



Image source: Architectus

10 Missenden Road, Camperdown

Transport Impact Assessment

(Including Preliminary Green Travel Plan)

Prepared for: **ISPT**

12 August 2025



PROJECT INFORMATION

Project Name:	10 Missenden Road, Camperdown
Client:	ISPT
Project Number:	2442
Prepared By:	JMT Consulting

DOCUMENT HISTORY

Document Title	Revision	Date issued	Author
10 Missenden Road TIA	Draft	28.05.25	JM
10 Missenden Road TIA	Issue	13.06.25	JM
10 Missenden Road TIA	Rev A – post ToA	12.08.25	JM

This document has been prepared on behalf of ISPT. Use of this document by a third party to inform decisions is the sole responsibility of that third party. J Milston Transport Consulting Pty Ltd assumes no liability with respect to any reliance placed upon this document. Reproduction of this document or any part thereof is not permitted without prior written permission of J Milston Transport Consulting Pty Ltd and ISPT.

Table of Contents

1	Introduction	1
1.1	<i>Background</i>	1
1.2	<i>Site description</i>	1
1.3	<i>Proposal description</i>	3
1.4	<i>Report purpose</i>	4
1.5	<i>Response to agency feedback</i>	6
1.6	<i>Reference documents</i>	9
2	Existing Transport Conditions	10
2.1	<i>Road network</i>	10
2.2	<i>Vehicle site access</i>	11
2.3	<i>Public transport services</i>	12
2.4	<i>Public transport accessibility</i>	15
2.5	<i>Walking network</i>	16
2.6	<i>Cycling</i>	18
2.7	<i>Crash history</i>	19
2.8	<i>Traffic volumes</i>	20
3	Transport Access Strategy	21
3.1	<i>Vehicle access strategy</i>	21
3.2	<i>Driveway design principles</i>	22
3.3	<i>Internal vehicle circulation</i>	23
3.4	<i>Loading area</i>	24
3.5	<i>Car park design</i>	25
3.6	<i>Pedestrian access and movements</i>	25
3.7	<i>Car parking assessment</i>	26
3.8	<i>Public transport impacts</i>	27
3.9	<i>Bicycle parking and end of trip facilities</i>	27
3.10	<i>Emergency vehicles</i>	28
3.11	<i>Road user safety</i>	28
3.12	<i>Construction traffic management</i>	28
4	Traffic Impact Assessment	31
4.1	<i>Base traffic model calibration</i>	31
4.2	<i>Forecast traffic generation</i>	33

4.3	<i>Traffic distribution</i>	34
4.4	<i>Background traffic growth</i>	35
4.5	<i>Traffic modelling</i>	35
5	Preliminary Green Travel Plan	39
5.1	<i>GTP purpose</i>	39
5.2	<i>GTP overview</i>	39
5.3	<i>GTP objectives</i>	39
5.4	<i>Potential initiatives</i>	40
5.5	<i>Mode share targets</i>	41
5.6	<i>Management and monitoring</i>	41
5.7	<i>Communications strategy</i>	42
6	Summary	43
	Appendix A: Traffic Modelling Outputs	44

Figures

Figure 1	Site context.....	2
Figure 2	Site aerial.....	2
Figure 3	Road network serving the concept development area	10
Figure 4	Existing vehicle site access via Missenden Road	11
Figure 5	Existing hourly traffic movements generated by current site	12
Figure 6	Existing bus routes	13
Figure 7	Existing bus bays on Missenden Road.....	15
Figure 8	30 minute public transport catchment from Camperdown	16
Figure 9	Existing pedestrian infrastructure.....	17
Figure 10	Existing pedestrian crossing on Missenden Road.....	17
Figure 11	Existing cycling network.....	18
Figure 12	Crash data	19
Figure 13	Locations of traffic data collection	20
Figure 14	Location of proposed access driveway	21
Figure 15	Render of Missenden Road driveway access	22
Figure 16	Internal vehicle circulation.....	23
Figure 17	Swept path analysis – lower ground level	23
Figure 18	Proposed loading area.....	24
Figure 19	Swept path analysis – car parking level	25
Figure 20	Observed queuing on Missenden Road	31
Figure 21	Queue length surveys – Missenden Road	32
Figure 22	Forecast traffic generation.....	33
Figure 23	Forecast traffic distribution.....	34
Figure 24	Historical traffic flows – Parramatta Road, Camperdown	35
Figure 25	Existing and forecast vehicle queues on Missenden Road	38

Tables

Table 1	SEARs requirements	4
Table 2	Responses to TfNSW feedback on SEARs request	6
Table 3	Responses to City of Sydney feedback on SEARs request	8
Table 4	Bus route frequencies	14
Table 5	Base model calibration – John Hopkins Drive / Missenden Road	32
Table 6	Level of service grades / description.....	36
Table 7	Traffic modelling results	37
Table 8	Mode share targets	41

1 Introduction

1.1 Background

This transport impact assessment report has been prepared by JMT Consulting to accompany a Concept State Significant Development Application (SSDA) for a private hospital and associated ancillary uses located at 10 Missenden Road, Camperdown. This report has been prepared to address the Secretary's Environmental Assessment Requirements (**SEARs**) issued for the project (SSD-79888213).

The Concept proposal will provide a private hospital that is co-located to the RPA and supports the broader Camperdown Health, Education and Research Precinct ecosystem by providing for contributory health and life science land uses.

1.2 Site description

The concept development area is located at 10 Missenden Road, Camperdown, within the Sydney Local Government Area (LGA).

For abundant clarity, when referring to the site this is reference to the legal property allotment for 10 Missenden Road, Camperdown. Separately, when referring to the concept development area this is reference to part of the allotment to which the concept proposal relates.

The concept development area comprises 7,329m². The bulk of the concept development area is currently comprised of at-grade, outdoor carparking (public paid car park) with scattered tree plantings and a driveway/access point from Missenden Road. At the south-west corner, fronting Missenden Road, is a single-storey retail building, known as the Benning Building, which current accommodates three retail tenancies, a post-office, a "7/11" convenience store and an office.

The concept development area has a prevailing topography characterised by a moderate slope from Missenden Road to the east of the concept development area located along John Hopkins Drive.

The concept development area is located within the Camperdown Health, Education and Research Precinct (CHERP), which contains a mixture of healthcare services, medical research and education institutions. Surrounding land uses include the Royal Prince Alfred Hospital (RPAH), University of Sydney and ancillary student accommodation, and mixed-use buildings comprising commercial and residential activity.

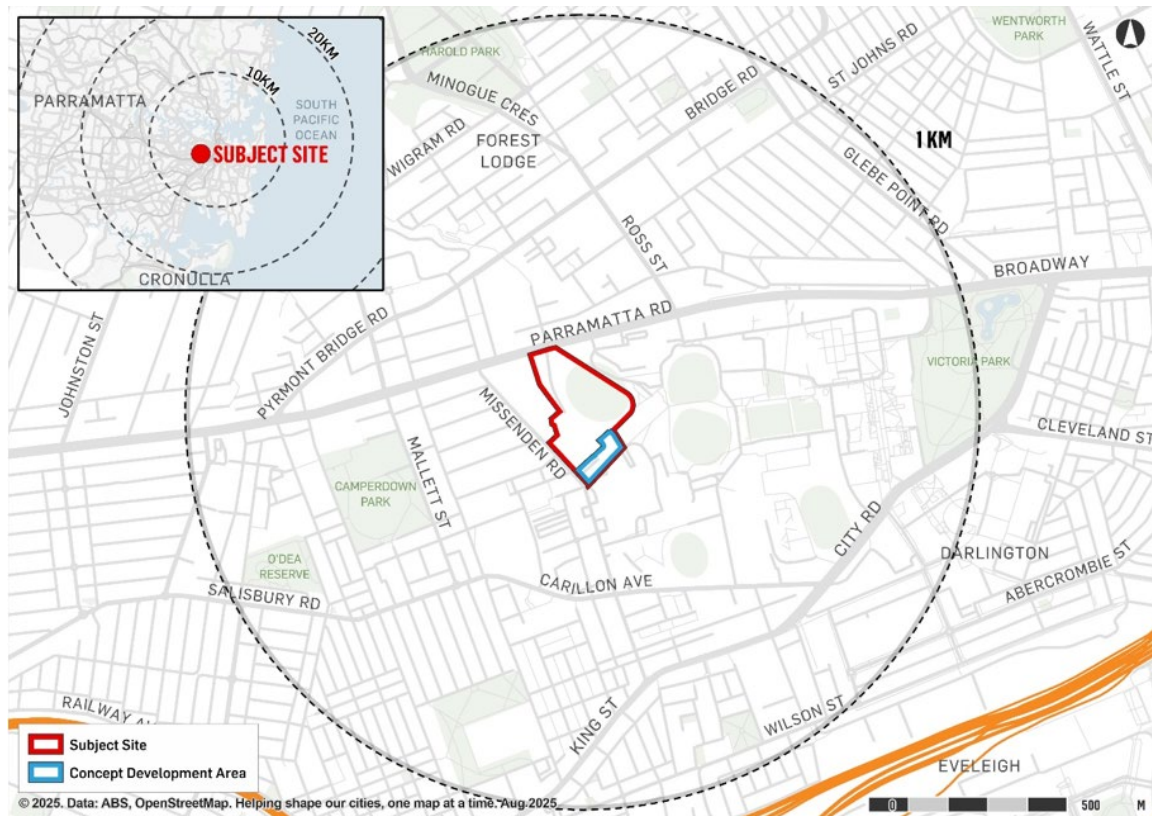


Figure 1 Site context

Source: Urbis



Figure 2 Site aerial

Source: Urbis

1.3 Proposal description

The Concept SSDA seeks development consent for a Concept Proposal for:

- Development of a private hospital, including the provision of ancillary health and research uses, ancillary retail and commercial office space and car parking;
- A building envelope comprising a stepped building form, with dual setbacks and cantilevered elements which responds to the surrounding heritage and context;
- A building envelope which includes:
 - Three (3) basement levels to a maximum depth of RL 13;
 - Five (5) storey terraced podium with a maximum height of RL 56.4;
 - A 10-storey tower, plus roof plant level, with a maximum height of RL 85.5;

The concept proposal *anticipates* the private hospital development will provide:

- Vehicular access from Missenden Road;
- 33,253m² gross floor area;
- A maximum of 264 basement car parking spaces and three (3) ground floor, hospital drop-off parking spaces;
- Associated tree removal and tree transplanting, site landscaping, public art and public domain upgrades within and adjacent to the concept development area.
- Accommodation of approximately 90 ward beds, 26 ICU/CCU beds and 8 Theatre rooms. Additionally, spaces for ancillary uses, such as:
 - Radiology
 - Pathology
 - Clinical suites
 - Research / technology
 - Education
 - Retail food and beverage
 - Pharmacy

This Concept SSDA is being sought pursuant to Division 4.4 of the EP&A Act. No physical works are proposed as part of this Concept SSDA. The Concept SSDA seeks development consent for the proposed concept envelope and private hospital land use only, further detailed design in the submission of staged DAs will determine the exact use and operation of these spaces.

All physical works will be the subject of detailed proposals as part of a future required detailed DA. An indicative reference scheme has been prepared by Architectus which provides a proof of concept that the proposed built form outcome is able to sensitively respond and integrate within the existing heritage fabric of the surrounding sites while accommodating the intended land use operations.

For a more detailed project description refer to the Environmental Impact Statement prepared by Urbis accompanying this application.

1.4 Report purpose

This report has been prepared in response to the requirements contained within the Secretary's Environmental Assessment Requirements (SEARs) dated 5 March 2025 and issued for the SSDA (SSD-79888213). Specifically, this report has been prepared to respond to the SEARs requirement relating to transport as summarised in Table 1.

Table 1 SEARs requirements

Item	Description of Requirement	Relevant Section of Report
10. Traffic, Transport and Accessibility	Provide a transport and accessibility impact assessment that includes the following:	This report
	an analysis of the existing transport network, including the road hierarchy and any pedestrian, bicycle or public transport infrastructure, current daily and peak hour vehicle movements, and existing performance levels of nearby intersections.	Section 2
	outlines the proposed concept development, including pedestrian and vehicular access arrangements (including swept path analysis of the largest vehicle and height clearances), parking arrangements and rates (including bicycle and end-of-trip facilities), drop-off/pick-up-zone(s) and bus bays (if applicable), and provisions for servicing and loading/unloading.	Section 3

Item	Description of Requirement	Relevant Section of Report
	analysis of the impacts of the proposed development during construction and operation (including justification for the methodology used), including predicted modal split, a forecast of additional daily and peak hour multimodal network flows as a result of the development (using industry standard modelling), identification of potential traffic impacts on road capacity, intersection performance and road safety (including pedestrian and cyclist conflict) and any cumulative impact from surrounding approved developments.	Section 4
	measures to mitigate any traffic impacts, including details of any new or upgraded infrastructure to achieve acceptable performance and safety, and the timing, viability and mechanisms of delivery (including proposed arrangements with local councils or government agencies) of any infrastructure improvements in accordance with relevant standards.	Sections 3.6, 3.9, 3.11, 5.4
	measures to promote sustainable travel choices for employees, residents, students and visitors, such as connections into existing walking and cycling networks, minimising car parking provision, encouraging car share and public transport, providing adequate bicycle parking and high quality end-of-trip facilities, and implementing a Green Travel Plan.	Section 5

The report has also been prepared with consideration of the relevant items contained within the TfNSW Guide to Transport Impact Assessment (GTIA) – Appendix E scoping checklist. It should be noted however that the GTIA provides for a generic set of guidelines across all types of development, with many of the items in the scoping checklist not relevant to a sub-division proposal. Section 1.1.3 of the GTIA specifically notes the following “*recommendations in this Guide may not be appropriate in all development situations. Discretion and professional judgement should always be exercised and clearly documented with justification*”.

1.5 Response to agency feedback

Responses to the items raised in the Transport for NSW (TfNSW) and City of Sydney Council submission as part of the SEARs request are noted in Table 3 and Table 3 respectively.

Table 2 Responses to TfNSW feedback on SEARs request

TfNSW SEARs advice comment	Response
A TIA is to be submitted in support of the future Development Application (DA). For TIAs commenced and applications lodged on or after 4 November 2024, the TIA needs to be prepared in accordance with the Guide to Transport Impact Assessment (GTIA). The Guide replaces the Guide to Traffic Generating Developments and can be found with this link. The TIA will enable TfNSW to understand the impacts the DA may have on the state classified road network that it manages. In addition to the above the TIA shall address the development impacts on the local road network that is managed by the Council. As such, consultation should be had with the local Council. Consideration shall be given to the following	This Transport Impact Assessment has been prepared in accordance with the Guide to Transport Impact Assessment (GTIA) to address the requirements set out by TfNSW and inform the assessment of impacts on the state road network.
The impact of trips generated by the development on nearby intersections (i.e. with classified roads) and at the development site access point, with consideration of the cumulative impacts from other approved developments in the vicinity, and the need/associated funding for, and details of, upgrades or road improvement works. Traffic modelling is to be undertaken using SIDRA network modelling. The modelling provided shall be based on current traffic counts, ensure the base model is calibrated with on-site observations (e.g. queue lengths, delays), provide existing traffic volumes with and without the proposed development and detail what defaults have been changed with supporting justification. Electronic copies of the SIDRA files will need to be provided to TfNSW for review	Traffic modelling has been carried out and is documented in Section 4 of this report.
The traffic modelling and analysis to be undertaken should not just consider the standard commuter peak periods and should also look for the worst periods of queueing on Missenden Road throughout a typical week. The investigation of the busiest period of the week for traffic queues along Missenden Road should be documented for TfNSW review.	A detailed queueing assessment along Missenden Road has been undertaken to consider the busiest time of day. This is documented in Section 4.1 of this report.

TfNSW SEARs advice comment	Response
An assessment of road and pedestrian safety adjacent to the proposed development and the details of required road safety measures	Refer to Section 3.11 for an assessment of road user safety
Emergency vehicle access, service vehicle access, delivery, and loading arrangements.	See sections 3.4 and 3.10 for further details
Review of the crash history and crash types with associated mitigation measures being provided should the existing crashes be related to vehicles entering and/or leaving the concept development area.	See section 2.7 for further details
SCATS DATA: SCATS data for traffic modelling proposes can be requested via SCATS.Traffic.Signal.Data@transport.nsw.gov.au	Traffic data has been collected at a number of locations in the surrounding area as noted in Section 2.8 of this document.
Construction Traffic and Pedestrian Management Plan (CTPMP): The preparation of a preliminary CTPMP to demonstrate the proposed management of the impact in relation to construction traffic addressing the following: • Assessment of cumulative impacts associated with other construction activities (if any). • An assessment of road safety at key intersections and locations subject to heavy vehicle construction traffic movements and high pedestrian activity. • Details of the construction program detailing the anticipated construction duration and highlighting significant and milestone stages and events during the construction process. • Details of anticipated peak hour and daily construction vehicle movements to and from the concept development area. • Details of on-site car parking and access arrangements of construction vehicles, construction workers to and from the concept development area, emergency vehicles and service vehicles. • Details of temporary cycling and pedestrian access during construction. • Details on impacts to existing bus stops and associated infrastructure	This SSDA is a Concept proposal only and does not seek consent for any physical works including demolition or construction. In this context the project SEARs did not require the development of a preliminary construction traffic management plan (CTMP). A preliminary CTMP is to be prepared as part of a future detailed SSDA. A final CTMP is to be prepared prior to the commencement of works on site. Refer to Section 3.12 of this document for further details.

TfNSW SEARs advice comment	Response
Green Travel Plan (GTP): A GTP should be prepared. The GTP should include, but not be limited to: • Identifying a package of measures that will be implemented to reduce the reliance on private car usage for staff and visitors as well as encourage and support more sustainable ways to travel to work (e.g. help reduce the use of single vehicle trips); • Look at existing transport infrastructure, identify opportunities and targets as well as strategies; • An audit of the adjacent bus stops for shelter, seating, lighting and accessibility. It should also include an audit of local road crossings, particularly those required to reach bus stops; • Identify any necessary improvements to surrounding pedestrian infrastructure to support active transport to the concept development area, including crossings; • Provide a screen and/or screens inside the buildings with real time public transport information, so people can avoid waiting too long at the bus stop, particularly in the heat, cold, rain or at night; • Provide timelines and identify responsible people for the full development and delivery of GTP; • Consider implementing a parking management strategy that prioritises parking for patients and visitors and limits parking for staff that are working during the day, when alternatives are available; and • Provide details on reviews of the GTP and the process to be used (i.e. reviewed annually for at least the first five years and involve surveys, evaluation and review).	Refer to Section 5 for a preliminary Green Travel Plan. A more detailed GTP will be prepared prior to occupancy which reflects the needs of the users of the building and outlines contemporary transport conditions. The requirement for the preparation of a detailed GTP prior to occupation is commonplace in major developments such as the Concept Development Area and can be reinforced through an appropriately worded condition of consent.

