson Street															
7	L2	All MCs	138	49.6	138	49.6	0.142	5.0	LOS A	0.0	0.0	0.00	0.35	0.00	47.0
8	T1	All MCs	67	29.7	67	29.7	0.142	0.0	LOS A	0.0	0.0	0.00	0.35	0.00	48.0
Approach			205	43.1	205	43.1	0.142	3.4	NA	0.0	0.0	0.00	0.35	0.00	47.2
All Vehicles			378	49.0	378	49.0	0.149	3.9	NA	0.5	5.5	0.10	0.37	0.10	46.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 603 [603 Stephen Rd x Swimbourne St EX+DEV AM (Site Folder: Existing + Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Stephen Road x Swimbourne Street
Exisiting + Development AM Peak
7:45am - 8:45am
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 70 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Stephen Road															
1	L2	All MCs	27	19.2	27	19.2	0.112	33.0	LOS C	0.9	7.2	0.88	0.70	0.88	40.4
2	T1	All MCs	186	8.5	186	8.5	* 0.562	29.1	LOS C	6.2	46.9	0.96	0.78	0.96	42.4
3	R2	All MCs	6	50.0	6	50.0	0.562	34.1	LOS C	6.2	46.9	0.96	0.78	0.96	36.5
Approach			220	11.0	220	11.0	0.562	29.7	LOS C	6.2	46.9	0.95	0.77	0.95	42.1
East: Swimbourne Street															
4	L2	All MCs	8	37.5	8	37.5	0.014	7.3	LOS A	0.1	1.4	0.55	0.59	0.55	42.6
5	T1	All MCs	7	42.9	7	42.9	0.061	31.5	LOS C	0.3	2.7	0.87	0.63	0.87	36.9
6	R2	All MCs	3	0.0	3	0.0	0.061	44.8	LOS D	0.3	2.7	0.92	0.64	0.92	37.1
Approach			19	33.3	19	33.3	0.061	23.0	LOS B	0.3	2.7	0.74	0.62	0.74	39.2
North: Stephen Road															
7	L2	All MCs	25	0.0	25	0.0	0.190	40.5	LOS C	2.9	21.2	0.74	0.62	0.74	42.1
8	T1	All MCs	225	7.9	225	7.9	* 0.879	45.1	LOS D	18.1	135.8	0.89	0.88	1.09	42.5
9	R2	All MCs	313	8.1	313	8.1	0.879	57.0	LOS E	18.1	135.8	1.00	1.07	1.34	39.9
Approach			563	7.7	563	7.7	0.879	51.5	LOS D	18.1	135.8	0.95	0.97	1.21	41.0
West: Swimbourne Street															
10	L2	All MCs	656	2.4	656	2.4	0.657	20.9	LOS B	14.5	103.6	0.70	0.79	0.70	45.5
11	T1	All MCs	35	9.1	35	9.1	* 0.377	32.7	LOS C	3.0	22.0	0.94	0.76	0.94	36.2
12	R2	All MCs	57	5.6	57	5.6	0.377	43.3	LOS D	3.0	22.0	0.94	0.76	0.94	40.2
Approach			747	3.0	747	3.0	0.657	23.1	LOS B	14.5	103.6	0.73	0.78	0.73	44.7
All Vehicles			1549	6.2	1549	6.2	0.879	34.4	LOS C	18.1	135.8	0.84	0.85	0.93	42.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Stephen Road												
P1	Full	50	53	29.3	LOS C	0.1	0.1	0.92	0.92	183.2	200.0	1.09
East: Swimbourne Street												
P2	Full	50	53	29.3	LOS C	0.1	0.1	0.92	0.92	183.2	200.0	1.09
North: Stephen Road												
P3	Full	50	53	29.3	LOS C	0.1	0.1	0.92	0.92	183.2	200.0	1.09
West: Swimbourne Street												
P4	Full	50	53	29.3	LOS C	0.1	0.1	0.92	0.92	183.2	200.0	1.09
All Pedestrians		200	211	29.3	LOS C	0.1	0.1	0.92	0.92	183.2	200.0	1.09

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT SUMMARY

Site: 104 [104 Foreshore Rd x Botany Rd x Penrhyn Rd EX+DEV PM (Site Folder: Existing + Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Foreshore Road x Botany Road x Penrhyn Road
Exisiting + Development PM Peak
3:00pm - 4:00pm
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 70 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Penrhyn Road															
1	L2	All MCs	58	63.6	58	63.6	0.229	28.7	LOS C	1.7	18.0	0.89	0.72	0.89	40.4
2	T1	All MCs	13	41.7	13	41.7	0.032	21.2	LOS B	0.3	3.1	0.77	0.54	0.77	29.0
3	R2	All MCs	37	77.1	37	77.1	0.125	27.1	LOS B	1.0	11.7	0.80	0.69	0.80	27.2
Approach			107	65.7	107	65.7	0.229	27.3	LOS B	1.7	18.0	0.85	0.69	0.85	35.2
East: Botany Road															
4	L2	All MCs	54	90.2	54	90.2	0.057	8.6	LOS A	0.2	2.8	0.22	0.61	0.22	46.9
5	T1	All MCs	1348	10.1	1348	10.1	0.604	18.1	LOS B	12.4	94.0	0.85	0.74	0.85	55.6
6	R2	All MCs	331	15.9	331	15.9	* 0.858	43.6	LOS D	13.1	104.0	1.00	1.01	1.33	28.3
Approach			1733	13.7	1733	13.7	0.858	22.7	LOS B	13.1	104.0	0.86	0.78	0.92	50.5
North: Botany Road															
7	L2	All MCs	422	8.7	422	8.7	0.235	4.5	LOS A	0.0	0.0	0.00	0.46	0.00	44.4
8	T1	All MCs	15	64.3	15	64.3	0.042	31.8	LOS C	0.4	4.2	0.78	0.60	0.78	26.2
9	R2	All MCs	256	26.3	256	26.3	* 0.736	42.5	LOS D	8.9	76.4	0.97	0.92	1.11	39.7
Approach			693	16.4	693	16.4	0.736	19.1	LOS B	8.9	76.4	0.38	0.63	0.43	41.6
West: Foreshore Road															
10	L2	All MCs	168	39.4	168	39.4	0.221	11.4	LOS A	1.9	18.0	0.44	0.69	0.44	54.4
11	T1	All MCs	765	19.1	765	19.1	* 0.830	32.8	LOS C	14.5	118.3	1.00	0.99	1.23	47.7
12	R2	All MCs	38	88.9	38	88.9	0.396	44.3	LOS D	1.4	17.0	0.98	0.74	0.98	36.8
Approach			972	25.4	972	25.4	0.830	29.6	LOS C	14.5	118.3	0.90	0.93	1.09	48.1
All Vehicles			3504	19.1	3504	19.1	0.858	24.0	LOS B	14.5	118.3	0.77	0.79	0.87	47.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Penrhyn Road												
P1B	Slip/Bypass	50	53	29.3	LOS C	0.1	0.1	0.92	0.92	183.2	200.0	1.09
West: Foreshore Road												
P4	Full	50	53	29.3	LOS C	0.1	0.1	0.92	0.92	183.2	200.0	1.09
All Pedestrians		100	105	29.3	LOS C	0.1	0.1	0.92	0.92	183.2	200.0	1.09

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT SUMMARY

Site: 204 [204 Botany Rd x Excell St EX+DEV PM (Site Folder: Existing + Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Botany Road x Excell Street
Exisiting + Development PM Peak
3:00pm - 4:00pm
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Botany Road															
5	T1	All MCs	658	20.3	658	20.3	0.382	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	49.8
Approach			658	20.3	658	20.3	0.382	0.1	NA	0.0	0.0	0.00	0.00	0.00	49.8
North: Excell Street															
7	L2	All MCs	419	20.4	419	20.4	0.449	8.3	LOS A	2.9	23.7	0.59	0.80	0.78	39.1
Approach			419	20.4	419	20.4	0.449	8.3	LOS A	2.9	23.7	0.59	0.80	0.78	39.1
West: Botany Road															
11	T1	All MCs	401	9.4	401	9.4	0.218	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach			401	9.4	401	9.4	0.218	0.0	NA	0.0	0.0	0.00	0.00	0.00	49.9
All Vehicles			1478	17.4	1478	17.4	0.449	2.4	NA	2.9	23.7	0.17	0.23	0.22	46.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: T:\Synergy\Projects\23\23.255\Modelling\23.255m01v01 TRAFFIX 49 Stephen Road, Banksmeadow.sip9

