# Attachment A7

**Transport impact assessment**
**Life sciences development**

ARUP

Wentworth Capital

# 88-94 Parramatta Road, Camperdown

## Transport Impact Assessment – Life Sciences

Reference: 304985-00

Rev 03 | 24 September 2026



This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 304985-00

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# Document Verification

| | |
|---|---|
| **Project title** | 88-94 Parramatta Road Camperdown |
| **Document title** | Transport Impact Assessment |
| **Job number** | 304985-00 |
| **Document ref** | 260924_ 88-94 Parramatta Rd_ TIA_ Life Sciences |
| **File reference** | 260924_ 88-94 Parramatta Rd_ TIA_ Life Sciences |

| Revision | Date | | | | |
|---|---|---|---|---|---|
| | | **Filename** | 260119 88-94 Parramatta Road - Transport Impact Assessment – Life Sciences | | |
| Draft | 19/01/2026 | **Description** | Transport Impact Assessment – Life Sciences | | |
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| Rev 01 | 17/02/2026 | **Filename** | 260217 88-94 Parramatta Road - Transport Impact Assessment – Life Sciences | | |
| | | **Description** | Transport Impact Assessment – Life Sciences | | |
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| Rev 02 | 30/07/2026 | **Filename** | 260730_ 88-94 Parramatta Rd_ TIA_ Life Sciences | | |
| | | **Description** | Updated Transport Impact Assessment, based on City of Sydney feedback | | |
| | | | **Prepared by** | **Checked by** | **Approved by** |
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| | | **Signature** | | | |
| Rev 03 | 24/09/2026 | **Filename** | 260924_ 88-94 Parramatta Rd_ TIA_ Life Sciences | | |
| | | **Description** | Updated Transport Impact Assessment, based on latest City of Sydney feedback | | |
| | | | **Prepared by** | **Checked by** | **Approved by** |
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Issue Document Verification with Document ✓

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# 1. Introduction

## 1.1 Background

This Transport Impact Assessment is submitted to the City of Sydney on behalf of University of Sydney / Wentworth Capital in support of a Planning Proposal for an amendment to the *Sydney Local Environmental Plan 2012* for the introduction of a new site-specific Floor Space Ratio (FSR) and Height of Buildings development standard to enable up to 6.5:1 floor space ratio for non-residential uses, for the purpose of a life sciences research facility and ancillary uses at 88–94 Parramatta Road, Camperdown.

## 1.2 Proposal overview

This Planning Proposal seeks approval for amendments to the Floor Space Ratio (FSR) and Height of Buildings development standards under the Sydney Local Environmental Plan 2012 to facilitate a life sciences development at 88–94 Parramatta Road, Camperdown (the Site).

The Proposal includes a purpose-built life sciences research facility and ancillary uses, supported by life science office space, conference and retail uses. The Proposal also includes retention and adaptive reuse of the existing warehouse at 88–90 Parramatta Road and site-specific amendments to the Sydney Development Control Plan 2012 to guide future built form and public domain outcomes.

## 1.3 Purpose of this report

The purpose of this report is to support the Planning Proposal. The report summarises the existing transport conditions and assesses the likely traffic on the surrounding road network during the operation of the Proposal.

This report also assesses the internal traffic network within the Site, including access arrangements, internal circulation and loading dock operations. In addition, an outline Framework Travel Plan (FTP) and a framework Construction Traffic Management Plan (CTMP) will also be included as individual chapters in this report. The FTP is provided to support sustainable travel behaviours to and from the Proposal. The CTMP will establish the objectives and principles of traffic management during construction.

# 2. Existing transport environment

This section of the report details the existing transport network surrounding the development Site.

## 2.1 Site location

The Site is located at 88-94 Parramatta Road, Camperdown within the City of Sydney (CoS) Local Government Area (LGA). The site is situated on the traditional land of the Gadigal people.

The land is owned by the University of Sydney and is located on the opposite side of Parramatta Road from the main University of Sydney Camperdown/Darlington campus. The site fronts Parramatta Road along its southern boundary and is bounded by a mixture of uses to the north, east, and west of the site. The site is located just 4km south-west of the Sydney CBD, and 2.5km west of Central Station, and is currently largely used by the University of Sydney for university purposes. The site's locational context is shown at Figure 1.

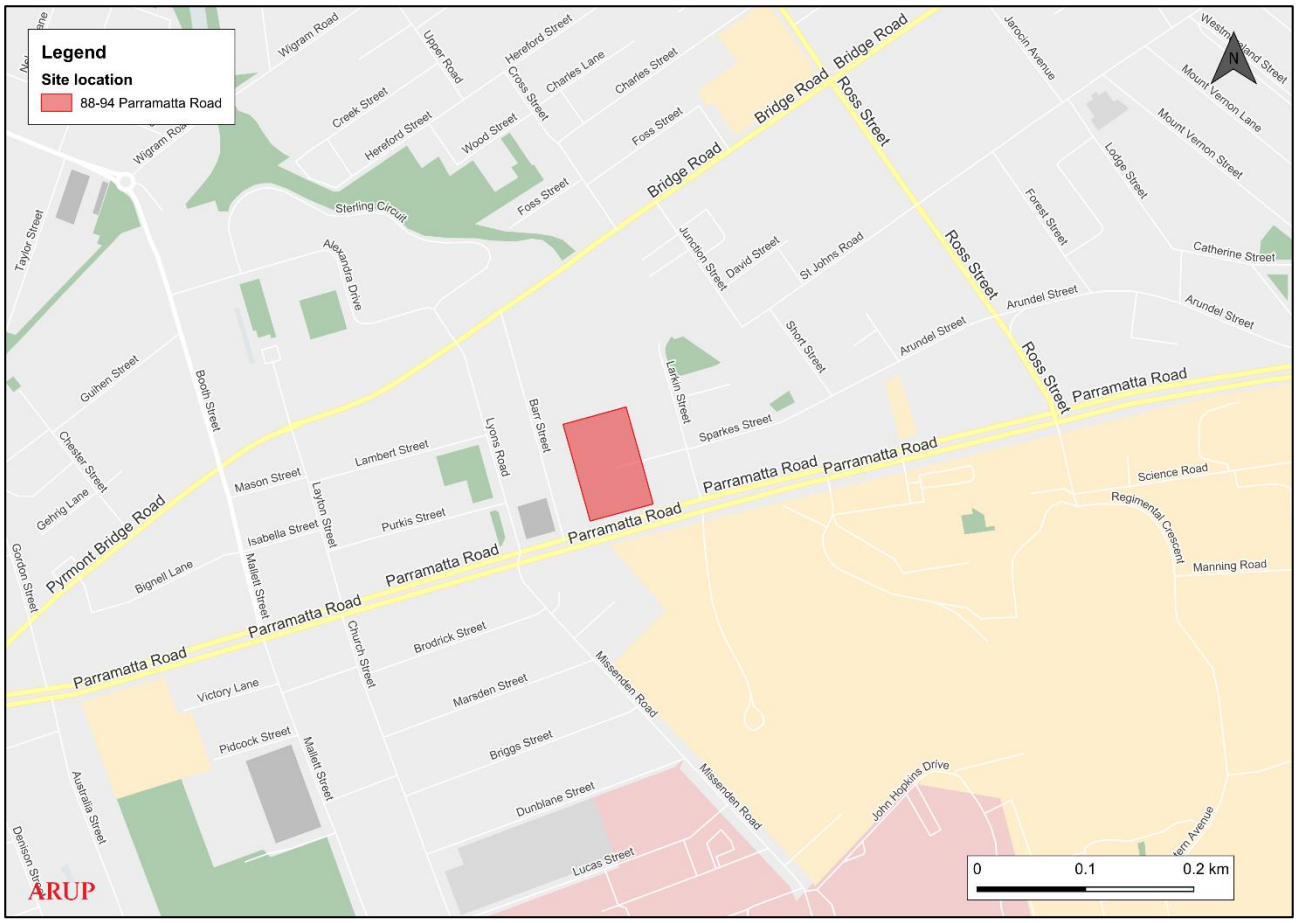



**Figure 1: Site location**

## 2.2 Road network

### 2.2.1 Parramatta Road

Parramatta Road is a major arterial road that runs in an east-west direction along the southern boundary of the Site. It is a two-way road generally configured with three lanes in each direction inclusive of kerbside bus lanes. The section of Parramatta Road that runs past the Site is subject to a posted speed limit of 60km/h and has parking restrictions during bus lanes hours of operation from 6am to 10am and 3pm and 7pm weekdays.

### 2.2.2 Ross Street

Ross Street runs in a north-south direction approximately 350m to the east of the Site. It is a two-way road generally configured with one lane in each direction with kerbside car parking provided for permit holders

on the eastern side of the road between Parramatta Road and St Johns Road and both sides of the road between St Johns Road and Bridge Road. This section of Ross Street provides a highway frontage to residential and commercial properties and is subject to a 50km/h posted speed limit.

### 2.2.3 Bridge Road

Bridge Road is a two-way road that runs in a northeast to southwest direction approximately 130m to the north of the Site. The section of road that runs to north of the Site is generally configured with one lane in each direction with on-street segregated cycle lanes on both sides of the road. This section of Bridge Road is a designated clearway with parking restrictions on both sides of the road and a posted speed limit of 40km/h.

### 2.2.4 Sparkes Street

The existing vehicular access to the Site is from Sparkes Street. Sparkes Street is a local road that runs in an east-west direction between the eastern boundary of the Site and Short Street. Sparkes Street is intersected by Larkin Street. The section of Sparkes Street between the Site access and Larkin Street is a two-way road with parking and stopping restrictions on the southern side of the road. On-street parking on the northern side of the road reduces the effective carriageway width to approximately 3.5 metres, which limits the ability for two vehicles to pass simultaneously.

## 2.3 Traffic survey and data

Comprehensive and extensive traffic survey data were collated and analysed as part of the study, which are summarised in Table 1.

**Table 1: Traffic survey and data summary**

| # | Data type | Specification | From | Use case |
|---|---|---|---|---|
| 1 | Intersection turn count | • Intersection:<br>(1) Parramatta Road / Missenden Road / Lyons Road intersection<br>(2) Parramatta Road / Western Avenue / Ross Street intersection<br>(3) Bridge Road / Ross Street intersection<br>• Date: 26 November 2024<br>• Time:<br>o AM (7:00 am - 10:00 am),<br>o PM (4:00 pm - 7:00 pm)<br>• Vehicle type: cars, rigid trucks, articulated trucks, buses, and pedestrians<br>• Data interval: 15-minute | Matrix | Identify peak hours, and traffic volume inputs into SIDRA modelling |
| | | • Intersection:<br>(4) Parramatta Road / Larkin Street intersection<br>(5) Sparkes Street / Larkin Street intersection<br>(6) Ross Street / Arundel Street intersection<br>• Date: 2 July 2026<br>• Time:<br>o AM (6:00 am - 10:00 am),<br>o PM (3:00 pm - 7:00 pm)<br>• Vehicle type: cars, rigid trucks, articulated trucks, buses, and pedestrians<br>• Data interval: 15-minute | Trans Traffic Survey | Identify peak hours and traffic volume inputs into SIDRA modelling. Additional intersections as requested by CoS. |
| 2 | Crash history data | Vehicle crashes during 2020–2024 within the study area | TfNSW Open Data Hub | Review road safety aspects and identify crash trends |

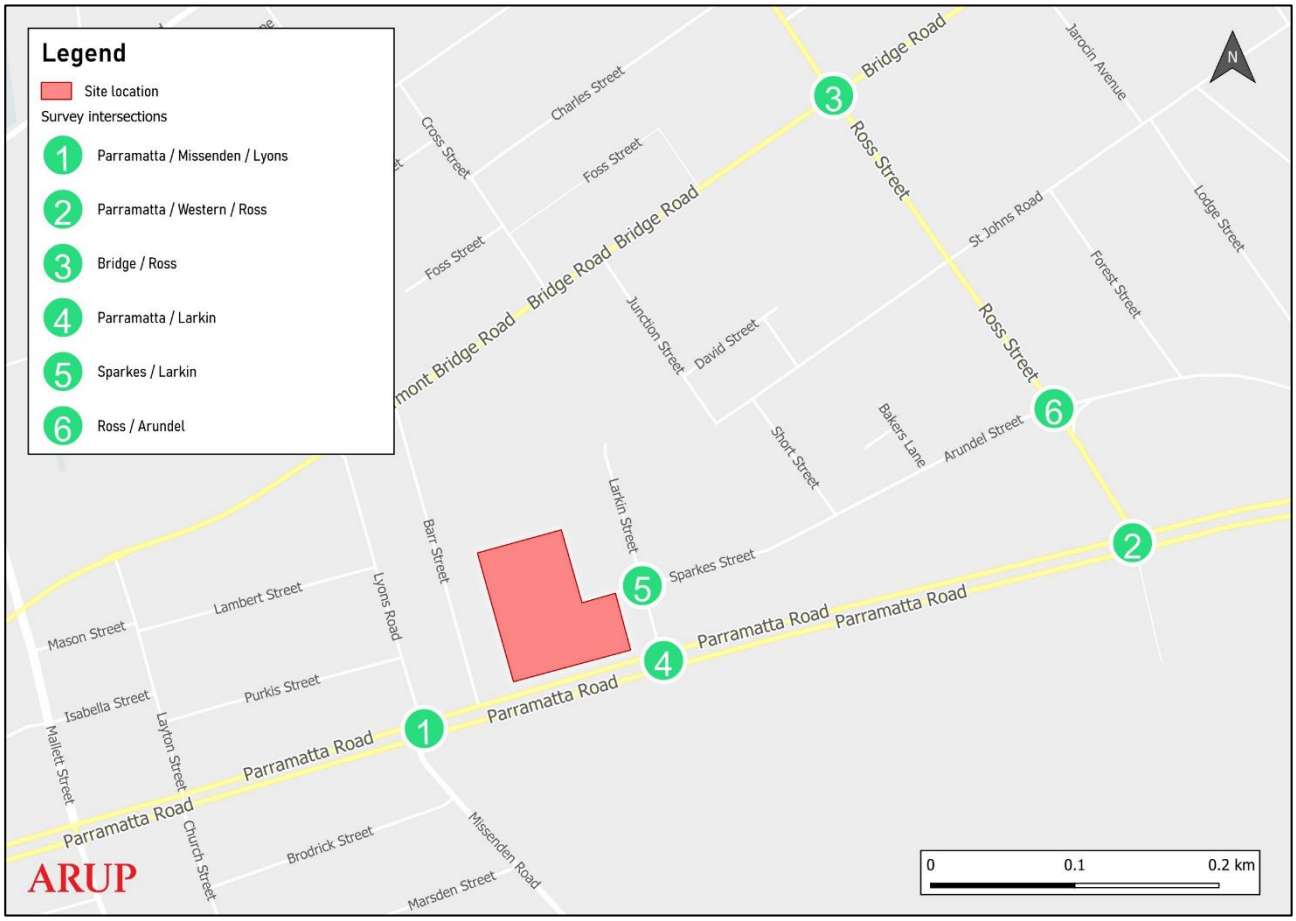



Figure 2: Key intersections surveyed

## 2.4 Traffic demand profile

The hourly traffic volumes for the three signalised surveyed intersections, gathered from the turn count survey, are summarised in Figure 3 for the morning (AM) and evening (PM) survey periods.

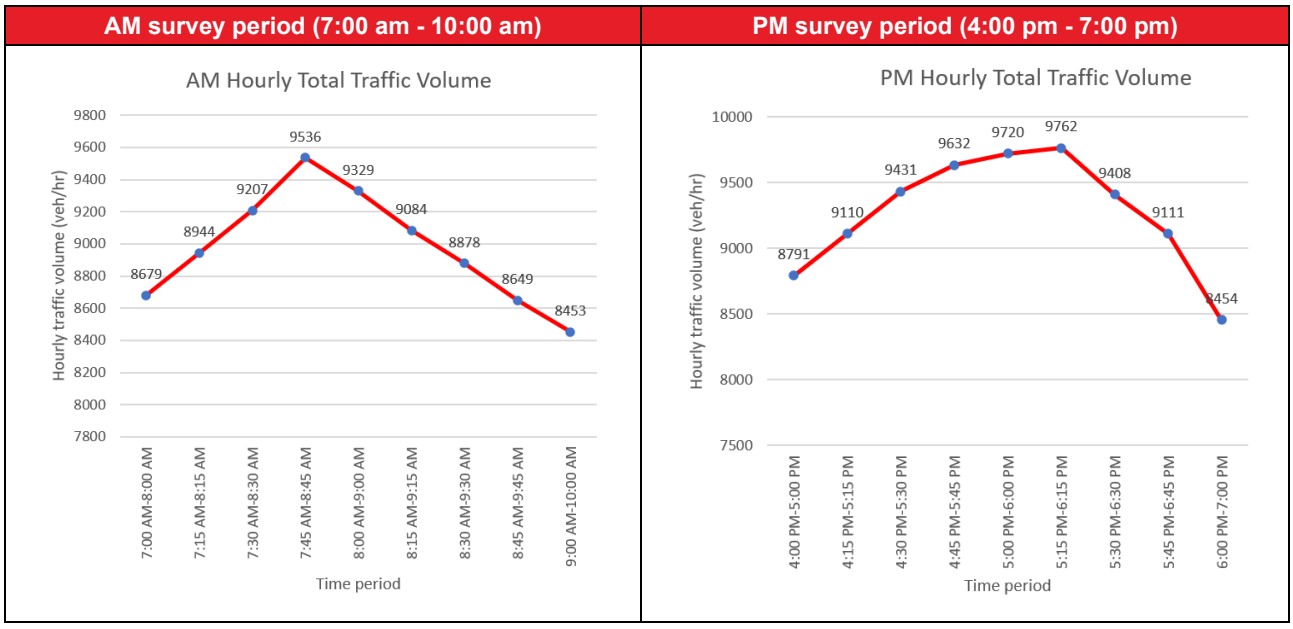



Figure 3: Hourly traffic demand profile

## 2.5 Peak hour

Based on the traffic demand profiles in Figure 3, the weekday peak hours were identified as:

- AM peak hour: 7:45 am – 8:45 am,
- PM peak hour: 5:15 pm – 6:15 pm.

SIDRA models were developed for these hours as they represent the critical network delay and degree of saturation (DoS) mainly with respect to the dominant through movements on Parramatta Road.

The associated total traffic volumes for each intersection are summarised in Table 2.

**Table 2: Weekday peak hours and traffic demand at intersections**

| Intersection | | Total traffic volume at intersection | |
|---|---|---|---|
| | | AM (7:45 am – 8:45 am) | PM (5:15 pm – 6:15 pm) |
| (1) | Parramatta Road / Missenden Road / Lyons Road intersection | 3,883 vehicles | 3,758 vehicles |
| (2) | Parramatta Road / Western Avenue / Ross Street intersection | 3,586 vehicles | 3,741 vehicles |
| (3) | Bridge Road / Ross Street intersection | 2,067 vehicles | 2,263 vehicles |
| (4) | Parramatta Road / Larkin Street intersection | 3,183 vehicles | 3,165 vehicles |
| (5) | Sparkes Street / Larkin Street intersection | 87 vehicles | 79 vehicles |
| (6) | Ross Street / Arundel Street intersection | 774 vehicles | 885 vehicles |

## 2.6 2026 survey factoring up

The July 2026 traffic surveys were undertaken during the NSW school holiday period. To account for potentially lower traffic volumes, the eastbound and westbound through movements along the Parramatta Road were compared between the 2026 data Parramatta Road / Larkin Street and the 2024 data at Parramatta Road / Missenden Road and Parramatta Road / Ross Street.

The comparison confirmed that 2026 school holiday traffic volumes were lower than the 2024 school-day traffic volumes. Accordingly, the following weighted average uplift factors were derived and applied to the July 2026 survey data to better represent typical weekday traffic conditions and maintain consistency with the November 2024 survey dataset.

- AM peak uplift factor: +11%
- PM peak uplift factor: +12%

## 2.7 Walking environment

The walking accessibility of the Site is very good due to its location in an urban setting close to Sydney CBD. Most roads in the surrounding area have footpaths on both sides, and intersections have pedestrian facilities for crossing.

A walking accessibility assessment for the 10, 15 and 20-minute walking catchments has been undertaken and is shown in Figure 4. Within the 10-minute catchment, there are ten bus routes, with eight of them stopping on Parramatta Road, at the bus stop directly outside the Site. One additional bus route is accessible within the 15-minute walking catchment. To the north two light rail stops along the L1 line are accessible within the 20-minute walking catchment, as well as an additional seven bus routes. The train stations that service the T2 and T3 lines are just outside the 20-minute walking catchment.

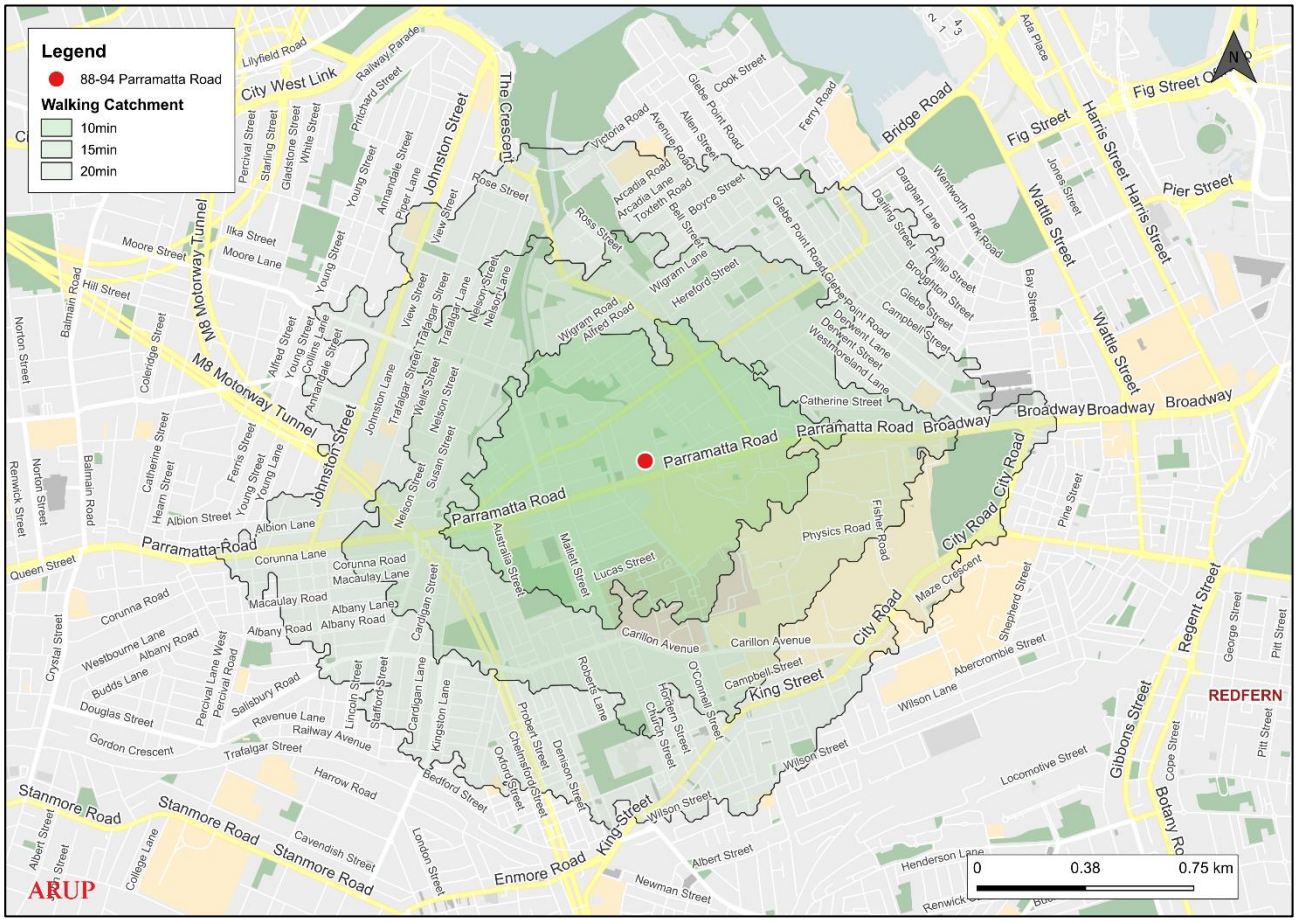



**Figure 4: Walking accessibility**

## 2.8 Cycling environment

The cycling accessibility of the Site is good due to its location in an urban setting and the presence of separated and shared use cycleways and paths as shown in Figure 5. Parramatta Road does not have any cycling infrastructure located along it. However, Bridge Road to the north has a separated off-road cycleway which connects into a network of off-road shared paths to the north of the Site.

A cycling accessibility assessment has been undertaken for the 10, 20 and 30-minute cycling catchments as shown in Figure 6. Four train stations and three light rail stops are located within the 10-minute cycling catchment. These train stations service the T2 and T3 rail lines and offer connections to the Sydney CBD and other key centres within Greater Sydney. The light rail stops services the L1 line connecting the Central Station to Dulwich Hill. Leichhardt, Chippendale and Stanmore are also a 10-minute cycle from the Site. Within the 20-minute catchment, additional train lines are accessible, such as the T1, T4, T8 and T9 as well as the new Metro line. Surry Hills, Balmain, Alexandria and Ashfield are all reachable within a 20-minute cycle. The Sydney CBD, Rosebery, Ashbury and Drummoyne are within a 30-minute cycle from the Site.

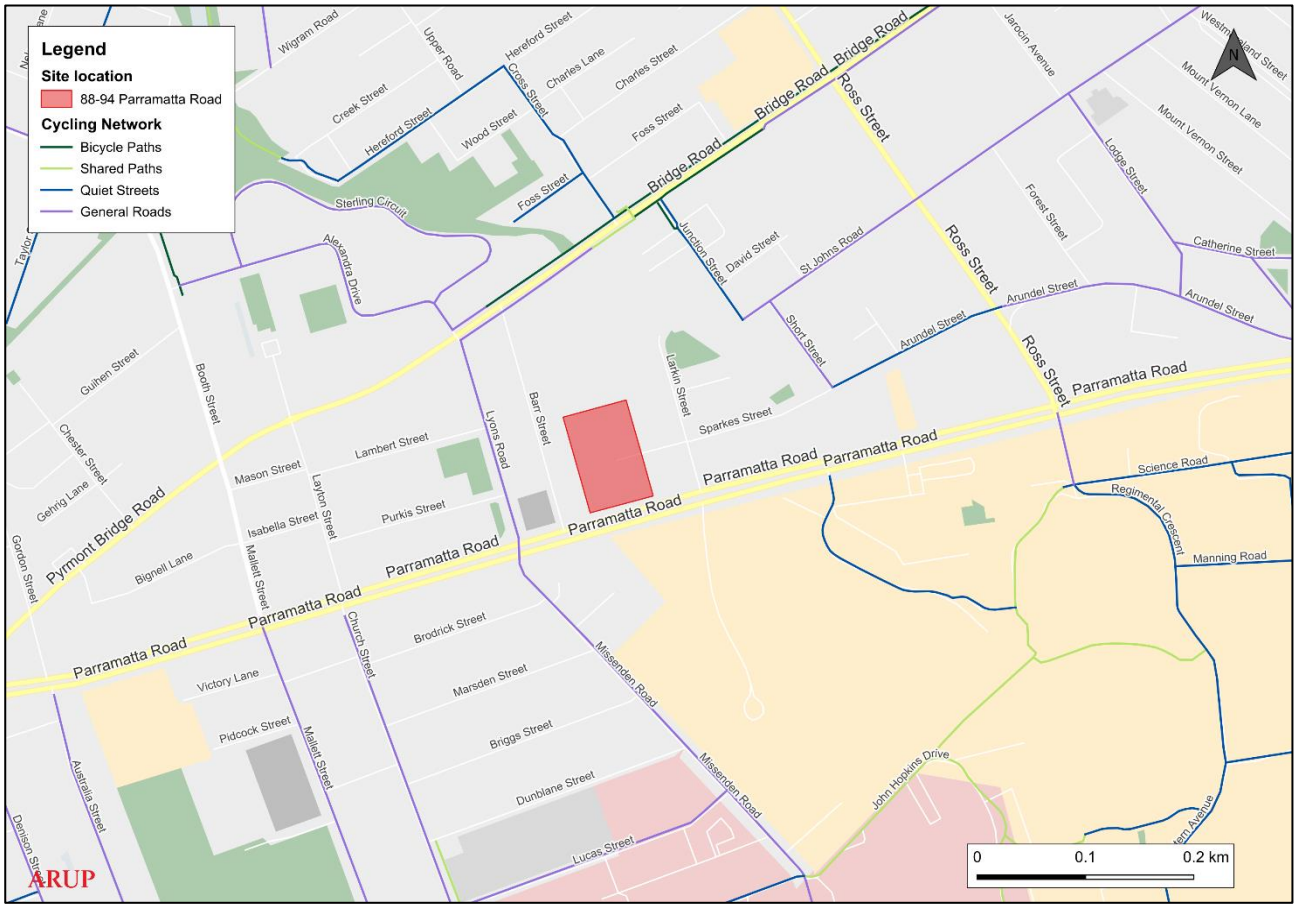



**Figure 5: Cycling network (source: City of Sydney)**

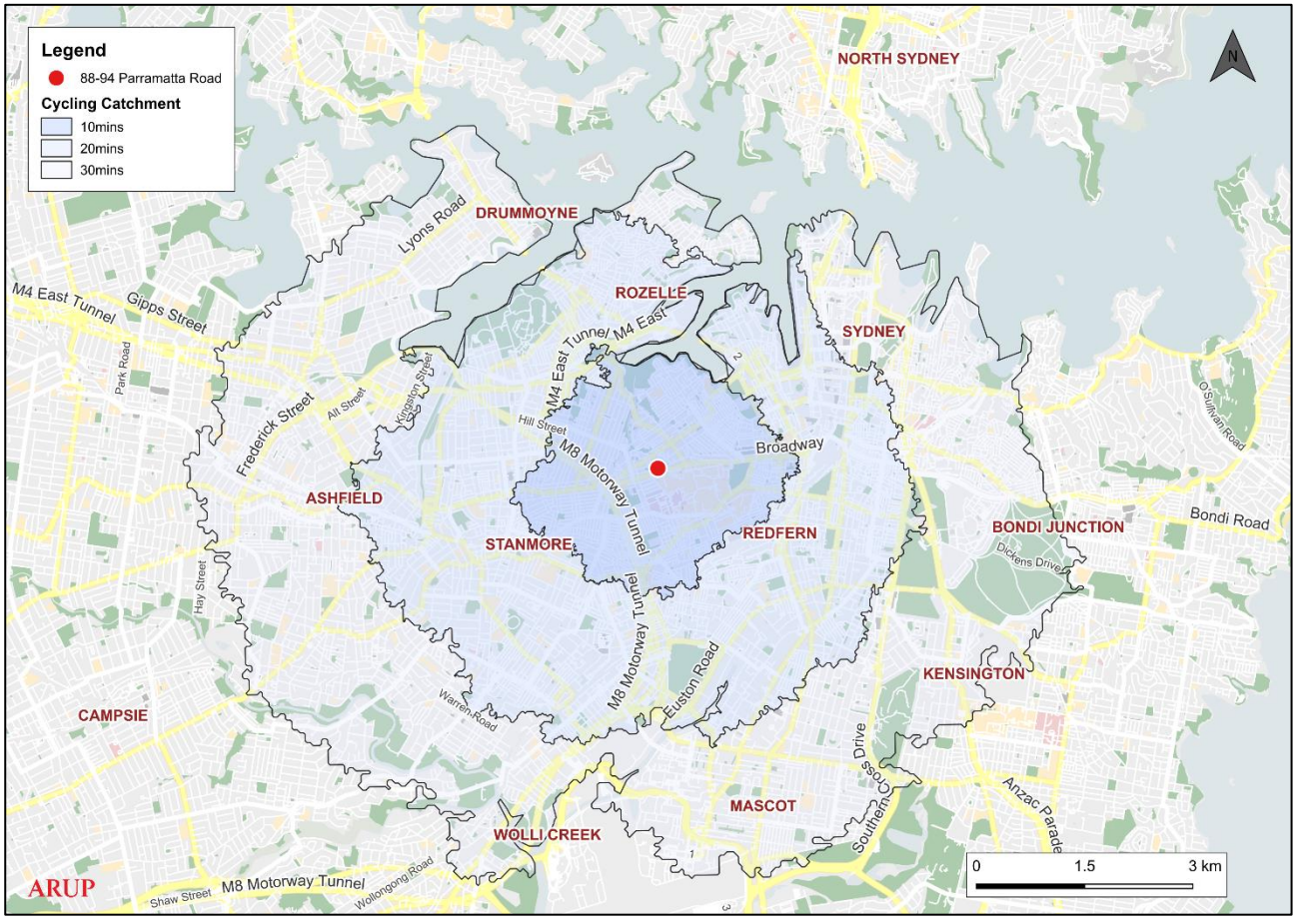



**Figure 6: Cycling accessibility**

## 2.9 Public transport

The Site is well connected to metropolitan Sydney as well as Greater Sydney via public transport. City of Sydney has categorised the Site's public transport accessibility as Category D, which is the highest level of accessibility. The train routes that service nearby stations mentioned in Section 2.7 and Section 2.8, stop at many stations around Sydney and most train lines are accessible with just one transfer. Bus services available on Parramatta Road and King Street connect the Site with other inner-city regions of Sydney.

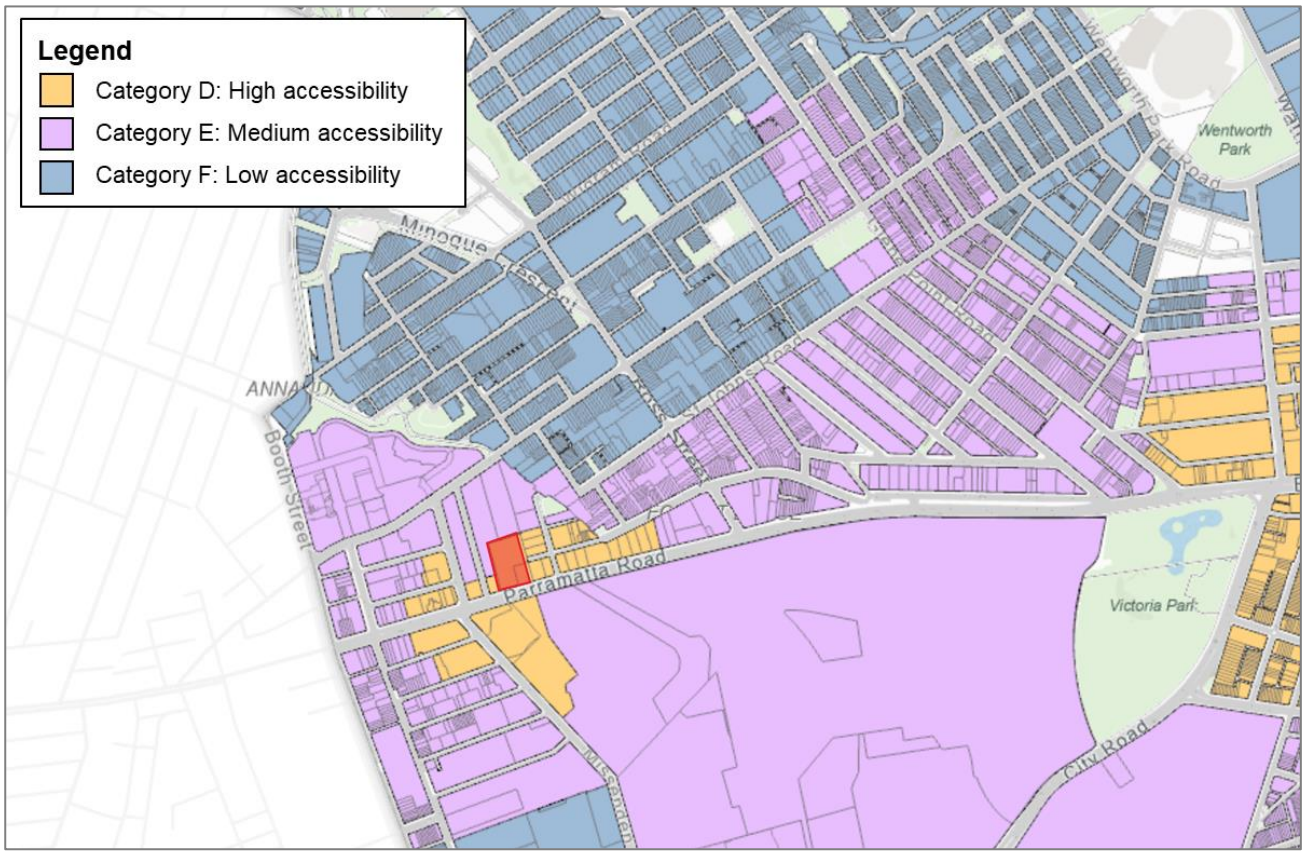



**Figure 7: Public transport accessibility (source: City of Sydney LEP)**

A public transport accessibility assessment has been undertaken for the AM (arriving at 9:00 am) and PM (departing at 5:30 pm) for the 15, 30, 45 and 60-minute catchments as shown in Figure 8 and Figure 9.

Public transport options available allow users to travel to/from as far as the likes of Parramatta, Chatswood and Revesby within 60 minutes. The inner city is mostly within the 45-minute catchment.

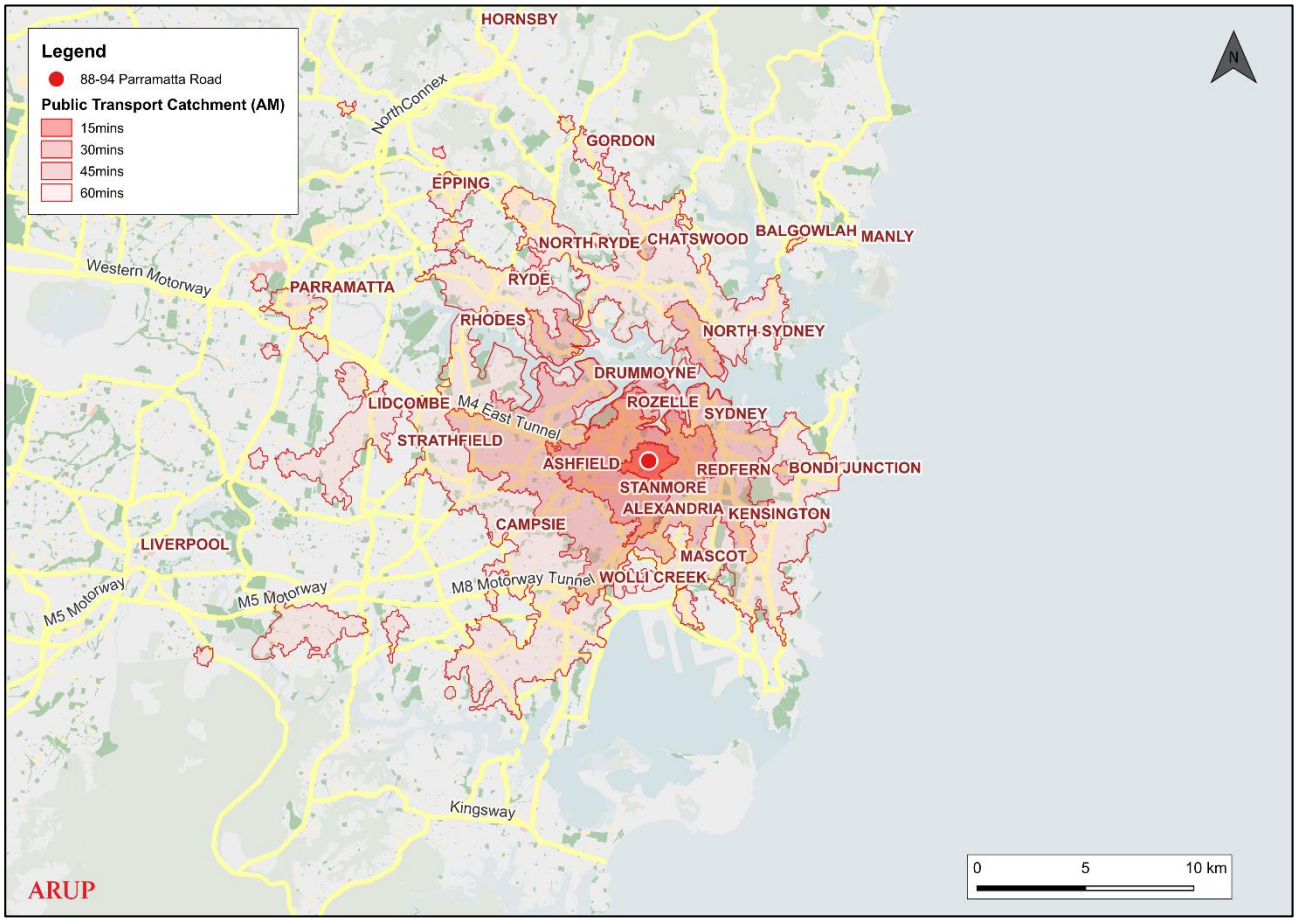



**Figure 8: Public transport accessibility – AM (Arriving at the Site at 9am)**

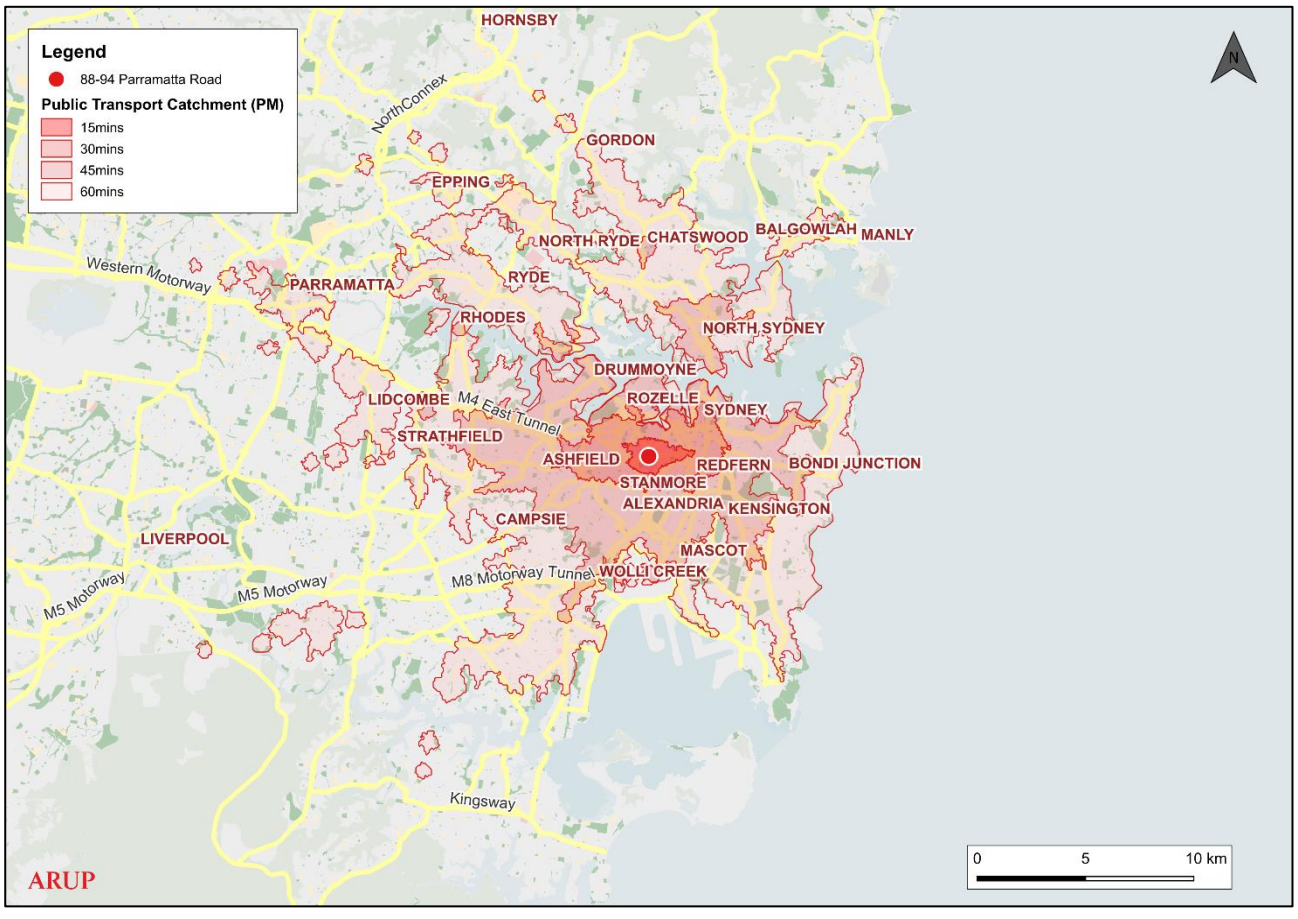



**Figure 9: Public transport accessibility – PM (Departing from the Site at 5:30pm)**

### 2.9.1 Bus

The Transdev John Holland bus routes service the roads surrounding the Site with the main routes located on Parramatta Road, King Street and Glebe Point Road. These services are shown in Figure 10 and summarised in Table 3.




**Figure 10: Bus routes**

Bus routes located within a 20-minute walk of the Site are summarised in Table 3, together with their respective service frequencies. These routes typically operate at least hourly between 6am and 9pm on weekdays and between 8am and 6pm on Saturdays and Sundays.

**Table 3: Bus routes and frequency**

| Route | Description | Closest stop | Walk time to stop | AM Peak Frequency | PM Peak Frequency |
|---|---|---|---|---|---|
| 352 | Marrickville Metro to Bondi Junction | King Street | 15 mins | 2 Inbound<br>2 Outbound | 2 inbound<br>3 Outbound |
| 370 | Coogee to Glebe Point | King Street/Glebe Point Road | 15 mins | 6 Inbound<br>9 Outbound | 12 Inbound<br>7 Outbound |
| 412 | Campsie to City Martin Place via Earlwood & Dulwich Hill | Parramatta Road | 5 mins | 3 Inbound<br>4 Outbound | 2 Inbound<br>3 Outbound |
| 413 | Campsie and Central Pitt Street | Parramatta Road | 5 mins | 5 Inbound<br>2 Outbound | 3 Inbound<br>4 Outbound |

| Route | Description | Closest stop | Walk time to stop | AM Peak Frequency | PM Peak Frequency |
|---|---|---|---|---|---|
| 422 | Kogarah to Central Pitt Street | Parramatta Road | 5 mins | 4 Inbound<br>4 Outbound | 4 Inbound<br>4 Outbound |
| 423 | Kingsgrove to City Martin Place | King Street | 15 mins | 6 Inbound<br>5 Outbound | 14 Inbound<br>10 Outbound |
| 423X | Earlwood Shops to Martin Place | King Street | 15 mins | 1 Inbound | 2 Outbound |
| 426 | Dulwich Hill to City Martin Place | King Street | 15 mins | 4 Inbound<br>2 Outbound | 4 Inbound<br>4 Outbound |
| 428 | Canterbury to City Martin Place | King Street | 15 mins | 6 Inbound<br>4 Outbound | 4 Inbound<br>6 Outbound |
| 428X | Canterbury Station to Martin Place | King Street | 15 mins | 3 Inbound | 3 Outbound |
| 430 | Sydenham to Central Railway Square (Loop Service) | King Street | 15 mins | 3 Inbound | 3 Inbound |
| 431 | Glebe Point to City Martin Place | Glebe Point Road | 15 mins | 6 Inbound<br>6 Outbound | 5 Inbound<br>6 Outbound |
| 433 | Balmain Gladstone Park to Central Pitt Street | Minogue Crescent | 12 mins | 8 Inbound<br>5 Outbound | 5 Inbound<br>6 Outbound |
| 438X | Canterbury to City Martin Place | Parramatta Road | 5 mins | 10 Inbound<br>6 Outbound | 6 Inbound<br>9 Outbound |
| 440 | Bondi Junction to Rozelle | Parramatta Road | 5 mins | 10 Inbound<br>5 Outbound | 6 Inbound<br>5 Outbound |
| 461X | Burwood to City Domain | Parramatta Road | 5 mins | 6 Inbound<br>5 Outbound | 4 Inbound<br>6 Outbound |
| 469 | Marketplace Leichhardt to Glebe (Loop Service) | Ross Street | 10 mins | 3 Inbound | 3 Inbound |
| 470 | Lilyfield to City Martin Place | Ross Street | 10 mins | 10 Inbound<br>6 Outbound | 7 Inbound<br>8 Outbound |
| 480 | Strathfield to Central Pitt Street via Homebush Road | Parramatta Road | 5 mins | 3 Inbound<br>3 Outbound | 2 Inbound<br>8 Outbound |
| 483 | Strathfield to Central Pitt Street via South Strathfield | Parramatta Road | 5 mins | 4 Inbound<br>2 Outbound | 4 Inbound<br>3 Outbound |

### 2.9.2 Light Rail

The Site is not currently served directly by light rail. The closest light rail station is Glebe Station located 1.5km (a 20-minute walk) northeast from the Site. Glebe Station is part of the L1 light rail line which connects Dulwich Hill and Central Station at a service frequency of every 6 minutes during the weekday peak, 10 minutes during weekday off peak and 15 minutes on Saturdays.

Glebe Station is accessible from the Site via the 440 and 469 bus routes which both stop on Glebe Point Road within 260m walk from the light rail station.

The ALTRAC consortium has proposed a new light rail line from Parramatta Road to Green Square via Central Station. The proposed 11km route would run along Parramatta Road and Broadway, passing through Central Station and various stops along the route, before terminating at Green Square Station. If delivered, the project would significantly improve public transport within the local area and provide an alternative option to access the Site from Sydney CBD.

On 24 June 2024, City of Sydney confirmed its support for the project and committed to working with the NSW Government and other stakeholders to accelerate the planning, consultation and delivery of the project as soon as possible[1].

### 2.9.3 Train

The nearest train station to the Site is Macdonaldtown Station which is located approximately 1.6km (a 23-minute walk) south of the Site, or a 10-minute cycle. Macdonaldtown Station is served by T2 train services which connect Parramatta to Sydney CBD via Strathfield every 8-15 minutes during peak hours. The Station is also served infrequently by T3 Liverpool and Inner West Line services.

Further from the Site, there are options for alternative rail lines. Erskineville Station is located approximately 400m south of Macdonaldtown Station and 2km south of the Site. This station is served by Sydney Trains T8 Airport and South services which connect Sydenham and Campbeltown to Sydney CBD every 15 minutes during peak hours.