Table 3 Responses to City of Sydney feedback on SEARs request

City of Sydney SEARs advice comment	Response
It is recommended that a Construction Traffic Management Plan (CTMP) is added to the Traffic, Transport and Accessibility requirements. An indicative CTMP is to demonstrate adequate consideration for construction vehicle access and development staging impacts.	This SSDA is a Concept proposal only and does not seek consent for any physical works including demolition or construction. In this context the project SEARs did not require the development of a preliminary construction traffic management plan (CTMP). A preliminary CTMP is to be prepared as part of a future detailed SSDA. A final CTMP is to be prepared prior to the commencement of works on site. Refer to Section 3.12 of this document for further details.

1.6 Reference documents

In preparing this report, reference has been made to the following:

- Transport for NSW Guide to Transport Impact Assessment (GTIA) 2024
- Sydney Development Control Plan (DCP) 2012
- State Local Environment Plan (LEP) 2013
- Australian Standard/ New Zealand Standard, Parking Facilities, Part 1: Off-Street Car Parking AS/NZS 2890.1:2004
- Australian Standard, Parking Facilities, Part 2: Off-Street Commercial Vehicle Facilities AS 2890.2:2018
- Australian Standard / New Zealand Standard, Parking Facilities, Part 6: Off-Street Parking for People with Disabilities AS/NZS 2890.6:2009
- Traffic and car parking surveys undertaken by Trans Traffic Survey as referenced in the context of this report
- Plans for the proposed development prepared by Architectus as referenced in the report
- Other documents and data as referenced in this report.

2 Existing Transport Conditions

2.1 Road network

To manage the extensive network of roads for which councils are responsible under the Roads Act 1993, Transport for NSW (TfNSW) in partnership with local government established an administrative framework of *State*, *Regional*, and *Local Road* categories. State Roads are managed and financed by TfNSW and Regional and Local Roads are managed and financed by councils. Regional Roads perform an intermediate function between the main arterial network of State Roads and council controlled Local Roads. Key State and Regional roads which provide access to the concept development area are illustrated in Figure 3 below.

Parramatta Road is a classified State road which serves as a major east-west arterial link in close proximity to the concept development area, providing connectivity between the Sydney CBD, Camperdown and Parramatta.

Missenden Road is the primary north-south link through the area and acts as a local road. It carries a single lane of traffic in each direction and provides for on-street car parking generally on both sides of the street.

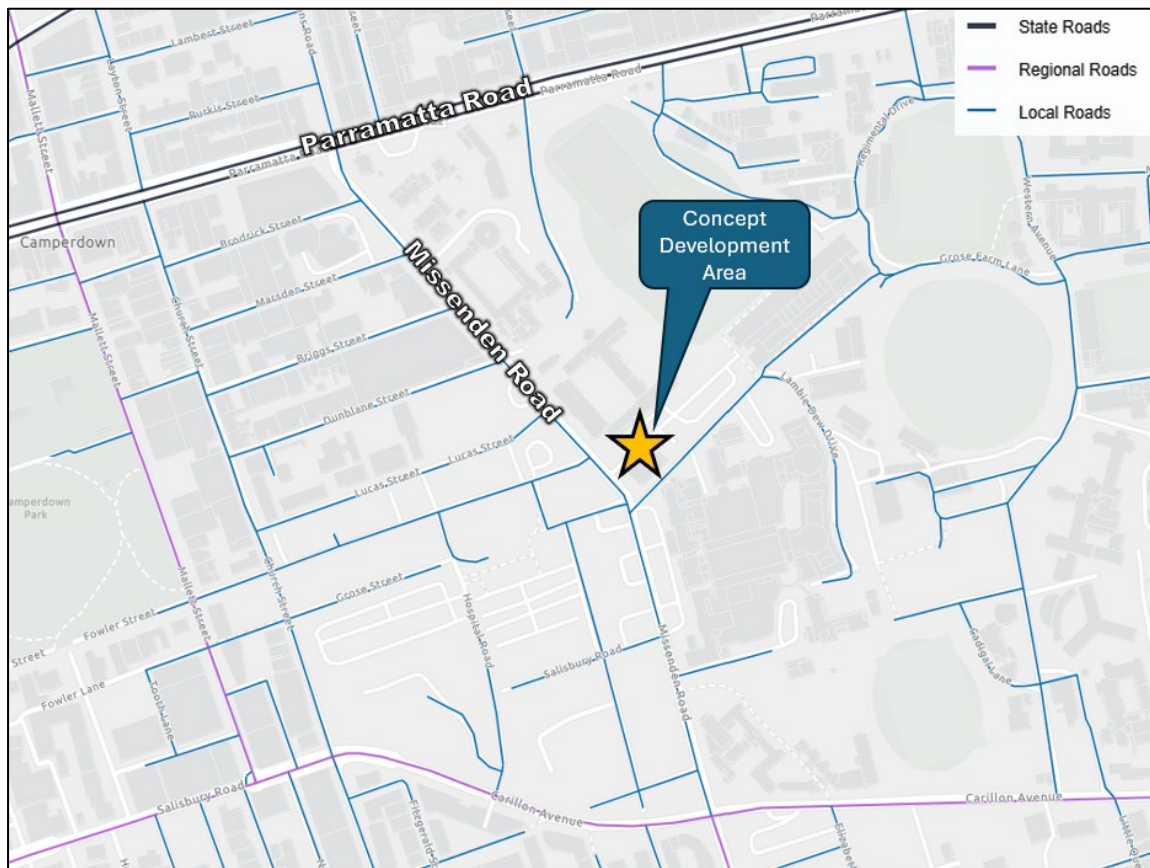


Figure 3 Road network serving the concept development area

2.2 Vehicle access

The existing development on the concept development area comprises an at grade car park accessed via a driveway located on Missenden Road (see Figure 4). The car park contains approximately 120 car parking spaces and generates traffic throughout the day



Figure 4 Existing vehicle access via Missenden Road

Traffic counts undertaken in March 2025 at the driveway entrance indicates the existing concept development area generates over 50 vehicle movements per hour at peak times as indicated in Figure 5.

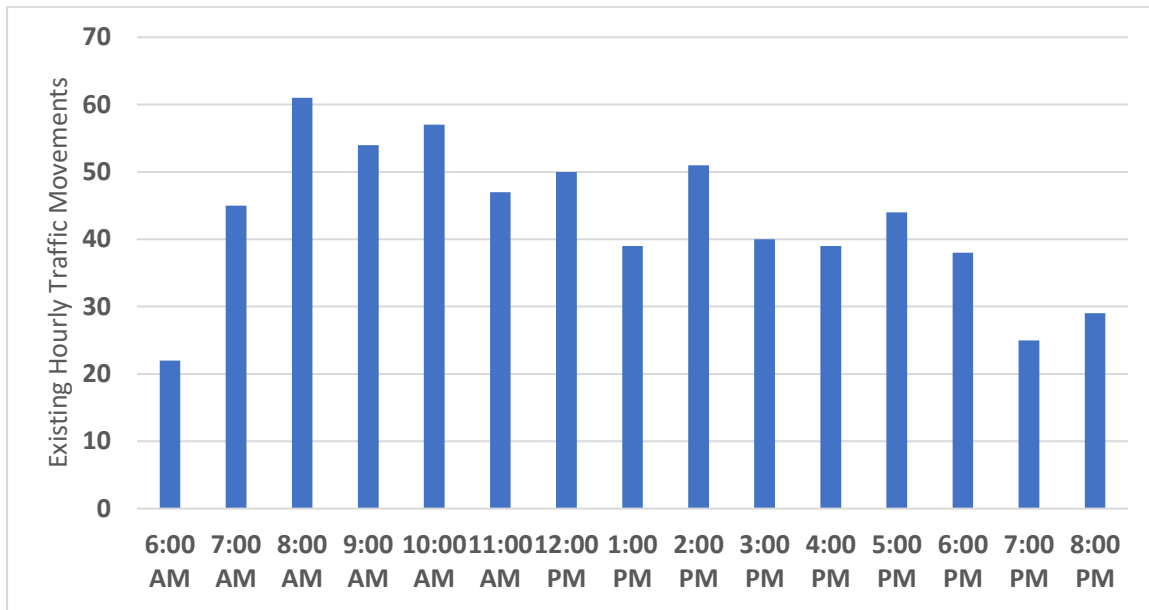


Figure 5 Existing hourly traffic movements

2.3 Public transport services

The concept development area is currently serviced by a number of bus routes providing connections to major centres including the Sydney CBD, Burwood and Strathfield. Bus routes are accessible from Missenden Road, Parramatta Road and Booth Street as shown in Figure 6 and are as follows:

- Route 412 (Campsie to City)
- Route 413 (Campsie to City via Ashbury)
- Route 422 (Kogarah to Central)
- Route 440 (Bondi Junction to Rozelle)
- Route 470 (Lilyfield to City)
- Route 483 (Strathfield and Burwood to City)

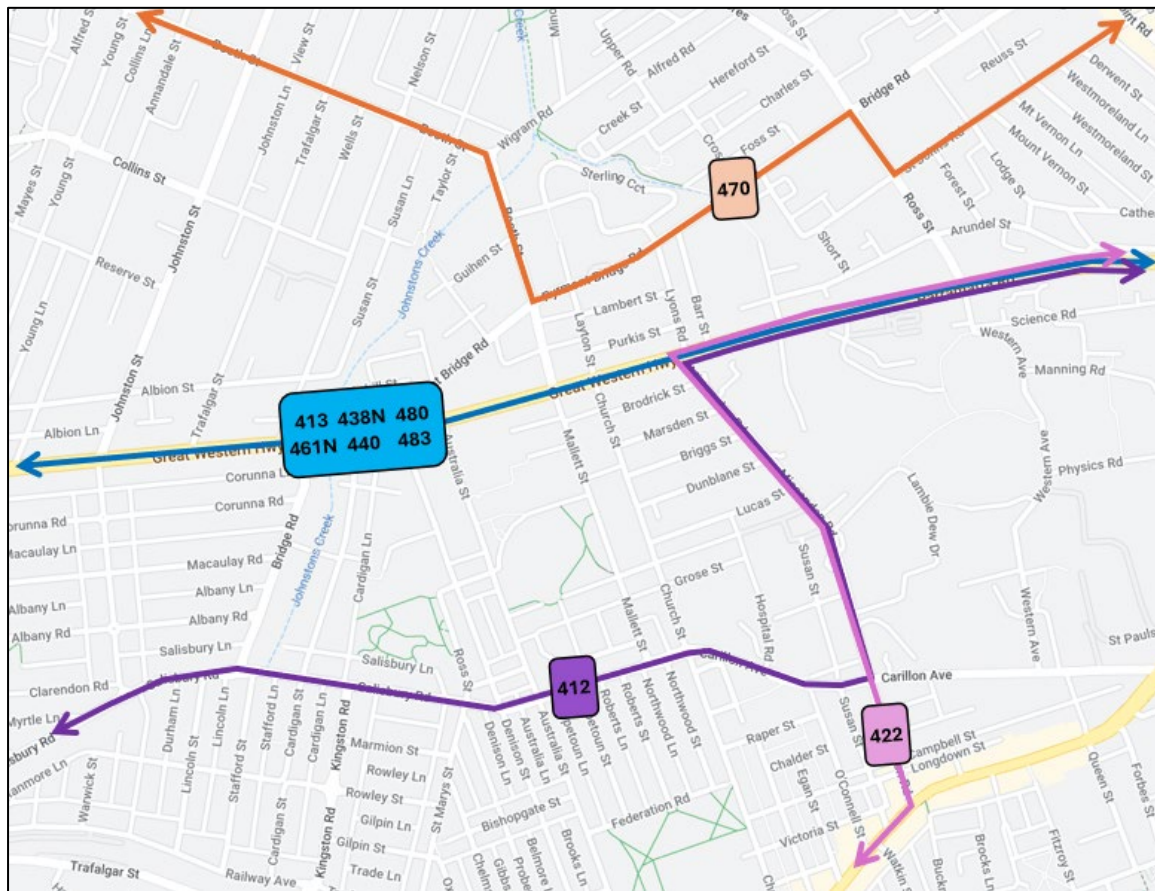


Figure 6 Existing bus routes

The operating frequencies of the various bus routes servicing the precinct are summarised in Table 4 below. While buses operate at good frequencies during peak periods of the day, outside of these peaks buses only typically operate every 15-30 minutes. These infrequent off-peak services limit public transport access to the precinct, particularly for uses that generate demand outside of commuter peak hours such as RPA and University of Sydney.

Table 4 Bus route frequencies

Route	Description	Frequency		Approximate weekday operating period
		Peak periods	Off-peak	
412	Campsie to City (Martin Place) via Earlwood and Dulwich Hill	10-15 minutes	20-30 minutes	5:15AM – 11:45PM
413	Campsie to Central (Pitt Street)	10-15 minutes	20-30 minutes	5:30AM – 11:30PM
422	Kogarah to Central (Pitt Street)	10-20 minutes	20-30 minutes	5:30AM – 11:45PM
438X	Abbottsford to City (Martin Place) [Express Service]	2-5 minutes	10-15 minutes	5:45AM – 9:30PM
438N	Abbottsford to City (Martin Place) [Night Service]	15 minutes	30-60 minutes	10:00PM – 5:30AM
440	Bondi Junction to Rozelle	3-8 minutes	10-15 minutes	4:30AM – 1:00AM
461X	Burwood to City (Domain) [Express Service]	6-10 minutes	15-20 minutes	6:00AM – 10:00PM
461N	Burwood to City (Hyde Park) [Night Service]	30 minutes	3 hours	10:30PM – 5:30AM
470	Lilyfield to Martin Place	10 – 15 minutes	20-30 minutes	5:00AM – 1:00AM
480	Strathfield to Central (Pitt Street) via Homebush Road	15-25 minutes	30-60 minutes	5:15AM – 7:00PM
483	Strathfield to Central (Pitt Street) via South Strathfield	20 minutes	30-60 minutes	5:45AM – 1:00AM

Dedicated bus bays are provided along Missenden Road adjacent to the concept development area with an example shown in Figure 7.



Figure 7 Existing bus bays on Missenden Road

2.4 Public transport accessibility

A key indicator of the level of public transport accessibility a site contains is the number of locations accessible within a 30 minute public transport catchment. A key objective of the Greater Sydney Commission's Greater Sydney Region Plan is to deliver a 30-minute city where jobs, services and quality public transport spaces are in easy reach of residences.

As illustrated in Figure 8 a number of key employment centres across Sydney can be reached within 30 minutes public transport travel time of the concept development area, including Green Square, Mascot, Central / Redfern, Sydney CBD and the North Sydney CBD. The highly accessible nature of the concept development area reduces the need for staff to own cars and rely on public transport as a means of accessing their place of work.

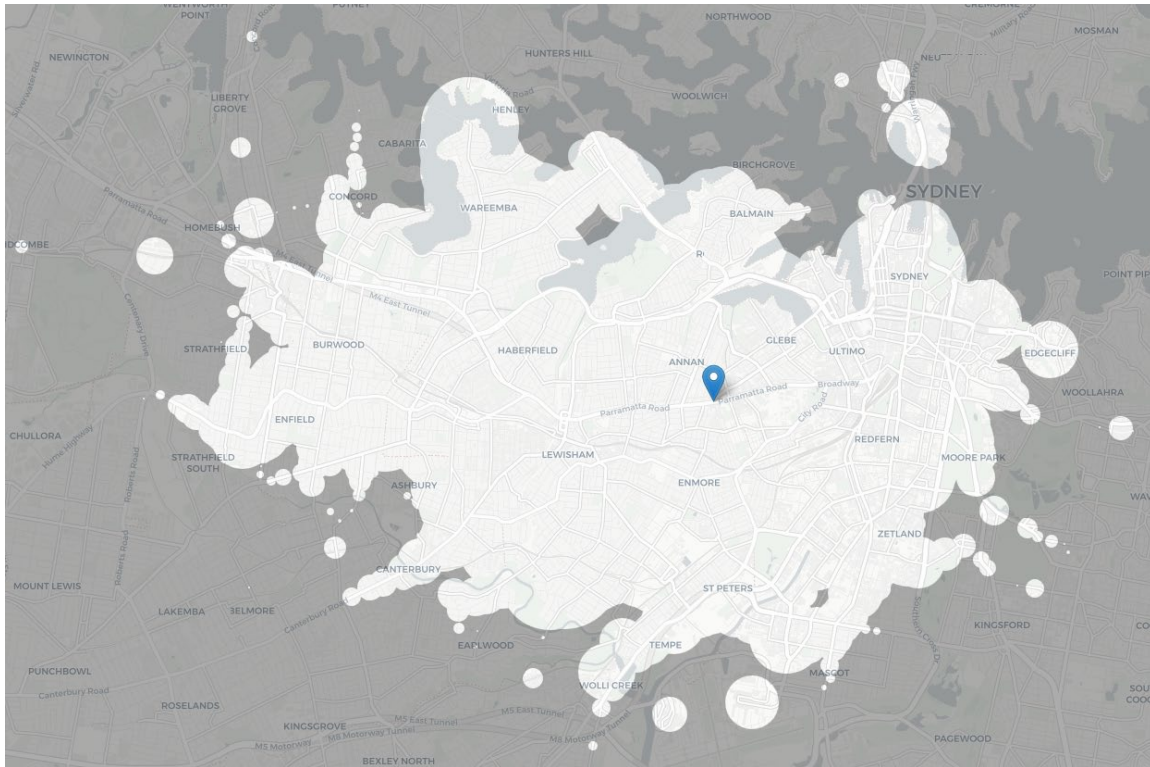


Figure 8 30 minute public transport catchment from Camperdown

Source: <https://www.mapnificent.net/sydney>

2.5 Walking network

There is a well established network of pedestrian facilities in the vicinity of the concept development area, with paved footpaths provided on both sides of all adjacent roads. The concept development area also benefits from being surrounded by a number of formal pedestrian crossings as shown in Figure 9 and Figure 7. There are currently no formal pedestrian facilities through the concept development area itself.