MOVEMENT SUMMARY

Site: 304 [304 Botany Rd x Hills St EX+DEV PM (Site Folder: Existing + Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Botany Road x Hills Street
Existing + Development PM Peak
3:00pm - 4:00pm
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Botany Road															
5	T1	All MCs	484	10.2	484	10.2	0.265	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
6	R2	All MCs	174	46.1	174	46.1	0.254	10.1	LOS A	1.1	10.9	0.63	0.82	0.66	33.2
Approach			658	19.7	658	19.7	0.265	2.7	NA	1.1	10.9	0.17	0.22	0.17	45.0
West: Botany Road															
10	L2	All MCs	126	10.8	126	10.8	0.289	4.7	LOS A	0.0	0.0	0.00	0.13	0.00	44.2
11	T1	All MCs	397	9.5	397	9.5	0.289	0.1	LOS A	0.0	0.0	0.00	0.13	0.00	48.6
Approach			523	9.9	523	9.9	0.289	1.2	NA	0.0	0.0	0.00	0.13	0.00	47.7
All Vehicles			1181	15.3	1181	15.3	0.289	2.0	NA	1.1	10.9	0.09	0.18	0.10	46.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 404 [404 Botany Rd x Stephen Rd EX+DEV PM (Site Folder: Existing + Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Botany Road x Stephen Road
Existing + Development PM Peak
3:00pm - 4:00pm
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Botany Road															
2	T1	All MCs	106	6.9	106	6.9	0.369	0.0	LOS A	2.1	16.3	0.49	0.58	0.49	47.9
3	R2	All MCs	388	10.3	388	10.3	0.369	6.7	LOS A	2.1	16.3	0.49	0.58	0.49	46.0
Approach			495	9.6	495	9.6	0.369	5.3	NA	2.1	16.3	0.49	0.58	0.49	46.5
East: Stephen Road															
4	L2	All MCs	384	11.0	384	11.0	0.521	7.6	LOS A	4.6	34.8	0.50	0.66	0.65	50.7
6	R2	All MCs	129	6.5	129	6.5	0.521	14.7	LOS B	4.6	34.8	0.50	0.66	0.65	55.2
Approach			514	9.8	514	9.8	0.521	9.4	LOS A	4.6	34.8	0.50	0.66	0.65	52.4
North: Botany Road															
7	L2	All MCs	148	6.4	148	6.4	0.161	5.7	LOS A	0.0	0.0	0.00	0.29	0.00	57.7
8	T1	All MCs	148	2.1	148	2.1	0.161	0.1	LOS A	0.0	0.0	0.00	0.29	0.00	58.4
Approach			297	4.3	297	4.3	0.161	2.9	NA	0.0	0.0	0.00	0.29	0.00	58.0
All Vehicles			1305	8.5	1305	8.5	0.521	6.4	NA	4.6	34.8	0.38	0.55	0.44	51.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 504 [504 McPherson St x Coal Pier Rd EX+DEV PM (Site Folder: Existing + Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: McPherson Street x Coal Pier Road
Existing + Development PM Peak
3:00pm - 4:00pm
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: McPherson Street															
2	T1	All MCs	117	10.8	117	10.8	0.068	0.0	LOS A	0.0	0.3	0.03	0.04	0.03	49.8
3	R2	All MCs	4	25.0	4	25.0	0.068	7.2	LOS A	0.0	0.3	0.03	0.04	0.03	48.5
Approach			121	11.3	121	11.3	0.068	0.3	NA	0.0	0.3	0.03	0.04	0.03	49.7
North: Coal Pier Road															
4	L2	All MCs	5	20.0	5	20.0	0.187	5.1	LOS A	0.7	5.8	0.38	0.63	0.38	46.1
6	R2	All MCs	152	28.5	152	28.5	0.187	6.6	LOS A	0.7	5.8	0.38	0.63	0.38	45.4
Approach			157	28.2	157	28.2	0.187	6.6	LOS A	0.7	5.8	0.38	0.63	0.38	45.4
West: McPherson Street															
7	L2	All MCs	119	43.4	119	43.4	0.132	5.0	LOS A	0.0	0.0	0.00	0.30	0.00	47.3
8	T1	All MCs	87	12.0	87	12.0	0.132	0.0	LOS A	0.0	0.0	0.00	0.30	0.00	48.4
Approach			206	30.1	206	30.1	0.132	2.9	NA	0.0	0.0	0.00	0.30	0.00	47.7
All Vehicles			484	24.8	484	24.8	0.187	3.4	NA	0.7	5.8	0.13	0.34	0.13	47.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 604 [604 Stephen Rd x Swimbourne St EX+DEV PM (Site Folder: Existing + Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Stephen Road x Swimbourne Street
Exisiting + Development PM Peak
3:00pm - 4:00pm
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Stephen Road															
1	L2	All MCs	37	8.6	37	8.6	0.167	43.7	LOS D	1.6	11.9	0.91	0.72	0.91	38.3
2	T1	All MCs	245	1.7	245	1.7	* 0.837	46.6	LOS D	12.0	86.0	1.00	1.00	1.25	39.3
3	R2	All MCs	6	50.0	6	50.0	0.837	51.7	LOS D	12.0	86.0	1.00	1.01	1.25	32.0
Approach			288	3.6	288	3.6	0.837	46.3	LOS D	12.0	86.0	0.99	0.97	1.21	39.1
East: Swimbourne Street															
4	L2	All MCs	3	33.3	3	33.3	0.053	5.6	LOS A	0.6	4.3	0.85	0.62	0.85	36.7
5	T1	All MCs	33	3.2	33	3.2	* 0.228	36.5	LOS C	1.6	11.4	0.91	0.67	0.91	34.9
6	R2	All MCs	19	0.0	19	0.0	0.228	51.7	LOS D	1.6	11.4	0.96	0.72	0.96	34.3
Approach			55	3.8	55	3.8	0.228	40.0	LOS C	1.6	11.4	0.92	0.69	0.92	34.8
North: Stephen Road															
7	L2	All MCs	6	16.7	6	16.7	0.180	39.6	LOS C	3.7	26.4	0.61	0.51	0.61	43.1
8	T1	All MCs	199	2.6	199	2.6	0.833	37.9	LOS C	26.0	191.4	0.71	0.64	0.74	44.6
9	R2	All MCs	545	6.2	545	6.2	* 0.833	52.0	LOS D	26.0	191.4	0.94	0.93	1.05	41.1
Approach			751	5.3	751	5.3	0.833	48.2	LOS D	26.0	191.4	0.87	0.85	0.97	42.0
West: Swimbourne Street															
10	L2	All MCs	440	1.7	440	1.7	0.363	14.5	LOS A	7.9	56.2	0.45	0.69	0.45	46.3
11	T1	All MCs	1	100.0	1	100.0	0.174	37.6	LOS C	1.2	8.6	0.94	0.72	0.94	32.8
12	R2	All MCs	27	0.0	27	0.0	0.174	49.0	LOS D	1.2	8.6	0.94	0.72	0.94	37.5
Approach			468	1.8	468	1.8	0.363	16.5	LOS B	7.9	56.2	0.48	0.69	0.48	45.7
All Vehicles			1562	3.9	1562	3.9	0.837	38.1	LOS C	26.0	191.4	0.78	0.82	0.86	42.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Stephen Road												
P1	Full	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	193.1	200.0	1.04
East: Swimbourne Street												
P2	Full	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	193.1	200.0	1.04
North: Stephen Road												
P3	Full	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	193.1	200.0	1.04
West: Swimbourne Street												
P4	Full	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	193.1	200.0	1.04
All Pedestrians		200	211	39.3	LOS D	0.1	0.1	0.94	0.94	193.1	200.0	1.04

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT SUMMARY

Site: 105 [105 Foreshore Rd x Botany Rd x Penrhyn Rd EX+DEV+APP AM (Site Folder: Existing + Development + Cumulative)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Foreshore Road x Botany Road x Penrhyn Road
Exisiting + Development + Approved AM Peak
7:45am - 8:45am
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Penrhyn Road															
1	L2	All MCs	35	93.9	35	93.9	0.145	39.4	LOS C	1.4	18.1	0.86	0.69	0.86	35.6
2	T1	All MCs	18	52.9	18	52.9	0.058	34.4	LOS C	0.7	7.2	0.83	0.60	0.83	23.0
3	R2	All MCs	27	53.8	27	53.8	0.109	39.9	LOS C	1.1	11.3	0.84	0.70	0.84	25.2
Approach			80	71.1	80	71.1	0.145	38.4	LOS C	1.4	18.1	0.85	0.67	0.85	30.2
East: Botany Road															
4	L2	All MCs	46	52.3	46	52.3	0.040	8.0	LOS A	0.2	2.4	0.17	0.61	0.17	47.4
5	T1	All MCs	756	24.2	756	24.2	0.313	17.6	LOS B	7.6	64.4	0.66	0.56	0.66	56.0
6	R2	All MCs	302	25.4	302	25.4	* 0.864	57.6	LOS E	16.6	141.3	1.00	0.99	1.26	24.1
Approach			1104	25.7	1104	25.7	0.864	28.2	LOS B	16.6	141.3	0.73	0.68	0.81	46.3
North: Botany Road															
7	L2	All MCs	512	18.5	512	18.5	0.304	4.6	LOS A	0.0	0.0	0.00	0.46	0.00	44.4
8	T1	All MCs	17	43.8	17	43.8	0.053	56.6	LOS E	0.7	6.4	0.83	0.63	0.83	21.3
9	R2	All MCs	202	54.2	202	54.2	* 0.842	77.5	LOS F	11.2	114.4	1.00	1.02	1.29	31.6
Approach			731	29.0	731	29.0	0.842	26.0	LOS B	11.2	114.4	0.30	0.62	0.38	37.8
West: Foreshore Road															
10	L2	All MCs	438	21.6	438	21.6	0.528	13.6	LOS A	9.4	77.9	0.55	0.74	0.55	52.0
11	T1	All MCs	1299	14.0	1299	14.0	* 0.901	43.8	LOS D	36.4	285.2	1.00	1.06	1.21	43.1
12	R2	All MCs	59	46.4	59	46.4	0.307	50.7	LOS D	2.7	26.5	0.94	0.76	0.94	34.7
Approach			1796	16.9	1796	16.9	0.901	36.7	LOS C	36.4	285.2	0.89	0.98	1.04	44.4
All Vehicles			3711	23.1	3711	23.1	0.901	32.1	LOS C	36.4	285.2	0.72	0.81	0.83	43.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Penrhyn Road												
P1B	Slip/Bypass	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
West: Foreshore Road												
P4	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
All Pedestrians		100	105	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT SUMMARY