### 2.9.4 Metro

While the Site is not directly served by Sydney Metro, Metro services can be accessed from Central Station approximately 2.3km to the east of the Site (10-minute cycle). Central Station is served by the Metro M1 line which connects Tallawong to Sydenham via Sydney's CBD with services running every 4 minutes during peak hours. This line will eventually continue directly to Bankstown via the converted T3 line to metro services.

Central Station is accessible from the Site via multiple bus routes that operate along Parramatta Road and Broadway, including the 422, 412, 413 and 483. These services stop on Pitt Street within 150m of Central Station.

## 2.10 Travel behaviour

Australian Bureau of Statistics (ABS) 2016 Census data has been used to understand travel. The existing mode share for the Site was calculated using the 2016 Journey to Work Census data for two Statistical Area Level 2 (SA2) Glebe/Forest Lodge and Newtown/Camperdown/Darlington, with resultant mode shares presented below in Table 4.

2016 Census data was used to approximate the existing mode share. The more recent 2021 Census data was not used due to the significant impact on movement during the COVID-19 pandemic.

[1] https://meetings.cityofsydney.nsw.gov.au/ieDecisionDetails.aspx?AIId=17932

**Table 4: Existing mode share for SA2 (Glebe/Forest Lodge and Newtown/Camperdown/Darlington)**

| Mode | Mode share 2016 |
|---|---|
| Private vehicle | 44% |
| Rail | 24% |
| Bus | 14% |
| Walk | 13% |
| Bicycle | 3% |
| Motorcycle | 1% |
| Ferry | <1% |
| Other | <1% |

The most common mode of transport is private vehicle followed by public transport. Due to the large area of the two SA2s used the mode share may not be exactly representative of the Site. The Site has a Public Transport Accessibility Level Category D, as shown in Figure 7, which is the highest level. The surrounding area surrounding the Site is Category E or F. This would indicate that the Site has better access to Public Transport than the rest of the SA2's and the public transport mode share is likely higher than what is shown in Table 4.

# 3. Proposed development

This section describes the proposed development including proposals for pedestrian, cycle and vehicular access as well as cycle and car parking facilities.

## 3.1 Site layout

With regard for the increased floor space ratio and height, the reference scheme considers a new life science and life science education buildings the Planning Proposal intends to increase floor space ratio and height to enable a new Life Science Hub.

The Proposal involves the construction of a new Life Science building and Life Science Office and Education building, and a small amount of retail. The Proposal includes three basement levels, two for parking and one loading dock. The Site will be accessed from the east via Sparkes Street.

The Site is currently zoned for mixed use - MU1. The area surrounding the Site is zone for infrastructure – SP2 to the south and mostly residential - R1 to the north. The Site is currently a university building with research labs and workspaces. A schedule of the proposed land uses and floor areas can be seen in Table 5.

**Table 5: Proposed Area Schedule (Gross Floor Area [GFA])**

| Level | Office | Life Science |
|---|---|---|
| | GFA | GFA |
| Ground | 550m$^2$ | 2,205m$^2$ |
| Level 1 | 1476m$^2$ | 1,280m$^2$ |
| Level 2 | 1116m$^2$ | 1,600m$^2$ |
| Level 3 | 922.5m$^2$ | 1,200m$^2$ |
| Level 4 | 765m$^2$ | 1,600m$^2$ |
| Level 5 | 765m$^2$ | 1,800m$^2$ |
| Level 6 | 765m$^2$ | 1,800m$^2$ |
| Level 7 | 287.5m$^2$ | 1,800m$^2$ |
| Level 8 | - | 1,800m$^2$ |
| Level 9 | - | 1,800m$^2$ |
| Level 10 | - | 1,800m$^2$ |
| Level 11 | - | 1,800m$^2$ |
| Level 12 | - | 1,800m$^2$ |
| Level 13 | - | 1,800m$^2$ |
| Level 14 | - | 1,800m$^2$ |
| Level 15 | - | 1,800m$^2$ |
| **Total** | **6,647m2** | **27,685m$^2$** |

The proposed layout for the Site is shown in Figure 11.

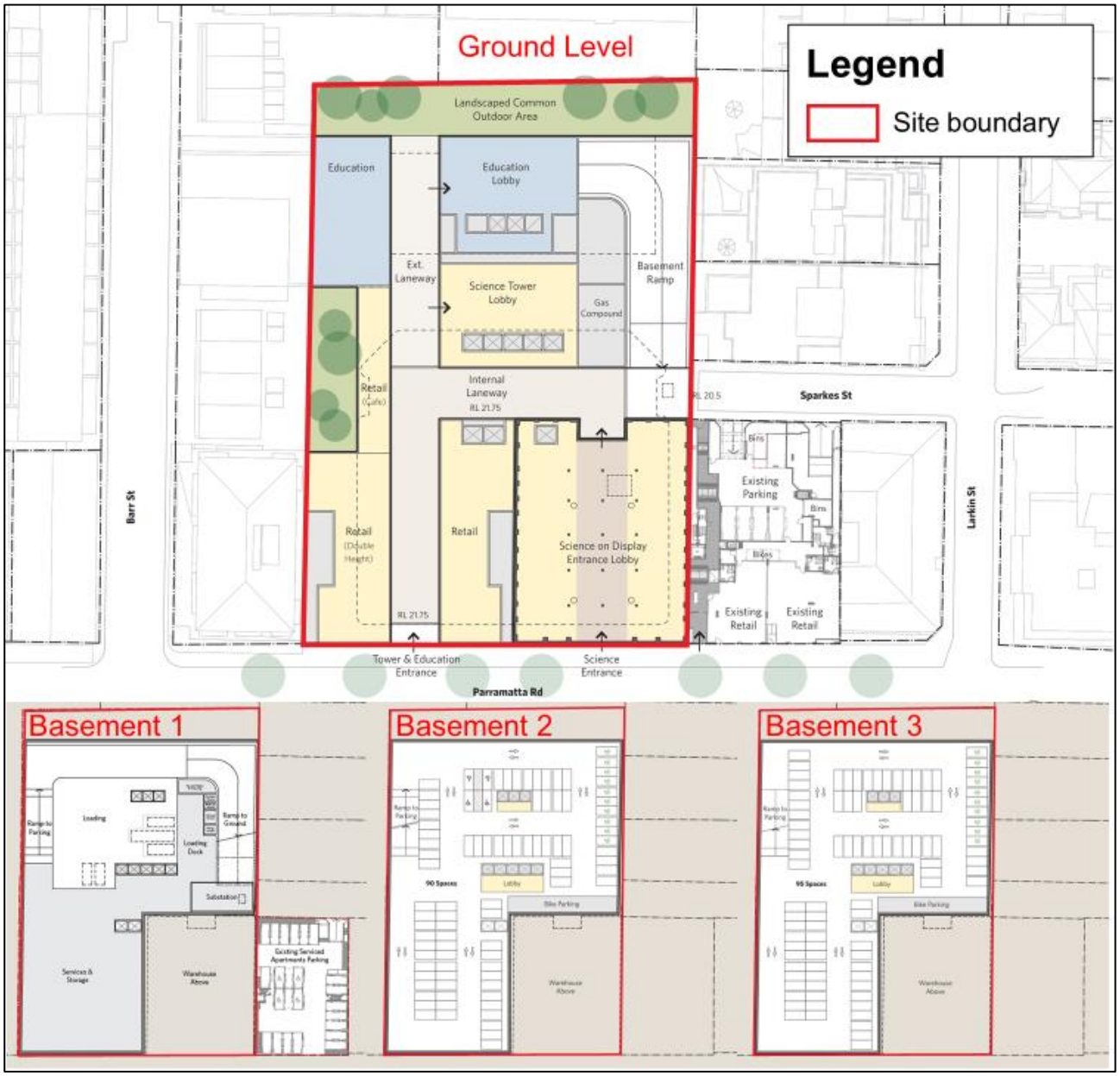



**Figure 11: Proposed site layout**

## 3.2 Site access

The following sub-sections detail the key principles of the pedestrian, cycling and vehicular movement and access strategy for the proposed development.

### 3.2.1 Pedestrian and cycling access

The pedestrian and cyclist access points for the Site are shown in Figure 12.

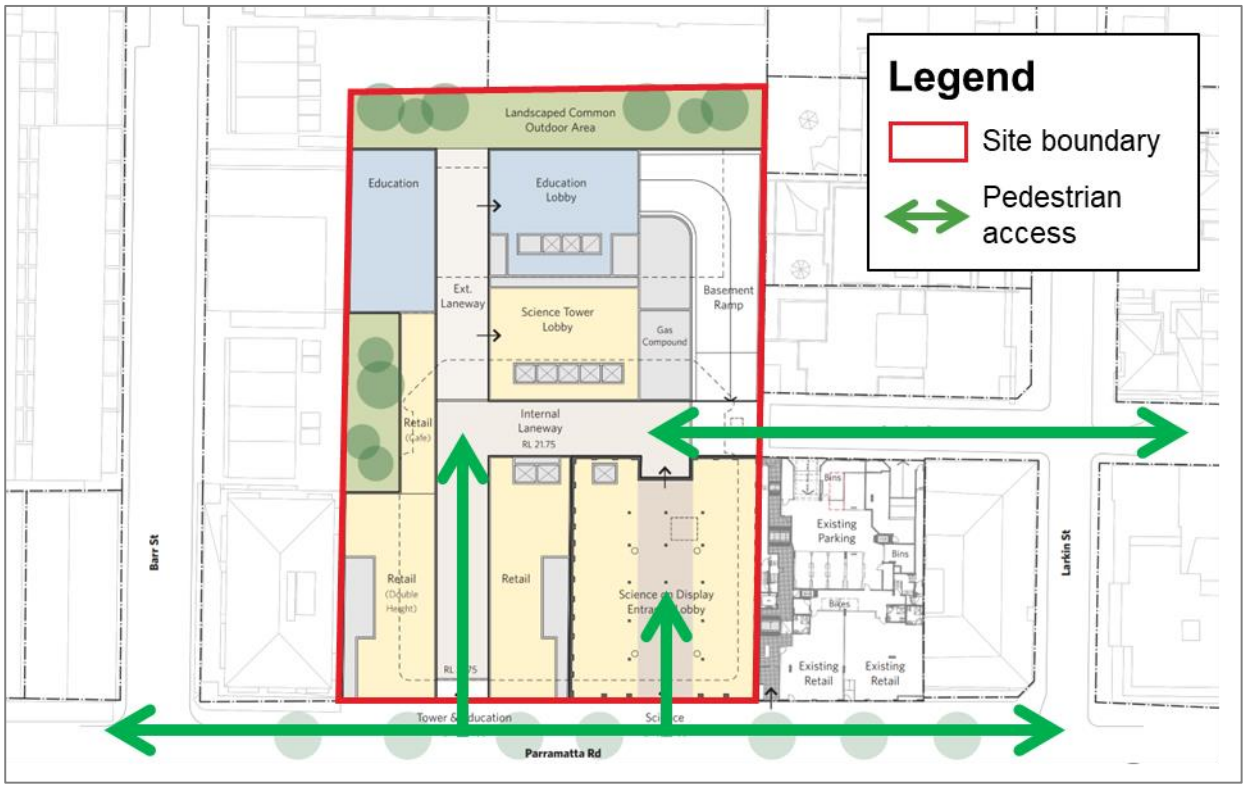



**Figure 12: Pedestrian and cycling access**

The main pedestrian access points to the Site are proposed from Parramatta Road with an entrance that provides access to the education building via an internal laneway and a dedicated science entrance that facilitates access to the lobby for the life sciences building.

### 3.2.2 Vehicle access

The proposed development site has been designed to accommodate vehicle movements associated with car parking, delivery and servicing activities. Access to basement level car parking and loading dock is proposed to be from Sparkes Street, as shown in Figure 13.

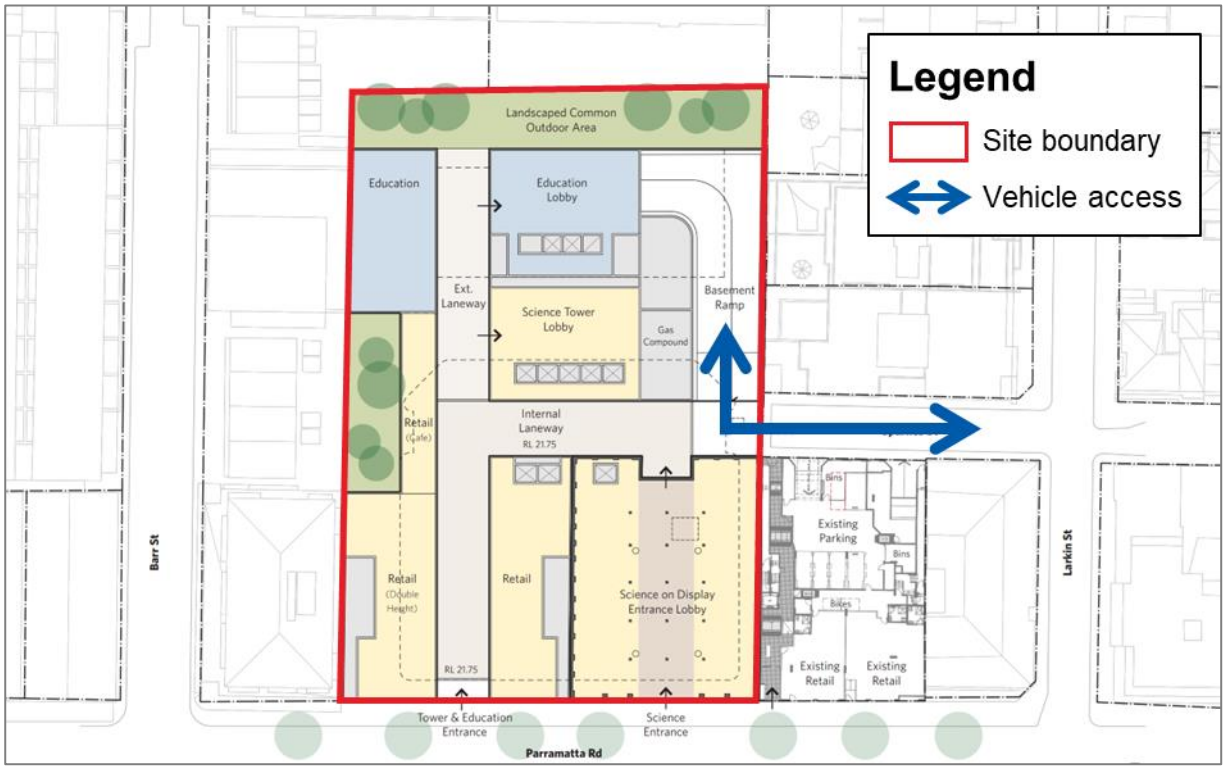



**Figure 13: Vehicle access**

### 3.2.3 Utilities access

#### *3.2.3.1 Laboratory gases*

Cryogenic gas is required for laboratory activities at the proposed development. Delivery and servicing activities associated with laboratory gases are proposed to take place on Sparkes Street adjacent to the proposed basement ramp access.

Laboratory gas deliveries would be undertaken using an 8.8 m Medium Rigid Vehicle (MRV).

BOC has confirmed that the proposed liquid nitrogen and liquid carbon dioxide storage vessels can be serviced using its smaller delivery vehicles. BOC has also confirmed that an 8.8 m entrance allowance would accommodate the vehicle used to deliver gas cylinders. Further details regarding the proposed storage volumes, delivery vehicles and BOC correspondence are provided in the *Utility Services Review – Technical Memo, Rev F*, dated 15 September 2026.

Delivery and servicing activities associated with laboratory gases would occur from Sparkes Street. Swept-path analysis that demonstrates the vehicle movements through the surrounding street network and at the site access for the 8.8 m MRV is provided in Appendix C, whereas the key findings of the analysis are discussed in Section 4.5.

This will need to be managed in liaison with the 84 Parramatta Road serviced apartments where possible.

Basement access is expected to be unavailable during delivery periods and therefore traffic management will be required.

#### *3.2.3.2 Electrical services*

A 3x1500kVA triplex transformer chamber substation is to be installed to supply the proposed development in consultation with local power supply authority Ausgrid. The substation is proposed to be installed at basement level with equipment access from ground level via an equipment access hatch, as shown in Figure 14 and Figure 15. Traffic management will be required on Sparkes Street to manage vehicle movements to and from the Site during the servicing and replacement of substation equipment. As the replacement of substation equipment occurs infrequently, the impact is deemed to be insignificant.

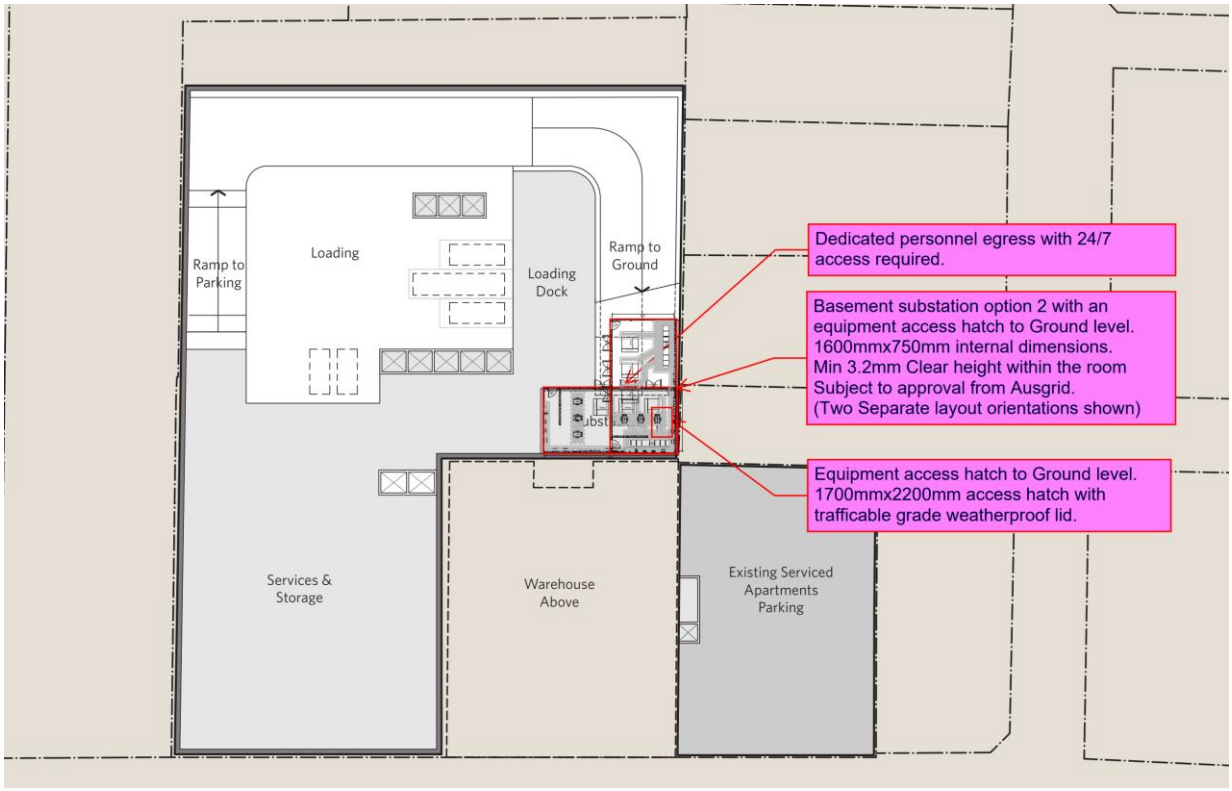



**Figure 14: Basement Substation with Access Hatch (Extracts from Basement)**

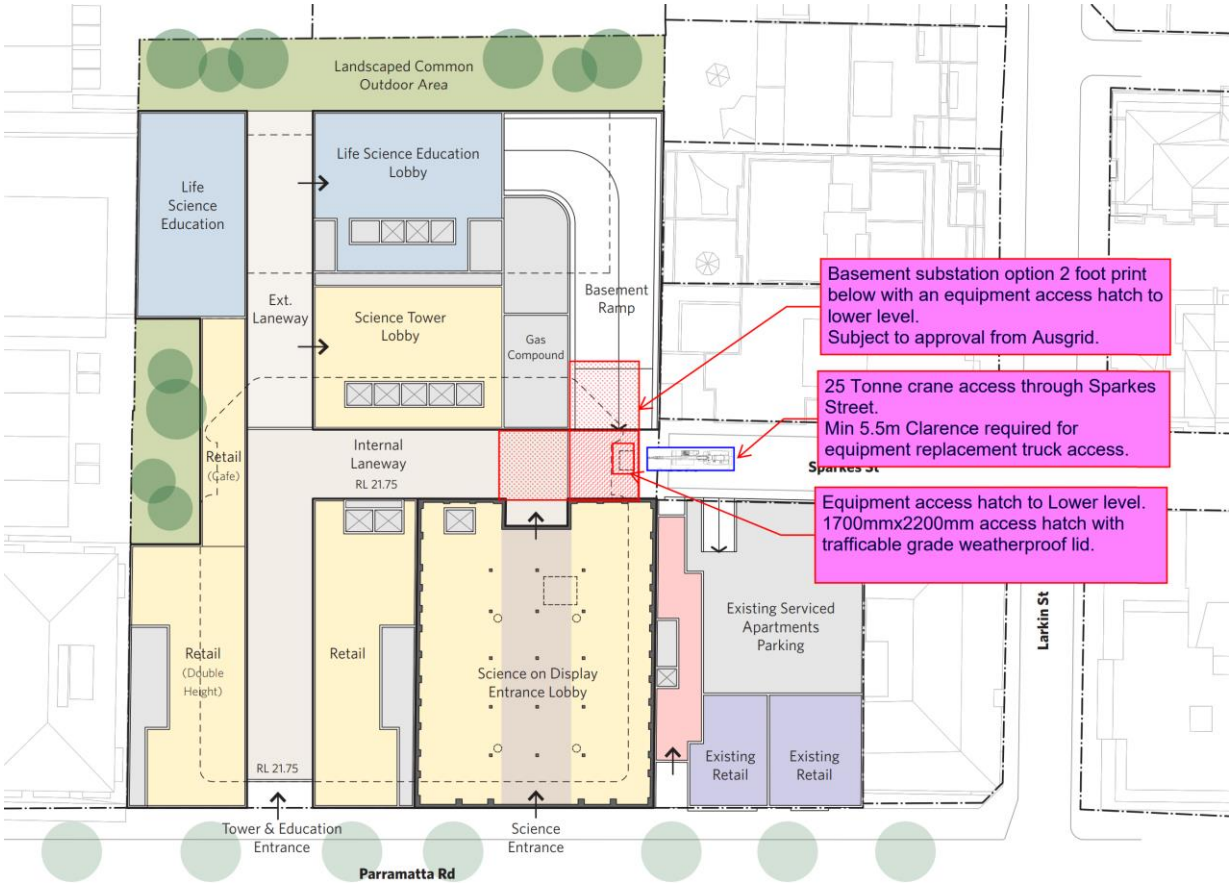



**Figure 15: Basement Substation with Access Hatch and Crane Access (Extracts from Ground)**

## 3.3 Vehicle parking

CoS Local Environmental Plan (LEP) sets out car parking rates for developments within CoS Local Government Area (LGA), within Appendix C – Parking Rates Update (December 2024).

A parking rate for Life Sciences is not provided in the LEP. Therefore, it has been assumed that the industrial rate applies, given that life sciences is a form of high technology industry. It is important to note that the rate for industrial is also being updated as part of the amendments. The maximum parking provision for the development has been calculated using both sets of rates and is detailed in the Table 6.

**Table 6: Maximum car parking**

| Land use | GFA (m2) | CoS LEP Amendments | |
|---|---|---|---|
| | | Rate | Spaces |
| Life Science (Industrial) | 27,685m$^2$ | 1 per 150m$^2$ | 185 spaces |
| Life Science (Office) | 6,647m$^2$ | M=(GxA)/(75xT) | 14 spaces |
| | **Total** | **199 spaces** | |

A total of 185 car parking spaces is proposed to be provided over two basement levels, as shown on Figure 16. The proposed basement level car parking will replace 77 existing car parking spaces associated with the University life sciences buildings. The net increase in proposed car parking at the Site is therefore 108 spaces.

As the proposed 185 car parking spaces have not been assigned to specific land uses yet, these spaces have been pro-rated to land uses based on CoS LEP Amendments maximum car parking in Table 6.

A total of 10 EV spaces has been provided on basement level 2.

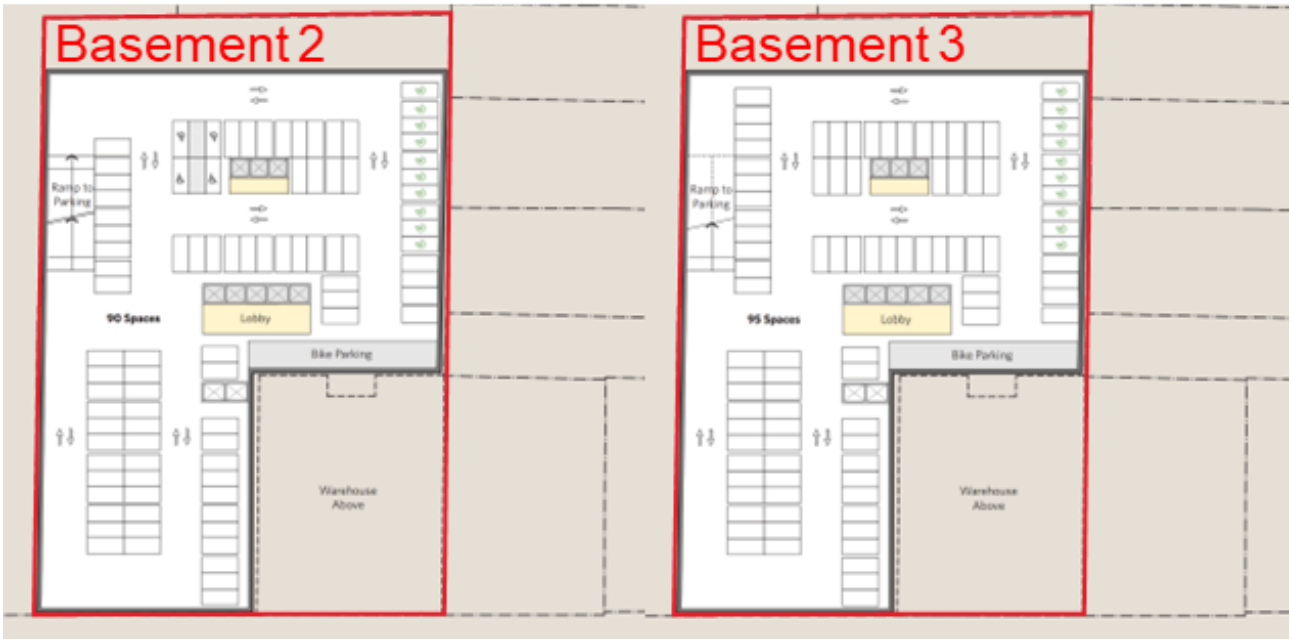



**Figure 16: Proposed basement level car parking**

## 3.4 Loading dock

It is proposed that delivery and servicing activities for the development will take place within the Basement 1 loading dock, accessed from Sparkes Street.

The loading dock is proposed to contain five loading bays, comprising one bay suitable for a 9.8 m waste vehicle, two bays suitable for 8.8 m Medium Rigid Vehicles (MRVs), and two bays suitable for 6 m Small Rigid Vehicles (SRVs).

A 9.8 m rear-lift waste collection vehicle was adopted as it represents a common commercial waste vehicle type, specifications were taken from Veolia's brochure[2].

City of Sydney DCP (2012) requires the following minimum servicing requirements for service vehicle parking for new developments:

- Commercial premises
  - 1 space per 3,300sqm GFA, or part thereof, for the first 50,000sqm
- The total requirement identified above may be reduced for developments with GFAs in excess of 50,000sqm where it can be demonstrated to the satisfaction of the consent authority that:
  - The proposed uses are complementary in terms of servicing demand; and
  - At least one space per tenancy for business owners is provided.

Five servicing bays are provided in total, with at least one space per tenancy for business owners is provided. Detailed servicing trip generation is provided in Section 4.2 to support the provision of 5 bays.

The loading dock has been designed such that vehicles will be able to access and exit in forward gear. Servicing and delivery activities would be managed to avoid simultaneous movements by the 8.8 m MRV and 9.8 m waste vehicle, minimising potential conflicts at the bend in the basement ramp. The loading bays can be seen in Figure 17.

The associated swept path analysis of vehicles manoeuvring within the loading dock has been undertaken and is contained in Appendix B.

The impacts of the proposed 8.8 m MRVs and 9.8 m waste vehicle on the surrounding local street network, are assessed via swept paths analysis in Section 4.5.

[2] https://www.anz.veolia.com/sites/g/files/dvc2011/files/document/2024/07/Veolia_Equipment%20Matrix%20Brochure_05-23.pdf

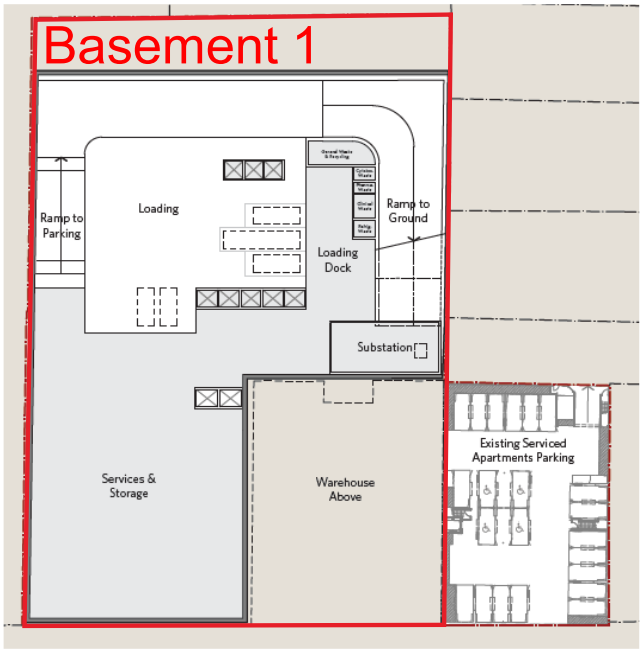



**Figure 17: Loading dock**

## 3.5 Bicycle parking and End of Trip Facilities

The provision of good quality bicycle parking will be incorporated into the development. The DCP provides guidance on the provision of bicycle facilities to support sustainable travel outcomes. The bicycle parking provision of the development will meet the number of spaces required and will be located in the southeast corner of basements 2 and 3.

**Table 7: Minimum cycle parking rates**

| Land use | Quantum | Rate | | Requirement | |
|---|---|---|---|---|---|
| | | Resident / Employee | Visitor | Resident / Employee | Visitor |
| Life science (industrial) | 27,685m$^2$ | 1 per 10 staff (966 FTE) | - | 97 | - |
| Life science Education (Office) | 6,647m$^2$ | 1 per 150m$^2$ GFA | 1 per 400m$^2$ GFA | 44 | 17 |
| Total | | | | c. 141 | 17 |

# 4. Transport impact assessment

## 4.1 Trip generation

As there are no published trip generation rates specifically for life sciences developments within the TfNSW Guide to Traffic Generating Developments 2002 (GTGD), a first-principles approach has been adopted to estimate vehicle trip generation associated with the Proposal. The methodology has been informed by two comparable developments within the Camperdown health and innovation precinct:

- Children's Medical Research Institute (CMRI) Gene Technologies Building, documented in the Transport Impact Assessment (March 2025)
- Sydney Biomedical Accelerator (SBA), documented in the Sydney Biomedical Accelerator Transport Impact Assessment (October 2023).

Both developments comprise specialised biomedical and life sciences research facilities with a comparable mix of laboratory, research, teaching and supporting workspace functions to those proposed at the Site.

### 4.1.1 Building capacity estimation

The benchmark assessments were reviewed to establish the relationship between gross floor area (GFA) and building capacity. As shown in Table 8, building capacity ratios were derived for the CMRI and SBA benchmark developments and blended to establish an adopted benchmark rate. This rate was then applied to the Proposal's GFA to estimate the building capacity adopted for traffic demand calculations.

**Table 8: Building capacity benchmark and estimate**

| Item | GFA | Building capacity | Building capacity ratio |
|---|---|---|---|
| CMRI Gene Technologies Building | 27,692m² | 770 persons | 1 person / 36m² |
| Sydney Biomedical Accelerator | 37,400m² | 1,953 persons | 1 person / 19m² |
| Adopted blended benchmark rate | — | — | 1 person / 28m² |
| Proposal | 34,332m² | 1,246 persons | 1 person / 28m² |

The existing development is estimated to accommodate approximately 82 workers, as identified in the Economic Impact Assessment prepared for the Proposal. This existing building capacity has been considered when estimating the net increase in person-based travel demand associated with the Proposal.

### 4.1.2 Staff arrival profile

The CMRI travel survey data was reviewed to understand the distribution of staff arrivals and departures throughout the day. The survey identified the busiest arrival and departure hours within the daily profile and the proportion of total daily movements occurring during those periods.

The survey data indicates that:

- the busiest arrival hour accommodated approximately 51% of total daily staff arrivals; and
- the busiest departure hour accommodated approximately 44% of total daily staff departures.

These arrival and departure profiles were adopted as the basis for estimating peak-hour occupant movements associated with the Proposal.

### 4.1.3 Network peak hour adjustment

The proposed life sciences development is expected to operate over an extended period between approximately 7:00 AM and 7:00 PM, with arrivals and departures occurring throughout the day rather than being concentrated within a traditional office peak period.

For context, the CMRI arrival and departure profiles identify the busiest staff arrival and departure hours for that development. However, these periods are not expected to directly align with the assessed road network peak hours of 7:45 AM - 8:45 AM and 5:15 PM - 6:15 PM.

For the Proposal, staff movements are expected to be concentrated around the start and end of the operating day, rather than wholly within the road network peak hours. As a result, a significant proportion of arrivals and departures are expected to occur outside the AM and PM network commuter peak hours.

Nonetheless, a 40% network peak hour adjustment factor has been applied to the benchmark arrival and departure profiles to estimate the proportion of building capacity movements occurring during the assessed road network peak hours.

### 4.1.4 Vehicle trip generation

The Proposal and existing site vehicle trips were estimated separately using the adopted arrival/departure profile, network peak hour adjustment and private vehicle mode share, as shown in Table 9 and Table 10.

**Table 9: Proposal total estimated vehicle trips**

| Step | Item | AM peak | PM peak |
|---|---|---|---|
| A | Building capacity | 1,246 persons | 1,246 persons |
| B | Busiest arrival/departure hour | 51% arrivals | 44% departures |
| C | Network peak hour adjustment | 40% | 40% |
| D | Persons travelling in network peak (A x B x C) | 254.2 persons | 219.3 persons |
| E | Private vehicle mode share | 44% | 44% |
| **F** | **Total vehicle trips (D x E)** | **112 trips** | **96 trips** |

**Table 10: Existing site estimated vehicle trips**

| Step | Item | AM peak | PM peak |
|---|---|---|---|
| A | Estimated workers | 82 | 82 |
| B | Busiest arrival/departure hour | 51% arrivals | 44% departures |
| C | Network peak hour adjustment | 40% | 40% |
| D | Persons travelling in network peak (A x B x C) | 16.7 persons | 14.4 persons |
| E | Private vehicle mode share | 44% | 44% |
| **F** | **Total vehicle trips (D x E)** | **7** | **6** |

Net additional vehicle trips were then calculated by deducting the estimated existing site trips from the Proposal total trips. The directional split was applied to the net additional trips, as shown in Table 11, to determine the inbound and outbound trips adopted for traffic modelling.

**Table 11: Net additional trips and direction by direction**

| | AM | | PM | |
|---|---|---|---|---|
| Proposal total vehicle trips | 112 trips | | 96 trips | |
| Less: existing site vehicle trips | 7 trips | | 6 trips | |
| Net (additional) vehicle trips | 105 trips | | 90 trips | |
| | **Inbound** | **Outbound** | **Inbound** | **Outbound** |
| Directional split | 90% | 10% | 10% | 90% |
| Net additional trips by direction | 95 trips | 10 trips | 9 trips | 81 trips |

## 4.2 Servicing trip generation

Deliveries are expected from 7am-5pm on weekdays, with some exceptions for out-of-hours deliveries.

The loading dock will be managed and accept:

- Dangerous goods deliveries and storage.
- Dangerous waste storage and removals.
- Bulk gas delivery and refuelling and bulk cylinder gas provision.
- Delivery and removal of large scientific instrumentation.
- Bulk consumable palette deliveries.
- Diesel back-up generator refuelling.

A management system would be implemented to minimise impacts on the surrounding road network during peak periods. A high-level UFFM assessment indicates that the development, excluding the serviced apartments, is expected to generate approximately 125 service and delivery vehicles per week, equivalent to approximately 25 vehicles per day or 50 vehicle trips per day comprising inbound and outbound movements.

Servicing activity is generally distributed outside peak traffic periods. During the peak hours, servicing demand is expected to be low, with up to one servicing vehicle anticipated during the PM peak hour and a higher concentration of activity during the AM peak, as reflected in the table above. This corresponds to a total of up to six vehicle trips during the peak hour period.

It is anticipated that servicing vehicles will generally arrive and depart within a short timeframe, with most servicing activities taking less than 30 minutes to complete. On this basis, the provision of five servicing bays is considered sufficient to accommodate peak servicing demand without adverse impacts on the surrounding road network.

**Table 12 Service vehicle trips**

| Timeframe | Vehicles | Trips (in and out) |
|---|---|---|
| Vehicles per day | 25 vehicles | 50 trips |
| Vehicles during the peak hour | AM Peak: 2 vehicles<br>PM Peak: 1 vehicle | AM Peak: 4 trips<br>PM Peak: 2 trips |
| Total peak hour trips | | 6 trips |

## 4.3 Vehicle trip distribution

The regional distribution of vehicle trips generated by the Proposal has been derived from Journey to Work data from the 2021 ABS Census. Origin-to-destination trip records were extracted for the destination zone encompassing the Site (DZN 113311281) and filtered to car-based journeys only.

Each origin was routed to the Site (by Google Maps API) to identify the most likely path through the surrounding road network for a typical weekday, with separate routes generated for the AM and PM peak periods. For each turn movement at the six modelled intersections, the proportion of total development traffic passing through that movement was then calculated, as summarised in Table 13 (inbound) and Table 14 (outbound).

The most prominent routes to and from the development are shown in Figure 18 and Figure 19 respectively. These illustrate the dominant travel routes only, and do not show every lower-demand route variation through the surrounding network. The routes are also presented as stick diagrams in Appendix D, in the 'Development AM' and 'Development PM' sheets.

Together, this provides an evidence-based estimate of how vehicle trips are likely to arrive at and depart from the Site, reflecting both observed Journey to Work patterns and realistic route choices through the local road network.

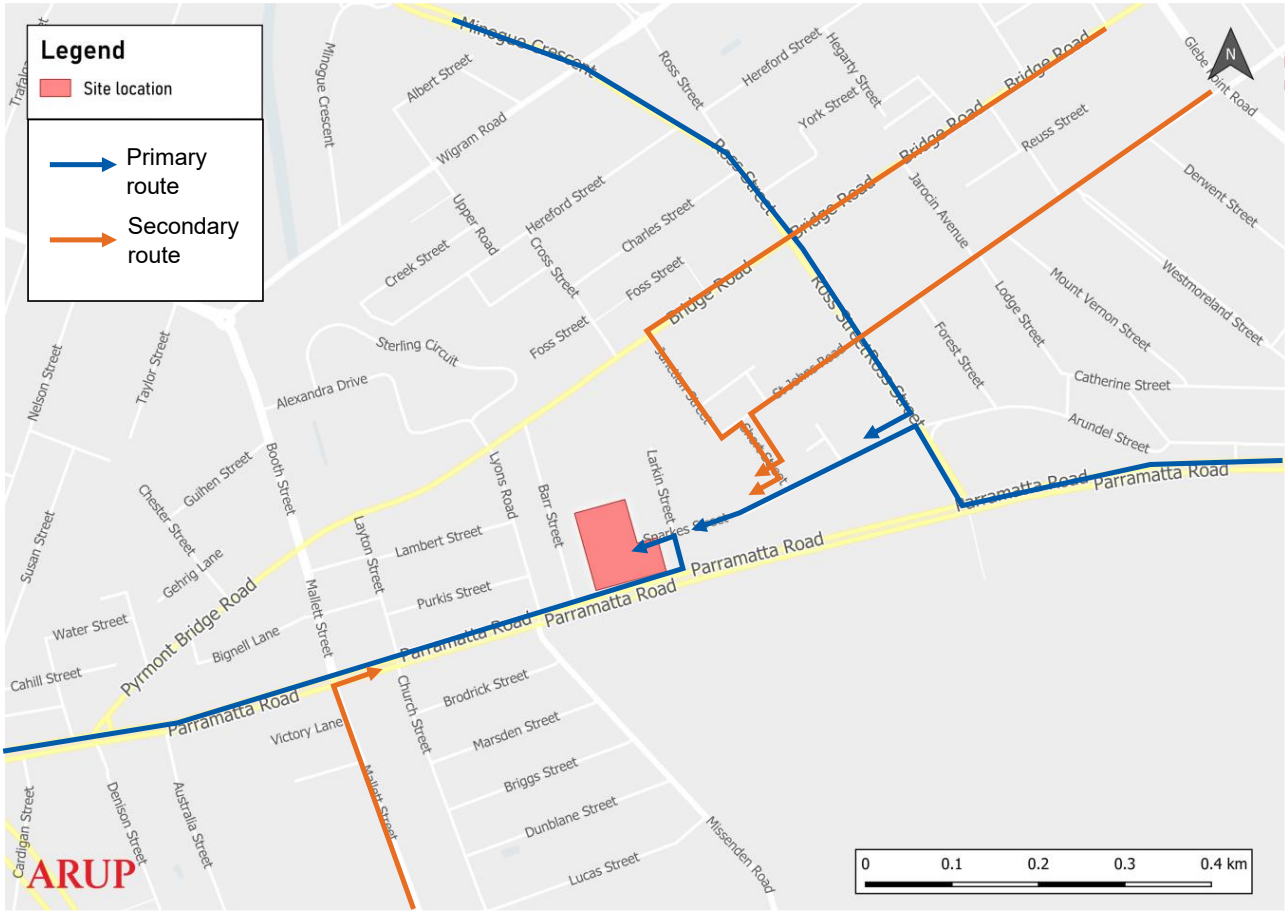



**Figure 18: AM inbound routes from the development**




**Figure 19: PM outbound routes from the development**

**Table 13: Proportion of AM trips traveling to Site**

| Intersection | From leg | To leg | Percent of total inbound trips |
|---|---|---|---|
| Arundel Street / Ross Street | N | W | 20% |
| Arundel Street / Ross Street | S | W | 14% |
| Bridge Road / Ross Street | N | S | 20% |
| Bridge Road / Ross Street | E | W | 9% |
| Bridge Road / Ross Street | E | S | 1% |
| Parramatta Road / Larkin Street | W | N | 47% |
| Parramatta Road / Lyons Street | W | E | 47% |
| Parramatta Road / Ross Street | E | N | 14% |
| Parramatta Road / Ross Street | S | N | 1% |
| Sparkes Street / Larkin Street | E | W | 53% |
| Sparkes Street / Larkin Street | S | W | 47% |

**Table 14: Proportion of PM trips leaving the Site**

| Intersection | From leg | To leg | Percent of total outbound trips |
|---|---|---|---|
| Arundel Street / Ross Street | S | N | 69% |
| Arundel Street / Ross Street | E | S | 2% |
| Bridge Road / Ross Street | S | N | 36% |
| Bridge Road / Ross Street | S | W | 14% |
| Parramatta Road / Larkin Street | N | E | 100% |
| Parramatta Road / Larkin Street | E | W | 1% |
| Parramatta Road / Lyons Street | E | W | 1% |
| Parramatta Road / Ross Street | W | N | 69% |
| Parramatta Road / Ross Street | W | E | 31% |
| Parramatta Road / Ross Street | N | W | 1% |
| Parramatta Road / Ross Street | N | S | 1% |
| Sparkes Street / Larkin Street | W | S | 100% |

## 4.4 Traffic modelling

Traffic modelling was conducted using SIDRA Intersection 10. Key intersections were analysed to determine their performance characteristics under existing and future traffic conditions.

### 4.4.1 Key intersections for assessment

Key intersections assessed around the site are summarised in Table 15.

**Table 15: Key intersections for assessment**

| Intersection | Type | Description |
|---|---|---|
| Parramatta Road / Missenden Road / Lyons Road | 4-leg signalised intersection | ○ Eastern Approach (Parramatta Rd): Three through lanes including one bus lane, an additional dedicated right-turn short lane to Missenden Rd.<br>○ Western Approach (Parramatta Rd): Three through lanes including one bus lane<br>○ Northern Approach (Missenden Rd): Two lanes including one short lane with on-street parking<br>○ Southern Approach (Lyons Rd): Two lanes including one short lane with on-street parking |
| Parramatta Road / Western Avenue / Ross Street intersection | 4-leg signalised intersection | ○ Eastern Approach (Parramatta Rd): Three through lanes including one bus lane.<br>○ Western Approach (Parramatta Rd): Three through lanes including one bus lane, an additional dedicated right-turn short lane to Ross St<br>○ Northern Approach (Western Avenue): Single lane<br>○ Southern Approach (Ross St): Two lanes including one short lane with on-street parking |
| Bridge Road / Ross Street intersection | 4-leg signalised intersection | ○ Eastern Approach (Bridge Rd): Two lanes with a dedicated right-turn short lane into Ross St.<br>○ Western Approach (Bridge Rd): Two lanes with a dedicated bus only right-turn short lane into Ross St.<br>○ Northern Approach (Ross St): Two lanes with no right turns, no left turns (short vehicles excepted).<br>○ Southern Approach (Ross St): Tow lanes, with no right turns. |
| Parramatta Rd / Larkin Street | 3-leg priority-controlled intersection | ○ Eastern Approach (Parramatta Rd): Multiple through lanes. Operates with bus lane in AM and PM peak.<br>○ Western Approach (Parramatta Rd): Multiple through lanes and left turn into Larkin Street. Operates with bus lane in AM and PM peak.<br>○ Northern Approach (Larkin St): Left turn only onto Parramatta Rd |
| Larkin Street / Sparkes Street | 4-leg priority-controlled intersection | ○ Northern Approach (Larkin St): Single lane, two-way operation.<br>○ Southern Approach (Larkin St): Single lane, two-way operation.<br>○ Eastern Approach (Sparkes St): Single lane, one-way westbound operation.<br>○ Western Approach (Sparkes St): Single lane local street approach. |
| Ross Street / Arundel Street | 4-leg priority-controlled intersection | ○ Northern Approach (Ross St): Two lane southbound (one lane in PM peak), two-way operation.<br>○ Southern Approach (Ross St): Single lane, two-way operation.<br>○ Western Approach (Arundel St): Single lane, two-way operation with high angel slip lane onto Arundel Street. |

### 4.4.2 Modelling Scenarios

Intersection modelling was undertaken for the following scenarios:

- 2024 Base case,
- 2030 Base case (linear growth rate of 1% per annum has been assumed for background traffic), and
- 2030 Project case (i.e. Base with Development).

These scenarios were assessed for the AM and PM peak hours.

### 4.4.3 Performance metrics

The intersection performance has been assessed using the following metrics:

- Degree of saturation (DoS)
- Average delay (seconds per vehicle)
- Level of service (LoS)
- 95$^{th}$ percentile queue length

A common measure of the intersection performance is the DoS, which provides an overall measure of the capability of the intersection to accommodate additional traffic. A DoS of 1.0 indicates that an intersection is operating at capacity. The desirable maximum degree of saturation for an intersection is 0.9 (or 90%).

In urban areas, the traffic capacity of the major road network is generally a function of the performance of key intersections. This performance is quantified in terms of LoS, which is based on the average delay per vehicle. LoS ranges from A = very good to F = unsatisfactory. A full breakdown is shown in Table 16. An intersection operating at LoS D is considered to be performing at an acceptable level.

**Table 16: Intersection performance indicators (TfNSW)**

| Level of Service | Average delay per vehicle (sec) | Traffic Signals, Roundabout | Give Way and Stop Sign |
|---|---|---|---|
| **A** | < 14 | Good operation | Good operation |
| **B** | 15 to 28 | Good, acceptable delays with spare capacity | Acceptable delays and spare capacity |
| **C** | 29 to 42 | Satisfactory | Satisfactory but accident study required |
| **D** | 43 to 56 | 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** | > 70 | Unsatisfactory and requires additional capacity. | Unsatisfactory and requires other control mode or major treatment. |

### 4.4.4 Modelling results

The operational performance results of the 6 intersections for all scenarios and peak hours, as predicted by SIDRA modelling, are summarised in Table 17. Detailed SIDRA results are attached in Appendix A.