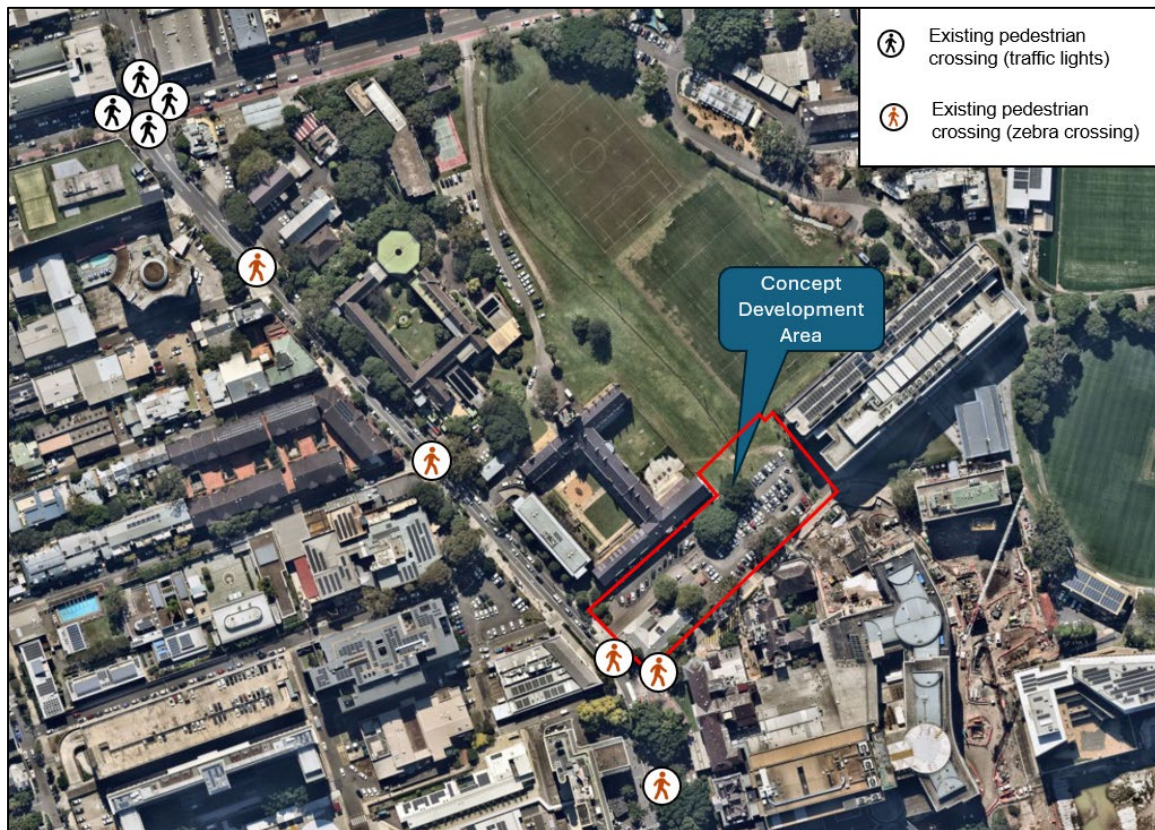


Figure 9 Existing pedestrian infrastructure



Figure 10 Existing pedestrian crossing on Missenden Road

2.6 Cycling

Cycle routes adjacent to the concept development area are generally limited to on-road routes carrying low traffic volumes such as Cardigan street and Mallett Street. Mallett Street provides a connection to the adjacent City of Sydney LGA via Booth Street, ultimately linking to the shared pathway along Johnston's Creek. Fowler Street provides the main east-west route through the precinct to link with the University of Sydney and Royal Prince Alfred Hospital.



Figure 11 Existing cycling network

Source: City of Sydney Council

2.7 Crash history

A review of crash data published by Transport for NSW for the most recent five year period has been review and is shown in Figure 12. This indicates three (generally minor) crashes adjacent to the concept development area on Missenden Road over a five year period – confirming no concerns of significance in relation to road safety. The location of the crashes are away from the existing driveway to the concept development area. The vast majority of the recorded crashes in the area are along Parramatta Road.



Figure 12 Crash data

Source: NSW Centre for Road Safety

2.8 Traffic volumes

Traffic counts were undertaken at the key intersections immediately surrounding the concept development area during the morning and afternoon peak hour periods on Thursday 27 March 2025 – with this existing traffic data indicated in the figures below. The traffic data was collected at the following locations:

- Parramatta Road / Missenden Road
- John Hopkins Drive / Missenden Road
- Salisbury Road / Missenden Road
- Carillon Avenue / Missenden Road



Figure 13 Locations of traffic data collection

3 Transport Access Strategy

3.1 Vehicle access strategy

St Johns College has frontage to Parramatta Road, Missenden Road and John Hopkins Drive. Given Parramatta Road is part of the classified road network, and John Hopkins Drive is a private road under the control of the Local Health District, vehicular access at this stage is proposed via Missenden Road. The driveway location is indicated in Figure 14 and would provide access for the following functions:

- Cars accessing the drop off / pick up zone on the lower ground parking level;
- Cars accessing the on-site car parking areas located over one of three basement levels;
- Ambulances accessing the drop off / pick up bay on the lower ground parking level; and
- Services vehicles accessing the on-site loading dock on the lower ground parking level

The consolidation of all access to a single driveway on Missenden Road provides a suitable outcome in terms of pedestrian safety and amenity – limiting the number of pedestrian / vehicle points of conflict. This arrangement is similar to current site conditions for the at-grade parking area which also provides for a driveway access point along Missenden Road.

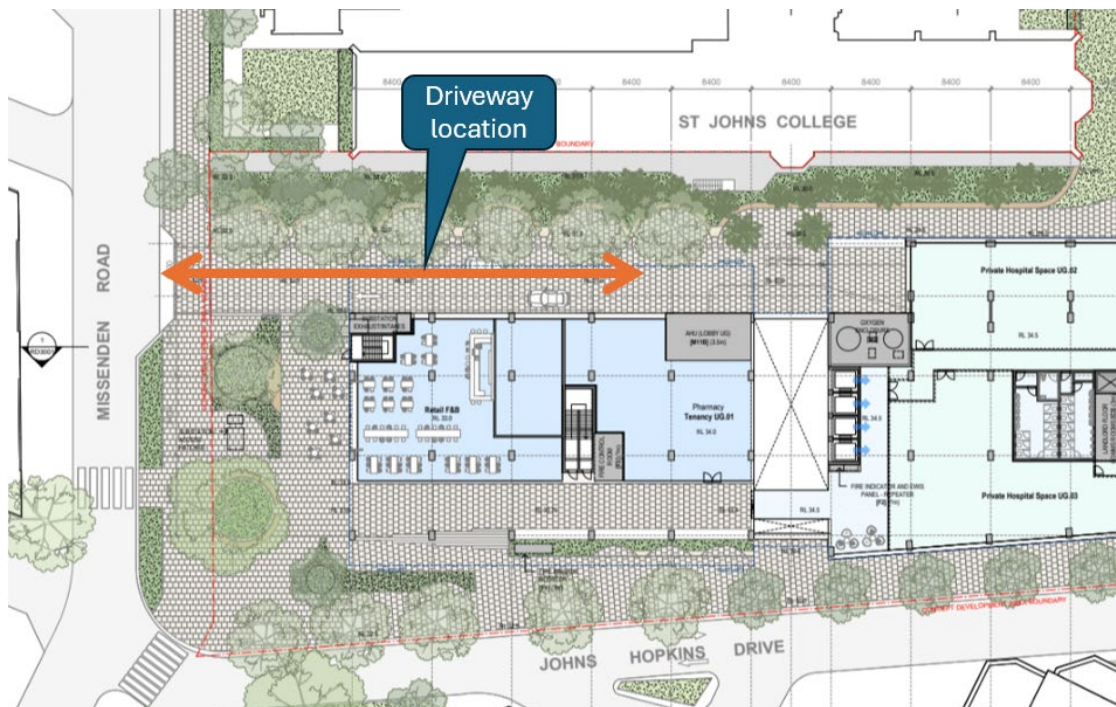


Figure 14 Location of proposed access driveway

3.2 Driveway design principles

To emphasise pedestrian priority along Missenden Road the driveway entrance is to be fully integrated with the adjoining footpath, at one continuous level. The treatment will therefore be an area which is designed for pedestrians, across which vehicles can pass slowly. Drivers of vehicles will be guided and encouraged to give way to pedestrians on the footpath as required by law. The crossings would also be designed with consistent pavement material. The render shown in Figure 15 provides an indication of how this driveway may look and feel – subject to further design development and subsequent stages of the planning process.

Other than promoting drivers to give way to pedestrians, the driveway has been designed to balance ease of vehicles in utilising the driveway with minimisation of pedestrian crossing distances, including minimising the crossover distance based on the swept paths of the design vehicle. Further work in this regard is required and the driveway design will be further confirmed at the time of the detailed Development Application for the concept development area.



Figure 15 Render of Missenden Road driveway access

Source: Architectus

3.3 Internal vehicle circulation

The reference scheme facilitates internal vehicle circulation at the lower-ground level for various functions as set out in Figure 16. Swept path analysis has been undertaken to confirm the suitability of the internal circulation arrangements as shown in Figure 17 – this will be further developed as the project progresses towards a detailed Development Application.

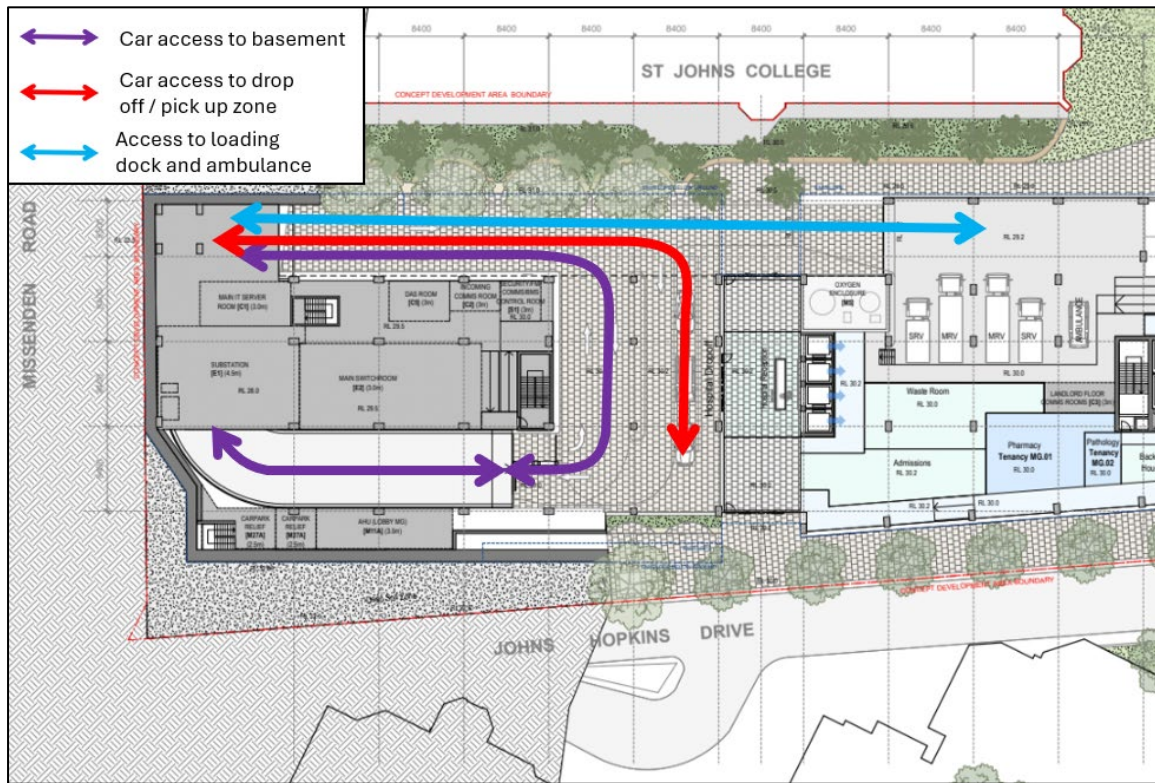


Figure 16 Internal vehicle circulation

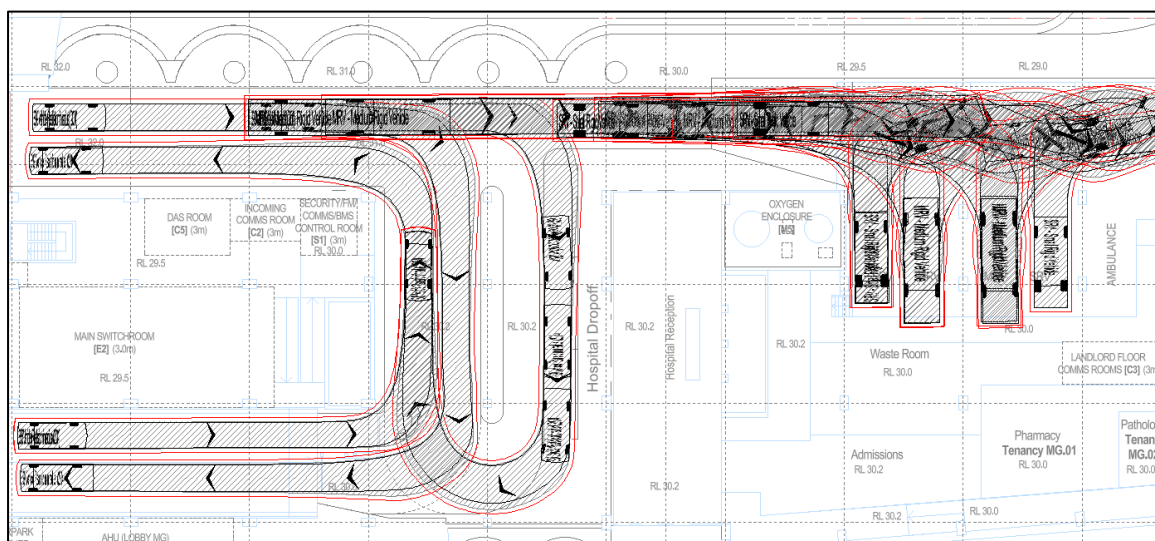


Figure 17 Swept path analysis – lower ground level

3.4 Loading area

The reference scheme includes an on-site loading dock at the eastern end of the lower ground level which can accommodate a range of service vehicles including an 8.8m long Medium Rigid Vehicle (MRV). The loading dock can accommodate up to four vehicles at any one time, including:

- 2 * 8.8m long Medium Rigid Vehicles (MRVs)
- 2 * 6.4m long Small Rigid Vehicles (SRVs)

The reference scheme allows for a height clearance in the loading dock of 4.5m and therefore sufficient for a range of waste and delivery vehicles to the concept development area.

All vehicles accessing the loading dock will enter and exit the concept development area in a forwards direction. The loading dock shown in the reference scheme is not reliant on a mechanical turntable, with all trucks having the ability to reverse into the concept development area. In accordance with best practice outlined in Australian Standards the trucks will manoeuvre into and out of the loading bays without clashing with general traffic accessing the basement car parking or drop off zone.

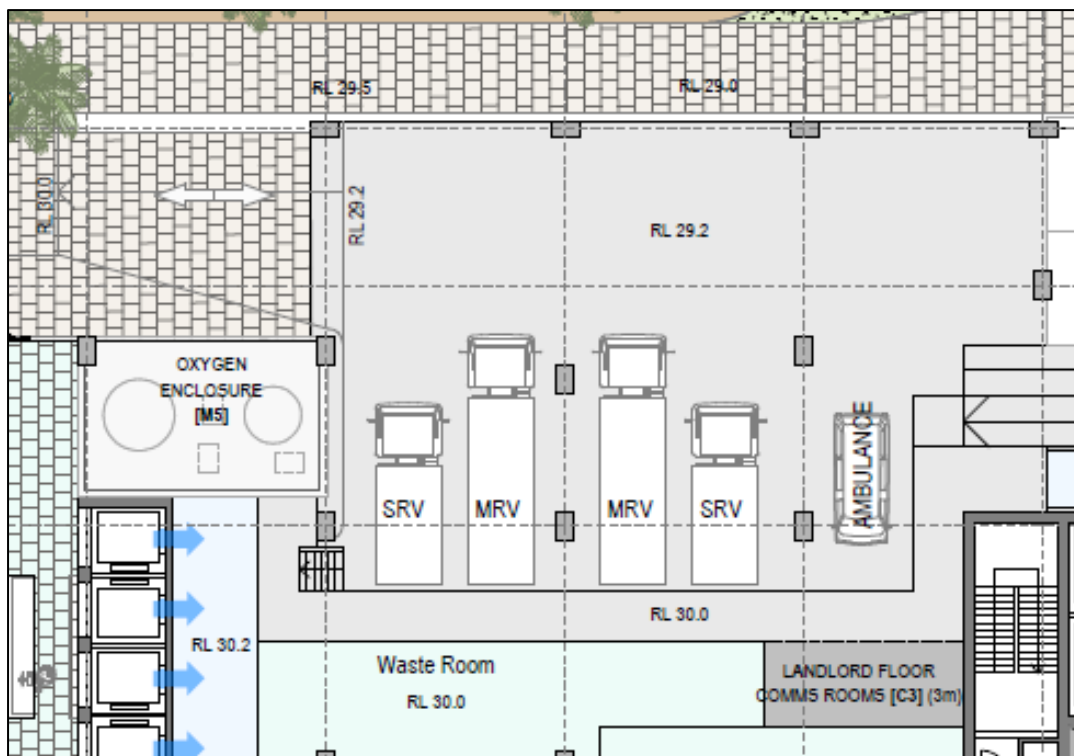


Figure 18 Proposed loading area

Source: Architectus

3.5 Car park design

The car park design prepared for the reference scheme has been set out in accordance with AS2890.1 with respect to ramp gradients, circulation aisle widths and car space dimensions. A review of the plans has found that the car park layout complies with the requirements of AS2890.1-2004 for all uses. Relevant dimensions provided include aisles minimum 5.8 metres wide with parking spaces 2.4 metres wide by 5.4 metres long

The main entry ramp has a relatively flat gradient for the first 6m beyond the property boundary in accordance with AS2890.1.

Swept path analysis for the car parking level is provided as Figure 19.

