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THE CHILDREN'S HOSPITAL AT WESTMEAD REDEVELOPMENT STAGE 2 MULTI-STOREY CAR PARK

TRANSPORT ASSESSMENT

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The Children's Hospital at Westmead Redevelopment Stage 2 Multi-Storey Car Park Transport Assessment

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EXECUTIVE SUMMARY

EXISTING TRANSPORT NETWORK

The Westmead Health Precinct is located within Westmead, west of Parramatta CBD. It comprises several medical facilities including (but not limited to) The Children's Hospital at Westmead (CHW) and Westmead Hospital.

The CHW's site location and surrounding transport network comprises:

- North-west Transitway (T-way) and Darcy Road stations about 500m to the south
- Westmead station is about 950m to the south
- visitor access to CHW is generally via Hawkesbury Road and Hainsworth Street to the south-east
- staff access is generally via Institute Road and Dragonfly Drive to the north-west and Redbank Road north-east
- active transport facilities are provided along the south-west periphery, facilitating linkage to Parramatta CBD via a mixture of on-road and off-road paths
- a T-way only section of road exists at the northern end of Mons Road, connecting with Briens Road.

In addition to the above, it is noted that Parramatta Light Rail Stage 1 is currently under construction on Hawkesbury Road and Hainsworth Street, along the south-east boundary of the campus (and site).

It is estimated that nearly 80 per cent of the CHW current staff population drive to/from the site, with nearly 18 per cent using public transport and nearly 3 per cent using active modes.

The CHW's peak traffic activity occurs within a brief 30-minute period between 6:45am and 7:15am in the AM and a brief 15-minute period between 4:00pm and 4:15pm in the PM (based on boomgate data). Traffic volumes are significantly lower outside these peak periods. Therefore, the selected assessment peak hours for this project are 7:00am-8:00am and 4:00pm-5:00pm.

Intersection modelling indicates that the surrounding intersections are generally operating with some spare capacity during the assessed CHW peak hours with the exception of the intersections of Briens Road and Redbank Road and Darcy Road, Mons Road and Institute Road, which are generally operating at capacity during the AM and PM peak hours, respectively.

STRATEGIC CONTEXT

The Greater Sydney Region Plan, A Metropolis of Three Cities was released by the NSW Government in March 2018 to guide land use planning decisions over the next 40 years. It identifies the location of future urban development, strategic transport corridors and major centres, including a vision to support the growth of the Greater Parramatta and the Olympic Peninsula (GPOP) as a key part of the Central River City. The Westmead Health and Education Precinct is identified as a key growth area and is located at the western extent of the GPOP Economic Corridor. The Parramatta CBD and the Westmead precinct are at the centre of the Central River City.

The NSW Government released five District Plans to determine how the *Greater Sydney Region Plan, A Metropolis of Three Cities* will be applied to local areas. In the Central City District Plan, the Westmead area is identified as an Urban Renewal Area due to its proximity to the Parramatta CBD and role as a major employment hub and economic generator. Westmead is also strategically located between Western Sydney Airport and the Parramatta and Sydney CBDs, and therefore has the potential to benefit from improved transport links between these major destinations.

The *Future Transport 2056* was released in March 2018 superseding the *Long-Term Transport Master Plan* (2012). The Strategy contains a wide range of planning visions, directions and outcomes to guide the progression of transport in Sydney over the next 40 years.

Positioned in Greater Parramatta and at the centre of the Central River City, the plan recognises that Westmead will benefit from radial mass transit initiatives designed to achieve a 30-minute access journey from surrounding suburbs. These initiatives will further strengthen the connection between Westmead and the Parramatta CBD and assist in reducing car use. PLR including any future extensions will also support local access and urban renewal along its alignment, potentially resulting in more staff living along the alignment in the future. These links will also make Greater Parramatta more attractive to surrounding suburbs and help to reduce car dependency in areas further west.

PROPOSED DEVELOPMENT

The proposed development under this SSDA is a MSCP accommodating both staff and visitor car parking to be located on Labyrinth Way, on the site of The Lodge.

The scope of proposed works includes:

- Demolition of The Lodge
- Construction of a new MSCP, approximately 8 car parking storeys, which is equivalent to the height of 5 storeys of the hospital.
  - Facilitating 1,003 car parking spaces for staff and visitors
  - Vehicular access from Labyrinth Way and / or Redbank Road
  - A split-level approach to the MSCP to respond to the natural ground level
- Ancillary retail facilities
- Road works:
  - Realignment of Redbank Road with vehicular access connection to MSCP
- Tree removal
- Associated landscape works.

The MSCP is being designed to be constructed in a single stage yet car parking will be staged operationally to come on-line with parking demand across the precinct:

- The first stage of car parking operation would provide replacement car parking for the demolished P17 car park. There would be no net increase of parking on site under this stage.
- The second stage of car parking operation to serve the growth in hospital activity associated with the future PSB (subject to a separate SSDA) would only come on-line operationally with the PSB SSDA consent becoming operational, specifically at occupation. This would provide growth of around 280 additional spaces in line with hospital activity projections until 2031.

OPERATIONAL IMPACT ASSESSMENT

The traffic generation for the Stage 2 Redevelopment has been estimated based on the proposed car parking provision of an additional 280 spaces. This is because the surrounding on-street parking supply is generally at capacity and therefore, the small car park increase would encourage staff and visitors to use more sustainable transport modes to access the site.

Based on a new car parking supply of 280 spaces (approximately 110 staff spaces and 170 visitor spaces), the development would generate an additional 89 vehicles in the AM peak hour and an additional 76 vehicles in the PM peak hour. In addition, a minor increase in set-down and pick-up activity is expected to occur along Hawkesbury Road. Based on CHW's forecast growth, the existing drop-off activity could increase by 25 per cent. By applying this to the existing set-down/pick-up activity that occurs during the assessed peak hours, the development's set-down/pick-up activity could generate an additional 23 vehicle trips (two-way) and 29 vehicle trips (two-way) during the AM and PM peak hours, respectively.

The drop-off activity would use the existing CHW drop-off, whereas the car park activity would likely access the site via Redbank Road or Institute Road. Approximately 50 spaces would be located within the PSB (subject to separate planning approvals), while the remainder would be located in the proposed MSCP to be located on the corner of Labyrinth Way and Redbank Road

Traffic modelling indicates that the anticipated traffic volumes associated with the development's traffic generation would have limited impact on the surrounding road network. The key intersections would continue to operate with similar operating conditions during the AM and PM peak hours in 2020 (7:00am-8:00am and 4:00-5:00pm). However, in 2030, many of the surrounding intersections would be operating at or above capacity due to background growth.

Given the development has a marginal impact on the existing traffic conditions of the arterial roads, this requires mitigation and improvement measures to be undertaken at a whole-of-government level, with consideration of the wider road network.

CONSTRUCTION IMPACT ASSESSMENT

It is anticipated that the construction works would commence in late 2021 and would be completed by mid 2023. The construction staging, timeframe and duration would be confirmed once a contractor is appointed for the project.

Construction work would be undertaken in accordance with the construction hours set out in the conditions of approval for the Environmental Impact Statement. These are expected to be Monday to Friday 7:00am to 6:00pm and Saturday 8:00am to 5:00pm.

The site is in close proximity to well established and high frequency public transport services, therefore construction workers should also be encouraged to use public transport instead of driving. Notwithstanding this, a small amount of construction worker parking may be established within the site. However, workers would not be permitted to park outside the construction site. This presents an opportunity for the contractor to encourage car pooling and implement measures that minimise the number of workers who would arrive during the AM and PM peak periods for the campus and also the broader road network.

Construction vehicles likely to be generated by the proposed construction activities would generally include rigid vehicles (6.4m-12.5m), 18m truck-and-dog vehicles and/or 19m semi-trailers and vans and utes depending on the construction activities. The campus roads have generally been designed to accommodate for vehicles up to a 19m semi-trailer. Therefore, the envisaged construction vehicle types can be accommodated on the internal road network and along the proposed construction vehicle access routes.

Detailed information on the number of construction vehicles likely to be generated by the proposed works is not currently known. However, it is estimated that the works could generate up to 10 vehicles per hour and up to 80 vehicles per day.

These peak vehicles estimates would likely occur during periods of large concrete pouring stages. Outside these peak activity periods, the construction vehicle generation would be less.

The MSCP construction works would likely coincide with construction of the PSB (subject to separate approval). The appointed contractors would need to coordinate the construction to minimise the likelihood of peak construction activity stages occurring simultaneously across both sites.

The anticipated peak construction vehicle volumes are unlikely to impact the surrounding and/or campus transport network, or its operations including the key campus access intersections of Darcy Road/Mons Road/ Institute Road, Briens Road/Redbank Road and Darcy Road/Hawkesbury Road, particularly given the construction activities would replace the current construction activities that have been occurring across the precinct over the last few years.

The key construction vehicles routes are likely to include to/from north and east via Redbank Road and Briens Road and to/from south and west via Institute Road, Darcy Road and Cumberland Highway. Redbank Road would be the preferred route, given that it provides a more direct access between the site and the arterial road network to/from the site from the north-east.

Where possible and safe to do so, pedestrian and cyclist access should be maintained in the vicinity of the construction site, for the duration of the works. The existing footpath on the southern side of Redbank Road is to be closed prior to commencement of PSB construction works. No footpaths currently exist along the site frontage on Redbank Road or Labyrinth Way. Therefore, interaction between vehicles accessing the site and pedestrians and cyclists would be minimal.

As there are no formal separated cycle paths provided along Redbank Road, cyclists would continue to use the available traffic lane while the construction works are underway.

1 INTRODUCTION

1.1 PROJECT BACKGROUND

Health Infrastructure (HI) and Sydney Children's Hospital Network (SCHN) are planning The Children's Hospital at Westmead (CHW) Stage 2 Redevelopment. The redevelopment will enable the expansion and replacement of several paediatric and neonatal services in a new Paediatric Services Building (subject of a separate planning approval), and refurbishment of the existing facility.

As part of the Stage 2 Redevelopment, HI and SCHN have demolished the existing CHW multi-storey staff car park (P17) to construct a new Paediatric Services Building (PSB); subject of a separate planning application. Furthermore, a new multi-storey car park (MSCP) is planned to be built on the former Ronald McDonald House site (known as the Lodge).

These works follow the completion of the Westmead Stage 1 Redevelopment where the Central Acute Services Building (CASB) has been completed. The CASB is set to be officially opened in 2021.

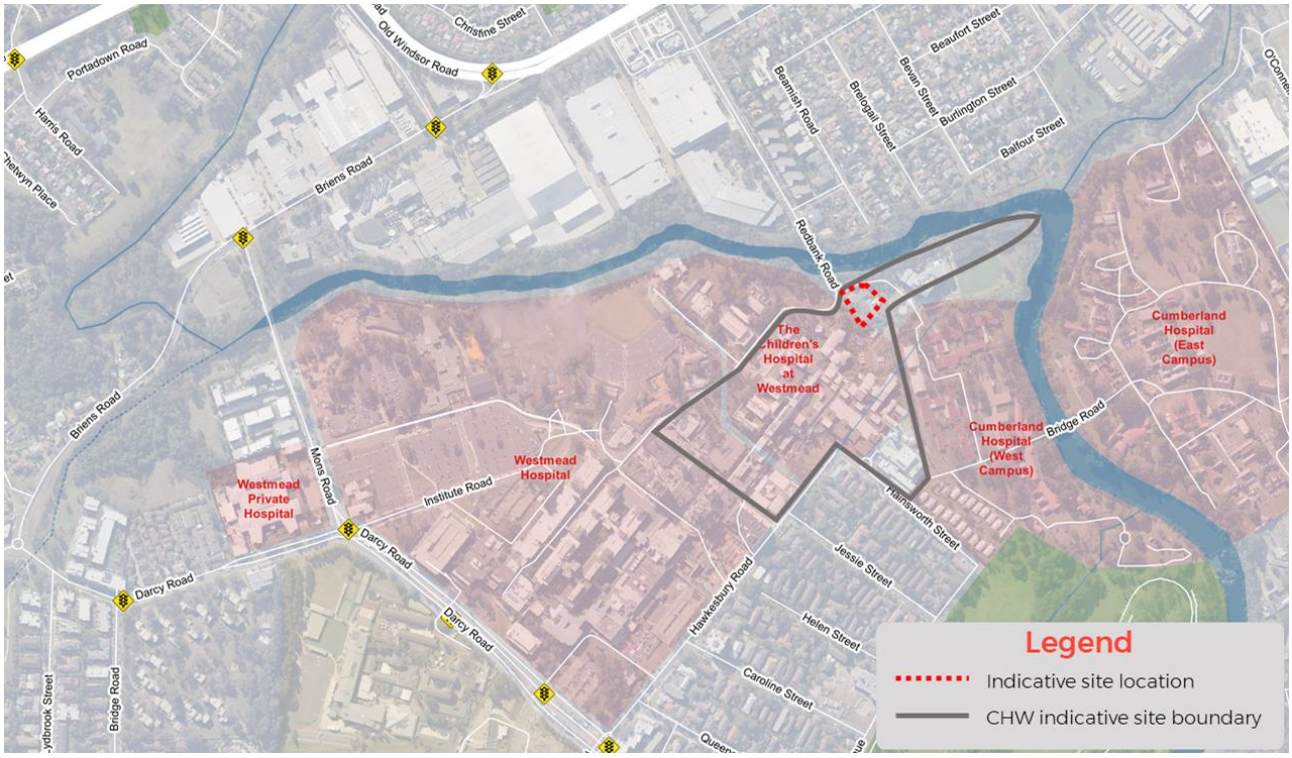
A State Significant Development Application (SSDA), which this transport assessment supports, is to be lodged with the NSW Department of Planning, Industry and Environment (DPIE). The application is seeking consent for the construction of the proposed MSCP.

A separate SSD Application is to be lodged for the construction of the PSB and ancillary works.

Health Infrastructure engaged WSP to prepare a Transport Impact Assessment for the proposed MSCP. Whilst this report may reference the proposed PSB, the assessment's focus is on the transport impacts of the MSCP.

1.2 SITE LOCATION

The Westmead Health Precinct is located within Westmead, west of Parramatta CBD. It comprises several medical facilities including (but not limited to) CHW and Westmead Hospital. The CHW boundary is indicatively shown in Figure 1.1. The proposed MSCP would be located on the former Ronald McDonald House site (known as the Lodge) and is generally bound by Redbank Road to the north and Labyrinth Way to the east, as shown in Figure 1.2.



Basemap source: *NSW Department of Lands Spatial Information Exchange*

Figure 1.1 Site location within the Westmead Health Precinct

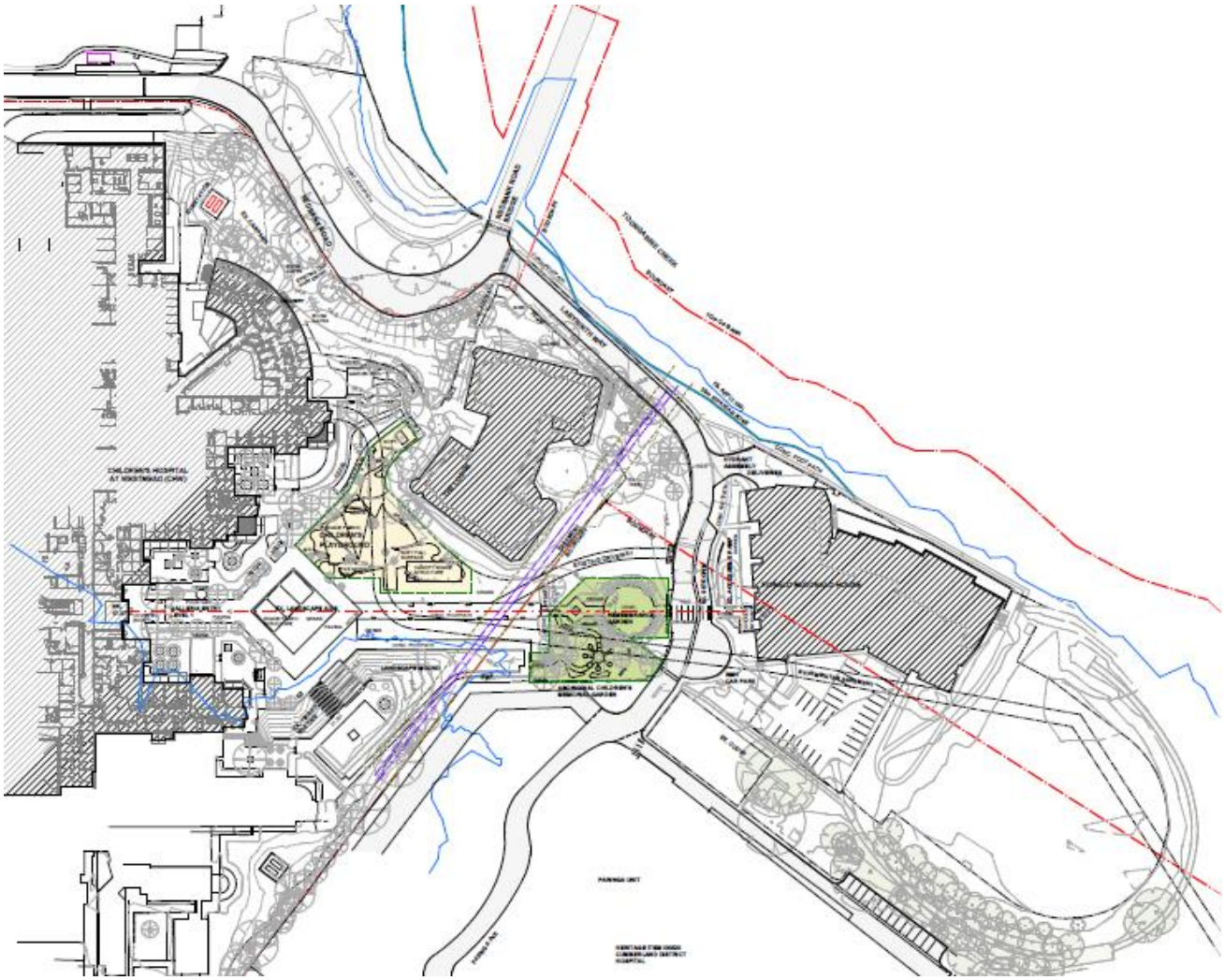


Image source: *Billard Leece Partnership Architects (December, 2020)*

Figure 1.2 Multi-storey carpark indicative site location

1.3 THE PROPOSED DEVELOPMENT

The proposed development under this SSDA is a MSCP accommodating both staff and visitor car parking to be located on Labyrinth Way, on the site of The Lodge.

The scope of proposed works includes:

- Demolition of The Lodge
- Construction of a new MSCP, approximately 8 car parking storeys, which is equivalent to the height of 5 storeys of the hospital.
  - Facilitating 1,003 car parking spaces for staff and visitors
  - Vehicular access from Labyrinth Way and / or Redbank Road
  - A split-level approach to the MSCP to respond to the natural ground level
- Ancillary retail facilities
- Road works:

- Realignment of Redbank Road with vehicular access connection to MSCP

- Tree removal

- Associated landscape works.

The MSCP is being designed to be constructed in a single stage yet car parking will be staged operationally to come on-line with parking demand across the precinct:

- The first stage of car parking operation would provide replacement car parking for the demolished P17 car park. There would be no net increase of parking on site under this stage.

- The second stage of car parking operation to serve the growth in hospital activity associated with the future PSB (subject to a separate SSDA) would only come on-line operationally with the PSB SSDA consent becoming operational, specifically at occupation. This would provide growth of around 280 additional spaces in line with hospital activity projections until 2031.

The proposed MSCP is indicatively shown in Figure 1.3.

Source: Billard Leece Partnership Architects, (December, 2020)

Figure 1.3 Proposed CHW MSCP indicative layout

1.4 WESTMEAD HEALTH PRECINCT

The Westmead Health Precinct contains many different facilities and services. Majority of the services are centred on the provision of healthcare and treatment services. Supplementary services for patients and staff are also provided such as short term patient accommodation and childcare facilities. The location of the following precinct services/facilities can be seen in Figure 1.4:

1 Westmead Hospital

2 Research and Education Network

3 Westmead Centre for Oral Health (Dental)

4 Westmead Institute for Medical Research

5 Children's Medical Research Institute

6 The Children's Hospital at Westmead

7 Proposed Paediatrics Services Building and MSCP

8 Central Acute Services Building (to be opened in 2021)

9 Kids Research

10 Healthshare

11 Brain Injury Unit

12 Childcare Centres

13 College of Dental Therapy

14 Redbank House

15 Cumberland Hospital

Basemap source: *Westmead Redevelopment, http://www.westmeadproject.health.nsw.gov.au/ visited 01 November 2020*

Figure 1.4 Westmead Health Precinct services and facilities

1.5 FORECAST CHW ACTIVITY

The CHW Stage 2 Redevelopment is planned to accommodate more employees, visitors and patients by 2031/32, as summarised in Table 1.1.

Table 1.1 CHW forecast growth

Category	2019	2026/2027	2031/2032
CHW full time equivalent (FTE)staff	3,204	3,664	4,014
Outpatients service events annual (weekday daily)	239,623	275,251	297,941
Emergency Department (ED) presentation annually (daily)	62,641	75,600	85,089
Inpatients bed	359	474	474

1.6 PURPOSE OF THIS REPORT

This report sets out an assessment of the transport implications of the proposed development, including consideration of the following:

- Existing transport conditions surrounding the site
- Suitability of the proposed parking in terms of supply and layout, referring to a parking demand study which was engaged separately to this work
- Suitability of the proposed access arrangements for the MSCP
- The traffic generating characteristics of the proposed MSCP
- The transport impact of the MSCP on the surrounding road network
- Preliminary Construction Traffic Management Plan.

1.7 RESPONSE TO SEAR'S

This report has been prepared in response to the relevant Planning Secretary's Environmental Assessment Requirements (SEAR's) issued for The Children's Hospital at Westmead – Multi-storey car park project and dated 20 November 2020. The relevant traffic and accessibility SEAR's fall under key issues number 6 and are included below in Table 1.2.