**Table 17: SIDRA results**

| ID | Intersection | Peak hour | Scenario | Total traffic at intersection | DOS | Delay(s)* | LoS* |
|---|---|---|---|---|---|---|---|
| 1 | Parramatta Rd / Missenden Rd / Lyons Rd | AM | 2024 Base | 4,044 | 0.89 | 30s | C |
| | | | 2030 Base | 4,282 | 0.93 | 37s | C |
| | | | 2030 Project case | 4,329 | 0.95 | 41s | C |
| | | PM | 2024 Base | 3,905 | 0.86 | 27s | B |
| | | | 2030 Base | 4,135 | 0.91 | 33s | C |
| | | | 2030 Project case | 4,139 | 0.91 | 33s | C |
| 2 | Parramatta Rd / Western Ave / Ross St | AM | 2024 Base | 3,708 | 0.93 | 35s | C |
| | | | 2030 Base | 3,924 | 0.99 | 51s | D |
| | | | 2030 Project case | 3,952 | 0.99 | 53s | D |
| | | PM | 2024 Base | 3,874 | 0.79 | 26s | B |
| | | | 2030 Base | 4,102 | 0.84 | 29s | C |
| | | | 2030 Project case | 4,192 | 0.83 | 30s | C |
| 3 | Bridge Rd / Ross St | AM | 2024 Base | 2,042 | 0.75 | 18s | B |
| | | | 2030 Base | 2,160 | 0.80 | 19s | B |
| | | | 2030 Project case | 2,195 | 0.80 | 19s | B |
| | | PM | 2024 Base | 2,252 | 0.67 | 17s | B |
| | | | 2030 Base | 2,382 | 0.71 | 18s | B |
| | | | 2030 Project case | 2,431 | 0.73 | 18s | B |
| 4 | Parramatta Rd / Larkin St | AM | 2024 Base | 3,345 | 0.61 | 6s | A |
| | | | 2030 Base | 3,541 | 0.64 | 6s | A |
| | | | 2030 Project case | 3,601 | 0.64 | 6s | A |
| | | PM | 2024 Base | 3,332 | 0.51 | 6s | A |
| | | | 2030 Base | 3,525 | 0.54 | 6s | A |
| | | | 2030 Project case | 3,616 | 0.54 | 6s | A |
| 5 | Larkin St / Sparkes St | AM | 2024 Base | 86 | 0.02 | 5s | A |
| | | | 2030 Base | 89 | 0.02 | 5s | A |
| | | | 2030 Project case | 204 | 0.07 | 5s | A |
| | | PM | 2024 Base | 77 | 0.02 | 5s | A |
| | | | 2030 Base | 82 | 0.02 | 5s | A |
| | | | 2030 Project case | 178 | 0.10 | 5s | A |
| 6 | Ross St / Arundel St | AM | 2024 Base | 814 | 0.23 | 16s | B |
| | | | 2030 Base | 864 | 0.24 | 16s | B |
| | | | 2030 Project case | 905 | 0.25 | 17s | B |
| | | PM | 2024 Base | 929 | 0.25 | 14s | A |
| | | | 2030 Base | 989 | 0.27 | 15s | B |
| | | | 2030 Project case | 1,054 | 0.30 | 17s | B |

** For priority-controlled intersections, Delay and LoS correspond to the movement experiencing the greatest delay, whereas DoS is based on the movement with the highest modelled degree of saturation. For signalised intersections, the Delay and LoS represent the weighted average of all movements, while DoS reflects the critical movement with highest degree of saturation.*

As shown in Table 17, the six assessed intersections are forecast to operate at acceptable levels under the 2030 Project case scenario. The three signalised intersections operate at LoS B to D, with the highest DoS recorded at 0.99 at Intersection 2 Parramatta Road / Western Avenue / Ross Street during the AM peak. The priority and stop-controlled intersections operate at LoS A to B in both the AM and PM peak periods, with minor delay increases. Overall, the Development scenario results show only minor changes compared with the 2030 Base scenario and indicate that the surrounding road network is expected to accommodate the additional traffic generated by the Proposal.

As shown in Table 18, the modelled delay changes on the specific legs relevant to ambulance egress from Central Ambulance Station are negligible under the 2030 Project case scenario. On the Larkin Street egress leg at Intersection 4 (onto Parramatta Road), average delay remains effectively unchanged at approximately 4 seconds in both the AM and PM peaks across all scenarios. On the Arundel Street leg at Intersection 6, average delay increases only marginally to approximately 11 seconds (AM) and 13 seconds (PM) under the 2030 Project case scenario, an increase of less than one second relative to the 2030 Base. These minor changes are not expected to materially affect ambulance egress from Central Ambulance Station or access to Parramatta Road.

**Table 18: Comparison of modelled delays on key local streets and legs**

| ID | Intersection<br>Leg | Peak hour | Scenario | Demand flow (veh/h) | Average delay (s) | Change vs 2030 Base (s) |
|---|---|---|---|---|---|---|
| 4 | Parramatta Road / Larkin Street<br>North: Larkin St (37m) | AM | 2024 Base | 47 | 3.6s | |
| | | | 2030 Base | 52 | 3.6s | |
| | | | 2030 Project case | 64 | 3.6s | 0.0s |
| | | PM | 2024 Base | 56 | 3.5s | |
| | | | 2030 Base | 59 | 3.5s | |
| | | | 2030 Project case | 145 | 3.5s | 0.0s |
| 5 | Larkin Street / Sparkes Street<br>East: Sparkes St (90m) | AM | 2024 Base | 28 | 4.5s | |
| | | | 2030 Base | 29 | 4.5s | |
| | | | 2030 Project case | 84 | 3.9s | -0.6s * |
| | | PM | 2024 Base | 23 | 4.7s | |
| | | | 2030 Base | 25 | 4.7s | |
| | | | 2030 Project case | 33 | 4.4s | -0.3s * |
| 6 | Ross Street / Arundel Street<br>West: Arundel St (155m) | AM | 2024 Base | 55 | 10.2s | |
| | | | 2030 Base | 58 | 10.5s | |
| | | | 2030 Project case | 58 | 10.8s | +0.3s |
| | | PM | 2024 Base | 63 | 11.4s | |
| | | | 2030 Base | 67 | 12.0s | |
| | | | 2030 Project case | 67 | 12.9s | +0.9s |

** Minor reductions in modelled delay of less than one second are considered to reflect normal SIDRA model sensitivity, rounding and changes in movement weighting, and are not operationally material.*

## 4.5 On-street parking impacts

Swept-path assessments were undertaken to evaluate the impacts of servicing vehicle movements on the local street network, including potential impacts on footpaths, on-street parking and street infrastructure.

The assessments considered inbound and outbound movements through the Sparkes Street/Larkin Street intersection for on-street gas deliveries (8.8 m MRV) as well as vehicles accessing the Basement 1 loading dock (8.8 m MRV and 9.8m waste vehicle). Several feasible servicing arrangements were assessed, with varying implications for on-street parking, signposts and potential footpath widening.

Importantly, the on-street swept path assessments for this study were undertaken with utmost care to avoid impacts to significant roadside features, including utility poles, street trees and property boundaries.

One inbound route is proposed via Arundel Street / Sparkes Street for all service vehicles, as summarised in Table 19. Detailed swept paths are shown in Appendices C.1, C.2 and C.3. For context, in Page title, "GAS" refers to gas delivery, "B1" refers to Basement 1, "MRV" refers to 8.8 m MRVs and "WASTE" refers to 9.8 m waste vehicles.

**Table 19: Inbound swept paths**

| Drawing # | Page title | Movement | Impacts | Avoided impacts |
|---|---|---|---|---|
| SKT019 | GAS MRV IN | Forward in from Sparkes Street (east) | No impact | |
| SKT004 | B1 MRV IN | Forward in from Sparkes Street (east) | No impact | |
| SKT013 | B1 WASTE IN | Forward in from Sparkes Street (east) | No impact | |

For outbound movements, broadly 3 options have been assessed to provide flexibility for further consideration:

In **Option 1,** the outbound movements would require vehicles to reverse along Sparkes Street and into the northern side of Larkin Street, before departing forward and continuing southbound along Larkin Street. These movements would be pre-arranged and undertaken outside of peak traffic periods, under a reasonable level of traffic control, with a suitably trained vehicle spotter controlling the manoeuvring area and preventing conflicting pedestrian and vehicle movements.

In **Option 2**, vehicles would be departing forward via Sparkes Street and then turning onto Larkin Street. Gas delivery would require vehicles to reverse into the basement ramp first.

**Option 3** incorporates similar movements as Option 2, with more impact to on-street parking (particularly on Sparkes Street). Notwithstanding, this also creates opportunity for potential widening of the footpath along Sparkes Street.

Opportunities for widening are constrained by vehicle turning movements at the Sparkes Street/Larkin Street corner, where the swept path runs close to the existing kerb. Beyond this corner, the footpath could be widened to approximately 2.3 m, consistent with the preferred path width identified in the City of Sydney's *Sydney Streets Code 2021*. Achieving this widening would require the removal of all on-street parking along this section of Sparkes Street.

Overall, the category and references of the 3 outbound options can be summarised as:

- Option 1: No impact to parking (Table 20, Appendix C.1)
- Option 2: Moderate impact to parking (Table 21, Appendix C.2)
- Option 3: Most impact to parking, possible footpath widening (Table 22, Appendix C.3).

**Table 20: Outbound option 1: No impact to parking**

| Drawing # | Page title | Movement | Impacts | Avoided impacts |
|---|---|---|---|---|
| SKT003 | GAS MRV OUT 1 | Reverse out from Sparkes Street into Larkin Street (north), then continue forward on Larkin Street (south) | • Relocation of one (1) street sign pole | • Parking on Sparkes Street (west) retained<br>• Parking on Larkin Street (north and south) retained |
| SKT020 | B1 MRV OUT 1 | Forward out from B1, turn right into the alley, reverse out from Sparkes Street into Larkin Street (north), then continue forward on Larkin Street (south) | • Relocation of one (1) street sign pole | • Parking on Sparkes Street (west) retained<br>• Parking on Larkin Street (north and south) retained |
| SKT022 | B1 WASTE OUT 1 | Forward out from B1, turn right into the alley, reverse out from Sparkes Street into Larkin Street (north), then continue forward on Larkin Street (south) | • Relocation of one (1) street sign pole | • Parking on Sparkes Street (west) retained<br>• Parking on Larkin Street (north and south) retained |

**Table 21: Outbound option 2: Moderate impact to parking**

| Drawing # | Page title | Movement | Impacts | Avoided impacts |
|---|---|---|---|---|
| SKT021 | GAS MRV OUT 2 | Reverse into the basement ramp, forward out from Sparkes St, then turn right onto Larkin St (south) | • Two (2) on-street parking removed along Larkin Street (south)<br>• Relocation of two (2) street sign poles | • Parking on Sparkes St (west) retained |
| SKT013 | GAS MRV OUT 3A | Reverse into the basement ramp, forward out from Sparkes St, then turn left onto Larkin St (north) towards cul-de-sac | • One (1) on-street parking removed along Larkin Street (north)<br>• Relocation of one (1) street sign pole | • Parking on Sparkes St (west) retained |
| SKT014 | GAS MRV OUT 3B | 5-point turn in cul-de-sac, then continuing forward southbound on Larkin St | • Two (2) on-street parking removed along Larkin Street | |
| SKT005 | B1 MRV OUT 2 | Forward out from Sparkes St, then turn right onto Larkin St (south) | • Up to two (2) on-street parking removed along Larkin Street (south)<br>• Relocation of two (2) street sign poles | • Parking on Sparkes St (west) retained |
| SKT016 | B1 WASTE OUT 2 | Forward out from Sparkes St, then turn right onto Larkin St (south) | • Up to two (2) on-street parking removed along Larkin Street (south)<br>• Relocation of one (1) street sign pole | • Parking on Sparkes St (west) retained |

**Table 22: Outbound option 3: Most impact to parking, possible footpath widening**

| Drawing # | Page title | Movement | Impacts | Avoided impacts |
|---|---|---|---|---|
| SKT012 | GAS MRV OUT 4 | Reverse into the basement ramp, proceed forward out from Sparkes Street, then turn right onto Larkin Street (south) | • All on-street parking impacted (4 spaces) on Sparkes Street (west)<br>• Up to two (2) on-street parking spaces impacted on Larkin Street (south)<br>• One (1) sign pole relocated | • One (1) street sign pole retained |
| SKT006 | B1 MRV OUT 3 | Proceed forward along Sparkes Street, turning right onto Larkin Street (south) | • All on-street parking impacted (4 spaces) on Sparkes Street (west)<br>• Up to two (2) on-street parking impacted on Larkin Street (south)<br>• One (1) sign pole relocated | • One (1) street sign pole retained |
| SKT023 | B1 WASTE OUT 3 | Proceed forward along Sparkes Street, turning right onto Larkin Street (south) | • All on-street parking impacted (4 spaces) on Sparkes Street (west)<br>• Up to two (2) on-street parking spaces impacted on Larkin Street (south)<br>• One (1) sign pole relocated | • One (1) street sign pole retained |

**Table 23: Summary of outbound option impacts**

| Option | Servicing arrangement | Impact on Parking | Impact on signpost | Other findings |
|---|---|---|---|---|
| 1 | Vehicles reverse along Sparkes Street into the Sparkes Street/Larkin Street intersection, then depart forward southbound | 0 spaces removed | 1 sign post relocated | Requires controlled reversing movements |
| 2A | Vehicles depart forward from Sparkes Street and turn right into Larkin Street south | 2 spaces removed on Larkin Street (south) | 2 sign posts relocated | Retains all on-street parking on Sparkes Street |
| 2B | Vehicles depart forward from Sparkes Street, turns left into Larkin Street north and undertakes a five-point turn at the cul-de-sac, then continues southbound on Larkin Street | 3 spaces removed on Larkin Street (north) | 1 sign post relocated | Retains all on-street parking on Sparkes Street |
| 3 | Vehicles proceed or turn within the basement-ramp area before departing forward via Larkin Street south | All 4 parking removed along Sparkes Street west.<br>2 parking removed on Larkin Street (south) | 1 sign post relocated | Enables footpath widening beyond the constrained Sparkes/Larkin corner |

No posted load, vehicle-length or height restrictions have been identified along Arundel Street, Sparkes Street or Larkin Street. However, these streets also provide access to existing residential and commercial properties requiring regular waste collection and servicing. This indicates that service vehicles of a comparable general scale already use the surrounding local street network.

The proposed 8.8 m MRVs and 9.8 m waste vehicles are therefore not expected to encounter load or height-clearance constraints along the proposed servicing route.

Additional swept path analysis demonstrates that both vehicle types can satisfactorily turn left from Larkin Street onto Parramatta Road, entering the second lane from the kerb, which represents the nearest available general traffic lane given that the kerbside lane operates as a bus lane. The corresponding swept path drawings are provided in Appendix C.4.

## 4.6 Impacts on Walking, Cycling and Public Transport

As discussed in Section 3.2, the main pedestrian access for the Site is proposed from Parramatta Road. Most roads in the surrounding area have footpaths on both sides, and intersections have pedestrian facilities for crossing.

Cyclist access will be provided via Parramatta Road, with dedicated bicycle parking and end-of-trip facilities located within the Proposal.

The Planning Proposal is expected to have minimal impact on public transport, walking, and cycling networks. The site benefits from strong connectivity, with 10 bus routes within a 10-minute walk, and two light rail stops accessible within 25-minute walk or 10-minute cycle.

## 4.7 Recommendations

To manage travel demand generated by the Planning Proposal, travel demand management measures are proposed to be implemented. Measures would aim to promote sustainable travel choices for staff and visitors and are detailed in a Framework Travel Plan as shown in Section 5.

# 5. Outline Framework Travel Plan

## 5.1 Objectives

A Framework Travel Plan (FTP) is a package of measures put in place by an employer or building manager to encourage more sustainable travel whilst commuting to and from a development. It allows an organisation to demonstrate a commitment and a proactive step towards improving environmental sustainability by reducing the environmental impact associated with travel to and from the development.

The key element of this plan is reducing reliance on private vehicles and maximising the use of public transport and other sustainable modes of transport. The FTP would contribute to a healthier and higher quality environment for building occupants, staff and visitors whilst reducing air and noise pollution. An FTP would apply to all who travel to and from the site.

As a constantly evolving strategy, the success of the plan will rely on ongoing monitoring and review. A robust governance structure could include a nominated FTP representative or committee consisting of building management. Objectives can act as measures of success and may also be used to identify potential refinements.

The objectives of an FTP typically cover the following:

- **Encourage the use of more sustainable transport modes** i.e. walking, cycling, public transport and carpooling in place of higher energy consumption travel modes such as single occupant car travel and taxi.
- **Raise awareness of sustainable modes of transportation** for employees or visitors who commute to, from and within the Site.
- **Reduce traffic congestion and air pollution** around the Site to enhance safer and more enjoyable journeys.
- **Travel Demand Management (TDM)** which includes management measures to reduce travel demand, such as by remoding, reducing or retiming trips.
- **Develop, implement, monitor, evaluate and review** the progress of the travel plan strategy.

A framework of potential management measures is also outlined to help achieve the objectives of the FTP.

## 5.2 Potential measures

The package of measures has been provided to encourage more sustainable travel while travelling to and from the Site. Physical and behavioural measures are two potential measures to introduce into a viable FTP. Physical measures will prioritise sustainable transport via walking, cycling, public transport or car share whereas behavioural measures aim to provide soft strategies which influence travel behaviours for those who will travel to and from the Site.

To meet the objectives and targets of an FTP, this section outlines the potential management measures that could be considered for implementation for the Proposal. The measures have been grouped into the principles of remode and reduce, which are the most relevant to this FTP as they focus specifically on sustainable travel or reducing travel altogether. These principles are discussed below.

### 5.2.1 Remode

The principle of remode aims to promote non-private vehicle modes of travel, such as public transport, walking or cycling, or more fuel-efficient vehicles such as electric vehicles (EVs) or small vehicles. Measures to remode travel are discussed below.

#### 5.2.1.1 *Education and awareness*

Education and awareness of the availability of sustainable travel modes would be crucial in encouraging all users at the site to adopt travel plan measures. It is important that all are made aware of the need to reduce car dependency where possible.

A new development provides an opportunity to offer staff advice on travel modes to and from the site. At this time, new travel patterns are being established, and people may particularly welcome information about the travel services and facilities available to them.

Potential measures to encourage education and awareness include:

- Provide travel information for visitors travelling to and from the Site using sustainable forms of transport, as well as outlining the benefits, objectives and measures of the wider FTP. A website or app associated with the development could include links to TfNSW websites to promote sustainable travel.
- A Travel Access Guide (TAG) could also be provided to staff and visitors to highlight sustainable travel methods. The purpose of a TAG is to highlight sustainable travel methods in a legible and easy to read format and would include the following:
  - Map showing key public transport, walking and cycling routes to the development.
  - Information on end of trip facilities, events and programs.
- Provide an overview of the FTP and TAG as part of all staff induction programs. Induction may also include a visit to bicycle parking and end of trip facilities to increase awareness.
- Events such as ‘National Bike Week’, ‘Bike2Work Days’ and ‘Walk to Work Day’ could be promoted to staff.
- Other incentives to encourage sustainable travel may also include discount vouchers for a local bicycle retailer.

#### 5.2.1.2 *Promotion of public transport*

The use of train and bus services could be promoted by outlining public transport services in a TAG to enable staff and visitors to assess route options and to plan a public transport route to work.

Links to journey planning websites and real-time public transport service data on a website or app associated with the development. All user groups should be provided with a user-friendly map describing the surrounding public transport links. Maps can be distributed via a range of digital platforms including email or mobile phone application. These maps would advertise and promote public transport and prompts all site users to consider public transport as their first transport option when travelling to and from the site. These public transport maps should also include information on accessible transport routes for all site users with special access needs.

#### 5.2.1.3 *Promotion of walking*

Walking could be promoted via the following measures:

- All site users should have access to a legible map outlining surrounding public transport linkages, local outlets and attractions within a reasonable walking distance. Maps can be distributed via a range of digital platforms including email, mobile phone application or information boards within the Site. Walking networks can be presented in a TAG and paths to key destinations such as nearby bus stops and serviced routes are indicated clearly.
- Participate in regular events such as ‘Walk to Work Day’.

#### *5.2.1.4 Promotion of cycling*

As discussed in Section 2.8 the proposed development is located near the wider off-road cycling network and will provide easily accessible bicycle parking and end of trip facilities for cyclists. The provision of secure bicycle parking and end of trip facilities are expected to encourage all site users.

Cycling could also be promoted via the following measures:

- Outline cycling facilities in the TAG to enable cyclists to assess route options and to plan how to cycle to work.
- Facilitate a bike-sharing program within the Proposal. Bikes could be made available to all users, which would be booked for a specific period of time. A bike-sharing program would provide access to a bike for site users who do not own one and could encourage long-term adoption of cycling.
- Form a Cycling Group consisting of staff who cycle to work regularly. The Cycling Group could advocate for cycling for all site occupants, including organising cycling events and notifying building management of maintenance and issues relating to the provision of on-Site cycling facilities.
- Participate in regular events such as 'Ride to Work Day'.
- Provide bicycle maps showing surrounding cycleways and infrastructure via a mobile phone application, the development's website or as physical wayfinding. This will allow cyclists to assess route options and plan how they cycle to the Site. As the surrounding area has high quality cycling infrastructure, cycling to and from the Site can be an enjoyable and sustainable method of travel.

#### *5.2.1.5 Car parking management*

Car parking management strategies could be considered to reduce private vehicle demand or a shift to more fuel-efficient private vehicles via the following measures:

- Provision of EV charging infrastructure or provision of 'small car' parking spaces to facilitate the uptake of EVs and small cars. EVs and small cars generally have lower exhaust emissions than typical internal combustion engine or larger vehicles during operation.
  - To further encourage EV uptake and small cars, small car parking spaces or spaces with EV charging infrastructure can be located in the most desirable parking spaces near access points to the development.
- Unbundled parking is a travel demand management strategy where parking spaces are rented, leased, or sold separately from the associated premises. It allows people to choose whether they need and want to pay for a parking space, rather than paying regardless of use. This measure can encourage individuals to reconsider and potentially reduce parking needs and private vehicle demand.

### 5.2.2 Reduce

The principle of reduce aims to reduce the overall number of trips generated. Measures to reduce travel are discussed below.

#### *5.2.2.1 Carpooling*

Carpooling (or ride sharing) involves carrying additional vehicle passengers while undertaking a journey with low additional distance. Carpooling enables a reduction in separate vehicle trips to a similar destination and is generally cost-effective, particularly to and from areas that are not well served by public transport.

Carpooling could be facilitated in the proposed development by building management to connect site users travelling to and from a similar destination.

## 5.3 Monitoring and review

The FTP is a live document, and its successful implementation would rely on ongoing monitoring and review. Although the objectives of the FTP would not change, targets and measures may be changed to reflect an ambition for continued progress.

Monitoring mechanisms could include periodic travel surveys to understand the travel behaviour of site occupants and success of the measures. The survey could be distributed 3 months post-occupation as well as yearly or following key transport network changes (such as new bus routes).

A key part of an effective FTP is to nominate personnel to champion and administer the plan. A robust governance structure would contribute to the success of the plan and could include a nominated FTP representative or committee. A representative or committee could consist of building management, who would:

- Manage and implement the FTP measures.
- Periodically update the FTP as new or safer transport routes become available.
- Engage with stakeholders, promote the FTP and solicit feedback.
- Achieve target mode shares, monitor performance and make decisions on the FTP.
- Raise improvements to public transport or walking and cycling facilities with Council or TfNSW.

# 6. Framework Construction Traffic Management Plan (CTMP)

This section outlines the objectives of the Framework CTMP and the high-level principles that can be used to achieve them.

## 6.1 Traffic management objectives

The key aim of this Framework CTMP is to minimise impacts to the surrounding transport network during construction. The following objectives have been developed to support this overarching aim:

- Ensure safety of pedestrians, cyclists, construction workers, road users and the local community;
- Minimise the overall impacts to road users;
- Ensure minimal disruptions to public transport operations, including schedules, stop location and routes;
- Maintain access for existing road users, including the local community, public transport operators, pedestrians and cyclists;
- Ensure disruption to surrounding stakeholders and land uses is minimised, including appropriate consultation.
- Minimise disruption to existing road furniture and kerbside provisions including existing bus stops, cycleways and on-street parking; and
- Comply with all relevant legislation and other requirements specified by relevant authorities.

## 6.2 Traffic management principles

To achieve the objectives outlined above a set of principles have been developed to guide all construction management measures across the project. The key principles are as follows:

- Clear and timely communication in relation to any changes, to affected areas and the expected duration of works via various platforms through the project website, radio, newspapers, social media or direct community engagement;
- Implement appropriate traffic controls including signage, line marking and stop lights to direct private vehicles, transport operators, pedestrians and cyclists past work Sites. Alternative routes may be provided where existing infrastructure is impacted by the works;
- Manage Site compounds and work areas to ensure construction traffic and works are primarily contained within these areas and road occupancy is minimised;
- Manage pedestrians and other vulnerable road users to ensure safe and continuous movement past the work Sites. Consideration of the land uses and key pedestrian desire lines in the surrounds of the work Sites will be the key drivers for the type of traffic management strategies implemented;
- Where practical, consideration of scheduling construction traffic movements to avoid peak times and smoothing of peaks in construction traffic activity to minimise impacts to the transport network; and
- Encourage construction workers, where possible, to use modes other than private vehicle.

These principles are to be communicated to any parties involved in construction traffic management across the project. Any issues arising during the works will also require notification to the users outlined, ensuring transparency across the duration of the construction phase.

## 6.3 Existing user group hierarchy

During preparation of any CTMPs, prioritisation of potential user groups is important in providing appropriate construction traffic management measures at each work Site. The hierarchy of users is listed below from highest to lowest:

- Pedestrians;
- Cyclists;
- Public transport users;
- Service vehicles (relating to businesses and agricultural uses); and
- Private vehicles.

The development of the user group hierarchy has been based on similar approaches applied in Framework CTMPs for other large infrastructure schemes. This hierarchy also aligns with Future Transport 2056. This hierarchy will be considered alongside the TfNSW functional road hierarchy provided below, in order of high to low priority roads, during the development of management measures.

- Primary arterial roads;
- Sub-arterial roads;
- Collector roads; and
- Local roads.

## 6.4 Governance

The document owner of each CTMP will be appointed during the procurement process and the governance of the construction traffic management process will be discussed and developed with the Department of Planning, Housing and Infrastructure as the project progresses.

## 6.5 Proposed working hours

While the construction times will vary throughout the project, the typical working hours are 07:00-18:00, with personnel arriving to the Site before 07:00 and leaving after 18:00.

In some cases, there may be night works to minimise disruption to traffic. Further assessments of these requirements will be undertaken once the detailed design stage is undertaken, and the requirements are known. All night works would be undertaken in accordance with the TfNSW Environmental Noise Management Manual (2001): Practice Note vii–Roadworks outside normal working hours, as well as the Office of Environment and Heritage Interim Construction Noise Guideline (DECC 2009).

## 6.6 Truck routes and controls

Due to the location of the proposed construction access is proposed from Parramatta Road (Great Western Highway). A detailed CTMP will need to be prepared for the works following approval with details of the size of vehicles due to the one-way narrow roads within the local road network.

# 7. Conclusion

This Transport Impact Assessment evaluates the transport implications of the proposed Life Sciences development at 88-94 Parramatta Road, Camperdown. The assessment considered existing transport conditions, including the local road network, public transport services, active transport facilities, and travel behaviour patterns.

To estimate the impact of development on the surrounding road network, SIDRA modelling and traffic analysis were undertaken for the below scenarios:

- 2024 Base case (existing conditions),
- 2030 Base case (linear growth rate of 1% per annum has been assumed for background traffic), and
- 2030 Project case (i.e. Base with Development).

The proposal is expected to generate a net increase of 105 vehicle trips in AM peak and 90 vehicle trips in PM peak, which is considered modest compared to the existing and future background traffic in the network. Under the 2030 Project case scenario, the surrounding road network is expected to accommodate the additional traffic generated by the Proposal, with all assessed intersections continuing to operate at acceptable levels of service.

Swept-path assessments demonstrate that the proposed 8.8 m MRVs and 9.8 m waste vehicle can access and service the development. Several feasible servicing arrangements have been identified, ranging from an option that retains all existing on-street parking to options involving progressively greater parking impacts. Depending on the option selected, associated public-domain changes may also include the relocation of street signs and widening of the northern footpath along the western section of Sparkes Street.

The preferred servicing arrangement and associated public-domain works would be confirmed through the subsequent design and approval process.

As construction traffic volumes are anticipated to be lower than operational traffic volumes, the associated impacts on the road network are also expected to be lower.

Car parking demand was estimated using a first-principles approach informed by the proposed land uses.

A CTMP is planned to be prepared as part of the detailed design phase.

Overall, the Planning Proposal is not expected to significantly worsen network conditions and can be accommodated with appropriate travel demand management measures provided in the Framework Travel Plan. Swept-path assessments confirm that feasible servicing routes are available for the proposed vehicles, subject to appropriate traffic management and any public-domain changes associated with the selected servicing arrangement.

# Appendix A

## SIDRA Modelling

# MOVEMENT SUMMARY

**Site: [1.24.B.AM] 1. Parramatta x Lyons - 2024 AM** (2024 Base AM)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Parramatta Rd x Lyons Rd / Missenden Rd
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 130.0 seconds (Site Optimum Cycle Time - Minimum Delay)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Missenden Rd (500m) | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 99 | 2.1 | 99 | 2.1 | 0.113 | 22.7 | LOS B | 3.4 | 23.9 | 0.58 | 0.66 | 0.58 | 29.4 |
| 2 | T1 | All MCs | 122 | 9.5 | 122 | 9.5 | 0.522 | 54.8 | LOS D | 8.0 | 63.3 | 0.97 | 0.79 | 0.97 | 21.2 |
| 3 | R2 | All MCs | 12 | 72.7 | 12 | 72.7 | 0.522 | 75.1 | LOS F | 8.0 | 63.3 | 0.97 | 0.79 | 0.97 | 20.4 |
| Approach | | | 233 | 9.5 | 233 | 9.5 | 0.522 | 42.2 | LOS C | 8.0 | 63.3 | 0.80 | 0.73 | 0.80 | 23.9 |
| East: Parramatta Rd (155m) | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 114 | 13.9 | 114 | 13.9 | 0.254 | 38.4 | LOS C | 6.0 | 51.6 | 0.74 | 0.74 | 0.74 | 26.2 |
| 5 | T1 | All MCs | 739 | 8.8 | 739 | 8.8 | 0.510 | 32.7 | LOS C | 17.3 | 127.5 | 0.82 | 0.71 | 0.82 | 21.8 |
| Approach | | | 853 | 9.5 | 853 | 9.5 | 0.510 | 33.5 | LOS C | 17.3 | 127.5 | 0.81 | 0.72 | 0.81 | 22.8 |
| North: Lyons Rd (180m) | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 83 | 2.5 | 83 | 2.5 | 0.303 | 76.9 | LOS F | 4.8 | 34.1 | 0.93 | 0.76 | 0.93 | 14.5 |
| 8 | T1 | All MCs | 201 | 2.1 | 201 | 2.1 | * 0.731 | 77.2 | LOS F | 13.0 | 92.5 | 1.00 | 0.88 | 1.07 | 20.9 |
| 9 | R2 | All MCs | 5 | 0.0 | 5 | 0.0 | 0.731 | 94.3 | LOS F | 13.0 | 92.5 | 1.00 | 0.88 | 1.07 | 14.3 |
| Approach | | | 289 | 2.2 | 289 | 2.2 | 0.731 | 77.4 | LOS F | 13.0 | 92.5 | 0.98 | 0.85 | 1.03 | 16.5 |
| West: Parramatta Rd (140m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 16 | 6.7 | 16 | 6.7 | 0.076 | 12.5 | LOS A | 1.1 | 12.4 | 0.34 | 0.54 | 0.34 | 32.8 |
| 11 | T1 | All MCs | 2386 | 4.1 | 2386 | 4.1 | * 0.890 | 20.1 | LOS B | 61.3 | 438.0 | 0.84 | 0.79 | 0.86 | 30.9 |
| 12 | R2 | All MCs | 267 | 3.9 | 267 | 3.9 | 0.510 | 51.8 | LOS D | 14.1 | 101.9 | 0.88 | 0.82 | 0.88 | 23.2 |
| Approach | | | 2669 | 4.1 | 2669 | 4.1 | 0.890 | 23.2 | LOS B | 61.3 | 438.0 | 0.84 | 0.79 | 0.86 | 27.3 |
| All Vehicles | | | 4044 | 5.4 | 4044 | 5.4 | 0.890 | 30.4 | LOS C | 61.3 | 438.0 | 0.84 | 0.78 | 0.86 | 24.3 |

Site Level of Service (LOS) Method: Delay (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. Qued | Eff. Stop Rate | Travel Time sec | Travel Dist. m | Aver. Speed m/sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Missenden Rd (500m) | | | | | | | | | | | | |
| P1 | Full | 57 | 60 | 59.3 | LOS E | 0.2 | 0.2 | 0.96 | 0.96 | 213.1 | 200.0 | 0.94 |
| East: Parramatta Rd (155m) | | | | | | | | | | | | |
| P2 | Full | 132 | 139 | 59.5 | LOS E | 0.5 | 0.5 | 0.96 | 0.96 | 213.3 | 200.0 | 0.94 |
| North: Lyons Rd (180m) | | | | | | | | | | | | |
| P3 | Full | 69 | 73 | 59.3 | LOS E | 0.3 | 0.3 | 0.96 | 0.96 | 213.2 | 200.0 | 0.94 |
| West: Parramatta Rd (140m) | | | | | | | | | | | | |
| P4 | Full | 215 | 226 | 59.7 | LOS E | 0.8 | 0.8 | 0.96 | 0.96 | 213.5 | 200.0 | 0.94 |
| All Pedestrians | | 473 | 498 | 59.5 | LOS E | 0.8 | 0.8 | 0.96 | 0.96 | 213.4 | 200.0 | 0.94 |

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

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# MOVEMENT SUMMARY

**Site: [2.24.B.AM] 2. Parramatta x Ross - 2024 AM** (2024 Base AM)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Parramatta Rd / Ross St / Western Av
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 140.0 seconds (Site Optimum Cycle Time - Minimum Delay)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Western Av | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 32 | 10.0 | 32 | 10.0 | 0.470 | 63.3 | LOS E | 6.1 | 44.1 | 0.99 | 0.77 | 0.99 | 10.8 |
| 2 | T1 | All MCs | 39 | 0.0 | 39 | 0.0 | 0.470 | 59.9 | LOS E | 6.1 | 44.1 | 0.99 | 0.77 | 0.99 | 7.8 |
| 3 | R2 | All MCs | 21 | 5.0 | 21 | 5.0 | 0.470 | 78.5 | LOS F | 6.1 | 44.1 | 0.99 | 0.77 | 0.99 | 13.8 |
| Approach | | | 92 | 4.6 | 92 | 4.6 | 0.470 | 65.3 | LOS E | 6.1 | 44.1 | 0.99 | 0.77 | 0.99 | 10.2 |
| East: Parramatta Rd (600m) | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 32 | 3.3 | 32 | 3.3 | 0.070 | 15.6 | LOS B | 1.2 | 12.0 | 0.34 | 1.03 | 0.34 | 16.1 |
| 5 | T1 | All MCs | 761 | 9.5 | 761 | 9.5 | 0.272 | 6.6 | LOS A | 8.2 | 60.0 | 0.36 | 0.35 | 0.36 | 52.8 |
| 6 | R2 | All MCs | 113 | 2.8 | 113 | 2.8 | * 0.659 | 74.7 | LOS F | 7.8 | 55.8 | 1.00 | 0.82 | 1.05 | 21.2 |
| Approach | | | 905 | 8.5 | 905 | 8.5 | 0.659 | 15.4 | LOS B | 8.2 | 60.0 | 0.44 | 0.43 | 0.45 | 42.5 |
| North: Ross St (85m) | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 91 | 0.0 | 91 | 0.0 | 0.586 | 55.2 | LOS D | 12.0 | 84.5 | 0.97 | 0.82 | 0.97 | 22.6 |
| 8 | T1 | All MCs | 97 | 2.2 | 97 | 2.2 | 0.586 | 76.9 | LOS F | 12.0 | 84.5 | 0.97 | 0.82 | 0.97 | 8.6 |
| 9 | R2 | All MCs | 143 | 5.9 | 143 | 5.9 | * 0.929 | 91.9 | LOS F | 11.6 | 85.1 | 1.00 | 1.07 | 1.43 | 12.4 |
| Approach | | | 331 | 3.2 | 331 | 3.2 | 0.929 | 77.5 | LOS F | 12.0 | 85.1 | 0.99 | 0.93 | 1.17 | 12.6 |
| West: Parramatta Rd (310m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 244 | 1.7 | 244 | 1.7 | 0.325 | 22.5 | LOS B | 10.4 | 84.2 | 0.56 | 0.70 | 0.56 | 30.5 |
| 11 | T1 | All MCs | 2137 | 4.8 | 2137 | 4.8 | * 0.923 | 37.3 | LOS C | 71.1 | 508.4 | 0.97 | 0.96 | 1.05 | 35.9 |
| Approach | | | 2381 | 4.5 | 2381 | 4.5 | 0.923 | 35.8 | LOS C | 71.1 | 508.4 | 0.93 | 0.93 | 1.00 | 35.6 |
| All Vehicles | | | 3708 | 5.4 | 3708 | 5.4 | 0.929 | 35.3 | LOS C | 71.1 | 508.4 | 0.82 | 0.81 | 0.88 | 31.8 |

Site Level of Service (LOS) Method: Delay (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. Qued | Eff. Stop Rate | Travel Time sec | Travel Dist. m | Aver. Speed m/sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Western Av | | | | | | | | | | | | |
| P1 | Full | 52 | 55 | 64.3 | LOS F | 0.2 | 0.2 | 0.96 | 0.96 | 218.1 | 200.0 | 0.92 |
| East: Parramatta Rd (600m) | | | | | | | | | | | | |
| P2 | Full | 228 | 240 | 64.8 | LOS F | 0.9 | 0.9 | 0.97 | 0.97 | 218.6 | 200.0 | 0.91 |
| North: Ross St (85m) | | | | | | | | | | | | |
| P3 | Full | 47 | 49 | 64.3 | LOS F | 0.2 | 0.2 | 0.96 | 0.96 | 218.1 | 200.0 | 0.92 |
| West: Parramatta Rd (310m) | | | | | | | | | | | | |
| P4 | Full | 51 | 54 | 64.3 | LOS F | 0.2 | 0.2 | 0.96 | 0.96 | 218.1 | 200.0 | 0.92 |
| All Pedestrians | | 378 | 398 | 64.6 | LOS F | 0.9 | 0.9 | 0.96 | 0.96 | 218.4 | 200.0 | 0.92 |

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: [3.24.B.AM] 3. Ross x Bridge - 2024 AM** (2024 Base AM)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Ross St / Bridge Rd
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60.0 seconds (Site Optimum Cycle Time - Minimum Delay)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ross St (110m) | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 100 | 6.3 | 100 | 6.3 | 0.353 | 28.8 | LOS C | 2.8 | 20.3 | 0.93 | 0.76 | 0.93 | 24.5 |
| 2 | T1 | All MCs | 153 | 4.8 | 153 | 4.8 | 0.385 | 22.7 | LOS B | 4.0 | 29.1 | 0.90 | 0.72 | 0.90 | 26.8 |
| Approach | | | 253 | 5.4 | 253 | 5.4 | 0.385 | 25.1 | LOS B | 4.0 | 29.1 | 0.91 | 0.74 | 0.91 | 25.7 |
| East: Bridge Rd (500m) | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 57 | 1.9 | 57 | 1.9 | 0.454 | 12.9 | LOS A | 8.4 | 59.8 | 0.61 | 0.56 | 0.61 | 34.4 |
| 5 | T1 | All MCs | 444 | 1.9 | 444 | 1.9 | 0.454 | 7.6 | LOS A | 8.4 | 59.8 | 0.61 | 0.56 | 0.61 | 36.4 |
| 6 | R2 | All MCs | 36 | 0.0 | 36 | 0.0 | 0.151 | 22.9 | LOS B | 0.9 | 6.0 | 0.80 | 0.70 | 0.80 | 31.3 |
| Approach | | | 537 | 1.8 | 537 | 1.8 | 0.454 | 9.1 | LOS A | 8.4 | 59.8 | 0.62 | 0.57 | 0.62 | 35.9 |
| North: Ross St (280m) | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 83 | 6.3 | 83 | 6.3 | 0.585 | 32.1 | LOS C | 5.6 | 40.7 | 0.96 | 0.81 | 0.98 | 30.0 |
| 8 | T1 | All MCs | 351 | 3.0 | 351 | 3.0 | * 0.585 | 25.1 | LOS B | 6.5 | 46.6 | 0.95 | 0.80 | 0.96 | 25.4 |
| Approach | | | 434 | 3.6 | 434 | 3.6 | 0.585 | 26.5 | LOS B | 6.5 | 46.6 | 0.96 | 0.80 | 0.96 | 26.7 |
| West: Bridge Rd (400m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 44 | 4.8 | 44 | 4.8 | * 0.748 | 21.3 | LOS B | 18.3 | 130.2 | 0.80 | 0.75 | 0.82 | 35.5 |
| 11 | T1 | All MCs | 761 | 2.1 | 761 | 2.1 | 0.748 | 16.0 | LOS B | 18.3 | 130.2 | 0.80 | 0.75 | 0.82 | 35.3 |
| 12 | R2 | All MCs | 14 | 100.0 | 14 | 100.0 | 0.055 | 20.3 | LOS B | 0.2 | 3.2 | 0.60 | 0.63 | 0.60 | 29.5 |
| Approach | | | 819 | 3.9 | 819 | 3.9 | 0.748 | 16.4 | LOS B | 18.3 | 130.2 | 0.79 | 0.75 | 0.82 | 33.3 |
| All Vehicles | | | 2042 | 3.5 | 2042 | 3.5 | 0.748 | 17.7 | LOS B | 18.3 | 130.2 | 0.80 | 0.71 | 0.81 | 32.2 |

Site Level of Service (LOS) Method: Delay (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. Qued | Eff. Stop Rate | Travel Time sec | Travel Dist. m | Aver. Speed m/sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ross St (110m) | | | | | | | | | | | | |
| P1 | Full | 94 | 99 | 24.4 | LOS C | 0.2 | 0.2 | 0.90 | 0.90 | 178.2 | 200.0 | 1.12 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| East: Bridge Rd (500m) | | | | | | | | | | | |
| P2 | Full | 150 | 158 | 24.5 | LOS C | 0.2 | 0.2 | 0.91 | 0.91 | 178.3 | 200.0 | 1.12 |
| North: Ross St (280m) | | | | | | | | | | | |
| P3 | Full | 70 | 74 | 24.4 | LOS C | 0.1 | 0.1 | 0.90 | 0.90 | 178.2 | 200.0 | 1.12 |
| West: Bridge Rd (400m) | | | | | | | | | | | |
| P4 | Full | 98 | 103 | 24.4 | LOS C | 0.2 | 0.2 | 0.90 | 0.90 | 178.3 | 200.0 | 1.12 |
| All Pedestrians | | 412 | 434 | 24.4 | LOS C | 0.2 | 0.2 | 0.90 | 0.90 | 178.3 | 200.0 | 1.12 |

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: [4.24.B.AM] 4. Parramatta x Larkin - 2024 AM (2024 Base AM)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Parramatta Rd x Larkin St
Site Category: Existing Design
Give-Way (Two-Way)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| East: Parramatta Rd (310m) | | | | | | | | | | | | | | | |
| 5 | T1 | All MCs | 895 | 10.8 | 895 | 10.8 | 0.230 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.9 |
| Approach | | | 895 | 10.8 | 895 | 10.8 | 0.230 | 0.0 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.9 |
| North: Larkin St (37m) | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 47 | 6.7 | 47 | 6.7 | 0.040 | 3.6 | LOS A | 0.1 | 1.0 | 0.17 | 0.48 | 0.17 | 44.7 |
| Approach | | | 47 | 6.7 | 47 | 6.7 | 0.040 | 3.6 | LOS A | 0.1 | 1.0 | 0.17 | 0.48 | 0.17 | 44.7 |
| West: Parramatta Rd (155m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 25 | 8.3 | 25 | 8.3 | 0.059 | 5.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.19 | 0.00 | 21.2 |
| 11 | T1 | All MCs | 2378 | 5.2 | 2378 | 5.2 | 0.608 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.3 |
| Approach | | | 2403 | 5.3 | 2403 | 5.3 | 0.608 | 0.2 | NA | 0.0 | 0.0 | 0.00 | 0.01 | 0.00 | 58.8 |
| All Vehicles | | | 3345 | 6.8 | 3345 | 6.8 | 0.608 | 0.2 | NA | 0.1 | 1.0 | 0.00 | 0.01 | 0.00 | 58.9 |

Site Level of Service (LOS) Method: Delay (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: [5.24.B.AM] 5. Larkin x Sparkes - 2024 AM (2024 Base AM)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Larkin St x Sparkes St
Site Category: Existing Design
Give-Way (Two-Way)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Larkin St (37m) | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 14 | 7.7 | 14 | 7.7 | 0.013 | 3.3 | LOS A | 0.0 | 0.0 | 0.00 | 0.31 | 0.00 | 20.8 |
| 2 | T1 | All MCs | 9 | 11.1 | 9 | 11.1 | 0.013 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.31 | 0.00 | 42.3 |
| Approach | | | 23 | 9.1 | 23 | 9.1 | 0.013 | 1.9 | NA | 0.0 | 0.0 | 0.00 | 0.31 | 0.00 | 27.6 |
| East: Sparkes St (90m) | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 14 | 15.4 | 14 | 15.4 | 0.022 | 4.8 | LOS A | 0.1 | 0.6 | 0.11 | 0.50 | 0.11 | 30.4 |
| 5 | T1 | All MCs | 7 | 0.0 | 7 | 0.0 | 0.022 | 3.4 | LOS A | 0.1 | 0.6 | 0.11 | 0.50 | 0.11 | 28.8 |
| 6 | R2 | All MCs | 7 | 0.0 | 7 | 0.0 | 0.022 | 5.1 | LOS A | 0.1 | 0.6 | 0.11 | 0.50 | 0.11 | 33.7 |
| Approach | | | 28 | 7.4 | 28 | 7.4 | 0.022 | 4.5 | LOS A | 0.1 | 0.6 | 0.11 | 0.50 | 0.11 | 30.9 |
| North: Larkin St (100m) | | | | | | | | | | | | | | | |
| 8 | T1 | All MCs | 29 | 0.0 | 29 | 0.0 | 0.016 | 0.0 | LOS A | 0.0 | 0.0 | 0.01 | 0.02 | 0.01 | 49.1 |
| 9 | R2 | All MCs | 1 | 0.0 | 1 | 0.0 | 0.016 | 4.6 | LOS A | 0.0 | 0.0 | 0.01 | 0.02 | 0.01 | 35.4 |
| Approach | | | 31 | 0.0 | 31 | 0.0 | 0.016 | 0.2 | NA | 0.0 | 0.0 | 0.01 | 0.02 | 0.01 | 48.4 |
| West: Sparkes St (60m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 1 | 0.0 | 1 | 0.0 | 0.004 | 4.3 | LOS A | 0.0 | 0.1 | 0.10 | 0.51 | 0.10 | 32.8 |
| 12 | R2 | All MCs | 3 | 33.3 | 3 | 33.3 | 0.004 | 4.7 | LOS A | 0.0 | 0.1 | 0.10 | 0.51 | 0.10 | 26.4 |
| Approach | | | 4 | 25.0 | 4 | 25.0 | 0.004 | 4.6 | LOS A | 0.0 | 0.1 | 0.10 | 0.51 | 0.10 | 28.3 |
| All Vehicles | | | 86 | 6.1 | 86 | 6.1 | 0.022 | 2.3 | NA | 0.1 | 0.6 | 0.04 | 0.28 | 0.04 | 34.3 |

Site Level of Service (LOS) Method: Delay (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: [6.24.B.AM] 6. Ross x Arundel - 2024 AM** (2024 Base AM)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Ross St x Arundel St
Site Category: Existing Design
Stop (Two-Way)
**Site Scenario: 1 | Local Volumes**

**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. Queued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ross St (85m) | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 64 | 4.9 | 64 | 4.9 | 0.226 | 5.6 | LOS A | 0.9 | 6.4 | 0.26 | 0.34 | 0.26 | 36.4 |
| 2 | T1 | All MCs | 226 | 3.7 | 226 | 3.7 | 0.226 | 0.6 | LOS A | 0.9 | 6.4 | 0.26 | 0.34 | 0.26 | 41.8 |
| 3 | R2 | All MCs | 72 | 10.3 | 72 | 10.3 | 0.226 | 6.0 | LOS A | 0.9 | 6.4 | 0.26 | 0.34 | 0.26 | 41.3 |
| 3u | U | All MCs | 11 | 0.0 | 11 | 0.0 | 0.226 | 7.7 | LOS A | 0.9 | 6.4 | 0.26 | 0.34 | 0.26 | 35.6 |
| Approach | | | 373 | 5.1 | 373 | 5.1 | 0.226 | 2.7 | NA | 0.9 | 6.4 | 0.26 | 0.34 | 0.26 | 40.4 |
| East: Arundel St (250m) | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 33 | 9.7 | 33 | 9.7 | 0.082 | 9.7 | LOS A | 0.3 | 2.2 | 0.48 | 0.90 | 0.48 | 34.3 |
| 5 | T1 | All MCs | 4 | 25.0 | 4 | 25.0 | 0.082 | 15.6 | LOS B | 0.3 | 2.2 | 0.48 | 0.90 | 0.48 | 34.4 |
| 6 | R2 | All MCs | 18 | 0.0 | 18 | 0.0 | 0.082 | 12.6 | LOS A | 0.3 | 2.2 | 0.48 | 0.90 | 0.48 | 34.5 |
| Approach | | | 55 | 7.7 | 55 | 7.7 | 0.082 | 11.1 | LOS A | 0.3 | 2.2 | 0.48 | 0.90 | 0.48 | 34.4 |
| North: Ross St (105m) | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 34 | 9.4 | 34 | 9.4 | 0.192 | 5.5 | LOS A | 0.5 | 3.5 | 0.17 | 0.24 | 0.17 | 43.5 |
| 8 | T1 | All MCs | 246 | 3.0 | 246 | 3.0 | 0.192 | 0.3 | LOS A | 0.5 | 3.5 | 0.17 | 0.24 | 0.17 | 44.2 |
| 9 | R2 | All MCs | 52 | 0.0 | 52 | 0.0 | 0.192 | 5.8 | LOS A | 0.5 | 3.5 | 0.17 | 0.24 | 0.17 | 38.0 |
| Approach | | | 332 | 3.2 | 332 | 3.2 | 0.192 | 1.7 | NA | 0.5 | 3.5 | 0.17 | 0.24 | 0.17 | 42.8 |
| West: Arundel St (155m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 26 | 4.0 | 26 | 4.0 | 0.087 | 7.8 | LOS A | 0.3 | 2.2 | 0.49 | 0.90 | 0.49 | 29.0 |
| 11 | T1 | All MCs | 6 | 0.0 | 6 | 0.0 | 0.087 | 11.2 | LOS A | 0.3 | 2.2 | 0.49 | 0.90 | 0.49 | 34.1 |
| 12 | R2 | All MCs | 22 | 4.8 | 22 | 4.8 | 0.087 | 12.8 | LOS A | 0.3 | 2.2 | 0.49 | 0.90 | 0.49 | 27.9 |
| Approach | | | 55 | 3.8 | 55 | 3.8 | 0.087 | 10.2 | LOS A | 0.3 | 2.2 | 0.49 | 0.90 | 0.49 | 29.3 |
| All Vehicles | | | 814 | 4.4 | 814 | 4.4 | 0.226 | 3.3 | NA | 0.9 | 6.4 | 0.26 | 0.37 | 0.26 | 39.4 |