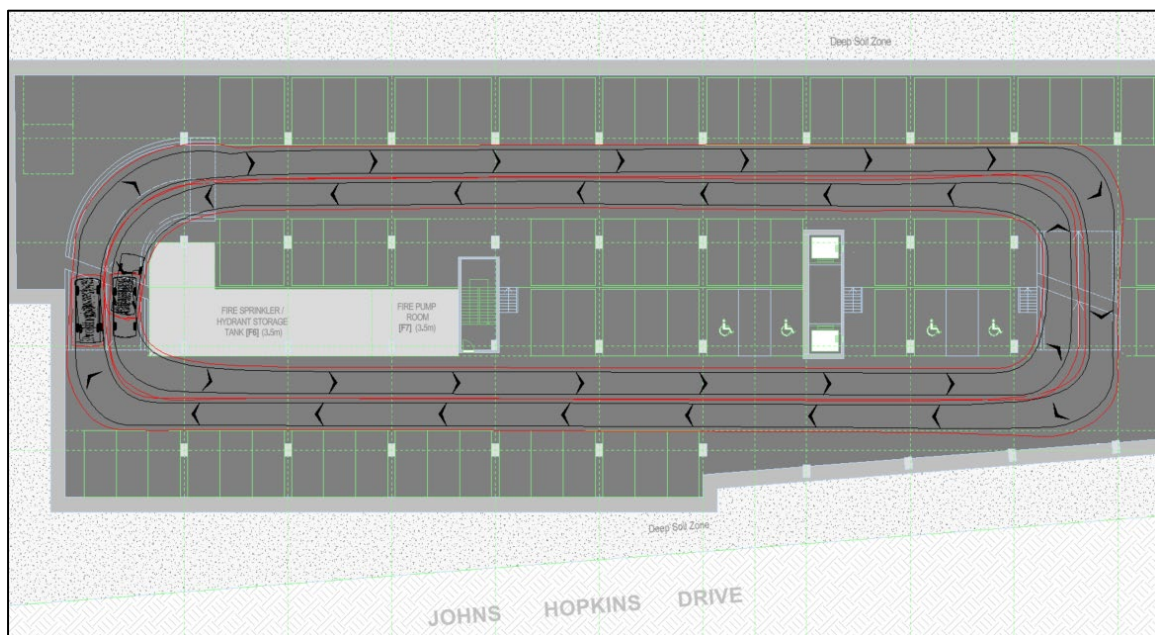


Figure 19 Swept path analysis – car parking level

The car parking layout will be further refined and confirmed at the time of the detailed Development Application to be lodged for the concept development area.

3.6 Pedestrian access and movements

The reference scheme significantly enhances pedestrian access around the concept development area through the provision of additional pathways around the concept development area perimeter. This includes a widening of the footpath adjacent to John Hopkins Drive and an additional connection on the northern frontage of the concept development area – providing connectivity between Missenden Road and St Johns Oval. Refer to the design and landscape reports for further detail in relation to the improvement to pedestrian activity in the area as a result of the proposal.

3.7 Car parking assessment

The reference scheme includes a private hospital with 90 ward beds, 26 ICU/CCU beds and 8 Theatre rooms. Additionally, spaces for ancillary medical and research uses are provided amounting to approximately 9,280m² GFA.

City of Sydney's Local Environmental Plan (LEP) does not specify parking rates for private hospitals. Additionally, while the LEP specifies a maximum rate for health consulting facility/medical centres (maximum two car parking spaces for every consulting room), the total number of consulting rooms is not yet determined in this concept SSDA.

As such, this assessment uses TfNSW's trip generation guidance for both the private hospital beds and the proposed ancillary floor space for medical centre/consultation space. These two functions are the two major components that are expected to generate parking demand.

TfNSW guidance noted in the Guide to Transport Impact Assessment (GTIA) document and the former Guide to Generating Traffic Developments document recommends the following parking rates for the proposed uses:

- Private hospital: 1.18 *no. of beds – 26.52
- Medical uses: 1.80 spaces per 100m² GFA¹

Based on the indicative development yields arising from the reference scheme and adopting the above parking rates up to 290 car parking spaces may be considered acceptable from a town planning perspective.

In response the Concept Proposal includes a maximum of 264 car parking spaces which is considered to provide a more balanced parking outcomes that assists in managing the traffic environment around the concept development area. This also reflects the concept development area's location in an established health and research precinct with strong linkages to nearby educational uses along with public transport accessibility. Reduced car parking provision is consistent with City of Sydney's policy of reducing car dependency and encouraging alternative modes of transport by reducing car parking requirements in new developments. The City of Sydney LEP specifies maximum car parking controls, with no minimums, for all land uses across the LGA.

The final number of car parking spaces to be provided will be confirmed at the time of the detailed Development Application to be lodged for the concept development area.

¹ Taken for a comparable site in the City of Sydney LGA (Broadway medical centre)

3.8 Public transport impacts

The reference scheme prepared for the Concept proposal includes a driveway along Missenden Road to the immediate south of the existing vehicular access to the concept development area. The relocation of the existing driveway to the south will require minor modifications to the existing bus stop / bus zone adjacent to the concept development area.

Noting vehicle access arrangements shown in the reference scheme are indicative only and subject to further review as part of subsequent project phases, any changes required to the bus zone would be documented as part of a future detailed application. This documentation would be developed following consultation with TfNSW to agree on the most appropriate arrangements for bus services adjacent to the concept development area.

3.9 Bicycle parking and end of trip facilities

Bicycle parking and supporting end of trip facilities would be provided as part of any future detailed Development Application for the concept development area. Given the proposed medical uses the following bicycle parking rates, as specified in the City of Sydney DCP, may be suitable for future adoption:

- 1 bicycle parking space per 5 practitioners/professions for employees
- 1 bicycle parking space per 200m² GFA for visitors

Supporting end of trip facilities for staff would also be provided at the following rates in line with City of Sydney requirements:

- One shower for every 10 (staff) bicycle parking spaces
- One locker for every (staff) bicycle parking space

The final number and location of bicycle parking and end of trip facilities would be determined at the time of the detailed Development Application.

3.10 Emergency vehicles

The reference scheme includes provision for a dedicated ambulance parking bay adjacent to the loading dock and accessed via Missenden Road.

3.11 Road user safety

No impacts to road user safety are expected as a result of the proposal given:

- There is no recorded history of crashes or road safety issues of significance adjacent to the concept development area as previously described in Section 2.7 of this document;
- There is already a vehicle access points at the concept development area on Missenden Road. The proposal retains this driveway however would significantly enhance the pedestrian environment by emphasising pedestrian priority with the vehicle driveway entrance to be fully integrated with the adjoining footpath, at one continuous level;
- The proposal provides for significantly improved pedestrian pathways on the concept development area frontage, specifically new connections between St Johns College and Missenden Road on the northern and southern frontages of the concept development area;
- All footpaths and zebra crossings would be retained;
- Active ground level uses will activate the adjoining street frontages and improve pedestrian amenity; and
- Staff and visitors are to be encouraged to use sustainable transport modes.

3.12 Construction traffic management

This SSDA is a Concept proposal only and does not seek consent for any physical works including demolition or construction. In this context the project SEARs did not require the development of a preliminary construction traffic management plan (CTMP). A preliminary CTMP is to be prepared as part of a future detailed SSDA for the concept development area which will include the following information:

- Description of the type of works to be undertaken;
- Details of size, types and estimated number of vehicular movements (to be confirmed with the project team);
- Pedestrian management strategy showing pedestrian movements around the work site ;
- Vehicle movement plan showing the likely access routes used by heavy vehicles to and from the concept development area during the works program; and
- Measures to mitigate the impacts of the construction works.

This preliminary CTMP will be updated prior to the commencement of any works commencing on the concept development area -this is to be reinforced via a suitably worded consent condition as is standard practice for projects such as these.

It can be expected the following typical mitigation measures are to be adopted during construction to ensure traffic movements have minimal impact on surrounding land uses and the community in general, and would include the following:

- Trucks to minimise the use of local streets for access to the construction site;
- Trucks to enter and exit the concept development area in a forward direction;
- Pedestrians near the ingress/egress points will not be held unnecessarily.
- Trucks to not circulate on the road network to wait to enter the concept development area (unless exceptional circumstances do not permit)
- Restrict construction vehicle activity to designated routes which do not utilise any local roads;
- Truck drivers will be advised of the designated truck routes to/ from the concept development area;
- Pedestrian movements adjacent the construction site will be managed and controlled by site personnel where required;
- Pedestrian warning signs and construction safety signs/devices to be utilised in the vicinity of the concept development area and to be provided in accordance with WorkCover requirements;
- Construction activity to be carried out in accordance with approved hours of work;
- Truck loads would be covered during transportation off-site;
- Establishment and enforcement of appropriate on-site vehicle speed limits which would be reviewed depending on weather conditions or safety requirements;
- Activities related to the construction works would not impede traffic flow along adjacent roads;
- Materials would be delivered and spoil removed during standard construction hours;
- Construction vehicles not to queue on adjacent streets;
- During site induction, workers will be informed of the existing bus and metro network servicing the concept development area;

- To support construction workers in utilising public transport, appropriate arrangements will be made for any equipment/ tool storage and drop-off requirements; and
- Development and enforcement of driver charter.

4 Traffic Impact Assessment

4.1 Base traffic model calibration

The intersection of John Hopkins Drive and Missenden Road is a unique configuration due to the two zebra crossings in the intersection and the proximity of the zebra crossing to the south, outside the RPA Hospital building. Site observations indicated that the queueing on Missenden Road's northern and southern approaches was a result of vehicle queues spilling over from the downstream zebra crossings.



Figure 20 Observed queuing on Missenden Road

Queue length surveys on Missenden Road at John Hopkins Drive were carried out across the entire day. These surveys measured the queue length on both the northern and southern approaches of the intersection across the course of the day and are presented in Figure 21.

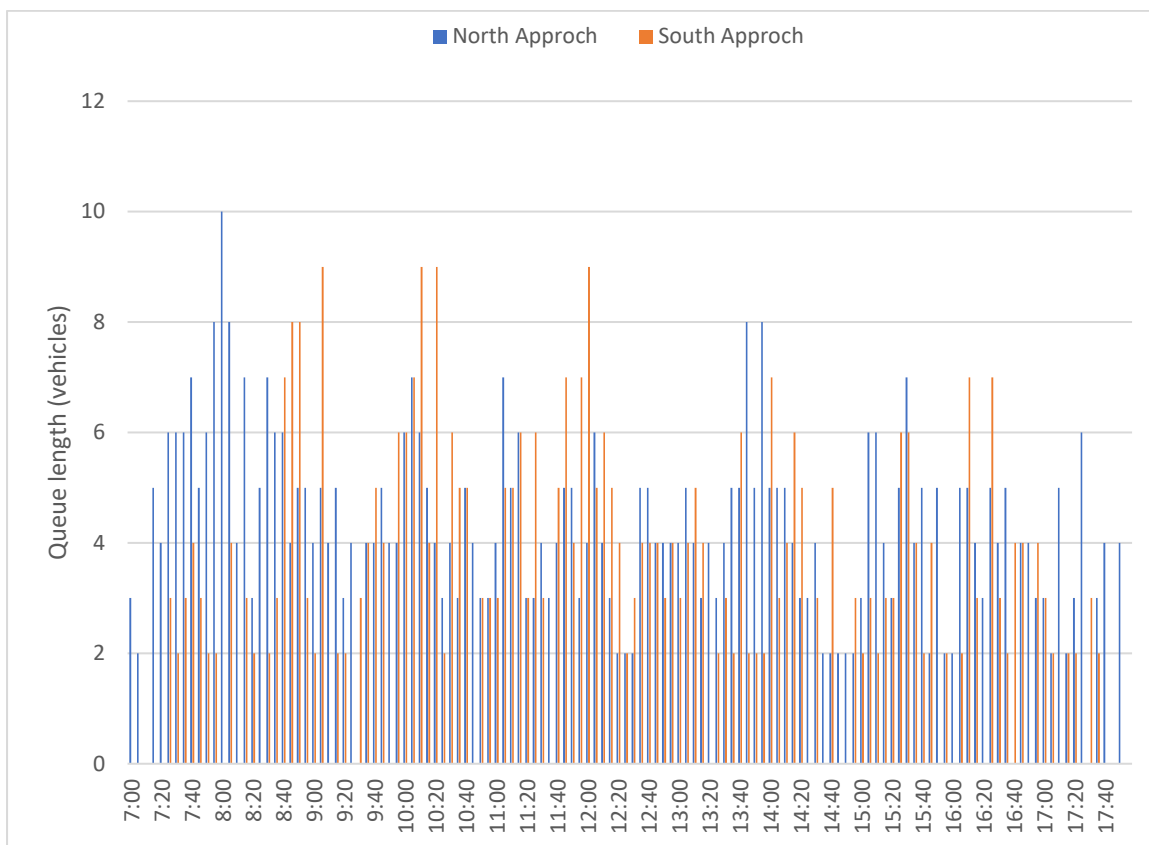


Figure 21 Queue length surveys – Missenden Road

The SIDRA network model carries the average queues from one intersection to another in case of queue spill over to accurately model queue spill over. As shown in Table 5 the modelled queue at the John Hopkins Drive / Missenden Road intersection closely resembles those observed on site and the base model can be used to identify impacts due to the proposed development.

Table 5 Base model calibration – John Hopkins Drive / Missenden Road

Intersection Approach	Observed and modelled queue length (no. of vehicles)			
	AM Peak Hour		PM Peak Hour	
	Observed	Modelled	Observed	Modelled
North Approach	8	7.6	6	5.0
South Approach	10	9.8	7	6.8

4.2 Forecast traffic generation

The existing surface car park provides parking for the broader Camperdown Health, Education and Research Precinct. Visitors and staff utilising the existing car park do so with the primary purpose of attending nearby health facilities – whether at the adjacent Royal Prince Alfred Hospital or other nearby health and research buildings.

Noting the recently released TfNSW Guide to Transport Impact Assessment (GTIA) does not provide traffic generation rates for private hospital or ancillary medical uses, it is considered appropriate to determine the likely extent of traffic generation on the basis of:

- The existing profile of traffic generation across a typical day as previously presented in Section 2.2 of this document; and
- The potential increase in on-site public car parking compared to current conditions. The Concept proposal envisages a maximum of 264 car parking spaces which represents a 120% increase on existing supply.

The resultant increase in traffic generation (relative to current site conditions)

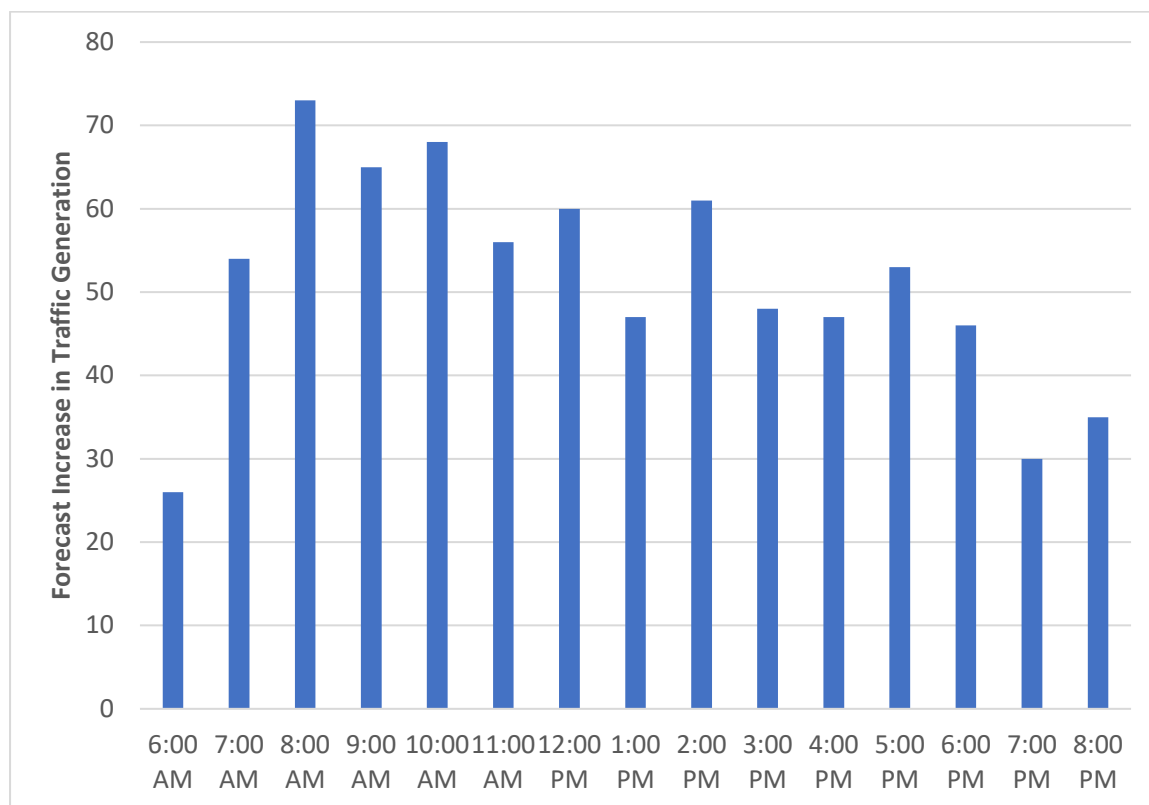


Figure 22 Forecast traffic generation

4.3 Traffic distribution

Consistent with the analysis undertaken for nearby projects in the health precinct, specifically SSD-47662959 (Royal Prince Alfred Hospital Redevelopment) and SSD-55388456 (USYD & RPA Sydney Biomedical Accelerator Project) the trip distribution for the project adopted for the project is illustrated in Figure 23.