Site: 205 [205 Botany Rd x Excell St EX+DEV+APP AM (Site Folder: Existing + Development + Cumulative)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Botany Road x Excell Street
Exisiting + Development + Approved AM Peak
7:45am - 8:45am
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Botany Road															
5	T1	All MCs	733	27.2	733	27.2	0.442	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	51.1
Approach			733	27.2	733	27.2	0.442	0.1	NA	0.0	0.0	0.00	0.00	0.00	51.1
North: Excell Street															
7	L2	All MCs	339	53.7	339	53.7	0.558	13.4	LOS A	3.7	37.8	0.71	1.05	1.19	35.7
Approach			339	53.7	339	53.7	0.558	13.4	LOS A	3.7	37.8	0.71	1.05	1.19	35.7
West: Botany Road															
11	T1	All MCs	516	11.0	516	11.0	0.283	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach			516	11.0	516	11.0	0.283	0.1	NA	0.0	0.0	0.00	0.00	0.00	49.9
All Vehicles			1587	27.6	1587	27.6	0.558	2.9	NA	3.7	37.8	0.15	0.23	0.25	46.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 305 [305 Botany Rd x Hills St EX+DEV+APP AM (Site Folder: Existing + Development + Cumulative)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Botany Road x Hills Street
Existing + Development + Approved AM Peak
7:45am - 8:45am
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Botany Road															
5	T1	All MCs	336	18.5	336	18.5	0.384	2.1	LOS A	2.2	17.7	0.70	0.49	0.72	46.6
6	R2	All MCs	376	37.0	376	37.0	0.739	21.3	LOS B	6.0	54.9	0.87	1.36	2.02	27.8
Approach			712	28.3	712	28.3	0.739	12.2	NA	6.0	54.9	0.79	0.95	1.41	35.5
West: Botany Road															
10	L2	All MCs	176	13.2	176	13.2	0.390	4.8	LOS A	0.0	0.0	0.00	0.14	0.00	44.1
11	T1	All MCs	521	11.1	521	11.1	0.390	0.1	LOS A	0.0	0.0	0.00	0.14	0.00	48.8
Approach			697	11.6	697	11.6	0.390	1.3	NA	0.0	0.0	0.00	0.14	0.00	47.8
All Vehicles			1408	20.0	1408	20.0	0.739	6.8	NA	6.0	54.9	0.40	0.55	0.71	40.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 405 [405 Botany Rd x Stephen Rd EX+DEV+APP AM (Site Folder: Existing + Development + Cumulative)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Botany Road x Stephen Road
Existing + Development + Approved AM Peak
7:45am - 8:45am
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Botany Road															
2	T1	All MCs	131	11.3	131	11.3	0.466	0.5	LOS A	3.8	29.5	0.54	0.64	0.64	47.7
3	R2	All MCs	482	12.7	482	12.7	0.466	7.6	LOS A	3.8	29.5	0.54	0.64	0.64	45.7
Approach			613	12.4	613	12.4	0.466	6.1	NA	3.8	29.5	0.54	0.64	0.64	46.2
East: Stephen Road															
4	L2	All MCs	242	19.1	242	19.1	0.436	6.5	LOS A	2.4	19.6	0.44	0.57	0.46	49.9
6	R2	All MCs	108	13.6	108	13.6	0.436	16.7	LOS B	2.4	19.6	0.44	0.57	0.46	55.0
Approach			351	17.4	351	17.4	0.436	9.7	LOS A	2.4	19.6	0.44	0.57	0.46	52.2
North: Botany Road															
7	L2	All MCs	204	8.8	204	8.8	0.165	5.8	LOS A	0.0	0.0	0.00	0.41	0.00	57.2
8	T1	All MCs	87	13.3	87	13.3	0.165	0.1	LOS A	0.0	0.0	0.00	0.41	0.00	57.7
Approach			292	10.1	292	10.1	0.165	4.1	NA	0.0	0.0	0.00	0.41	0.00	57.3
All Vehicles			1255	13.3	1255	13.3	0.466	6.6	NA	3.8	29.5	0.39	0.57	0.44	51.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 505 [505 McPherson St x Coal Pier Rd EX+DEV+APP AM (Site Folder: Existing + Development + Cumulative)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: McPherson Street x Coal Pier Road
Existing + Development + Approved AM Peak
7:45am - 8:45am
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: McPherson Street															
2	T1	All MCs	97	34.8	97	34.8	0.061	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	53.2
Approach			97	34.8	97	34.8	0.061	0.1	NA	0.0	0.0	0.00	0.02	0.00	53.2
North: Coal Pier Road															
4	L2	All MCs	5	20.0	5	20.0	0.187	5.5	LOS A	0.6	6.8	0.48	0.72	0.48	45.4
6	R2	All MCs	106	63.4	106	63.4	0.187	8.8	LOS A	0.6	6.8	0.48	0.72	0.48	44.2
Approach			112	61.3	112	61.3	0.187	8.6	LOS A	0.6	6.8	0.48	0.72	0.48	44.3
West: McPherson Street															
7	L2	All MCs	208	34.3	208	34.3	0.228	5.3	LOS A	0.0	0.0	0.00	0.32	0.00	50.2
8	T1	All MCs	151	21.7	151	21.7	0.228	0.1	LOS A	0.0	0.0	0.00	0.32	0.00	51.5
Approach			359	29.0	359	29.0	0.228	3.1	NA	0.0	0.0	0.00	0.32	0.00	50.6
All Vehicles			567	36.4	567	36.4	0.228	3.7	NA	0.6	6.8	0.09	0.34	0.09	49.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 605 [605 Stephen Rd x Swimbourne St EX+DEV+APP AM (Site Folder: Existing + Development + Cumulative)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Stephen Road x Swimbourne Street
Exisiting + Development + Approved AM Peak
7:45am - 8:45am
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 70 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Stephen Road															
1	L2	All MCs	27	19.2	27	19.2	0.112	33.0	LOS C	0.9	7.2	0.88	0.70	0.88	40.4
2	T1	All MCs	186	8.5	186	8.5	* 0.562	29.1	LOS C	6.2	46.9	0.96	0.78	0.96	42.4
3	R2	All MCs	6	50.0	6	50.0	0.562	34.1	LOS C	6.2	46.9	0.96	0.78	0.96	36.5
Approach			220	11.0	220	11.0	0.562	29.7	LOS C	6.2	46.9	0.95	0.77	0.95	42.1
East: Swimbourne Street															
4	L2	All MCs	8	37.5	8	37.5	0.014	7.3	LOS A	0.1	1.4	0.55	0.59	0.55	42.6
5	T1	All MCs	7	42.9	7	42.9	0.061	31.5	LOS C	0.3	2.7	0.87	0.63	0.87	36.9
6	R2	All MCs	3	0.0	3	0.0	0.061	44.8	LOS D	0.3	2.7	0.92	0.64	0.92	37.1
Approach			19	33.3	19	33.3	0.061	23.0	LOS B	0.3	2.7	0.74	0.62	0.74	39.2
North: Stephen Road															
7	L2	All MCs	25	0.0	25	0.0	0.190	40.5	LOS C	2.9	21.2	0.74	0.62	0.74	42.1
8	T1	All MCs	225	7.9	225	7.9	* 0.879	45.1	LOS D	18.1	135.8	0.89	0.88	1.09	42.5
9	R2	All MCs	313	8.1	313	8.1	0.879	57.0	LOS E	18.1	135.8	1.00	1.07	1.34	39.9
Approach			563	7.7	563	7.7	0.879	51.5	LOS D	18.1	135.8	0.95	0.97	1.21	41.0
West: Swimbourne Street															
10	L2	All MCs	656	2.4	656	2.4	0.657	20.9	LOS B	14.5	103.6	0.70	0.79	0.70	45.5
11	T1	All MCs	35	9.1	35	9.1	* 0.377	32.7	LOS C	3.0	22.0	0.94	0.76	0.94	36.2
12	R2	All MCs	57	5.6	57	5.6	0.377	43.3	LOS D	3.0	22.0	0.94	0.76	0.94	40.2
Approach			747	3.0	747	3.0	0.657	23.1	LOS B	14.5	103.6	0.73	0.78	0.73	44.7
All Vehicles			1549	6.2	1549	6.2	0.879	34.4	LOS C	18.1	135.8	0.84	0.85	0.93	42.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Stephen Road												
P1	Full	50	53	29.3	LOS C	0.1	0.1	0.92	0.92	183.2	200.0	1.09
East: Swimbourne Street												
P2	Full	50	53	29.3	LOS C	0.1	0.1	0.92	0.92	183.2	200.0	1.09
North: Stephen Road												
P3	Full	50	53	29.3	LOS C	0.1	0.1	0.92	0.92	183.2	200.0	1.09
West: Swimbourne Street												
P4	Full	50	53	29.3	LOS C	0.1	0.1	0.92	0.92	183.2	200.0	1.09
All Pedestrians		200	211	29.3	LOS C	0.1	0.1	0.92	0.92	183.2	200.0	1.09