Table 1.2 Secretary's Environmental Assessment Requirements (SEAR's)

SEAR description		Relevant report sections
Include a transport and accessibility impact assessment, which includes, but is not limited to the following:	Analysis of the existing transport network, including: — road hierarchy — pedestrian, cycle and public transport infrastructure — details of current daily and peak hour vehicle movements based on traffic surveys and / or existing traffic studies relevant to the locality — existing performance levels of nearby intersections utilising appropriate traffic modelling methods (such as SIDRA network modelling)	Section 2
	Details of the proposed development, including: — a map of the proposed access which identifies public roads, bus routes, footpaths and cycleways — vehicular access arrangements, including for service and emergency vehicles, including swept path analysis demonstrating the largest design vehicle entering and leaving the site and moving in each direction through intersections along the proposed transport routes — number of car parking spaces and any bicycle parking — pedestrian or road infrastructure improvements or safety measures.	Sections 2.1, 3.2, 4.1, 4.6
	Analysis of the impacts due to the operation of the proposed development, including: — estimated total daily and peak hour vehicular trip generation — a clear explanation and justification of the: — assumed growth rate applied — volume and distribution of proposed trips to be generated — type and frequency of design vehicles accessing the site. — details of performance of nearby intersections with the additional traffic generated by the development both at the commencement of operation and in a 10-year time period (using SIDRA network modelling) — cumulative traffic impacts from any surrounding approved development(s) — adequacy of car parking including assumptions made to determine/justify the amount of car spaces sought to service the associated hospital — adequacy of the existing / proposed pedestrian infrastructure to enable convenient and safe access to and from the site for all users.	Sections 3.2, 4.5, 5

SEAR description		Relevant report sections
	Measures to ameliorate any adverse traffic and transport impacts due to the development based on the above analysis, including infrastructure improvements, including details of timing and method of delivery.	Sections 5
	Analysis of the impacts of the traffic generated during construction of the proposed development, including: — construction vehicle routes, types and volumes — construction program (duration and milestones) — on-site car parking and access arrangements for construction, emergency and construction worker vehicles — cumulative impacts associated with other construction activities in the locality (if any) — road safety at identified intersections near the site due to conflicts between construction vehicles and existing traffic in the locality — measures to mitigate impacts, including to ensure the safety of pedestrian and cyclists during construction.	Section 6
	A preliminary Construction Traffic and Pedestrian Management Plan	Section 6

1.8 STAKEHOLDER CONSULTATION

Members of the project team met with key representatives of Transport for NSW to discuss the approach for this transport assessment. We understand that Transport for NSW was generally in agreement with the transport assessment approach that has been documented in this report.

1.9 REFERENCES

In preparing this assessment, the following documents have been referenced:

- Architectural Drawings prepared by Billard Leece Partnership Pty Ltd dated 21 December 2020
- Australian Standards AS2890.
- Cycling Aspects of Austroads Guides (Austroads, 2017)
- EIS Guidelines - Road and Related Facilities (Department of Urban Affairs and Planning (DUAP), 1996)
- Guide to Traffic Generating Developments (Transport for NSW, 2002)
- Guide to Traffic Generating Developments – Updated Traffic Surveys (Transport for NSW, 2013)
- Guide to Traffic Management Part 12: Integrated Transport Assessments for Developments (Austroads, 2020)
- Holroyd Local Environmental Plan (2013)
- Holroyd Development Control Plan (2013)
- NSW Planning Guidelines for Walking and Cycling (Department of Infrastructure, Planning and Natural Resources (DIPNR), 2004)
- Parramatta Local Environmental Plan (2011)
- Paramatta Development Control Plan (2011)
- The Children's Hospital at Westmead Stage 2 Redevelopment Car Parking Demand Study (GTA Consultants, 2019).

2 EXISTING TRANSPORT CONDITIONS

2.1 OVERVIEW

The CHW's site location and surrounding transport network are shown in Figure 2.1. In summary, the transport network comprises:

- North-west Transitway (T-way) and Darcy Road stations about 500m to the south
- Westmead station is about 950m to the south
- visitor access to CHW is generally via Hawkesbury Road and Hainsworth Street to the south-east
- staff access is generally via Institute Road and Dragonfly Drive to the north-west and Redbank Road north-east
- active transport facilities are provided along the south-west periphery, facilitating linkage to Parramatta CBD via a mixture of on-road and off-road paths
- a T-way only section of road exists at the northern end of Mons Road, connecting with Briens Road.

In addition to the above, it is noted that Parramatta Light Rail Stage 1 is currently under construction on Hawkesbury Road and Hainsworth Street, along the south-east boundary of the precinct (and site).

Basemap source: *NSW Department of Lands Spatial Information Exchange*

Figure 2.1 Existing transport context

2.2 LAND USE ZONING

The site is zoned Infrastructure (SP2) Zone of the Paramatta Local Environmental Plan (LEP) 2011.

2.3 SURROUNDING ROAD NETWORK

The surrounding local road network connects with Sydney's arterial (main road) network, via:

- Hawkesbury Road which connects with the Great western Highway and the M4 Western Motorway (M4)
- Redbank Road which connects with Briens Road, which in turn provides access to the Old Windsor Road, Pennant Hills Road and James Ruse Drive
- Darcy Road which connects with the Cumberland Highway.

The surrounding road network can generally be summarised as follows:

Hawkesbury Road is a collector road between CHW (at Hainsworth Street) and the Great Western Highway. It generally has one traffic lane in each direction, with a 40-50 km/h speed limit plus school speed zones. Kerbside parking is generally provided as 2 hour parking. Hawkesbury Road, north of Darcy Road (along the precinct frontage), is a High Pedestrian Activity Area with a speed limit of 40 km/h.

Redbank Road is a local road between the precinct and Briens Road. It provides access to the precinct from the north-east. It generally has one traffic lane in each direction, with a 50 km/h speed limit. Redbank Road has a mix of 2P and unrestricted kerbside parking.

Labyrinth Way is a local road between Redbank Road and Paringa Avenue. It provides access to the existing Ronald McDonald House and the Cumberland sites. Labyrinth Way accommodates two-way traffic movements with a single lane in each direction and has a posted speed limit of 20km/h.

Darcy Road is a collector road that provides access to the precinct from the west. It generally has two lanes for each direction. The speed limit varies between 40 km/h and 50 km/h, with a High Pedestrian Activity Area and school speed zones during both the morning and afternoon weekday periods. Darcy Road also accommodates the North-West Transit-way (T-way).

Mons Road is a local road between Briens Road and Darcy Road, generally with one traffic lane in each direction and a mix of 2P and 1/4P restricted kerbside parking. At its northern end, Mons Road functions as a restricted T-way with no public access to Briens Road. Mons Road is a 40km/h High Pedestrian Activity Area.

The **M4 Western Motorway (M4)** is an arterial road that extends from Strathfield in the east to Emu Plains in the west. It is one of Sydney's major motorways, providing a high standard alignment and high-speed driving conditions. Exit ramps connect to Coleman Street and the Cumberland Highway near Westmead. The M4 is designated as a B-double route and allows vehicles with a maximum vertical height clearance of 4.6 m. A variable speed limit applies which is typically 90 km/h or more.

The **Great Western Highway (Route A44)** is an arterial road that runs parallel to the M4 Western Motorway for much of its length. It is designated as a B-double route and allows vehicles with a maximum vertical height clearance of 4.6 m, where the road is generally signposted as a 60 km/h speed zone. The section near Westmead generally provides a divided road configuration with two lanes and one bus lane per direction.

Cumberland Highway/Hart Drive (Route A28) is an arterial road that surrounds the precinct, running north-south to the west and east-west to the north of the precinct. The road is generally signposted as a 70 km/h speed zone with a divided carriageway, that is mostly three lanes in each direction.

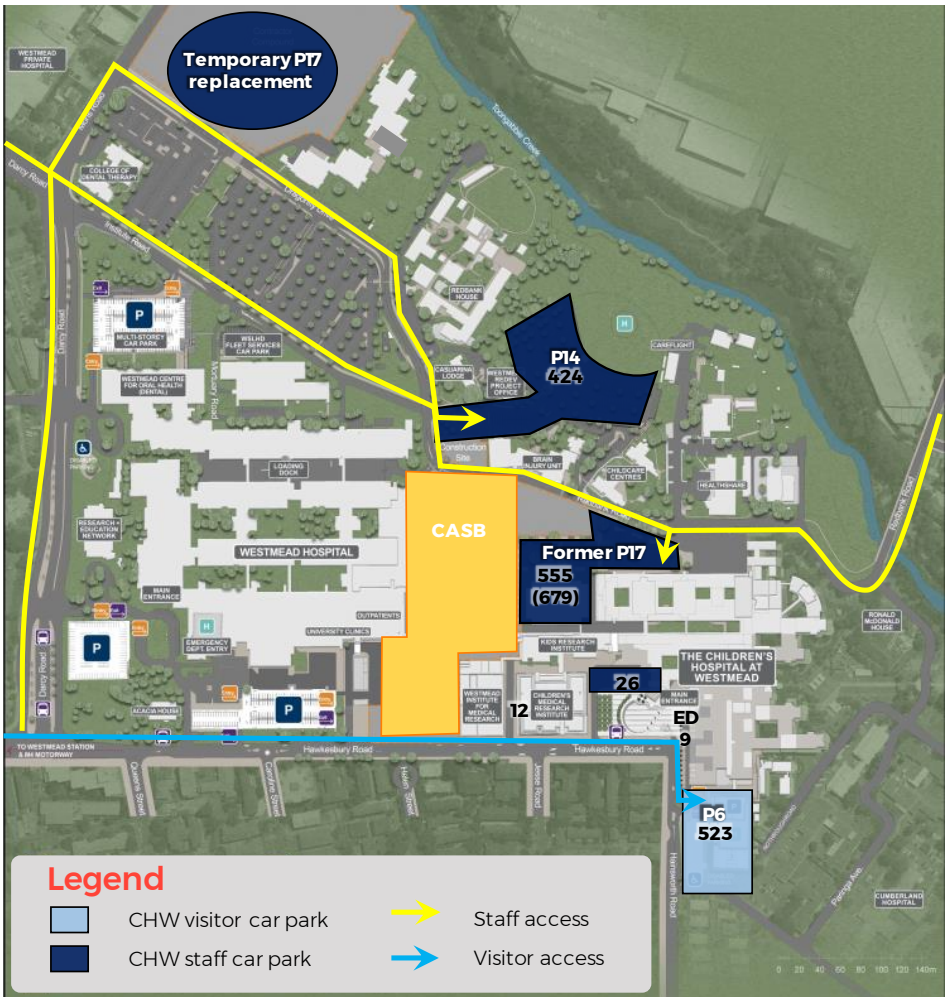
2.4 PARKING ARRANGEMENTS

CHW has a total parking supply of 1,547 spaces[1] spread across the following main car parks (excludes some small parking areas):

- P6 visitor car park fronting Hainsworth Street and accessed via a roundabout on Hainsworth Street
- P14 staff (oval) car park located within the precinct and accessed via Redbank Road, Institute Road and Dragonfly Drive
- P17 staff car park which was located within the precinct and accessed via Redbank Road, Institute Road and Dragonfly Drive and has recently been demolished and temporarily replaced by a temporary car park located north of Dragonfly Drive.

P17 also accommodated up to 124 vehicles via stacked arrangements, increasing the CHW's parking capacity to 1,671 vehicles.

The CHW's car parks and associated access arrangements are shown in the existing traffic access plan in Figure 2.2.



Basemap source: *Westmead Redevelopment, http://www.westmeadproject.health.nsw.gov.au/ visited 27 February 2020*

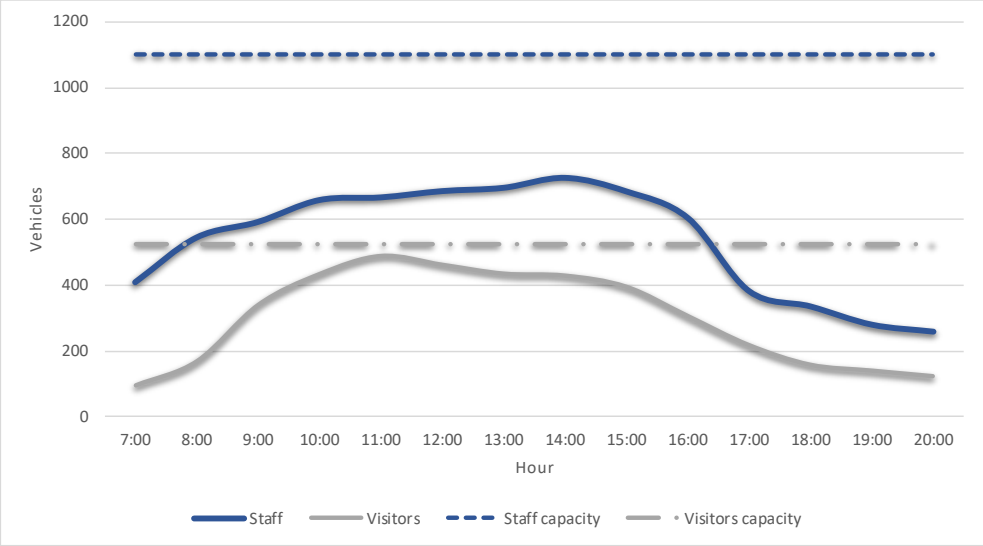
Figure 2.2 Existing parking and traffic access plan

[1] Car Parking Demand Study prepared by GTA Consultants (October 2019),

2.5 PARKING DEMAND

Health Infrastructure provided February 2020 car parking accumulation data for the CHW car parks operated by Secure Parking. A typical daily parking accumulation profile is shown in Figure 2.3.

Peak parking demand occurs in the middle of the day, between 11:00am and 2:00pm, where staff demand ranges from 650 to 750 vehicles and visitor demand ranges from around 430 to 500 vehicles. Overall the data indicates that the peak parking demand is around 70 per cent of the total CHW parking capacity.



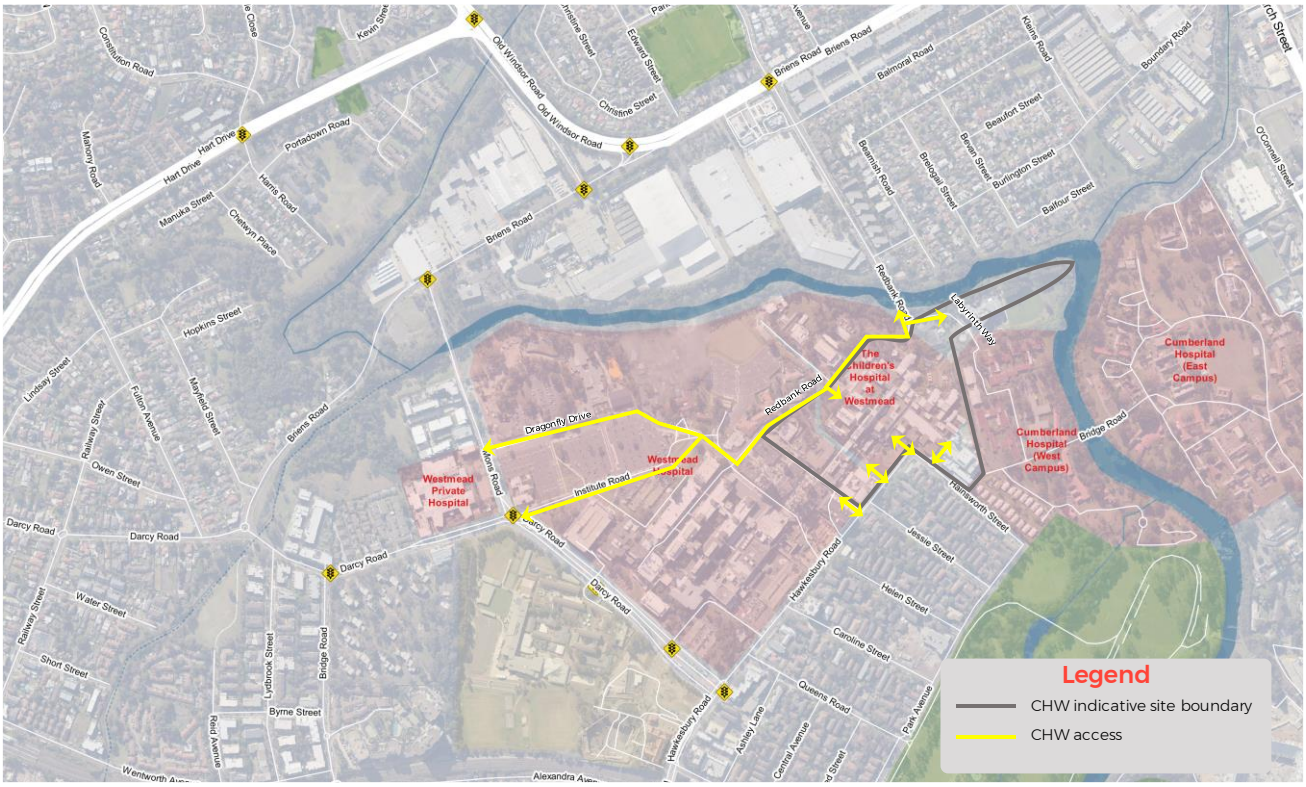
Data source: *Secure Parking, 2020*

Figure 2.3 CHW on-site parking demand

2.6 CHW ACCESS

The Westmead Health Precinct's internal road network generally comprises Redbank Road, Institute Road and Dragonfly Drive, as shown in Figure 2.4. These provide access to several car parks across the precinct, as well as providing back-of-house (primarily staff) access to CHW.

The main public access to CHW is via Hawkesbury Road and Hainsworth Street.



Basemap source: *NSW Department of Lands Spatial Information Exchange*

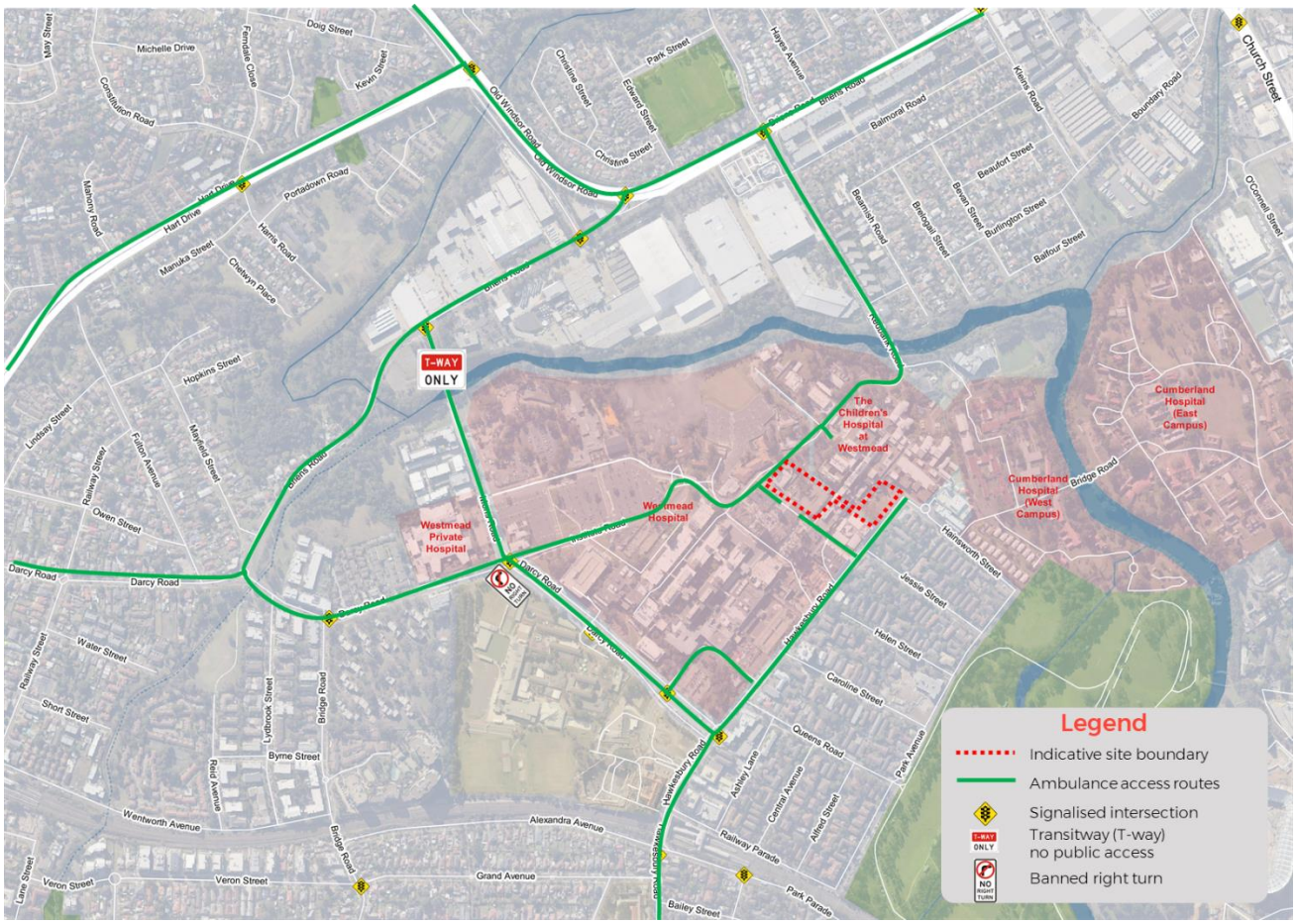
Figure 2.4 CHW vehicle access

2.7 AMBULANCE ROUTES

The existing Westmead Hospital and CHW Emergency Department's (ED) currently front Hawkesbury Road. Therefore, ambulances have typically accessed these locations via Darcy Road, Hawkesbury Road and Mons Road. These ED's have relocated to the recently constructed CASB, which has primary ambulance access from Redbank Road, immediately adjacent to the proposed PSB site. There is also an alternate ambulance access to the CASB building via Hawkesbury Road and Kids Research Lane.

Emergency vehicles, including ambulances are permitted on the T-way.

The existing and future ambulance access routes are shown in Figure 2.5.



Basemap source: *NSW Department of Lands Spatial Information Exchange*

Figure 2.5 Ambulance access routes

2.8 CHW TRAFFIC PATTERNS

2.8.1 STAFF

Referencing boom gate data for the CHW staff car park (P17), the daily traffic profile for the main staff car park is shown in Figure 2.6 across two days in February 2020. The peak period profiles on the same days are shown in Figure 2.7.

The data indicates the following:

- The peak period traffic profiles at P17 are relatively consistent across the two days that were analysed, although some variation occurred in the off-peak periods.
- Peak arrivals occur between 7:00am and 8:00am, with around 200 vehicles arriving in this hour.
- Peak departures occur between 4:00pm and 5:00pm, with around 160-190 vehicles departing during this hour.
- The AM peak activity generally occurs within a brief 30-minute period between 6:45am and 7:15am.
- The PM peak activity is spread out across the PM peak with a 15-minute spike between 4:00pm and 4:15pm.