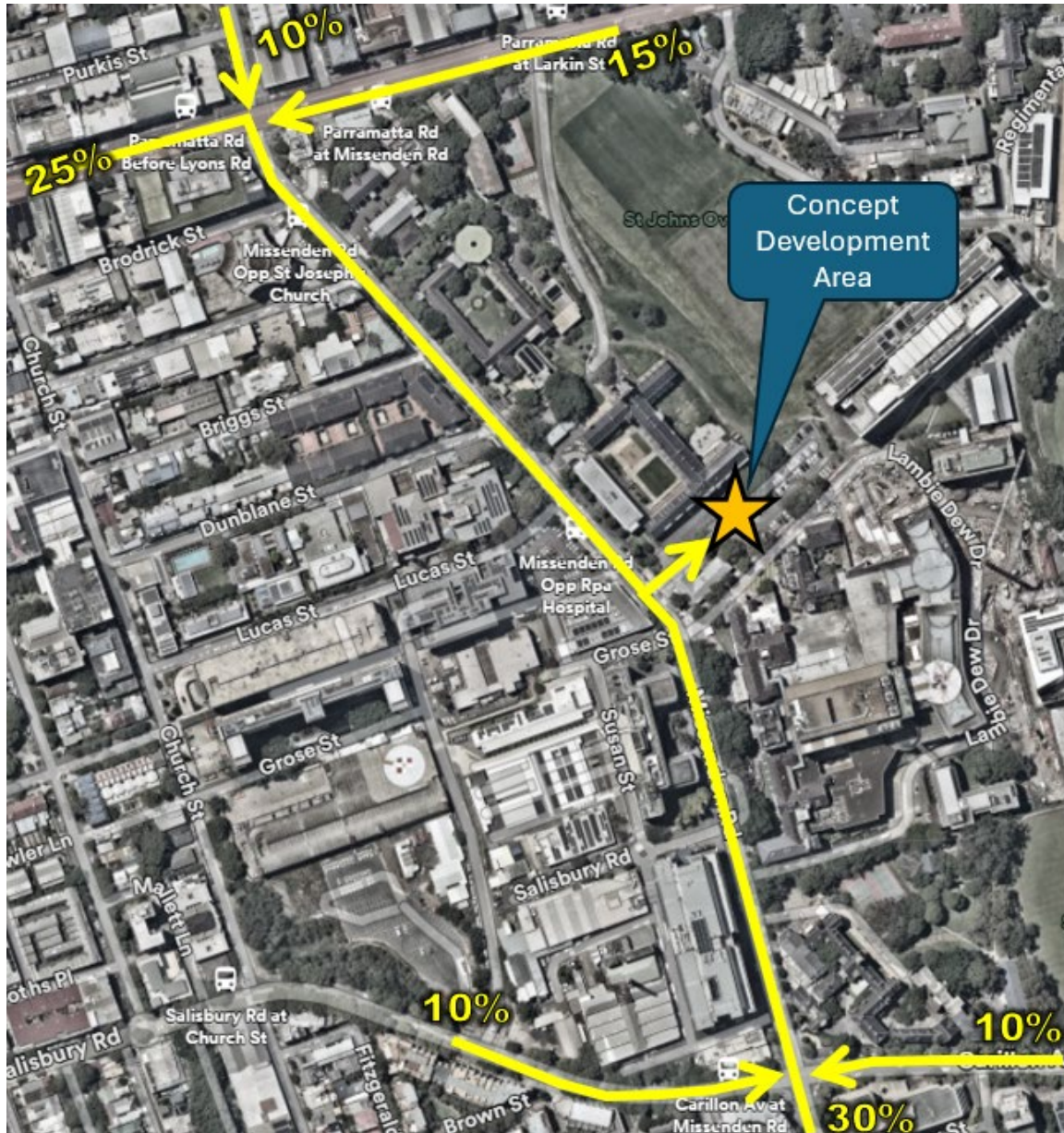


Figure 23 Forecast traffic distribution

4.4 Background traffic growth

Located in an inner-city location, traffic on the road network during peak hours is typically at capacity and is controlled through signalised intersections upstream and downstream. Traffic counter data for Parramatta Road at Bridge Road shows that daily volumes have remained stable over the past decade as shown in Figure 24. Therefore on this basis no background traffic growth has been adopted as part of this transport impact assessment.

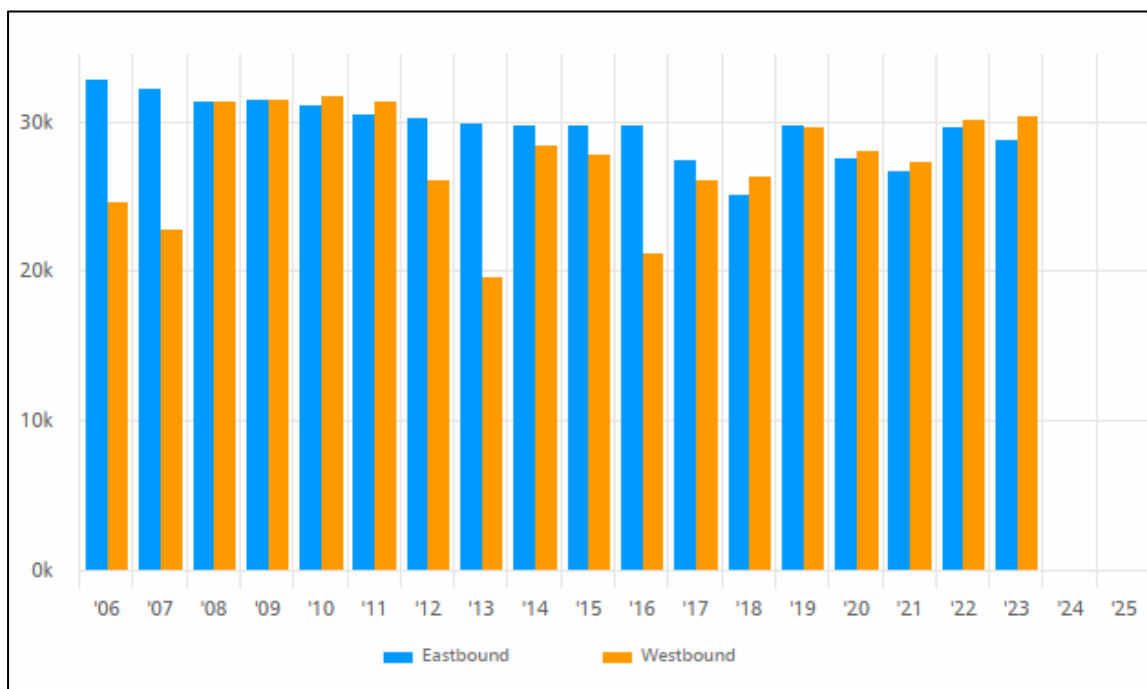


Figure 24 Historical traffic flows – Parramatta Road, Camperdown

Source: TfNSW traffic volume viewer

4.5 Traffic modelling

4.5.1 Process

The traffic modelling undertaken to support the proposal has been conducted using the TfNSW approved 'SIDRA Network' modelling package. SIDRA Network, unlike SIDRA Intersection, considers the operation of intersections in a coordinated manner including downstream and upstream queuing effects. SIDRA Network also has the ability to consider the interaction of traffic signal phasing / timing and queueing at adjoining intersections – in this case intersections along Missenden Road.

A key benefit of using SIDRA Network, as is now commonly recommended by TfNSW, is that any vehicle queues arising at a site are considered in the model and will impact the operation of the adjacent intersections.

4.5.2 Metrics

The traffic modelling metric used to analyse the performance of the intersections is intersection Level of Service (LOS). Level of Service is a measure that uses the average delay experienced by vehicles to categorically assign each approach and movement with a qualitative ordinal grade (A through F, with A being the best and F being the worst). TfNSW Traffic Modelling Guidelines indicate the average delay relating to each grade, this is outlined in Table 6. In typical urban environments it is typical for intersections to operate at Level of Service D or E and still remain within acceptable performance levels.

Table 6 Level of service grades / description

Level of service grade	Average delay (seconds)	Description
A	Less than 14	Good operation
B	15 to 28	Good with acceptable delays and spare capacity
C	29 to 42	Satisfactory
D	43 to 56	Operating near capacity
E	57 to 70	At capacity. At signals, incidents will cause excessive delays. Roundabouts require other control mode
F	Greater than 71	Unsatisfactory with excessive queuing

Degree of Saturation (DoS) - Another common measure of intersection performance is the degree of saturation, 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.

4.5.3 Results

The results of the traffic modelling are summarised in Table 7, with full analysis is provided as Appendix A of this document.

The traffic modelling demonstrates that the increased traffic flows associated with the potential development of the concept development area, as envisaged under the Concept proposal, will not result in adverse impacts on the surrounding road network during the critical peak hours. All surrounding intersections are forecast to retain their existing level of service during both the AM and PM peak hours.

Table 7 Traffic modelling results

Peak Hour	Intersection	Existing conditions			Existing conditions plus proposed Concept development		
		AVD (sec)	DOS	LOS	AVD (sec)	DOS	LOS
AM peak hour	Parramatta Road / Missenden Road	18	0.73	B	18	0.73	B
	John Hopkins Drive / Missenden Road	22	0.86	B	30	0.90	B
	Salisbury Road / Missenden Road	29	0.29	C	29	0.31	C
	Carillon Avenue / Missenden Road	50	0.68	D	53	0.72	D
PM peak hour	Parramatta Road / Missenden Road	16	0.88	B	17	0.88	B
	John Hopkins Drive / Missenden Road	11	0.67	A	12	0.70	A
	Salisbury Road / Missenden Road	33	0.32	C	33	0.34	C
	Carillon Avenue / Missenden Road	57	0.69	E	58	0.71	E

AVD – Average vehicle delay DOS – Degree of Saturation LOS – Level of Service

In response to consultation undertaken with TfNSW prior to the lodgement of the Concept Proposal the extent of vehicle queuing along Missenden Road has been analysed.

As demonstrated via detailed queue length surveys (previously presented in Figure 21) the maximum queue length on Missenden Road currently occurs during the morning peak period. In this context, to consider a worst case scenario, the queueing assessment has been based on predicted traffic movements arising from the proposal during the morning peak hour period.

The existing and forecast queue lengths on Missenden Road from the John Hopkins Drive intersection are presented in Figure 25. While the queue length is predicted to extend for a further 20 metres compared to current conditions as a result of the proposal, the vehicle queues are not expected to ‘spill back’ to adjacent signalised intersections. Crucially from a TfNSW perspective the vehicle queues are expected to remain well clear of the Parramatta Road signalised intersection, with some 270m buffer maintained.



Figure 25 Existing and forecast vehicle queues on Missenden Road

It can therefore be concluded that the traffic impacts of the proposal are acceptable, with no further traffic mitigation works required, given that:

- SIDRA network modelling indicates all nearby intersections are forecast to retain their current level of service; and
- A detailed queueing assessment indicates the proposal will not result in vehicle queues extending back to Parramatta Road or adversely affect the operation of the classified road network.

5 Preliminary Green Travel Plan

5.1 GTP purpose

This report includes a preliminary Green Travel Plan (GTP) identifying some key items that could be included in a more detailed plan to be completed prior to the initial opening of the development. A more detailed GTP will be prepared prior to occupancy which reflects the needs of the users of the building and outlines contemporary transport conditions. The requirement for the preparation of a detailed GTP prior to occupation is commonplace in major developments and can be reinforced through an appropriately worded condition of consent.

5.2 GTP overview

A GTP is a package of measures aimed at promoting and encouraging sustainable travel and reducing reliance on the private car. The GTP for the concept development area will assist in reducing car reliance by promoting alternative, sustainable modes of travel. The GTP aims to encourage and support the broader use of sustainable travel options by the community in carrying out their daily activities.

Sustainable travel options include active transport (including travel by foot, bicycle and other non-motorised vehicles) and public transport. The GTP focuses on minimising the impact of events on the local and wider transport network and encourages those accessing the concept development area to do so by sustainable modes of transport, thereby reducing car dependency for staff and visitors of the concept development area.

5.3 GTP objectives

The key objectives of the GTP are to:

- Achieve a high modal share for public transport, cycling and walking journeys for staff and visitors of the concept development area;
- Reduce private vehicle dependency as a means of access to the concept development area;
- Ensure adequate facilities are provided at the concept development area to enable users to travel by sustainable transport modes; and
- Raise awareness of, and actively encourage the use of, sustainable transport amongst users.

5.4 Potential initiatives

The following potential measures and initiatives could be implemented to encourage more sustainable travel modes. These initiatives will be developed further as the project progresses towards a detailed Development Application.

Travel Access Guide

Provide a Travel Access Guide (TAG) which would be provided to all staff and publicly available to all visitors. The document would be based on facilities available at the concept development area and include detail on the surrounding public transport services and active transport initiatives. The TAG would be updated as the surrounding transport environment changes. A TAG provides information to staff and visitors on how to travel to the concept development area using sustainable transport modes such as walking and public transport. The information is presented visually in the format of a map (or app) showing the concept development area location and nearby transport modes highlighting available pedestrian and cycle routes. The information is usually presented as a brochure (or app) to be included in a welcome pack or on the back of company stationery and business cards.

Public Transport Information

Providing public transport information boards/ apps to inform staff and visitors of alternative transport options (the format of such information boards would be based upon the TAG). Several opportunities exist to provide staff and visitors with information about nearby transport options.

Connecting staff and visitors with information would help to facilitate journey planning and increase their awareness of convenient and inexpensive transport options which support change in travel behaviour

Active Transport Facilities

Providing bicycle facilities including secure bicycle parking for staff, bicycle racks/ rails for visitors and shower and change room facilities.

Increasing the visual presence of bicycle and end-of-trip facilities through wayfinding signage and dedicated access.

Increase the provision of staff lockers and shower facilities to facilitate walking and or running as a form of transport to the concept development area.

Car Pooling

Encouraging staff that drive to work and park on surrounding roads to carpool through creation of a carpooling club or registry/ forum.

5.5 Mode share targets

The aim of the GTP is to encourage a modal shift away from private vehicles by implementing measures that influence the travel patterns of staff working at the concept development area. The implementation of the GTP would be regularly monitored to ensure that the GTP is having the desired effect. The success of the GTP is measured by setting modal share targets and identifying the measures and actions that have the greatest impact.

Targets have been established based on the current travel patterns to neighbouring RPA development and the mode share targets set by the City of Sydney's Sustainable Sydney 2030-2050 as summarised in Table 8 below. These mode share targets also align with those for the neighbouring Royal Prince Alfred Hospital development as summarised in the recent transport strategies prepared to support future development on the concept development area².

Table 8 Mode share targets

Mode of travel	Staff Mode Share		
	Existing	Proposed short term	Proposed long term
Car driver	64%	45%	33%
Public transport	24%	37%	44%
Walk / Bicycle	11%	17%	22%
Other	1%	1%	1%
Total	100%	100%	100%

5.6 Management and monitoring

There is no standard methodology for the implementation and management of a GTP. However, the GTP will be monitored to ensure that it is achieving the desired benefits. The mode share targets set out in this document are used in this regard to ensure there is an overall goal in the management of the GTP.

The Plan is a 'living' document, so measures excluded at this time could be reconsidered or reintroduced at any time in the future. It is recognised that travel

² As noted in the transport impact assessment support SSD-47662959
<https://www.planningportal.nsw.gov.au/major-projects/projects/royal-prince-alfred-hospital-redevelopment>

needs, and patterns will change, and new measures will become available. The Plan will be periodically reviewed to ensure that the objectives are being met.

The monitoring of the GTP would require travel surveys to be undertaken with a focus to establish travel patterns including mode share of trips to and from the concept development area. It is anticipated that the first set of surveys would be undertaken within six months of first occupation to obtain the baseline mode shares for the concept development area.

Utilisation of bicycle parking and end of trip facilities will also provide a measure for monitoring the effectiveness of the plan – and enhance these facilities should monitoring determine that demand is exceeding supply. Additionally staff and visitor feedback on the bicycle parking and end of trip facilities should be gathered on an ongoing basis (e.g. through staff meetings) to understand any concern with the provision of bicycle facilities, with enhancements made based on the outcomes of this feedback and subsequent investigations.

5.7 Communications strategy

In order to secure a successful Travel Plan, the Travel Plan Coordinator will continue to engage with key transport agencies and stakeholders such as Transport for NSW and City of Sydney Council. It will also be necessary to provide feedback to staff and visitors to ensure that they can see the benefits of sustainable transport. Indeed, there are several keys to the development and implementation of a successful GTP. These include:

- **Communications** – Good communications are an essential part of the GTP. It will be necessary to explain the reason for adopting the plan to promote the benefits of sustainable transport options.
- **Commitment** – GTPs involve changing established habits or providing the impetus for people in new developments to choose a travel mode other than car use. To achieve co-operation, it is essential to promote positively the wider objectives and benefits of the plan. This commitment includes the provision of the necessary resources to implement the plan, beginning with the introduction of the 'carrots' or incentives for changing travel modes upon occupation.
- **Building Consensus** – It will be necessary to obtain broad support for the introduction of the plan from the staff and visitors.

Once the plan has been adopted, it is essential to maintain interest in the scheme. Each new initiative in the plan will need to be publicised and marketing of the project as a whole will be important. A continuous review will take place to identify remedial actions should the modal share targets not be achieved.

6 Summary

This transport assessment report has been prepared by JMT Consulting to accompany a Concept State Significant Development Application (SSDA) for a private hospital and associated ancillary uses located at 10 Missenden Road, Camperdown. Key findings of the transport assessment are as follows:

- The concept development area has strong access to nearby public transport services, particularly bus routes along Missenden Road and Parramatta Road.
- The reference scheme prepared for the Concept proposal envisages a single, combined vehicular access point for both cars and trucks located on Missenden Road – consistent with current site conditions.
- Service vehicles are accommodated in the reference scheme through a dedicated loading dock that is separated from the main car circulation areas.
- Up to 264 car parking spaces are to be provided over three basement levels, with this quantum of on-site car parking considered to provide a balanced parking outcomes that assists in managing the traffic environment around the concept development area. The final number of car parking spaces is to be determined at the detailed Development Application stage of the project.
- The reference scheme significantly enhances pedestrian access around the concept development area through the provision of additional pathways around the concept development area perimeter – with footpath widening adjacent to John Hopkins Drive and an additional connection on the northern frontage of the concept development area.
- Bicycle parking and end of trip facilities would be provided on the concept development area for all uses in accordance with the parking rates outlined in the City of Sydney DCP.
- Traffic modelling undertaken indicates that the proposal is not anticipated to result in unacceptable traffic impacts on the surrounding road network given:
 - All nearby intersections are forecast to retain their current level of service; and
 - A detailed queueing assessment indicates the proposal will not result in vehicle queues extending back to Parramatta Road.
- Travel demand management measures have been suggested to improve the mode share of public transport and active transport. These items should be considered further at subsequent stages of the project.

In the above context, the traffic and transport impacts arising from the Concept proposal are considered acceptable.