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT SUMMARY

Site: 106 [106 Foreshore Rd x Botany Rd x Penrhyn Rd EX+DEV+APP PM (Site Folder: Existing + Development + Cumulative)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Foreshore Road x Botany Road x Penrhyn Road
Exisiting + Development + Approved PM Peak
3:00pm - 4:00pm
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 80 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Penrhyn Road															
1	L2	All MCs	58	63.6	58	63.6	0.282	35.6	LOS C	2.0	22.0	0.93	0.73	0.93	37.8
2	T1	All MCs	13	41.7	13	41.7	0.026	20.5	LOS B	0.3	3.2	0.72	0.51	0.72	29.4
3	R2	All MCs	37	77.1	37	77.1	0.108	26.4	LOS B	1.0	12.2	0.74	0.68	0.74	27.4
Approach			107	65.7	107	65.7	0.282	30.7	LOS C	2.0	22.0	0.84	0.68	0.84	33.9
East: Botany Road															
4	L2	All MCs	54	90.2	54	90.2	0.056	8.6	LOS A	0.3	3.1	0.21	0.61	0.21	47.0
5	T1	All MCs	1348	10.1	1348	10.1	0.623	21.5	LOS B	14.4	109.2	0.86	0.75	0.86	53.6
6	R2	All MCs	337	16.3	337	16.3	* 0.890	51.6	LOS D	15.8	125.7	1.00	1.04	1.37	25.8
Approach			1739	13.8	1739	13.8	0.890	26.9	LOS B	15.8	125.7	0.87	0.80	0.94	48.1
North: Botany Road															
7	L2	All MCs	456	9.2	456	9.2	0.255	4.6	LOS A	0.0	0.0	0.00	0.47	0.00	44.8
8	T1	All MCs	15	64.3	15	64.3	0.034	38.1	LOS C	0.4	4.4	0.72	0.57	0.72	26.5
9	R2	All MCs	358	22.9	358	22.9	* 0.870	60.8	LOS E	16.5	137.9	1.00	1.05	1.32	35.6
Approach			828	16.1	828	16.1	0.870	29.5	LOS C	16.5	137.9	0.44	0.72	0.58	38.8
West: Foreshore Road															
10	L2	All MCs	211	36.0	211	36.0	0.272	11.5	LOS A	2.8	25.4	0.44	0.69	0.44	53.5
11	T1	All MCs	765	19.1	765	19.1	* 0.898	44.9	LOS D	18.3	148.8	1.00	1.09	1.37	42.7
12	R2	All MCs	38	88.9	38	88.9	0.453	50.5	LOS D	1.6	19.6	0.99	0.74	0.99	34.8
Approach			1014	25.2	1014	25.2	0.898	38.2	LOS C	18.3	148.8	0.88	1.00	1.16	43.9
All Vehicles			3688	19.0	3688	19.0	0.898	30.7	LOS C	18.3	148.8	0.78	0.83	0.92	44.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Penrhyn Road												
P1B	Slip/Bypass	50	53	34.3	LOS D	0.1	0.1	0.93	0.93	188.1	200.0	1.06
West: Foreshore Road												
P4	Full	50	53	34.3	LOS D	0.1	0.1	0.93	0.93	188.1	200.0	1.06
All Pedestrians		100	105	34.3	LOS D	0.1	0.1	0.93	0.93	188.1	200.0	1.06

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT SUMMARY

Site: 206 [206 Botany Rd x Excell St EX+DEV+APP PM (Site Folder: Existing + Development + Cumulative)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Botany Road x Excell Street
Exisiting + Development + Approved PM Peak
3:00pm - 4:00pm
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Botany Road															
5	T1	All MCs	706	20.6	706	20.6	0.411	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	50.3
Approach			706	20.6	706	20.6	0.411	0.1	NA	0.0	0.0	0.00	0.00	0.00	50.3
North: Excell Street															
7	L2	All MCs	555	19.0	555	19.0	0.589	9.9	LOS A	5.0	41.1	0.66	0.93	1.05	39.1
Approach			555	19.0	555	19.0	0.589	9.9	LOS A	5.0	41.1	0.66	0.93	1.05	39.1
West: Botany Road															
11	T1	All MCs	401	9.4	401	9.4	0.218	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach			401	9.4	401	9.4	0.218	0.0	NA	0.0	0.0	0.00	0.00	0.00	49.9
All Vehicles			1662	17.4	1662	17.4	0.589	3.3	NA	5.0	41.1	0.22	0.31	0.35	45.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 306 [306 Botany Rd x Hills St EX+DEV+APP PM (Site Folder: Existing + Development + Cumulative)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Botany Road x Hills Street
Existing + Development + Approved PM Peak
3:00pm - 4:00pm
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Botany Road															
5	T1	All MCs	484	10.2	484	10.2	0.265	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
6	R2	All MCs	222	41.2	222	41.2	0.319	10.8	LOS A	1.6	15.1	0.65	0.86	0.77	33.8
Approach			706	20.0	706	20.0	0.319	3.4	NA	1.6	15.1	0.20	0.27	0.24	44.4
West: Botany Road															
10	L2	All MCs	137	10.0	137	10.0	0.295	4.7	LOS A	0.0	0.0	0.00	0.14	0.00	44.3
11	T1	All MCs	397	9.5	397	9.5	0.295	0.1	LOS A	0.0	0.0	0.00	0.14	0.00	48.7
Approach			534	9.7	534	9.7	0.295	1.3	NA	0.0	0.0	0.00	0.14	0.00	47.7
All Vehicles			1240	15.5	1240	15.5	0.319	2.5	NA	1.6	15.1	0.12	0.21	0.14	45.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 406 [406 Botany Rd x Stephen Rd EX+DEV+APP PM (Site Folder: Existing + Development + Cumulative)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Botany Road x Stephen Road
Existing + Development + Approved PM Peak
3:00pm - 4:00pm
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Botany Road															
2	T1	All MCs	106	6.9	106	6.9	0.373	0.1	LOS A	2.2	16.9	0.50	0.59	0.51	47.9
3	R2	All MCs	388	10.3	388	10.3	0.373	6.9	LOS A	2.2	16.9	0.50	0.59	0.51	46.0
Approach			495	9.6	495	9.6	0.373	5.4	NA	2.2	16.9	0.50	0.59	0.51	46.5
East: Stephen Road															
4	L2	All MCs	384	11.0	384	11.0	0.527	7.8	LOS A	4.7	35.9	0.52	0.68	0.69	50.6
6	R2	All MCs	129	6.5	129	6.5	0.527	15.0	LOS B	4.7	35.9	0.52	0.68	0.69	55.1
Approach			514	9.8	514	9.8	0.527	9.6	LOS A	4.7	35.9	0.52	0.68	0.69	52.3
North: Botany Road															
7	L2	All MCs	148	6.4	148	6.4	0.166	5.7	LOS A	0.0	0.0	0.00	0.28	0.00	57.7
8	T1	All MCs	159	2.0	159	2.0	0.166	0.1	LOS A	0.0	0.0	0.00	0.28	0.00	58.4
Approach			307	4.1	307	4.1	0.166	2.8	NA	0.0	0.0	0.00	0.28	0.00	58.0
All Vehicles			1316	8.4	1316	8.4	0.527	6.4	NA	4.7	35.9	0.39	0.55	0.46	51.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 506 [506 McPherson St x Coal Pier Rd EX+DEV+APP PM (Site Folder: Existing + Development + Cumulative)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: McPherson Street x Coal Pier Road
Existing + Development + Approved PM Peak
3:00pm - 4:00pm
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: McPherson Street															
2	T1	All MCs	206	12.8	206	12.8	0.119	0.0	LOS A	0.0	0.3	0.02	0.03	0.02	54.1
3	R2	All MCs	4	25.0	4	25.0	0.119	7.5	LOS A	0.0	0.3	0.02	0.03	0.02	50.0
Approach			211	13.0	211	13.0	0.119	0.2	NA	0.0	0.3	0.02	0.03	0.02	54.0
North: Coal Pier Road															
4	L2	All MCs	5	20.0	5	20.0	0.284	5.5	LOS A	1.1	9.4	0.49	0.73	0.53	46.6
6	R2	All MCs	198	25.0	198	25.0	0.284	8.2	LOS A	1.1	9.4	0.49	0.73	0.53	46.4
Approach			203	24.9	203	24.9	0.284	8.2	LOS A	1.1	9.4	0.49	0.73	0.53	46.4
West: McPherson Street															
7	L2	All MCs	139	40.9	139	40.9	0.167	5.2	LOS A	0.0	0.0	0.00	0.28	0.00	48.9
8	T1	All MCs	126	13.3	126	13.3	0.167	0.0	LOS A	0.0	0.0	0.00	0.28	0.00	50.2
Approach			265	27.8	265	27.8	0.167	2.7	NA	0.0	0.0	0.00	0.28	0.00	49.4
All Vehicles			679	22.3	679	22.3	0.284	3.6	NA	1.1	9.4	0.15	0.34	0.16	49.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 606 [606 Stephen Rd x Swimbourne St EX+DEV+APP PM (Site Folder: Existing + Development + Cumulative)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Intersection: Stephen Road x Swimbourne Street
Exisiting + Development + Approved PM Peak
3:00pm - 4:00pm
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Stephen Road															
1	L2	All MCs	37	8.6	37	8.6	0.167	43.7	LOS D	1.6	11.9	0.91	0.72	0.91	38.3
2	T1	All MCs	245	1.7	245	1.7	* 0.837	46.6	LOS D	12.0	86.0	1.00	1.00	1.25	39.3
3	R2	All MCs	6	50.0	6	50.0	0.837	51.7	LOS D	12.0	86.0	1.00	1.01	1.25	32.0
Approach			288	3.6	288	3.6	0.837	46.3	LOS D	12.0	86.0	0.99	0.97	1.21	39.1
East: Swimbourne Street															
4	L2	All MCs	3	33.3	3	33.3	0.053	5.6	LOS A	0.6	4.3	0.85	0.62	0.85	36.7
5	T1	All MCs	33	3.2	33	3.2	* 0.228	36.5	LOS C	1.6	11.4	0.91	0.67	0.91	34.9
6	R2	All MCs	19	0.0	19	0.0	0.228	51.7	LOS D	1.6	11.4	0.96	0.72	0.96	34.3
Approach			55	3.8	55	3.8	0.228	40.0	LOS C	1.6	11.4	0.92	0.69	0.92	34.8
North: Stephen Road															
7	L2	All MCs	6	16.7	6	16.7	0.180	39.6	LOS C	3.7	26.4	0.61	0.51	0.61	43.1
8	T1	All MCs	199	2.6	199	2.6	0.833	37.9	LOS C	26.0	191.4	0.71	0.64	0.74	44.6
9	R2	All MCs	545	6.2	545	6.2	* 0.833	52.0	LOS D	26.0	191.4	0.94	0.93	1.05	41.1
Approach			751	5.3	751	5.3	0.833	48.2	LOS D	26.0	191.4	0.87	0.85	0.97	42.0
West: Swimbourne Street															
10	L2	All MCs	440	1.7	440	1.7	0.363	14.5	LOS A	7.9	56.2	0.45	0.69	0.45	46.3
11	T1	All MCs	1	100.0	1	100.0	0.174	37.6	LOS C	1.2	8.6	0.94	0.72	0.94	32.8
12	R2	All MCs	27	0.0	27	0.0	0.174	49.0	LOS D	1.2	8.6	0.94	0.72	0.94	37.5
Approach			468	1.8	468	1.8	0.363	16.5	LOS B	7.9	56.2	0.48	0.69	0.48	45.7
All Vehicles			1562	3.9	1562	3.9	0.837	38.1	LOS C	26.0	191.4	0.78	0.82	0.86	42.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