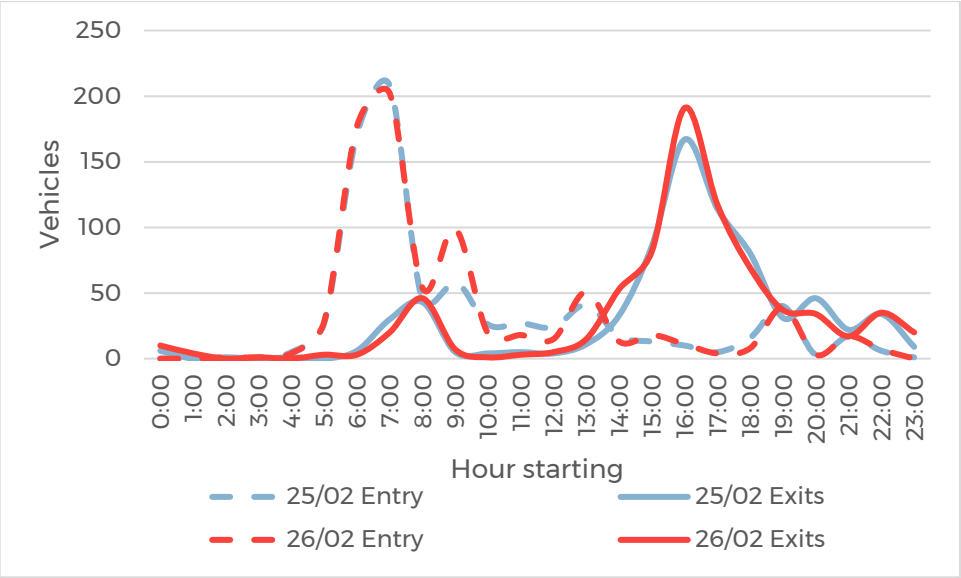


Figure 2.6 P17 staff car park boom gate daily profile

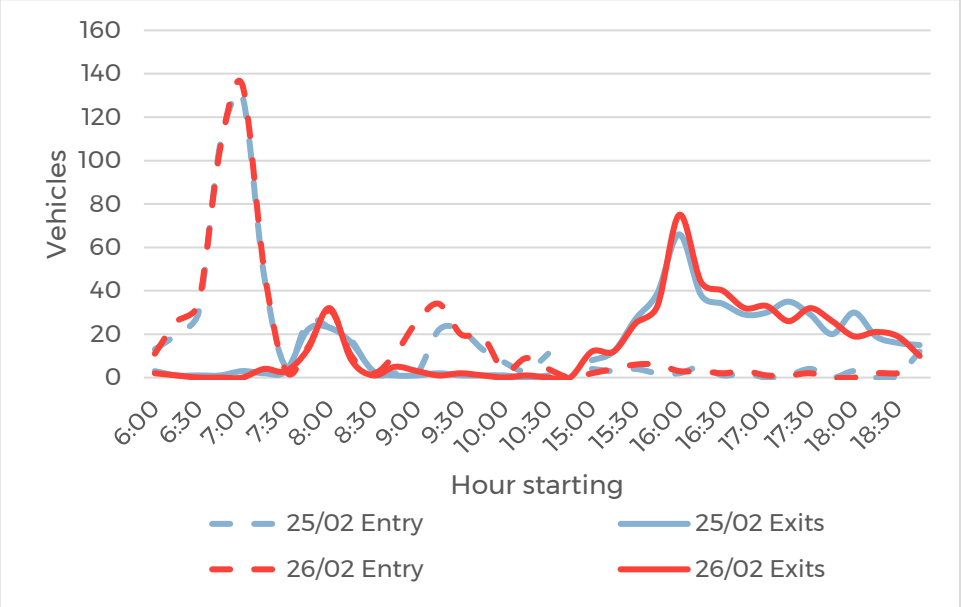


Figure 2.7 P17 staff car park boom gate peak period profile

2.8.2 VISITOR

The boom gate data for the CHW visitor car park (P6) is shown in Figure 2.8. The data shows that:

- The AM peak arrivals occur at 7:30-8:30am, with peak arrivals of 155 vehicles
- The AM peak departures occur at 3:15-4:15pm, with peak departures of 120 vehicles.

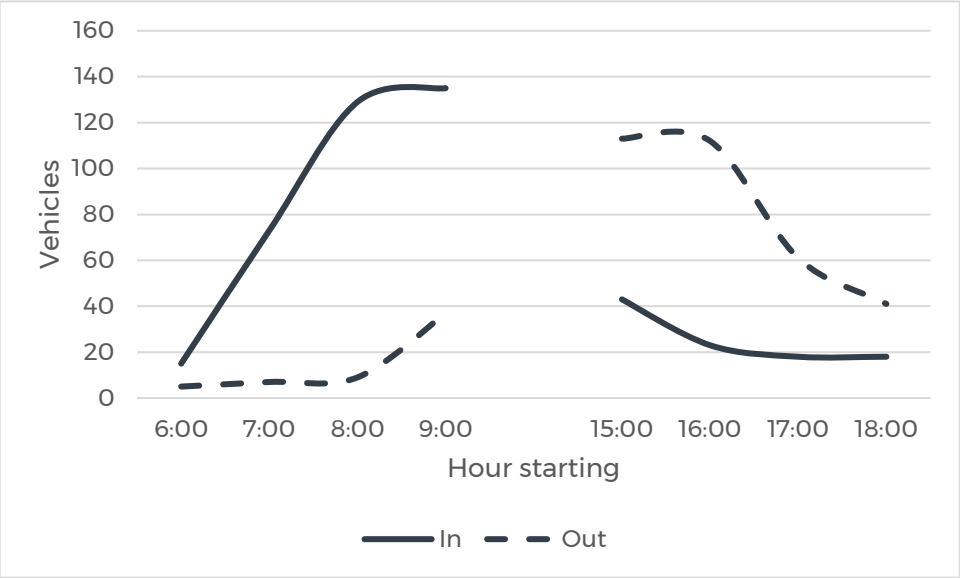


Figure 2.8 P6 visitor car park boom gate peak period profile

2.9 ROAD NETWORK TRAFFIC VOLUMES

2.9.1 SURVEY DATA

It is noted that this assessment has been conducted during the COVID-19 period, when typical travel patterns weren't observed and data collection couldn't be conducted. Therefore, we have relied on historical traffic data obtained from Matrix Traffic Surveys from 2018 and 2019, as well as February 2020 SCATS traffic counts (obtained from TfNSW) for the purpose of this assessment.

Weekday peak period traffic counts from 2018 were obtained for the following intersections:

1. Darcy Road/ Hawkesbury Road
2. Darcy Road/ Farmhouse Road/ Hospital access
3. Darcy Road/Catherine McAuley Westmead/Dental access
4. Darcy Road/Mons Road/Institute Road
5. Darcy Road/Bridge Road/Coles entry
6. Briens Road/ Old Windsor Road
7. Briens Road/ Redbank Road

2.9.2 PEAK HOUR SELECTION

As discussed in section 2.8, the CHW's peak traffic activity occurs within a brief 30-minute period between 6:45am and 7:15am in the AM and a brief 15-minute period between 4:00pm and 4:15pm in the PM. Traffic volumes are significantly lower outside these peak periods, as shown in Figure 2.7.

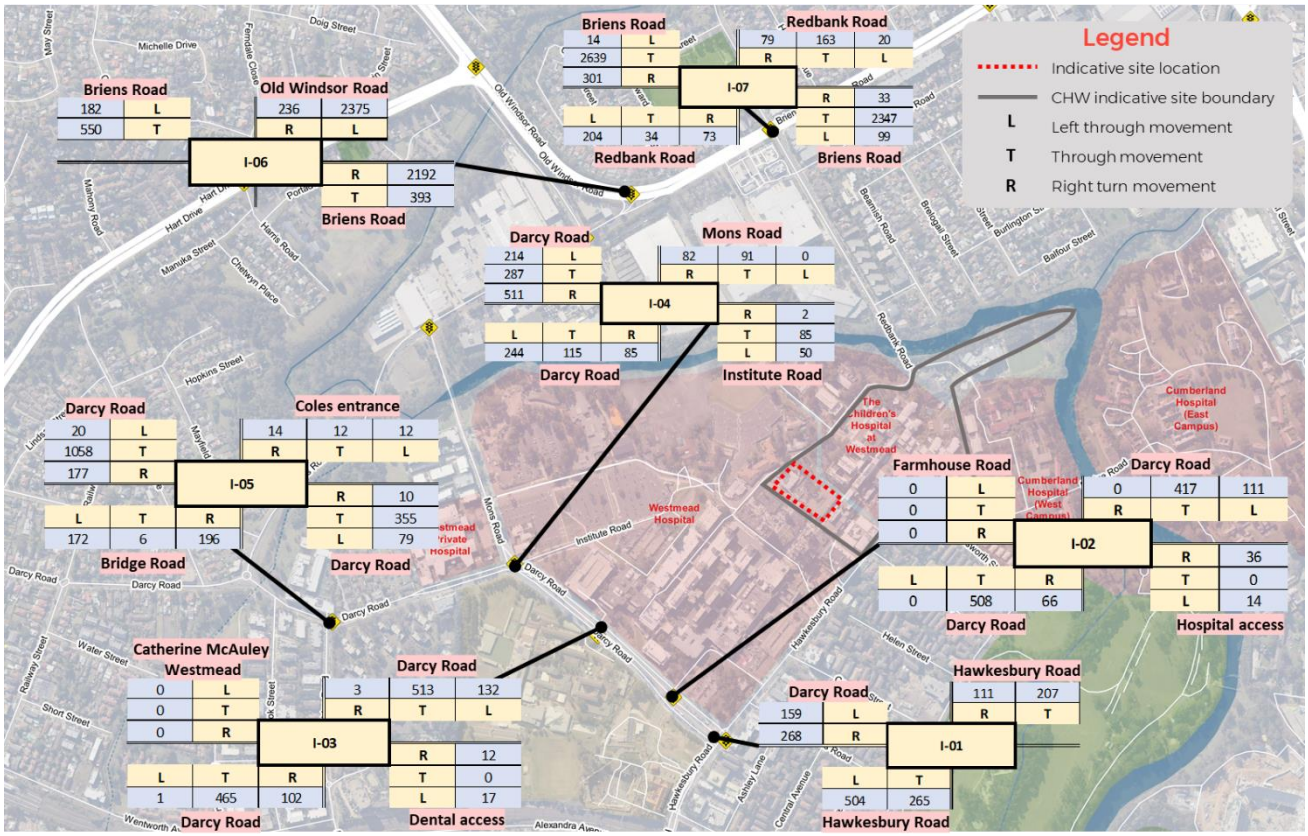
It is expected that these traffic patterns would also be adopted by future staff of the CHW and the proposed PSB, using the MSCP. Therefore, the selected assessment peak hours for this project are:

- AM peak hour - 7:00am-8:00am
- PM peak hour - 4:00pm-5:00pm.

It is noted that the development's AM peak hour would occur outside the road network AM peak hour.

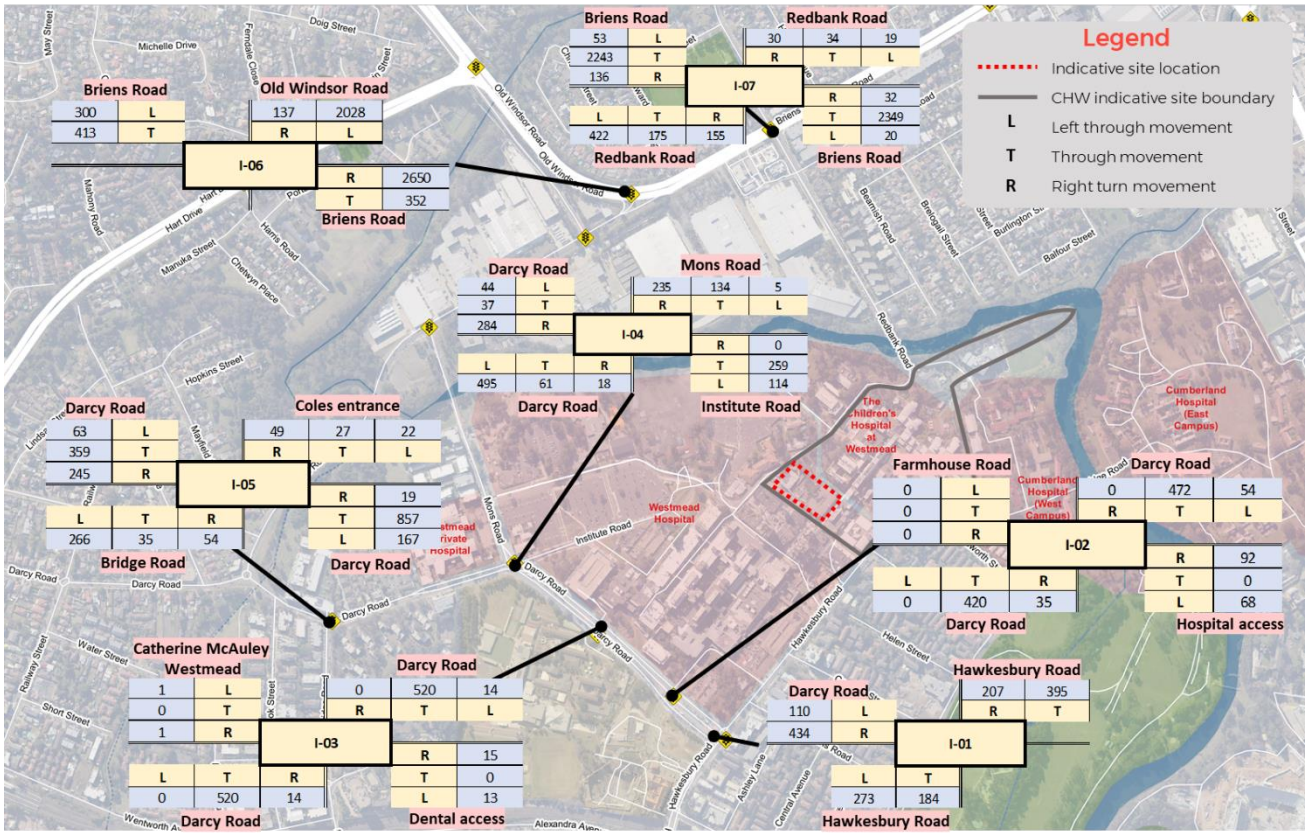
2.9.3 2018 EXISTING

The 2018 surveyed traffic volumes at the surrounding intersections for the AM and PM peak hours are shown in Figure 2.9 and Figure 2.10, respectively.



Basemap source: *NSW Department of Lands Spatial Information Exchange*

Figure 2.9 2018 existing AM peak hour surveyed traffic volumes



Basemap source: *NSW Department of Lands Spatial Information Exchange*

Figure 2.10 2018 existing PM peak hour surveyed traffic volumes

2.9.4 2020 BASE CASE

In the absence on new traffic data (due to COVID-19) we have reviewed historical 2018 traffic counts, supplemented by 2019 traffic counts at selected locations and February 2020 SCATS traffic counts at key locations. Overall, the traffic volumes across the three sets of data showed relatively consistent patterns, with some growth identified at specific locations. The daily traffic profiles and comparisons between available data sets are shown in Appendix A, for the Darcy Road, Hawkesbury Road and Institute Road corridors.

Based on the dataset comparisons, the 2018 traffic survey data through volumes has been increased to 2020 by adopting the compound growth factors for each of the corridors as summarised in Table 2.1 and Table 2.2 for the AM and PM peak hours, respectively.

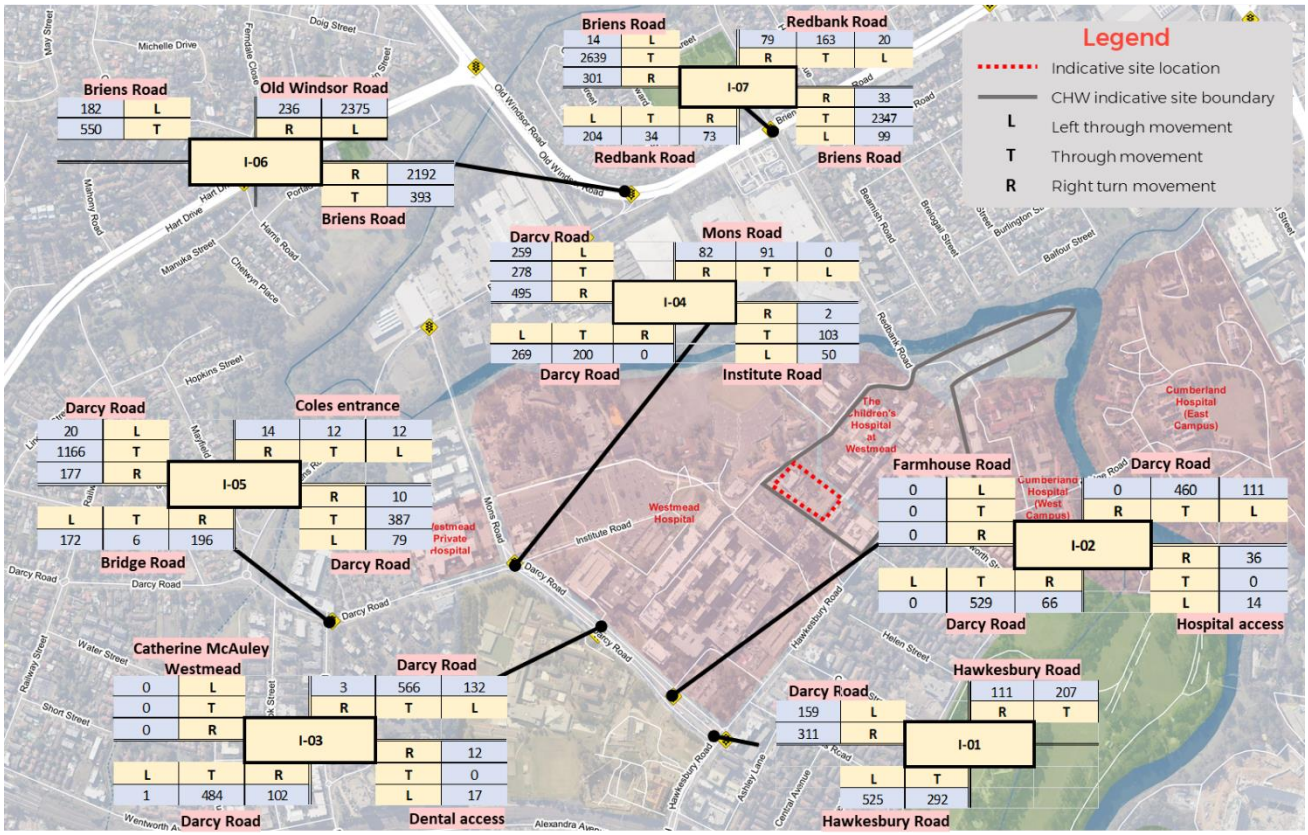
Table 2.1 AM peak growth factors from 2018

Corridor	Eastbound	Westbound	Northbound	Southbound
Briens Road corridor	None	None	-	-
Darcy Road corridor	-	-	2%	5%
Hawkesbury Road corridor	None	None	-	-
Institute Road	None	10%		

Table 2.2 PM peak growth factors from 2018

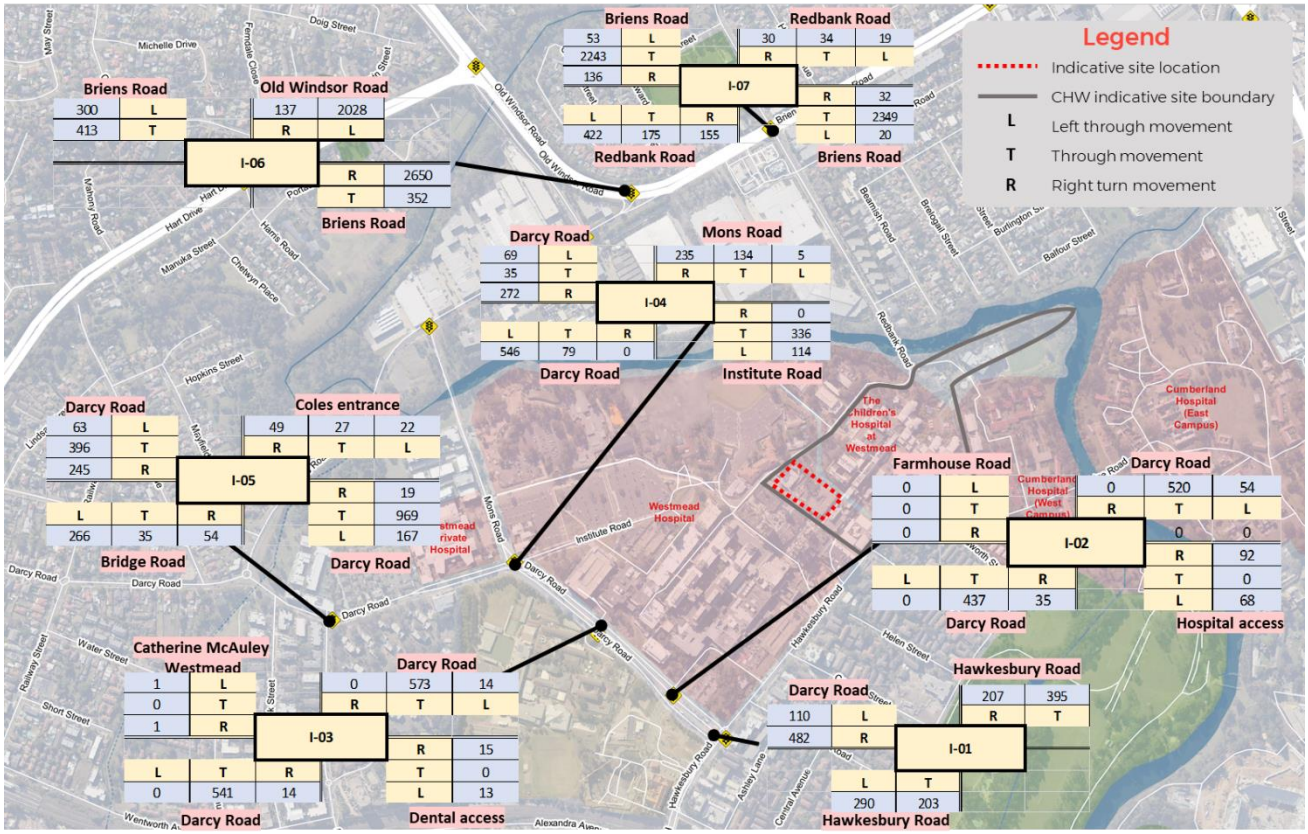
Corridor	Eastbound	Westbound	Northbound	Southbound
Briens Road corridor	None	None	-	-
Darcy Road corridor	-	-	None	None
Hawkesbury Road corridor	5%	None	-	-
Institute Road	None	14%		

The 2020 base case traffic volumes at the surrounding intersections for the AM and PM peak hours are shown in Figure 2.11 and Figure 2.12, respectively.



Basemap source: *NSW Department of Lands Spatial Information Exchange*

Figure 2.11 2020 AM peak traffic volumes



Basemap source: *NSW Department of Lands Spatial Information Exchange*

Figure 2.12 2020 PM peak traffic volumes

2.10 INTERSECTION OPERATION

The operation of the study intersections has been assessed using the SIDRA Intersection modelling software, adopting the 2020 base case traffic volumes.

The Traffic Modelling Guidelines (Roads and Maritime Services, 2013) specifies that intersection operation is generally measured by degree of saturation, level of service and 95th percentile base of queue distance.

SIDRA Intersection measures these elements, with the intersection level of service being a measure of the average delay at the intersection, as defined by the criteria set out in Table 2.3.

Table 2.3 SIDRA intersection level of service criteria

Level of service	Average delay (seconds per vehicle)	Criteria for traffic signals	Criteria for give way and stop signs
A	<14	Good operation	Good operation
B	15 to 28	Good operation with acceptable delays and spare capacity	Good operation with acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Near capacity	Near capacity and accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays	At capacity, requires other control mode
F	>70	Extra capacity required	At capacity, requires other control mode

Source: Adopted from Guide to Traffic Generating Developments (Roads and Maritime Services, 2002)

Table 2.4 and Table 2.5 present a summary of the 2020 base case intersection operations of the key study intersections during the weekday AM and PM peak hours.

It should be noted that the critical movement for level of service at a roundabout or priority-controlled intersection is the movement with the worst delay, whereas for a signalised intersection, the average movement delay and level of service over all movements should be adopted.

The intersection modelling results indicate the surrounding intersections are generally operating with some spare capacity during the assessed CHW peak hours (not the road network peak hours) with the exception of the intersections of Briens Road and Redbank Road and Darcy Road, Mons Road and Institute Road, which are generally operating at capacity during the AM and PM peak hours, respectively.