Appendix A: Traffic Modelling Outputs

MOVEMENT SUMMARY

 Site: [1_BRC_AM] PAR_MIS_25_AM_CAL (Base AM)
Network: [N101] Base AM Peak (Base 2025)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Parra/Missenden
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140.0 seconds (Network User-Given Cycle Time)
Network Scenario: 1 | Local Volumes Site Scenario: 1 | Local Volumes

Vehicle Movement Performance														
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m			km/h
South: Missenden Rd														
1	L2	All MCs	101	5.2	127	9.1	0.144	24.4	LOS B	4.4	33.5	0.55	0.71	32.1
2	T1	All MCs	144	5.8	180	10.3	*0.649	59.5	LOS E	12.4	96.1	0.99	0.82	21.7
3	R2	All MCs	11	100.0	11	100.0	0.649	77.6	LOS F	12.4	96.1	0.99	0.82	26.4
Approach			256	9.5	318	12.8	0.649	46.1	LOS D	12.4	96.1	0.81	0.78	24.8
East: Parramatta Rd														
4	L2	All MCs	125	12.6	125	12.6	0.292	40.8	LOS C	7.7	67.1	0.74	0.73	26.0
5	T1	All MCs	731	11.0	731	11.0	0.500	28.6	LOS C	15.7	116.5	0.72	0.63	34.1
Approach			856	11.2	856	11.2	0.500	30.3	LOS C	15.7	116.5	0.72	0.65	32.9
North: Lyons Rd														
7	L2	All MCs	69	1.5	69	1.5	0.245	79.7	LOS F	4.2	28.7	0.93	0.75	22.1
8	T1	All MCs	180	2.3	180	2.3	0.637	80.3	LOS F	12.2	83.2	0.98	0.82	10.0
9	R2	All MCs	8	0.0	8	0.0	0.637	94.2	LOS F	12.2	83.2	0.98	0.82	14.6
Approach			258	2.0	258	2.0	0.637	80.6	LOS F	12.2	83.2	0.97	0.80	11.8
West: Parramatta Rd														
10	L2	All MCs	20	0.0	20	0.0	0.080	7.5	LOS A	0.5	4.6	0.08	0.19	42.0
11	T1	All MCs	2142	7.5	2142	7.5	*0.730	0.5	LOS A	4.9	35.5	0.08	0.08	59.1
12	R2	All MCs	257	2.5	257	2.5	0.500	30.4	LOS C	9.6	68.6	0.89	1.06	10.9
Approach			2419	6.9	2419	6.9	0.730	3.7	LOS A	9.6	68.6	0.16	0.18	52.3
All Vehicles			3788	7.7	3850	7.6	0.730	18.3	LOS B	15.7	116.5	0.40	0.37	38.2

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

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

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

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

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

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Qued	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec

South: Missenden Rd											
P1	Full	69	64.3	LOS F	0.3	0.3	0.96	0.96	79.7	20.0	0.25
East: Parramatta Rd											
P2	Full	195	64.7	LOS F	0.7	0.7	0.96	0.96	80.0	20.0	0.25
North: Lyons Rd											
P3	Full	103	64.4	LOS F	0.4	0.4	0.96	0.96	79.8	20.0	0.25
West: Parramatta Rd											
P4	Full	214	64.7	LOS F	0.8	0.8	0.97	0.97	80.1	20.0	0.25
All Pedestrians		581	64.6	LOS F	0.8	0.8	0.96	0.96	80.0	20.0	0.25

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.

SIDRA INTERSECTION 10.0 | Copyright © 2000-2025 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: JMT CONSULTING | Licence: NETWORK / 1PC | Processed: Wednesday, 28 May 2025 8:38:22 AM

Project: C:\Users\61415\OneDrive - JMT Consulting\JMT Consulting Projects\2442 - St Johns College\Internal\Traffic counts & modelling\10 Missenden Road SIDRA.sipx

MOVEMENT SUMMARY



Site: [4_BRC_AM] MIS_EXT_25_AM (Base AM)

Network: [N101] Base AM Peak (Base 2025)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Development access on the Missenden Rd

Site Category: (None)

Stop (Two-Way)

Network Scenario: 1 | Local Volumes

Site Scenario: 1 | Local Volumes

Vehicle Movement Performance														
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m		Rate to Depart	km/h
South: Missenden Rd														
2	T1	All MCs	273	6.9	292	10.3	0.179	0.3	LOS A	0.3	2.0	0.10	0.11	43.7
3	R2	All MCs	22	0.0	23	0.0	0.179	4.2	LOS A	0.3	2.0	0.10	0.11	53.9
Approach			295	6.4	315	9.6	0.179	0.5	NA	0.3	2.0	0.10	0.11	49.5
East: Development access														
4	L2	All MCs	7	0.0	7	0.0	0.036	10.0	LOS A	0.1	0.6	0.52	0.89	45.1
6	R2	All MCs	8	0.0	8	0.0	0.036	12.2	LOS A	0.1	0.6	0.52	0.89	45.1
Approach			16	0.0	16	0.0	0.036	11.2	LOS A	0.1	0.6	0.52	0.89	45.1
North: Missenden Rd														
7	L2	All MCs	23	0.0	23	0.0	0.473	5.8	LOS A	0.0	0.0	0.00	0.03	56.3
8	T1	All MCs	434	5.6	434	5.6	0.473	0.3	LOS A	0.0	0.0	0.00	0.03	58.5
Approach			457	5.3	457	5.3	0.473	0.6	NA	0.0	0.0	0.00	0.03	58.3
All Vehicles			767	5.6	788	5.5	0.473	0.8	NA	0.3	2.0	0.05	0.08	56.7

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

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

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

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

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

SIDRA INTERSECTION 10.0 | Copyright © 2000-2025 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: JMT CONSULTING | Licence: NETWORK / 1PC | Processed: Wednesday, 28 May 2025 8:38:22 AM

Project: C:\Users\61415\OneDrive - JMT Consulting\JMT Consulting Projects\2442 - St Johns College\Internal\Traffic counts & modelling\10

Missenden Road SIDRA.sipx

MOVEMENT SUMMARY

Site: [2_BRC_AM] MIS_JOH_25_AM_CAL (Base AM)
Network: [N101] Base AM Peak (Base 2025)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site
Site Category: (None)
Give-Way (Two-Way)
Network Scenario: 1 | Local Volumes Site Scenario: 1 | Local Volumes

Vehicle Movement Performance														
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Cycles	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh.]	[Dist]		Rate to Depart	km/h
			veh/h	%	veh/h	%	v/c	sec		veh	m			
South: Missenden Road														
2	T1	All MCs	292	8.7	311	8.7	0.828	21.5	LOS B	7.6	57.5	0.90	1.53	12.5
3	R2	All MCs	9	33.3	10	33.3	0.828	23.8	LOS B	7.6	57.5	0.90	1.53	12.3
Approach			301	9.4	321	9.4	0.828	21.6	NA	7.6	57.5	0.90	1.53	12.5
East: John Hopkins														
4	L2	All MCs	2	50.0	2	50.0	0.044	3.7	LOS A	0.1	1.0	0.82	0.82	2.1
6	R2	All MCs	3	66.7	3	66.7	0.044	37.7	LOS C	0.1	1.0	0.82	0.82	2.1
Approach			5	60.0	5	60.0	0.044	24.1	LOS B	0.1	1.0	0.82	0.82	2.1
North: Missenden Road														
7	L2	All MCs	5	0.0	6	0.0	0.860	26.5	LOS B	-N8	-N8	0.92	1.73	6.3
8	T1	All MCs	363	4.9	383	4.9	0.860	22.2	LOS B	-N8	-N8	0.92	1.73	5.8
Approach			368	4.9	388	4.9	0.860	22.3	NA	-N8	-N8	0.92	1.73	5.8
West: Grose St														
10	L2	All MCs	1	100.	1	100.	0.013	13.3	LOS A	0.0	0.5	0.62	0.55	7.7
			0		0									
11	T1	All MCs	1	0.0	1	0.0	0.013	2.0	LOS A	0.0	0.5	0.62	0.55	7.9
12	R2	All MCs	3	100.	3	100.	0.013	5.6	LOS A	0.0	0.5	0.62	0.55	7.7
			0		0									
Approach			5	80.0	5	80.0	0.013	6.4	LOS A	0.0	0.5	0.62	0.55	7.8
All Vehicles			680	7.9	720	7.5	0.860	21.9	NA	-N8	-N8	0.90	1.62	8.9

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

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

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

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

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

N8 The Percentile Back of Queue extends to upstream Site lanes.

MOVEMENT SUMMARY



Site: [5_BRC_AM] MIS_ZEB_25_AM_CAL (Base AM)

Network: [N101] Base AM Peak (Base 2025)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Pedestrian crossing in front of the RPA main entrance

Site Category: Base Year

Pedestrian Crossing (Unsignalised)

Network Scenario: 1 | Local Volumes

Site Scenario: 1 | Local Volumes

Vehicle Movement Performance														
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m		Rate to Depart	km/h
South: Missenden Road														
2	T1	All MCs	273	6.6	273	6.6	0.281	3.9	LOS A	1.1	8.1	0.50	0.59	22.3
Approach			273	6.6	273	6.6	0.281	3.9	LOS A	1.1	8.1	0.50	0.59	22.3
North: Missenden Road														
8	T1	All MCs	418	5.8	388	5.9	0.713	6.1	LOS A	3.1	22.8	0.78	0.92	20.4
Approach			418	5.8	388	5.9	0.713	6.1	LOS A	3.1	22.8	0.78	0.92	20.4
All Vehicles			691	6.1	661	6.4	0.713	5.2	NA	3.1	22.8	0.67	0.78	21.1

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

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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: Akçelik M1.

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.

SIDRA INTERSECTION 10.0 | Copyright © 2000-2025 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: JMT CONSULTING | Licence: NETWORK / 1PC | Processed: Wednesday, 28 May 2025 8:38:22 AM

Project: C:\Users\61415\OneDrive - JMT Consulting\JMT Consulting Projects\2442 - St Johns College\Internal\Traffic counts & modelling\10 Missenden Road SIDRA.sipx

MOVEMENT SUMMARY

 Site: [1] SAL_MIS_25_AM_CAL (Base AM)
 Network: [N101] Base AM Peak (Base 2025)
 Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Missenden Road
 Site Category: (None)
 Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140.0 seconds (Network User-Given Cycle Time)
Network Scenario: 1 | Local Volumes Site Scenario: 1 | Local Volumes

Vehicle Movement Performance														
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Cycles	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh.]	[Dist]		Rate to Depart	km/h
			veh/h	%	veh/h	%	v/c	sec		veh	m			
South: Missenden Road														
1	L2	All MCs	96	6.6	96	6.6	0.134	23.8	LOS B	3.2	23.8	0.53	0.60	0.53
2	T1	All MCs	258	11.0	258	11.0	0.246	17.3	LOS B	8.9	68.2	0.55	0.32	0.55
Approach			354	9.8	354	9.8	0.246	19.0	LOS B	8.9	68.2	0.55	0.40	0.55
North: Missenden Road														
8	T1	All MCs	297	6.7	313	6.7	0.309	16.7	LOS B	N8	N8	0.60	0.40	0.60
9	R2	All MCs	72	2.9	75	2.9	*0.309	31.1	LOS C	N8	N8	0.62	0.46	0.62
Approach			368	6.0	388	5.9	0.309	19.5	LOS B	N8	N8	0.61	0.41	0.61
West: Salisbury Road														
10	L2	All MCs	43	0.0	43	0.0	0.236	95.7	LOS F	2.7	18.6	0.92	0.74	0.92
12	R2	All MCs	56	3.8	56	3.8	*0.309	101.0	LOS F	3.7	26.6	0.98	0.76	0.98
Approach			99	2.1	99	2.1	0.309	98.7	LOS F	3.7	26.6	0.95	0.75	0.95
All Vehicles			821	7.2	841	7.0	0.309	28.6	LOS C	N8	N8	0.62	0.45	0.62

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

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

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

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

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

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

* Critical Movement (Signal Timing)

N8 The Percentile Back of Queue extends to upstream Site lanes.

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Qued	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	sec		[Ped]	[Dist]			sec	m	m/sec
					ped	m					
South: Missenden Road											
P1	Full	140	64.5	LOS F	0.5	0.5	0.96	0.96	218.4	200.0	0.92
North: Missenden Road											
P3	Full	44	64.2	LOS F	0.2	0.2	0.96	0.96	218.1	200.0	0.92
West: Salisbury Road											
P4	Full	269	64.9	LOS F	1.0	1.0	0.97	0.97	218.7	200.0	0.91
All Pedestrians		454	64.7	LOS F	1.0	1.0	0.97	0.97	218.5	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.

SIDRA INTERSECTION 10.0 | Copyright © 2000-2025 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: JMT CONSULTING | Licence: NETWORK / 1PC | Processed: Wednesday, 28 May 2025 8:38:22 AM

Project: C:\Users\61415\OneDrive - JMT Consulting\JMT Consulting Projects\2442 - St Johns College\Internal\Traffic counts & modelling\10 Missenden Road SIDRA.sipx

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Network Scenario: 1 | Local Volumes **Site Scenario: 1 | Local Volumes**

- * Critical Movement (Signal Timing)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE [Ped Dist]		Prop. Qued	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	sec		ped	m			sec	m	m/sec
South: Missenden Rd											

P1 Full	137	64.5	LOS F	0.5	0.5	0.96	0.96	79.9	20.0	0.25
East: Carillon Ave										
P2 Full	306	65.0	LOS F	1.2	1.2	0.97	0.97	80.3	20.0	0.25
North: Missenden Rd										
P3 Full	106	64.4	LOS F	0.4	0.4	0.96	0.96	79.8	20.0	0.25
West: Carillon Ave										
P4 Full	255	64.8	LOS F	1.0	1.0	0.97	0.97	80.2	20.0	0.25
All Pedestrians	804	64.8	LOS F	1.2	1.2	0.97	0.97	80.1	20.0	0.25

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.

SIDRA INTERSECTION 10.0 | Copyright © 2000-2025 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: JMT CONSULTING | Licence: NETWORK / 1PC | Processed: Wednesday, 28 May 2025 8:38:22 AM

Project: C:\Users\61415\OneDrive - JMT Consulting\JMT Consulting Projects\2442 - St Johns College\Internal\Traffic counts & modelling\10 Missenden Road SIDRA.sipx

MOVEMENT SUMMARY

 **Site:** [1_BRC_A] PAR_MIS_25_AM_CAL (Base AM + Proposal)
Network: [N101 (2)] Base AM + Proposal (Base 2025)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Parra/Missenden
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140.0 seconds (Site User-Given Cycle Time)
Network Scenario: 1 | Local Volumes Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]		[Total HV]					[Veh. veh	Dist] m				km/h
			veh/h	%	veh/h	%	v/c	sec		veh	m				
South: Missenden Rd															
1	L2	All MCs	108	5.8	133	9.4	0.154	26.9	LOS B	4.9	37.3	0.58	0.72	0.58	31.4
2	T1	All MCs	151	5.6	186	9.9	* 0.693	62.6	LOS E	12.9	99.9	0.99	0.85	1.02	21.4
3	R2	All MCs	11	100.0	11	100.0	0.693	81.4	LOS F	12.9	99.9	1.00	0.85	1.03	26.1
Approach			269	9.4	330	12.6	0.693	48.7	LOS D	12.9	99.9	0.82	0.79	0.84	24.0
East: Parramatta Rd															
4	L2	All MCs	134	11.8	134	11.8	0.313	42.0	LOS C	8.3	71.5	0.76	0.74	0.76	25.6
5	T1	All MCs	731	11.0	731	11.0	0.512	29.6	LOS C	16.1	119.1	0.73	0.64	0.73	33.6
Approach			864	11.1	864	11.1	0.512	31.5	LOS C	16.1	119.1	0.74	0.66	0.74	32.3
North: Lyons Rd															
7	L2	All MCs	69	1.5	69	1.5	0.245	81.0	LOS F	4.2	28.7	0.93	0.75	0.93	22.1
8	T1	All MCs	185	2.3	185	2.3	0.663	82.2	LOS F	12.6	86.4	0.99	0.82	1.00	9.9
9	R2	All MCs	8	0.0	8	0.0	0.663	97.4	LOS F	12.6	86.4	0.99	0.82	1.00	14.5
Approach			263	2.0	263	2.0	0.663	82.4	LOS F	12.6	86.4	0.97	0.80	0.98	11.5
West: Parramatta Rd															
10	L2	All MCs	20	0.0	20	0.0	0.080	7.5	LOS A	0.5	4.6	0.08	0.19	0.08	42.0
11	T1	All MCs	2142	7.5	2142	7.5	* 0.730	0.5	LOS A	4.9	35.5	0.08	0.08	0.08	59.1
12	R2	All MCs	271	2.3	271	2.3	0.512	29.9	LOS C	10.0	71.4	0.89	1.06	0.89	11.0
Approach			2433	6.9	2433	6.9	0.730	3.8	LOS A	10.0	71.4	0.17	0.19	0.17	52.1
All Vehicles			3829	7.7	3890	7.6	0.730	19.1	LOS B	16.1	119.1	0.40	0.38	0.41	37.6

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

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

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

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

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

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Qued	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	sec		[Ped ped]	Dist] m			sec	m	m/sec

South: Missenden Rd											
P1	Full	69	64.3	LOS F	0.3	0.3	0.96	0.96	79.7	20.0	0.25
East: Parramatta Rd											
P2	Full	195	64.7	LOS F	0.7	0.7	0.96	0.96	80.0	20.0	0.25
North: Lyons Rd											
P3	Full	103	64.4	LOS F	0.4	0.4	0.96	0.96	79.8	20.0	0.25
West: Parramatta Rd											
P4	Full	214	64.7	LOS F	0.8	0.8	0.97	0.97	80.1	20.0	0.25
All Pedestrians		581	64.6	LOS F	0.8	0.8	0.96	0.96	80.0	20.0	0.25

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.