Site Level of Service (LOS) Method: Delay (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: [1.24.B.PM] 1. Parramatta x Lyons - 2024 PM** (2024 Base PM)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Parramatta Rd x Lyons Rd / Missenden Rd
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 140.0 seconds (Site Optimum Cycle Time - Minimum Delay)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Missenden Rd (500m) | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 133 | 0.0 | 133 | 0.0 | 0.235 | 53.4 | LOS D | 6.7 | 47.0 | 0.79 | 0.74 | 0.79 | 23.7 |
| 2 | T1 | All MCs | 234 | 1.4 | 234 | 1.4 | * 0.837 | 79.4 | LOS F | 17.1 | 122.3 | 1.00 | 0.99 | 1.17 | 19.3 |
| 3 | R2 | All MCs | 3 | 66.7 | 3 | 66.7 | 0.837 | 90.2 | LOS F | 17.1 | 122.3 | 1.00 | 0.99 | 1.17 | 18.6 |
| Approach | | | 369 | 1.4 | 369 | 1.4 | 0.837 | 70.1 | LOS E | 17.1 | 122.3 | 0.93 | 0.90 | 1.03 | 18.8 |
| East: Parramatta Rd (155m) | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 148 | 7.1 | 148 | 7.1 | 0.217 | 22.5 | LOS B | 6.1 | 52.0 | 0.53 | 0.67 | 0.53 | 31.4 |
| 5 | T1 | All MCs | 1966 | 2.7 | 1966 | 2.7 | * 0.860 | 26.4 | LOS B | 54.8 | 387.0 | 0.90 | 0.84 | 0.91 | 24.9 |
| Approach | | | 2115 | 3.0 | 2115 | 3.0 | 0.860 | 26.2 | LOS B | 54.8 | 387.0 | 0.88 | 0.83 | 0.88 | 25.6 |
| North: Lyons Rd (180m) | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 48 | 0.0 | 48 | 0.0 | 0.192 | 61.9 | LOS E | 3.0 | 20.8 | 0.93 | 0.73 | 0.93 | 13.8 |
| 8 | T1 | All MCs | 94 | 0.0 | 94 | 0.0 | 0.395 | 59.7 | LOS E | 6.4 | 44.6 | 0.96 | 0.76 | 0.96 | 20.4 |
| 9 | R2 | All MCs | 6 | 0.0 | 6 | 0.0 | 0.395 | 83.9 | LOS F | 6.4 | 44.6 | 0.96 | 0.76 | 0.96 | 13.8 |
| Approach | | | 148 | 0.0 | 148 | 0.0 | 0.395 | 61.4 | LOS E | 6.4 | 44.6 | 0.95 | 0.75 | 0.95 | 18.4 |
| West: Parramatta Rd (140m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 24 | 0.0 | 24 | 0.0 | 0.051 | 12.1 | LOS A | 0.9 | 8.5 | 0.33 | 0.81 | 0.33 | 29.4 |
| 11 | T1 | All MCs | 1143 | 2.3 | 1143 | 2.3 | 0.388 | 6.7 | LOS A | 13.4 | 94.3 | 0.39 | 0.36 | 0.39 | 43.8 |
| 12 | R2 | All MCs | 105 | 1.0 | 105 | 1.0 | * 0.482 | 69.2 | LOS E | 6.9 | 48.6 | 0.98 | 0.79 | 0.98 | 19.0 |
| Approach | | | 1273 | 2.2 | 1273 | 2.2 | 0.482 | 12.0 | LOS A | 13.4 | 94.3 | 0.44 | 0.41 | 0.44 | 36.0 |
| All Vehicles | | | 3905 | 2.5 | 3905 | 2.5 | 0.860 | 27.1 | LOS B | 54.8 | 387.0 | 0.74 | 0.69 | 0.76 | 25.6 |

Site Level of Service (LOS) Method: Delay (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. Qued | Eff. Stop Rate | Travel Time sec | Travel Dist. m | Aver. Speed m/sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Missenden Rd (500m) | | | | | | | | | | | | |
| P1 | Full | 76 | 80 | 64.3 | LOS F | 0.3 | 0.3 | 0.96 | 0.96 | 218.2 | 200.0 | 0.92 |
| East: Parramatta Rd (155m) | | | | | | | | | | | | |
| P2 | Full | 171 | 180 | 64.6 | LOS F | 0.7 | 0.7 | 0.96 | 0.96 | 218.5 | 200.0 | 0.92 |
| North: Lyons Rd (180m) | | | | | | | | | | | | |
| P3 | Full | 81 | 85 | 64.4 | LOS F | 0.3 | 0.3 | 0.96 | 0.96 | 218.2 | 200.0 | 0.92 |
| West: Parramatta Rd (140m) | | | | | | | | | | | | |
| P4 | Full | 104 | 109 | 64.4 | LOS F | 0.4 | 0.4 | 0.96 | 0.96 | 218.3 | 200.0 | 0.92 |
| All Pedestrians | | 432 | 455 | 64.5 | LOS F | 0.7 | 0.7 | 0.96 | 0.96 | 218.3 | 200.0 | 0.92 |

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: [2.24.B.PM] 2. Parramatta x Ross - 2024 PM** (2024 Base PM)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Parramatta Rd / Ross St / Western Av
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 90.0 seconds (Site Optimum Cycle Time - Minimum Delay)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Western Av | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 66 | 1.6 | 66 | 1.6 | 0.363 | 32.4 | LOS C | 5.9 | 41.7 | 0.89 | 0.72 | 0.89 | 12.3 |
| 2 | T1 | All MCs | 67 | 1.6 | 67 | 1.6 | 0.363 | 29.6 | LOS C | 5.9 | 41.7 | 0.89 | 0.72 | 0.89 | 8.4 |
| 3 | R2 | All MCs | 22 | 0.0 | 22 | 0.0 | 0.363 | 41.8 | LOS C | 5.9 | 41.7 | 0.89 | 0.72 | 0.89 | 15.5 |
| Approach | | | 156 | 1.4 | 156 | 1.4 | 0.363 | 32.5 | LOS C | 5.9 | 41.7 | 0.89 | 0.72 | 0.89 | 11.1 |
| East: Parramatta Rd (600m) | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 38 | 0.0 | 38 | 0.0 | 0.129 | 19.6 | LOS B | 1.7 | 17.4 | 0.53 | 0.94 | 0.53 | 16.2 |
| 5 | T1 | All MCs | 1807 | 3.3 | 1807 | 3.3 | 0.789 | 16.3 | LOS B | 30.3 | 213.3 | 0.83 | 0.78 | 0.84 | 46.4 |
| 6 | R2 | All MCs | 207 | 0.5 | 207 | 0.5 | * 0.784 | 51.5 | LOS D | 9.7 | 68.0 | 1.00 | 0.92 | 1.19 | 26.6 |
| Approach | | | 2053 | 3.0 | 2053 | 3.0 | 0.789 | 19.9 | LOS B | 30.3 | 213.3 | 0.84 | 0.80 | 0.87 | 41.9 |
| North: Ross St (85m) | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 124 | 0.8 | 124 | 0.8 | 0.411 | 27.8 | LOS B | 7.7 | 54.1 | 0.87 | 0.82 | 0.87 | 30.7 |
| 8 | T1 | All MCs | 86 | 1.2 | 86 | 1.2 | 0.411 | 49.0 | LOS D | 7.7 | 54.1 | 0.87 | 0.82 | 0.87 | 9.7 |
| 9 | R2 | All MCs | 188 | 0.6 | 188 | 0.6 | * 0.772 | 48.7 | LOS D | 8.8 | 61.9 | 1.00 | 0.93 | 1.19 | 19.4 |
| Approach | | | 399 | 0.8 | 399 | 0.8 | 0.772 | 42.2 | LOS C | 8.8 | 61.9 | 0.93 | 0.87 | 1.02 | 17.8 |
| West: Parramatta Rd (310m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 104 | 2.0 | 104 | 2.0 | 0.252 | 29.5 | LOS C | 4.2 | 35.3 | 0.76 | 0.73 | 0.76 | 27.0 |
| 11 | T1 | All MCs | 1162 | 2.8 | 1162 | 2.8 | * 0.784 | 29.1 | LOS C | 23.3 | 163.5 | 0.95 | 0.88 | 1.00 | 39.3 |
| Approach | | | 1266 | 2.7 | 1266 | 2.7 | 0.784 | 29.1 | LOS C | 23.3 | 163.5 | 0.93 | 0.87 | 0.98 | 38.7 |
| All Vehicles | | | 3874 | 2.6 | 3874 | 2.6 | 0.789 | 25.7 | LOS B | 30.3 | 213.3 | 0.88 | 0.82 | 0.92 | 34.4 |

Site Level of Service (LOS) Method: Delay (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. Qued | Eff. Stop Rate | Travel Time sec | Travel Dist. m | Aver. Speed m/sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Western Av | | | | | | | | | | | | |
| P1 | Full | 62 | 65 | 39.3 | LOS D | 0.2 | 0.2 | 0.94 | 0.94 | 193.2 | 200.0 | 1.04 |
| East: Parramatta Rd (600m) | | | | | | | | | | | | |
| P2 | Full | 274 | 288 | 39.7 | LOS D | 0.7 | 0.7 | 0.94 | 0.94 | 193.5 | 200.0 | 1.03 |
| North: Ross St (85m) | | | | | | | | | | | | |
| P3 | Full | 73 | 77 | 39.3 | LOS D | 0.2 | 0.2 | 0.94 | 0.94 | 193.2 | 200.0 | 1.04 |
| West: Parramatta Rd (310m) | | | | | | | | | | | | |
| P4 | Full | 63 | 66 | 39.3 | LOS D | 0.2 | 0.2 | 0.94 | 0.94 | 193.2 | 200.0 | 1.04 |
| All Pedestrians | | 472 | 497 | 39.5 | LOS D | 0.7 | 0.7 | 0.94 | 0.94 | 193.4 | 200.0 | 1.03 |

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: [3.24.B.PM] 3. Ross x Bridge - 2024 PM** (2024 Base PM)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Ross St / Bridge Rd
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 60.0 seconds (Site Optimum Cycle Time - Minimum Delay)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ross St (110m) | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 237 | 3.1 | 237 | 3.1 | 0.595 | 27.1 | LOS B | 6.5 | 46.9 | 0.95 | 0.81 | 0.96 | 25.1 |
| 2 | T1 | All MCs | 351 | 0.3 | 351 | 0.3 | * 0.673 | 22.5 | LOS B | 9.7 | 68.0 | 0.95 | 0.84 | 0.99 | 26.9 |
| Approach | | | 587 | 1.4 | 587 | 1.4 | 0.673 | 24.3 | LOS B | 9.7 | 68.0 | 0.95 | 0.83 | 0.98 | 26.0 |
| East: Bridge Rd (500m) | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 44 | 2.4 | 44 | 2.4 | * 0.673 | 17.1 | LOS B | 14.8 | 104.7 | 0.79 | 0.71 | 0.79 | 32.7 |
| 5 | T1 | All MCs | 641 | 1.0 | 641 | 1.0 | 0.673 | 11.1 | LOS A | 14.8 | 104.7 | 0.79 | 0.71 | 0.79 | 35.1 |
| 6 | R2 | All MCs | 122 | 0.9 | 122 | 0.9 | 0.301 | 18.4 | LOS B | 2.6 | 18.6 | 0.74 | 0.73 | 0.74 | 32.9 |
| Approach | | | 807 | 1.0 | 807 | 1.0 | 0.673 | 12.5 | LOS A | 14.8 | 104.7 | 0.78 | 0.71 | 0.78 | 34.7 |
| North: Ross St (280m) | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 58 | 0.0 | 58 | 0.0 | 0.163 | 25.6 | LOS B | 1.7 | 11.7 | 0.84 | 0.72 | 0.84 | 31.1 |
| 8 | T1 | All MCs | 320 | 1.0 | 320 | 1.0 | 0.597 | 22.5 | LOS B | 8.2 | 57.6 | 0.92 | 0.79 | 0.92 | 27.1 |
| Approach | | | 378 | 0.8 | 378 | 0.8 | 0.597 | 23.0 | LOS B | 8.2 | 57.6 | 0.91 | 0.78 | 0.91 | 28.0 |
| West: Bridge Rd (400m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 89 | 2.4 | 89 | 2.4 | 0.478 | 16.5 | LOS B | 8.9 | 63.1 | 0.68 | 0.63 | 0.68 | 35.7 |
| 11 | T1 | All MCs | 384 | 0.8 | 384 | 0.8 | 0.478 | 11.0 | LOS A | 8.9 | 63.1 | 0.68 | 0.63 | 0.68 | 35.5 |
| 12 | R2 | All MCs | 5 | 100.0 | 5 | 100.0 | 0.035 | 24.0 | LOS B | 0.1 | 1.6 | 0.76 | 0.64 | 0.76 | 26.4 |
| Approach | | | 479 | 2.2 | 479 | 2.2 | 0.478 | 12.1 | LOS A | 8.9 | 63.1 | 0.68 | 0.63 | 0.68 | 34.9 |
| All Vehicles | | | 2252 | 1.4 | 2252 | 1.4 | 0.673 | 17.3 | LOS B | 14.8 | 104.7 | 0.82 | 0.74 | 0.83 | 32.1 |

Site Level of Service (LOS) Method: Delay (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. Qued | Eff. Stop Rate | Travel Time sec | Travel Dist. m | Aver. Speed m/sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ross St (110m) | | | | | | | | | | | | |
| P1 | Full | 77 | 81 | 24.4 | LOS C | 0.1 | 0.1 | 0.90 | 0.90 | 178.2 | 200.0 | 1.12 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| East: Bridge Rd (500m) | | | | | | | | | | | |
| P2 Full | 90 | 95 | 24.4 | LOS C | 0.1 | 0.1 | 0.90 | 0.90 | 178.2 | 200.0 | 1.12 |
| North: Ross St (280m) | | | | | | | | | | | |
| P3 Full | 91 | 96 | 24.4 | LOS C | 0.1 | 0.1 | 0.90 | 0.90 | 178.2 | 200.0 | 1.12 |
| West: Bridge Rd (400m) | | | | | | | | | | | |
| P4 Full | 88 | 93 | 24.4 | LOS C | 0.1 | 0.1 | 0.90 | 0.90 | 178.2 | 200.0 | 1.12 |
| All Pedestrians | 346 | 364 | 24.4 | LOS C | 0.1 | 0.1 | 0.90 | 0.90 | 178.2 | 200.0 | 1.12 |

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: [4.24.B.PM] 4. Parramatta x Larkin - 2024 PM (2024 Base PM)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Parramatta Rd x Larkin St
Site Category: Existing Design
Give-Way (Two-Way)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| East: Parramatta Rd (310m) | | | | | | | | | | | | | | | |
| 5 | T1 | All MCs | 2026 | 3.3 | 2026 | 3.3 | 0.509 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.6 |
| Approach | | | 2026 | 3.3 | 2026 | 3.3 | 0.509 | 0.1 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.6 |
| North: Larkin St (37m) | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 56 | 1.9 | 56 | 1.9 | 0.044 | 3.5 | LOS A | 0.2 | 1.1 | 0.13 | 0.48 | 0.13 | 45.3 |
| Approach | | | 56 | 1.9 | 56 | 1.9 | 0.044 | 3.5 | LOS A | 0.2 | 1.1 | 0.13 | 0.48 | 0.13 | 45.3 |
| West: Parramatta Rd (155m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 12 | 0.0 | 12 | 0.0 | 0.037 | 5.5 | LOS A | 0.0 | 0.0 | 0.00 | 0.15 | 0.00 | 21.4 |
| 11 | T1 | All MCs | 1238 | 3.4 | 1238 | 3.4 | 0.309 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.7 |
| Approach | | | 1249 | 3.4 | 1249 | 3.4 | 0.309 | 0.1 | NA | 0.0 | 0.0 | 0.00 | 0.01 | 0.00 | 59.3 |
| All Vehicles | | | 3332 | 3.3 | 3332 | 3.3 | 0.509 | 0.2 | NA | 0.2 | 1.1 | 0.00 | 0.01 | 0.00 | 59.2 |

Site Level of Service (LOS) Method: Delay (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: [5.24.B.PM] 5. Larkin x Sparkes - 2024 PM (2024 Base PM)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Larkin St x Sparkes St
Site Category: Existing Design
Give-Way (Two-Way)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Larkin St (37m) | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 9 | 0.0 | 9 | 0.0 | 0.006 | 3.3 | LOS A | 0.0 | 0.0 | 0.00 | 0.46 | 0.00 | 20.1 |
| 2 | T1 | All MCs | 1 | 0.0 | 1 | 0.0 | 0.006 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.46 | 0.00 | 39.4 |
| Approach | | | 11 | 0.0 | 11 | 0.0 | 0.006 | 3.0 | NA | 0.0 | 0.0 | 0.00 | 0.46 | 0.00 | 21.5 |
| East: Sparkes St (90m) | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 13 | 0.0 | 13 | 0.0 | 0.017 | 4.6 | LOS A | 0.1 | 0.4 | 0.08 | 0.53 | 0.08 | 30.2 |
| 5 | T1 | All MCs | 1 | 0.0 | 1 | 0.0 | 0.017 | 3.3 | LOS A | 0.1 | 0.4 | 0.08 | 0.53 | 0.08 | 28.4 |
| 6 | R2 | All MCs | 9 | 0.0 | 9 | 0.0 | 0.017 | 5.0 | LOS A | 0.1 | 0.4 | 0.08 | 0.53 | 0.08 | 33.3 |
| Approach | | | 23 | 0.0 | 23 | 0.0 | 0.017 | 4.7 | LOS A | 0.1 | 0.4 | 0.08 | 0.53 | 0.08 | 31.6 |
| North: Larkin St (100m) | | | | | | | | | | | | | | | |
| 8 | T1 | All MCs | 22 | 4.8 | 22 | 4.8 | 0.012 | 0.0 | LOS A | 0.0 | 0.0 | 0.01 | 0.03 | 0.01 | 48.9 |
| 9 | R2 | All MCs | 1 | 0.0 | 1 | 0.0 | 0.012 | 4.6 | LOS A | 0.0 | 0.0 | 0.01 | 0.03 | 0.01 | 35.3 |
| Approach | | | 23 | 4.5 | 23 | 4.5 | 0.012 | 0.2 | NA | 0.0 | 0.0 | 0.01 | 0.03 | 0.01 | 47.9 |
| West: Sparkes St (60m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 1 | 0.0 | 1 | 0.0 | 0.018 | 4.3 | LOS A | 0.1 | 0.4 | 0.06 | 0.53 | 0.06 | 32.9 |
| 12 | R2 | All MCs | 19 | 0.0 | 19 | 0.0 | 0.018 | 4.4 | LOS A | 0.1 | 0.4 | 0.06 | 0.53 | 0.06 | 27.1 |
| Approach | | | 20 | 0.0 | 20 | 0.0 | 0.018 | 4.4 | LOS A | 0.1 | 0.4 | 0.06 | 0.53 | 0.06 | 27.5 |
| All Vehicles | | | 77 | 1.4 | 77 | 1.4 | 0.018 | 3.0 | NA | 0.1 | 0.4 | 0.04 | 0.37 | 0.04 | 32.4 |

Site Level of Service (LOS) Method: Delay (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: [6.24.B.PM] 6. Ross x Arundel - 2024 PM** (2024 Base PM)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Ross St x Arundel St
Site Category: Existing Design
Stop (Two-Way)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ross St (85m) | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 51 | 0.0 | 51 | 0.0 | 0.250 | 5.5 | LOS A | 0.8 | 5.4 | 0.21 | 0.27 | 0.21 | 37.5 |
| 2 | T1 | All MCs | 317 | 1.0 | 317 | 1.0 | 0.250 | 0.4 | LOS A | 0.8 | 5.4 | 0.21 | 0.27 | 0.21 | 43.5 |
| 3 | R2 | All MCs | 72 | 1.5 | 72 | 1.5 | 0.250 | 5.8 | LOS A | 0.8 | 5.4 | 0.21 | 0.27 | 0.21 | 42.6 |
| 3u | U | All MCs | 3 | 0.0 | 3 | 0.0 | 0.250 | 7.9 | LOS A | 0.8 | 5.4 | 0.21 | 0.27 | 0.21 | 37.0 |
| Approach | | | 442 | 1.0 | 442 | 1.0 | 0.250 | 1.9 | NA | 0.8 | 5.4 | 0.21 | 0.27 | 0.21 | 42.4 |
| East: Arundel St (250m) | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 61 | 0.0 | 61 | 0.0 | 0.152 | 9.3 | LOS A | 0.6 | 3.9 | 0.52 | 0.91 | 0.52 | 34.4 |
| 5 | T1 | All MCs | 3 | 0.0 | 3 | 0.0 | 0.152 | 13.3 | LOS A | 0.6 | 3.9 | 0.52 | 0.91 | 0.52 | 34.3 |
| 6 | R2 | All MCs | 36 | 0.0 | 36 | 0.0 | 0.152 | 14.1 | LOS A | 0.6 | 3.9 | 0.52 | 0.91 | 0.52 | 34.2 |
| Approach | | | 100 | 0.0 | 100 | 0.0 | 0.152 | 11.2 | LOS A | 0.6 | 3.9 | 0.52 | 0.91 | 0.52 | 34.3 |
| North: Ross St (105m) | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 36 | 0.0 | 36 | 0.0 | 0.180 | 5.3 | LOS A | 0.3 | 1.8 | 0.10 | 0.17 | 0.10 | 44.7 |
| 8 | T1 | All MCs | 265 | 0.0 | 265 | 0.0 | 0.180 | 0.2 | LOS A | 0.3 | 1.8 | 0.10 | 0.17 | 0.10 | 46.0 |
| 9 | R2 | All MCs | 23 | 0.0 | 23 | 0.0 | 0.180 | 6.2 | LOS A | 0.3 | 1.8 | 0.10 | 0.17 | 0.10 | 39.0 |
| Approach | | | 324 | 0.0 | 324 | 0.0 | 0.180 | 1.2 | NA | 0.3 | 1.8 | 0.10 | 0.17 | 0.10 | 45.1 |
| West: Arundel St (155m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 20 | 0.0 | 20 | 0.0 | 0.120 | 8.1 | LOS A | 0.4 | 2.9 | 0.56 | 0.96 | 0.56 | 28.3 |
| 11 | T1 | All MCs | 12 | 0.0 | 12 | 0.0 | 0.120 | 12.2 | LOS A | 0.4 | 2.9 | 0.56 | 0.96 | 0.56 | 33.3 |
| 12 | R2 | All MCs | 32 | 0.0 | 32 | 0.0 | 0.120 | 13.1 | LOS A | 0.4 | 2.9 | 0.56 | 0.96 | 0.56 | 27.1 |
| Approach | | | 63 | 0.0 | 63 | 0.0 | 0.120 | 11.4 | LOS A | 0.4 | 2.9 | 0.56 | 0.96 | 0.56 | 28.9 |
| All Vehicles | | | 929 | 0.5 | 929 | 0.5 | 0.250 | 3.3 | NA | 0.8 | 5.4 | 0.23 | 0.35 | 0.23 | 40.2 |

Site Level of Service (LOS) Method: Delay (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: [1.30.B.AM] 1. Parramatta x Lyons - 2030 Base AM** (2030 Base AM)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Parramatta Rd x Lyons Rd / Missenden Rd
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 140.0 seconds (Site Optimum Cycle Time - Minimum Delay)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Missenden Rd (500m) | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 105 | 2.0 | 105 | 2.0 | 0.136 | 27.0 | LOS B | 4.2 | 29.6 | 0.62 | 0.67 | 0.62 | 27.8 |
| 2 | T1 | All MCs | 129 | 9.8 | 129 | 9.8 | 0.631 | 62.5 | LOS E | 9.4 | 73.9 | 1.00 | 0.81 | 1.01 | 19.9 |
| 3 | R2 | All MCs | 12 | 72.7 | 12 | 72.7 | 0.631 | 87.2 | LOS F | 9.4 | 73.9 | 1.00 | 0.81 | 1.01 | 19.1 |
| Approach | | | 246 | 9.4 | 246 | 9.4 | 0.631 | 48.5 | LOS D | 9.4 | 73.9 | 0.83 | 0.75 | 0.84 | 22.5 |
| East: Parramatta Rd (155m) | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 120 | 13.2 | 120 | 13.2 | 0.253 | 39.3 | LOS C | 6.6 | 56.4 | 0.73 | 0.74 | 0.73 | 26.0 |
| 5 | T1 | All MCs | 782 | 8.7 | 782 | 8.7 | 0.522 | 34.1 | LOS C | 19.6 | 144.2 | 0.81 | 0.71 | 0.81 | 21.3 |
| Approach | | | 902 | 9.3 | 902 | 9.3 | 0.522 | 34.8 | LOS C | 19.6 | 144.2 | 0.80 | 0.72 | 0.80 | 22.3 |
| North: Lyons Rd (180m) | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 88 | 2.4 | 88 | 2.4 | 0.349 | 90.3 | LOS F | 5.6 | 39.7 | 0.95 | 0.77 | 0.95 | 13.6 |
| 8 | T1 | All MCs | 213 | 2.0 | 213 | 2.0 | * 0.867 | 99.7 | LOS F | 16.4 | 116.4 | 1.00 | 1.04 | 1.23 | 18.6 |
| 9 | R2 | All MCs | 5 | 0.0 | 5 | 0.0 | 0.867 | 120.5 | LOS F | 16.4 | 116.4 | 1.00 | 1.04 | 1.23 | 12.2 |
| Approach | | | 306 | 2.1 | 306 | 2.1 | 0.867 | 97.4 | LOS F | 16.4 | 116.4 | 0.98 | 0.96 | 1.15 | 14.3 |
| West: Parramatta Rd (140m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 17 | 6.2 | 17 | 6.2 | 0.074 | 12.1 | LOS A | 1.1 | 12.5 | 0.31 | 0.53 | 0.31 | 33.2 |
| 11 | T1 | All MCs | 2527 | 4.0 | 2527 | 4.0 | * 0.929 | 27.3 | LOS B | 79.6 | 568.5 | 0.90 | 0.87 | 0.96 | 26.1 |
| 12 | R2 | All MCs | 283 | 3.7 | 283 | 3.7 | 0.522 | 55.5 | LOS D | 15.9 | 115.2 | 0.88 | 0.82 | 0.88 | 22.7 |
| Approach | | | 2827 | 3.9 | 2827 | 3.9 | 0.929 | 30.0 | LOS C | 79.6 | 568.5 | 0.89 | 0.86 | 0.95 | 23.8 |
| All Vehicles | | | 4282 | 5.3 | 4282 | 5.3 | 0.929 | 36.9 | LOS C | 79.6 | 568.5 | 0.88 | 0.83 | 0.92 | 21.8 |

Site Level of Service (LOS) Method: Delay (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. Qued | Eff. Stop Rate | Travel Time sec | Travel Dist. m | Aver. Speed m/sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Missenden Rd (500m) | | | | | | | | | | | | |
| P1 | Full | 57 | 60 | 64.3 | LOS F | 0.2 | 0.2 | 0.96 | 0.96 | 218.1 | 200.0 | 0.92 |
| East: Parramatta Rd (155m) | | | | | | | | | | | | |
| P2 | Full | 132 | 139 | 64.5 | LOS F | 0.5 | 0.5 | 0.96 | 0.96 | 218.3 | 200.0 | 0.92 |
| North: Lyons Rd (180m) | | | | | | | | | | | | |
| P3 | Full | 69 | 73 | 64.3 | LOS F | 0.3 | 0.3 | 0.96 | 0.96 | 218.2 | 200.0 | 0.92 |
| West: Parramatta Rd (140m) | | | | | | | | | | | | |
| P4 | Full | 215 | 226 | 64.7 | LOS F | 0.9 | 0.9 | 0.97 | 0.97 | 218.6 | 200.0 | 0.91 |
| All Pedestrians | | 473 | 498 | 64.6 | LOS F | 0.9 | 0.9 | 0.96 | 0.96 | 218.4 | 200.0 | 0.92 |

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: [2.30.B.AM] 2. Parramatta x Ross - 2030 Base AM** (2030 Base AM)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Parramatta Rd / Ross St / Western Av
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 140.0 seconds (Site Optimum Cycle Time - Minimum Delay)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Western Av | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 34 | 9.4 | 34 | 9.4 | 0.482 | 62.8 | LOS E | 6.4 | 46.5 | 0.99 | 0.77 | 0.99 | 10.9 |
| 2 | T1 | All MCs | 41 | 0.0 | 41 | 0.0 | 0.482 | 59.4 | LOS E | 6.4 | 46.5 | 0.99 | 0.77 | 0.99 | 7.8 |
| 3 | R2 | All MCs | 22 | 4.8 | 22 | 4.8 | 0.482 | 78.8 | LOS F | 6.4 | 46.5 | 0.99 | 0.77 | 0.99 | 13.8 |
| Approach | | | 97 | 4.3 | 97 | 4.3 | 0.482 | 65.0 | LOS E | 6.4 | 46.5 | 0.99 | 0.77 | 0.99 | 10.3 |
| East: Parramatta Rd (600m) | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 34 | 3.1 | 34 | 3.1 | 0.072 | 16.0 | LOS B | 1.3 | 12.7 | 0.35 | 1.04 | 0.35 | 16.1 |
| 5 | T1 | All MCs | 804 | 9.3 | 804 | 9.3 | 0.291 | 7.0 | LOS A | 9.0 | 66.2 | 0.38 | 0.36 | 0.38 | 52.4 |
| 6 | R2 | All MCs | 119 | 2.7 | 119 | 2.7 | * 0.695 | 75.4 | LOS F | 8.3 | 59.4 | 1.00 | 0.84 | 1.08 | 21.1 |
| Approach | | | 957 | 8.3 | 957 | 8.3 | 0.695 | 15.9 | LOS B | 9.0 | 66.2 | 0.45 | 0.44 | 0.46 | 42.2 |
| North: Ross St (85m) | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 96 | 0.0 | 96 | 0.0 | 0.593 | 54.5 | LOS D | 12.6 | 88.8 | 0.97 | 0.83 | 0.97 | 22.7 |
| 8 | T1 | All MCs | 102 | 2.1 | 102 | 2.1 | 0.593 | 76.1 | LOS F | 12.6 | 88.8 | 0.97 | 0.83 | 0.97 | 8.6 |
| 9 | R2 | All MCs | 152 | 5.6 | 152 | 5.6 | * 0.929 | 91.6 | LOS F | 12.3 | 89.9 | 1.00 | 1.07 | 1.42 | 12.5 |
| Approach | | | 349 | 3.0 | 349 | 3.0 | 0.929 | 76.9 | LOS F | 12.6 | 89.9 | 0.98 | 0.93 | 1.17 | 12.7 |
| West: Parramatta Rd (310m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 259 | 1.6 | 259 | 1.6 | 0.344 | 23.3 | LOS B | 11.2 | 90.3 | 0.58 | 0.71 | 0.58 | 30.0 |
| 11 | T1 | All MCs | 2262 | 4.7 | 2262 | 4.7 | * 0.991 | 65.1 | LOS E | 96.5 | 689.6 | 0.99 | 1.18 | 1.24 | 27.6 |
| Approach | | | 2521 | 4.4 | 2521 | 4.4 | 0.991 | 60.8 | LOS E | 96.5 | 689.6 | 0.95 | 1.13 | 1.17 | 27.8 |
| All Vehicles | | | 3924 | 5.2 | 3924 | 5.2 | 0.991 | 51.4 | LOS D | 96.5 | 689.6 | 0.83 | 0.94 | 0.99 | 27.2 |

Site Level of Service (LOS) Method: Delay (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. Qued | Eff. Stop Rate | Travel Time sec | Travel Dist. m | Aver. Speed m/sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Western Av | | | | | | | | | | | | |
| P1 | Full | 52 | 55 | 64.3 | LOS F | 0.2 | 0.2 | 0.96 | 0.96 | 218.1 | 200.0 | 0.92 |
| East: Parramatta Rd (600m) | | | | | | | | | | | | |
| P2 | Full | 228 | 240 | 64.8 | LOS F | 0.9 | 0.9 | 0.97 | 0.97 | 218.6 | 200.0 | 0.91 |
| North: Ross St (85m) | | | | | | | | | | | | |
| P3 | Full | 47 | 49 | 64.3 | LOS F | 0.2 | 0.2 | 0.96 | 0.96 | 218.1 | 200.0 | 0.92 |
| West: Parramatta Rd (310m) | | | | | | | | | | | | |
| P4 | Full | 51 | 54 | 64.3 | LOS F | 0.2 | 0.2 | 0.96 | 0.96 | 218.1 | 200.0 | 0.92 |
| All Pedestrians | | 378 | 398 | 64.6 | LOS F | 0.9 | 0.9 | 0.96 | 0.96 | 218.4 | 200.0 | 0.92 |

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: [3.30.B.AM] 3. Ross x Bridge - 2030 Base AM** (2030 Base AM)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Ross St / Bridge Rd
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 60.0 seconds (Site Optimum Cycle Time - Minimum Delay)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ross St (110m) | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 105 | 6.0 | 105 | 6.0 | 0.371 | 28.9 | LOS C | 2.9 | 21.4 | 0.93 | 0.76 | 0.93 | 24.5 |
| 2 | T1 | All MCs | 161 | 4.6 | 161 | 4.6 | 0.405 | 22.8 | LOS B | 4.2 | 30.8 | 0.91 | 0.73 | 0.91 | 26.7 |
| Approach | | | 266 | 5.1 | 266 | 5.1 | 0.405 | 25.2 | LOS B | 4.2 | 30.8 | 0.92 | 0.74 | 0.92 | 25.6 |
| East: Bridge Rd (500m) | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 60 | 1.8 | 60 | 1.8 | 0.480 | 13.1 | LOS A | 9.1 | 64.6 | 0.62 | 0.57 | 0.62 | 34.3 |
| 5 | T1 | All MCs | 471 | 1.8 | 471 | 1.8 | 0.480 | 7.7 | LOS A | 9.1 | 64.6 | 0.62 | 0.57 | 0.62 | 36.3 |
| 6 | R2 | All MCs | 38 | 0.0 | 38 | 0.0 | 0.180 | 25.1 | LOS B | 1.0 | 6.7 | 0.84 | 0.72 | 0.84 | 30.6 |
| Approach | | | 568 | 1.7 | 568 | 1.7 | 0.480 | 9.4 | LOS A | 9.1 | 64.6 | 0.64 | 0.58 | 0.64 | 35.8 |
| North: Ross St (280m) | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 87 | 6.0 | 87 | 6.0 | 0.616 | 32.5 | LOS C | 6.0 | 43.5 | 0.97 | 0.83 | 1.01 | 29.9 |
| 8 | T1 | All MCs | 371 | 2.8 | 371 | 2.8 | * 0.616 | 25.5 | LOS B | 7.0 | 49.9 | 0.96 | 0.82 | 0.99 | 25.3 |
| Approach | | | 458 | 3.4 | 458 | 3.4 | 0.616 | 26.9 | LOS B | 7.0 | 49.9 | 0.96 | 0.82 | 0.99 | 26.6 |
| West: Bridge Rd (400m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 46 | 4.5 | 46 | 4.5 | * 0.795 | 24.5 | LOS B | 21.6 | 154.3 | 0.84 | 0.83 | 0.91 | 34.3 |
| 11 | T1 | All MCs | 806 | 2.1 | 806 | 2.1 | 0.795 | 19.1 | LOS B | 21.6 | 154.3 | 0.84 | 0.83 | 0.91 | 34.4 |
| 12 | R2 | All MCs | 15 | 100.0 | 15 | 100.0 | 0.063 | 21.5 | LOS B | 0.3 | 3.5 | 0.61 | 0.63 | 0.61 | 29.3 |
| Approach | | | 867 | 3.9 | 867 | 3.9 | 0.795 | 19.4 | LOS B | 21.6 | 154.3 | 0.83 | 0.82 | 0.91 | 32.3 |
| All Vehicles | | | 2160 | 3.4 | 2160 | 3.4 | 0.795 | 19.1 | LOS B | 21.6 | 154.3 | 0.82 | 0.75 | 0.86 | 31.7 |

Site Level of Service (LOS) Method: Delay (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. Qued | Eff. Stop Rate | Travel Time sec | Travel Dist. m | Aver. Speed m/sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ross St (110m) | | | | | | | | | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P1 | Full | 94 | 99 | 24.4 | LOS C | 0.2 | 0.2 | 0.90 | 0.90 | 178.2 | 200.0 | 1.12 |
| East: Bridge Rd (500m) | | | | | | | | | | | | |
| P2 | Full | 150 | 158 | 24.5 | LOS C | 0.2 | 0.2 | 0.91 | 0.91 | 178.3 | 200.0 | 1.12 |
| North: Ross St (280m) | | | | | | | | | | | | |
| P3 | Full | 70 | 74 | 24.4 | LOS C | 0.1 | 0.1 | 0.90 | 0.90 | 178.2 | 200.0 | 1.12 |
| West: Bridge Rd (400m) | | | | | | | | | | | | |
| P4 | Full | 98 | 103 | 24.4 | LOS C | 0.2 | 0.2 | 0.90 | 0.90 | 178.3 | 200.0 | 1.12 |
| All Pedestrians | | 412 | 434 | 24.4 | LOS C | 0.2 | 0.2 | 0.90 | 0.90 | 178.3 | 200.0 | 1.12 |

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: [4.30.B.AM] 4. Parramatta x Larkin - 2030 Base AM

(2030 Base AM)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Parramatta Rd x Larkin St
Site Category: Existing Design
Give-Way (Two-Way)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| East: Parramatta Rd (310m) | | | | | | | | | | | | | | | |
| 5 | T1 | All MCs | 945 | 10.6 | 945 | 10.6 | 0.244 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.9 |
| Approach | | | 945 | 10.6 | 945 | 10.6 | 0.244 | 0.0 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.9 |
| North: Larkin St (37m) | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 52 | 8.2 | 52 | 8.2 | 0.043 | 3.6 | LOS A | 0.2 | 1.2 | 0.17 | 0.49 | 0.17 | 44.5 |
| Approach | | | 52 | 8.2 | 52 | 8.2 | 0.043 | 3.6 | LOS A | 0.2 | 1.2 | 0.17 | 0.49 | 0.17 | 44.5 |
| West: Parramatta Rd (155m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 27 | 7.7 | 27 | 7.7 | 0.060 | 5.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.20 | 0.00 | 21.1 |
| 11 | T1 | All MCs | 2517 | 5.1 | 2517 | 5.1 | 0.644 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.2 |
| Approach | | | 2544 | 5.1 | 2544 | 5.1 | 0.644 | 0.2 | NA | 0.0 | 0.0 | 0.00 | 0.01 | 0.00 | 58.7 |
| All Vehicles | | | 3541 | 6.6 | 3541 | 6.6 | 0.644 | 0.2 | NA | 0.2 | 1.2 | 0.00 | 0.01 | 0.00 | 58.8 |

Site Level of Service (LOS) Method: Delay (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: [5.30.B.AM] 5. Larkin x Sparkes - 2030 Base AM (2030 Base AM)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Larkin St x Sparkes St
Site Category: Existing Design
Give-Way (Two-Way)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Larkin St (37m) | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 15 | 7.1 | 15 | 7.1 | 0.014 | 3.3 | LOS A | 0.0 | 0.0 | 0.00 | 0.31 | 0.00 | 20.8 |
| 2 | T1 | All MCs | 9 | 11.1 | 9 | 11.1 | 0.014 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.31 | 0.00 | 42.1 |
| Approach | | | 24 | 8.7 | 24 | 8.7 | 0.014 | 2.0 | NA | 0.0 | 0.0 | 0.00 | 0.31 | 0.00 | 27.2 |
| East: Sparkes St (90m) | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 15 | 14.3 | 15 | 14.3 | 0.023 | 4.8 | LOS A | 0.1 | 0.6 | 0.11 | 0.50 | 0.11 | 30.4 |
| 5 | T1 | All MCs | 7 | 0.0 | 7 | 0.0 | 0.023 | 3.4 | LOS A | 0.1 | 0.6 | 0.11 | 0.50 | 0.11 | 28.8 |
| 6 | R2 | All MCs | 7 | 0.0 | 7 | 0.0 | 0.023 | 5.1 | LOS A | 0.1 | 0.6 | 0.11 | 0.50 | 0.11 | 33.7 |
| Approach | | | 29 | 7.1 | 29 | 7.1 | 0.023 | 4.5 | LOS A | 0.1 | 0.6 | 0.11 | 0.50 | 0.11 | 30.9 |
| North: Larkin St (100m) | | | | | | | | | | | | | | | |
| 8 | T1 | All MCs | 31 | 0.0 | 31 | 0.0 | 0.016 | 0.0 | LOS A | 0.0 | 0.0 | 0.01 | 0.02 | 0.01 | 49.2 |
| 9 | R2 | All MCs | 1 | 0.0 | 1 | 0.0 | 0.016 | 4.6 | LOS A | 0.0 | 0.0 | 0.01 | 0.02 | 0.01 | 35.4 |
| Approach | | | 32 | 0.0 | 32 | 0.0 | 0.016 | 0.2 | NA | 0.0 | 0.0 | 0.01 | 0.02 | 0.01 | 48.4 |
| West: Sparkes St (60m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 1 | 0.0 | 1 | 0.0 | 0.004 | 4.3 | LOS A | 0.0 | 0.1 | 0.10 | 0.51 | 0.10 | 32.8 |
| 12 | R2 | All MCs | 3 | 33.3 | 3 | 33.3 | 0.004 | 4.7 | LOS A | 0.0 | 0.1 | 0.10 | 0.51 | 0.10 | 26.4 |
| Approach | | | 4 | 25.0 | 4 | 25.0 | 0.004 | 4.6 | LOS A | 0.0 | 0.1 | 0.10 | 0.51 | 0.10 | 28.3 |
| All Vehicles | | | 89 | 5.9 | 89 | 5.9 | 0.023 | 2.3 | NA | 0.1 | 0.6 | 0.04 | 0.28 | 0.04 | 34.1 |

Site Level of Service (LOS) Method: Delay (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: [6.30.B.AM] 6. Ross x Arundel - 2030 Base AM (2030 Base AM)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Ross St x Arundel St
Site Category: Existing Design
Stop (Two-Way)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ross St (85m) | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 68 | 6.2 | 68 | 6.2 | 0.241 | 5.7 | LOS A | 1.0 | 7.0 | 0.28 | 0.35 | 0.28 | 36.3 |
| 2 | T1 | All MCs | 239 | 3.5 | 239 | 3.5 | 0.241 | 0.6 | LOS A | 1.0 | 7.0 | 0.28 | 0.35 | 0.28 | 41.6 |
| 3 | R2 | All MCs | 76 | 9.7 | 76 | 9.7 | 0.241 | 6.1 | LOS A | 1.0 | 7.0 | 0.28 | 0.35 | 0.28 | 41.2 |
| 3u | U | All MCs | 12 | 0.0 | 12 | 0.0 | 0.241 | 7.9 | LOS A | 1.0 | 7.0 | 0.28 | 0.35 | 0.28 | 35.5 |
| Approach | | | 395 | 5.1 | 395 | 5.1 | 0.241 | 2.8 | NA | 1.0 | 7.0 | 0.28 | 0.35 | 0.28 | 40.3 |
| East: Arundel St (250m) | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 35 | 12.1 | 35 | 12.1 | 0.093 | 10.0 | LOS A | 0.3 | 2.5 | 0.50 | 0.91 | 0.50 | 34.0 |
| 5 | T1 | All MCs | 5 | 20.0 | 5 | 20.0 | 0.093 | 15.7 | LOS B | 0.3 | 2.5 | 0.50 | 0.91 | 0.50 | 34.2 |
| 6 | R2 | All MCs | 19 | 0.0 | 19 | 0.0 | 0.093 | 13.2 | LOS A | 0.3 | 2.5 | 0.50 | 0.91 | 0.50 | 34.2 |
| Approach | | | 59 | 8.9 | 59 | 8.9 | 0.093 | 11.5 | LOS A | 0.3 | 2.5 | 0.50 | 0.91 | 0.50 | 34.1 |
| North: Ross St (105m) | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 37 | 11.4 | 37 | 11.4 | 0.205 | 5.5 | LOS A | 0.5 | 3.8 | 0.18 | 0.25 | 0.18 | 43.3 |
| 8 | T1 | All MCs | 261 | 2.8 | 261 | 2.8 | 0.205 | 0.3 | LOS A | 0.5 | 3.8 | 0.18 | 0.25 | 0.18 | 44.1 |
| 9 | R2 | All MCs | 55 | 0.0 | 55 | 0.0 | 0.205 | 5.9 | LOS A | 0.5 | 3.8 | 0.18 | 0.25 | 0.18 | 38.0 |
| Approach | | | 353 | 3.3 | 353 | 3.3 | 0.205 | 1.7 | NA | 0.5 | 3.8 | 0.18 | 0.25 | 0.18 | 42.7 |
| West: Arundel St (155m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 28 | 3.7 | 28 | 3.7 | 0.096 | 7.9 | LOS A | 0.3 | 2.4 | 0.50 | 0.90 | 0.50 | 28.8 |
| 11 | T1 | All MCs | 6 | 0.0 | 6 | 0.0 | 0.096 | 11.7 | LOS A | 0.3 | 2.4 | 0.50 | 0.90 | 0.50 | 33.9 |
| 12 | R2 | All MCs | 23 | 4.5 | 23 | 4.5 | 0.096 | 13.4 | LOS A | 0.3 | 2.4 | 0.50 | 0.90 | 0.50 | 27.7 |
| Approach | | | 58 | 3.6 | 58 | 3.6 | 0.096 | 10.5 | LOS A | 0.3 | 2.4 | 0.50 | 0.90 | 0.50 | 29.1 |
| All Vehicles | | | 864 | 4.5 | 864 | 4.5 | 0.241 | 3.5 | NA | 1.0 | 7.0 | 0.27 | 0.38 | 0.27 | 39.3 |

Site Level of Service (LOS) Method: Delay (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: [1.30.B.PM] 1. Parramatta x Lyons - 2030 Base PM** (2030 Base PM)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Parramatta Rd x Lyons Rd / Missenden Rd
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 140.0 seconds (Site Optimum Cycle Time - Minimum Delay)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Missenden Rd (500m) | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 141 | 0.0 | 141 | 0.0 | 0.250 | 56.6 | LOS E | 7.2 | 50.3 | 0.80 | 0.75 | 0.80 | 23.6 |
| 2 | T1 | All MCs | 247 | 1.3 | 247 | 1.3 | *0.910 | 92.3 | LOS F | 19.7 | 140.7 | 1.00 | 1.11 | 1.30 | 17.9 |
| 3 | R2 | All MCs | 3 | 66.7 | 3 | 66.7 | 0.910 | 104.6 | LOS F | 19.7 | 140.7 | 1.00 | 1.11 | 1.30 | 17.3 |
| Approach | | | 392 | 1.3 | 392 | 1.3 | 0.910 | 79.6 | LOS F | 19.7 | 140.7 | 0.93 | 0.98 | 1.12 | 17.6 |
| East: Parramatta Rd (155m) | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 157 | 6.7 | 157 | 6.7 | 0.225 | 22.6 | LOS B | 6.5 | 54.3 | 0.54 | 0.68 | 0.54 | 31.3 |
| 5 | T1 | All MCs | 2082 | 2.6 | 2082 | 2.6 | *0.911 | 35.4 | LOS C | 67.5 | 476.2 | 0.96 | 0.94 | 1.03 | 20.8 |
| Approach | | | 2239 | 2.9 | 2239 | 2.9 | 0.911 | 34.5 | LOS C | 67.5 | 476.2 | 0.93 | 0.92 | 0.99 | 21.8 |
| North: Lyons Rd (180m) | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 52 | 0.0 | 52 | 0.0 | 0.205 | 62.0 | LOS E | 3.2 | 22.2 | 0.93 | 0.74 | 0.93 | 13.8 |
| 8 | T1 | All MCs | 99 | 0.0 | 99 | 0.0 | 0.432 | 60.7 | LOS E | 6.8 | 47.4 | 0.97 | 0.77 | 0.97 | 20.2 |
| 9 | R2 | All MCs | 6 | 0.0 | 6 | 0.0 | 0.432 | 87.7 | LOS F | 6.8 | 47.4 | 0.97 | 0.77 | 0.97 | 13.6 |
| Approach | | | 157 | 0.0 | 157 | 0.0 | 0.432 | 62.2 | LOS E | 6.8 | 47.4 | 0.96 | 0.76 | 0.96 | 18.3 |
| West: Parramatta Rd (140m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 25 | 0.0 | 25 | 0.0 | 0.052 | 12.1 | LOS A | 0.9 | 8.7 | 0.33 | 0.82 | 0.33 | 29.3 |
| 11 | T1 | All MCs | 1211 | 2.2 | 1211 | 2.2 | 0.411 | 6.9 | LOS A | 14.6 | 102.5 | 0.40 | 0.37 | 0.40 | 43.6 |
| 12 | R2 | All MCs | 112 | 0.9 | 112 | 0.9 | *0.511 | 69.5 | LOS E | 7.3 | 51.7 | 0.98 | 0.79 | 0.98 | 19.0 |
| Approach | | | 1347 | 2.0 | 1347 | 2.0 | 0.511 | 12.2 | LOS A | 14.6 | 102.5 | 0.45 | 0.41 | 0.45 | 35.8 |
| All Vehicles | | | 4135 | 2.4 | 4135 | 2.4 | 0.911 | 32.5 | LOS C | 67.5 | 476.2 | 0.77 | 0.75 | 0.83 | 23.2 |

Site Level of Service (LOS) Method: Delay (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. Qued | Eff. Stop Rate | Travel Time sec | Travel Dist. m | Aver. Speed m/sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Missenden Rd (500m) | | | | | | | | | | | | |
| P1 | Full | 76 | 80 | 64.3 | LOS F | 0.3 | 0.3 | 0.96 | 0.96 | 218.2 | 200.0 | 0.92 |
| East: Parramatta Rd (155m) | | | | | | | | | | | | |
| P2 | Full | 171 | 180 | 64.6 | LOS F | 0.7 | 0.7 | 0.96 | 0.96 | 218.5 | 200.0 | 0.92 |
| North: Lyons Rd (180m) | | | | | | | | | | | | |
| P3 | Full | 81 | 85 | 64.4 | LOS F | 0.3 | 0.3 | 0.96 | 0.96 | 218.2 | 200.0 | 0.92 |
| West: Parramatta Rd (140m) | | | | | | | | | | | | |
| P4 | Full | 104 | 109 | 64.4 | LOS F | 0.4 | 0.4 | 0.96 | 0.96 | 218.3 | 200.0 | 0.92 |
| All Pedestrians | | 432 | 455 | 64.5 | LOS F | 0.7 | 0.7 | 0.96 | 0.96 | 218.3 | 200.0 | 0.92 |