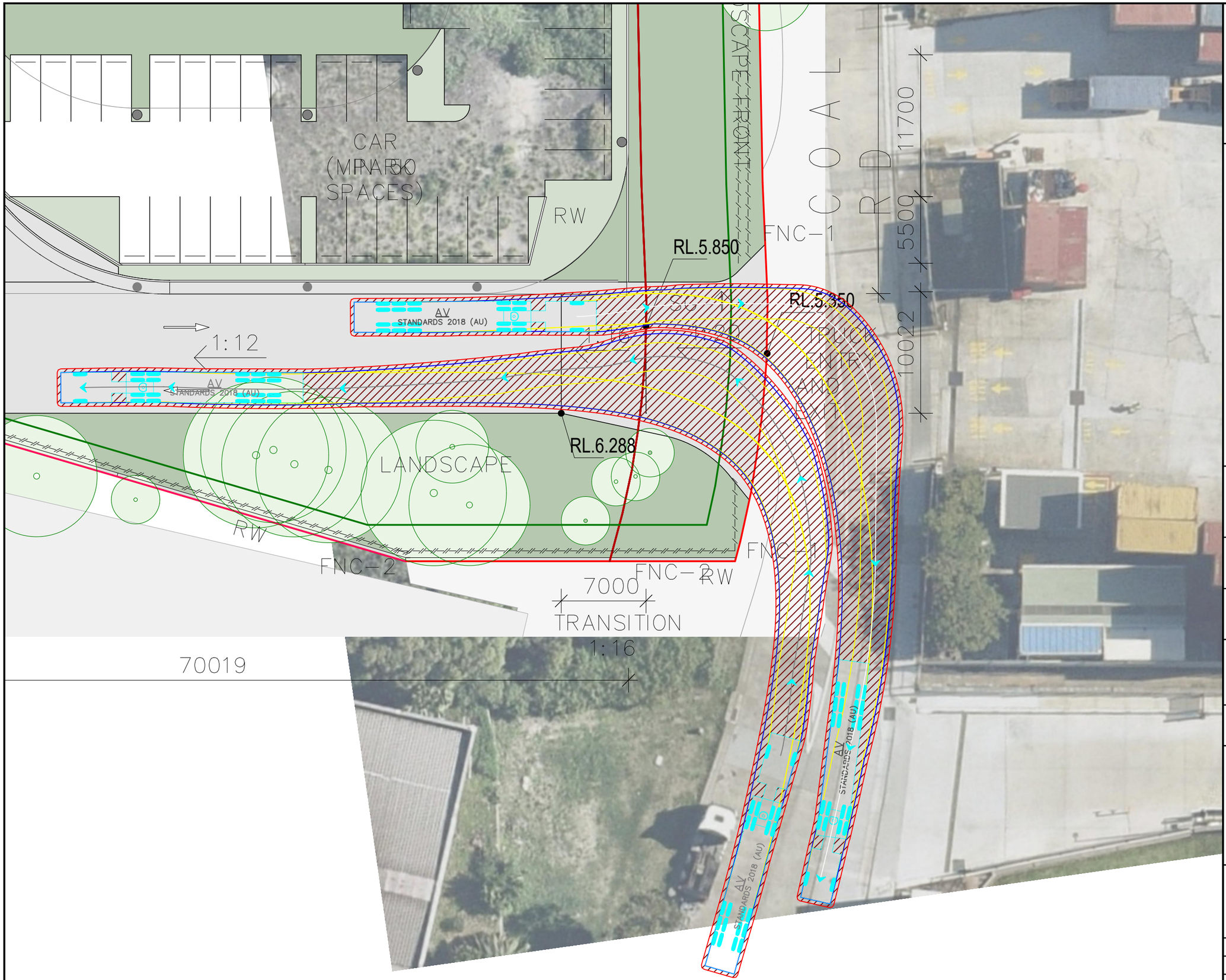
Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Stephen Road												
P1	Full	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	193.1	200.0	1.04
East: Swimbourne Street												
P2	Full	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	193.1	200.0	1.04
North: Stephen Road												
P3	Full	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	193.1	200.0	1.04
West: Swimbourne Street												
P4	Full	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	193.1	200.0	1.04
All Pedestrians		200	211	39.3	LOS D	0.1	0.1	0.94	0.94	193.1	200.0	1.04

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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APPENDIX C

Swept Path Analysis



Notes:

This drawing is prepared for information purposes only. It is not to be used for construction.