SIDRA INTERSECTION 10.0 | Copyright © 2000-2025 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: JMT CONSULTING | Licence: NETWORK / 1PC | Processed: Wednesday, 28 May 2025 8:39:02 AM

Project: C:\Users\61415\OneDrive - JMT Consulting\JMT Consulting Projects\2442 - St Johns College\Internal\Traffic counts & modelling\10 Missenden Road SIDRA.sipx

MOVEMENT SUMMARY



Site: [4_BRC_A] MIS_EXT_25_AM (Base AM + Proposal)
Network: [N101 (2)] Base AM + Proposal (Base 2025)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Development access on the Missenden Rd
Site Category: (None)
Stop (Two-Way)
Network Scenario: 1 | Local Volumes Site Scenario: 1 | Local Volumes

Vehicle Movement Performance														
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m		Rate to Depart	km/h
South: Missenden Rd														
2	T1	All MCs	273	6.9	291	10.3	0.207	0.7	LOS A	0.6	4.7	0.21	0.23	32.5
3	R2	All MCs	51	4.2	53	4.2	0.207	4.5	LOS A	0.6	4.7	0.21	0.23	52.5
Approach			323	6.5	344	9.4	0.207	1.2	NA	0.6	4.7	0.21	0.23	46.5
East: Development access														
4	L2	All MCs	21	10.0	21	10.0	0.112	10.8	LOS A	0.3	2.0	0.56	0.95	44.1
6	R2	All MCs	22	9.5	22	9.5	0.112	14.3	LOS A	0.3	2.0	0.56	0.95	44.1
Approach			43	9.8	43	9.8	0.112	12.6	LOS A	0.3	2.0	0.56	0.95	44.1
North: Missenden Rd														
7	L2	All MCs	47	4.4	47	4.4	0.488	5.8	LOS A	0.0	0.0	0.00	0.06	55.8
8	T1	All MCs	434	5.6	434	5.6	0.488	0.3	LOS A	0.0	0.0	0.00	0.06	57.9
Approach			481	5.5	481	5.5	0.488	0.8	NA	0.0	0.0	0.00	0.06	57.4
All Vehicles			847	6.1	868	5.9	0.488	1.6	NA	0.6	4.7	0.11	0.17	54.4

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

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

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

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

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

MOVEMENT SUMMARY

Site: [2_BRC_A] MIS_JOH_25_AM_CAL (Base AM + Proposal)

Network: [N101 (2)] Base AM + Proposal (Base 2025)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site

Site Category: (None)

Give-Way (Two-Way)

Network Scenario: 1 | Local Volumes

Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Cycles	Number Rate to Depart	Aver. Speed
			[Total HV]		[Total HV]					[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Missenden Road															
2	T1	All MCs	320	8.6	339	8.6	0.901	33.3	LOS C	11.9	89.8	0.96	2.13	3.31	9.0
3	R2	All MCs	9	33.3	10	33.3	0.901	35.2	LOS C	11.9	89.8	0.96	2.13	3.31	9.1
Approach			329	9.3	349	9.3	0.901	33.3	NA	11.9	89.8	0.96	2.13	3.31	9.0
East: John Hopkins															
4	L2	All MCs	2	50.0	2	50.0	0.048	3.9	LOS A	0.1	1.1	0.84	0.84	0.84	2.0
6	R2	All MCs	3	66.7	3	66.7	0.048	41.5	LOS C	0.1	1.1	0.84	0.84	0.84	2.0
Approach			5	60.0	5	60.0	0.048	26.4	LOS B	0.1	1.1	0.84	0.84	0.84	2.0
North: Missenden Road															
7	L2	All MCs	5	0.0	6	0.0	0.893	31.8	LOS C	-N8	-N8	0.95	2.02	3.14	5.2
8	T1	All MCs	377	5.3	397	5.3	0.893	27.8	LOS B	-N8	-N8	0.95	2.02	3.14	4.7
Approach			382	5.2	402	5.2	0.893	27.9	NA	-N8	-N8	0.95	2.02	3.14	4.8
West: Grose St															
10	L2	All MCs	1	100.0	1	100.0	0.014	14.6	LOS B	0.0	0.5	0.65	0.59	0.65	7.6
11	T1	All MCs	1	0.0	1	0.0	0.014	2.1	LOS A	0.0	0.5	0.65	0.59	0.65	7.7
12	R2	All MCs	3	100.0	3	100.0	0.014	6.1	LOS A	0.0	0.5	0.65	0.59	0.65	7.6
Approach			5	80.0	5	80.0	0.014	7.0	LOS A	0.0	0.5	0.65	0.59	0.65	7.6
All Vehicles			722	8.0	762	7.6	0.901	30.2	NA	-N8	-N8	0.95	2.05	3.18	6.9

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

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

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

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

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

N8 The Percentile Back of Queue extends to upstream Site lanes.

SIDRA INTERSECTION 10.0 | Copyright © 2000-2025 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: JMT CONSULTING | Licence: NETWORK / 1PC | Processed: Wednesday, 28 May 2025 8:39:02 AM

Project: C:\Users\61415\OneDrive - JMT Consulting\JMT Consulting Projects\2442 - St Johns College\Internal\Traffic counts & modelling\10 Missenden Road SIDRA.sipx

MOVEMENT SUMMARY

 Site: [5_BRC_A] MIS_ZEB_25_AM_CAL (Base AM + Proposal)

Network: [N101 (2)] Base AM + Proposal (Base 2025)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Pedestrian crossing in front of the RPA main entrance

Site Category: Base Year

Pedestrian Crossing (Unsignalised)

Network Scenario: 1 | Local Volumes

Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Missenden Road															
2	T1	All MCs	301	6.6	301	6.6	0.389	4.5	LOS A	1.5	11.1	0.55	0.67	0.66	22.2
Approach			301	6.6	301	6.6	0.389	4.5	LOS A	1.5	11.1	0.55	0.67	0.66	22.2
North: Missenden Road															
8	T1	All MCs	432	6.1	402	6.3	0.740	6.5	LOS A	3.4	25.1	0.81	0.96	1.24	20.2
Approach			432	6.1	402	6.3	0.740	6.5	LOS A	3.4	25.1	0.81	0.96	1.24	20.2
All Vehicles			733	6.3	703	6.6	0.740	5.7	NA	3.4	25.1	0.70	0.84	0.99	21.0

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

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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: Akçelik M1.

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.

SIDRA INTERSECTION 10.0 | Copyright © 2000-2025 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: JMT CONSULTING | Licence: NETWORK / 1PC | Processed: Wednesday, 28 May 2025 8:39:02 AM

Project: C:\Users\61415\OneDrive - JMT Consulting\JMT Consulting Projects\2442 - St Johns College\Internal\Traffic counts & modelling\10 Missenden Road SIDRA.sipx

MOVEMENT SUMMARY

 **Site:** [1 (3)] SAL_MIS_25_AM_CAL (Base AM + Proposal)
Network: [N101 (2)] Base AM + Proposal (Base 2025)
 Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Missenden Road

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140.0 seconds (Network User-Given Cycle Time)

Network Scenario: 1 | Local Volumes **Site Scenario: 1 | Local Volumes**

Vehicle Movement Performance														
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Cycles	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh.]	[Dist]		Rate to Depart	km/h
			veh/h	%	veh/h	%	v/c	sec		veh	m			
South: Missenden Road														
1	L2	All MCs	96	6.6	96	6.6	0.133	23.3	LOS B	3.1	22.9	0.51	0.61	40.2
2	T1	All MCs	286	10.7	286	10.7	0.268	16.9	LOS B	9.6	73.6	0.54	0.32	28.2
Approach			382	9.6	382	9.6	0.268	18.5	LOS B	9.6	73.6	0.53	0.40	27.6
North: Missenden Road														
8	T1	All MCs	312	7.1	315	6.7	0.311	16.9	LOS B	N8	N8	0.61	0.40	11.9
9	R2	All MCs	72	2.9	73	2.8	* 0.311	32.2	LOS C	N8	N8	0.63	0.46	38.4
Approach			383	6.3	387	5.9	0.311	19.8	LOS B	N8	N8	0.61	0.41	18.6
West: Salisbury Road														
10	L2	All MCs	43	0.0	43	0.0	0.237	95.9	LOS F	2.7	18.7	0.92	0.74	19.7
12	R2	All MCs	56	3.8	56	3.8	* 0.310	101.2	LOS F	3.7	26.6	0.98	0.76	18.6
Approach			99	2.1	99	2.1	0.310	98.9	LOS F	3.7	26.6	0.95	0.75	14.3
All Vehicles			864	7.3	868	7.3	0.311	28.2	LOS B	N8	N8	0.61	0.45	20.4

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

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

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

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

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

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

* Critical Movement (Signal Timing)

N8 The Percentile Back of Queue extends to upstream Site lanes.

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Qued	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	sec		[Ped]	[Dist]			sec	m	m/sec
					ped	m					
South: Missenden Road											
P1	Full	140	64.5	LOS F	0.5	0.5	0.96	0.96	218.4	200.0	0.92
North: Missenden Road											
P3	Full	44	64.2	LOS F	0.2	0.2	0.96	0.96	218.1	200.0	0.92
West: Salisbury Road											
P4	Full	269	64.9	LOS F	1.0	1.0	0.97	0.97	218.7	200.0	0.91
All Pedestrians		454	64.7	LOS F	1.0	1.0	0.97	0.97	218.5	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.

SIDRA INTERSECTION 10.0 | Copyright © 2000-2025 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: JMT CONSULTING | Licence: NETWORK / 1PC | Processed: Wednesday, 28 May 2025 8:39:02 AM

Project: C:\Users\61415\OneDrive - JMT Consulting\JMT Consulting Projects\2442 - St Johns College\Internal\Traffic counts & modelling\10 Missenden Road SIDRA.sipx

 Site: [3_BRC_A] CAR_MIS_25_AM_CAL (Base AM + Proposal)
Network: [N101 (2)] Base AM + Proposal (Base 2025)
 Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Network Scenario: 1 | Local Volumes **Site Scenario: 1 | Local Volumes**

- * Critical Movement (Signal Timing)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Qued	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
South: Missenden Rd											

P1 Full	137	64.5	LOS F	0.5	0.5	0.96	0.96	79.9	20.0	0.25
East: Carillon Ave										
P2 Full	306	65.0	LOS F	1.2	1.2	0.97	0.97	80.3	20.0	0.25
North: Missenden Rd										
P3 Full	106	64.4	LOS F	0.4	0.4	0.96	0.96	79.8	20.0	0.25
West: Carillon Ave										
P4 Full	255	64.8	LOS F	1.0	1.0	0.97	0.97	80.2	20.0	0.25
All Pedestrians	804	64.8	LOS F	1.2	1.2	0.97	0.97	80.1	20.0	0.25

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.

SIDRA INTERSECTION 10.0 | Copyright © 2000-2025 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: JMT CONSULTING | Licence: NETWORK / 1PC | Processed: Wednesday, 28 May 2025 8:39:02 AM

Project: C:\Users\61415\OneDrive - JMT Consulting\JMT Consulting Projects\2442 - St Johns College\Internal\Traffic counts & modelling\10 Missenden Road SIDRA.sipx

MOVEMENT SUMMARY

 **Site:** [1_BRC_PM] PAR_MIS_25_PM_CAL (Base PM Peak)
Network: [N102] Base PM (Base 2025)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Parra/Missenden
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140.0 seconds (Network User-Given Cycle Time)
Network Scenario: 1 | Local Volumes Site Scenario: 1 | Local Volumes

Vehicle Movement Performance														
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m		Rate to Depart	km/h
South: Missenden Rd														
1	L2	All MCs	144	1.5	144	1.5	0.261	53.5	LOS D	7.3	51.8	0.79	0.77	24.1
2	T1	All MCs	258	6.5	258	6.5	*0.755	62.7	LOS E	16.6	122.3	0.96	0.85	23.7
Approach			402	4.7	402	4.7	0.755	59.4	LOS E	16.6	122.3	0.90	0.82	21.4
East: Parramatta Rd														
4	L2	All MCs	144	5.8	144	5.8	0.151	22.9	LOS B	4.9	35.8	0.54	0.71	33.9
5	T1	All MCs	1885	2.5	1885	2.5	*0.878	5.0	LOS A	25.0	179.0	0.40	0.39	53.0
Approach			2029	2.7	2029	2.7	0.878	6.3	LOS A	25.0	179.0	0.41	0.41	51.4
North: Lyons Rd														
7	L2	All MCs	41	0.0	41	0.0	0.129	61.4	LOS E	2.4	16.7	0.88	0.73	23.9
8	T1	All MCs	107	3.9	107	3.9	0.447	66.1	LOS E	7.8	56.5	0.99	0.80	9.6
9	R2	All MCs	12	9.1	12	9.1	0.447	92.5	LOS F	7.8	56.5	0.99	0.80	14.0
Approach			160	3.3	160	3.3	0.447	66.8	LOS E	7.8	56.5	0.96	0.78	13.8
West: Parramatta Rd														
10	L2	All MCs	32	0.0	32	0.0	0.025	13.7	LOS A	0.7	4.9	0.35	0.64	31.9
11	T1	All MCs	1035	4.1	1035	4.1	0.393	1.9	LOS A	4.1	29.9	0.13	0.12	57.1
12	R2	All MCs	134	2.4	134	2.4	*0.878	85.3	LOS F	10.2	72.6	1.00	0.97	6.1
Approach			1200	3.8	1200	3.8	0.878	11.5	LOS A	10.2	72.6	0.23	0.23	44.9
All Vehicles			3792	3.3	3792	3.3	0.878	16.1	LOS B	25.0	179.0	0.43	0.41	41.1

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

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

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

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

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

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance										
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Qued	Eff. Stop Rate	Travel Time	Aver. Speed
		ped/h	sec		[Ped ped	Dist] m			sec	m/sec
South: Missenden Rd										
P1	Full	71	64.3	LOS F	0.3	0.3	0.96	0.96	79.7	0.25

East: Parramatta Rd											
P2	Full	185	64.6	LOS F	0.7	0.7	0.96	0.96	80.0	20.0	0.25
North: Lyons Rd											
P3	Full	84	64.4	LOS F	0.3	0.3	0.96	0.96	79.7	20.0	0.25
West: Parramatta Rd											
P4	Full	127	64.5	LOS F	0.5	0.5	0.96	0.96	79.9	20.0	0.25
All Pedestrians		467	64.5	LOS F	0.7	0.7	0.96	0.96	79.9	20.0	0.25

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.

SIDRA INTERSECTION 10.0 | Copyright © 2000-2025 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: JMT CONSULTING | Licence: NETWORK / 1PC | Processed: Wednesday, 28 May 2025 8:27:21 AM

Project: C:\Users\61415\OneDrive - JMT Consulting\JMT Consulting Projects\2442 - St Johns College\Internal\Traffic counts & modelling\10 Missenden Road SIDRA.sipx

MOVEMENT SUMMARY



Site: [4_BRC_PM] MIS_EXT_25_PM (Base PM Peak)

Network: [N102] Base PM (Base 2025)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Development access on the Missenden Rd

Site Category: (None)

Stop (Two-Way)

Network Scenario: 1 | Local Volumes

Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Missenden Rd															
2	T1	All MCs	368	2.9	368	2.9	0.197	0.0	LOS A	0.1	0.4	0.02	0.02	0.02	57.4
3	R2	All MCs	5	0.0	5	0.0	0.197	3.2	LOS A	0.1	0.4	0.02	0.02	0.02	54.7
Approach			374	2.8	374	2.8	0.197	0.1	NA	0.1	0.4	0.02	0.02	0.02	56.7
East: Development exit															
4	L2	All MCs	5	0.0	5	0.0	0.026	9.7	LOS A	0.1	0.4	0.51	0.87	0.51	45.2
6	R2	All MCs	6	0.0	6	0.0	0.026	12.1	LOS A	0.1	0.4	0.51	0.87	0.51	45.2
Approach			12	0.0	12	0.0	0.026	11.0	LOS A	0.1	0.4	0.51	0.87	0.51	45.2
North: Missenden Rd															
7	L2	All MCs	4	0.0	4	0.0	0.416	5.7	LOS A	0.0	0.0	0.00	0.01	0.00	56.6
8	T1	All MCs	398	2.4	398	2.4	0.416	0.2	LOS A	0.0	0.0	0.00	0.01	0.00	59.3
Approach			402	2.4	402	2.4	0.416	0.3	NA	0.0	0.0	0.00	0.01	0.00	59.2
All Vehicles			787	2.5	787	2.5	0.416	0.3	NA	0.1	0.4	0.02	0.03	0.02	58.4

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

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

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

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

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

SIDRA INTERSECTION 10.0 | Copyright © 2000-2025 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: JMT CONSULTING | Licence: NETWORK / 1PC | Processed: Wednesday, 28 May 2025 8:27:21 AM

Project: C:\Users\61415\OneDrive - JMT Consulting\JMT Consulting Projects\2442 - St Johns College\Internal\Traffic counts & modelling\10

Missenden Road SIDRA.sipx

MOVEMENT SUMMARY

Site: [2_BRC_PM] MIS_JOH_25_PM_CAL (Base PM Peak)
Network: [N102] Base PM (Base 2025)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site
Site Category: (None)
Give-Way (Two-Way)
Network Scenario: 1 | Local Volumes Site Scenario: 1 | Local Volumes

Vehicle Movement Performance														
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Cycles	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh.]	[Dist]		Rate to Depart	km/h
			veh/h	%	veh/h	%	v/c	sec		veh	m			
South: Missenden Road														
2	T1	All MCs	326	5.5	326	5.5	0.585	9.9	LOS A	5.0	36.9	0.76	0.99	13.5
3	R2	All MCs	22	4.8	22	4.8	0.585	15.4	LOS B	5.0	36.9	0.76	0.99	13.2
Approach			348	5.4	348	5.4	0.585	10.3	NA	5.0	36.9	0.76	0.99	13.5
East: John Hopkins														
4	L2	All MCs	8	12.5	8	12.5	0.034	6.7	LOS A	0.1	0.7	0.76	0.76	4.2
6	R2	All MCs	2	0.0	2	0.0	0.034	20.5	LOS B	0.1	0.7	0.76	0.76	4.2
Approach			11	10.0	11	10.0	0.034	9.5	LOS A	0.1	0.7	0.76	0.76	4.2
North: Missenden Road														
7	L2	All MCs	16	0.0	16	0.0	0.671	18.8	LOS B	N8	N8	0.80	1.14	6.7
8	T1	All MCs	377	5.3	377	5.3	0.671	12.0	LOS A	N8	N8	0.80	1.14	6.3
Approach			393	5.1	393	5.1	0.671	12.2	NA	N8	N8	0.80	1.14	6.3
West: Grose St														
10	L2	All MCs	2	0.0	2	0.0	0.002	3.1	LOS A	0.0	0.1	0.60	0.40	8.8
Approach			2	0.0	2	0.0	0.002	3.1	LOS A	0.0	0.1	0.60	0.40	8.8
All Vehicles			754	5.3	754	5.3	0.671	11.3	NA	N8	N8	0.78	1.06	9.7

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

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

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

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

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

N8 The Percentile Back of Queue extends to upstream Site lanes.

MOVEMENT SUMMARY



Site: [5_BRC_PM] MIS_ZEB_25_PM_CAL (Base PM Peak)

Network: [N102] Base PM (Base 2025)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Pedestrian crossing in front of the RPA main entrance

Site Category: Base Year

Pedestrian Crossing (Unsignalised)

Network Scenario: 1 | Local Volumes

Site Scenario: 1 | Local Volumes

Vehicle Movement Performance														
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m		Rate to Depart	km/h
South: Missenden Road														
2	T1	All MCs	348	2.7	348	2.7	0.328	4.3	LOS A	1.6	11.4	0.54	0.65	21.3
Approach			348	2.7	348	2.7	0.328	4.3	LOS A	1.6	11.4	0.54	0.65	21.3
North: Missenden Road														
8	T1	All MCs	378	2.8	378	2.8	0.712	6.3	LOS A	6.0 ^{N7}	43.1 ^{N7}	0.79	0.95	20.1
Approach			378	2.8	378	2.8	0.712	6.3	LOS A	6.0 ^{N7}	43.1 ^{N7}	0.79	0.95	20.1
All Vehicles			726	2.8	726	2.8	0.712	5.4	NA	6.0 ^{N7}	43.1 ^{N7}	0.67	0.80	20.6

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

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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: Akçelik M1.

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.

^{N7} The capacity reduction has been determined from the queue blockage probability based on the Percentile Back of Queue values of a Site further downstream.