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: [2.30.B.PM] 2. Parramatta x Ross - 2030 Base PM** (2030 Base PM)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Parramatta Rd / Ross St / Western Av
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 90.0 seconds (Site Optimum Cycle Time - Minimum Delay)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Western Av | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 71 | 1.5 | 71 | 1.5 | 0.388 | 32.7 | LOS C | 6.3 | 44.6 | 0.90 | 0.73 | 0.90 | 12.3 |
| 2 | T1 | All MCs | 72 | 1.5 | 72 | 1.5 | 0.388 | 29.8 | LOS C | 6.3 | 44.6 | 0.90 | 0.73 | 0.90 | 8.4 |
| 3 | R2 | All MCs | 23 | 0.0 | 23 | 0.0 | 0.388 | 42.7 | LOS D | 6.3 | 44.6 | 0.90 | 0.73 | 0.90 | 15.5 |
| Approach | | | 165 | 1.3 | 165 | 1.3 | 0.388 | 32.8 | LOS C | 6.3 | 44.6 | 0.90 | 0.73 | 0.90 | 11.0 |
| East: Parramatta Rd (600m) | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 40 | 0.0 | 40 | 0.0 | 0.131 | 19.5 | LOS B | 1.7 | 17.7 | 0.53 | 0.95 | 0.53 | 16.2 |
| 5 | T1 | All MCs | 1914 | 3.2 | 1914 | 3.2 | 0.841 | 21.0 | LOS B | 36.8 | 259.3 | 0.88 | 0.86 | 0.93 | 43.9 |
| 6 | R2 | All MCs | 220 | 0.5 | 220 | 0.5 | * 0.827 | 54.8 | LOS D | 10.6 | 74.4 | 1.00 | 0.96 | 1.25 | 26.0 |
| Approach | | | 2174 | 2.9 | 2174 | 2.9 | 0.841 | 24.4 | LOS B | 36.8 | 259.3 | 0.88 | 0.87 | 0.96 | 39.6 |
| North: Ross St (85m) | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 132 | 0.8 | 132 | 0.8 | 0.439 | 28.1 | LOS B | 8.2 | 58.0 | 0.88 | 0.82 | 0.88 | 30.5 |
| 8 | T1 | All MCs | 92 | 1.1 | 92 | 1.1 | 0.439 | 49.6 | LOS D | 8.2 | 58.0 | 0.88 | 0.82 | 0.88 | 9.7 |
| 9 | R2 | All MCs | 200 | 0.5 | 200 | 0.5 | * 0.829 | 51.9 | LOS D | 9.8 | 68.8 | 1.00 | 0.99 | 1.28 | 18.6 |
| Approach | | | 423 | 0.7 | 423 | 0.7 | 0.829 | 44.0 | LOS D | 9.8 | 68.8 | 0.93 | 0.90 | 1.07 | 17.5 |
| West: Parramatta Rd (310m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 111 | 1.9 | 111 | 1.9 | 0.261 | 29.5 | LOS C | 4.4 | 36.8 | 0.76 | 0.73 | 0.76 | 27.0 |
| 11 | T1 | All MCs | 1229 | 2.7 | 1229 | 2.7 | * 0.827 | 31.9 | LOS C | 26.3 | 184.5 | 0.97 | 0.94 | 1.07 | 38.1 |
| Approach | | | 1340 | 2.6 | 1340 | 2.6 | 0.827 | 31.7 | LOS C | 26.3 | 184.5 | 0.95 | 0.92 | 1.04 | 37.5 |
| All Vehicles | | | 4102 | 2.5 | 4102 | 2.5 | 0.841 | 29.1 | LOS C | 36.8 | 259.3 | 0.91 | 0.89 | 1.00 | 33.1 |

Site Level of Service (LOS) Method: Delay (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. Qued | Eff. Stop Rate | Travel Time sec | Travel Dist. m | Aver. Speed m/sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Western Av | | | | | | | | | | | | |
| P1 | Full | 62 | 65 | 39.3 | LOS D | 0.2 | 0.2 | 0.94 | 0.94 | 193.2 | 200.0 | 1.04 |
| East: Parramatta Rd (600m) | | | | | | | | | | | | |
| P2 | Full | 274 | 288 | 39.7 | LOS D | 0.7 | 0.7 | 0.94 | 0.94 | 193.5 | 200.0 | 1.03 |
| North: Ross St (85m) | | | | | | | | | | | | |
| P3 | Full | 73 | 77 | 39.3 | LOS D | 0.2 | 0.2 | 0.94 | 0.94 | 193.2 | 200.0 | 1.04 |
| West: Parramatta Rd (310m) | | | | | | | | | | | | |
| P4 | Full | 63 | 66 | 39.3 | LOS D | 0.2 | 0.2 | 0.94 | 0.94 | 193.2 | 200.0 | 1.04 |
| All Pedestrians | | 472 | 497 | 39.5 | LOS D | 0.7 | 0.7 | 0.94 | 0.94 | 193.4 | 200.0 | 1.03 |

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: [3.30.B.PM] 3. Ross x Bridge - 2030 Base PM** (2030 Base PM)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Ross St / Bridge Rd
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 60.0 seconds (Site Optimum Cycle Time - Minimum Delay)
**Site Scenario: 1 | Local Volumes**

**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. Queued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ross St (110m) | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 251 | 2.9 | 251 | 2.9 | 0.625 | 27.4 | LOS B | 7.0 | 50.3 | 0.95 | 0.83 | 0.99 | 25.0 |
| 2 | T1 | All MCs | 372 | 0.3 | 372 | 0.3 | * 0.710 | 23.2 | LOS B | 10.6 | 74.1 | 0.96 | 0.88 | 1.04 | 26.5 |
| Approach | | | 622 | 1.4 | 622 | 1.4 | 0.710 | 24.9 | LOS B | 10.6 | 74.1 | 0.96 | 0.86 | 1.02 | 25.8 |
| East: Bridge Rd (500m) | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 46 | 2.3 | 46 | 2.3 | * 0.710 | 17.7 | LOS B | 16.2 | 114.3 | 0.81 | 0.74 | 0.82 | 32.5 |
| 5 | T1 | All MCs | 677 | 0.6 | 677 | 0.6 | 0.710 | 11.6 | LOS A | 16.2 | 114.3 | 0.81 | 0.74 | 0.82 | 34.9 |
| 6 | R2 | All MCs | 129 | 0.8 | 129 | 0.8 | 0.337 | 19.3 | LOS B | 2.9 | 20.4 | 0.77 | 0.74 | 0.77 | 32.6 |
| Approach | | | 853 | 0.7 | 853 | 0.7 | 0.710 | 13.1 | LOS A | 16.2 | 114.3 | 0.81 | 0.74 | 0.81 | 34.5 |
| North: Ross St (280m) | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 61 | 0.0 | 61 | 0.0 | 0.172 | 25.6 | LOS B | 1.8 | 12.4 | 0.84 | 0.72 | 0.84 | 31.1 |
| 8 | T1 | All MCs | 339 | 0.9 | 339 | 0.9 | 0.629 | 22.7 | LOS B | 8.7 | 61.7 | 0.93 | 0.81 | 0.94 | 26.9 |
| Approach | | | 400 | 0.8 | 400 | 0.8 | 0.629 | 23.2 | LOS B | 8.7 | 61.7 | 0.92 | 0.79 | 0.92 | 27.9 |
| West: Bridge Rd (400m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 95 | 2.2 | 95 | 2.2 | 0.509 | 17.4 | LOS B | 9.7 | 68.4 | 0.70 | 0.64 | 0.70 | 35.6 |
| 11 | T1 | All MCs | 407 | 0.8 | 407 | 0.8 | 0.509 | 11.9 | LOS A | 9.7 | 68.4 | 0.70 | 0.64 | 0.70 | 35.3 |
| 12 | R2 | All MCs | 5 | 100.0 | 5 | 100.0 | 0.037 | 26.0 | LOS B | 0.1 | 1.6 | 0.78 | 0.64 | 0.78 | 25.9 |
| Approach | | | 507 | 2.1 | 507 | 2.1 | 0.509 | 13.1 | LOS A | 9.7 | 68.4 | 0.70 | 0.64 | 0.70 | 34.5 |
| All Vehicles | | | 2382 | 1.2 | 2382 | 1.2 | 0.710 | 17.9 | LOS B | 16.2 | 114.3 | 0.84 | 0.76 | 0.86 | 31.8 |

Site Level of Service (LOS) Method: Delay (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. Queued | Eff. Stop Rate | Travel Time sec | Travel Dist. m | Aver. Speed m/sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ross St (110m) | | | | | | | | | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P1 | Full | 77 | 81 | 24.4 | LOS C | 0.1 | 0.1 | 0.90 | 0.90 | 178.2 | 200.0 | 1.12 |
| East: Bridge Rd (500m) | | | | | | | | | | | | |
| P2 | Full | 90 | 95 | 24.4 | LOS C | 0.1 | 0.1 | 0.90 | 0.90 | 178.2 | 200.0 | 1.12 |
| North: Ross St (280m) | | | | | | | | | | | | |
| P3 | Full | 91 | 96 | 24.4 | LOS C | 0.1 | 0.1 | 0.90 | 0.90 | 178.2 | 200.0 | 1.12 |
| West: Bridge Rd (400m) | | | | | | | | | | | | |
| P4 | Full | 88 | 93 | 24.4 | LOS C | 0.1 | 0.1 | 0.90 | 0.90 | 178.2 | 200.0 | 1.12 |
| All Pedestrians | | 346 | 364 | 24.4 | LOS C | 0.1 | 0.1 | 0.90 | 0.90 | 178.2 | 200.0 | 1.12 |

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: [4.30.B.PM] 4. Parramatta x Larkin - 2030 Base PM

(2030 Base PM)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Parramatta Rd x Larkin St
Site Category: Existing Design
Give-Way (Two-Way)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| East: Parramatta Rd (310m) | | | | | | | | | | | | | | | |
| 5 | T1 | All MCs | 2144 | 3.2 | 2144 | 3.2 | 0.540 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.5 |
| Approach | | | 2144 | 3.2 | 2144 | 3.2 | 0.540 | 0.1 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.5 |
| North: Larkin St (37m) | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 59 | 1.8 | 59 | 1.8 | 0.047 | 3.5 | LOS A | 0.2 | 1.2 | 0.13 | 0.48 | 0.13 | 45.3 |
| Approach | | | 59 | 1.8 | 59 | 1.8 | 0.047 | 3.5 | LOS A | 0.2 | 1.2 | 0.13 | 0.48 | 0.13 | 45.3 |
| West: Parramatta Rd (155m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 13 | 0.0 | 13 | 0.0 | 0.037 | 5.5 | LOS A | 0.0 | 0.0 | 0.00 | 0.16 | 0.00 | 21.3 |
| 11 | T1 | All MCs | 1309 | 3.2 | 1309 | 3.2 | 0.328 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.7 |
| Approach | | | 1322 | 3.2 | 1322 | 3.2 | 0.328 | 0.1 | NA | 0.0 | 0.0 | 0.00 | 0.01 | 0.00 | 59.3 |
| All Vehicles | | | 3525 | 3.2 | 3525 | 3.2 | 0.540 | 0.2 | NA | 0.2 | 1.2 | 0.00 | 0.01 | 0.00 | 59.2 |

Site Level of Service (LOS) Method: Delay (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: [5.30.B.PM] 5. Larkin x Sparkes - 2030 Base PM (2030 Base PM)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Larkin St x Sparkes St
Site Category: Existing Design
Give-Way (Two-Way)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Larkin St (37m) | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 1 | 0.0 | 1 | 0.0 | 0.006 | 3.3 | LOS A | 0.0 | 0.0 | 0.00 | 0.05 | 0.00 | 22.6 |
| 2 | T1 | All MCs | 11 | 0.0 | 11 | 0.0 | 0.006 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.05 | 0.00 | 48.6 |
| Approach | | | 12 | 0.0 | 12 | 0.0 | 0.006 | 0.3 | NA | 0.0 | 0.0 | 0.00 | 0.05 | 0.00 | 45.1 |
| East: Sparkes St (90m) | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 14 | 0.0 | 14 | 0.0 | 0.019 | 4.6 | LOS A | 0.1 | 0.5 | 0.09 | 0.53 | 0.09 | 30.1 |
| 5 | T1 | All MCs | 1 | 0.0 | 1 | 0.0 | 0.019 | 3.3 | LOS A | 0.1 | 0.5 | 0.09 | 0.53 | 0.09 | 28.4 |
| 6 | R2 | All MCs | 11 | 0.0 | 11 | 0.0 | 0.019 | 5.0 | LOS A | 0.1 | 0.5 | 0.09 | 0.53 | 0.09 | 33.2 |
| Approach | | | 25 | 0.0 | 25 | 0.0 | 0.019 | 4.7 | LOS A | 0.1 | 0.5 | 0.09 | 0.53 | 0.09 | 31.5 |
| North: Larkin St (100m) | | | | | | | | | | | | | | | |
| 8 | T1 | All MCs | 23 | 4.5 | 23 | 4.5 | 0.013 | 0.0 | LOS A | 0.0 | 0.0 | 0.01 | 0.02 | 0.01 | 48.9 |
| 9 | R2 | All MCs | 1 | 0.0 | 1 | 0.0 | 0.013 | 4.6 | LOS A | 0.0 | 0.0 | 0.01 | 0.02 | 0.01 | 35.3 |
| Approach | | | 24 | 4.3 | 24 | 4.3 | 0.013 | 0.2 | NA | 0.0 | 0.0 | 0.01 | 0.02 | 0.01 | 48.0 |
| West: Sparkes St (60m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 1 | 0.0 | 1 | 0.0 | 0.019 | 4.3 | LOS A | 0.1 | 0.4 | 0.11 | 0.52 | 0.11 | 32.6 |
| 12 | R2 | All MCs | 20 | 0.0 | 20 | 0.0 | 0.019 | 4.5 | LOS A | 0.1 | 0.4 | 0.11 | 0.52 | 0.11 | 26.8 |
| Approach | | | 21 | 0.0 | 21 | 0.0 | 0.019 | 4.5 | LOS A | 0.1 | 0.4 | 0.11 | 0.52 | 0.11 | 27.2 |
| All Vehicles | | | 82 | 1.3 | 82 | 1.3 | 0.019 | 2.7 | NA | 0.1 | 0.5 | 0.06 | 0.31 | 0.06 | 35.6 |

Site Level of Service (LOS) Method: Delay (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: [6.30.B.PM] 6. Ross x Arundel - 2030 Base PM (2030 Base PM)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Ross St x Arundel St
Site Category: Existing Design
Stop (Two-Way)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ross St (85m) | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 54 | 0.0 | 54 | 0.0 | 0.268 | 5.6 | LOS A | 0.9 | 6.0 | 0.22 | 0.28 | 0.22 | 37.4 |
| 2 | T1 | All MCs | 337 | 1.2 | 337 | 1.2 | 0.268 | 0.4 | LOS A | 0.9 | 6.0 | 0.22 | 0.28 | 0.22 | 43.4 |
| 3 | R2 | All MCs | 76 | 1.4 | 76 | 1.4 | 0.268 | 6.0 | LOS A | 0.9 | 6.0 | 0.22 | 0.28 | 0.22 | 42.5 |
| 3u | U | All MCs | 4 | 0.0 | 4 | 0.0 | 0.268 | 8.1 | LOS A | 0.9 | 6.0 | 0.22 | 0.28 | 0.22 | 36.9 |
| Approach | | | 471 | 1.1 | 471 | 1.1 | 0.268 | 2.0 | NA | 0.9 | 6.0 | 0.22 | 0.28 | 0.22 | 42.3 |
| East: Arundel St (250m) | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 65 | 0.0 | 65 | 0.0 | 0.173 | 9.5 | LOS A | 0.6 | 4.4 | 0.54 | 0.92 | 0.54 | 34.0 |
| 5 | T1 | All MCs | 4 | 0.0 | 4 | 0.0 | 0.173 | 14.1 | LOS A | 0.6 | 4.4 | 0.54 | 0.92 | 0.54 | 34.0 |
| 6 | R2 | All MCs | 38 | 0.0 | 38 | 0.0 | 0.173 | 15.1 | LOS B | 0.6 | 4.4 | 0.54 | 0.92 | 0.54 | 33.9 |
| Approach | | | 107 | 0.0 | 107 | 0.0 | 0.173 | 11.6 | LOS A | 0.6 | 4.4 | 0.54 | 0.92 | 0.54 | 34.0 |
| North: Ross St (105m) | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 38 | 0.0 | 38 | 0.0 | 0.192 | 5.3 | LOS A | 0.3 | 2.1 | 0.11 | 0.18 | 0.11 | 44.7 |
| 8 | T1 | All MCs | 281 | 0.0 | 281 | 0.0 | 0.192 | 0.2 | LOS A | 0.3 | 2.1 | 0.11 | 0.18 | 0.11 | 45.9 |
| 9 | R2 | All MCs | 25 | 0.0 | 25 | 0.0 | 0.192 | 6.3 | LOS A | 0.3 | 2.1 | 0.11 | 0.18 | 0.11 | 38.9 |
| Approach | | | 344 | 0.0 | 344 | 0.0 | 0.192 | 1.2 | NA | 0.3 | 2.1 | 0.11 | 0.18 | 0.11 | 44.9 |
| West: Arundel St (155m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 21 | 0.0 | 21 | 0.0 | 0.136 | 8.2 | LOS A | 0.5 | 3.3 | 0.58 | 0.98 | 0.58 | 27.8 |
| 11 | T1 | All MCs | 13 | 0.0 | 13 | 0.0 | 0.136 | 12.9 | LOS A | 0.5 | 3.3 | 0.58 | 0.98 | 0.58 | 32.9 |
| 12 | R2 | All MCs | 34 | 0.0 | 34 | 0.0 | 0.136 | 14.0 | LOS A | 0.5 | 3.3 | 0.58 | 0.98 | 0.58 | 26.6 |
| Approach | | | 67 | 0.0 | 67 | 0.0 | 0.136 | 12.0 | LOS A | 0.5 | 3.3 | 0.58 | 0.98 | 0.58 | 28.4 |
| All Vehicles | | | 989 | 0.5 | 989 | 0.5 | 0.268 | 3.4 | NA | 0.9 | 6.0 | 0.24 | 0.36 | 0.24 | 39.9 |

Site Level of Service (LOS) Method: Delay (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: [1.30.P.AM] 1. Parramatta x Lyons - 2030 Project Case AM

(2030 Project Case AM)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Parramatta Rd x Lyons Rd / Missenden Rd
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 140.0 seconds (Site Optimum Cycle Time - Minimum Delay)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Missenden Rd (500m) | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 105 | 2.0 | 105 | 2.0 | 0.136 | 27.1 | LOS B | 4.2 | 29.7 | 0.62 | 0.68 | 0.62 | 27.8 |
| 2 | T1 | All MCs | 129 | 9.8 | 129 | 9.8 | 0.631 | 62.5 | LOS E | 9.4 | 73.9 | 1.00 | 0.81 | 1.01 | 19.9 |
| 3 | R2 | All MCs | 12 | 72.7 | 12 | 72.7 | 0.631 | 87.2 | LOS F | 9.4 | 73.9 | 1.00 | 0.81 | 1.01 | 19.1 |
| Approach | | | 246 | 9.4 | 246 | 9.4 | 0.631 | 48.5 | LOS D | 9.4 | 73.9 | 0.84 | 0.75 | 0.84 | 22.5 |
| East: Parramatta Rd (155m) | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 120 | 13.2 | 120 | 13.2 | 0.253 | 39.3 | LOS C | 6.6 | 56.4 | 0.73 | 0.74 | 0.73 | 26.0 |
| 5 | T1 | All MCs | 782 | 8.7 | 782 | 8.7 | 0.522 | 34.1 | LOS C | 19.6 | 144.2 | 0.81 | 0.71 | 0.81 | 21.3 |
| Approach | | | 902 | 9.3 | 902 | 9.3 | 0.522 | 34.8 | LOS C | 19.6 | 144.2 | 0.80 | 0.72 | 0.80 | 22.3 |
| North: Lyons Rd (180m) | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 88 | 2.4 | 88 | 2.4 | 0.349 | 90.3 | LOS F | 5.6 | 39.7 | 0.95 | 0.77 | 0.95 | 13.6 |
| 8 | T1 | All MCs | 213 | 2.0 | 213 | 2.0 | * 0.867 | 99.7 | LOS F | 16.4 | 116.4 | 1.00 | 1.04 | 1.23 | 18.6 |
| 9 | R2 | All MCs | 5 | 0.0 | 5 | 0.0 | 0.867 | 120.5 | LOS F | 16.4 | 116.4 | 1.00 | 1.04 | 1.23 | 12.2 |
| Approach | | | 306 | 2.1 | 306 | 2.1 | 0.867 | 97.4 | LOS F | 16.4 | 116.4 | 0.98 | 0.96 | 1.15 | 14.3 |
| West: Parramatta Rd (140m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 17 | 6.2 | 17 | 6.2 | 0.074 | 12.1 | LOS A | 1.1 | 12.5 | 0.31 | 0.53 | 0.31 | 33.2 |
| 11 | T1 | All MCs | 2575 | 3.9 | 2575 | 3.9 | * 0.949 | 34.3 | LOS C | 89.9 | 641.6 | 0.94 | 0.94 | 1.04 | 22.6 |
| 12 | R2 | All MCs | 283 | 3.7 | 283 | 3.7 | 0.522 | 56.2 | LOS D | 15.9 | 115.2 | 0.88 | 0.82 | 0.88 | 22.7 |
| Approach | | | 2875 | 3.9 | 2875 | 3.9 | 0.949 | 36.3 | LOS C | 89.9 | 641.6 | 0.93 | 0.93 | 1.02 | 21.3 |
| All Vehicles | | | 4329 | 5.2 | 4329 | 5.2 | 0.949 | 41.0 | LOS C | 89.9 | 641.6 | 0.90 | 0.88 | 0.97 | 20.5 |

Site Level of Service (LOS) Method: Delay (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. Qued | Eff. Stop Rate | Travel Time sec | Travel Dist. m | Aver. Speed m/sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Missenden Rd (500m) | | | | | | | | | | | | |
| P1 | Full | 57 | 60 | 64.3 | LOS F | 0.2 | 0.2 | 0.96 | 0.96 | 218.1 | 200.0 | 0.92 |
| East: Parramatta Rd (155m) | | | | | | | | | | | | |
| P2 | Full | 132 | 139 | 64.5 | LOS F | 0.5 | 0.5 | 0.96 | 0.96 | 218.3 | 200.0 | 0.92 |
| North: Lyons Rd (180m) | | | | | | | | | | | | |
| P3 | Full | 69 | 73 | 64.3 | LOS F | 0.3 | 0.3 | 0.96 | 0.96 | 218.2 | 200.0 | 0.92 |
| West: Parramatta Rd (140m) | | | | | | | | | | | | |
| P4 | Full | 215 | 226 | 64.7 | LOS F | 0.9 | 0.9 | 0.97 | 0.97 | 218.6 | 200.0 | 0.91 |
| All Pedestrians | | 473 | 498 | 64.6 | LOS F | 0.9 | 0.9 | 0.96 | 0.96 | 218.4 | 200.0 | 0.92 |

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: [2.30.P.AM] 2. Parramatta x Ross - 2030 Project Case AM

(2030 Project Case AM)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Parramatta Rd / Ross St / Western Av
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 140.0 seconds (Site Optimum Cycle Time - Minimum Delay)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Western Av | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 34 | 9.4 | 34 | 9.4 | 0.483 | 62.7 | LOS E | 6.5 | 46.9 | 0.99 | 0.77 | 0.99 | 10.9 |
| 2 | T1 | All MCs | 42 | 0.0 | 42 | 0.0 | 0.483 | 59.4 | LOS E | 6.5 | 46.9 | 0.99 | 0.77 | 0.99 | 7.8 |
| 3 | R2 | All MCs | 22 | 4.8 | 22 | 4.8 | 0.483 | 78.8 | LOS F | 6.5 | 46.9 | 0.99 | 0.77 | 0.99 | 13.8 |
| Approach | | | 98 | 4.3 | 98 | 4.3 | 0.483 | 64.9 | LOS E | 6.5 | 46.9 | 0.99 | 0.77 | 0.99 | 10.2 |
| East: Parramatta Rd (600m) | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 34 | 3.1 | 34 | 3.1 | 0.072 | 16.0 | LOS B | 1.3 | 12.7 | 0.35 | 1.04 | 0.35 | 16.1 |
| 5 | T1 | All MCs | 804 | 9.3 | 804 | 9.3 | 0.291 | 7.1 | LOS A | 9.0 | 66.3 | 0.38 | 0.36 | 0.38 | 52.4 |
| 6 | R2 | All MCs | 133 | 2.4 | 133 | 2.4 | * 0.773 | 77.7 | LOS F | 9.5 | 67.8 | 1.00 | 0.89 | 1.15 | 20.7 |
| Approach | | | 971 | 8.1 | 971 | 8.1 | 0.773 | 17.0 | LOS B | 9.5 | 67.8 | 0.46 | 0.46 | 0.48 | 41.6 |
| North: Ross St (85m) | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 96 | 0.0 | 96 | 0.0 | 0.592 | 54.5 | LOS D | 12.6 | 88.8 | 0.97 | 0.83 | 0.97 | 22.7 |
| 8 | T1 | All MCs | 102 | 2.1 | 102 | 2.1 | 0.592 | 76.1 | LOS F | 12.6 | 88.8 | 0.97 | 0.83 | 0.97 | 8.6 |
| 9 | R2 | All MCs | 152 | 5.6 | 152 | 5.6 | * 0.932 | 92.3 | LOS F | 12.3 | 90.3 | 1.00 | 1.07 | 1.43 | 12.4 |
| Approach | | | 349 | 3.0 | 349 | 3.0 | 0.932 | 77.2 | LOS F | 12.6 | 90.3 | 0.98 | 0.93 | 1.17 | 12.6 |
| West: Parramatta Rd (310m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 266 | 2.0 | 266 | 2.0 | 0.352 | 23.5 | LOS B | 11.5 | 93.0 | 0.58 | 0.71 | 0.58 | 29.9 |
| 11 | T1 | All MCs | 2267 | 4.7 | 2267 | 4.7 | * 0.994 | 66.8 | LOS E | 97.9 | 699.7 | 0.99 | 1.19 | 1.25 | 27.2 |
| Approach | | | 2534 | 4.4 | 2534 | 4.4 | 0.994 | 62.3 | LOS E | 97.9 | 699.7 | 0.95 | 1.14 | 1.18 | 27.4 |
| All Vehicles | | | 3952 | 5.2 | 3952 | 5.2 | 0.994 | 52.5 | LOS D | 97.9 | 699.7 | 0.83 | 0.95 | 1.00 | 26.9 |

Site Level of Service (LOS) Method: Delay (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. Qued | Eff. Stop Rate | Travel Time sec | Travel Dist. m | Aver. Speed m/sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Western Av | | | | | | | | | | | | |
| P1 | Full | 52 | 55 | 64.3 | LOS F | 0.2 | 0.2 | 0.96 | 0.96 | 218.1 | 200.0 | 0.92 |
| East: Parramatta Rd (600m) | | | | | | | | | | | | |
| P2 | Full | 228 | 240 | 64.8 | LOS F | 0.9 | 0.9 | 0.97 | 0.97 | 218.6 | 200.0 | 0.91 |
| North: Ross St (85m) | | | | | | | | | | | | |
| P3 | Full | 47 | 49 | 64.3 | LOS F | 0.2 | 0.2 | 0.96 | 0.96 | 218.1 | 200.0 | 0.92 |
| West: Parramatta Rd (310m) | | | | | | | | | | | | |
| P4 | Full | 51 | 54 | 64.3 | LOS F | 0.2 | 0.2 | 0.96 | 0.96 | 218.1 | 200.0 | 0.92 |
| All Pedestrians | | 378 | 398 | 64.6 | LOS F | 0.9 | 0.9 | 0.96 | 0.96 | 218.4 | 200.0 | 0.92 |

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: [3.30.P.AM] 3. Ross x Bridge - 2030 Project Case AM

(2030 Project Case AM)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Ross St / Bridge Rd
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 60.0 seconds (Site Optimum Cycle Time - Minimum Delay)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ross St (110m) | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 107 | 5.9 | 107 | 5.9 | 0.378 | 29.0 | LOS C | 3.0 | 21.8 | 0.93 | 0.76 | 0.93 | 24.5 |
| 2 | T1 | All MCs | 163 | 4.5 | 163 | 4.5 | 0.410 | 22.8 | LOS B | 4.3 | 31.2 | 0.91 | 0.73 | 0.91 | 26.7 |
| Approach | | | 271 | 5.1 | 271 | 5.1 | 0.410 | 25.3 | LOS B | 4.3 | 31.2 | 0.92 | 0.74 | 0.92 | 25.6 |
| East: Bridge Rd (500m) | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 61 | 1.7 | 61 | 1.7 | 0.490 | 13.2 | LOS A | 9.3 | 66.4 | 0.63 | 0.58 | 0.63 | 34.2 |
| 5 | T1 | All MCs | 480 | 1.8 | 480 | 1.8 | 0.490 | 7.8 | LOS A | 9.3 | 66.4 | 0.63 | 0.58 | 0.63 | 36.3 |
| 6 | R2 | All MCs | 38 | 0.0 | 38 | 0.0 | 0.180 | 25.1 | LOS B | 1.0 | 6.7 | 0.84 | 0.72 | 0.84 | 30.6 |
| Approach | | | 579 | 1.6 | 579 | 1.6 | 0.490 | 9.5 | LOS A | 9.3 | 66.4 | 0.64 | 0.59 | 0.64 | 35.7 |
| North: Ross St (280m) | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 87 | 6.0 | 87 | 6.0 | 0.640 | 32.9 | LOS C | 6.4 | 46.0 | 0.97 | 0.84 | 1.03 | 29.8 |
| 8 | T1 | All MCs | 391 | 2.7 | 391 | 2.7 | * 0.640 | 25.9 | LOS B | 7.3 | 52.5 | 0.97 | 0.84 | 1.01 | 25.1 |
| Approach | | | 478 | 3.3 | 478 | 3.3 | 0.640 | 27.2 | LOS B | 7.3 | 52.5 | 0.97 | 0.84 | 1.02 | 26.4 |
| West: Bridge Rd (400m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 46 | 4.5 | 46 | 4.5 | * 0.795 | 24.5 | LOS B | 21.7 | 154.5 | 0.84 | 0.83 | 0.92 | 34.3 |
| 11 | T1 | All MCs | 806 | 2.1 | 806 | 2.1 | 0.795 | 19.1 | LOS B | 21.7 | 154.5 | 0.84 | 0.83 | 0.92 | 34.4 |
| 12 | R2 | All MCs | 15 | 100.0 | 15 | 100.0 | 0.064 | 21.7 | LOS B | 0.3 | 3.5 | 0.62 | 0.64 | 0.62 | 29.2 |
| Approach | | | 867 | 3.9 | 867 | 3.9 | 0.795 | 19.5 | LOS B | 21.7 | 154.5 | 0.83 | 0.82 | 0.91 | 32.3 |
| All Vehicles | | | 2195 | 3.3 | 2195 | 3.3 | 0.795 | 19.2 | LOS B | 21.7 | 154.5 | 0.82 | 0.75 | 0.86 | 31.6 |

Site Level of Service (LOS) Method: Delay (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. Qued | Eff. Stop Rate | Travel Time sec | Travel Dist. m | Aver. Speed m/sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ross St (110m) | | | | | | | | | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P1 | Full | 94 | 99 | 24.4 | LOS C | 0.2 | 0.2 | 0.90 | 0.90 | 178.2 | 200.0 | 1.12 |
| East: Bridge Rd (500m) | | | | | | | | | | | | |
| P2 | Full | 150 | 158 | 24.5 | LOS C | 0.2 | 0.2 | 0.91 | 0.91 | 178.3 | 200.0 | 1.12 |
| North: Ross St (280m) | | | | | | | | | | | | |
| P3 | Full | 70 | 74 | 24.4 | LOS C | 0.1 | 0.1 | 0.90 | 0.90 | 178.2 | 200.0 | 1.12 |
| West: Bridge Rd (400m) | | | | | | | | | | | | |
| P4 | Full | 98 | 103 | 24.4 | LOS C | 0.2 | 0.2 | 0.90 | 0.90 | 178.3 | 200.0 | 1.12 |
| All Pedestrians | | 412 | 434 | 24.4 | LOS C | 0.2 | 0.2 | 0.90 | 0.90 | 178.3 | 200.0 | 1.12 |

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: [4.30.P.AM] 4. Parramatta x Larkin - 2030 Project Case AM (2030 Project Case AM)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Parramatta Rd x Larkin St
Site Category: Existing Design
Give-Way (Two-Way)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| East: Parramatta Rd (310m) | | | | | | | | | | | | | | | |
| 5 | T1 | All MCs | 945 | 10.6 | 945 | 10.6 | 0.244 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.9 |
| Approach | | | 945 | 10.6 | 945 | 10.6 | 0.244 | 0.0 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.9 |
| North: Larkin St (37m) | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 64 | 9.8 | 64 | 9.8 | 0.055 | 3.6 | LOS A | 0.2 | 1.5 | 0.17 | 0.49 | 0.17 | 44.4 |
| Approach | | | 64 | 9.8 | 64 | 9.8 | 0.055 | 3.6 | LOS A | 0.2 | 1.5 | 0.17 | 0.49 | 0.17 | 44.4 |
| West: Parramatta Rd (155m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 75 | 4.2 | 75 | 4.2 | 0.086 | 5.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.34 | 0.00 | 20.4 |
| 11 | T1 | All MCs | 2517 | 5.1 | 2517 | 5.1 | 0.644 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.01 | 0.00 | 59.1 |
| Approach | | | 2592 | 5.1 | 2592 | 5.1 | 0.644 | 0.3 | NA | 0.0 | 0.0 | 0.00 | 0.02 | 0.00 | 57.8 |
| All Vehicles | | | 3601 | 6.6 | 3601 | 6.6 | 0.644 | 0.3 | NA | 0.2 | 1.5 | 0.00 | 0.02 | 0.00 | 58.1 |

Site Level of Service (LOS) Method: Delay (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: [5.30.P.AM] 5. Larkin x Sparkes - 2030 Project Case AM

(2030 Project Case AM)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Larkin St x Sparkes St
Site Category: Existing Design
Give-Way (Two-Way)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Larkin St (37m) | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 62 | 3.4 | 62 | 3.4 | 0.039 | 3.3 | LOS A | 0.0 | 0.0 | 0.00 | 0.44 | 0.00 | 20.1 |
| 2 | T1 | All MCs | 9 | 11.1 | 9 | 11.1 | 0.039 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.44 | 0.00 | 39.6 |
| Approach | | | 72 | 4.4 | 72 | 4.4 | 0.039 | 2.9 | NA | 0.0 | 0.0 | 0.00 | 0.44 | 0.00 | 22.0 |
| East: Sparkes St (90m) | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 15 | 14.3 | 15 | 14.3 | 0.068 | 4.8 | LOS A | 0.3 | 1.8 | 0.16 | 0.47 | 0.16 | 31.3 |
| 5 | T1 | All MCs | 62 | 1.7 | 62 | 1.7 | 0.068 | 3.6 | LOS A | 0.3 | 1.8 | 0.16 | 0.47 | 0.16 | 29.4 |
| 6 | R2 | All MCs | 7 | 0.0 | 7 | 0.0 | 0.068 | 5.1 | LOS A | 0.3 | 1.8 | 0.16 | 0.47 | 0.16 | 34.4 |
| Approach | | | 84 | 3.8 | 84 | 3.8 | 0.068 | 3.9 | LOS A | 0.3 | 1.8 | 0.16 | 0.47 | 0.16 | 30.2 |
| North: Larkin St (100m) | | | | | | | | | | | | | | | |
| 8 | T1 | All MCs | 31 | 0.0 | 31 | 0.0 | 0.016 | 0.0 | LOS A | 0.0 | 0.0 | 0.01 | 0.02 | 0.01 | 49.0 |
| 9 | R2 | All MCs | 1 | 0.0 | 1 | 0.0 | 0.016 | 4.6 | LOS A | 0.0 | 0.0 | 0.01 | 0.02 | 0.01 | 35.4 |
| Approach | | | 32 | 0.0 | 32 | 0.0 | 0.016 | 0.2 | NA | 0.0 | 0.0 | 0.01 | 0.02 | 0.01 | 48.3 |
| West: Sparkes St (60m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 1 | 0.0 | 1 | 0.0 | 0.019 | 4.3 | LOS A | 0.1 | 0.5 | 0.19 | 0.52 | 0.19 | 31.9 |
| 12 | R2 | All MCs | 16 | 20.0 | 16 | 20.0 | 0.019 | 5.2 | LOS A | 0.1 | 0.5 | 0.19 | 0.52 | 0.19 | 25.7 |
| Approach | | | 17 | 18.8 | 17 | 18.8 | 0.019 | 5.1 | LOS A | 0.1 | 0.5 | 0.19 | 0.52 | 0.19 | 26.2 |
| All Vehicles | | | 204 | 4.6 | 204 | 4.6 | 0.068 | 3.1 | NA | 0.3 | 1.8 | 0.08 | 0.40 | 0.08 | 28.5 |

Site Level of Service (LOS) Method: Delay (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: [6.30.P.AM] 6. Ross x Arundel - 2030 Project Case AM

(2030 Project Case AM)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Ross St x Arundel St
Site Category: Existing Design
Stop (Two-Way)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ross St (85m) | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 82 | 5.1 | 82 | 5.1 | 0.253 | 5.6 | LOS A | 1.0 | 7.3 | 0.27 | 0.36 | 0.27 | 36.3 |
| 2 | T1 | All MCs | 246 | 3.8 | 246 | 3.8 | 0.253 | 0.6 | LOS A | 1.0 | 7.3 | 0.27 | 0.36 | 0.27 | 41.5 |
| 3 | R2 | All MCs | 76 | 9.7 | 76 | 9.7 | 0.253 | 6.1 | LOS A | 1.0 | 7.3 | 0.27 | 0.36 | 0.27 | 41.2 |
| 3u | U | All MCs | 12 | 0.0 | 12 | 0.0 | 0.253 | 7.9 | LOS A | 1.0 | 7.3 | 0.27 | 0.36 | 0.27 | 35.5 |
| Approach | | | 416 | 5.1 | 416 | 5.1 | 0.253 | 2.8 | NA | 1.0 | 7.3 | 0.27 | 0.36 | 0.27 | 40.1 |
| East: Arundel St (250m) | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 35 | 12.1 | 35 | 12.1 | 0.097 | 10.0 | LOS A | 0.3 | 2.5 | 0.51 | 0.92 | 0.51 | 33.8 |
| 5 | T1 | All MCs | 5 | 20.0 | 5 | 20.0 | 0.097 | 16.6 | LOS B | 0.3 | 2.5 | 0.51 | 0.92 | 0.51 | 34.0 |
| 6 | R2 | All MCs | 19 | 0.0 | 19 | 0.0 | 0.097 | 13.6 | LOS A | 0.3 | 2.5 | 0.51 | 0.92 | 0.51 | 34.1 |
| Approach | | | 59 | 8.9 | 59 | 8.9 | 0.097 | 11.7 | LOS A | 0.3 | 2.5 | 0.51 | 0.92 | 0.51 | 33.9 |
| North: Ross St (105m) | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 37 | 11.4 | 37 | 11.4 | 0.221 | 5.7 | LOS A | 0.7 | 5.1 | 0.23 | 0.30 | 0.23 | 42.8 |
| 8 | T1 | All MCs | 261 | 2.8 | 261 | 2.8 | 0.221 | 0.5 | LOS A | 0.7 | 5.1 | 0.23 | 0.30 | 0.23 | 43.1 |
| 9 | R2 | All MCs | 75 | 0.0 | 75 | 0.0 | 0.221 | 6.0 | LOS A | 0.7 | 5.1 | 0.23 | 0.30 | 0.23 | 37.4 |
| Approach | | | 373 | 3.1 | 373 | 3.1 | 0.221 | 2.1 | NA | 0.7 | 5.1 | 0.23 | 0.30 | 0.23 | 41.6 |
| West: Arundel St (155m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 28 | 3.7 | 28 | 3.7 | 0.100 | 7.9 | LOS A | 0.3 | 2.5 | 0.52 | 0.91 | 0.52 | 28.6 |
| 11 | T1 | All MCs | 6 | 0.0 | 6 | 0.0 | 0.100 | 12.2 | LOS A | 0.3 | 2.5 | 0.52 | 0.91 | 0.52 | 33.7 |
| 12 | R2 | All MCs | 23 | 4.5 | 23 | 4.5 | 0.100 | 14.0 | LOS A | 0.3 | 2.5 | 0.52 | 0.91 | 0.52 | 27.4 |
| Approach | | | 58 | 3.6 | 58 | 3.6 | 0.100 | 10.8 | LOS A | 0.3 | 2.5 | 0.52 | 0.91 | 0.52 | 28.9 |
| All Vehicles | | | 905 | 4.4 | 905 | 4.4 | 0.253 | 3.6 | NA | 1.0 | 7.3 | 0.29 | 0.40 | 0.29 | 38.8 |

Site Level of Service (LOS) Method: Delay (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: [1.30.P.PM] 1. Parramatta x Lyons - 2030 Project Case PM

(2030 Project Case PM)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Parramatta Rd x Lyons Rd / Missenden Rd
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 140.0 seconds (Site Optimum Cycle Time - Minimum Delay)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Missenden Rd (500m) | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 141 | 0.0 | 141 | 0.0 | 0.250 | 56.6 | LOS E | 7.2 | 50.3 | 0.80 | 0.75 | 0.80 | 23.6 |
| 2 | T1 | All MCs | 247 | 1.3 | 247 | 1.3 | *0.910 | 92.3 | LOS F | 19.7 | 140.7 | 1.00 | 1.11 | 1.30 | 17.9 |
| 3 | R2 | All MCs | 3 | 66.7 | 3 | 66.7 | 0.910 | 104.6 | LOS F | 19.7 | 140.7 | 1.00 | 1.11 | 1.30 | 17.3 |
| Approach | | | 392 | 1.3 | 392 | 1.3 | 0.910 | 79.6 | LOS F | 19.7 | 140.7 | 0.93 | 0.98 | 1.12 | 17.6 |
| East: Parramatta Rd (155m) | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 157 | 6.7 | 157 | 6.7 | 0.225 | 22.6 | LOS B | 6.5 | 54.3 | 0.54 | 0.68 | 0.54 | 31.3 |
| 5 | T1 | All MCs | 2083 | 2.6 | 2083 | 2.6 | *0.912 | 35.5 | LOS C | 67.6 | 477.1 | 0.96 | 0.94 | 1.03 | 20.7 |
| Approach | | | 2240 | 2.9 | 2240 | 2.9 | 0.912 | 34.6 | LOS C | 67.6 | 477.1 | 0.93 | 0.92 | 0.99 | 21.8 |
| North: Lyons Rd (180m) | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 52 | 0.0 | 52 | 0.0 | 0.205 | 62.0 | LOS E | 3.2 | 22.2 | 0.93 | 0.74 | 0.93 | 13.8 |
| 8 | T1 | All MCs | 99 | 0.0 | 99 | 0.0 | 0.432 | 60.7 | LOS E | 6.8 | 47.4 | 0.97 | 0.77 | 0.97 | 20.2 |
| 9 | R2 | All MCs | 6 | 0.0 | 6 | 0.0 | 0.432 | 87.7 | LOS F | 6.8 | 47.4 | 0.97 | 0.77 | 0.97 | 13.6 |
| Approach | | | 157 | 0.0 | 157 | 0.0 | 0.432 | 62.2 | LOS E | 6.8 | 47.4 | 0.96 | 0.76 | 0.96 | 18.3 |
| West: Parramatta Rd (140m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 25 | 0.0 | 25 | 0.0 | 0.052 | 12.1 | LOS A | 0.9 | 8.7 | 0.33 | 0.82 | 0.33 | 29.3 |
| 11 | T1 | All MCs | 1214 | 2.2 | 1214 | 2.2 | 0.412 | 6.9 | LOS A | 14.7 | 102.9 | 0.40 | 0.37 | 0.40 | 43.5 |
| 12 | R2 | All MCs | 112 | 0.9 | 112 | 0.9 | *0.511 | 69.5 | LOS E | 7.3 | 51.7 | 0.98 | 0.79 | 0.98 | 19.0 |
| Approach | | | 1351 | 2.0 | 1351 | 2.0 | 0.511 | 12.2 | LOS A | 14.7 | 102.9 | 0.45 | 0.42 | 0.45 | 35.8 |
| All Vehicles | | | 4139 | 2.4 | 4139 | 2.4 | 0.912 | 32.6 | LOS C | 67.6 | 477.1 | 0.77 | 0.75 | 0.83 | 23.2 |

Site Level of Service (LOS) Method: Delay (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. Qued | Eff. Stop Rate | Travel Time sec | Travel Dist. m | Aver. Speed m/sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Missenden Rd (500m) | | | | | | | | | | | | |
| P1 | Full | 76 | 80 | 64.3 | LOS F | 0.3 | 0.3 | 0.96 | 0.96 | 218.2 | 200.0 | 0.92 |
| East: Parramatta Rd (155m) | | | | | | | | | | | | |
| P2 | Full | 171 | 180 | 64.6 | LOS F | 0.7 | 0.7 | 0.96 | 0.96 | 218.5 | 200.0 | 0.92 |
| North: Lyons Rd (180m) | | | | | | | | | | | | |
| P3 | Full | 81 | 85 | 64.4 | LOS F | 0.3 | 0.3 | 0.96 | 0.96 | 218.2 | 200.0 | 0.92 |
| West: Parramatta Rd (140m) | | | | | | | | | | | | |
| P4 | Full | 104 | 109 | 64.4 | LOS F | 0.4 | 0.4 | 0.96 | 0.96 | 218.3 | 200.0 | 0.92 |
| All Pedestrians | | 432 | 455 | 64.5 | LOS F | 0.7 | 0.7 | 0.96 | 0.96 | 218.3 | 200.0 | 0.92 |

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: [2.30.P.PM] 2. Parramatta x Ross - 2030 Project Case PM

(2030 Project Case PM)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Parramatta Rd / Ross St / Western Av
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 100.0 seconds (Site Optimum Cycle Time - Minimum Delay)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Western Av | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 71 | 1.5 | 71 | 1.5 | 0.366 | 35.1 | LOS C | 6.8 | 48.3 | 0.88 | 0.72 | 0.88 | 12.2 |
| 2 | T1 | All MCs | 72 | 1.5 | 72 | 1.5 | 0.366 | 32.0 | LOS C | 6.8 | 48.3 | 0.88 | 0.72 | 0.88 | 8.3 |
| 3 | R2 | All MCs | 23 | 0.0 | 23 | 0.0 | 0.366 | 43.6 | LOS D | 6.8 | 48.3 | 0.88 | 0.72 | 0.88 | 15.4 |
| Approach | | | 165 | 1.3 | 165 | 1.3 | 0.366 | 34.9 | LOS C | 6.8 | 48.3 | 0.88 | 0.72 | 0.88 | 10.9 |
| East: Parramatta Rd (600m) | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 40 | 0.0 | 40 | 0.0 | 0.127 | 20.0 | LOS B | 1.9 | 19.0 | 0.52 | 0.94 | 0.52 | 16.2 |
| 5 | T1 | All MCs | 1914 | 3.2 | 1914 | 3.2 | * 0.828 | 20.4 | LOS B | 38.3 | 269.9 | 0.86 | 0.82 | 0.88 | 44.5 |
| 6 | R2 | All MCs | 221 | 0.5 | 221 | 0.5 | 0.812 | 59.2 | LOS E | 11.5 | 81.2 | 1.00 | 0.93 | 1.20 | 25.1 |
| Approach | | | 2175 | 2.9 | 2175 | 2.9 | 0.828 | 24.3 | LOS B | 38.3 | 269.9 | 0.87 | 0.84 | 0.91 | 39.6 |
| North: Ross St (85m) | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 132 | 0.8 | 132 | 0.8 | 0.415 | 28.4 | LOS B | 8.9 | 62.8 | 0.86 | 0.82 | 0.86 | 30.0 |
| 8 | T1 | All MCs | 93 | 1.1 | 93 | 1.1 | 0.415 | 52.8 | LOS D | 8.9 | 62.8 | 0.86 | 0.82 | 0.86 | 9.6 |
| 9 | R2 | All MCs | 201 | 0.5 | 201 | 0.5 | * 0.814 | 54.9 | LOS D | 10.7 | 75.0 | 1.00 | 0.97 | 1.23 | 18.0 |
| Approach | | | 425 | 0.7 | 425 | 0.7 | 0.814 | 46.2 | LOS D | 10.7 | 75.0 | 0.92 | 0.89 | 1.03 | 17.1 |
| West: Parramatta Rd (310m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 171 | 1.9 | 171 | 1.9 | 0.343 | 31.7 | LOS C | 7.1 | 56.6 | 0.77 | 0.76 | 0.77 | 25.7 |
| 11 | T1 | All MCs | 1256 | 2.6 | 1256 | 2.6 | 0.812 | 32.3 | LOS C | 28.4 | 199.3 | 0.96 | 0.90 | 1.02 | 37.9 |
| Approach | | | 1426 | 2.5 | 1426 | 2.5 | 0.812 | 32.2 | LOS C | 28.4 | 199.3 | 0.93 | 0.89 | 0.99 | 36.9 |
| All Vehicles | | | 4192 | 2.5 | 4192 | 2.5 | 0.828 | 29.7 | LOS C | 38.3 | 269.9 | 0.90 | 0.85 | 0.95 | 32.9 |