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	Prelim Swept Path Analysis	TY	09-04-24
B	Swept Path Analysis	SH	06-11-24

Swept Path Legend

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

Architect
SBA Architects

Client
ESR

Scale
0 3 6 9 12m
1:300 @ A3

Project Description
Proposed Multi-Level Industrial Development
49 Stephen Road, Banksmeadow, NSW 2019

Drawing Prepared By

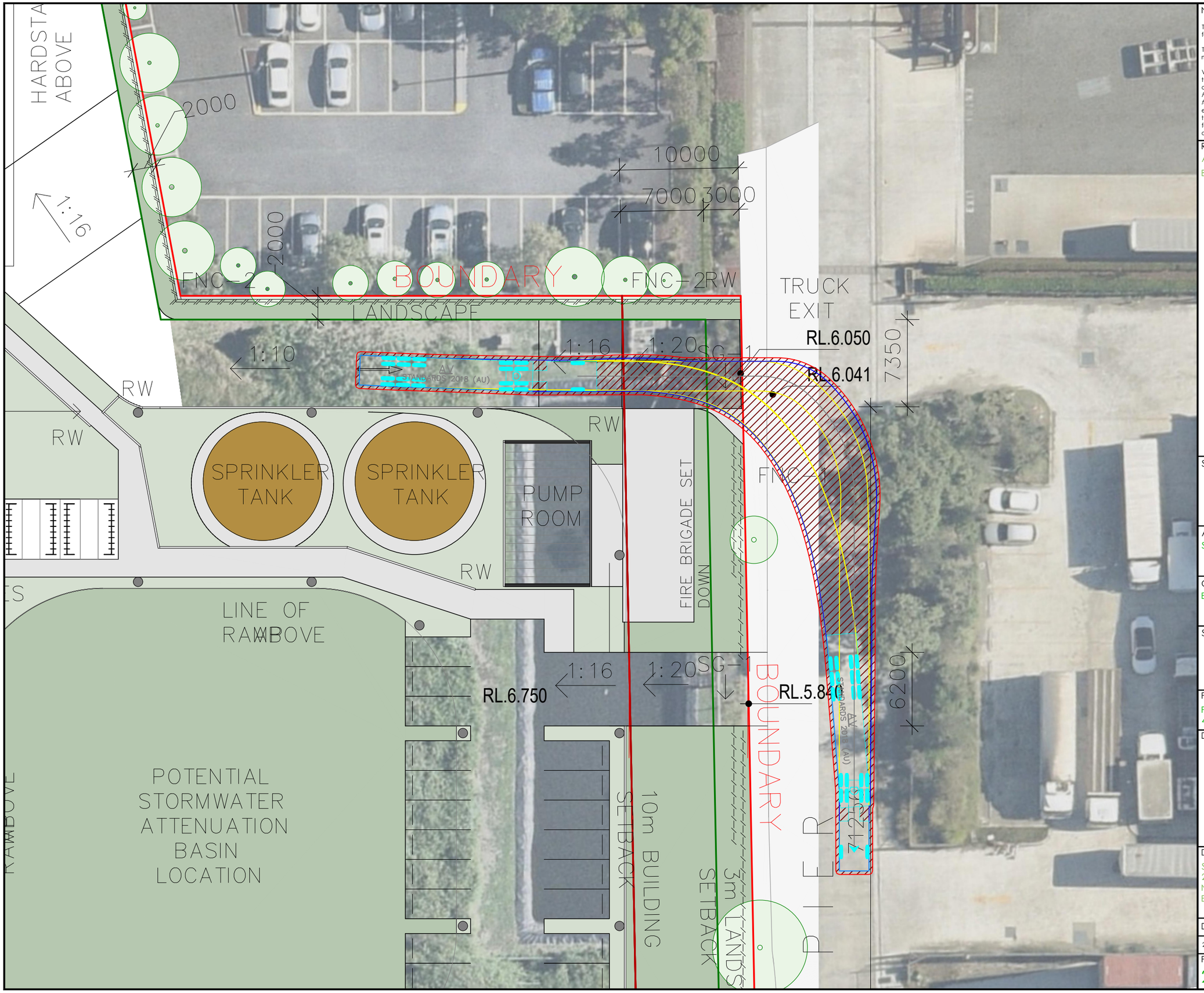
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PO Box 1124
Strawberry Hills, NSW 2012
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Drawing Title
Swept Path Analysis
20m Articulated Vehicle
South Coal Pier Road Access
Entry & Exit

Drawn:	Checked:	Date:
SH	TY	06-11-24

23.255d06v01 TRAFFIX [241023 Plans] Design Review.dwg

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



Notes:

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Rev.	Revision Note	By.	Date
A	Prelim Swept Path Analysis	TY	09-04-24
B	Swept Path Analysis	SH	06-11-24

Swept Path Legend

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

Architect
SBA Architects

Client
ESR

Scale
0 3 6 9 12m
1:300 @ A3

Project Description
Proposed Multi-Level Industrial Development
49 Stephen Road, Banksmeadow, NSW 2019

Drawing Prepared By

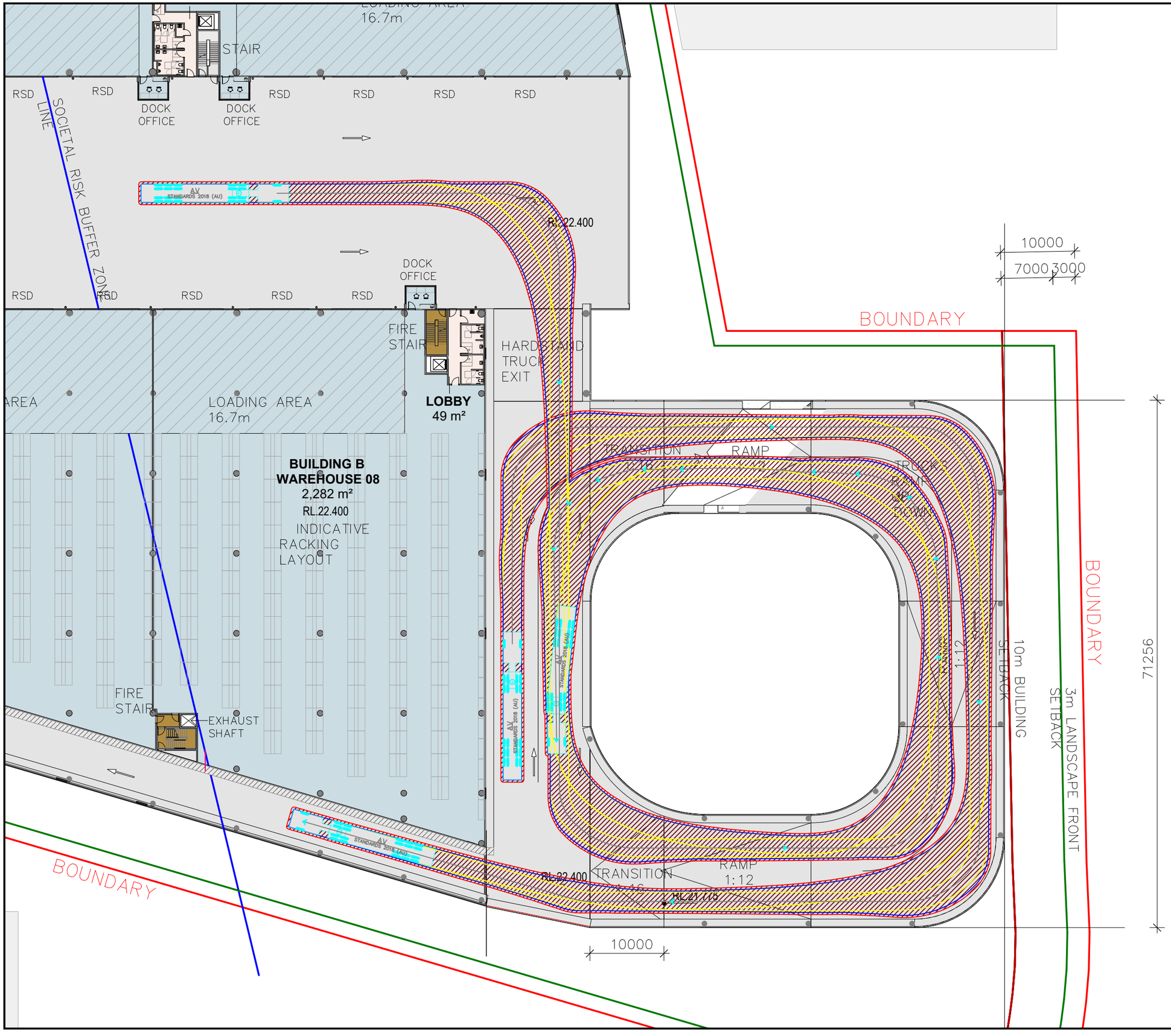
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Drawing Title
Swept Path Analysis
20m Articulated Vehicle
North Coal Pier Road Access
Exit Only

Drawn:	Checked:	Date:
SH	TY	06-11-24

23.255d06v01 TRAFFIX [241023 Plans] Design Review.dwg

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



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Rev.	Revision Note	By.	Date
A	Prelim Swept Path Analysis	TY	09-04-24
B	Swept Path Analysis	SH	06-11-24

Swept Path Legend

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

Architect
SBA Architects

Client
ESR

Scale
0 5 10 15 20m
1:500 @ A3

Project Description
Proposed Multi-Level Industrial Development
49 Stephen Road, Banksmeadow, NSW 2019