Table 2.4 AM peak intersection operation – 2020 base case

Intersection	Degree of saturation	Average delay (secs)	95th percentile queue (m)				Level of service
			South	East	North	West	
Briens Road and Redbank Road	1.04	51	71	506	-	505	D
Bridge Road and Darcy Road	0.91	30	60	46	6	160	C
Darcy Road, Mons Road and Institute Avenue and	0.78	31	36	21	19	99	C
Dental Hospital, Marist High School and Darcy Road	0.37	10	25	3	30	0	A
Hospital Access, WSU and Darcy Road	0.38	17	52	9	13	5	B
Darcy Road and Hawkesbury Road	0.52	25	-	22	33	49	B
Railway Parade and Hawkesbury Road	0.54	11	22	45	-	18	A
Alexandra Avenue and Hawkesbury Road	0.63	33	39	46	52	80	C

Table 2.5 PM peak intersection operation – 2020 base case

Intersection	Degree of saturation	Average delay (secs)	95th percentile queue (m)				Level of service
			South	East	North	West	
Briens Road and Redbank Road	0.80	30	184	323	-	289	C
Bridge Road and Darcy Road	0.74	27	51	105	21	44	B
Darcy Road, Mons Road and Institute Avenue and	0.99	46	45	82	56	24	D
Dental Hospital, Marist High School and Darcy Road	0.21	4	4	4	13	0	A
Hospital Access, WSU and Darcy Road	0.6	41	56	25	64	5	C
Darcy Road and Hawkesbury Road	0.73	23	-	58	50	49	B
Railway Parade and Hawkesbury Road	0.74	30	58	130	-	24	C
Alexandra Avenue and Hawkesbury Road	0.78	35	58	55	37	54	C

2.11 PUBLIC TRANSPORT SERVICES

2.11.1 TRAIN

The T1 Western, T5 Cumberland and Blue Mountains lines stop at Westmead station, which is about a 12 minute walk from the CHW.

The T1 Western Line operates in the east-west direction via the City Circle in the east and Emu Plains or Richmond in the west and north west respectively. It interchanges with the T9 Northern Line at Strathfield, the T7 Olympic Park Line and the T3 Bankstown Line at Lidcombe and the T2 Inner West and Leppington line at Parramatta, Lidcombe or Strathfield.

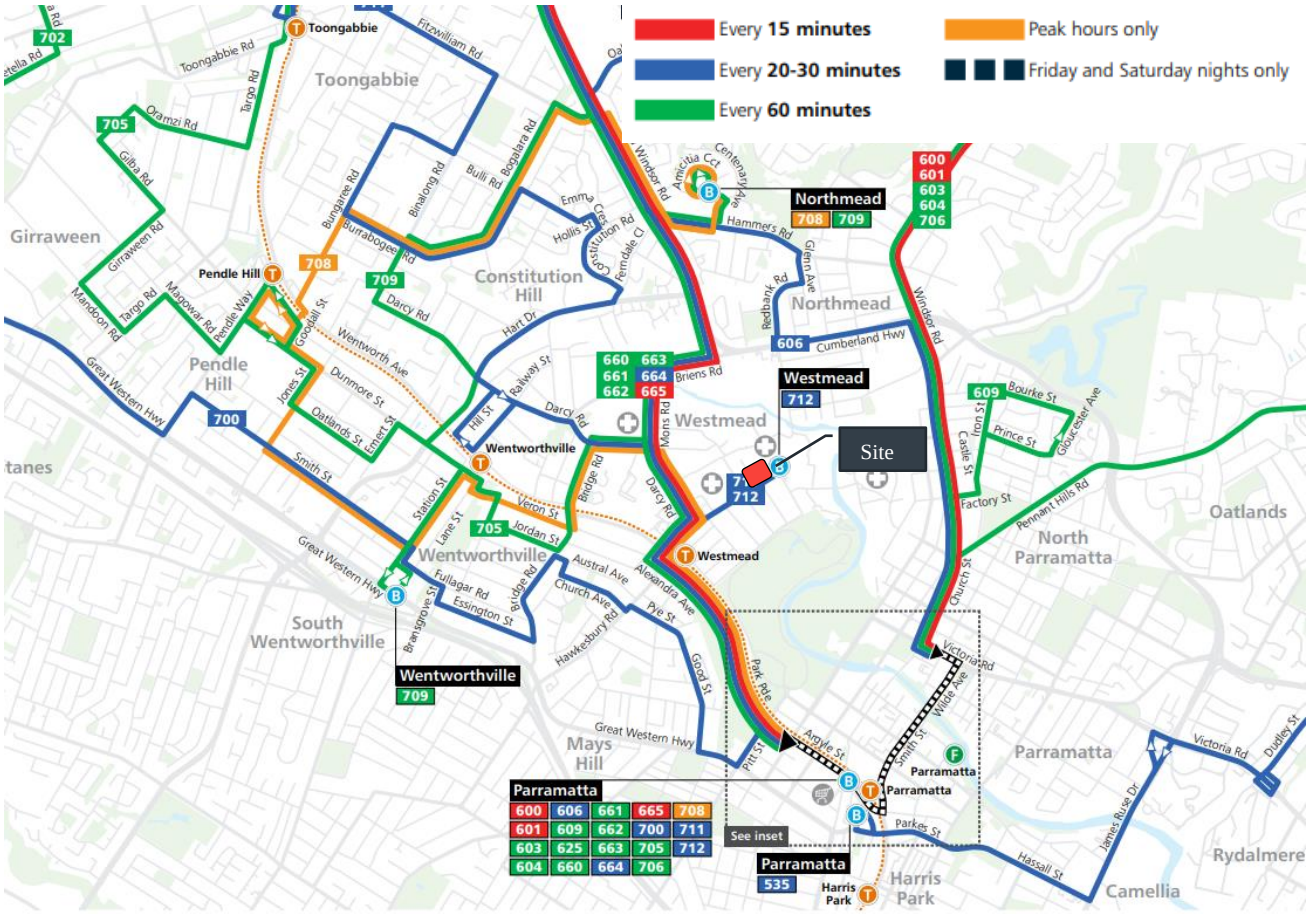
The T5 Cumberland Line provides a north-south line servicing western Sydney from Richmond to Leppington. The line interchanges with the T1 Western and T2 Inner West and Leppington lines at Parramatta, the T3 Bankstown Line at Cabramatta and Liverpool, and the T8 Airport and South Line at Glenfield.

The T1 Western Line and the T5 Cumberland Line operate with a peak weekday frequency of 5-10 minutes and 30 minutes, respectively. The Blue Mountains train stops at Westmead station four times per weekday in each direction.

2.11.2 BUS

The surrounding bus network including its routes and frequencies are shown in Figure 2.13. Several routes, with a range of frequencies, use the T-way along Mons Road and Darcy Road, connecting to north-west Sydney. This includes route 665 which operates between Rouse Hill and Parramatta on a 15 minute frequency. In addition, the following routes service the site:

- 705 (Blacktown to Parramatta via Seven Hills) stops on Darcy Road and operates hourly throughout the day, with some 30 minute services during the weekday peak periods
- 708 (Constitutional Hill to Parramatta via Pendle Hill) stops on Darcy Road but operates with one afternoon service and one AM peak service
- 711 (Blacktown to Parramatta via Wentworthville) and route 712 (CHW to Parramatta) stop on Hawkesbury Road and have a 20-30 minute frequency during the weekday peaks
- 818 (Westmead to Merrylands) stops on Hawkesbury Road and operates hourly throughout the day.



Source: *Hills District Bus Guide, http://www.cdcbus.com.au/images/files/maps/hillsbus/Region_4_Network_Map.pdf, accessed 27 February 2020*

Figure 2.13 Surrounding bus network (excluding route 818)

2.11.3 SYDNEY'S BUS FUTURE

Sydney's Bus Future (Transport for NSW, 2013) is the NSW Government's long-term plan to redesign Sydney city's bus network. It proposed a three-tiered bus network comprising:

- Rapid bus routes (high frequency, all-day, linking centres)
- Suburban bus routes (high-frequency, more closely spaced stops, link suburban areas to major centres)
- Local bus routes (increased coverage, daytime services, less frequent, more closely spaced stops).

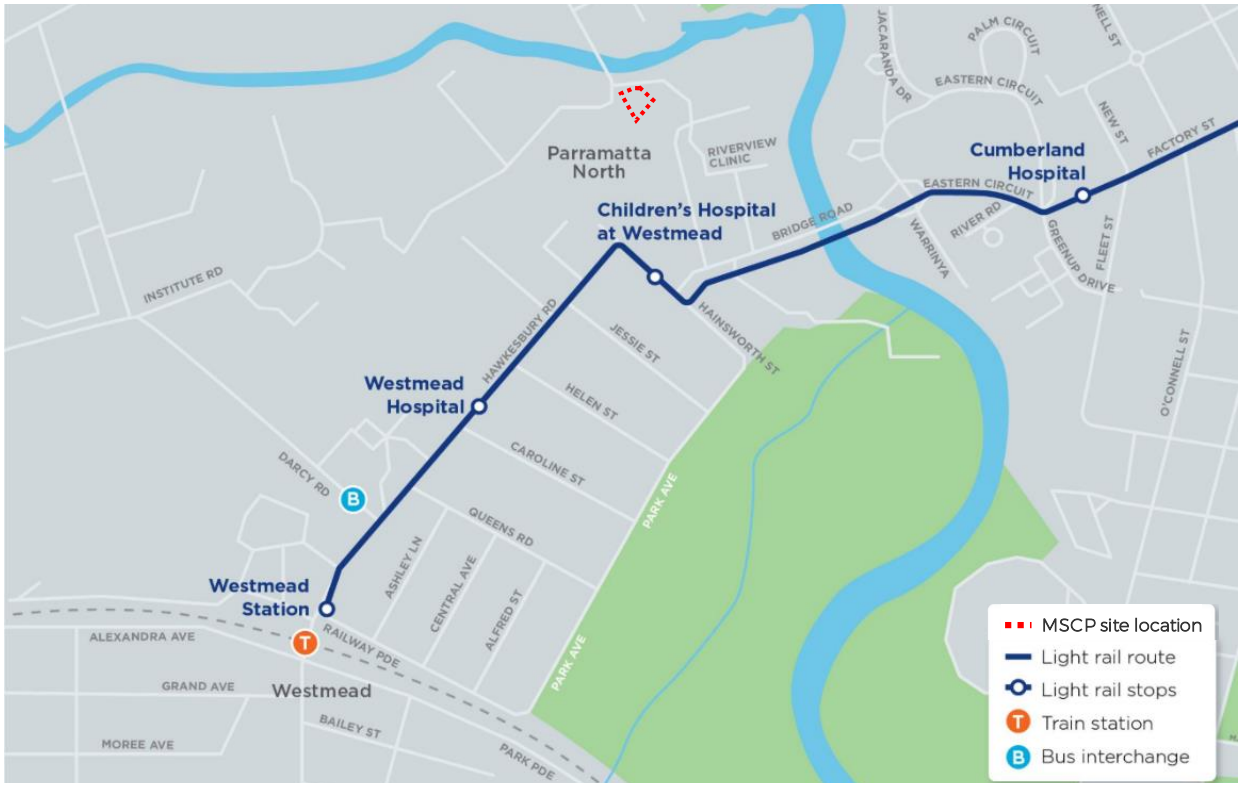
The plan has now been superseded by the *Future Transport 2056 Strategy* and planning has been revised for most of the "rapid bus routes" identified for Greater Parramatta, however it is still a useful guide for bus network and infrastructure planning. Bus network changes to the North-West T-way may have an impact on the Westmead and Wentworthville precincts.

2.11.4 FUTURE PARRAMATTA LIGHT RAIL

Parramatta Light Rail (PLR) is a major infrastructure project connecting Westmead with Parramatta, Camellia and Carlingford. Stage 1 was approved in 2018 and is currently under construction. It is expected that services will commence in 2023.

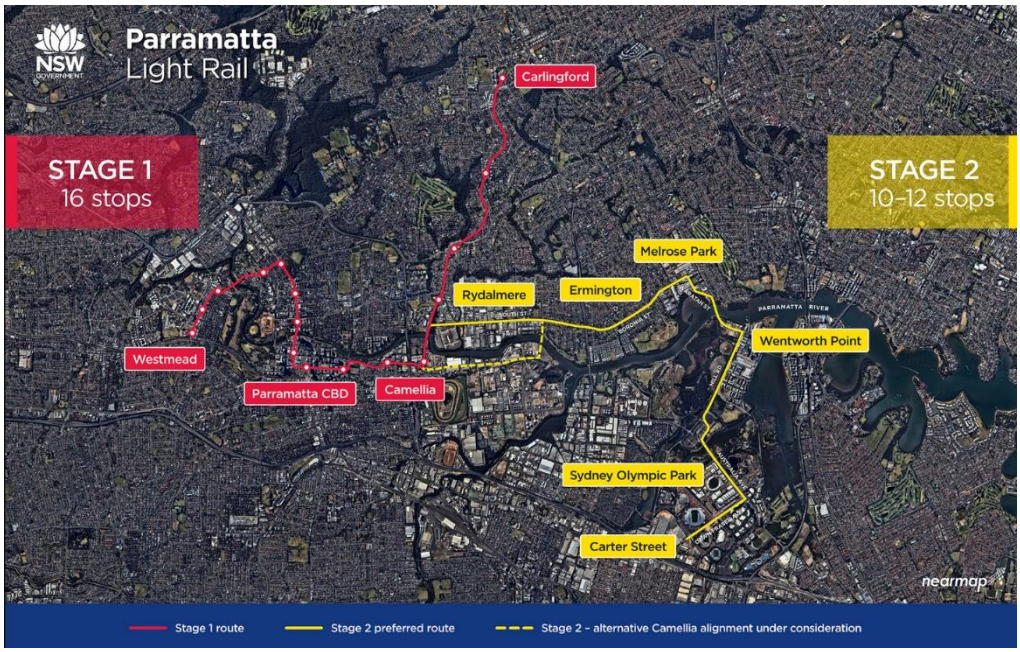
In Stage 1, there will be three stops within Westmead, as shown in Figure 2.14. The Westmead stop is located to the east side of Hawkesbury Road, on the opposite side of Railway Parade to the station. The Westmead Hospital stop is located in the centre of Hawkesbury Road and the CHW stop is to be located on Hainsworth Street about 250-300m from the proposed PSB. These three stops combine to significantly increase the public transport accessibility of Westmead.

The approved Stage 1 and the preferred Stage 2 network is shown in Figure 2.15.



Basemap source: http://www.parramattalightrail.nsw.gov.au/node/213/, accessed 23 October 2020

Figure 2.14 Parramatta Light Rail preferred alignment through Westmead



Source: http://data.parramattalightrail.nsw.gov.au/s3fs-public/PLR_Stages1&2_Waratah2.jpg?PS.cK_UytTwCs3MztqO819g6DwcnuZ3V, accessed 23 October 2020

Figure 2.15 Parramatta Light Rail preferred alignment for Stage 1 and Stage 2

2.12 CYCLING

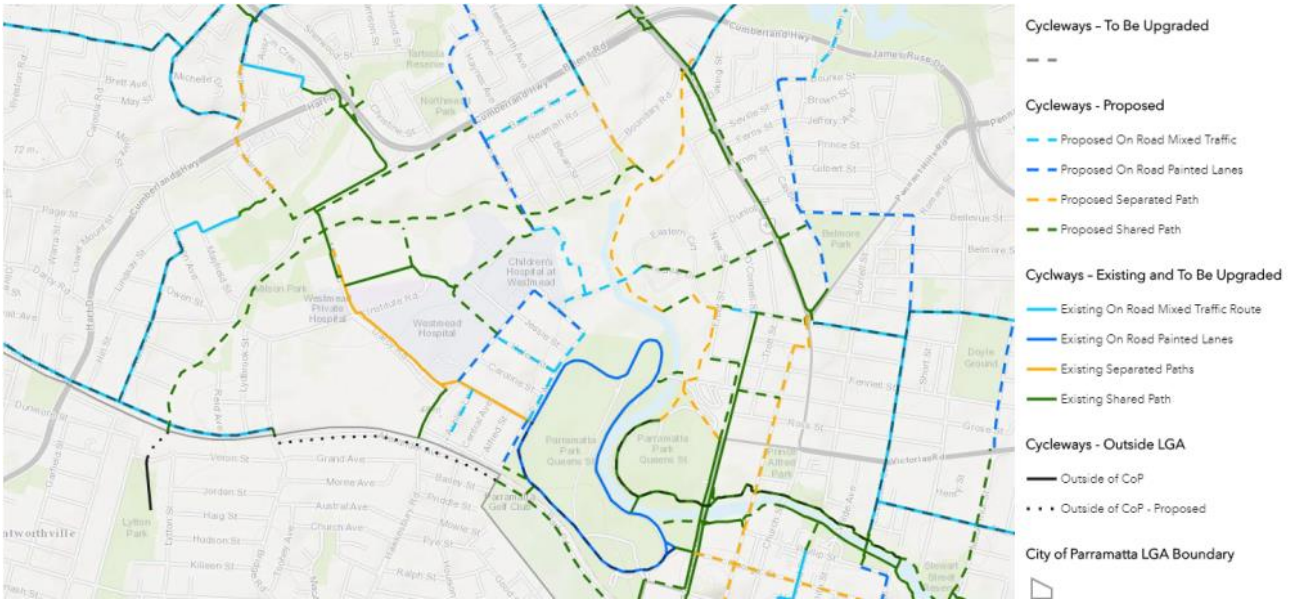
2.12.1 EXISTING AND PLANNED NETWORK

Westmead currently lacks a comprehensive network of safe, complete and connected cycling routes. Sections of cycling infrastructure, where present, are short and isolated, with poor links both within, and to and from the precincts.

The *Parramatta Bike Plan 2017* was released in May 2017 in support of Parramatta City Council's vision to become more sustainable, liveable and productive as Sydney's Central City. The plan aspires to encourage safe and healthy lifestyles by increasing cycling mode share to 5 per cent of all trips to work (commute) in the City of Parramatta LGA and 10 per cent of all trips ending in the CBD. The Plan outlines several "network design principles" to be used in the development of the Parramatta bicycle network including safety, connecting centres, strengthening the existing network, directness and coverage.

The proposed Parramatta Cycling Network identifies several corridors within the study area of varying typology (Figure 2.16). Corridors that may be beneficial to the CHW's staff and visitors include:

- Proposed painted bicycle lanes on Park Avenue, Hainsworth Street and Hawkesbury Road in Westmead
- Existing physically separated bicycle lanes From Westmead to Parramatta CBD (Queens Road and Parramatta Park)
- Existing off-road separated bicycle lanes along Darcy Road and Mons Road (North-West T-way)
- Proposed Toongabbie Creek shared path
- Proposed on-road facilities on Redbank Road, Balmoral Road and Kleins Road.



Source: Parramatta Bike Plan, Parramatta City Council, (2018)

Figure 2.16 Planned cycling network within the Westmead region

Parramatta Light Rail will also include an active transport link along its alignment which will also strengthen cycling connections to Parramatta CBD and the wider region.

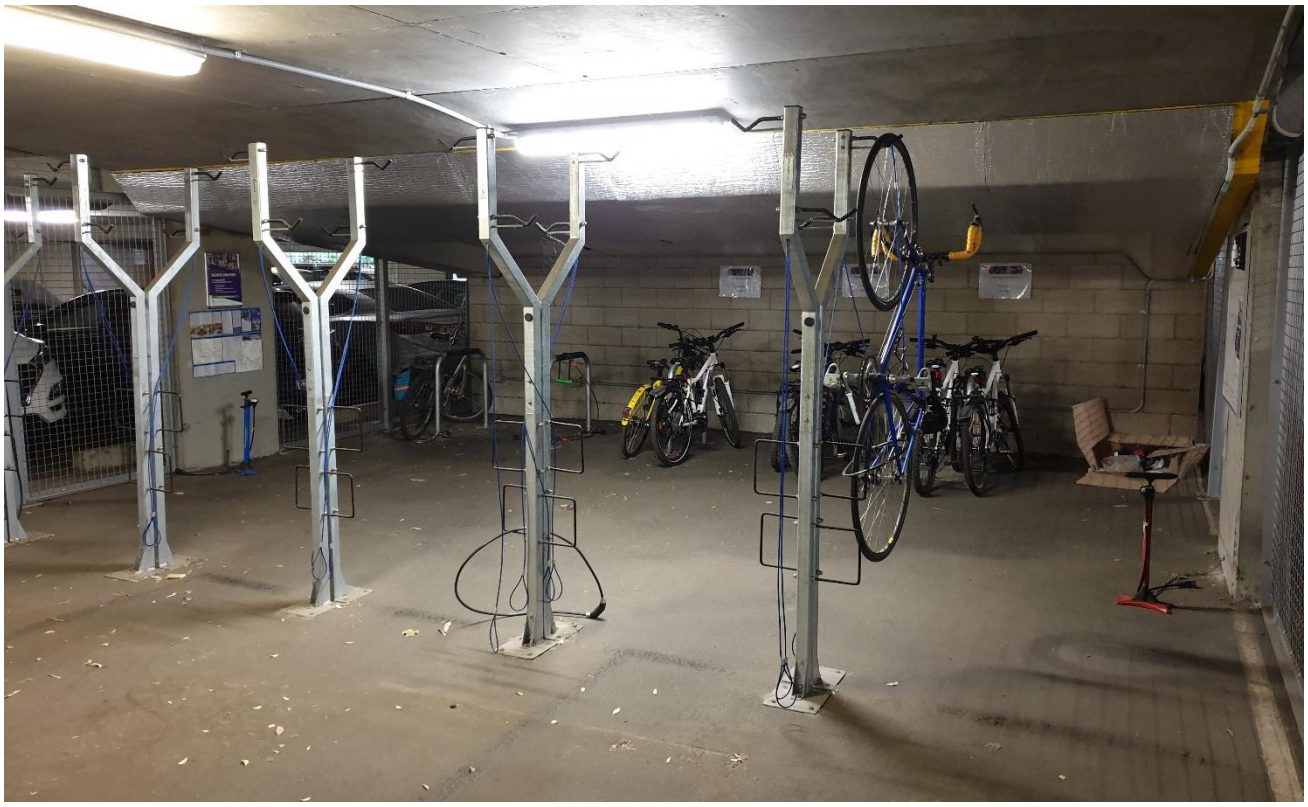
Bicycle storage facilities are provided across campus, including a mixture of secure bicycle cages and bike hoops at strategic entry points for visitors. CHW staff were using a bicycle parking facility which was located in the P17 car park. Following the demolition of P17, the existing bike parking is to be relocated and expanded to an unused undercroft area located in the Kid's Research Institute (KR) building, adjacent to the proposed PSB. The facility could be accessed via Redbank Road and Hawkesbury Road via Kids Research Lane.

The proposed bicycle parking would have capacity for up to 50 spaces, set out in accordance with the Australian Standards. It is noted the proposed bicycle parking has been approved through a Review on Environmental Factors.

On-site observations indicated that the existing bike parking facility typically had plenty of spare capacity, as shown in Figure 2.17. The facility had capacity for around 40 bicycles, therefore, the proposed larger facility would be suitable to accommodate the existing and future staff bicycle parking demand.