Site Level of Service (LOS) Method: Delay (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. Qued | Eff. Stop Rate | Travel Time sec | Travel Dist. m | Aver. Speed m/sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Western Av | | | | | | | | | | | | |
| P1 | Full | 77 | 81 | 44.3 | LOS E | 0.2 | 0.2 | 0.94 | 0.94 | 198.2 | 200.0 | 1.01 |
| East: Parramatta Rd (600m) | | | | | | | | | | | | |
| P2 | Full | 90 | 95 | 44.4 | LOS E | 0.3 | 0.3 | 0.94 | 0.94 | 198.2 | 200.0 | 1.01 |
| North: Ross St (85m) | | | | | | | | | | | | |
| P3 | Full | 91 | 96 | 44.4 | LOS E | 0.3 | 0.3 | 0.94 | 0.94 | 198.2 | 200.0 | 1.01 |
| West: Parramatta Rd (310m) | | | | | | | | | | | | |
| P4 | Full | 88 | 93 | 44.4 | LOS E | 0.2 | 0.2 | 0.94 | 0.94 | 198.2 | 200.0 | 1.01 |
| All Pedestrians | | 346 | 364 | 44.3 | LOS E | 0.3 | 0.3 | 0.94 | 0.94 | 198.2 | 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: [3.30.P.PM] 3. Ross x Bridge - 2030 Project Case PM

(2030 Project Case PM)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Ross St / Bridge Rd
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 60.0 seconds (Site Optimum Cycle Time - Minimum Delay)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ross St (110m) | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 262 | 2.8 | 262 | 2.8 | 0.617 | 26.7 | LOS B | 7.2 | 51.7 | 0.95 | 0.82 | 0.97 | 25.2 |
| 2 | T1 | All MCs | 402 | 0.3 | 402 | 0.3 | * 0.734 | 23.3 | LOS B | 11.6 | 81.2 | 0.96 | 0.90 | 1.06 | 26.5 |
| Approach | | | 664 | 1.3 | 664 | 1.3 | 0.734 | 24.6 | LOS B | 11.6 | 81.2 | 0.96 | 0.87 | 1.02 | 25.9 |
| East: Bridge Rd (500m) | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 46 | 2.3 | 46 | 2.3 | * 0.734 | 19.1 | LOS B | 17.3 | 122.1 | 0.84 | 0.78 | 0.86 | 31.9 |
| 5 | T1 | All MCs | 681 | 0.9 | 681 | 0.9 | 0.734 | 12.9 | LOS A | 17.3 | 122.1 | 0.84 | 0.78 | 0.86 | 34.4 |
| 6 | R2 | All MCs | 129 | 0.8 | 129 | 0.8 | 0.350 | 20.2 | LOS B | 3.0 | 21.0 | 0.79 | 0.75 | 0.79 | 32.2 |
| Approach | | | 857 | 1.0 | 857 | 1.0 | 0.734 | 14.4 | LOS A | 17.3 | 122.1 | 0.83 | 0.77 | 0.85 | 34.0 |
| North: Ross St (280m) | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 61 | 0.0 | 61 | 0.0 | 0.165 | 24.9 | LOS B | 1.8 | 12.4 | 0.83 | 0.72 | 0.83 | 31.4 |
| 8 | T1 | All MCs | 341 | 0.9 | 341 | 0.9 | 0.602 | 21.8 | LOS B | 8.6 | 60.5 | 0.91 | 0.79 | 0.91 | 27.4 |
| Approach | | | 402 | 0.8 | 402 | 0.8 | 0.602 | 22.3 | LOS B | 8.6 | 60.5 | 0.90 | 0.78 | 0.90 | 28.3 |
| West: Bridge Rd (400m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 95 | 2.2 | 95 | 2.2 | 0.522 | 18.3 | LOS B | 10.0 | 70.3 | 0.72 | 0.66 | 0.72 | 35.3 |
| 11 | T1 | All MCs | 407 | 0.8 | 407 | 0.8 | 0.522 | 12.8 | LOS A | 10.0 | 70.3 | 0.72 | 0.66 | 0.72 | 35.1 |
| 12 | R2 | All MCs | 5 | 100.0 | 5 | 100.0 | 0.039 | 27.6 | LOS B | 0.1 | 1.7 | 0.81 | 0.64 | 0.81 | 25.5 |
| Approach | | | 507 | 2.1 | 507 | 2.1 | 0.522 | 14.0 | LOS A | 10.0 | 70.3 | 0.72 | 0.65 | 0.72 | 34.2 |
| All Vehicles | | | 2431 | 1.3 | 2431 | 1.3 | 0.734 | 18.4 | LOS B | 17.3 | 122.1 | 0.85 | 0.78 | 0.88 | 31.6 |

Site Level of Service (LOS) Method: Delay (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. Qued | Eff. Stop Rate | Travel Time sec | Travel Dist. m | Aver. Speed m/sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ross St (110m) | | | | | | | | | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P1 | Full | 77 | 81 | 24.4 | LOS C | 0.1 | 0.1 | 0.90 | 0.90 | 178.2 | 200.0 | 1.12 |
| East: Bridge Rd (500m) | | | | | | | | | | | | |
| P2 | Full | 90 | 95 | 24.4 | LOS C | 0.1 | 0.1 | 0.90 | 0.90 | 178.2 | 200.0 | 1.12 |
| North: Ross St (280m) | | | | | | | | | | | | |
| P3 | Full | 91 | 96 | 24.4 | LOS C | 0.1 | 0.1 | 0.90 | 0.90 | 178.2 | 200.0 | 1.12 |
| West: Bridge Rd (400m) | | | | | | | | | | | | |
| P4 | Full | 88 | 93 | 24.4 | LOS C | 0.1 | 0.1 | 0.90 | 0.90 | 178.2 | 200.0 | 1.12 |
| All Pedestrians | | 346 | 364 | 24.4 | LOS C | 0.1 | 0.1 | 0.90 | 0.90 | 178.2 | 200.0 | 1.12 |

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: [4.30.P.PM] 4. Parramatta x Larkin - 2030 Project Case PM

(2030 Project Case PM)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Parramatta Rd x Larkin St
Site Category: Existing Design
Give-Way (Two-Way)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| East: Parramatta Rd (310m) | | | | | | | | | | | | | | | |
| 5 | T1 | All MCs | 2145 | 3.2 | 2145 | 3.2 | 0.540 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.5 |
| Approach | | | 2145 | 3.2 | 2145 | 3.2 | 0.540 | 0.1 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.5 |
| North: Larkin St (37m) | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 145 | 1.4 | 145 | 1.4 | 0.115 | 3.5 | LOS A | 0.4 | 3.1 | 0.14 | 0.49 | 0.14 | 45.2 |
| Approach | | | 145 | 1.4 | 145 | 1.4 | 0.115 | 3.5 | LOS A | 0.4 | 3.1 | 0.14 | 0.49 | 0.14 | 45.2 |
| West: Parramatta Rd (155m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 16 | 0.0 | 16 | 0.0 | 0.039 | 5.5 | LOS A | 0.0 | 0.0 | 0.00 | 0.18 | 0.00 | 21.2 |
| 11 | T1 | All MCs | 1309 | 3.2 | 1309 | 3.2 | 0.328 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.7 |
| Approach | | | 1325 | 3.2 | 1325 | 3.2 | 0.328 | 0.1 | NA | 0.0 | 0.0 | 0.00 | 0.01 | 0.00 | 59.2 |
| All Vehicles | | | 3616 | 3.1 | 3616 | 3.1 | 0.540 | 0.3 | NA | 0.4 | 3.1 | 0.01 | 0.02 | 0.01 | 58.8 |

Site Level of Service (LOS) Method: Delay (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: [5.30.P.PM] 5. Larkin x Sparkes - 2030 Project Case PM

(2030 Project Case PM)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Larkin St x Sparkes St
Site Category: Existing Design
Give-Way (Two-Way)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Larkin St (37m) | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 3 | 0.0 | 3 | 0.0 | 0.007 | 3.3 | LOS A | 0.0 | 0.0 | 0.00 | 0.12 | 0.00 | 22.1 |
| 2 | T1 | All MCs | 11 | 0.0 | 11 | 0.0 | 0.007 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.12 | 0.00 | 46.7 |
| Approach | | | 14 | 0.0 | 14 | 0.0 | 0.007 | 0.8 | NA | 0.0 | 0.0 | 0.00 | 0.12 | 0.00 | 38.9 |
| East: Sparkes St (90m) | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 14 | 0.0 | 14 | 0.0 | 0.025 | 4.6 | LOS A | 0.1 | 0.6 | 0.09 | 0.51 | 0.09 | 30.6 |
| 5 | T1 | All MCs | 8 | 12.5 | 8 | 12.5 | 0.025 | 3.4 | LOS A | 0.1 | 0.6 | 0.09 | 0.51 | 0.09 | 28.5 |
| 6 | R2 | All MCs | 11 | 0.0 | 11 | 0.0 | 0.025 | 5.0 | LOS A | 0.1 | 0.6 | 0.09 | 0.51 | 0.09 | 33.6 |
| Approach | | | 33 | 3.2 | 33 | 3.2 | 0.025 | 4.4 | LOS A | 0.1 | 0.6 | 0.09 | 0.51 | 0.09 | 31.1 |
| North: Larkin St (100m) | | | | | | | | | | | | | | | |
| 8 | T1 | All MCs | 23 | 4.5 | 23 | 4.5 | 0.013 | 0.0 | LOS A | 0.0 | 0.0 | 0.01 | 0.02 | 0.01 | 48.9 |
| 9 | R2 | All MCs | 1 | 0.0 | 1 | 0.0 | 0.013 | 4.6 | LOS A | 0.0 | 0.0 | 0.01 | 0.02 | 0.01 | 35.3 |
| Approach | | | 24 | 4.3 | 24 | 4.3 | 0.013 | 0.2 | NA | 0.0 | 0.0 | 0.01 | 0.02 | 0.01 | 48.0 |
| West: Sparkes St (60m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 1 | 0.0 | 1 | 0.0 | 0.101 | 4.3 | LOS A | 0.4 | 2.5 | 0.15 | 0.53 | 0.15 | 32.4 |
| 12 | R2 | All MCs | 106 | 1.0 | 106 | 1.0 | 0.101 | 4.6 | LOS A | 0.4 | 2.5 | 0.15 | 0.53 | 0.15 | 26.5 |
| Approach | | | 107 | 1.0 | 107 | 1.0 | 0.101 | 4.6 | LOS A | 0.4 | 2.5 | 0.15 | 0.53 | 0.15 | 26.6 |
| All Vehicles | | | 178 | 1.8 | 178 | 1.8 | 0.101 | 3.7 | NA | 0.4 | 2.5 | 0.11 | 0.43 | 0.11 | 30.7 |

Site Level of Service (LOS) Method: Delay (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: [6.30.P.PM] 6. Ross x Arundel - 2030 Project Case PM

(2030 Project Case PM)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Ross St x Arundel St
Site Category: Existing Design
Stop (Two-Way)
**Site Scenario: 1 | Local Volumes**

**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. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ross St (85m) | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 55 | 0.0 | 55 | 0.0 | 0.299 | 5.6 | LOS A | 0.9 | 6.2 | 0.20 | 0.26 | 0.20 | 37.8 |
| 2 | T1 | All MCs | 397 | 1.3 | 397 | 1.3 | 0.299 | 0.4 | LOS A | 0.9 | 6.2 | 0.20 | 0.26 | 0.20 | 44.0 |
| 3 | R2 | All MCs | 76 | 1.4 | 76 | 1.4 | 0.299 | 6.0 | LOS A | 0.9 | 6.2 | 0.20 | 0.26 | 0.20 | 42.8 |
| 3u | U | All MCs | 4 | 0.0 | 4 | 0.0 | 0.299 | 8.2 | LOS A | 0.9 | 6.2 | 0.20 | 0.26 | 0.20 | 37.4 |
| Approach | | | 532 | 1.2 | 532 | 1.2 | 0.299 | 1.8 | NA | 0.9 | 6.2 | 0.20 | 0.26 | 0.20 | 42.9 |
| East: Arundel St (250m) | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 66 | 0.0 | 66 | 0.0 | 0.186 | 9.5 | LOS A | 0.7 | 4.8 | 0.57 | 0.92 | 0.57 | 33.6 |
| 5 | T1 | All MCs | 4 | 0.0 | 4 | 0.0 | 0.186 | 15.3 | LOS B | 0.7 | 4.8 | 0.57 | 0.92 | 0.57 | 33.6 |
| 6 | R2 | All MCs | 38 | 0.0 | 38 | 0.0 | 0.186 | 16.5 | LOS B | 0.7 | 4.8 | 0.57 | 0.92 | 0.57 | 33.5 |
| Approach | | | 108 | 0.0 | 108 | 0.0 | 0.186 | 12.1 | LOS A | 0.7 | 4.8 | 0.57 | 0.92 | 0.57 | 33.6 |
| North: Ross St (105m) | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 38 | 0.0 | 38 | 0.0 | 0.195 | 5.6 | LOS A | 0.3 | 2.4 | 0.13 | 0.20 | 0.13 | 44.5 |
| 8 | T1 | All MCs | 281 | 0.0 | 281 | 0.0 | 0.195 | 0.3 | LOS A | 0.3 | 2.4 | 0.13 | 0.20 | 0.13 | 45.6 |
| 9 | R2 | All MCs | 27 | 0.0 | 27 | 0.0 | 0.195 | 6.6 | LOS A | 0.3 | 2.4 | 0.13 | 0.20 | 0.13 | 38.7 |
| Approach | | | 346 | 0.0 | 346 | 0.0 | 0.195 | 1.4 | NA | 0.3 | 2.4 | 0.13 | 0.20 | 0.13 | 44.6 |
| West: Arundel St (155m) | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 21 | 0.0 | 21 | 0.0 | 0.152 | 8.6 | LOS A | 0.5 | 3.6 | 0.62 | 1.00 | 0.62 | 27.1 |
| 11 | T1 | All MCs | 13 | 0.0 | 13 | 0.0 | 0.152 | 14.0 | LOS A | 0.5 | 3.6 | 0.62 | 1.00 | 0.62 | 32.2 |
| 12 | R2 | All MCs | 34 | 0.0 | 34 | 0.0 | 0.152 | 15.3 | LOS B | 0.5 | 3.6 | 0.62 | 1.00 | 0.62 | 25.9 |
| Approach | | | 67 | 0.0 | 67 | 0.0 | 0.152 | 12.9 | LOS A | 0.5 | 3.6 | 0.62 | 1.00 | 0.62 | 27.7 |
| All Vehicles | | | 1054 | 0.6 | 1054 | 0.6 | 0.299 | 3.4 | NA | 0.9 | 6.2 | 0.24 | 0.35 | 0.24 | 40.0 |

Site Level of Service (LOS) Method: Delay (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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# Appendix B

## Basement Swept Paths

A3

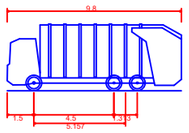
# B1 WASTE PARKING




## Legend

- Body Envelope
- 500mm Envelope
- Wheel Envelope

## Design Vehicle(s)




| | |
|---|---|
| Veolia 9.8m | |
| Overall Length | 9.800m |
| Overall Width | 2.500m |
| Overall Body Height | 3.752m |
| Min Body Ground Clearance | 0.304m |
| Track Width | 2.500m |
| Lock-to-lock time | 6.00s |
| Wall to Wall Turning Radius | 9.000m |

| Issue | Date | By | Chkd | Appd |
|---|---|---|---|---|
| C | 01/09/26 | JG | SH | SH |
| B | 10/07/26 | JG | SH | SH |
| For information | | | | |


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Client
WENTWORTH CAPITAL

Job Title
84-94 PARRAMATTA ROAD

Drawing Title
DESIGN REVIEW
B1 WASTE COLLECTION
9.8M SWEPT PATH ASSESSMENT

Scale at A3 1:400

Discipline TRAFFIC

Drawing Status **DRAFT**

| Job No | Drawing No | Issue |
|---|---|---|
| **304985-00** | **SKT017** | **C** |

Do not scale

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A3

GENERAL WASTE

Cytotox. Waste

Pharma. Waste

Clinical Waste

Refrig. Waste

LOADING DOCK

Veolia 9.8m

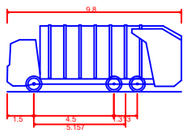
Veolia 9.8m

B1 WASTE EXIT

## Legend

- Body Envelope
- 500mm Envelope
- Wheel Envelope

## Design Vehicle(s)




| Veolia 9.8m | |
|---|---|
| Overall Length | 9.800m |
| Overall Width | 2.500m |
| Overall Body Height | 3.752m |
| Min Body Ground Clearance | 0.304m |
| Track Width | 2.500m |
| Lock-to-lock time | 6.00s |
| Wall to Wall Turning Radius | 9.000m |

| Issue | Date | By | Chkd | Appd |
|---|---|---|---|---|
| C | 01/09/26 | JG | SH | SH |
| B | 10/07/26 | JG | SH | SH |
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Client
WENTWORTH CAPITAL

Job Title
84-94 PARRAMATTA ROAD

Drawing Title
DESIGN REVIEW
B1 WASTE COLLECTION
9.8M SWEPT PATH ASSESSMENT

Scale at A3 1:400

Discipline TRAFFIC

Drawing Status
**DRAFT**

| Job No | Drawing No | Issue |
|---|---|---|
| **304985-00** | **SKT017** | **C** |

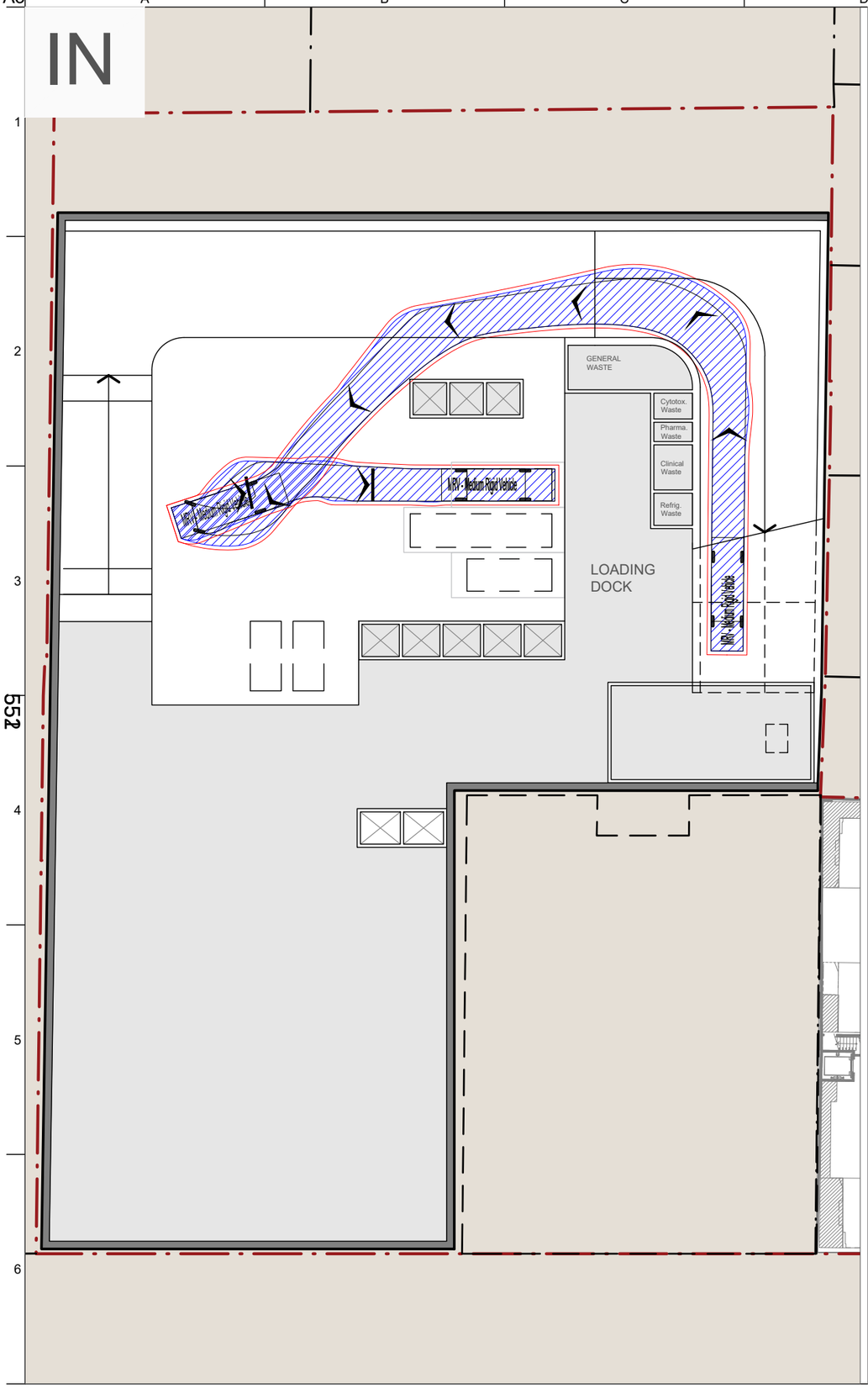
Do not scale

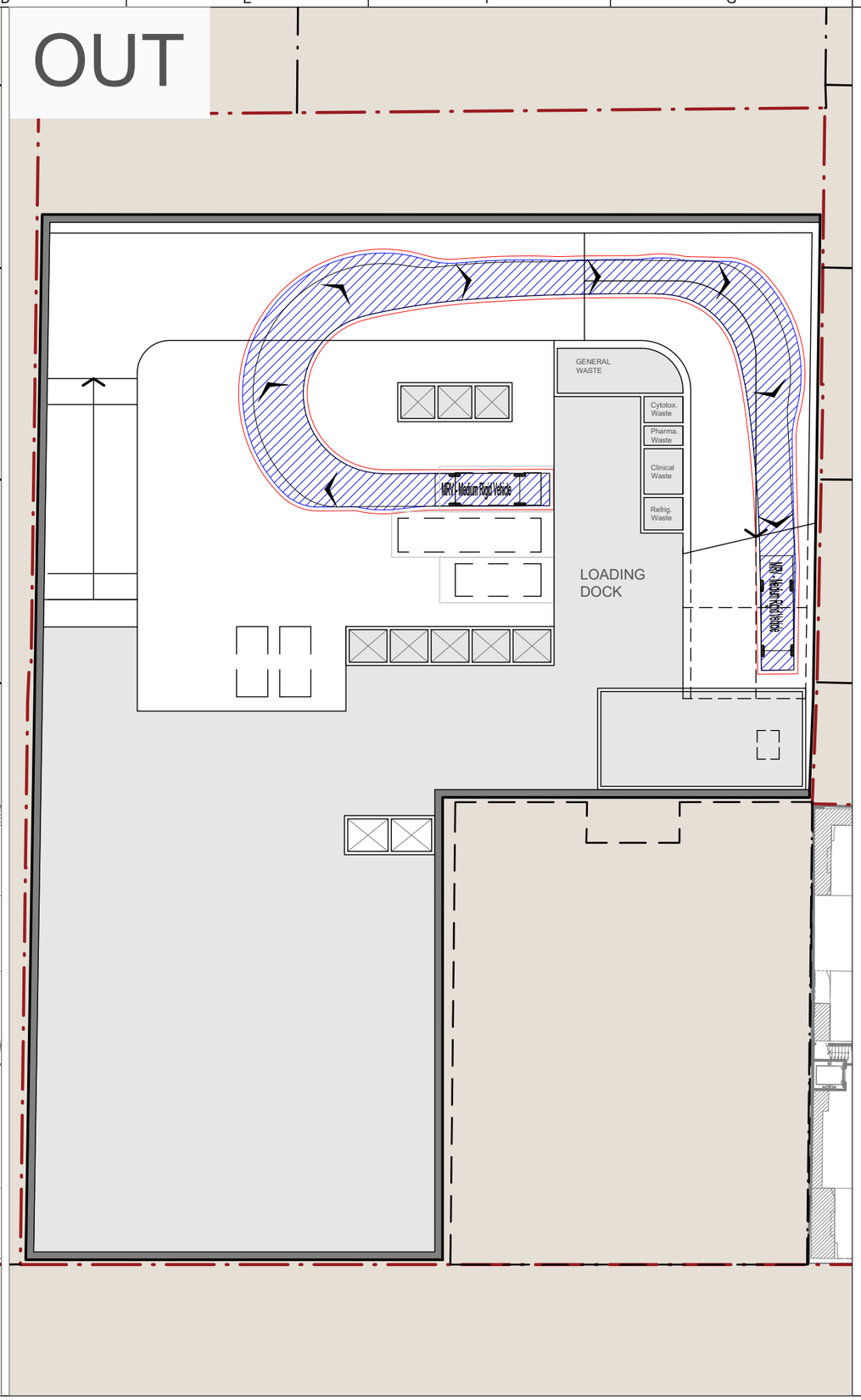
© Arup

A3

IN

OUT



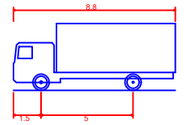




552

## Legend

- Body Envelope
- 500mm Envelope
- Wheel Envelope

## Design Vehicle(s)




| MRV - Medium Rigid Vehicle | |
|---|---|
| Overall Length | 8.800m |
| Overall Width | 2.500m |
| Overall Body Height | 3.633m |
| Min Body Ground Clearance | 0.428m |
| Track Width | 2.500m |
| Lock to Lock Time | 4.00 sec |
| Curb to Curb Turning Radius | 10.000m |

| Issue | Date | By | Chkd | Appd |
|---|---|---|---|---|
| B | 20/07/26 | JG | SH | SH |
| A | 01/10/25 | LW | WZ | WZ |
| For information | | | | |

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www.arup.com.au

Client
WENTWORTH CAPITAL

Job Title
84-94 PARRAMATTA ROAD

Drawing Title
DESIGN REVIEW
BASEMENT 1
MRV SWEPT PATH ASSESSMENT
MRV BAY 1

Scale at A3 1:400

Discipline TRAFFIC

Drawing Status
**DRAFT**

| Job No | Drawing No | Issue |
|---|---|---|
| **304985-00** | **SKT003** | **B** |

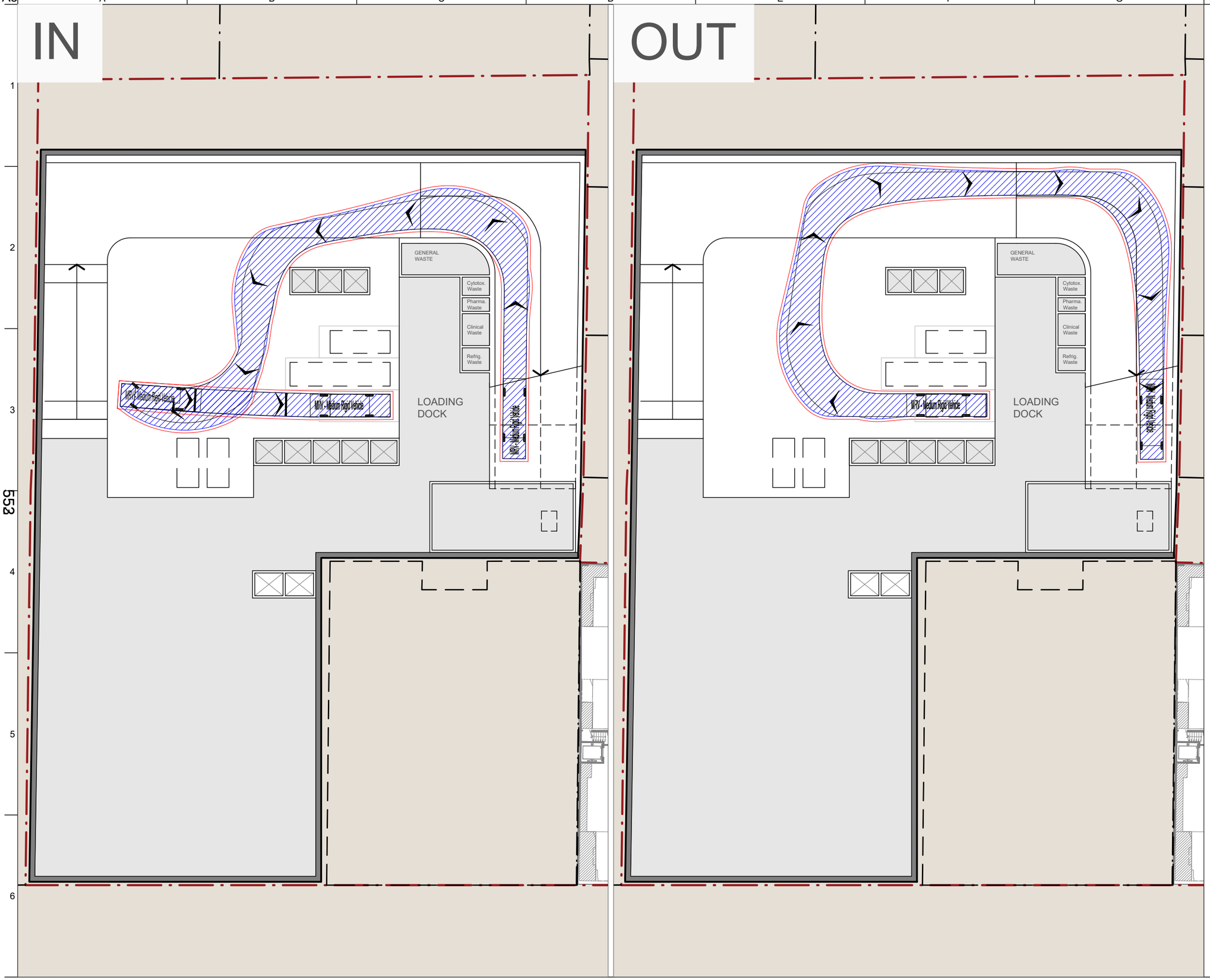
Do not scale

© Arup

A3

IN

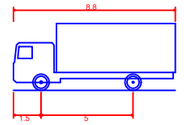
OUT




## Legend

- Body Envelope
- 500mm Envelope
- Wheel Envelope

## Design Vehicle(s)




| MRV - Medium Rigid Vehicle | |
|---|---|
| Overall Length | 8.800m |
| Overall Width | 2.500m |
| Overall Body Height | 3.633m |
| Min Body Ground Clearance | 0.428m |
| Track Width | 2.500m |
| Lock to Lock Time | 4.00 sec |
| Curb to Curb Turning Radius | 10.000m |

| Issue | Date | By | Chkd | Appd |
|---|---|---|---|---|
| B | 20/07/26 | JG | SH | SH |
| A | 01/10/25 | LW | WZ | WZ |
| For information | | | | |

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Client
WENTWORTH CAPITAL

Job Title
84-94 PARRAMATTA ROAD

Drawing Title
DESIGN REVIEW
BASEMENT 1
MRV SWEPT PATH ASSESSMENT
MRV BAY 2

Scale at A3 1:400

Discipline TRAFFIC

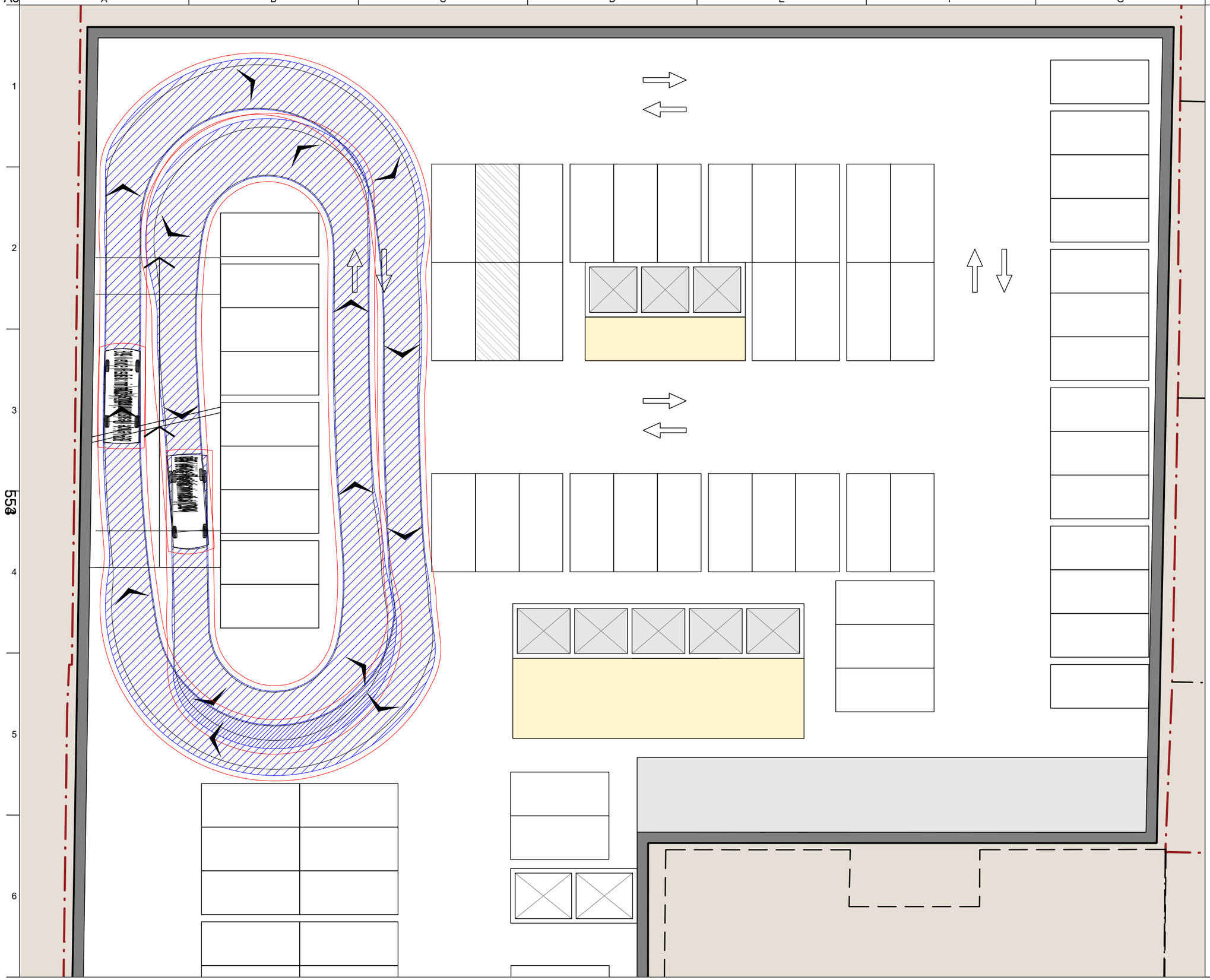
Drawing Status
**DRAFT**

| Job No | Drawing No | Issue |
|---|---|---|
| **304985-00** | **SKT004** | **B** |

Do not scale

© Arup

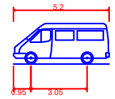
A3



## Legend

- Body Envelope
- 300mm Envelope
- Wheel Envelope

## Design Vehicle(s)




B99 Vehicle (Realistic min radius) (2004)

| | |
|---|---|
| Overall Length | 5.200m |
| Overall Width | 1.940m |
| Overall Body Height | 2.200m |
| Min Body Ground Clearance | 0.312m |
| Track Width | 1.840m |
| Lock to Lock Time | 4.00 sec |
| Curb to Curb Turning Radius | 6.250m |

| Issue | Date | By | Chkd | Appd |
|---|---|---|---|---|
| B | 20/07/26 | JG | SH | SH |
| A | 01/10/25 | LW | WZ | WZ |
| For information | | | | |


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Client
WENTWORTH CAPITAL

Job Title
84-94 PARRAMATTA ROAD

Drawing Title
DESIGN REVIEW
BASEMENT 1
B99 SWEPT PATH ASSESSMENT
B99 CIRCULATION

Scale at A3 1:200

Discipline TRAFFIC

Drawing Status **DRAFT**

| Job No | Drawing No | Issue |
|---|---|---|
| **304985-00** | **SKT005** | **B** |

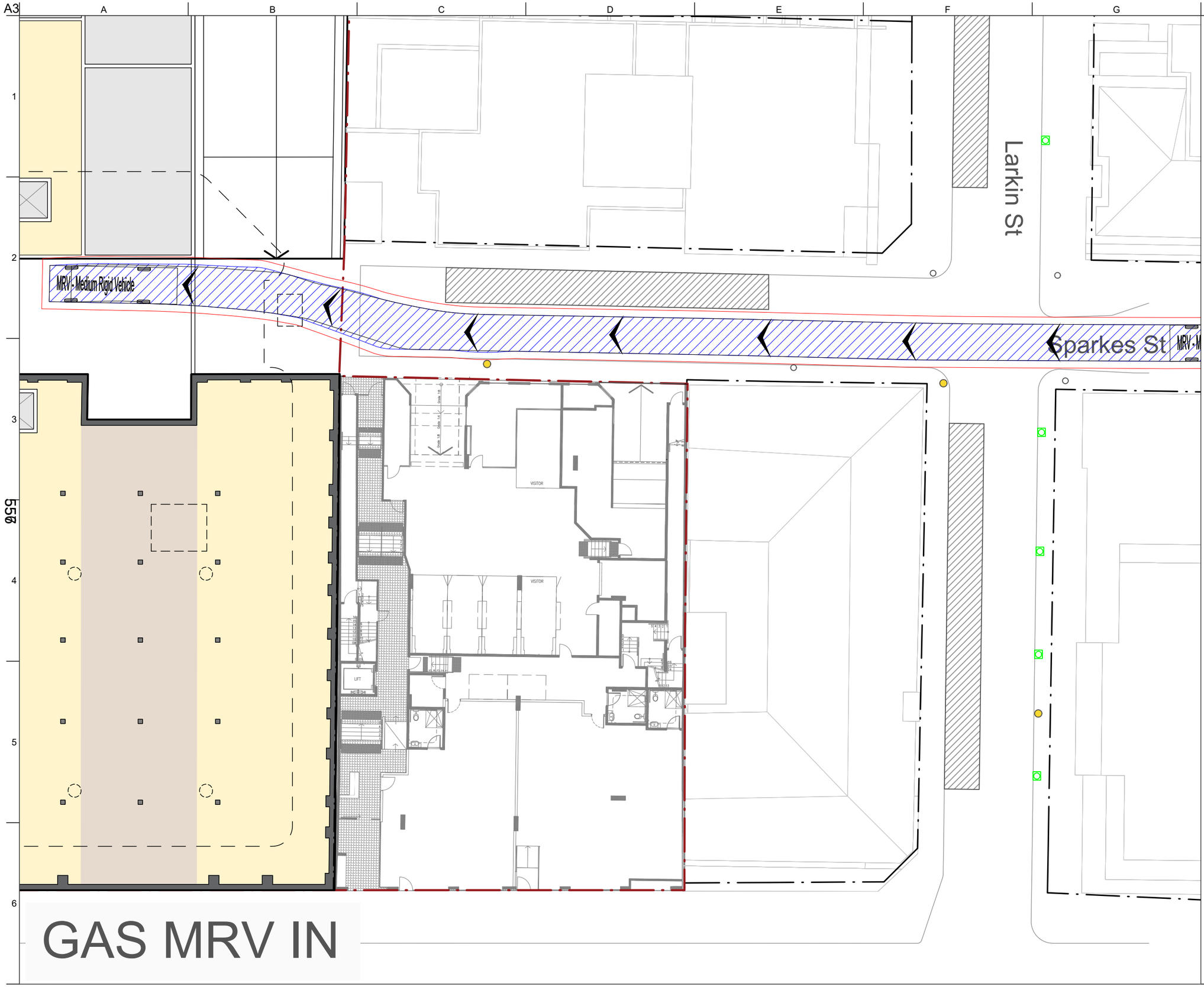
Do not scale

© Arup

# Appendix C

## On-street Swept Paths

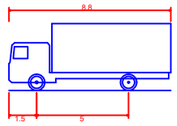
# C.1 Option 1 paths




Legend

- Body Envelope
- 500mm Envelope
- Wheel Envelope

Design Vehicle(s)



MRV - Medium Rigid Vehicle

| | |
|---|---|
| Overall Length | 8.800m |
| Overall Width | 2.500m |
| Overall Body Height | 3.633m |
| Min Body Ground Clearance | 0.428m |
| Track Width | 2.500m |
| Lock to Lock Time | 4.00 sec |
| Curb to Curb Turning Radius | 10.000m |

Tree

Power pole

Street sign pole

| Issue | Date | By | Chkd | Appd |
|---|---|---|---|---|
| D | 04/09/26 | JG | SH | SH |
| C | 25/08/26 | JG | SH | SH |
| B | 10/07/26 | JG | SH | SH |
| For information | | | | |

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Client
WENTWORTH CAPITAL

Job Title
84-94 PARRAMATTA ROAD

Drawing Title
DESIGN REVIEW
STREET LEVEL GAS DELIVERY
MRV SWEPT PATH ASSESSMENT

Scale at A3 1:400

Discipline TRAFFIC

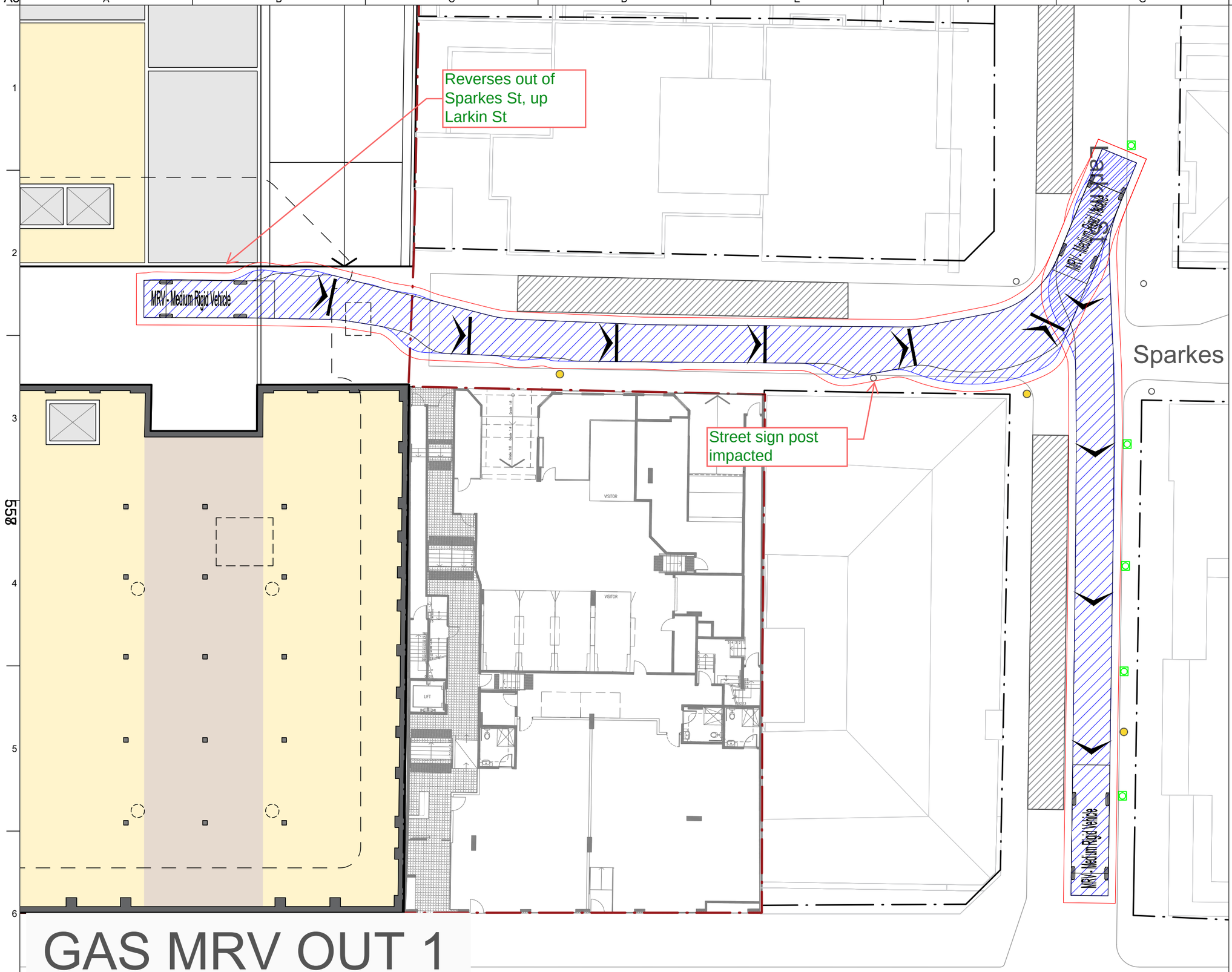
Drawing Status
**DRAFT**

| Job No | Drawing No | Issue |
|---|---|---|
| **304985-00** | **SKT019** | **D** |

Do not scale

© Arup

A3



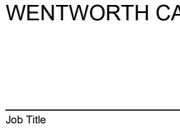

GAS MRV OUT 1

Do not scale

## Legend

- Body Envelope
- 500mm Envelope
- Wheel Envelope

## Design Vehicle(s)



MRV - Medium Rigid Vehicle

| | |
|---|---|
| Overall Length | 8.800m |
| Overall Width | 2.500m |
| Overall Body Height | 3.633m |
| Min Body Ground Clearance | 0.428m |
| Track Width | 2.500m |
| Lock to Lock Time | 4.00 sec |
| Curb to Curb Turning Radius | 10.000m |

- Tree
- Power pole
- Street sign pole

| Issue | Date | By | Chkd | Appd |
|---|---|---|---|---|
| D | 04/09/26 | JG | SH | SH |
| C | 25/08/26 | JG | SH | SH |
| B | 10/07/26 | JG | SH | SH |
| For information | | | | |

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Client
WENTWORTH CAPITAL

Job Title
84-94 PARRAMATTA ROAD

Drawing Title
DESIGN REVIEW
STREET LEVEL GAS DELIVERY
MRV SWEPT PATH ASSESSMENT

Scale at A3 1:400

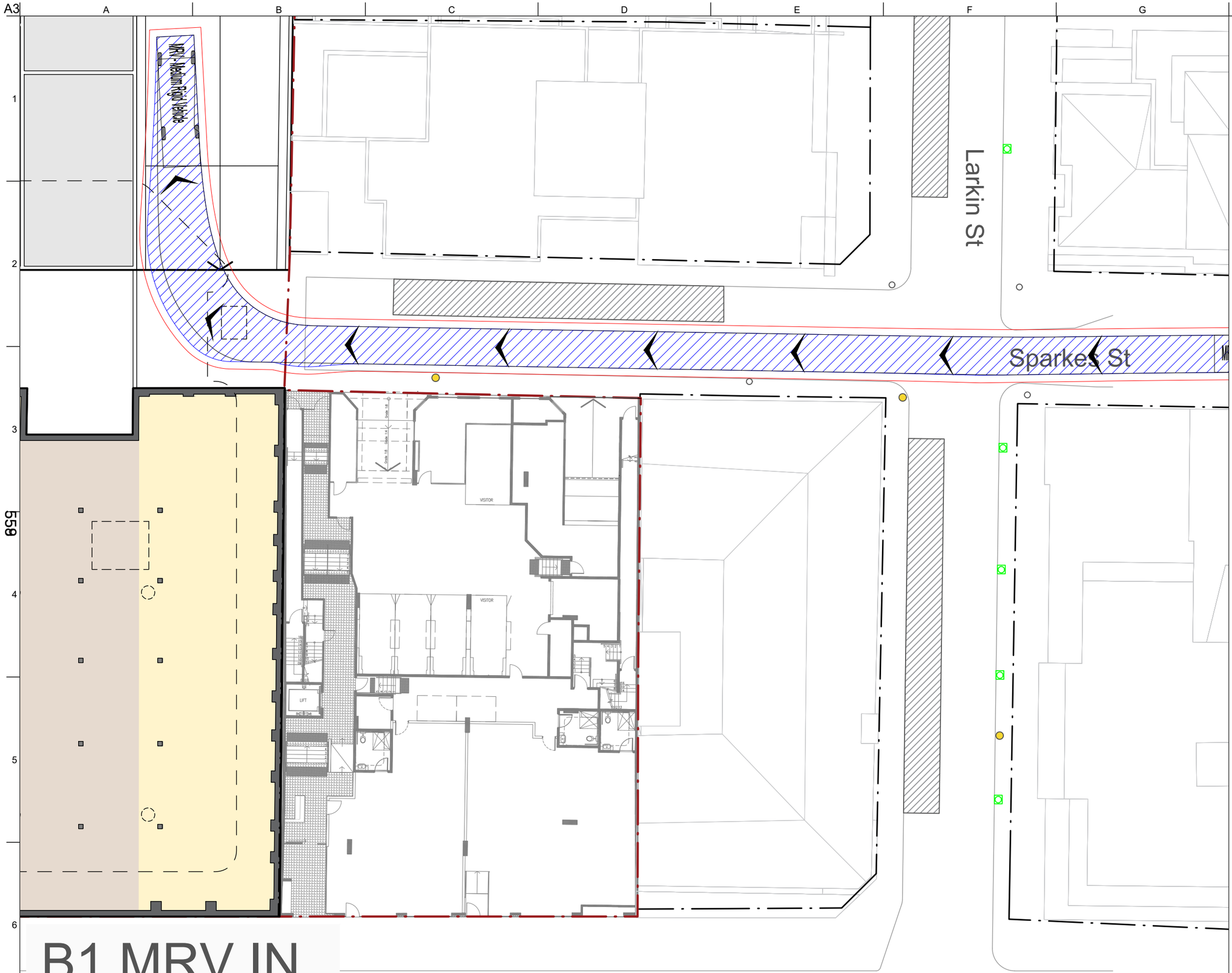
Discipline TRAFFIC

Drawing Status
**DRAFT**

| Job No | Drawing No | Issue |
|---|---|---|
| **304985-00** | **SKT003** | **D** |

© Arup

A3

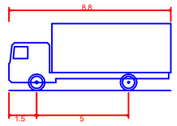



B1 MRV IN

Legend

- Body Envelope
- 500mm Envelope
- Wheel Envelope

Design Vehicle(s)



MRV - Medium Rigid Vehicle

| | |
|---|---|
| Overall Length | 8.800m |
| Overall Width | 2.500m |
| Overall Body Height | 3.633m |
| Min Body Ground Clearance | 0.428m |
| Track Width | 2.500m |
| Lock to Lock Time | 4.00 sec |
| Curb to Curb Turning Radius | 10.000m |

Tree

Power pole

Street sign pole

| Issue | Date | By | Chkd | Appd |
|---|---|---|---|---|
| D | 04/09/26 | JG | SH | SH |
| C | 25/08/26 | JG | SH | SH |
| B | 10/07/26 | JG | SH | SH |
| For information | | | | |