Drawing Prepared By

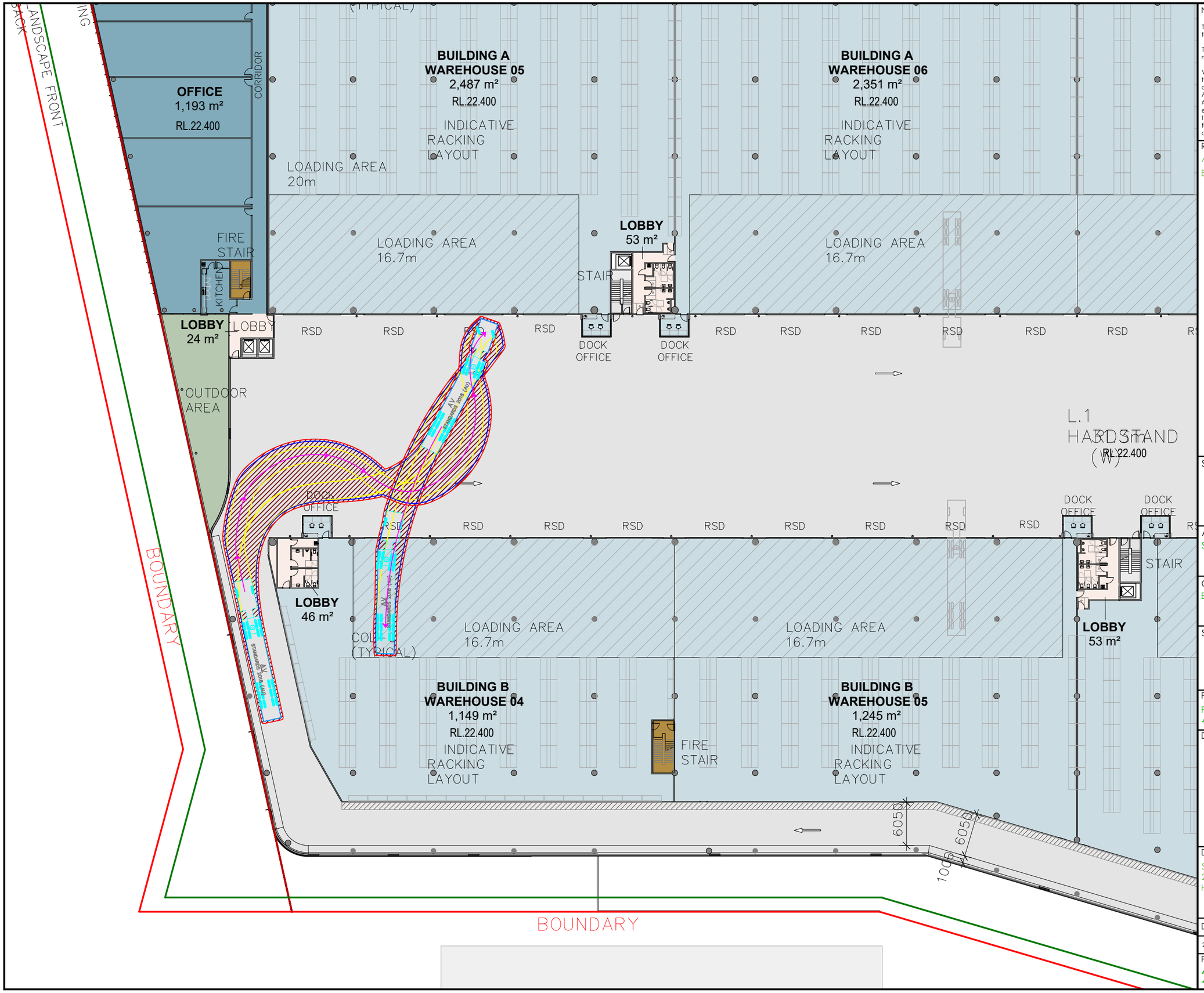
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Drawing Title
Swept Path Analysis
20m Articulated Vehicle
Ramp Circulation

Drawn:	Checked:	Date:
SH	TY	06-11-24

23.255d06v01 TRAFFIX [241023 Plans] Design Review.dwg

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



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Rev.	Revision Note	By.	Date
A	Prelim Swept Path Analysis	TY	09-04-24
B	Swept Path Analysis	SH	06-11-24

Swept Path Legend

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

Architect
SBA Architects

Client
ESR

Scale
0 5 10 15 20m
1:500 @ A3

Project Description
Proposed Multi-Level Industrial Development
49 Stephen Road, Banksmeadow, NSW 2019

Drawing Prepared By

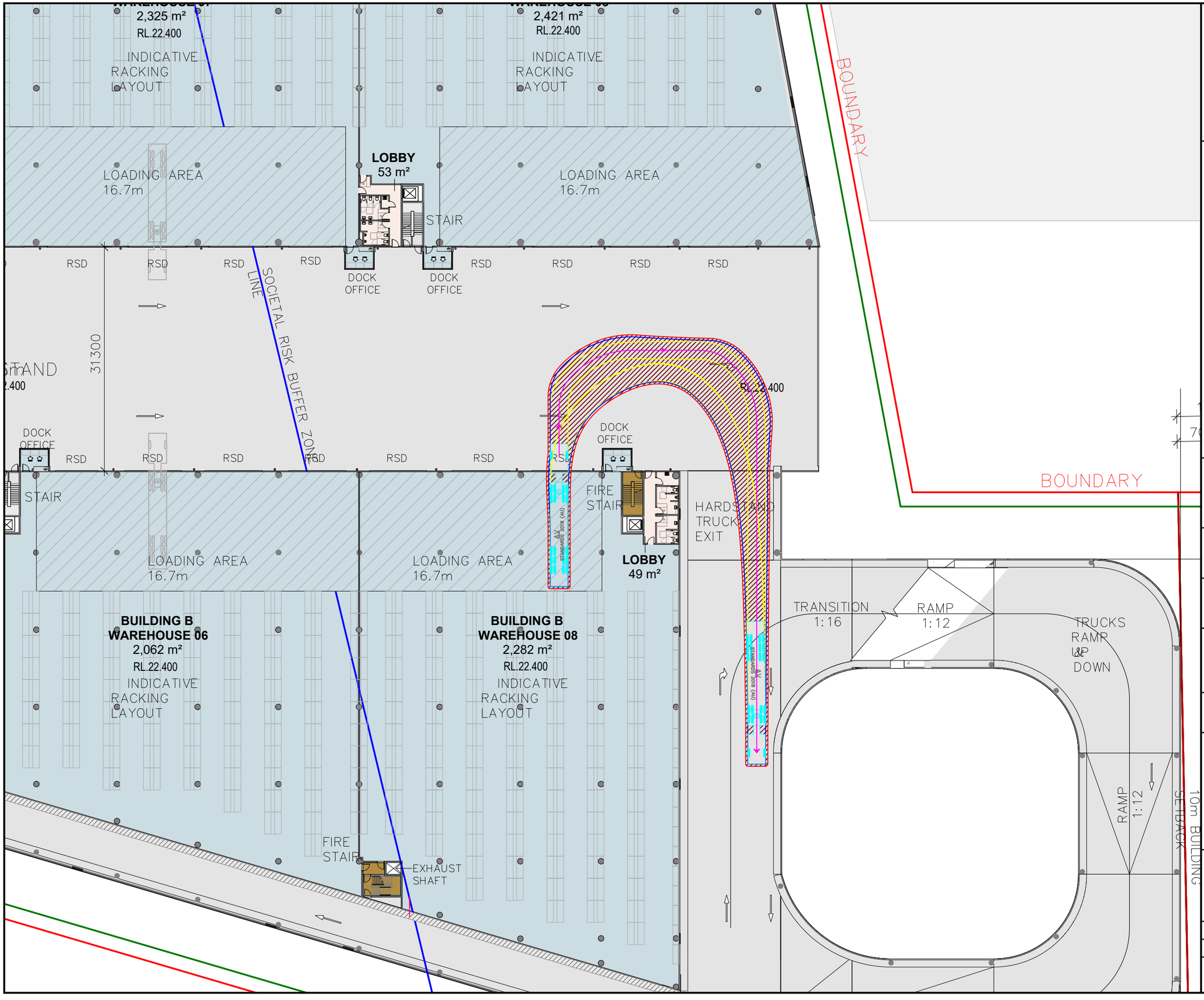
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Drawing Title
Swept Path Analysis
20m Articulated Vehicle
Hardstand Maneouvre

Drawn:	Checked:	Date:
SH	TY	06-11-24

23.255d06v01 TRAFFIX [241023 Plans] Design Review.dwg

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



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Rev.	Revision Note	By.	Date
A	Prelim Swept Path Analysis	TY	09-04-24
B	Swept Path Analysis	SH	06-11-24

Swept Path Legend

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

Architect
SBA Architects

Client
ESR

Scale
0 5 10 15 20m
1:500 @ A3

Project Description
Proposed Multi-Level Industrial Development
49 Stephen Road, Banksmeadow, NSW 2019