In addition, the CHW staff have access to the following substantial end-of-trip facilities located within the precinct:

- The recently opened CASB contains 8 showers, change rooms and 90 bike spaces.
- The proposed PSB would have 6 staff showers and change rooms available throughout the building, co-located with clinical departments.
- The existing CHW has centralised end-of-trip facilities including 8 showers and change rooms located near the new bicycle storage. Anecdotally, these are located due to staff preference to utilise facilities adjacent to the clinical departments, of which there are facilities throughout the existing CHW.



Source: PwC

Figure 2.17 Existing bike parking facility utilisation

2.12.2 SYDNEY'S CYCLING FUTURE

Sydney's Cycling Future (Transport for NSW, 2013) is a long-term plan for cycling in Sydney that proposes to create safe, connected cycling networks by:

- Creating new or improve existing infrastructure and facilities, particularly within 5 km of major centres or near key destinations
- Fixing missing links
- Creating hierarchy of safe cycling routes
- Delivering improvements with major infrastructure projects.

The Westmead Health Precinct will benefit from identified cycle network improvements including the Parramatta Valley Cycleway, cycleway improvements in Parramatta Park and the M4 Cycleway. Opportunities exist to improve connections to these cycleways including improved cycle infrastructure along the Parramatta River, as well as new north-south connections to the M4 Cycleway. The plan identifies that cycling links which feel safe and match cyclists' abilities are key to promoting increased cycling trips. These links are required outwards from centres and connecting to key routes and destinations such as other centres. Also identified is the importance of providing adequate end-of-trip facilities at key destinations.

2.13 WALKING

2.13.1 EXISTING NETWORK

For pedestrians accessing CHW via train, the walking distance between Westmead station and CHW is approximately 850m or a 10-15 minute walk, via Hawkesbury Road. The Hawkesbury Road footpath in front of the CASB has been upgraded to be 4-5m wide. Further footpath widening works along Hawkesbury Road are also under construction as part of PLR works.

2.13.2 SYDNEY'S WALKING FUTURE

Sydney's Walking Future (Transport for NSW, 2013) is an action plan to promote more walking in Sydney. This will be provided for through:

- Design and development principles for interchanges prioritising walking routes
- Provision for walking links from the surrounding suburbs
- A focus on safety and access for disabled persons or the mobility impaired
- The walkability index which will lead to improved standards, guidelines and benchmarks for walking solutions
- Improved design of pedestrian infrastructure
- Education programs and conferences
- Involvement with community events and initiatives
- Improved trip planning information on the ground and online.

Sydney's Walking Future targets the removal of barriers to pedestrian movement within approximately 2km of activity centres.

2.14 JOURNEY TO WORK DATA

Australia Bureau of Statistics (ABS) Journey to Work (JtW) data from the 2011 and 2016 Census's were reviewed to understand the commuter mode share patterns for staff of the Westmead area. The data is only available for a Statistical Area 2 (shown in Figure 2.18), which is larger than the CHW site or the Westmead Health Precinct. However, given that the precinct has a large staff population, the data is considered to be representative of employees of the Westmead Health Precinct.

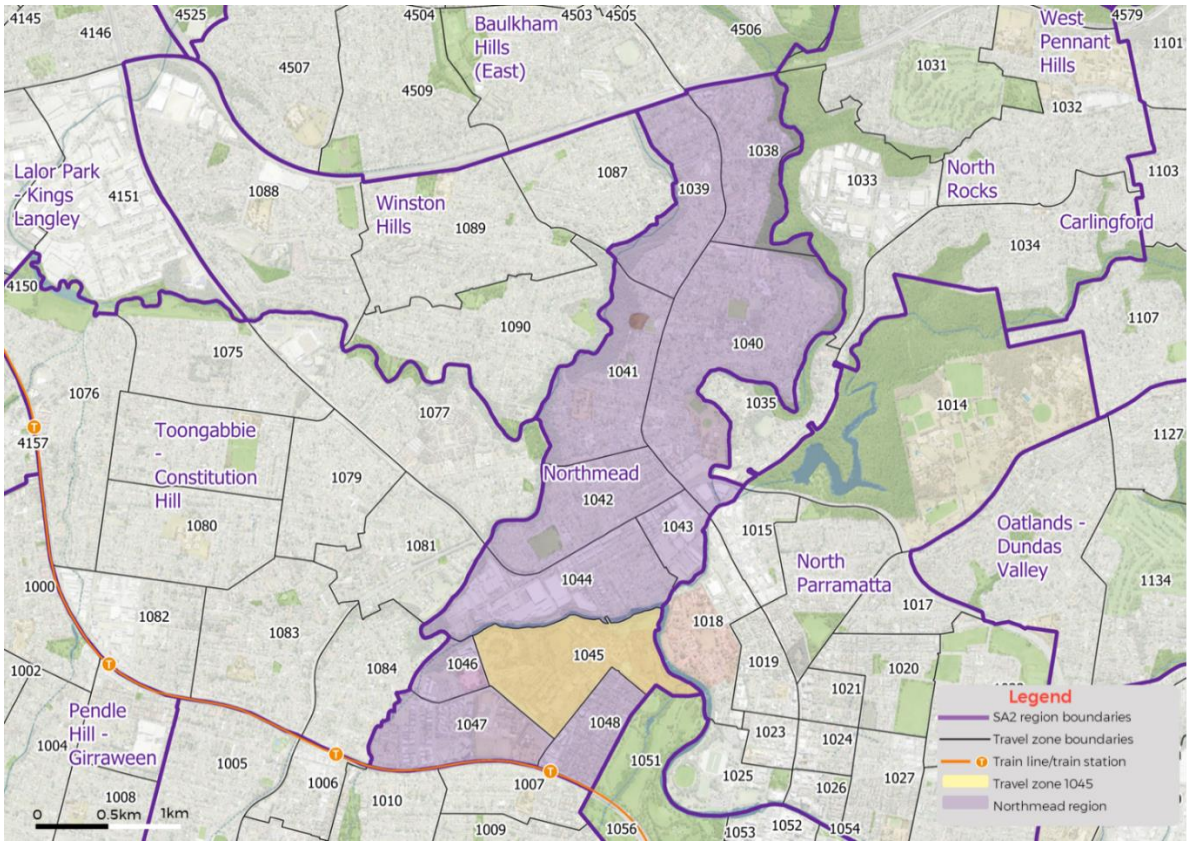


Figure 2.18 Journey to Work region boundaries

The mode share data for 2011 and 2016 JtW data is summarised in Table 2.6. The place of origin for the employees of the area are shown in Figure 2.19.

Overall, the JtW highlights the following:

- Large proportion of employees originate from areas nearby to the Westmead Health Precinct or to the west and north-west of the precinct, with the top three regions being:
- Northmead
- Girraween – Westmead
- Toongabbie – Constitution Hill
- Approximately half of the commuters who live in the Northmead area, walk to their place of work 403 of 996 employees).
- The number of employees who rely on private vehicle has reduced by around 4 per cent since 2011. Similarly, the he number of employees who use public transport has increased since 2011 by 7 per cent.

Table 2.6 Journey to Work data for Statistical Area 2

Mode	2011	2016	% change from 2011 to 2016
People	13,732	14,715	
Vehicle driver	78%	75%	-3%
Vehicle passenger	5%	4%	-1%
Train	9%	12%	+3%
Bus	0%	4%	+4%
Walk	4%	4%	0%
Cycling	1%	0%	-1%
Other	3%	1%	-2%

Source: Australia Bureau of Statistics Journey to Work

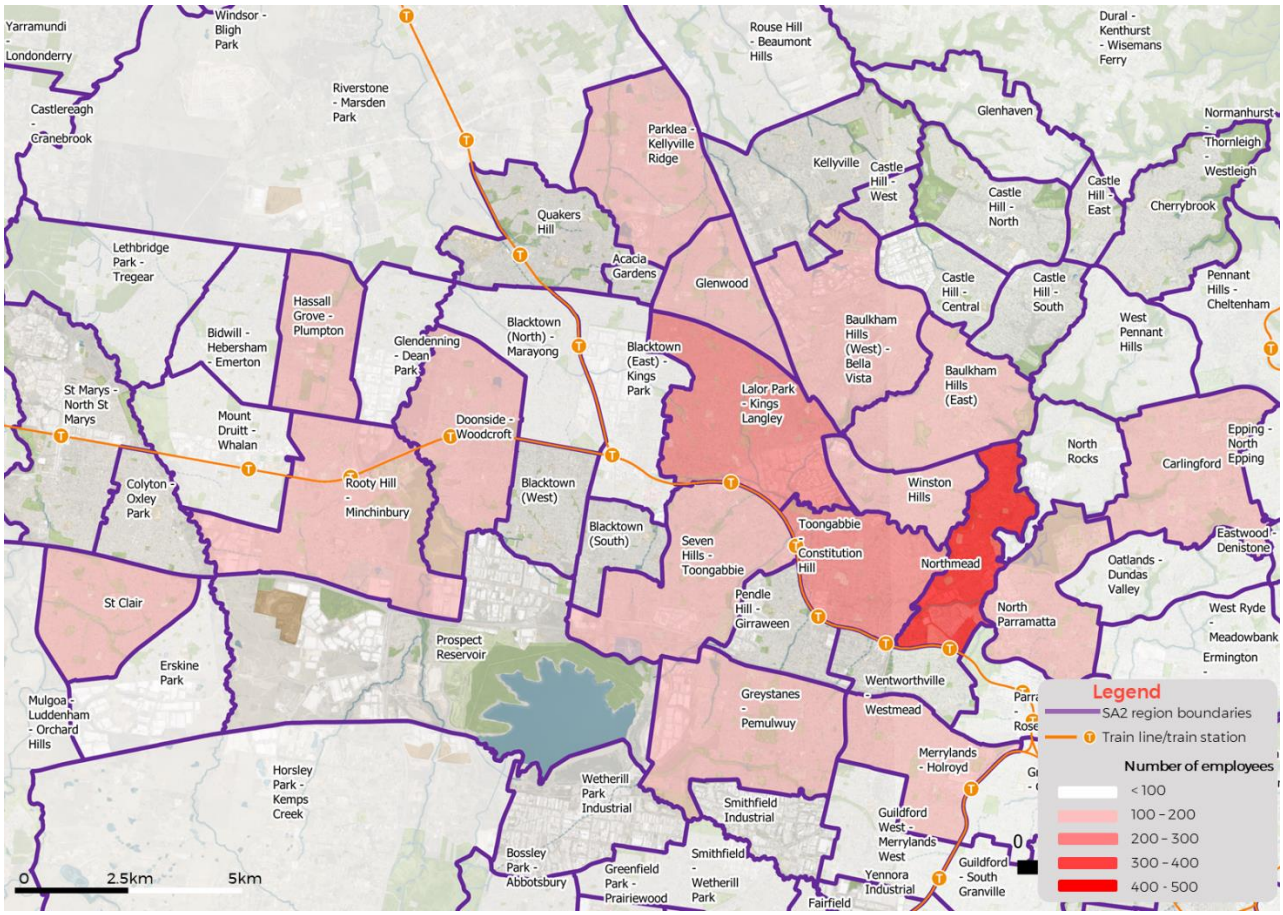


Figure 2.19 Journey to Work 2016 employee place of origin

2.15 STAFF TRAVEL SURVEYS

CHW staff surveys were completed in July 2019 by GTA Consultants as part of the CHW Stage 2 Car Park Demand Study. The surveys had 864 responses and identified the mode share splits summarised in Table 2.7. The staff travel survey results reflected similar results to the JtW data, including nearly 80 per cent of staff travel to/from CHW via private vehicle.

The staff travel surveys also noted that the average private vehicle occupancy was 1.1 persons per vehicle, demonstrating a lack of carpooling from staff.

Table 2.7 Mode share of staff respondents

Mode of transport	Stage travel survey response (%)
Car	79.2
Train	11.7
Bus	2.6
Combination of bus and train	3.7
Bicycle	0.8
Walk	1.8
Other	0.2

Source: CHW Stage 2 Parking Demand study (GTA Consultants, 2019)

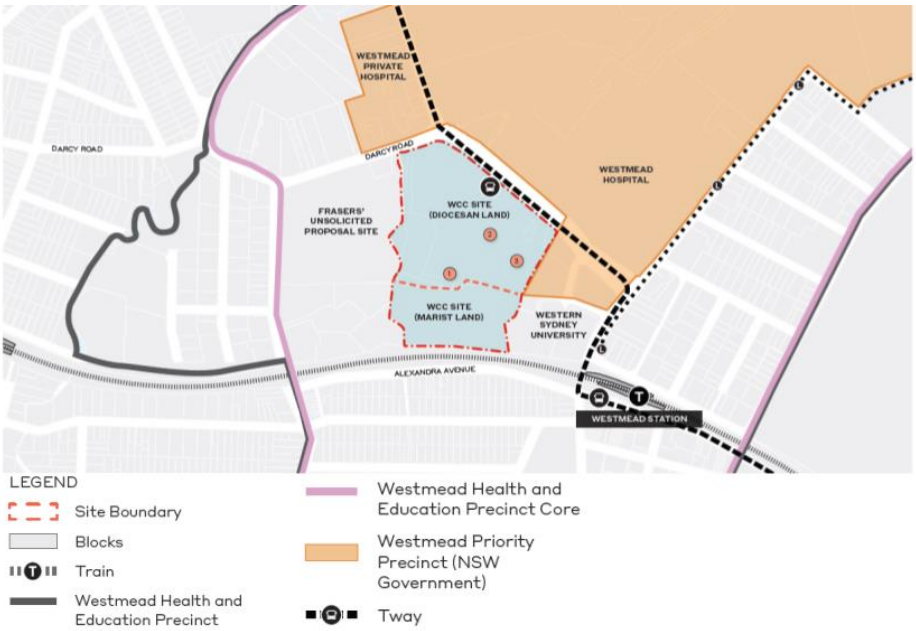
CHW staff also provided responses to why they did not use public transport. The main factors contributing to staff not choosing public transport include:

- Longer commute times using public transport when compared with driving
- No direct route to the CHW site, requiring staff to change services to complete their journey
- Lack of convenient public transport stops, and routes close to home
- Insufficient public transport services available for typical start and finish times.

2.16 SURROUNDING PLANNED DEVELOPMENTS

2.16.1 WESTMEAD CATHOLIC EDUCATION CAMPUS

The Westmead Catholic Education Campus has submitted a State Significant Development application requesting the redevelopment and extension of the education campus located on 2 Darcy Road. The extent of the proposed redevelopment is seen on Figure 2.20.



Basemap source: *Ethos Urban*

Figure 2.20 Westmead Catholic Education Campus site location and context

The transport impact assessment indicated that the primary school is expected to generate an additional 90 trips in each direction in both AM and PM school peak hours in 2023, and an additional 450 trips in each direction in both AM and PM peak hours by 2033.

A proposed Out-of-School Hours childcare facility to be developed in parallel within the site is expected to reduce the developments peak hour traffic generation by between 49 and 77 per cent of peak trips. With the proposed childcare facility moving trips out of the peak hours, the intersections along Darcy Road and Hawkesbury Road were expected to perform similar to their current operation.

2.16.2 PARRAMATTA NORTH

The Parramatta North Urban Transformation project is located on the existing Cumberland Hospital sites surrounding the Parramatta River in Westmead and Parramatta North. The approved Parramatta North Urban Transformation rezoning proposed to deliver:

- 20,000 square metres of floor space of heritage items
- Village centre of approximately 4,000 square metres of floor space
- 3,000 homes that are located within the proximity of the Parramatta CBD, transport and local services.

The Department of Planning, Industry and Environment is undertaking more detailed planning for the precinct.

3 CAR PARKING ASSESSMENT

3.1 REQUIREMENTS

3.1.1 FUTURE CAR PARKING DEMAND

The car parking requirements for different development types are set out in City of Parramatta Council's DCP 2011, and The Guide to Traffic Generating Developments (RMS, 2002). However, neither guide provides any specific parking requirements for hospitals. Therefore, a detailed parking demand study was completed on behalf of Health Infrastructure to determine parking requirements for the proposed CHW Redevelopment Stage 2.

It is understood that the Car Parking Demand Study (GTA Consultants, 2019) was completed using a Parking Demand Model based on first principles analysis and calibrated against on-site parking observations.

The Study determined that an additional 280 spaces would be required to accommodate the 2031/32 demands of the Stage 2 Redevelopment adopting some private vehicle mode share reduction to account for the expected increase in public transport uptake, once PLR and Sydney Metro are completed.

Approximately 110 of these spaces would be staff and 170 would be for visitors.

In addition, the study identified the need for a further 35 spaces to replace the stacked parking arrangements that are currently accommodated within the P17 car park that is planned to be demolished.

3.1.2 P17 REPLACEMENT

As discussed in section 2.4, the existing CHW staff car park, P17 will need to be replaced as part of the project. P17 currently accommodates the following:

- 555 formal parking spaces
- an additional 124 vehicles via stacked parking arrangements.

Therefore, P17's total capacity is 679 spaces. It is proposed that all 679 spaces be replaced within the new MSCP.

3.1.3 OTHER CAR PARK REPLACEMENT

The proposed car park entry ramp requires the removal of about 33 spaces accessed via Redbank Road. These spaces are used by visitors to The Lodge and/or maintenance vehicles that access an adjacent maintenance storage shed.

It is proposed that all 33 spaces are relocated within the MSCP.

3.2 ADEQUACY OF CAR PARKING PROVISION

The proposed MSCP would have 1,003 spaces that could accommodate atleast the following:

- 110 new staff spaces
- 170 new visitor spaces
- 679 replaced staff spaces from P17
- 33 replaced spaces for the MSCP site.

3.3 DISABLED PARKING PROVISIONS

The Building Code of Australia (BCA) outlines requirements for the provision of car parking for people with disabilities. Under the BCA the proposed MSCP, which is to be used by staff and visitors of the hospital, is considered to be a Class 9A building and attracts a requirement of 1 disabled space for every 100 car parking spaces or part thereof.

Given 1,003 car spaces are to be provided within the MSCP, the development generates a requirement to provide at least 11 disabled car parking spaces.

The proposed MSCP plans currently include 14 disabled parking spaces, which is considered suitable given the above requirement.

Disabled parking as well as the adjacent disabled shared zones need to be designed in accordance with the Australian Standards AS2890.6:2009, which require minimum dimensions of 2.4m width by 5.4m length.

3.4 MOTORCYCLE PARKING

The Paramatta DCP 2011 does not include a specific requirement for motorcycle parking within the Westmead precinct, however, the DCP does provide motorcycle parking rates for the Paramatta City Centre.

For the purposes of this assessment, the motorcycle parking rates for the Paramatta City Centre has been adopted, given the proximity of both precincts.

Control 6 (C.6) of the Paramatta DCP 2011 for the Paramatta City Centre requires 1 motorcycle parking space for every 50 car parking spaces provided or part thereof, as separate parking for motorcycles.

Given that 1,003 car spaces are to be provided in the MSCP, it is recommended that at least 21 motorcycle parking spaces are provided.

Motorcycle parking spaces are to be designed in accordance with Australian Standards, with dimensions of 1.2m wide by 2.5m long. The dimensions of the motorcycle parking spaces are in accordance with AS2890.1:2004.

3.5 BICYCLE END-OF-TRIP FACILITIES

As discussed in section 2.12.1, the bicycle parking facility which was located in the P17 car park is planned to be relocated to an unused undercroft area located in the KR building, adjacent to the proposed PSB.

The KR bike parking could be accessed via Redbank Road and Hawkesbury Road via Kids Research Lane. The facility would also be a short walk to/from the CASB's end-of-trip facilities and the showers and change rooms planned to be provided in the PSB. The bike parking facility is planned to have capacity for around 50 bicycles (an increase of 10 bicycles).

Staff and visitors to the CHW could also use alternative bike parking facilities that are provided across the campus including those within the CASB for staff, the bike loops located within the CASB forecourt and the CHW forecourt fronting Hawkesbury Road. Furthermore, as mentioned in section 2.12, a significant number of showers and change room facilities will be located within the PSB and existing CHW. These facilities combine to provide considerable end-of-trip facilities for those arriving to the site via bicycle or by foot.

Therefore, the KR bike parking facilities, as well as the CASB bike parking and the precinct's existing bike additional parking areas and end-of-trip facilities would be well placed to encourage sustainable transport modes and have sufficient capacity to accommodate CHW's the existing and future bicycle parking demands.

On the above basis, no bike parking or end-of-trip facilities are proposed within the MSCP, which will be strategically located on the periphery of the precinct.

4 CAR PARK DESIGN

4.1 SITE ACCESS

The vehicle access to the proposed MSCP is via a one-way entry ramp from Redbank Road, and vehicle exit via a one-way ramp to Labyrinth Way, as shown in Figure 4.1.

The entry and exit ramp grades are complaint with AS2890.1:2004, as shown in Appendix B.

Swept path diagrams have been prepared for the site access and exit using Autoturn V10.2 and the B99 design vehicle from AS2890.1:2004, and are attached in Appendix B. The diagrams confirm that a B99 vehicle can enter and exit the site in an appropriate manner.

Image source: *Billard Leece Partnership Architects (December, 2020)*

Figure 4.1 MSCP access arrangements

The entry ramp also provides access to an existing storage area and small substation. Access to/from the substation is expected to be infrequently needed by a small truck (assumed to be 6.4m SRV). As shown in Appendix B, the SRV would need to enter and exit the substation area via the MSCP entry ramp. This would need to be completed under a managed scenario that minimises impacts on the MSCP operations.

Access to the storage area would be via the MSCP entry ramp and would exit via the MSCP and its exit ramp (vehicles up to B99 only). Swept paths of this manoeuvre have been included in Appendix B.

4.2 BOOM GATE QUEUE ANALYSIS

Preliminary queuing analysis has been completed for the proposed boom gates at the MSCP entry and exit. The analysis conservatively adopts an arrival rate that is based on the CHW staff arrival patterns and hasn't been reduced to recognise that some of the car park would be reserved for visitors.

The queueing analysis for the entry and exit arrangements during the AM and PM peak hours are summarised in Table 4.1. The assessment is based on the queueing theory approach addressed in AS2890.1.

Table 4.1 AM and PM peak queuing assessment

Requirement	Entry (AM)	Exit (PM)
Service rate based on AS2890.1 for manually controlled access (vehicles per hour)	400	300
Traffic volumes	451	251
Minimum required number of lanes	2	2
99th percentile vehicle queue per lane (metres)	48	30
Total 95th percentile vehicle queue (metres)	96	60

Based on the above, the analysis shows that the 99th percentile anticipated queue lengths for the MSCP would be up to 96m on entry and 60m on exit. These queuing arrangements can generally be accommodated via the current entry and exit ramp designs, as shown in Appendix B, albeit there may be some minor queuing within the MSCP on exit.

Therefore, it is anticipated that vehicles would not queue on Redbank Road, Labyrinth Way or significantly impact circulation within the MSCP during the AM and PM peak periods when entering or exiting the car park.

4.3 CAR PARK DIMENSIONS

The MSCP would predominantly be for staff and visitors of the CHW, and would therefore be designed for User Class 3 facilities under the Australian Standards AS2890.1:2004. As such, the minimum required dimensions for 90-degree parking bays are 2.6m width by 5.4m length, accessed from an aisle of at least 5.8m wide. The architectural plans provided show the car parking layout typically meets this requirement, with the majority of car parking aisles dimensioned at 5.8m.