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Client
WENTWORTH CAPITAL

Job Title
84-94 PARRAMATTA ROAD

Drawing Title
DESIGN REVIEW
STREET TO BASEMENT LEVEL
MRV SWEPT PATH ASSESSMENT

Scale at A3
1:400

Discipline
TRAFFIC

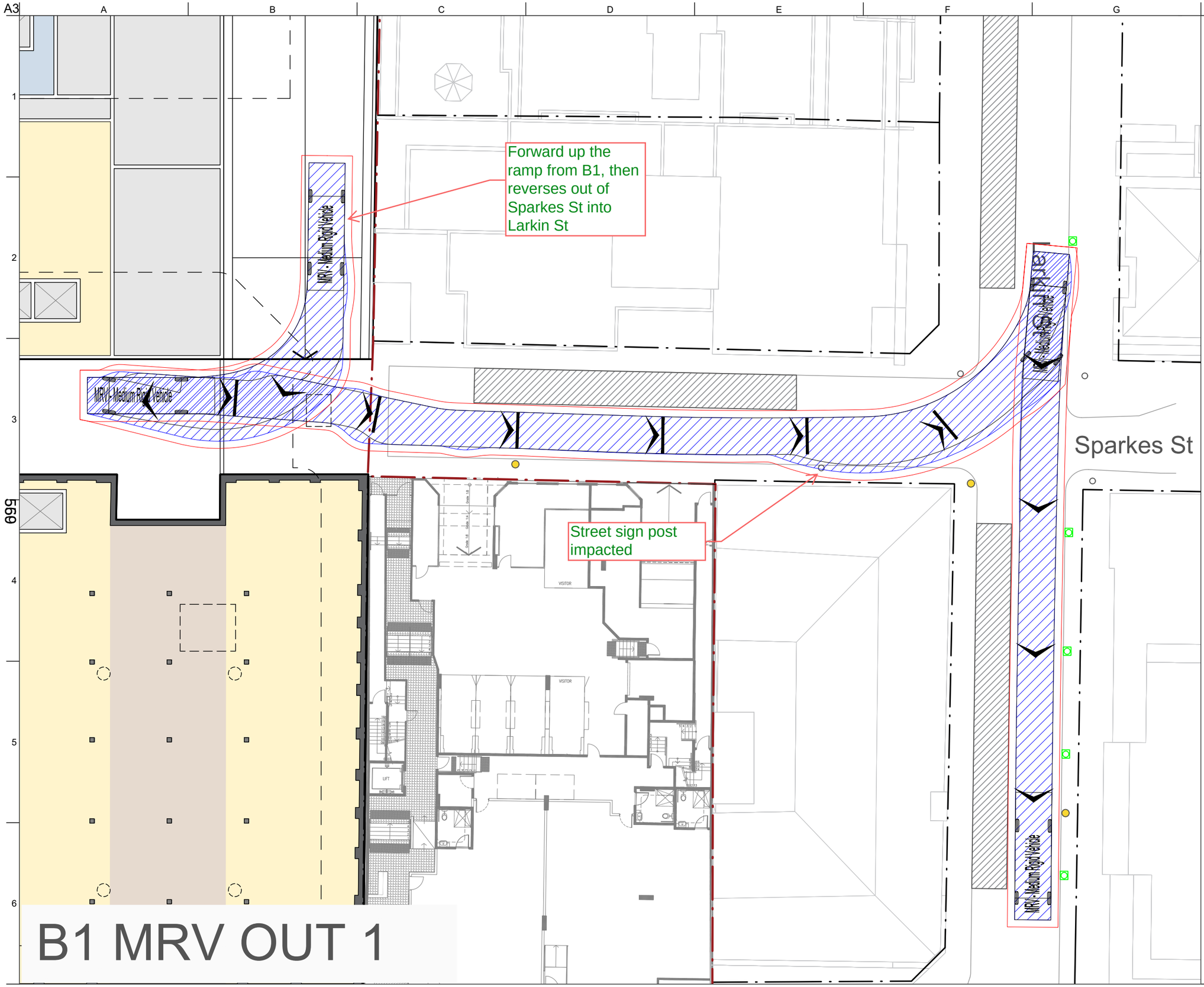
Drawing Status
**DRAFT**

| Job No | Drawing No | Issue |
|---|---|---|
| **304985-00** | **SKT004** | **D** |

Do not scale

© Arup

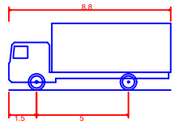
A3




Legend

- Body Envelope
- 500mm Envelope
- Wheel Envelope

Design Vehicle(s)




| MRV - Medium Rigid Vehicle | |
|---|---|
| Overall Length | 8.800m |
| Overall Width | 2.500m |
| Overall Body Height | 3.633m |
| Min Body Ground Clearance | 0.428m |
| Track Width | 2.500m |
| Lock to Lock Time | 4.00 sec |
| Curb to Curb Turning Radius | 10.000m |

Tree

Power pole

Street sign pole

| Issue | Date | By | Chkd | Appd |
|---|---|---|---|---|
| D | 04/09/26 | JG | SH | SH |
| C | 31/08/26 | JG | SH | SH |
| B | 10/07/26 | JG | SH | SH |

For information

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Client
WENTWORTH CAPITAL

Job Title
84-94 PARRAMATTA ROAD

Drawing Title
DESIGN REVIEW
STREET LEVEL GAS DELIVERY
MRV SWEPT PATH ASSESSMENT

Scale at A3 1:400

Discipline TRAFFIC

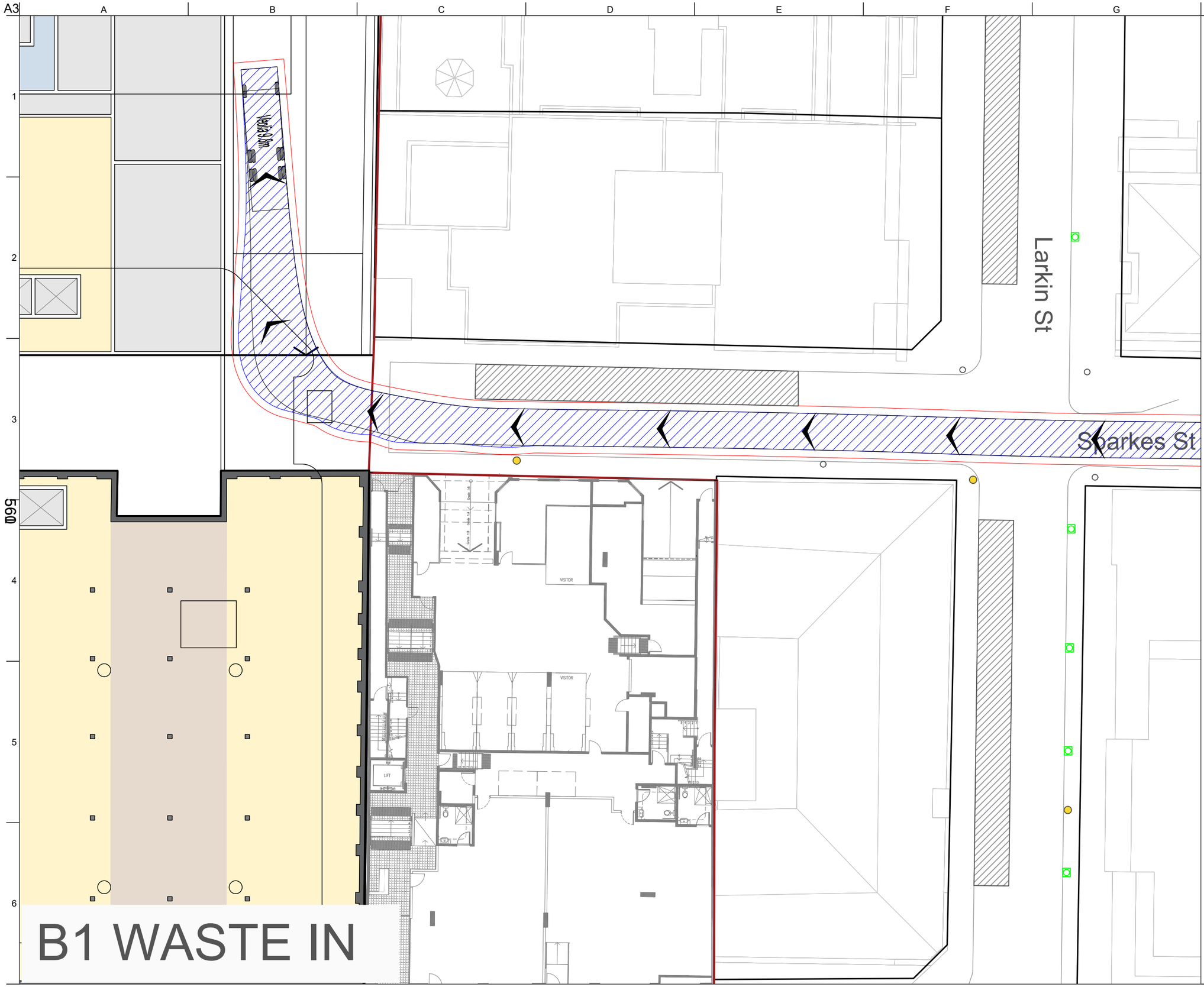
Drawing Status
**DRAFT**

| Job No | Drawing No | Issue |
|---|---|---|
| **304985-00** | **SKT020** | **D** |

Do not scale

© Arup

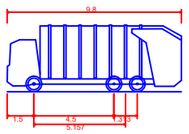
A3




Legend

- Body Envelope
- 500mm Envelope
- Wheel Envelope

Design Vehicle(s)



Veolia 9.8m

| | |
|---|---|
| Overall Length | 9.800m |
| Overall Width | 2.500m |
| Overall Body Height | 3.752m |
| Min Body Ground Clearance | 0.304m |
| Track Width | 2.500m |
| Lock-to-lock time | 6.00s |
| Wall to Wall Turning Radius | 9.000m |

Tree

Power pole

Street sign pole

| Issue | Date | By | Chkd | Appd |
|---|---|---|---|---|
| C | 01/09/26 | JG | SH | SH |
| B | 10/07/26 | JG | SH | SH |
| For information | | | | |

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www.arup.com.au

Client
WENTWORTH CAPITAL

Job Title
84-94 PARRAMATTA ROAD

Drawing Title
DESIGN REVIEW
B1 WASTE COLLECTION
9.8M SWEPT PATH ASSESSMENT

Scale at A3 1:400

Discipline TRAFFIC

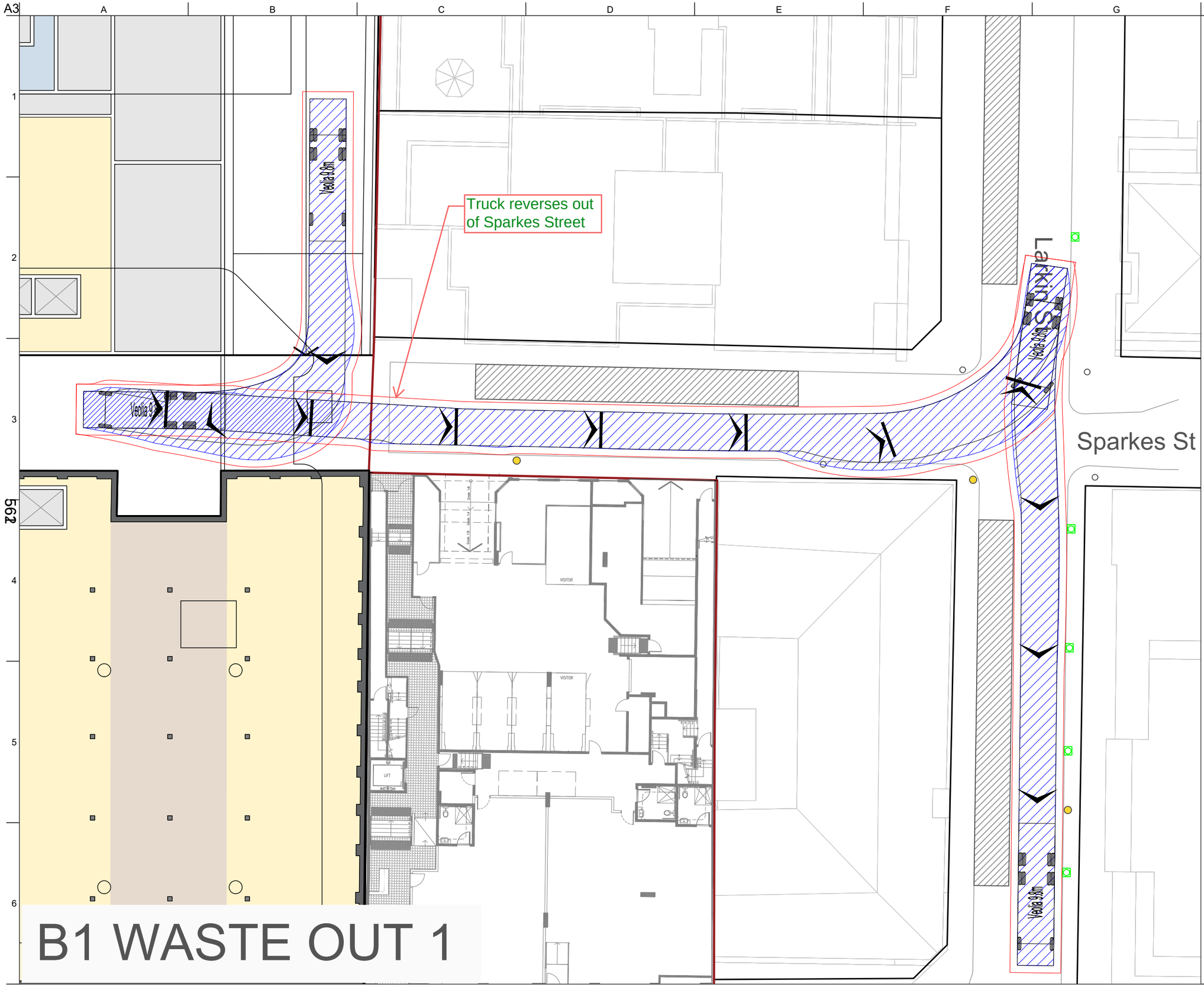
Drawing Status
**DRAFT**

| Job No | Drawing No | Issue |
|---|---|---|
| **304985-00** | **SKT013** | **C** |

Do not scale

© Arup

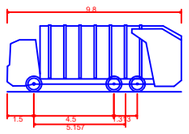
A3




## Legend

- Body Envelope
- 500mm Envelope
- Wheel Envelope

## Design Vehicle(s)



Veolia 9.8m

| | |
|---|---|
| Overall Length | 9.800m |
| Overall Width | 2.500m |
| Overall Body Height | 3.752m |
| Min Body Ground Clearance | 0.304m |
| Track Width | 2.500m |
| Lock-to-lock time | 6.00s |
| Wall to Wall Turning Radius | 9.000m |

- Tree
- Power pole
- Street sign pole

| Issue | Date | By | Chkd | Appd |
|---|---|---|---|---|
| D | 16/09/26 | JG | SH | SH |
| C | 01/09/26 | JG | SH | SH |
| B | 10/07/26 | JG | SH | SH |

For information

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Client
WENTWORTH CAPITAL

Job Title
84-94 PARRAMATTA ROAD

Drawing Title
DESIGN REVIEW
B1 WASTE COLLECTION
9.8M SWEPT PATH ASSESSMENT

Scale at A3 1:400

Discipline TRAFFIC

Drawing Status
**DRAFT**

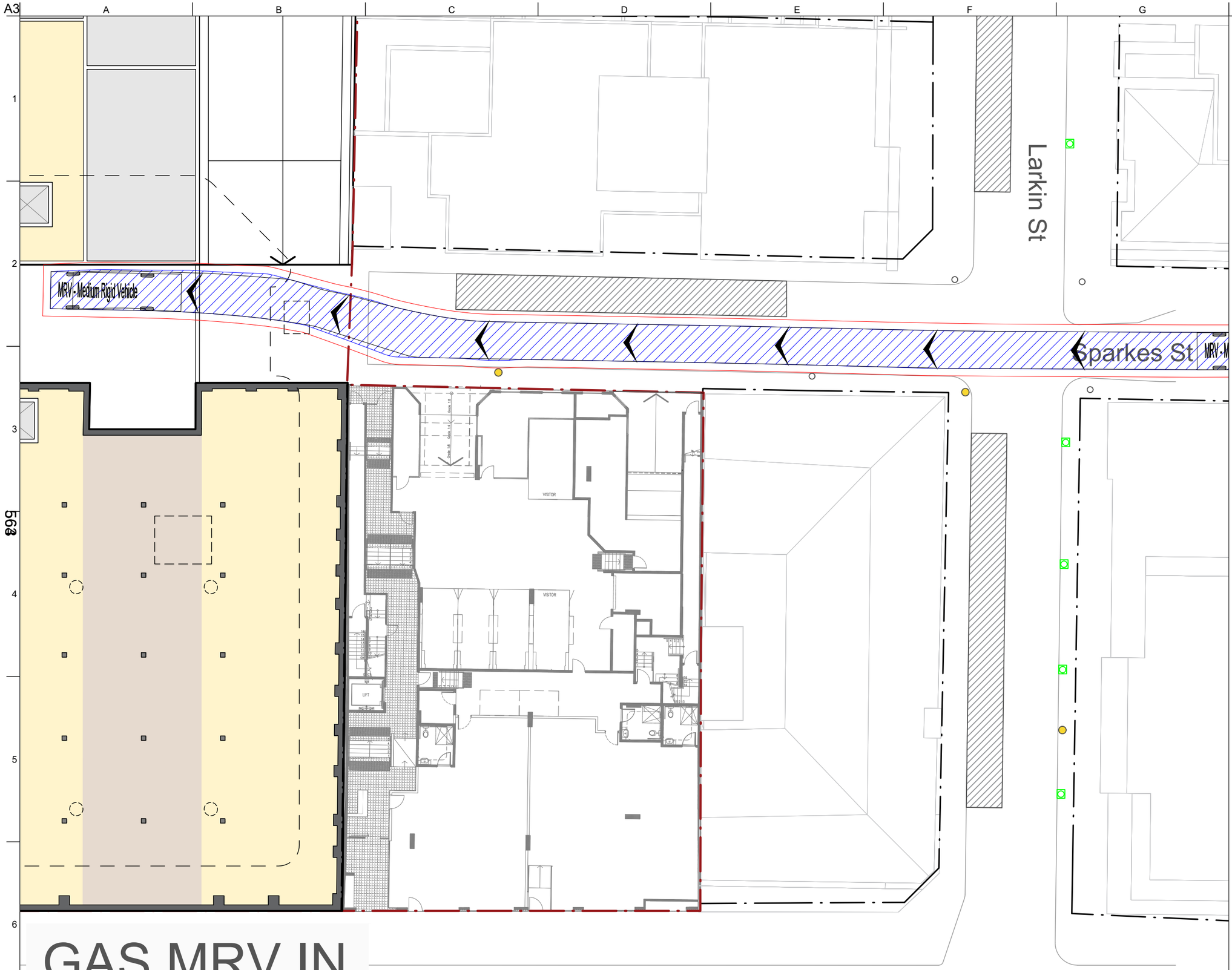
| Job No | Drawing No | Issue |
|---|---|---|
| **304985-00** | **SKT022** | **D** |

Do not scale

© Arup

# C.2 Option 2 paths

A3

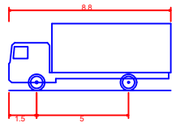



GAS MRV IN

Legend

- Body Envelope
- 500mm Envelope
- Wheel Envelope

Design Vehicle(s)



MRV - Medium Rigid Vehicle

| | |
|---|---|
| Overall Length | 8.800m |
| Overall Width | 2.500m |
| Overall Body Height | 3.633m |
| Min Body Ground Clearance | 0.428m |
| Track Width | 2.500m |
| Lock to Lock Time | 4.00 sec |
| Curb to Curb Turning Radius | 10.000m |

Tree

Power pole

Street sign pole

| Issue | Date | By | Chkd | Appd |
|---|---|---|---|---|
| D | 04/09/26 | JG | SH | SH |
| C | 25/08/26 | JG | SH | SH |
| B | 10/07/26 | JG | SH | SH |
| For information | | | | |

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www.arup.com.au

Client
WENTWORTH CAPITAL

Job Title
84-94 PARRAMATTA ROAD

Drawing Title
DESIGN REVIEW
STREET LEVEL GAS DELIVERY
MRV SWEPT PATH ASSESSMENT

Scale at A3 1:400

Discipline TRAFFIC

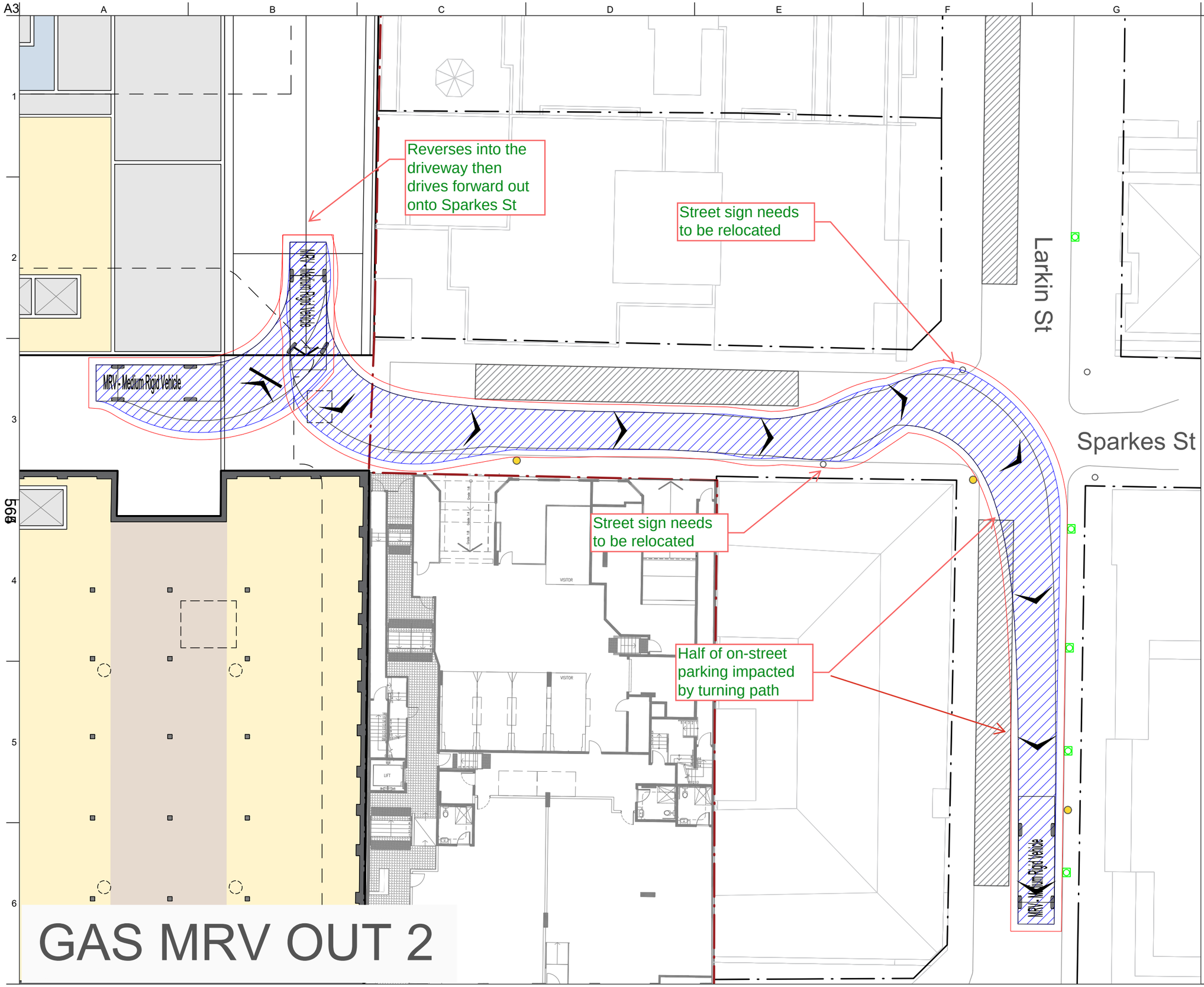
Drawing Status
**DRAFT**

| Job No | Drawing No | Issue |
|---|---|---|
| **304985-00** | **SKT019** | **D** |

Do not scale

© Arup

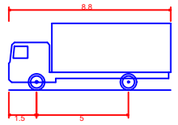
A3




Legend

- Body Envelope
- 500mm Envelope
- Wheel Envelope

Design Vehicle(s)




| MRV - Medium Rigid Vehicle | |
|---|---|
| Overall Length | 8.800m |
| Overall Width | 2.500m |
| Overall Body Height | 3.633m |
| Min Body Ground Clearance | 0.428m |
| Track Width | 2.500m |
| Lock to Lock Time | 4.00 sec |
| Curb to Curb Turning Radius | 10.000m |

Tree

Power pole

Street sign pole

| Issue | Date | By | Chkd | Appd |
|---|---|---|---|---|
| D | 04/09/26 | JG | SH | SH |
| C | 31/08/26 | JG | SH | SH |
| B | 10/07/26 | JG | SH | SH |
| For information | | | | |


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www.arup.com.au


Client
WENTWORTH CAPITAL

Job Title
84-94 PARRAMATTA ROAD

Drawing Title
DESIGN REVIEW
STREET LEVEL GAS DELIVERY
MRV SWEPT PATH ASSESSMENT

Scale at A3 1:400

Discipline TRAFFIC

Drawing Status
**DRAFT**

| Job No | Drawing No | Issue |
|---|---|---|
| **304985-00** | **SKT021** | **D** |

Do not scale

© Arup

A3

Reverses into the driveway then drives forward out onto Sparkes St

Continues north on Larkin St

One parking space impacted by turning path

Street sign needs to be relocated

MRV - Medium Rigid Vehicle

Larkin St

Sparkes St

VISITOR

LIFT

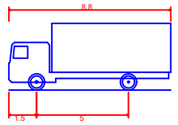
# GAS MRV OUT 3A

Do not scale

## Legend

- Body Envelope
- 500mm Envelope
- Wheel Envelope

## Design Vehicle(s)




| MRV - Medium Rigid Vehicle | |
|---|---|
| Overall Length | 8.800m |
| Overall Width | 2.500m |
| Overall Body Height | 3.633m |
| Min Body Ground Clearance | 0.428m |
| Track Width | 2.500m |
| Lock to Lock Time | 4.00 sec |
| Curb to Curb Turning Radius | 10.000m |

Tree

Power pole

Street sign pole

| Issue | Date | By | Chkd | Appd |
|---|---|---|---|---|
| D | 04/09/26 | JG | SH | SH |
| C | 31/08/26 | JG | SH | SH |
| B | 10/07/26 | JG | SH | SH |
| For information | | | | |


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www.arup.com.au


Client
WENTWORTH CAPITAL

Job Title
84-94 PARRAMATTA ROAD

Drawing Title
DESIGN REVIEW
STREET LEVEL GAS DELIVERY
MRV SWEPT PATH ASSESSMENT

Scale at A3 1:400

Discipline TRAFFIC

Drawing Status **DRAFT**

| Job No | Drawing No | Issue |
|---|---|---|
| **304985-00** | **SKT013** | **D** |

© Arup

A3

FIRE HYDRANT

Vehicle body needs to avoid fire hydrant block

MRV reverses into wide driveway

5 point turn using round about and driveway

12m or about 2 parallel parking spaces impacted

Continues south on Larkin St

Larkin St Cul de sac

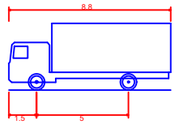
GAS MRV OUT 3B

Do not scale

## Legend

- Body Envelope
- 500mm Envelope
- Wheel Envelope

### Design Vehicle(s)




| MRV - Medium Rigid Vehicle | |
|---|---|
| Overall Length | 8.800m |
| Overall Width | 2.500m |
| Overall Body Height | 3.633m |
| Min Body Ground Clearance | 0.428m |
| Track Width | 2.500m |
| Lock to Lock Time | 4.00 sec |
| Curb to Curb Turning Radius | 10.000m |

- Tree
- Power pole
- Street sign pole

| Issue | Date | By | Chkd | Appd |
|---|---|---|---|---|
| D | 04/09/26 | JG | SH | SH |
| C | 31/08/26 | JG | SH | SH |
| B | 10/07/26 | JG | SH | SH |
| For information | | | | |

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Client
WENTWORTH CAPITAL

Job Title
84-94 PARRAMATTA ROAD

Drawing Title
DESIGN REVIEW
STREET LEVEL GAS DELIVERY
MRV SWEPT PATH ASSESSMENT

Scale at A3 1:400

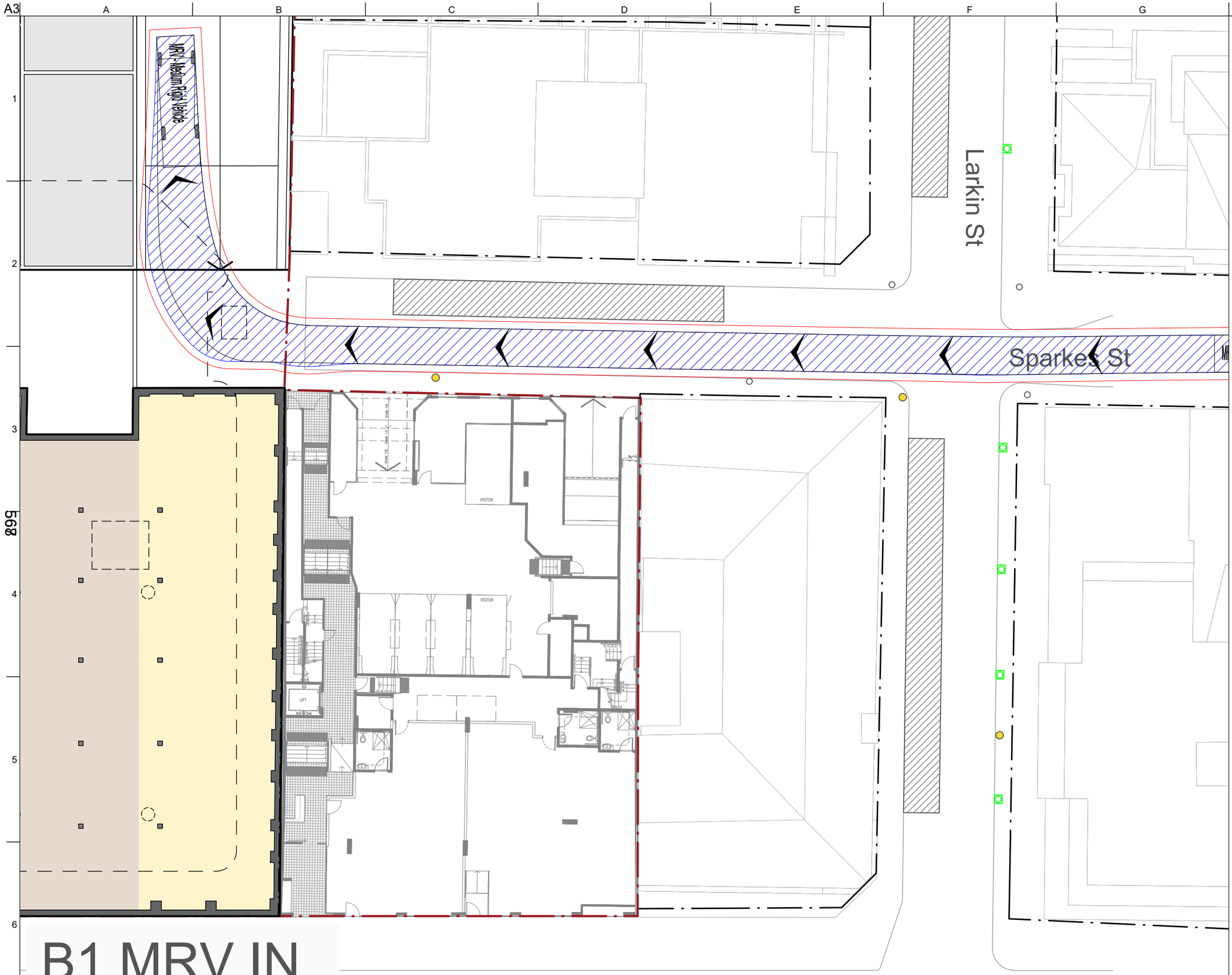
Discipline TRAFFIC

Drawing Status
**DRAFT**

| Job No | Drawing No | Issue |
|---|---|---|
| **304985-00** | **SKT014** | **D** |

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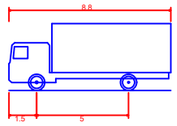
A3




Legend

- Body Envelope
- 500mm Envelope
- Wheel Envelope

Design Vehicle(s)



MRV - Medium Rigid Vehicle

| | |
|---|---|
| Overall Length | 8.800m |
| Overall Width | 2.500m |
| Overall Body Height | 3.633m |
| Min Body Ground Clearance | 0.428m |
| Track Width | 2.500m |
| Lock to Lock Time | 4.00 sec |
| Curb to Curb Turning Radius | 10.000m |

- Tree
- Power pole
- Street sign pole

| Issue | Date | By | Chkd | Appd |
|---|---|---|---|---|
| D | 04/09/26 | JG | SH | SH |
| C | 25/08/26 | JG | SH | SH |
| B | 10/07/26 | JG | SH | SH |
| For information | | | | |

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Client
WENTWORTH CAPITAL

Job Title
84-94 PARRAMATTA ROAD

Drawing Title
DESIGN REVIEW
STREET TO BASEMENT LEVEL
MRV SWEPT PATH ASSESSMENT

Scale at A3 1:400

Discipline TRAFFIC

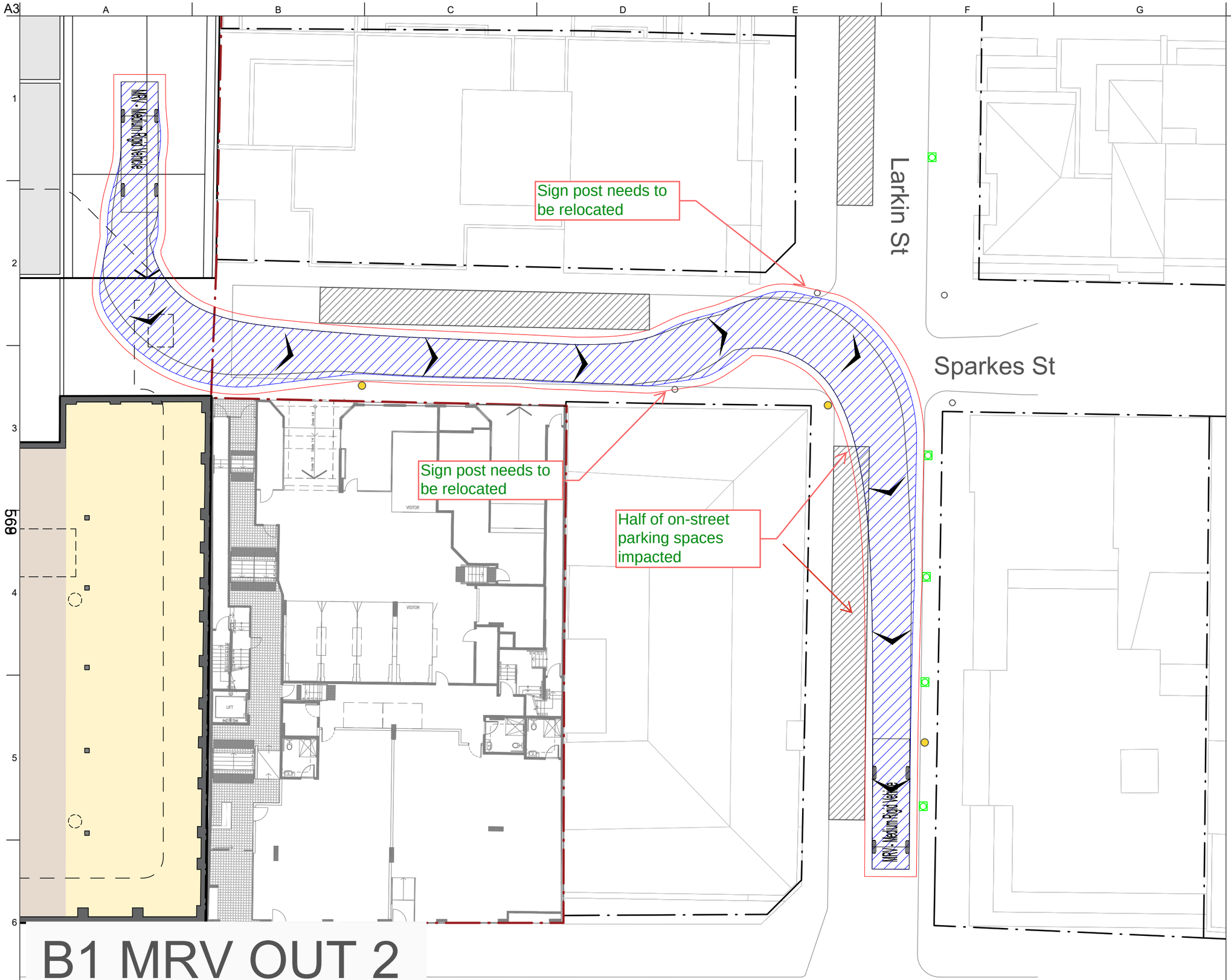
Drawing Status
**DRAFT**

| Job No | Drawing No | Issue |
|---|---|---|
| **304985-00** | **SKT004** | **D** |

Do not scale

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A3

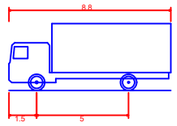



# B1 MRV OUT 2

Legend

- Body Envelope
- 500mm Envelope
- Wheel Envelope

Design Vehicle(s)




| MRV - Medium Rigid Vehicle | |
|---|---|
| Overall Length | 8.800m |
| Overall Width | 2.500m |
| Overall Body Height | 3.633m |
| Min Body Ground Clearance | 0.428m |
| Track Width | 2.500m |
| Lock to Lock Time | 4.00 sec |
| Curb to Curb Turning Radius | 10.000m |

Tree

Power pole

Street sign pole

| Issue | Date | By | Chkd | Appd |
|---|---|---|---|---|
| D | 04/09/26 | JG | SH | SH |
| C | 25/08/26 | JG | SH | SH |
| B | 10/07/26 | JG | SH | SH |

For information

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www.arup.com.au

Client
WENTWORTH CAPITAL

Job Title
84-94 PARRAMATTA ROAD

Drawing Title
DESIGN REVIEW
STREET TO BASEMENT LEVEL
MRV SWEPT PATH ASSESSMENT

Scale at A3 1:400

Discipline TRAFFIC

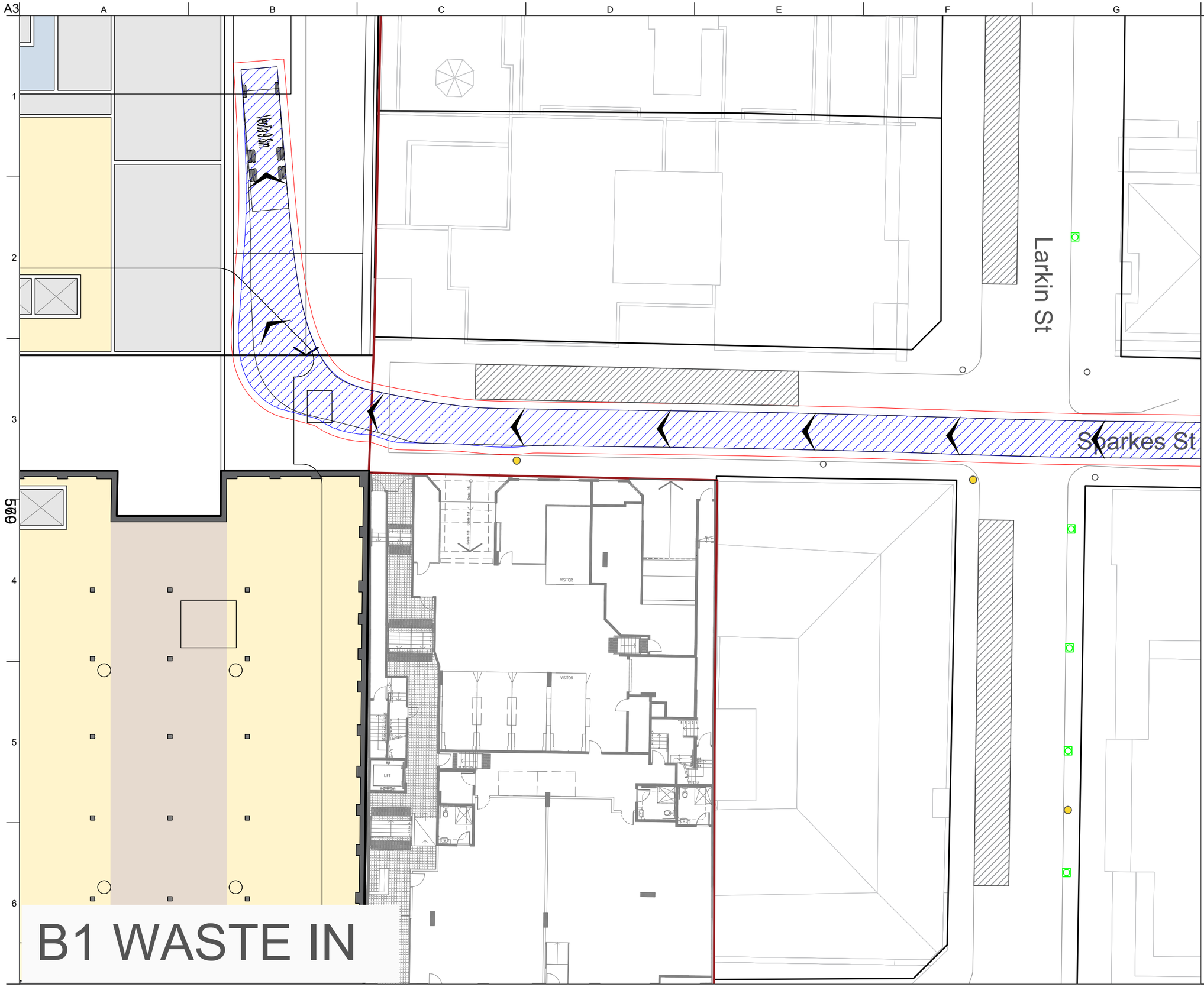
Drawing Status
**DRAFT**

| Job No | Drawing No | Issue |
|---|---|---|
| **304985-00** | **SKT005** | **D** |

Do not scale

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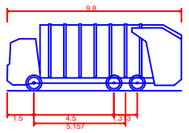
A3




Legend

- Body Envelope
- 500mm Envelope
- Wheel Envelope

Design Vehicle(s)



| Veolia 9.8m | |
|---|---|
| Overall Length | 9.800m |
| Overall Width | 2.500m |
| Overall Body Height | 3.752m |
| Min Body Ground Clearance | 0.304m |
| Track Width | 2.500m |
| Lock-to-lock time | 6.00s |
| Wall to Wall Turning Radius | 9.000m |

Tree

Power pole

Street sign pole

| Issue | Date | By | Chkd | Appd |
|---|---|---|---|---|
| C | 01/09/26 | JG | SH | SH |
| B | 10/07/26 | JG | SH | SH |
| For information | | | | |

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Client
WENTWORTH CAPITAL

Job Title
84-94 PARRAMATTA ROAD

Drawing Title
DESIGN REVIEW
B1 WASTE COLLECTION
9.8M SWEPT PATH ASSESSMENT

Scale at A3 1:400

Discipline TRAFFIC

Drawing Status
**DRAFT**

| Job No | Drawing No | Issue |
|---|---|---|
| **304985-00** | **SKT013** | **C** |

Do not scale

© Arup

A3

Street sign needs to be relocated

Half of on-street parking impacted by turning path

Larkin St

Sparkes St

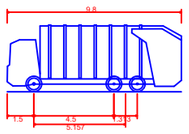
Veolia 9.8m

B1 WASTE OUT 2

## Legend

- Body Envelope
- 500mm Envelope
- Wheel Envelope

## Design Vehicle(s)



| Veolia 9.8m | |
|---|---|
| Overall Length | 9.800m |
| Overall Width | 2.500m |
| Overall Body Height | 3.752m |
| Min Body Ground Clearance | 0.304m |
| Track Width | 2.500m |
| Lock-to-lock time | 6.00s |
| Wall to Wall Turning Radius | 9.000m |

- Tree
- Power pole
- Street sign pole

| Issue | Date | By | Chkd | Appd |
|---|---|---|---|---|
| D | 16/09/26 | JG | SH | SH |
| C | 01/09/26 | JG | SH | SH |
| B | 10/07/26 | JG | SH | SH |
| For information | | | | |


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www.arup.com.au


Client
WENTWORTH CAPITAL

Job Title
84-94 PARRAMATTA ROAD

Drawing Title
DESIGN REVIEW
B1 WASTE COLLECTION
9.8M SWEPT PATH ASSESSMENT

Scale at A3 1:400

Discipline TRAFFIC

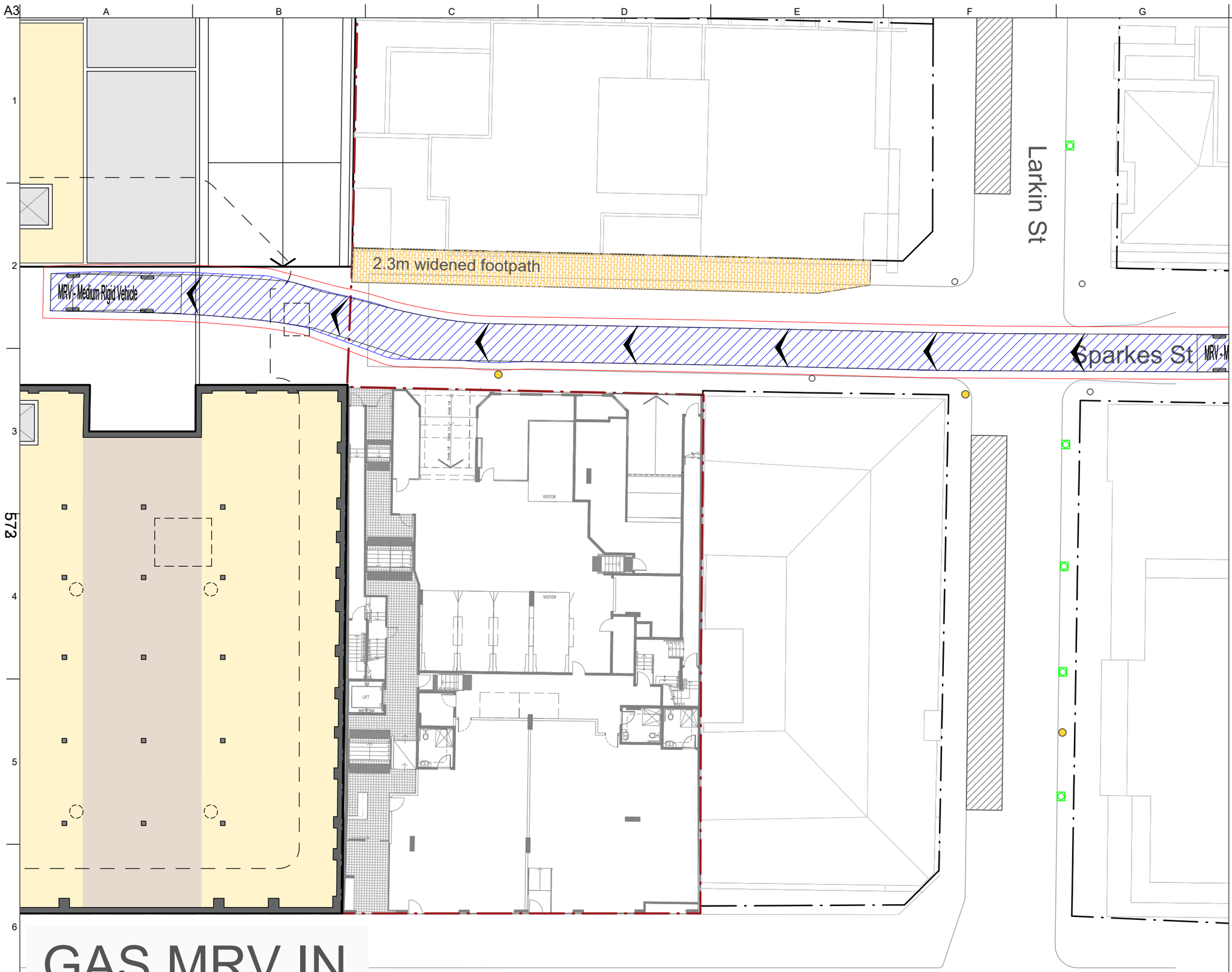
Drawing Status
**DRAFT**

| Job No | Drawing No | Issue |
|---|---|---|
| **304985-00** | **SKT016** | **D** |

Do not scale

© Arup

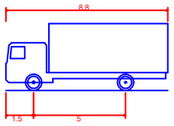
# C.3 Option 3 paths




Legend

- Body Envelope
- 500mm Envelope
- Wheel Envelope

Design Vehicle(s)



MRV - Medium Rigid Vehicle

| | |
|---|---|
| Overall Length | 8.800m |
| Overall Width | 2.500m |
| Overall Body Height | 3.633m |
| Min Body Ground Clearance | 0.428m |
| Track Width | 2.500m |
| Lock to Lock Time | 4.00 sec |
| Curb to Curb Turning Radius | 10.000m |

Tree

Power pole

Street sign pole

| | | | | |
|---|---|---|---|---|
| D | 04/09/26 | JG | SH | SH |
| C | 25/08/26 | JG | SH | SH |
| B | 10/07/26 | JG | SH | SH |

For information

| Issue | Date | By | Chkd | Appd |
|---|---|---|---|---|

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Client
WENTWORTH CAPITAL

Job Title
84-94 PARRAMATTA ROAD

Drawing Title
DESIGN REVIEW
STREET LEVEL GAS DELIVERY
MRV SWEPT PATH ASSESSMENT

Scale at A3 1:400

Discipline TRAFFIC

Drawing Status
**DRAFT**

| Job No | Drawing No | Issue |
|---|---|---|
| **304985-00** | **SKT019** | **D** |