SIDRA INTERSECTION 10.0 | Copyright © 2000-2025 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: JMT CONSULTING | Licence: NETWORK / 1PC | Processed: Wednesday, 28 May 2025 8:27:21 AM

Project: C:\Users\61415\OneDrive - JMT Consulting\JMT Consulting Projects\2442 - St Johns College\Internal\Traffic counts & modelling\10

Missenden Road SIDRA.sipx

MOVEMENT SUMMARY

 **Site:** [1 (2)] SAL_MIS_25_PM_CAL (Base PM Peak)
Network: [N102] Base PM (Base 2025)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Missenden Road
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140.0 seconds (Network User-Given Cycle Time)
Network Scenario: 1 | Local Volumes Site Scenario: 1 | Local Volumes

Vehicle Movement Performance														
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Cycles	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh.]	[Dist]		Rate to Depart	km/h
			veh/h	%	veh/h	%	v/c	sec		veh	m			
South: Missenden Road														
1	L2	All MCs	57	0.0	57	0.0	0.047	25.7	LOS B	1.8	12.3	0.49	0.65	39.6
2	T1	All MCs	275	6.9	275	6.9	0.247	20.4	LOS B	9.4	69.9	0.55	0.37	25.4
Approach			332	5.7	332	5.7	0.247	21.3	LOS B	9.4	69.9	0.54	0.42	23.6
North: Missenden Road														
8	T1	All MCs	337	6.2	337	6.2	0.303	21.4	LOS B	_N8	_N8	0.65	0.43	10.5
9	R2	All MCs	48	0.0	48	0.0	*0.303	35.7	LOS C	_N8	_N8	0.67	0.47	37.2
Approach			385	5.5	385	5.5	0.303	23.2	LOS B	_N8	_N8	0.65	0.43	14.1
West: Salisbury Road														
10	L2	All MCs	74	0.0	74	0.0	*0.303	86.8	LOS F	4.3	30.2	0.88	0.77	21.3
12	R2	All MCs	73	0.0	73	0.0	0.323	88.8	LOS F	4.3	30.4	0.90	0.77	20.7
Approach			146	0.0	146	0.0	0.323	87.8	LOS F	4.3	30.4	0.89	0.77	15.6
All Vehicles			863	4.6	863	4.6	0.323	33.4	LOS C	_N8	_N8	0.65	0.49	17.5

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

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

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

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

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

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

* Critical Movement (Signal Timing)

N8 The Percentile Back of Queue extends to upstream Site lanes.

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Qued	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	sec		[Ped]	[Dist]			sec	m	m/sec
					ped	m					
South: Missenden Road											
P1	Full	67	64.3	LOS F	0.3	0.3	0.96	0.96	218.2	200.0	0.92
North: Missenden Road											
P3	Full	20	64.2	LOS F	0.1	0.1	0.96	0.96	218.0	200.0	0.92
West: Salisbury Road											
P4	Full	208	64.7	LOS F	0.8	0.8	0.97	0.97	218.5	200.0	0.92
All Pedestrians		296	64.6	LOS F	0.8	0.8	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.

SIDRA INTERSECTION 10.0 | Copyright © 2000-2025 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: JMT CONSULTING | Licence: NETWORK / 1PC | Processed: Wednesday, 28 May 2025 8:27:21 AM

Project: C:\Users\61415\OneDrive - JMT Consulting\JMT Consulting Projects\2442 - St Johns College\Internal\Traffic counts & modelling\10 Missenden Road SIDRA.sipx

Network: [N102] Base PM (Base 2025)

Missenden/Carillon

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140.0 seconds (Network User-Given Cycle Time)

Network Scenario: 1 | Local Volumes **Site Scenario: 1 | Local Volumes**

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

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

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

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

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

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

- * Critical Movement (Signal Timing)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE [Ped Dist]		Prop. Qued	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	sec		ped	m			sec	m	m/sec
South: Missenden Rd											

P1 Full	89	64.4	LOS F	0.3	0.3	0.96	0.96	79.8	20.0	0.25
East: Carillon Ave										
P2 Full	262	64.8	LOS F	1.0	1.0	0.97	0.97	80.2	20.0	0.25
North: Missenden Rd										
P3 Full	108	64.4	LOS F	0.4	0.4	0.96	0.96	79.8	20.0	0.25
West: Carillon Ave										
P4 Full	241	64.8	LOS F	0.9	0.9	0.97	0.97	80.2	20.0	0.25
All Pedestrians	701	64.7	LOS F	1.0	1.0	0.97	0.97	80.1	20.0	0.25

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.

SIDRA INTERSECTION 10.0 | Copyright © 2000-2025 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: JMT CONSULTING | Licence: NETWORK / 1PC | Processed: Wednesday, 28 May 2025 8:27:21 AM

Project: C:\Users\61415\OneDrive - JMT Consulting\JMT Consulting Projects\2442 - St Johns College\Internal\Traffic counts & modelling\10 Missenden Road SIDRA.sipx

MOVEMENT SUMMARY

 **Site:** [1_BRC_P] PAR_MIS_25_PM_CAL (Base PM + Proposal)
Network: [N102 (2)] Base PM + Proposal (Base 2025)
 Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Parra/Missenden
 Site Category: (None)
 Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140.0 seconds (Site User-Given Cycle Time)
Network Scenario: 1 | Local Volumes Site Scenario: 1 | Local Volumes

Vehicle Movement Performance														
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue Prop.		Eff. Stop	Number of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m	Rate	to Depart	km/h
South: Missenden Rd														
1	L2	All MCs	155	2.0	155	2.0	0.278	55.0	LOS D	7.8	55.5	0.79	0.77	24.3
2	T1	All MCs	267	6.3	267	6.3	*0.803	67.1	LOS E	17.8	131.2	0.98	0.89	23.0
Approach			422	4.7	422	4.7	0.803	62.7	LOS E	17.8	131.2	0.91	0.84	20.7
East: Parramatta Rd														
4	L2	All MCs	148	5.7	148	5.7	0.156	23.2	LOS B	5.1	37.1	0.54	0.71	33.8
5	T1	All MCs	1885	2.5	1885	2.5	*0.883	5.8	LOS A	27.3	195.4	0.44	0.42	52.1
Approach			2034	2.7	2034	2.7	0.883	7.1	LOS A	27.3	195.4	0.45	0.44	50.5
North: Lyons Rd														
7	L2	All MCs	41	0.0	41	0.0	0.129	62.6	LOS E	2.4	16.7	0.88	0.73	23.9
8	T1	All MCs	109	3.8	109	3.8	0.477	68.1	LOS E	8.0	57.9	1.00	0.80	9.4
9	R2	All MCs	12	9.1	12	9.1	0.477	97.0	LOS F	8.0	57.9	1.00	0.80	13.8
Approach			162	3.2	162	3.2	0.477	68.8	LOS E	8.0	57.9	0.97	0.78	13.5
West: Parramatta Rd														
10	L2	All MCs	32	0.0	32	0.0	0.025	13.7	LOS A	0.7	4.9	0.35	0.64	31.9
11	T1	All MCs	1035	4.1	1035	4.1	0.393	1.9	LOS A	4.1	29.9	0.13	0.12	57.1
12	R2	All MCs	140	2.3	140	2.3	*0.883	85.5	LOS F	10.7	76.3	1.00	0.97	6.0
Approach			1206	3.8	1206	3.8	0.883	11.9	LOS A	10.7	76.3	0.24	0.23	44.5
All Vehicles			3824	3.3	3824	3.3	0.883	17.4	LOS B	27.3	195.4	0.45	0.44	40.1

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

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

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

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

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

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance										
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Qued	Eff. Stop Rate	Travel Time	Aver. Speed
		ped/h	sec		[Ped ped	Dist] m			sec	m/sec
South: Missenden Rd										
P1	Full	71	64.3	LOS F	0.3	0.3	0.96	0.96	79.7	0.25

East: Parramatta Rd											
P2	Full	185	64.6	LOS F	0.7	0.7	0.96	0.96	80.0	20.0	0.25
North: Lyons Rd											
P3	Full	84	64.4	LOS F	0.3	0.3	0.96	0.96	79.7	20.0	0.25
West: Parramatta Rd											
P4	Full	127	64.5	LOS F	0.5	0.5	0.96	0.96	79.9	20.0	0.25
All Pedestrians		467	64.5	LOS F	0.7	0.7	0.96	0.96	79.9	20.0	0.25

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.

SIDRA INTERSECTION 10.0 | Copyright © 2000-2025 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: JMT CONSULTING | Licence: NETWORK / 1PC | Processed: Wednesday, 28 May 2025 8:27:41 AM

Project: C:\Users\61415\OneDrive - JMT Consulting\JMT Consulting Projects\2442 - St Johns College\Internal\Traffic counts & modelling\10 Missenden Road SIDRA.sipx

MOVEMENT SUMMARY



Site: [4_BRC_P] MIS_EXT_25_PM (Base PM + Proposal)
Network: [N102 (2)] Base PM + Proposal (Base 2025)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Development access on the Missenden Rd
Site Category: (None)
Stop (Two-Way)
Network Scenario: 1 | Local Volumes Site Scenario: 1 | Local Volumes

Vehicle Movement Performance														
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Rate	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m			km/h
South: Missenden Rd														
2	T1	All MCs	367	2.6	367	2.6	0.209	0.2	LOS A	0.2	1.7	0.07	0.07	48.0
3	R2	All MCs	19	11.1	19	11.1	0.209	4.3	LOS A	0.2	1.7	0.07	0.07	53.2
Approach			386	3.0	386	3.0	0.209	0.4	NA	0.2	1.7	0.07	0.07	50.6
East: Development exit														
4	L2	All MCs	25	4.2	25	4.2	0.106	10.2	LOS A	0.3	1.8	0.53	0.92	45.1
6	R2	All MCs	21	0.0	21	0.0	0.106	12.7	LOS A	0.3	1.8	0.53	0.92	45.1
Approach			46	2.3	46	2.3	0.106	11.3	LOS A	0.3	1.8	0.53	0.92	45.1
North: Missenden Rd														
7	L2	All MCs	17	12.5	17	12.5	0.425	5.9	LOS A	0.0	0.0	0.00	0.02	55.8
8	T1	All MCs	398	2.4	398	2.4	0.425	0.2	LOS A	0.0	0.0	0.00	0.02	58.9
Approach			415	2.8	415	2.8	0.425	0.5	NA	0.0	0.0	0.00	0.02	58.6
All Vehicles			847	2.9	847	2.9	0.425	1.0	NA	0.3	1.8	0.06	0.10	55.9

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

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

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

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

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

MOVEMENT SUMMARY

Site: [2_BRC_P] MIS_JOH_25_PM_CAL (Base PM + Proposal)

Network: [N102 (2)] Base PM + Proposal (Base 2025)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site

Site Category: (None)

Give-Way (Two-Way)

Network Scenario: 1 | Local Volumes

Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Missenden Road															
2	T1	All MCs	340	5.9	340	5.9	0.612	10.5	LOS A	5.5	40.7	0.78	1.03	1.38	13.0
3	R2	All MCs	22	4.8	22	4.8	0.612	16.3	LOS B	5.5	40.7	0.78	1.03	1.38	12.7
Approach			362	5.8	362	5.8	0.612	10.9	NA	5.5	40.7	0.78	1.03	1.38	13.0
East: John Hopkins															
4	L2	All MCs	8	12.5	8	12.5	0.036	7.2	LOS A	0.1	0.8	0.77	0.77	0.77	4.1
6	R2	All MCs	2	0.0	2	0.0	0.036	22.1	LOS B	0.1	0.8	0.77	0.77	0.77	4.1
Approach			11	10.0	11	10.0	0.036	10.1	LOS A	0.1	0.8	0.77	0.77	0.77	4.1
North: Missenden Road															
7	L2	All MCs	16	0.0	16	0.0	0.706	19.9	LOS B	-N8	-N8	0.82	1.22	1.71	6.3
8	T1	All MCs	397	5.3	397	5.3	0.706	13.0	LOS A	-N8	-N8	0.82	1.22	1.71	5.8
Approach			413	5.1	413	5.1	0.706	13.3	NA	-N8	-N8	0.82	1.22	1.71	5.9
West: Grose St															
10	L2	All MCs	2	0.0	2	0.0	0.002	3.2	LOS A	0.0	0.1	0.61	0.41	0.61	8.8
Approach			2	0.0	2	0.0	0.002	3.2	LOS A	0.0	0.1	0.61	0.41	0.61	8.8
All Vehicles			787	5.5	787	5.5	0.706	12.1	NA	-N8	-N8	0.80	1.13	1.55	9.2

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

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

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

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

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

N8 The Percentile Back of Queue extends to upstream Site lanes.

SIDRA INTERSECTION 10.0 | Copyright © 2000-2025 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: JMT CONSULTING | Licence: NETWORK / 1PC | Processed: Wednesday, 28 May 2025 8:27:41 AM

Project: C:\Users\61415\OneDrive - JMT Consulting\JMT Consulting Projects\2442 - St Johns College\Internal\Traffic counts & modelling\10

Missenden Road SIDRA.sipx

MOVEMENT SUMMARY

 **Site:** [5_BRC_P] MIS_ZEB_25_PM_CAL (Base PM + Proposal)
Network: [N102 (2)] Base PM + Proposal (Base 2025)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Pedestrian crossing in front of the RPA main entrance
Site Category: Base Year
Pedestrian Crossing (Unsignalised)
Network Scenario: 1 | Local Volumes Site Scenario: 1 | Local Volumes

Vehicle Movement Performance														
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m		Rate to Depart	km/h
South: Missenden Road														
2	T1	All MCs	361	2.9	361	2.9	0.341	4.5	LOS A	1.7	12.2	0.55	0.66	21.2
Approach			361	2.9	361	2.9	0.341	4.5	LOS A	1.7	12.2	0.55	0.66	21.2
North: Missenden Road														
8	T1	All MCs	397	2.7	397	2.7	0.747	6.8	LOS A	6.6 ^{N7}	47.3 ^{N7}	0.82	1.00	19.9
Approach			397	2.7	397	2.7	0.747	6.8	LOS A	6.6 ^{N7}	47.3 ^{N7}	0.82	1.00	19.9
All Vehicles			758	2.8	758	2.8	0.747	5.7	NA	6.6 ^{N7}	47.3 ^{N7}	0.69	0.84	20.5

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

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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: Akçelik M1.

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.

^{N7} The capacity reduction has been determined from the queue blockage probability based on the Percentile Back of Queue values of a Site further downstream.

MOVEMENT SUMMARY

 **Site:** [1 (4)] SAL_MIS_25_PM_CAL (Base PM + Proposal)
Network: [N102 (2)] Base PM + Proposal (Base 2025)
 Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Missenden Road
 Site Category: (None)
 Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140.0 seconds (Network User-Given Cycle Time)
Network Scenario: 1 | Local Volumes Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Cycles	Number of Cycles to Depart	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Missenden Road															
1	L2	All MCs	57	0.0	57	0.0	0.046	24.9	LOS B	1.7	12.0	0.48	0.65	0.48	40.0
2	T1	All MCs	286	6.6	286	6.6	0.253	19.6	LOS B	9.6	71.3	0.54	0.37	0.54	26.0
Approach			343	5.5	343	5.5	0.253	20.5	LOS B	9.6	71.3	0.53	0.41	0.53	24.0
North: Missenden Road															
8	T1	All MCs	356	5.9	356	5.9	0.315	21.4	LOS B	-N8	-N8	0.65	0.42	0.65	10.7
9	R2	All MCs	48	0.0	48	0.0	*0.315	36.0	LOS C	-N8	-N8	0.67	0.46	0.67	37.4
Approach			404	5.2	404	5.2	0.315	23.1	LOS B	-N8	-N8	0.65	0.43	0.65	13.9
West: Salisbury Road															
10	L2	All MCs	74	0.0	74	0.0	*0.315	88.6	LOS F	4.4	30.6	0.89	0.77	0.89	21.0
12	R2	All MCs	73	0.0	73	0.0	0.337	90.6	LOS F	4.4	30.8	0.91	0.77	0.91	20.5
Approach			146	0.0	146	0.0	0.337	89.6	LOS F	4.4	30.8	0.90	0.77	0.90	15.4
All Vehicles			894	4.5	894	4.5	0.337	33.0	LOS C	-N8	-N8	0.64	0.48	0.64	17.4

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

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

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

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

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

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

* Critical Movement (Signal Timing)

N8 The Percentile Back of Queue extends to upstream Site lanes.

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Qued	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	sec		[Ped ped]	Dist] m			sec	m	m/sec
South: Missenden Road											
P1	Full	67	64.3	LOS F	0.3	0.3	0.96	0.96	218.2	200.0	0.92
North: Missenden Road											
P3	Full	20	64.2	LOS F	0.1	0.1	0.96	0.96	218.0	200.0	0.92
West: Salisbury Road											
P4	Full	208	64.7	LOS F	0.8	0.8	0.97	0.97	218.5	200.0	0.92
All Pedestrians		296	64.6	LOS F	0.8	0.8	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.

SIDRA INTERSECTION 10.0 | Copyright © 2000-2025 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: JMT CONSULTING | Licence: NETWORK / 1PC | Processed: Wednesday, 28 May 2025 8:27:41 AM

Project: C:\Users\61415\OneDrive - JMT Consulting\JMT Consulting Projects\2442 - St Johns College\Internal\Traffic counts & modelling\10 Missenden Road SIDRA.sipx

 Site: [3_BRC_P] CAR_MIS_25_PM_CAL (Base PM + Proposal)
Network: [N102 (2)] Base PM + Proposal (Base 2025)
 Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Network Scenario: 1 | Local Volumes **Site Scenario: 1 | Local Volumes**

- * Critical Movement (Signal Timing)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Qued	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
South: Missenden Rd											

P1 Full	89	64.4	LOS F	0.3	0.3	0.96	0.96	79.8	20.0	0.25
East: Carillon Ave										
P2 Full	262	64.8	LOS F	1.0	1.0	0.97	0.97	80.2	20.0	0.25
North: Missenden Rd										
P3 Full	108	64.4	LOS F	0.4	0.4	0.96	0.96	79.8	20.0	0.25
West: Carillon Ave										
P4 Full	241	64.8	LOS F	0.9	0.9	0.97	0.97	80.2	20.0	0.25
All Pedestrians	701	64.7	LOS F	1.0	1.0	0.97	0.97	80.1	20.0	0.25

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.

SIDRA INTERSECTION 10.0 | Copyright © 2000-2025 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: JMT CONSULTING | Licence: NETWORK / 1PC | Processed: Wednesday, 28 May 2025 8:27:41 AM

Project: C:\Users\61415\OneDrive - JMT Consulting\JMT Consulting Projects\2442 - St Johns College\Internal\Traffic counts & modelling\10 Missenden Road SIDRA.sipx