The MSCP has generally been designed in accordance with AS2890.1:2004. However, some comments are made on the drawings included in Appendix B regarding some amendments that will be required. In particular, 300mm clearance is to be provided between a wall and the side of any adjacent car parking space. In addition, some of the fire hydrants are located within the car park side clearance areas.

4.4 INTERNAL CIRCULATION

Internal circulation is accommodated via one-way aisles, where possible, and access between parking levels is proposed via one-way only split ramps, as shown in Figure 4.2. In accordance with AS2890.1:2004, one-way ramps are to be 3m minimum between kerbs. The proposal exceeds this requirement and is therefore considered satisfactory. Swept path diagrams have been prepared for internal circulation along ramps between parking levels using the Austroads B99 car. Swept path diagrams show that an Austroads B99 (see Appendix B) car can circulate the car parking levels in an appropriate manner.

The proposed car park circulation, as well as the site access/egress is considered satisfactory.

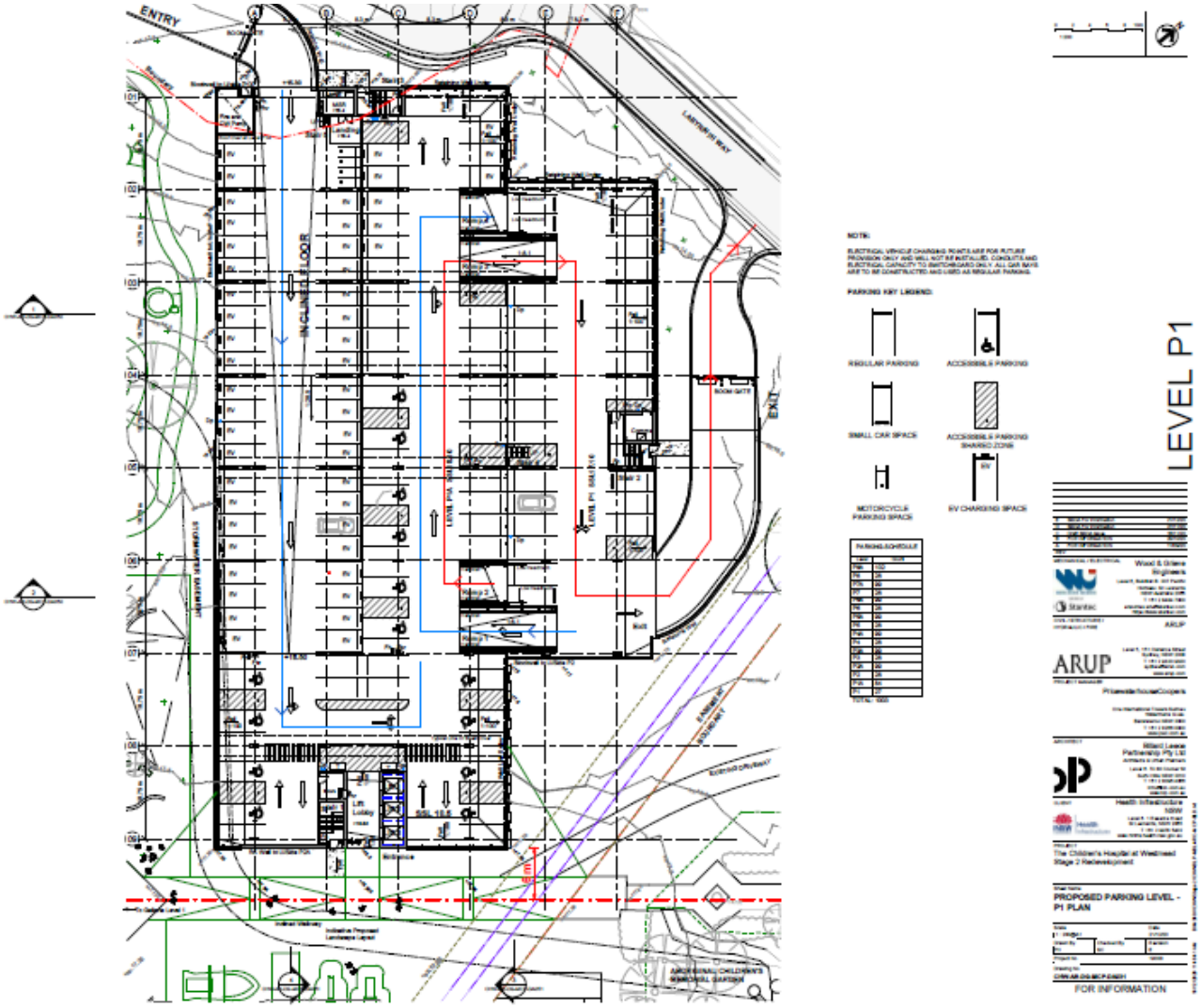


Image source: *Billard Leece Partnership Architects (December, 2020)*

Figure 4.2 MSCP internal circulation

4.5 PEDESTRIAN ACCESS

The primary pedestrian access to/from the MSCP would be via lifts and a ramp at southern end of the car park. This access provides good access between the MSCP and Ronald McDonald House to the east and CHW to the west via the east-west landscaped pedestrian spine. The pedestrian access is shown in Figure 4.3.

Secondary pedestrian access and fire stairs are located along the eastern and northern site frontages.

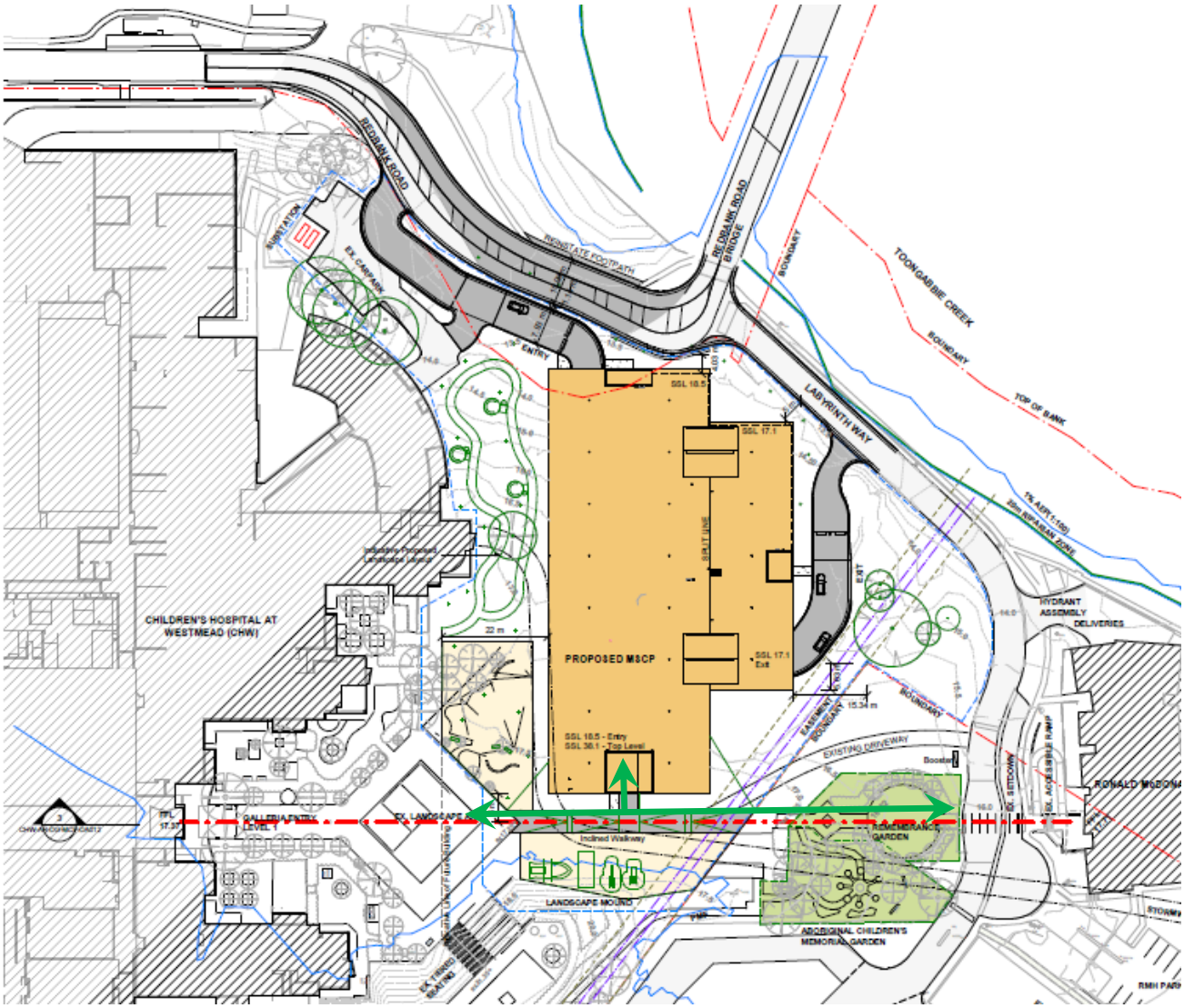


Image source: *Billard Leece Partnership Architects (December, 2020)*

Figure 4.3 MSCP pedestrian access

4.6 REDBANK ROAD REALIGNMENT

The proposed MSCP requires realignment of Redbank Road to enable the MSCP to geometrically be located south of Redbank Road and north of a key east-west pedestrian spine.

The realignment will be designed to allow for a semi-trailer to enter the precinct simultaneously with a B99 car leaving the precinct. It is understood that a semi-trailer does not need to exit the precinct via Redbank Road.

While, the MSCP would be located in close proximity to the Redbank Road realignment, Redbank Road has a 20km/h posted speed limit, therefore, road safety risks associated with this are considered to be minor. Nevertheless, it is recommended that a road safety barrier is provided between Redbank Road and the MSCP around the realigned bend.

5 TRAFFIC IMPACT ASSESSMENT

As discussed in section 3.1, the proposed MSCP would largely cater for replacement car parking and 280 new spaces that are required for the CHW Stage 2 Redevelopment. The impacts of the CHW Stage 2 Redevelopment, including the traffic impacts associated with providing an additional 280 spaces are a direct result of the CHW Redevelopment Stage 2 Paediatric Services Building.

The existing traffic patterns and traffic demands associated with the existing P17 and the adjacent Lodge parking spaces would be maintained despite being relocated to the MSCP. Therefore, the proposed MSCP itself would have negligible impact on the surrounding road network. Nevertheless, the following sections outline the traffic generation for the Stage 2 Redevelopment (generated by the PSB and the forecast growth in staff and visitors).

5.1 TRAFFIC GENERATION

The traffic generation for the Stage 2 Redevelopment has been estimated based on the proposed car parking provision of an additional 280 spaces. This is because the surrounding on-street parking supply is generally at capacity and therefore, the small car park increase would encourage staff and visitors to use more sustainable transport modes to access the site.

To estimate the traffic generation associated with the redevelopment, WSP has reviewed the peak activity at the two main CHW car parks (P6 for visitors and former P17 for staff) and have applied the same characteristics to the proposed additional parking supply. Refer Section 2.8, which discussed existing CHW traffic patterns.

Based on the traffic profiles at P6 and the former P17, the number of vehicles that arrive and exit the CHW car parks can be proportionally applied to the capacity, using the rates summarised in Table 5.1.

Table 5.1 Adopted traffic generation rates (proportion of car park capacity)

User	AM peak		PM peak	
	In	Out	In	Out
Staff	45%	5%	5%	25%
Visitor	15%	5%	5%	20%

Based on a new car parking supply of 280 spaces (approximately 110 staff spaces and 170 visitor spaces), the development would generate an additional 89 vehicles in the AM peak hour and an additional 76 vehicles in the PM peak hour, as shown in Table 5.2.

It is noted that these peak traffic volumes would occur in the CHW peaks of 7:00am-8:00am and 4:00-5:00pm. As demonstrated in Figure 2.7, the staff traffic generation is significantly less outside of these peak hours.

Table 5.2 Additional traffic generation

User	AM (7:00am-8:00am)			PM (4:00pm-5:00pm)		
	In	Out	Total	In	Out	Total
Staff	50	6	56	6	28	34
Visitor	25	8	33	8	34	42
Drop-off	12	11	23	15	14	29
Total	**87**	**25**	**112**	**29**	**76**	**105**

In addition, a minor increase in set-down and pick-up activity is expected to occur along Hawkesbury Road. Based on CHW's forecast growth discussed in Section 1.5, the existing drop-off activity could increase by 25 per cent. By applying this to the existing set-down/pick-up activity that occurs during the assessed peak hours, the development's set-

down/pick-up activity could generate an additional 23 vehicle trips (two-way) and 29 vehicle trips (two-way) during the AM and PM peak hours, respectively.

5.1 TRAFFIC ASSIGNMENT AND DISTRIBUTION

For the purposes of this assessment, the following assumptions are made:

— Staff would be discouraged from accessing any new car parking via Hawkesbury Road or Hainsworth Street. Staff would continue to use Redbank Road as the primary access road, with some using Institute Road to access new car parking.

— Visitors would not be encouraged to access any new car parking via Redbank Road. Visitors would continue to use Hawkesbury Road and Hainsworth Street and could also use Institute Road to access any new car parking.

5.1.1 P17 REASSIGNMENT

Given that the former P17 car park supply would also be replaced within the MSCP, the traffic patterns for the P17 car park would be unchanged, with most staff expected to continue to arrive and depart as they currently do (mostly via Redbank Road).

5.1.2 DEVELOPMENT TRAFFIC DISTRIBUTION AND ASSIGNMENT

The following traffic assignments have been adopted for the new staff and visitor traffic:

— Based on our on-site observations, it is estimated that around 80 per cent of CHW staff would use Redbank Road to access the Campus, with around 20 per cent using the Institute Road or Dragonfly Drive accesses.

— It is estimated that all new visitor traffic would use the Institute Road access except for the drop-off activity which would continue to use Hawkesbury Road and Hainsworth Street.

5.1.3 BACKGROUND GROWTH AND SURROUNDING DEVELOPMENTS

The background growth rates discussed in Section 2.9.4 have been adopted for the 2030 future year scenario. These growth rates were established based on historical growth in the area and recognise the ongoing traffic growth associated with both surrounding developments and an increase in the through traffic that uses the local and arterial road network.

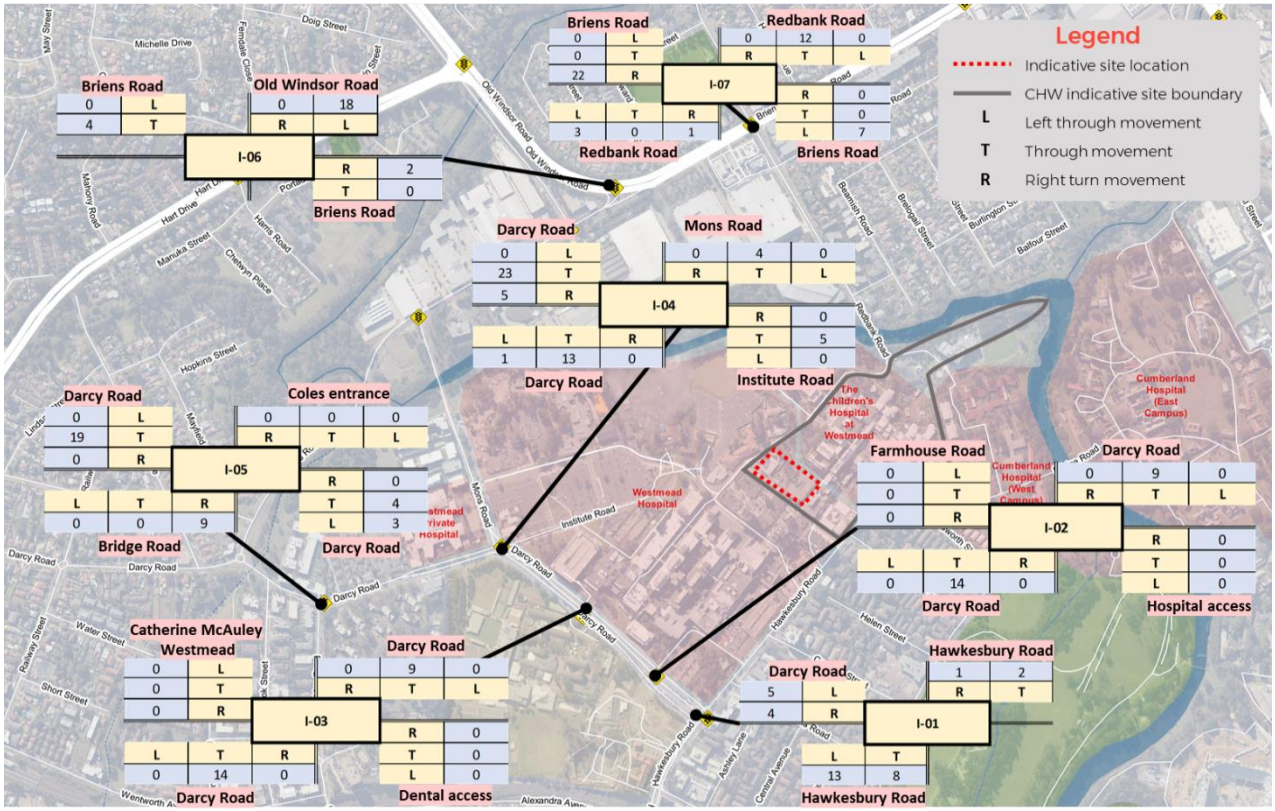
It is recognised that the surrounding road network is reaching capacity and that all developments within the Westmead area, as well as the broader Western Sydney region need to encourage the use of sustainable and public transport modes, as much as practical to limit their cumulative impacts on the road network.

This redevelopment's estimated parking demand and traffic generation was developed assuming an increase in public transport and sustainable transport use. A Green Travel Plan has been prepared to support these assumptions.

5.1.4 SUMMARY OF TRAFFIC VOLUME CHANGES

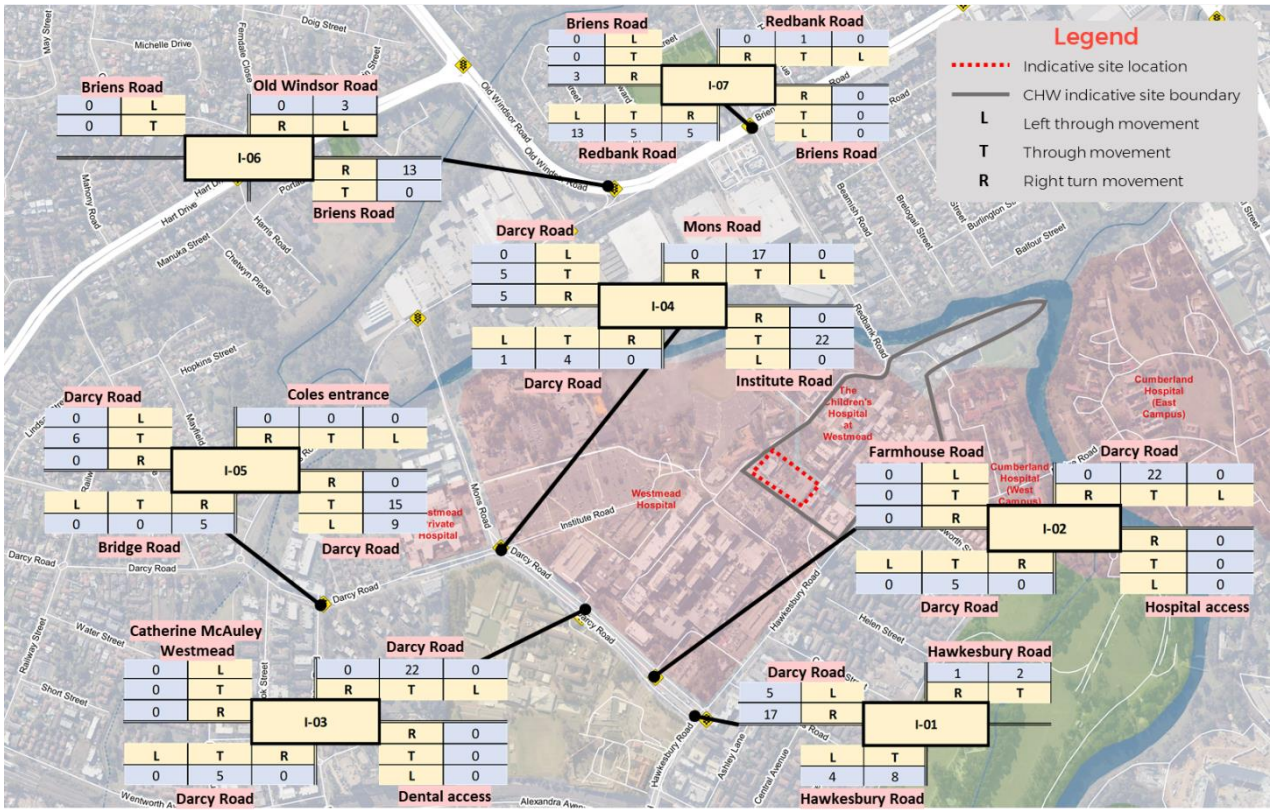
Overall, the estimated additional traffic volume at the key intersections during the AM and PM peak hours are shown in Figure 5.1 and Figure 5.2, respectively.

The overall post-development traffic volumes across the road network in the AM and PM peak periods in 2020 and 2030 are shown in Appendix C.



Basemap source: *NSW Department of Lands Spatial Information Exchange*

Figure 5.1 AM peak development traffic volume estimates



Basemap source: *NSW Department of Lands Spatial Information Exchange*

Figure 5.2 PM peak development traffic volume estimates

5.2 FUTURE INTERSECTION OPERATION

Table 5.3 and Table 5.4 show the performance for key intersections for the 2020 without development and the 2020 with development scenarios in the AM and PM peaks respectively. Similarly, Table 5.5 and Table 5.6 show the performance for key intersections for the 2030 without development and 2030 with development scenarios in the AM and PM peak hours, respectively.

The traffic modelling assessment indicates that the anticipated traffic volumes associated with the development's traffic generation would have limited impact on the surrounding road network. Table 5.3 and Table 5.4 show that most intersections would continue to operate with similar operating conditions during the AM and PM peak hours in 2020 (7:00am-8:00am and 4:00-5:00pm).

Most intersections would operate with the same level of service with or without the development. However, the level of service at the intersection of Darcy Road, Institute Road and Mons Road would change from a level of service D to E during the PM peak hour. As the intersection is currently operating at capacity (degree of saturation 1), a minor increase in traffic volumes would alter the level of service. However, the development's overall impact to the Darcy Road, Institute Road and Mons Road intersection and the Darcy Road corridor is minor. Further, there are limited physical intersection improvements available at this intersection, recognising the extent of improvements investigated and implemented as part of the Stage 1 Redevelopment project. Instead, CHW would continue to actively encourage sustainable and public transport modes, in consultation with TfNSW.

Table 5.5 and Table 5.6 show that in 2030, many of the surrounding intersections would be operating at or above capacity due to background growth associated with other developments. The level of service would not change at these intersections as a result of the proposed development.

In response to the surrounding traffic issues associated with accessing the Westmead Health Precinct, Health is actively involved in the whole-of-government place-based approach to address short, medium and long term transport issues in a coordinated way.