Do not scale

© Arup

A3

Reversed on ramp to exit Sparkes St forward out

Sign post needs to be re-located

2.3m widened footpath

Half of on-street parking spaces impacted

Larkin St

Sparkes St

MRV - Medium Rigid Vehicle

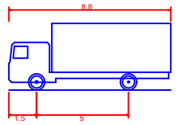
GAS MRV OUT 4

Do not scale

## Legend

- Body Envelope
- 500mm Envelope
- Wheel Envelope

## Design Vehicle(s)




| MRV - Medium Rigid Vehicle | |
|---|---|
| Overall Length | 8.800m |
| Overall Width | 2.500m |
| Overall Body Height | 3.633m |
| Min Body Ground Clearance | 0.428m |
| Track Width | 2.500m |
| Lock to Lock Time | 4.00 sec |
| Curb to Curb Turning Radius | 10.000m |

- Tree
- Power pole
- Street sign pole

| Issue | Date | By | Chkd | Appd |
|---|---|---|---|---|
| D | 04/09/26 | JG | SH | SH |
| C | 31/08/26 | JG | SH | SH |
| B | 10/07/26 | JG | SH | SH |
| For information | | | | |

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www.arup.com.au

Client
WENTWORTH CAPITAL

Job Title
84-94 PARRAMATTA ROAD

Drawing Title
DESIGN REVIEW
STREET LEVEL GAS DELIVERY
MRV SWEPT PATH ASSESSMENT

Scale at A3 1:400

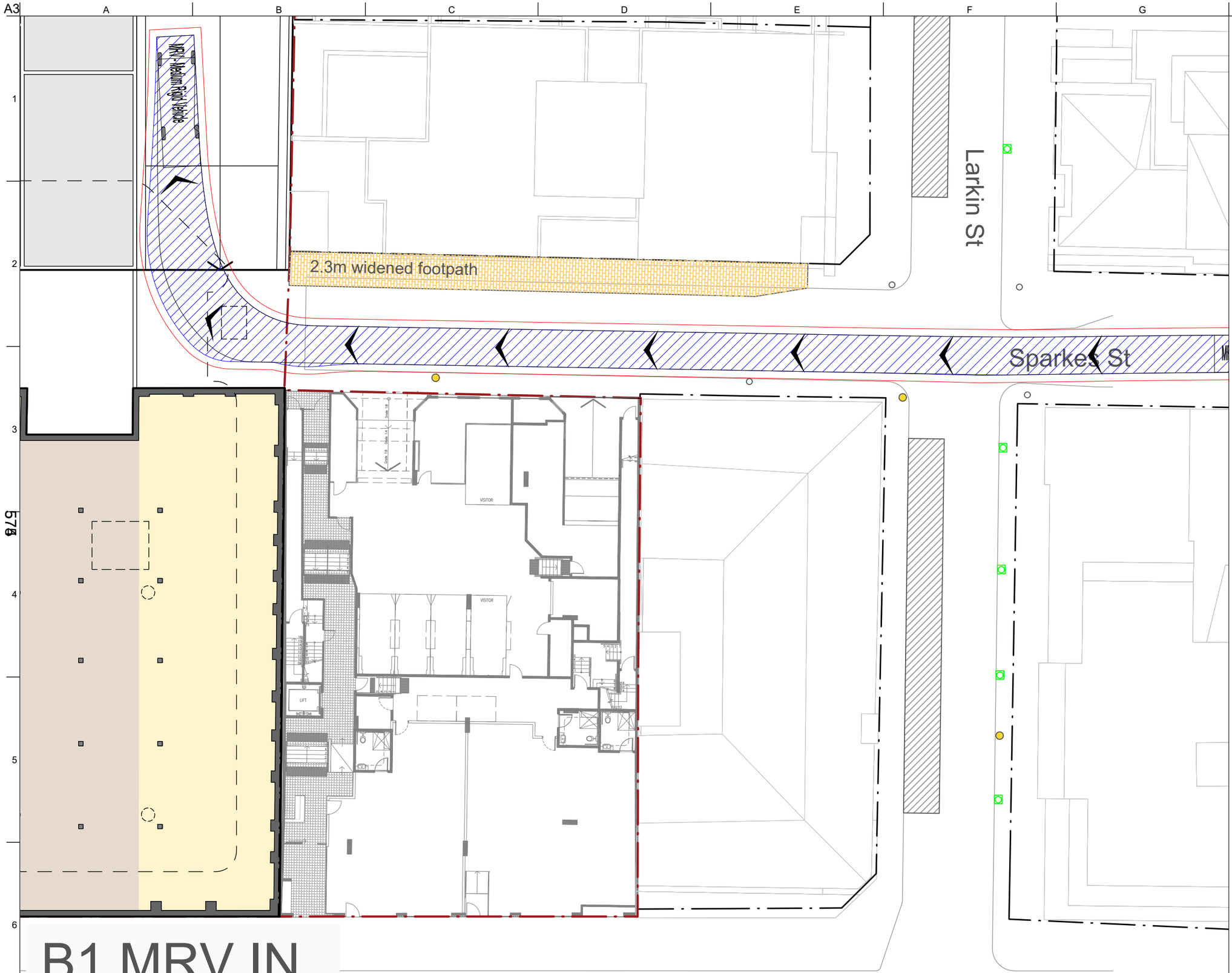
Discipline TRAFFIC

Drawing Status
**DRAFT**

| Job No | Drawing No | Issue |
|---|---|---|
| **304985-00** | **SKT012** | **D** |

© Arup

A3

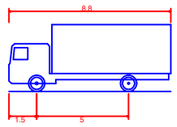



B1 MRV IN

Legend

- Body Envelope
- 500mm Envelope
- Wheel Envelope

Design Vehicle(s)



MRV - Medium Rigid Vehicle

| | |
|---|---|
| Overall Length | 8.800m |
| Overall Width | 2.500m |
| Overall Body Height | 3.633m |
| Min Body Ground Clearance | 0.428m |
| Track Width | 2.500m |
| Lock to Lock Time | 4.00 sec |
| Curb to Curb Turning Radius | 10.000m |

Tree

Power pole

Street sign pole

| Issue | Date | By | Chkd | Appd |
|---|---|---|---|---|
| D | 04/09/26 | JG | SH | SH |
| C | 25/08/26 | JG | SH | SH |
| B | 10/07/26 | JG | SH | SH |
| For information | | | | |

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www.arup.com.au

Client
WENTWORTH CAPITAL

Job Title
84-94 PARRAMATTA ROAD

Drawing Title
DESIGN REVIEW
STREET TO BASEMENT LEVEL
MRV SWEPT PATH ASSESSMENT

Scale at A3
1:400

Discipline
TRAFFIC

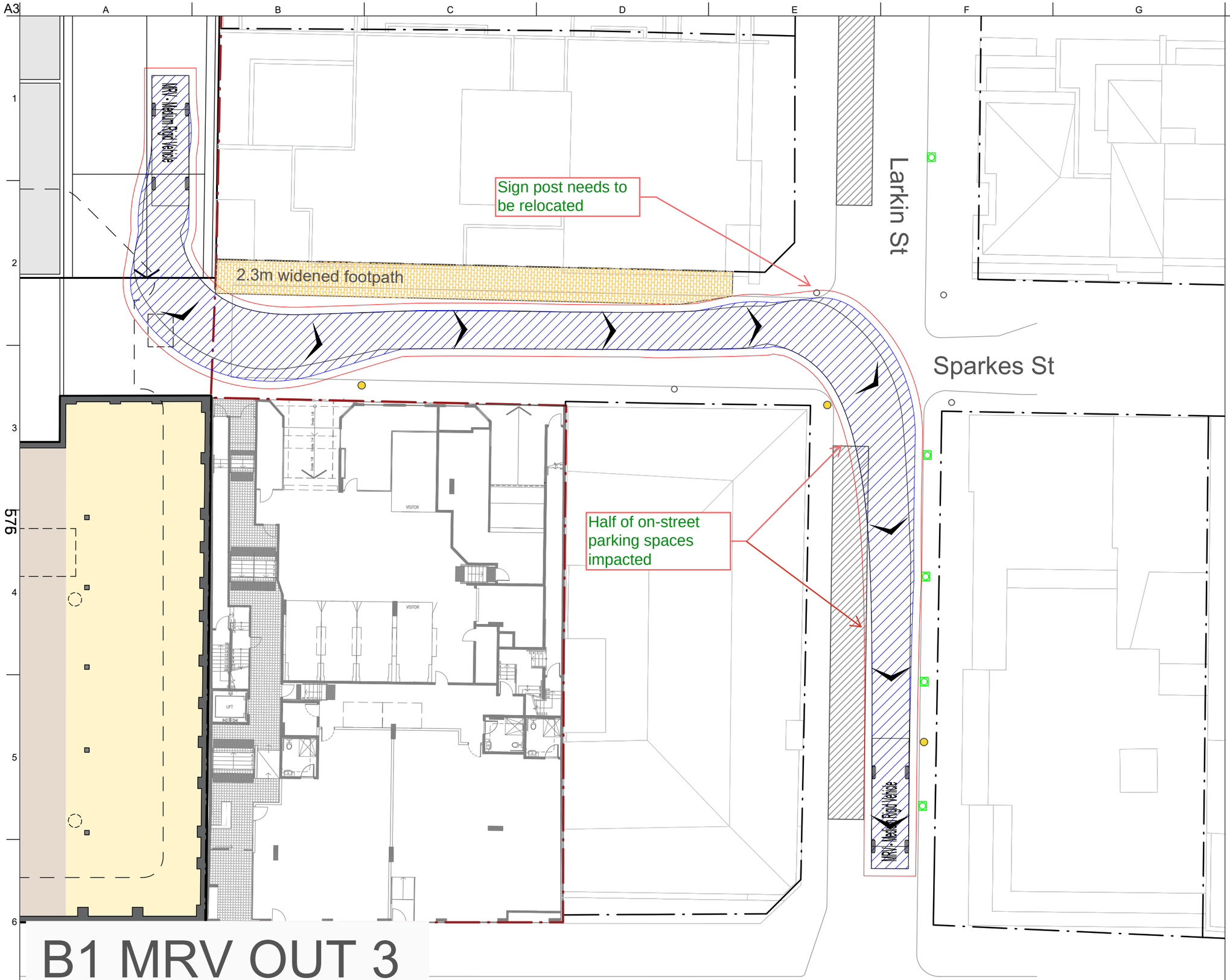
Drawing Status
**DRAFT**

| Job No | Drawing No | Issue |
|---|---|---|
| **304985-00** | **SKT004** | **D** |

Do not scale

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A3



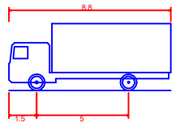

B1 MRV OUT 3

Do not scale

## Legend

- Body Envelope
- 500mm Envelope
- Wheel Envelope

## Design Vehicle(s)




| MRV - Medium Rigid Vehicle | |
|---|---|
| Overall Length | 8.800m |
| Overall Width | 2.500m |
| Overall Body Height | 3.633m |
| Min Body Ground Clearance | 0.428m |
| Track Width | 2.500m |
| Lock to Lock Time | 4.00 sec |
| Curb to Curb Turning Radius | 10.000m |

Tree

Power pole

Street sign pole

| Issue | Date | By | Chkd | Appd |
|---|---|---|---|---|
| D | 04/09/26 | JG | SH | SH |
| C | 25/08/26 | JG | SH | SH |
| B | 10/07/26 | JG | SH | SH |
| For information | | | | |

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www.arup.com.au

Client
WENTWORTH CAPITAL

Job Title
84-94 PARRAMATTA ROAD

Drawing Title
DESIGN REVIEW
STREET TO BASEMENT LEVEL
MRV SWEPT PATH ASSESSMENT

Scale at A3 1:400

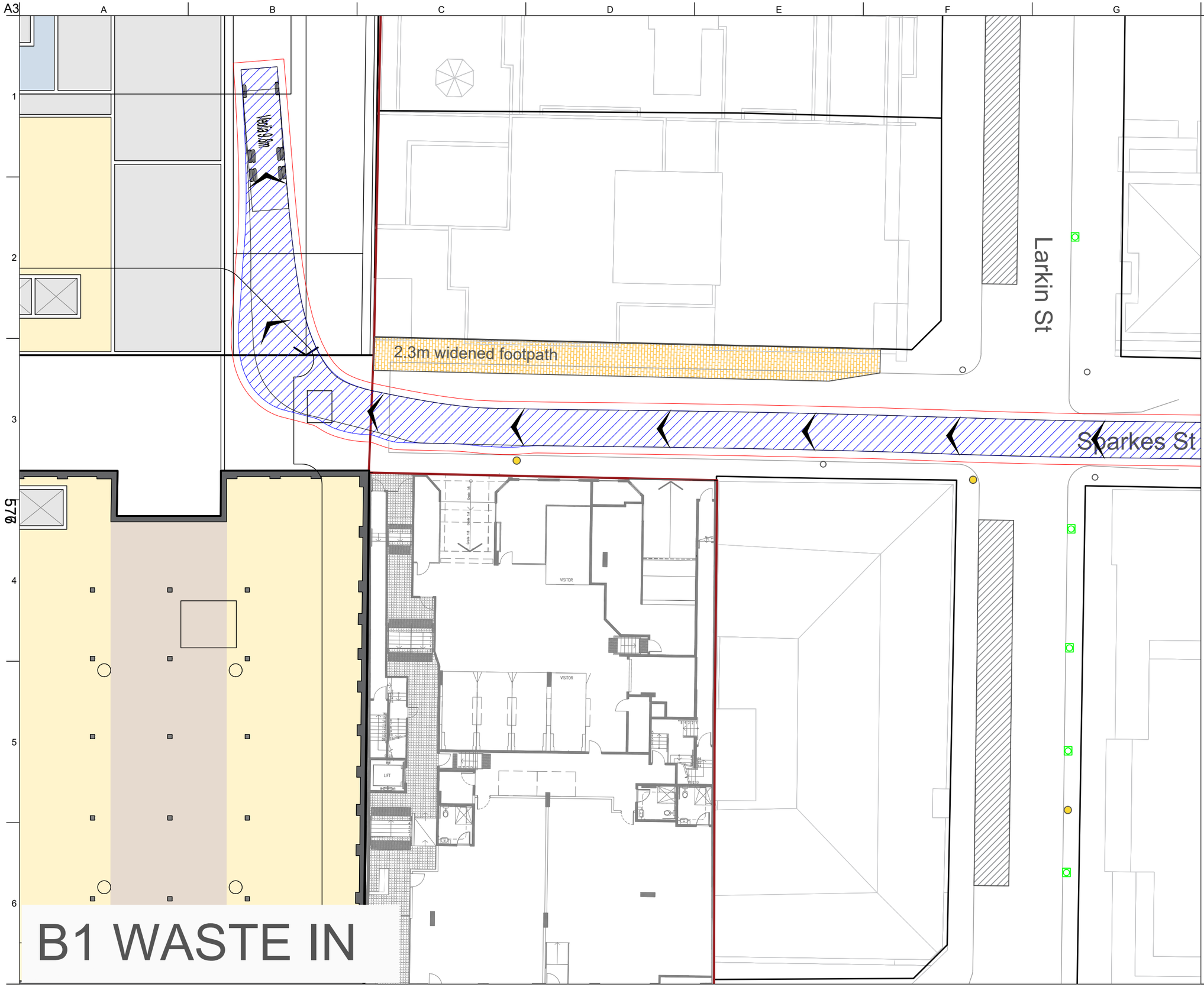
Discipline TRAFFIC

Drawing Status
**DRAFT**

| Job No | Drawing No | Issue |
|---|---|---|
| **304985-00** | **SKT006** | **D** |

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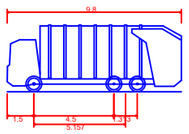
A3




Legend

- Body Envelope
- 500mm Envelope
- Wheel Envelope

Design Vehicle(s)



Veolia 9.8m

| | |
|---|---|
| Overall Length | 9.800m |
| Overall Width | 2.500m |
| Overall Body Height | 3.752m |
| Min Body Ground Clearance | 0.304m |
| Track Width | 2.500m |
| Lock-to-lock time | 6.00s |
| Wall to Wall Turning Radius | 9.000m |

Tree

Power pole

Street sign pole

| Issue | Date | By | Chkd | Appd |
|---|---|---|---|---|
| C | 01/09/26 | JG | SH | SH |
| B | 10/07/26 | JG | SH | SH |
| For information | | | | |


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Client
WENTWORTH CAPITAL

Job Title
84-94 PARRAMATTA ROAD

Drawing Title
DESIGN REVIEW
B1 WASTE COLLECTION
9.8M SWEPT PATH ASSESSMENT

Scale at A3 1:400

Discipline TRAFFIC

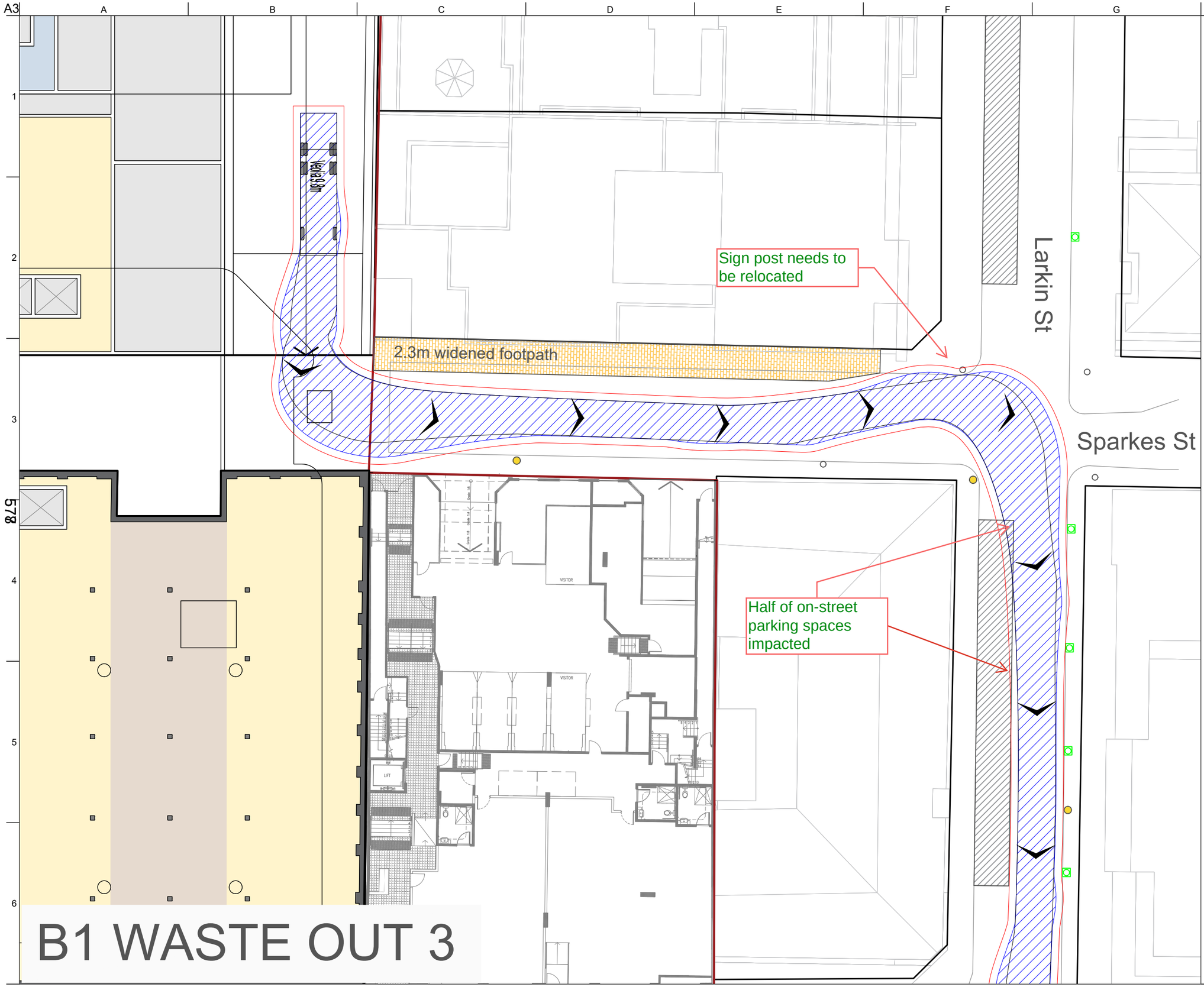
Drawing Status
**DRAFT**

| Job No | Drawing No | Issue |
|---|---|---|
| **304985-00** | **SKT013** | **C** |

Do not scale

© Arup

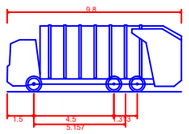
A3




Legend

- Body Envelope
- 500mm Envelope
- Wheel Envelope

Design Vehicle(s)



Veolia 9.8m

| | |
|---|---|
| Overall Length | 9.800m |
| Overall Width | 2.500m |
| Overall Body Height | 3.752m |
| Min Body Ground Clearance | 0.304m |
| Track Width | 2.500m |
| Lock-to-lock time | 6.00s |
| Wall to Wall Turning Radius | 9.000m |

- Tree
- Power pole
- Street sign pole

| Issue | Date | By | Chkd | Appd |
|---|---|---|---|---|
| D | 16/09/26 | JG | SH | SH |
| C | 01/09/26 | JG | SH | SH |
| B | 10/07/26 | JG | SH | SH |
| For information | | | | |


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www.arup.com.au


Client
WENTWORTH CAPITAL

Job Title
84-94 PARRAMATTA ROAD

Drawing Title
DESIGN REVIEW
B1 WASTE COLLECTION
9.8M SWEPT PATH ASSESSMENT

Scale at A3 1:400

Discipline TRAFFIC

Drawing Status
**DRAFT**

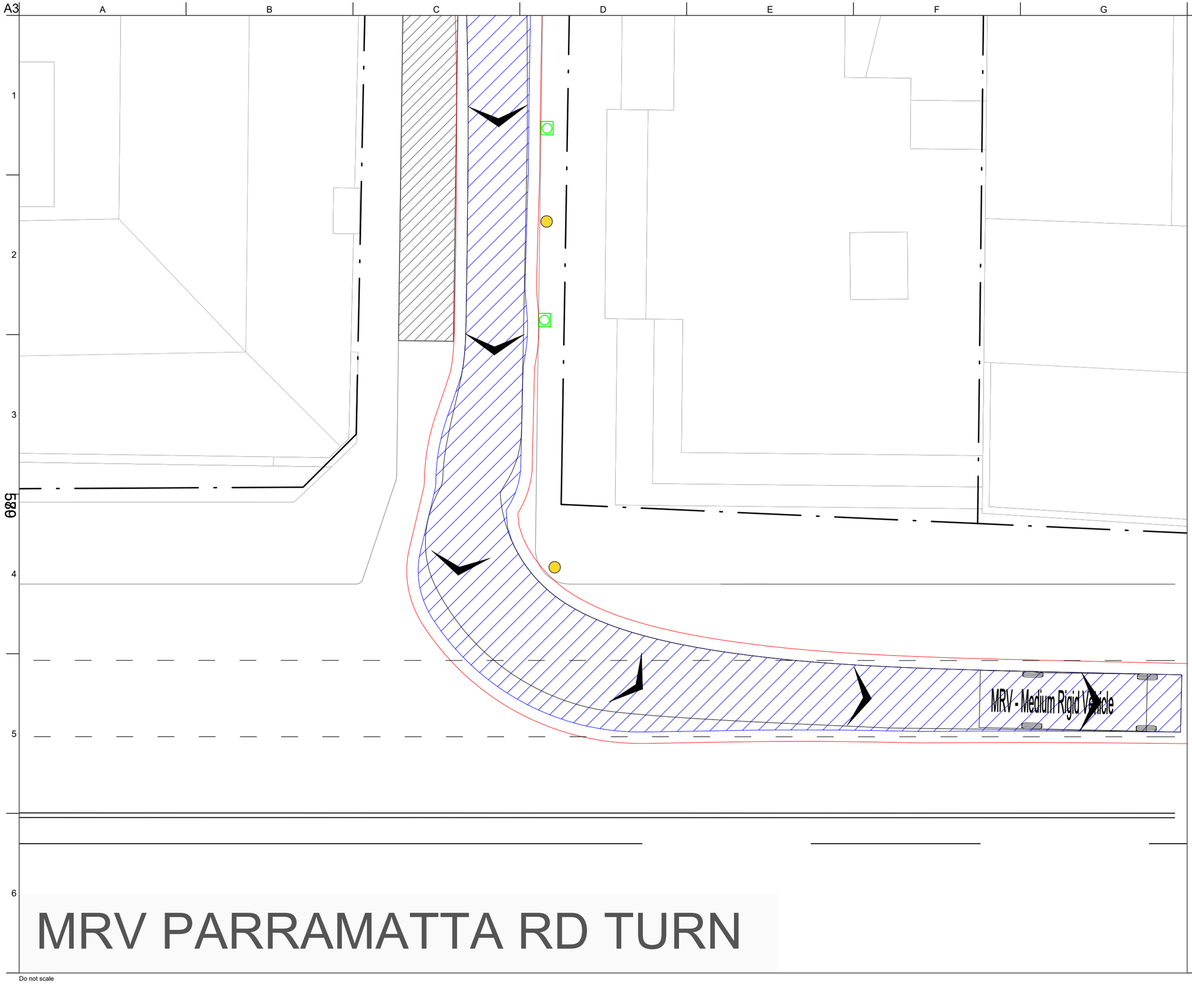
| Job No | Drawing No | Issue |
|---|---|---|
| **304985-00** | **SKT023** | **D** |

Do not scale

© Arup

# C.4 Turn out to Parramatta Road paths

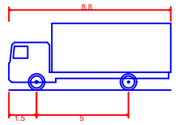
A3




## Legend

- Body Envelope
- 500mm Envelope
- Wheel Envelope

## Design Vehicle(s)




| MRV - Medium Rigid Vehicle | |
|---|---|
| Overall Length | 8.800m |
| Overall Width | 2.500m |
| Overall Body Height | 3.633m |
| Min Body Ground Clearance | 0.428m |
| Track Width | 2.500m |
| Lock to Lock Time | 4.00 sec |
| Curb to Curb Turning Radius | 10.000m |

Tree

Power pole

Street sign pole

| Issue | Date | By | Chkd | Appd |
|---|---|---|---|---|
| D | 16/09/26 | JG | SH | SH |
| C | 31/08/26 | JG | SH | SH |
| B | 10/07/26 | JG | SH | SH |
| For information | | | | |

ARUP

Arup, Level 5, 151 Clarence St
Sydney, NSW, 2000
Tel +61(02)9320 9320 Fax +61(02)9320 9321
www.arup.com.au

Client
WENTWORTH CAPITAL

Job Title
84-94 PARRAMATTA ROAD

Drawing Title
DESIGN REVIEW
LARKIN ST TO PARRAMATTA RD
MRV SWEPT PATH ASSESSMENT

Scale at A3 1:400

Discipline TRAFFIC

Drawing Status
**DRAFT**

| Job No | Drawing No | Issue |
|---|---|---|
| **304985-00** | **SKT024** | **D** |

# MRV PARRAMATTA RD TURN

Do not scale

© Arup

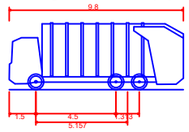
A3




## Legend

- Body Envelope
- 500mm Envelope
- Wheel Envelope

## Design Vehicle(s)




| Veolia 9.8m | |
|---|---|
| Overall Length | 9.800m |
| Overall Width | 2.500m |
| Overall Body Height | 3.752m |
| Min Body Ground Clearance | 0.304m |
| Track Width | 2.500m |
| Lock-to-lock time | 6.00s |
| Wall to Wall Turning Radius | 9.000m |

Tree

Power pole

Street sign pole

| Issue | Date | By | Chkd | Appd |
|---|---|---|---|---|
| D | 16/09/26 | JG | SH | SH |
| C | 31/08/26 | JG | SH | SH |
| B | 10/07/26 | JG | SH | SH |
| For information | | | | |

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Client
WENTWORTH CAPITAL

Job Title
84-94 PARRAMATTA ROAD

Drawing Title
DESIGN REVIEW
LARKIN ST TO PARRAMATTA RD
9.8m SWEPT PATH ASSESSMENT

Scale at A3 1:400

Discipline TRAFFIC

Drawing Status
**DRAFT**

| Job No | Drawing No | Issue |
|---|---|---|
| **304985-00** | **SKT025** | **D** |

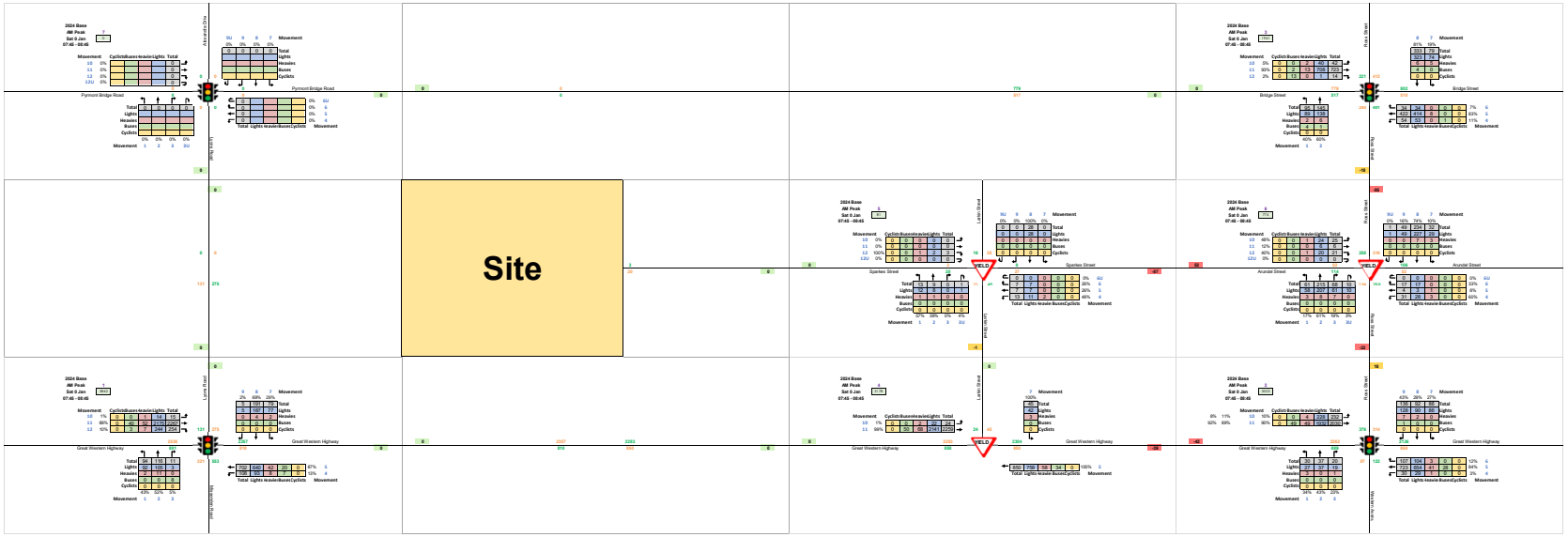
# WASTE PARRAMATTA RD TURN

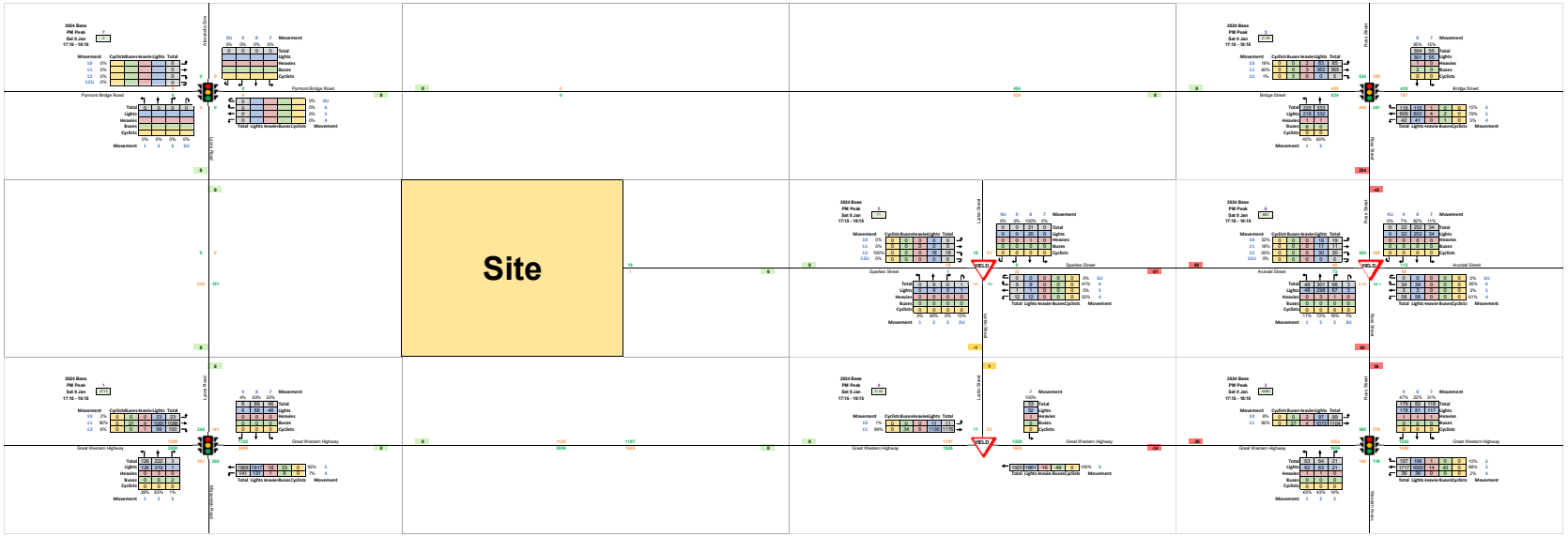
Do not scale

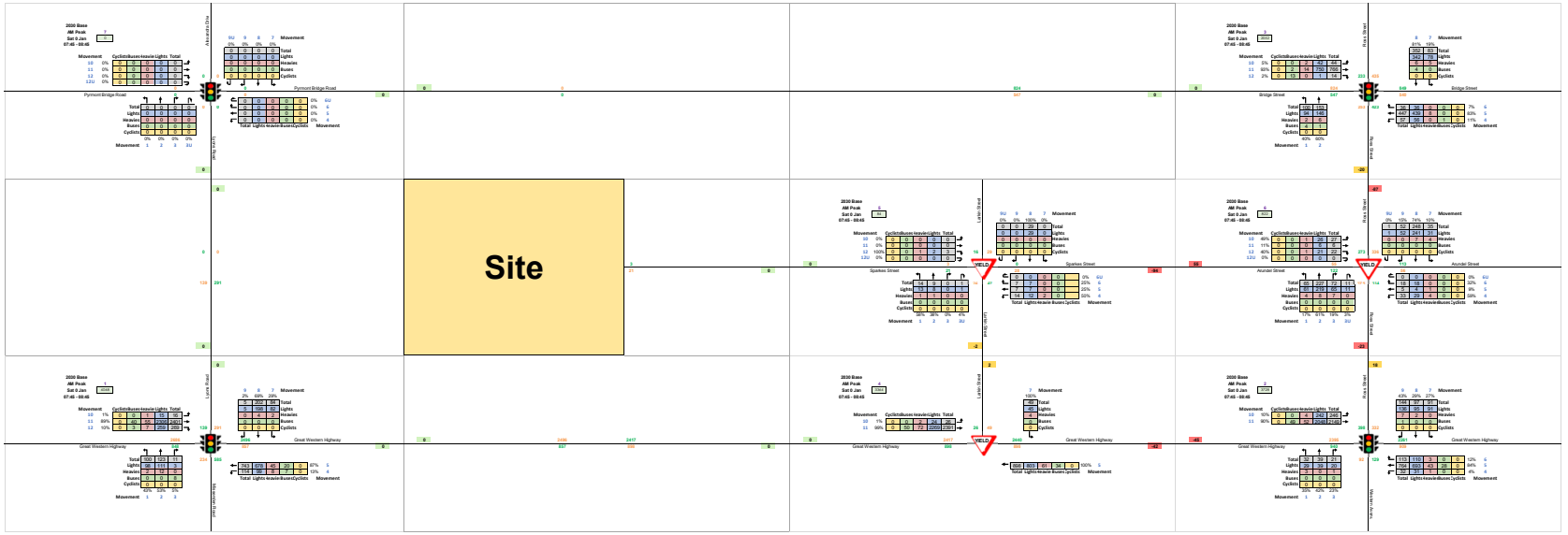
© Arup

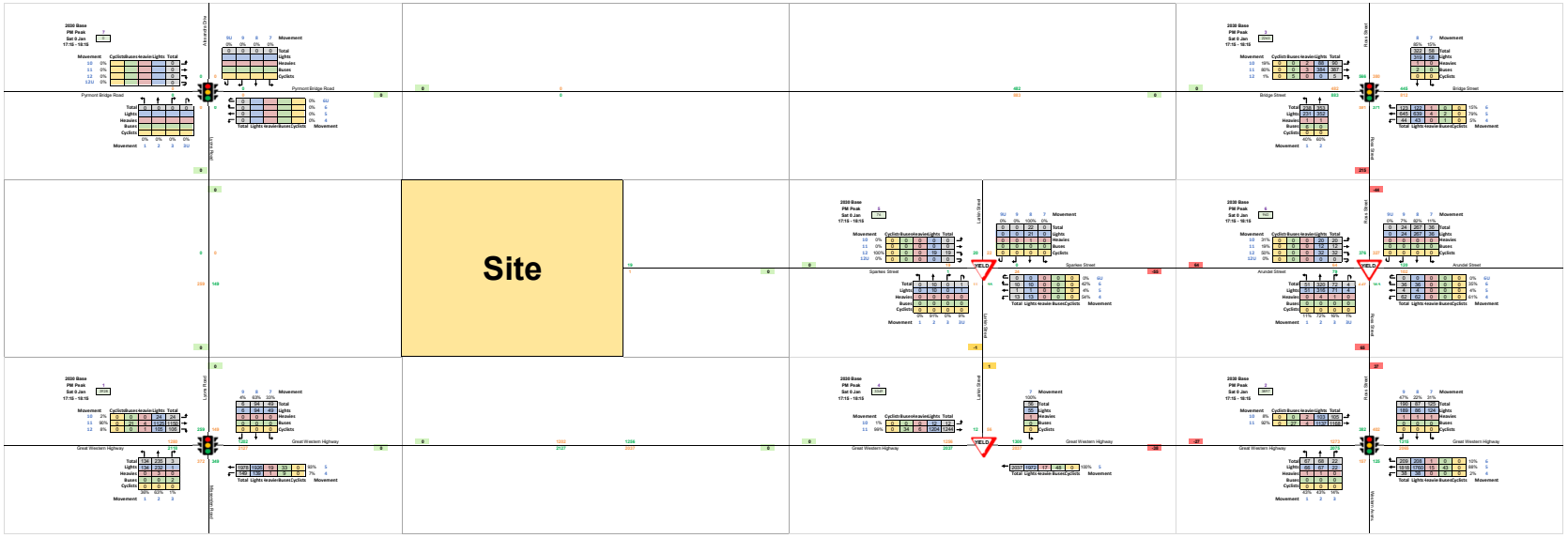
# Appendix D

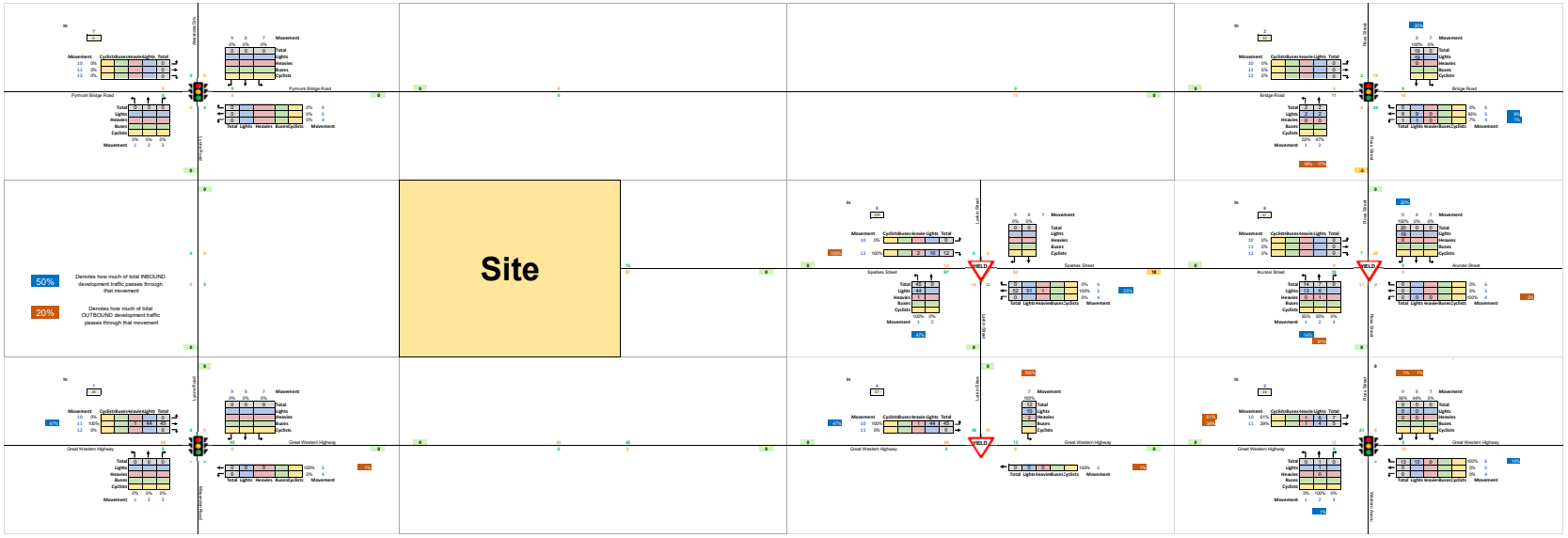
## Stick diagrams


Site

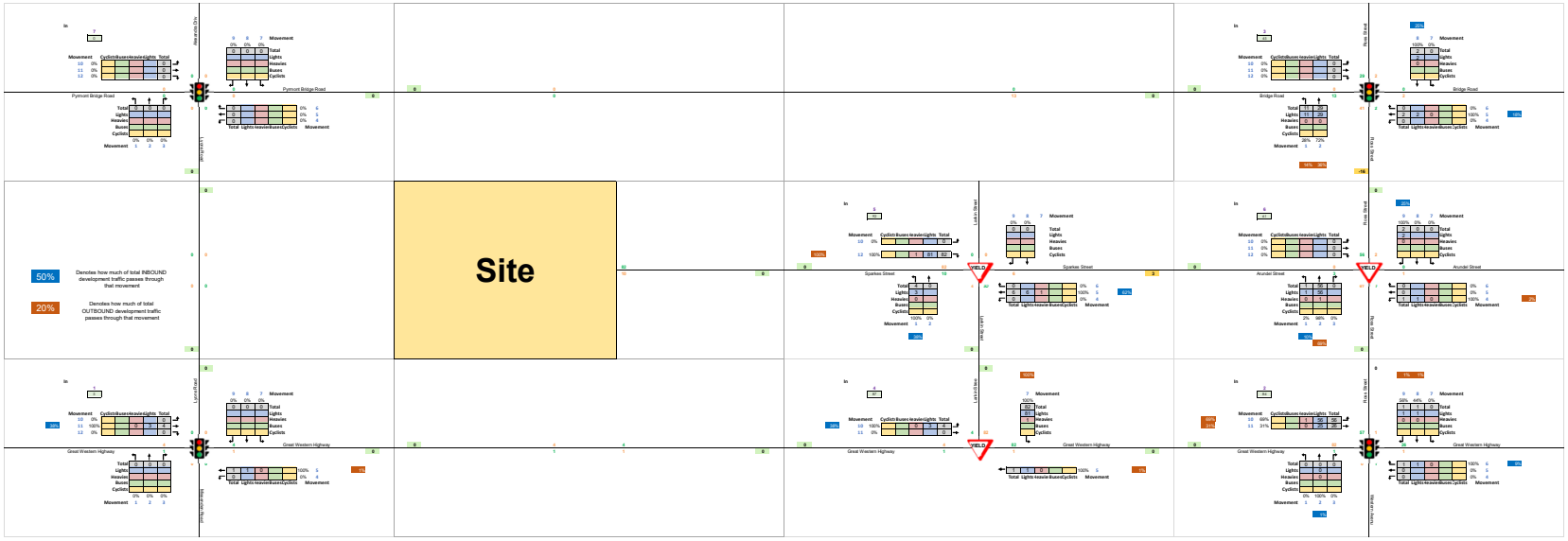

Site


Site

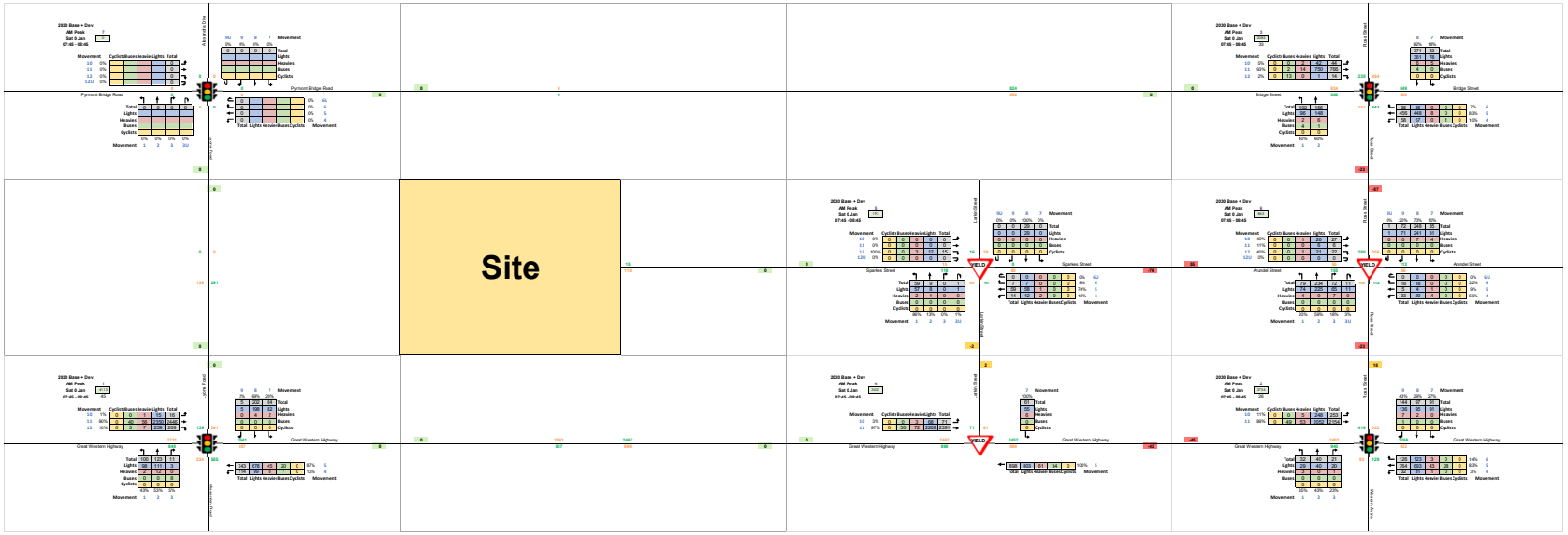

Site

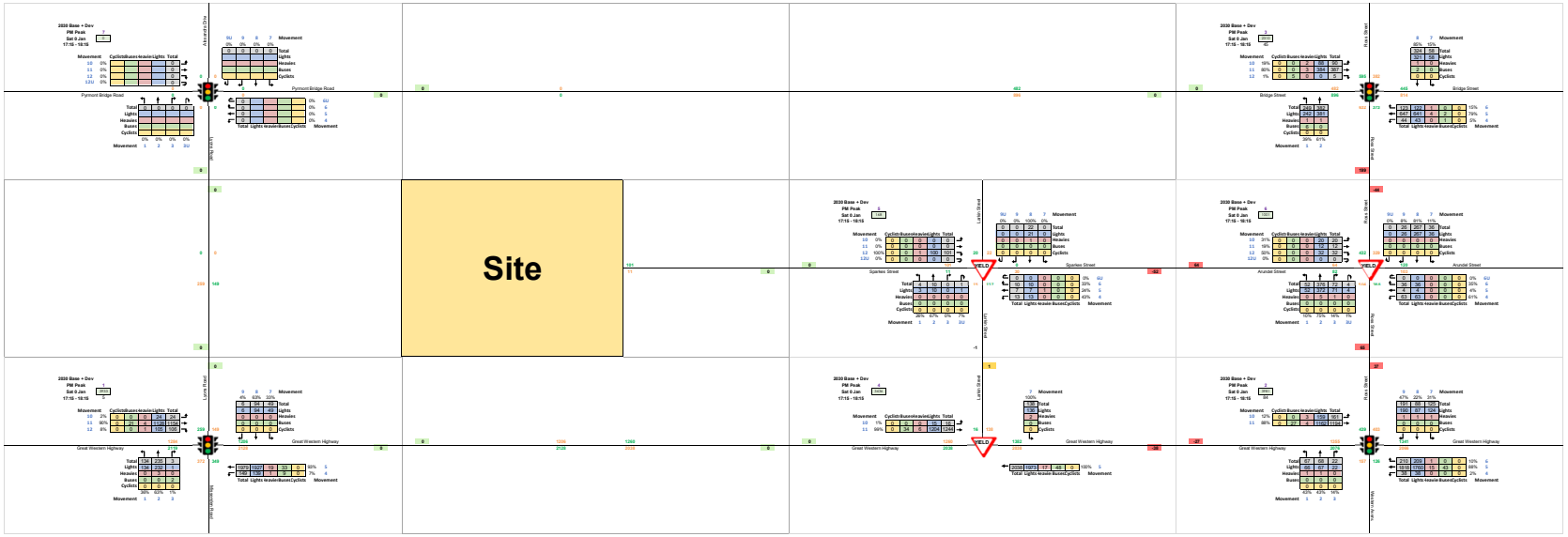

Site
50%
Denotes how much of total INBOUND development traffic passes through that movement
20%
Denotes how much of total OUTBOUND development traffic passes through that movement
Pyrmont Bridge Road
Wattle St In
Lyon Park
Bridge Road
Arundel Street
Sparkes Street
Great Western Highway
Lyon Park Road
Lackie Street
Ross Street
Arthur St
Fig St
Parramatta Rd
Victoria Rd
YIELD

Development only generated traffic to / from development in PM




588


Site
Pyrmont Bridge Road
Sparkes Street
Arundel Street
Bridge Street
Great Western Highway
Allen Street
Levey Street
Wattle Street
Parramatta Road
Ross Street
YIELD


Site