Drawing Prepared By

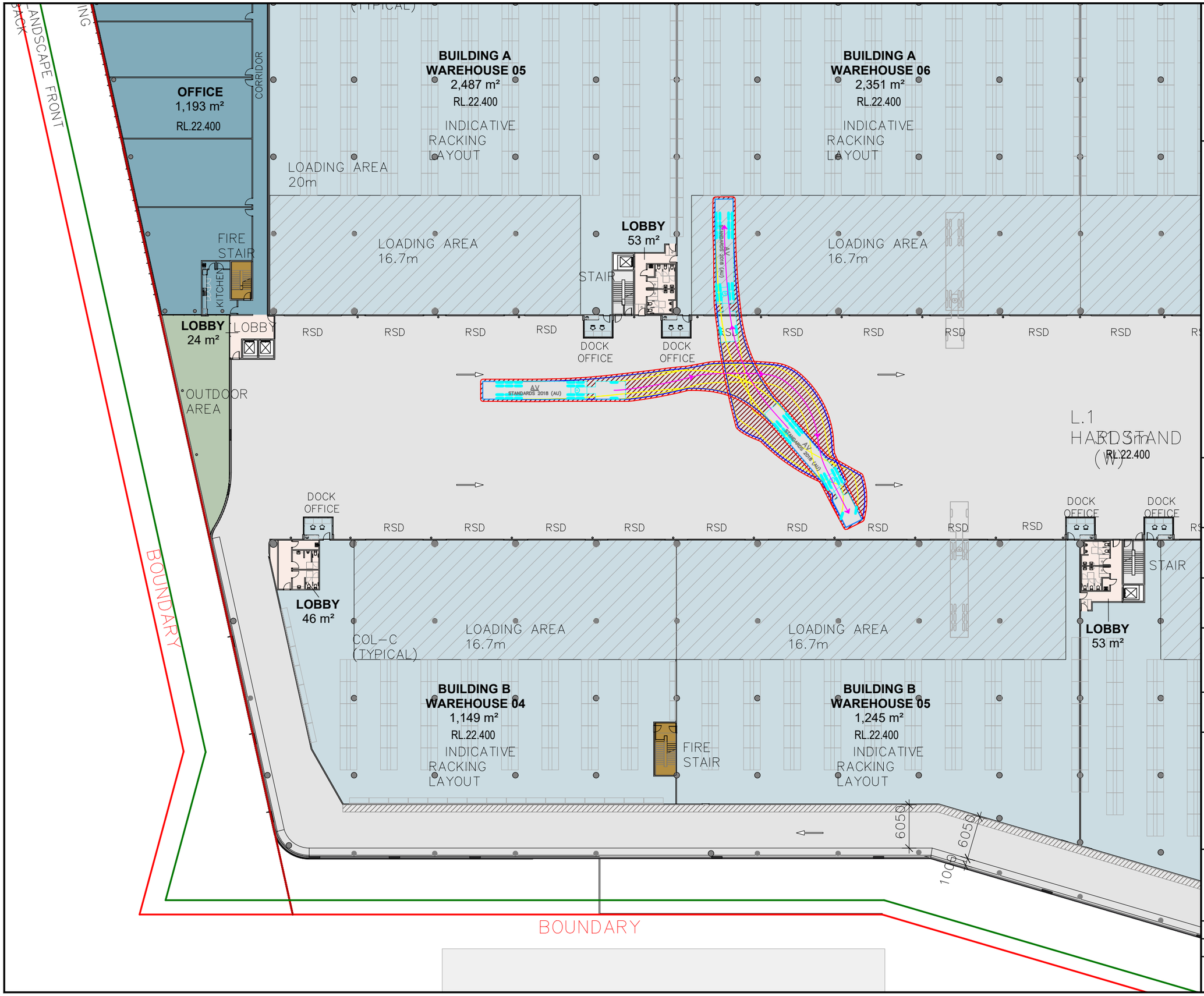
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Drawing Title
Swept Path Analysis
20m Articulated Vehicle
Hardstand Maneouvre

Drawn:	Checked:	Date:
SH	TY	06-11-24

23.255d06v01 TRAFFIX [241023 Plans] Design Review.dwg

Project No.	Drawing Phase	Drawing No.	Rev.
23.255	DA	TX.05	B



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Rev.	Revision Note	By.	Date
A	Prelim Swept Path Analysis	TY	09-04-24
B	Swept Path Analysis	SH	06-11-24

Swept Path Legend

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

Architect
SBA Architects

Client
ESR

Scale
0 5 10 15 20m
1:500 @ A3

Project Description
Proposed Multi-Level Industrial Development
49 Stephen Road, Banksmeadow, NSW 2019

Drawing Prepared By

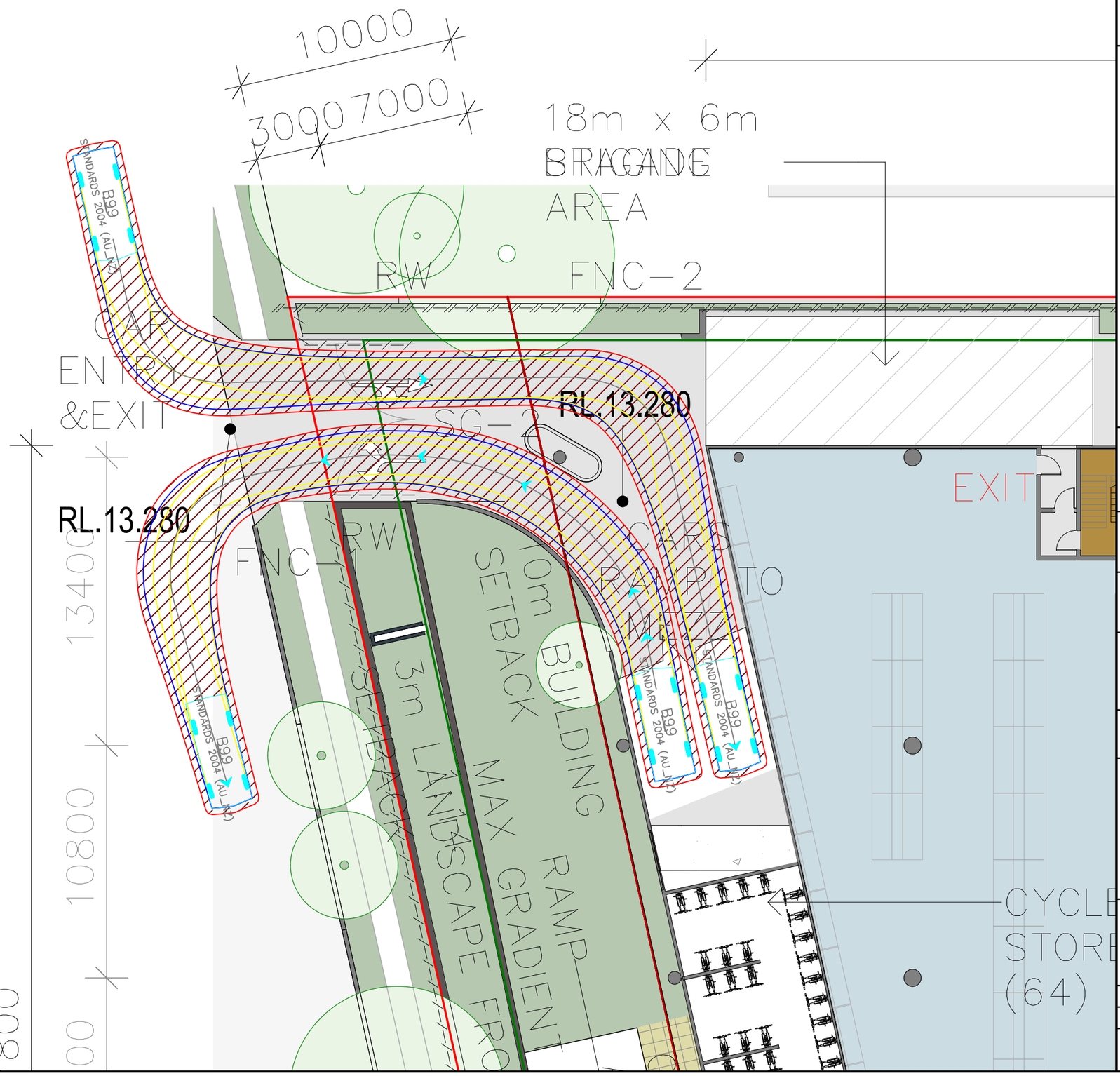
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Drawing Title
Swept Path Analysis
20m Articulated Vehicle
Hardstand Maneouvre

Drawn:	Checked:	Date:
SH	TY	06-11-24

23.255d06v01 TRAFFIX [241023 Plans] Design Review.dwg

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23.255	DA	TX.06	B



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Rev.	Revision Note	By.	Date
A	Prelim Swept Path Analysis	TY	09-04-24
B	Swept Path Analysis	SH	06-11-24

Swept Path Legend

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

Architect
SBA Architects

Client
ESR

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

Project Description
Proposed Multi-Level Industrial Development
49 Stephen Road, Banksmeadow, NSW 2019

Drawing Prepared By

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Drawing Title
Swept Path Analysis
B99 Vehicle
North Stephen Road Access
Entry and Exit

Drawn:	Checked:	Date:
SH	TY	06-11-24

23.255d06v01 TRAFFIX [241023 Plans] Design Review.dwg

Project No.	Drawing Phase	Drawing No.	Rev.
23.255	DA	TX.07	B