TfNSW and DPIE are leading the development of a Place-Based Transport Strategy, that will consider government investments in the Westmead Health and Innovation District, growth and development over the coming years. Health is part of the Steering Committee for this work, due to be undertaken in 2021 and will consider the initiatives within traffic and transport required to support future developments within a zone inclusive Briens, Darcy and Hawkesbury Roads, which are all arterial road access to the Precinct.

Given the development has a marginal impact on the existing traffic conditions of the arterial roads, this requires mitigation and improvement measures to be undertaken at a whole-of-government level, with consideration of the wider road network.

Health is also involved in the Parramatta Outer Ring Road Strategic Corridor Plan, which aims to develop a strategic corridor plan for targeted future infrastructure upgrades and improvements within a larger zone bordered by James Ruse Drive, Briens Road, Cumberland Highway and the M4 Motorway. Targeted meetings will be held with Health in 2021 specific to the Health Precinct, with the whole plan due for completion in 2022.

The full modelling results are shown in Appendix D.

Table 5.3 2020 post development intersection performance - AM peak

Intersection	2020 without development intersection performance							2020 with development intersection performance						
	Degree of saturation	Average delay (seconds)	95th percentile queue (m)				Level of service	Degree of saturation	Average delay (seconds)	95th percentile queue (m)				Level of service
			South	East	North	West				South	East	North	West	
Briens Road and Redbank Road	1.04	51	71	506	-	505	D	1.12	55	73	512	-	511	D
Bridge Road and Darcy Road	0.91	30	60	46	6	160	C	0.91	31	63	47	6	165	C
Darcy Road, Institute Avenue and Mons Road	0.78	31	36	21	19	99	C	0.81	32	40	22	19	104	C
Dental Hospital, Marist High School and Darcy Road	0.37	10	25	3	30	0	A	0.37	10	25	3	31	0	A
Hospital Access, WSU and Darcy Road	0.38	17	52	9	13	5	B	0.38	17	53	9	14	5	B
Darcy Road and Hawkesbury Road	0.52	25	-	22	33	49	B	0.54	25	-	22	34	51	B
Railway Parade and Hawkesbury Road	0.54	11	22	45	-	18	A	0.54	11	22	46	-	18	A
Alexandra Avenue and Hawkesbury Road	0.63	33	39	46	52	80	C	0.63	33	39	46	52	80	C

Table 5.4 2020 post development intersection performance - PM peak

Intersection	2020 without development intersection performance							2020 with development intersection performance						
	Degree of saturation	Average delay (seconds)	95th percentile queue (m)				Level of service	Degree of saturation	Average delay (seconds)	95th percentile queue (m)				Level of service
			South	East	North	West				South	East	North	West	
Briens Road and Redbank Road	0.8	30	184	323	-	289	C	0.83	31	191	323	-	289	C
Bridge Road and Darcy Road	0.74	27	51	105	21	44	B	0.74	27	51	105	21	50	B
Darcy Road, Institute Avenue and Mons Road	0.99	46	45	82	56	24	D	1.04	57	44	104	56	37	E
Dental Hospital, Marist High School and Darcy Road	0.21	4	4	4	13	0	A	0.21	4	4	4	10	0	A
Hospital Access, WSU and Darcy Road	0.6	41	56	25	64	5	C	0.6	42	57	25	69	5	C
Darcy Road and Hawkesbury Road	0.73	23	-	58	50	49	B	0.76	24	-	59	49	57	B
Railway Parade and Hawkesbury Road	0.74	30	58	130	-	24	C	0.69	29	58	130	-	23	C
Alexandra Avenue and Hawkesbury Road	0.78	35	58	55	37	54	C	0.78	41	58	55	37	54	C

Table 5.5 2030 post development intersection performance - AM peak

Intersection	2030 without development intersection performance							2030 with development intersection performance						
	Degree of saturation	Average delay (seconds)	95th percentile queue (m)				Level of service	Degree of saturation	Average delay (seconds)	95th percentile queue (m)				Level of service
			South	East	North	West				South	East	North	West	
Briens Road and Redbank Road	1.04	51	71	506	-	505	D	1.12	55	73	512	-	511	D
Bridge Road and Darcy Road	1.43	97	171	49	7	501	F	1.49	105	189	50	7	519	F
Darcy Road, Institute Avenue and Mons Road	0.91	37	40	45	19	110	C	0.94	38	43	48	19	114	C
Dental Hospital, Marist High School and Darcy Road	0.48	10	22	3	50	0	A	0.48	10	22	3	50	0	A
Hospital Access, WSU and Darcy Road	0.45	13	45	9	17	5	A	0.46	13	46	9	18	5	A
Darcy Road and Hawkesbury Road	0.83	30	-	26	66	97	C	0.84	31	-	25	69	96	C
Railway Parade and Hawkesbury Road	0.73	15	24	89	-	53	B	0.74	15	24	88	-	54	B
Alexandra Avenue and Hawkesbury Road	1.19	153	93	55	62	524	F	1.21	159	101	55	62	543	F

Table 5.6 2030 post development intersection performance - PM peak

Intersection	2030 without development intersection performance							2030 with development intersection performance						
	Degree of saturation	Average delay (seconds)	95th percentile queue (m)				Level of service	Degree of saturation	Average delay (seconds)	95th percentile queue (m)				Level of service
			South	East	North	West				South	East	North	West	
Briens Road and Redbank Road	0.83	30	184	323	-	289	C	0.83	31	191	323	-	289	C
Bridge Road and Darcy Road	0.85	31	51	160	21	77	C	0.85	31	51	163	21	78	C
Darcy Road, Institute Avenue and Mons Road	2.14	402	88	629	56	38	F	2.19	419	88	653	56	39	F
Dental Hospital, Marist High School and Darcy Road	0.61	5	4	4	34	0	A	0.63	5	4	4	37	0	A
Hospital Access, WSU and Darcy Road	1.33	199	65	25	165	5	F	1.36	215	65	25	165	5	F
Darcy Road and Hawkesbury Road	1.09	65	-	64	90	122	E	1.06	46	-	62	90	130	D
Railway Parade and Hawkesbury Road	0.95	31	101	120	-	36	C	0.94	30	97	114	-	35	C
Alexandra Avenue and Hawkesbury Road	0.82	37	72	55	39	102	C	0.83	37	70	55	39	103	C

6 PRELIMINARY CONSTRUCTION TRAFFIC MANAGEMENT PLAN

6.1 CONSTRUCTION STAGING AND PROGRAM

6.1.1 MSCP WORKS

The proposed MSCP is planned to be constructed in one stage, commencing in late 2021. The works are expected to be completed by mid 2023.

6.1.2 REDBANK ROAD WORKS

As discussed in section 4.6, Redbank Road is planned to be realigned. While the potential construction staging along Redbank Road is currently unknown, it is envisaged that the works may require a partial road closure, with contra-flow traffic activity maintained via a single traffic lane and stop-go traffic control.

If a single traffic lane was maintained along Redbank Road, vehicles up to a semi-trailer would need to be accommodated, as well as ambulances in emergency situations.

If any of the works requires a full closure of Redbank Road, this should occur at night where practical, to minimise impacts to the surrounding road network and also to the precinct operations and subject to separate approval.

6.2 PROPOSED WORKING HOURS

Construction work would be undertaken in accordance with the conditions of consent, which are expected to be:

- Monday to Friday 7:00am to 6:00pm
- Saturday 8:00am to 5:00pm.

No works would be undertaken on Sundays or public holidays.

The contractor would be responsible for informing and ensuring all sub-contractors adhere to the set hours of work.

It may be necessary to carry out some work outside of the set hours to mitigate any disruptions to daily traffic and disturbances to hospital staff and patients as well as surrounding landowners. If this occurs, prior notice will be given to the community and appropriate approvals sought.

6.3 CONSTRUCTION WORKER PARKING

The site is in close proximity to well established and high frequency public transport services, therefore construction workers should also be encouraged to use public transport instead of driving.

Notwithstanding this, a small amount of construction worker parking may be established within the site. However, workers would not be permitted to park outside the construction site. This presents an opportunity for the contractor to encourage car pooling and implement measures that minimise the number of workers who would arrive during the AM and PM peak periods for the precinct and also the broader road network.

The appointed contractor will be responsible for adhering to the above parking objectives in consultation with Health Infrastructure and SCHN.

6.4 CONSTRUCTION VEHICLE TYPES

Construction vehicles likely to be generated by the proposed construction activities would generally include rigid vehicles (6.4m-12.5m), 18m truck-and-dog vehicles and/or 19m semi-trailers and vans and utes depending on the construction activities.

The precinct roads have generally been designed to accommodate for vehicles up to a 19m semi-trailer. Therefore, the envisaged construction vehicle types can be accommodated on the internal road network and along the proposed construction vehicle access routes.

It is anticipated that limited oversized or overmass vehicles would be required for the works. However, if an oversize or overmass vehicle is needed, this would be subject to consultation and approval from Transport for NSW. A separate Construction Traffic Management Plan (CTMP) would be prepared in the event that there is a requirement for an oversized vehicle during the proposed works.

6.5 CONSTRUCTION VEHICLE ACCESS ROUTES

Generally, construction vehicles will have origins and destinations from a wide variety of locations throughout Sydney. However, all construction vehicles will be restricted to the arterial road network, where possible.

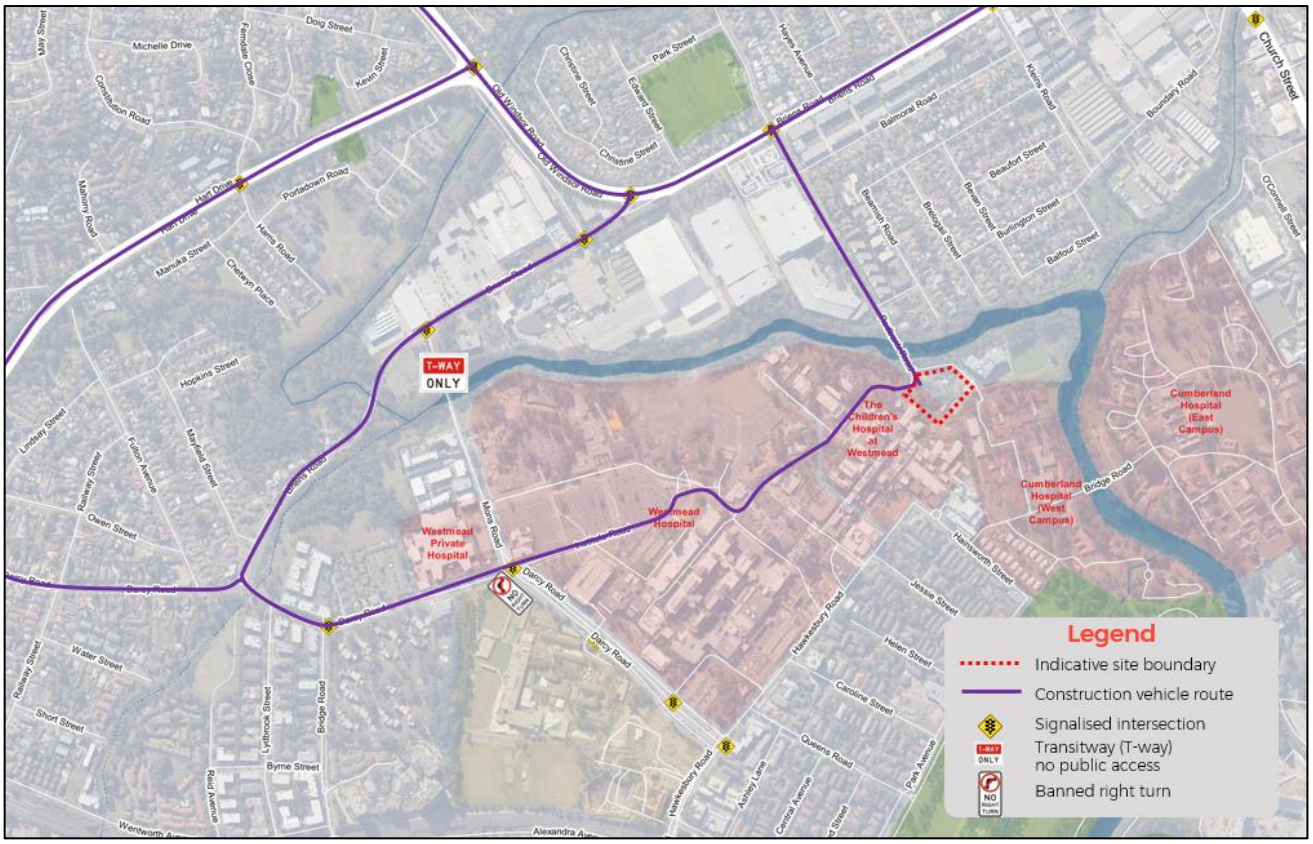
As such, dedicated construction vehicle routes have been developed with the aim to provide the shortest distances to/from the arterial road network, whilst minimising the impact of construction traffic on the local road network in the vicinity of the site. Alternative routes would not be used without specific prior approval from the appropriate stakeholders.

The potential construction vehicle routes are shown in Figure 6.1 and include:

- to/from north and east via Redbank Road and Briens Road
- to/from south and west via Dragonfly Drive, Darcy Road and Cumberland Highway.

Redbank Road would be the preferred route, given that it provides a more direct access to/from the site from the north-east.

Construction vehicles would likely access the site via Redbank Road. However, specific details of the site access arrangements will need to be developed in conjunction with the appointed contractor and their construction methodology. The selected construction vehicle access would need to allow for all vehicles to enter and exit the site in a forward direction and would need to minimise any vehicle queuing on Redbank Road, which could affect emergency vehicle access or the precinct traffic operations.



Basemap source: *NSW Department of Lands Spatial Information Exchange*

Figure 6.1 Construction vehicle routes

6.6 NUMBER OF CONSTRUCTION VEHICLES

Detailed information on the number of construction vehicles likely to be generated by the proposed works is not currently known. However, the preliminary construction vehicle estimates are:

- Up to 10 vehicles per hour
- Up to 80 vehicles per day.

These peak vehicles estimates would likely occur during periods of large concrete pouring stages. Outside these peak activity periods, the construction vehicle generation would be less. Therefore, the MSCP construction activities are unlikely to impact the precinct transport network, and/or the surrounding road network and intersections.

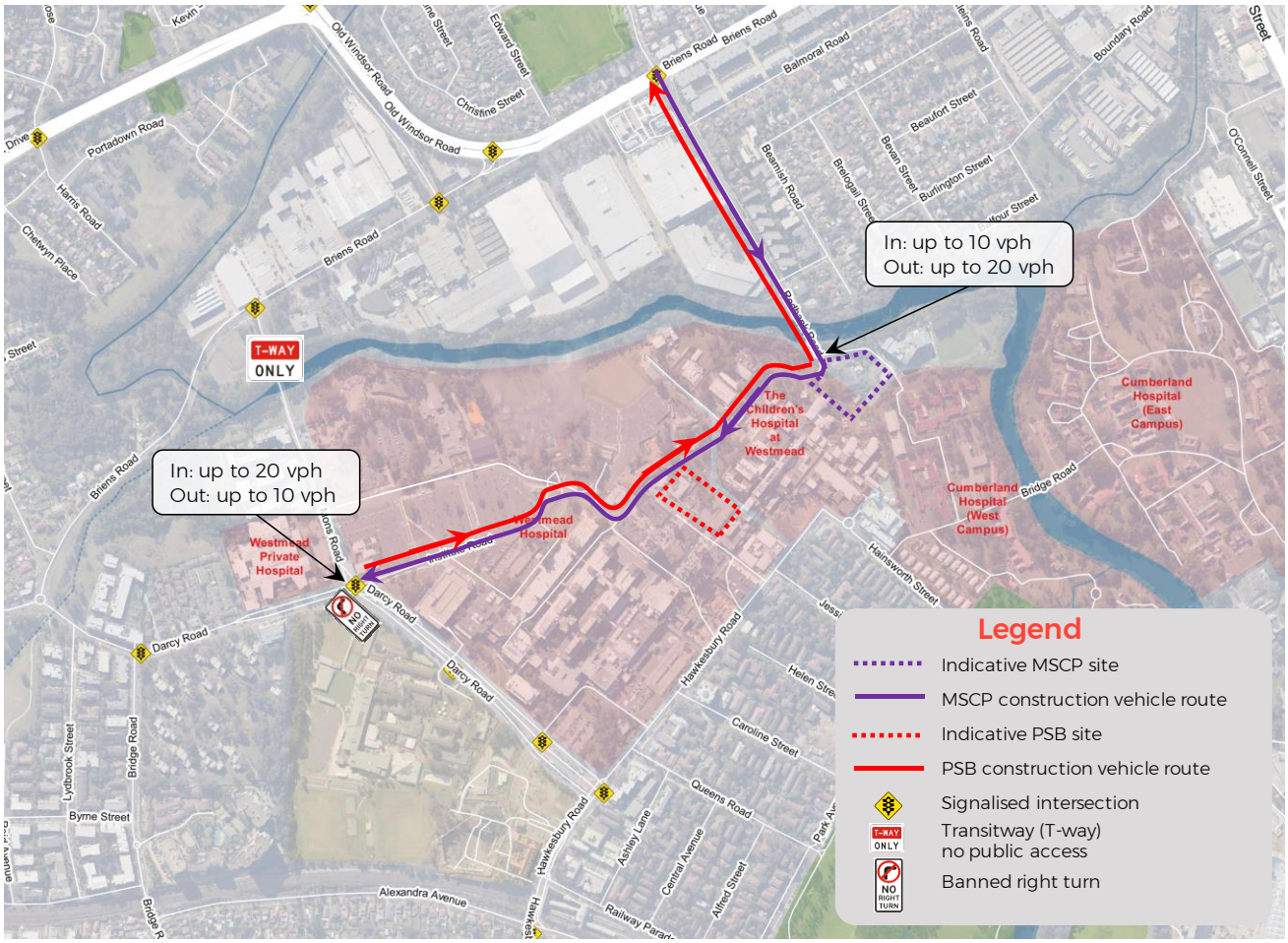
While the appointed contractors would coordinate the construction works to minimise the likelihood of peak construction activity occurring simultaneously across the Precinct, the MSCP construction works would likely coincide with construction of the PSB for brief periods (subject to separate approval). However, the cumulative Stage 2 Redevelopment works replace the larger Stage 1 Redevelopment works which had been active from 2016-2020. It is understood that the Stage 1 Redevelopment works were managed effectively to minimise disruption to the internal precinct traffic operations, and also minimise impacts to the operation of surrounding intersections. Management measures that were implemented during the Stage 1 works include staggered construction activities and restricted construction activities during the road network and precinct peak periods. The cumulative traffic impacts of the Stage 2 works would be managed using the same measures.

During peak cumulative construction periods, construction vehicle activity would be limited (as much as practical) to the period between 9:00am and 4:00pm when the surrounding road network traffic volumes are significantly lower than the morning and evening peak periods of (7:00am-9:00am and 4:00pm-6:00pm). In addition, during peak cumulative

construction periods, construction vehicle access routes could be restricted for each project to distribute the construction vehicle volumes across the Precinct access intersections. The managed construction vehicle access routes would likely be as shown in Figure 6.2 and include:

- PSB routes: inbound only via Dragonfly Drive and outbound only (up to 20 construction vehicle movements per hour) via Redbank Road (up to 20 construction vehicle movements per hour)
- MSCP routes: inbound only via Redbank Road and outbound only (up to 10 construction vehicle movements per hour) via Dragonfly Drive (up to 10 construction vehicle movements per hour).

The managed construction vehicle routes would minimise the cumulative impacts to the surrounding intersections, with up to 30 vehicle movements expected at each intersection, during the peak cumulative construction periods.



Basemap source: *NSW Department of Lands Spatial Information Exchange*

Figure 6.2 Managed construction vehicle routes

It is noted that the existing traffic conditions discussed in Section 2.10 include the impacts of the Stage 1 construction activity. Given that the Stage 2 construction activities are smaller and therefore expected to generate less traffic volumes than the Stage 1 construction activities, the cumulative traffic volumes generated by the Stage 2 works would have negligible impact on the level of service of the surrounding intersections. The intersections would continue to operate as per the current conditions, as discussed in Section 2.10.

6.7 ON-STREET WORK ZONES

It is not anticipated that any Works Zones would be required during the MSCP construction works.

6.8 PEDESTRIANS AND CYCLISTS

Where possible and safe to do so, pedestrian and cyclist access should be maintained in the vicinity of the construction site, for the duration of the works.

No footpaths currently exist along the site frontage on Redbank Road or Labyrinth Way. Therefore, interaction between vehicles accessing the site and pedestrians and cyclists would be minimal.

As there are no formal separated cycle paths provided along Redbank Road or Labyrinth Way, cyclists would continue to use the available traffic lane while the construction works are underway.

6.9 PUBLIC TRANSPORT

Given the infrequent heavy vehicle movements associated with the works, the overall impact to existing public transport services is expected to be negligible. This includes the impact on bus services along Darcy Road, Mons Road (including the T-way) and in the vicinity of the site.

6.10 EMERGENCY VEHICLES ACCESS

The existing and future emergency access routes to/from CHW and Westmead Hospital would be maintained via Hawkesbury Road, Institute Road, Redbank Road and Kids Research Lane as required.

While not expected, if any temporary partial or full road closures are required, traffic controllers would manage the emergency vehicles around the work site and giving them priority.

6.11 MANAGEMENT MEASURES

The following proposed traffic management principles should be adopted during the construction period:

- A detailed construction transport management plan and associated Traffic Control Plans (TCP's) would be developed and incorporated into the construction environmental management plan (CEMP).
- Traffic controllers and associated signage would be required to facilitate any temporary partial or full road closures that may be required (although not anticipated).
- Traffic controllers would allow for priority emergency vehicle movements around the construction sites.
- Footpaths and/or pedestrian access should be maintained, where possible. If any short-term closures are required, suitable alternative routes should be provided. These will need to be identified and mitigated as part of the future Construction Traffic Management Plan's and traffic control plans for the works, when more detailed construction methodology and staging information is known.
- Construction vehicles entering or leaving the site would use arterial roads wherever possible, via the identified construction vehicle routes.
- Construction vehicle movements and worker arrivals would be minimised during the AM and PM peak hours for both the road network and the precinct peak arrival and departure times.
- The appointed contractors would coordinate the construction works to minimise the likelihood of peak construction activity occurring simultaneously at the PSB and MSCP sites.
- During peak cumulative construction periods, construction vehicle activity would be limited (as much as practical) to the period between 9:00am and 4:00pm when the surrounding road network traffic volumes are significantly lower than the morning and evening peak periods.
- During peak cumulative construction periods, construction vehicle access routes could be restricted for each project (MSCP and PSB) to distribute the construction vehicle volumes across the Precinct access intersections.

7 CONCLUSION

The proposal seeks to construct a Multi-Storey Car Park (MSCP) comprising of 8 parking levels above ground level as part of the Children's Hospital at Westmead (CHW) Stage 2 Redevelopment. The proposed MSCP would be located on the Lodge site, which is generally bound by Redbank Road to the north and Labyrinth Way to the east.

The MSCP is proposed to include 1,003 spaces including 14 disabled spaces.

Access and exit to and from the proposed MSCP is via Redbank Road and Labyrinth Way, respectively. The proposal also includes modifications to Redbank Road along the site frontage.

Having consideration for the preceding analysis, it is concluded that:

- A Car Parking Demand Study (GTA Consultants, 2019) was completed using a Parking Demand Model based on first principles analysis and calibrated against on-site parking observations and it determined that an additional 280 spaces would be required to accommodate the 2031/32 demands of the Stage 2 Redevelopment adopting some private vehicle mode share reduction to account for the expected increase in public transport uptake, once PLR and Sydney Metro are completed.
- The MSCP also needs to accommodate the replacement of the CHW P17 parking spaces and an additional 33 spaces that are currently located on the MSCP site.
- The proposed MSCP would have 1,003 spaces that could accommodate the future CHW demands and the replacement car parks.
- Given 1,003 car spaces are to be provided within the MSCP, the development generates a requirement to provide at least 11 disabled car parking spaces. The proposed MSCP plans currently include 14 disabled parking spaces, which is considered suitable given the above requirement.
- Given that 1,003 car spaces are to be provided in the MSCP, it is recommended that at least 21 motorcycle parking spaces are provided.
- Swept path diagrams have been prepared for the site access and exit. The diagrams confirm that a B99 vehicle can enter and exit the site in an appropriate manner.
- Preliminary queuing analysis has been completed for the proposed boom gates at the MSCP entry and exit. The analysis conservatively identifies a need for two entry lanes of 48m each and two exit lanes of 30m each to accommodate the 99th percentile vehicle queue during the AM and PM peak hours. The MSCP design accommodates this requirement. Therefore, it is anticipated that vehicles would not queue on Redbank Road, Labyrinth Way or impact circulation within the MSCP.
- The MSCP would predominantly be for staff and visitors of the CHW, and should therefore be designed for User Class 3 facilities under the Australian Standards AS2890.1:2004. As such, the minimum required dimensions for 90-degree parking bays are 2.6m width by 5.4m length, accessed from an aisle of at least 5.8m wide. The architectural plans provided show the car parking layout typically meets this requirement, with the majority of car parking aisles dimensioned at 5.8m.
- Internal circulation is accommodated via one-way aisles, where possible, and access between parking levels is proposed via one-way only split ramps. These have generally been designed in accordance with AS2890.1:2004.
- No bicycle parking is proposed as part of the MSCP. Bicycle parking facilities are instead to be located at more convenient locations across the precinct to encourage sustainable transport modes.
- The existing traffic patterns and traffic demands associated with the existing P17 and the adjacent Lodge parking spaces would be maintained despite being relocated to the MSCP.

- The traffic modelling assessment indicates that the anticipated traffic volumes associated with the CHW Stage 2 Redevelopment would have limited impact on the surrounding road network and most intersections would continue to operate with similar operating conditions during the AM and PM peak hours in 2020.
- In 2030, many of the surrounding intersections would be operating at or above capacity due to background growth associated with other developments. However, the level of service would not change at these intersections as a result of the proposed development.
- The construction impacts of the MSCP would be manageable, assuming that the identified traffic management measures are implemented.
- The existing traffic conditions discussed in Section 2.10 include the impacts of the Stage 1 construction activity. Given that the Stage 2 construction activities are smaller and therefore expected to generate less traffic volumes than the Stage 1 construction activities, the cumulative traffic volumes generated by the Stage 2 works (MSCP and PSB) would have negligible impact on the level of service of the surrounding intersections.

APPENDIX A

TRAFFIC VOLUME PROFILE

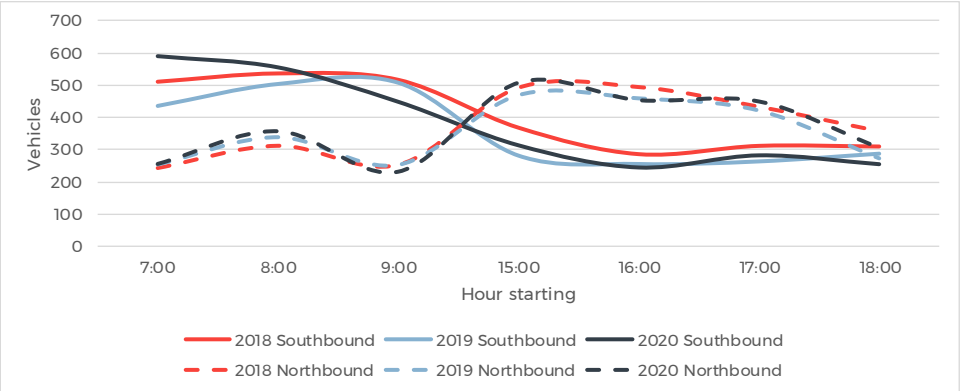


Figure A.1 Darcy Road corridor traffic volume comparisons

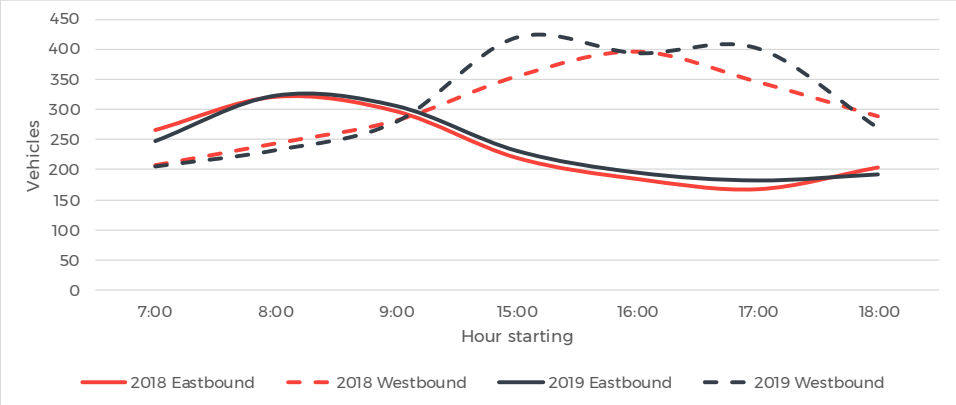


Figure A.2 Hawkesbury Road corridor traffic volume comparisons

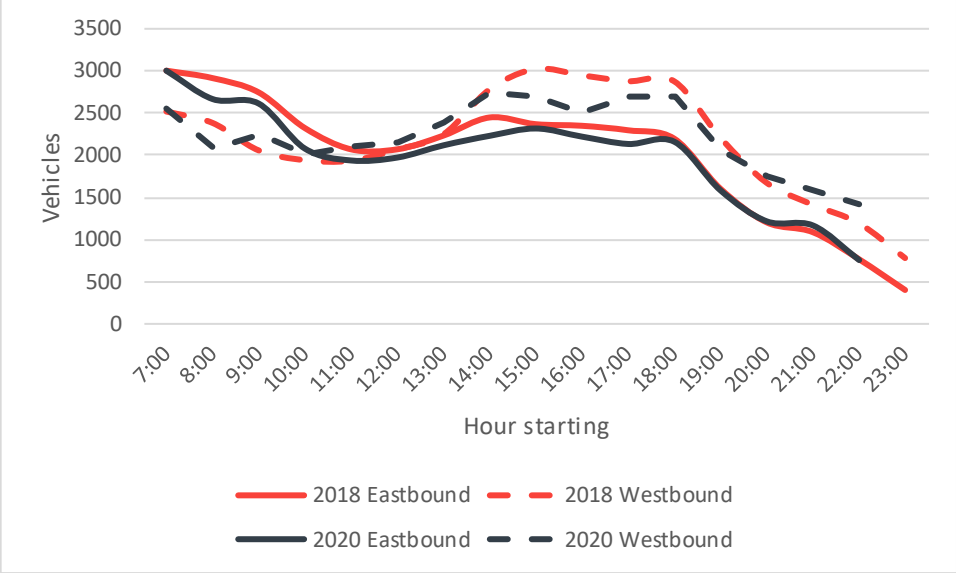


Figure A.3 Briens Road corridor traffic volume comparisons

APPENDIX B

MSCP SWEPT PATH ASSESSMENT AND DESIGN REVIEW

PROPOSED REDBANK ROAD

EX RL 13.00

24.06m @ 1:17.3

2.1

RL 14.39

FLAT

RL 14.39

RL 14.39

7.88m @ 1:20

EX RL 14.00

19.75m @ 1:21.8

2

CONSIDERATION ON HOW BOOM GATE SEQUENCING IS TO WORK TO STAGGER ENTRY MOVEMENTS

IMPACT TO EXISTING PARKING SPACES

REMOVE EXISTING BOOM GATES

ALL RAMP MEASUREMENTS ARE TAKEN FROM INSIDE CURVE

SUBSTATION

EX. CARPARK

ENTRY

BOOM GATE

Retaining Wall

Blockwall to U/side P1A

Fire and CW Pump

Roof Over at Level P1A

Stair 3

Stair 5

Landing

MSB

MSR

Fall

Fall 1:10

Retaining Wall Under

RL 15.30

+15.30

+16.4

EV

PS118400 SK128

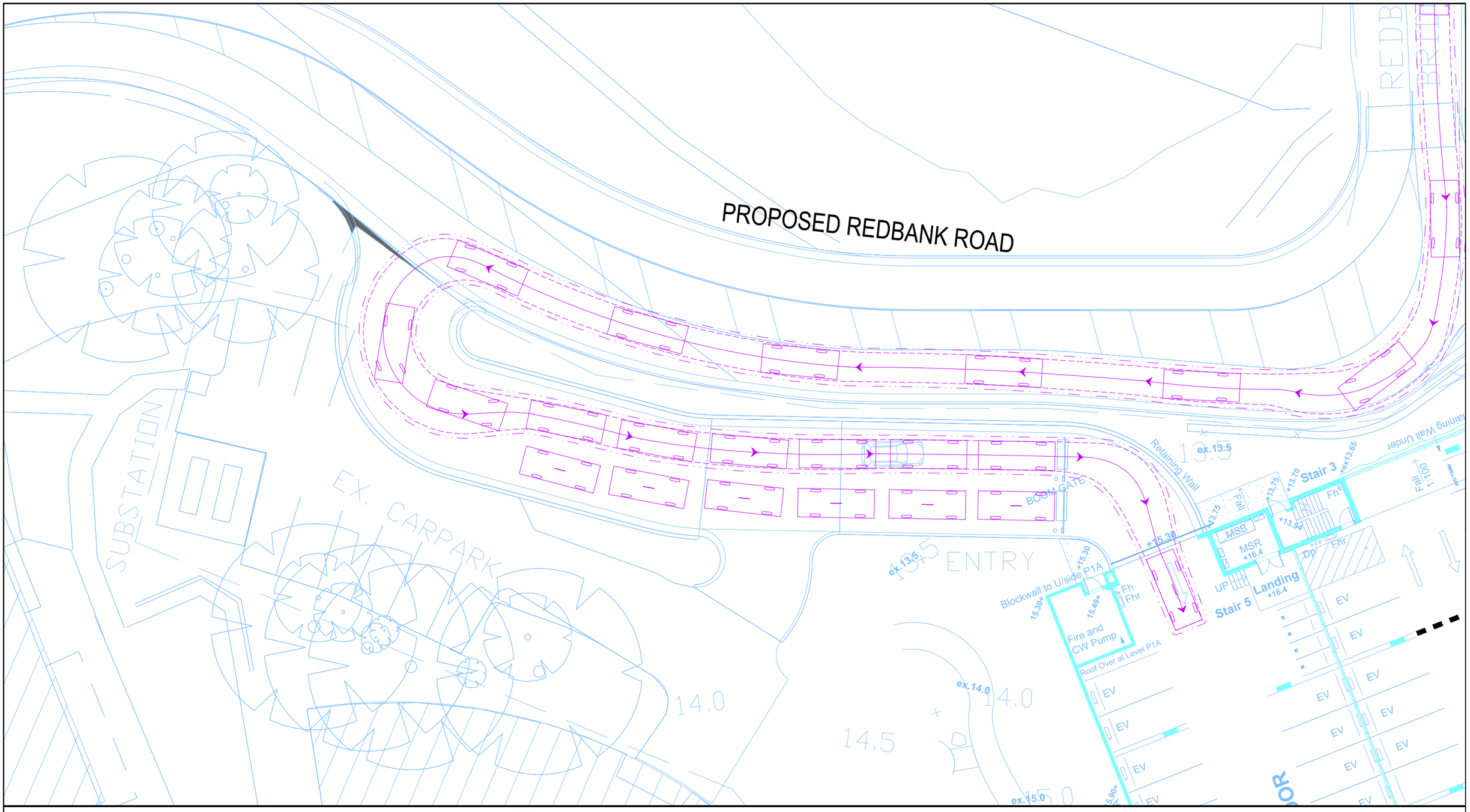
MSCP ENTRY RAMP LAYOUT DETAILS

C.W. 06.04.2021

0 5 10m

SCALE 1:250 @A3

NORTH



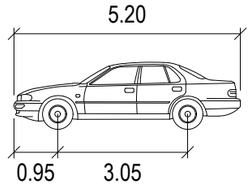
VEHICLE LEGEND

B99CAR 300mm CLEARANCE

B99CAR OVERHANG

B99CAR CENTRELINE

AUSTROADS B99CAR



B99	meters
Width	: 1.94
Track	: 1.84
Lock to Lock Time	: 6.00
Steering Angle	: 33.50

PS118400 SK129

AUSTROADS B99CAR
SITE INGRESS MANOEUVRE
C.W. 06.04.2021

0 5 10m

SCALE 1:250 @A3

wsp

NORTH

INGRESS

PROPOSED REDBANK ROAD

EX. CARPARK

14.0

14.5

EGRESS

PROPOSED REDBANK ROAD

BOOM GATE

ENTRY

ex.13.5

13.5

+15.30

Blockwall to U/side P1A

15.30+

15.49+

Fh

Fhr

Fire and CW Pump

Roof Over at Level

EV

EV

ex.14.0

14.0

14.5

ex.15.0

15.0

15.90+

P1A

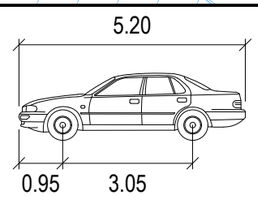
VEHICLE LEGEND

B99CAR 300mm CLEARANCE

B99CAR OVERHANG

B99CAR CENTRELINE

AUSTROADS B99CAR



B99	meters
Width	: 1.94
Track	: 1.84
Lock to Lock Time	: 6.00
Steering Angle	: 33.50

PS118400 SK130

AUSTROADS B99CAR

STORAGE INGRESS/EGRESS MANOEUVRE

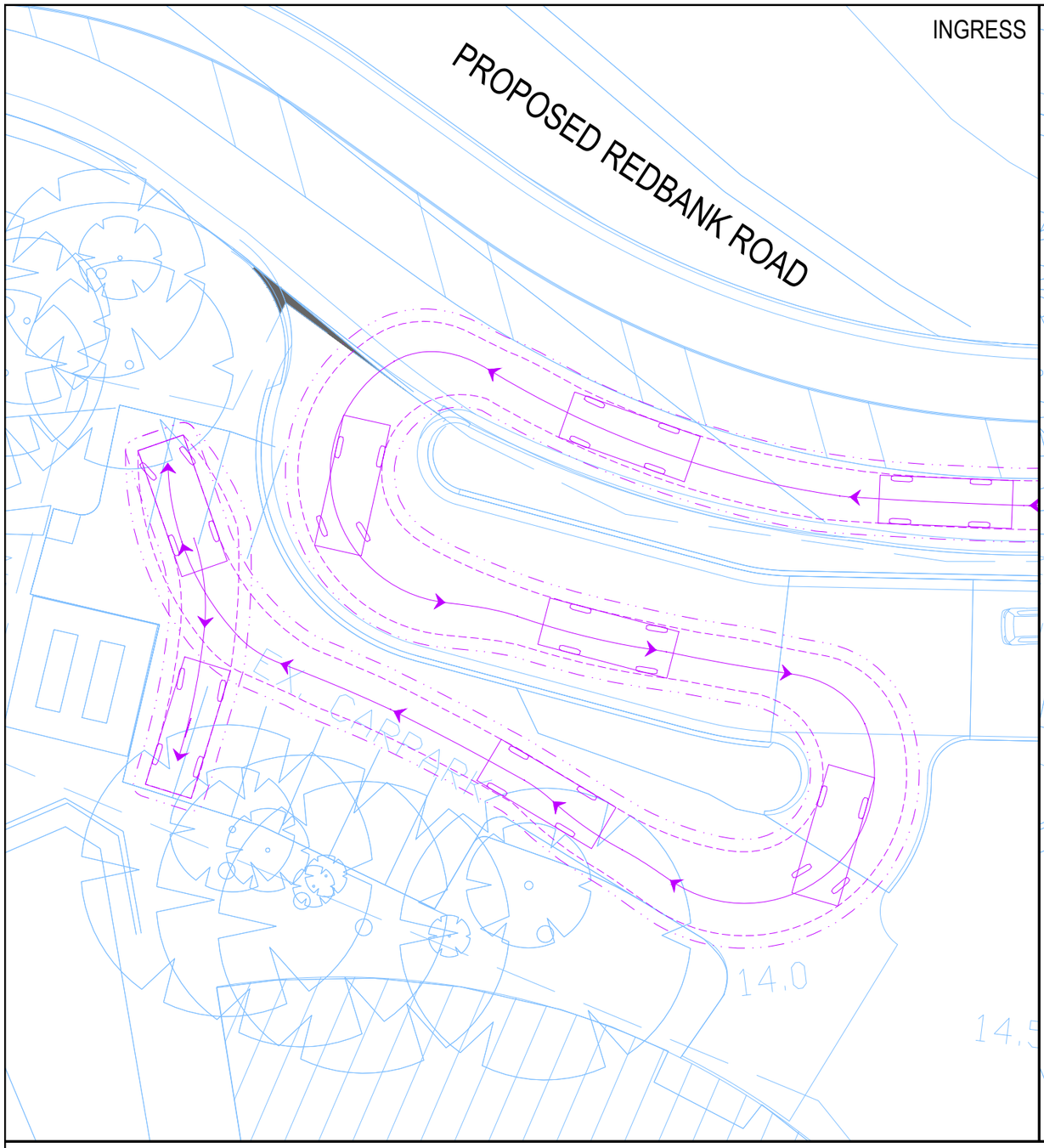
C.W. 06.04.2021

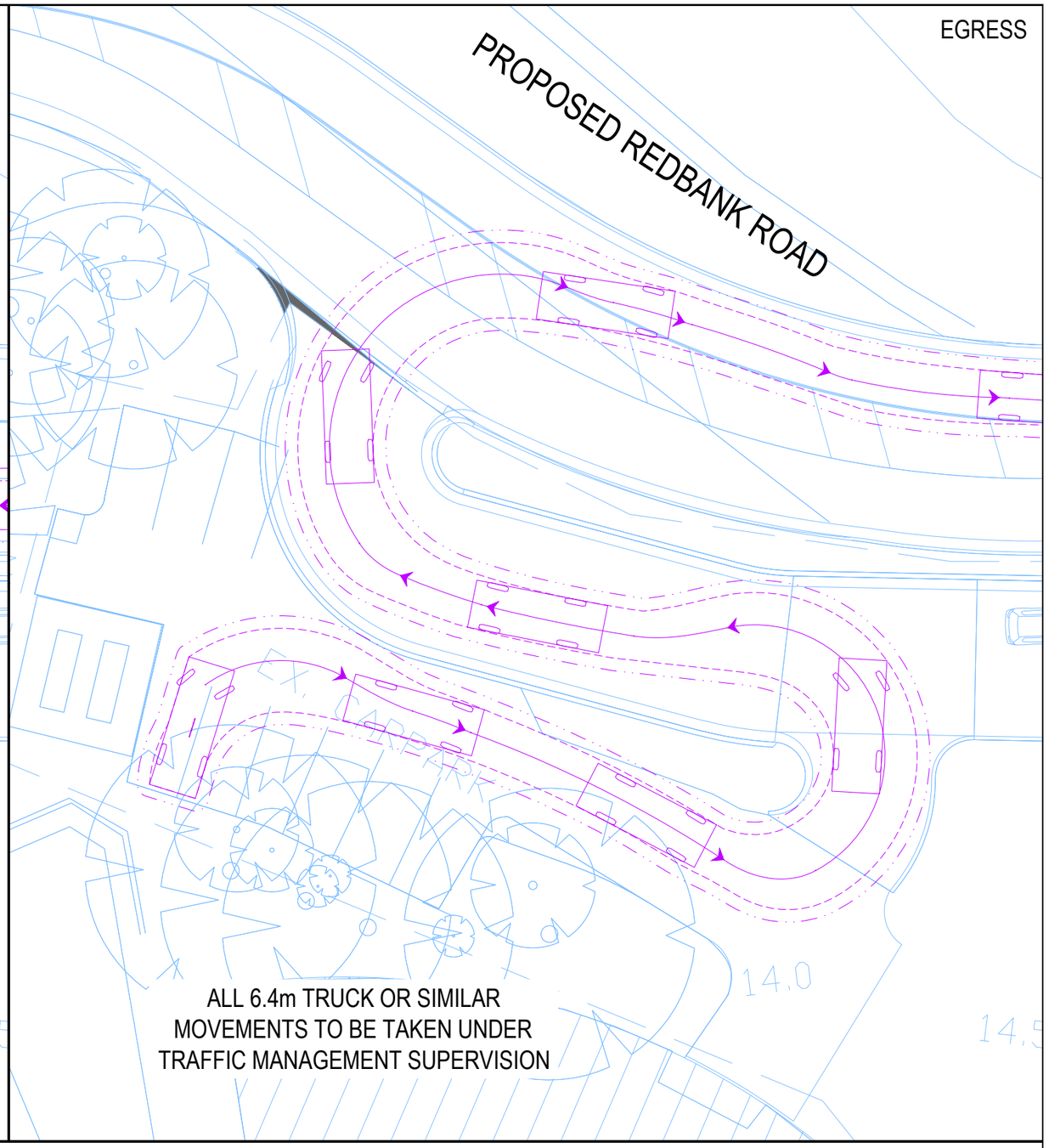
0 5 10m

SCALE 1:250 @A3

wsp

NORTH





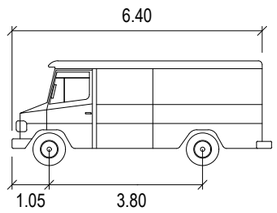
VEHICLE LEGEND

6.4m TRUCK 600mm CLEARANCE

6.4m TRUCK OVERHANG

6.4m TRUCK CENTRELINE

AUSTROADS 6.4m TRUCK



SRV	meters
Width	: 2.30
Track	: 2.30
Lock to Lock Time	: 6.0
Steering Angle	: 38.0

PS118400 SK131

AUSTROADS 6.4m TRUCK
SITE INGRESS/EGRESS MANOEUVRE
C.W. 06.04.2021

0 5 10m

SCALE 1:250 @A3

wsp

NORTH

LABYRINTH WAY

LABYRINTH WAY

5 m

EXISTING RL TO BE CONFIRMED AT THIS LOCATION

RECOMMEND KEEPING AREA CLEAR FROM
ANY VISUAL OBSTRUCTIONS.
ANY VEGETATION AND/OR SURFACE GRADES
COULD LEAD TO POTENTIAL OBSTRUCTION.

EX RL 12.50

2.5

R4

35 MINIMUM SIGHT DISTANCE

20m @ 1:7.4
DOWNWARDS

BOOM GATE

6m @ 1:20
DOWNWARDS

EXIT

CONSIDERATION ON HOW BOOM
GATE SEQUENCING IS TO WORK TO
STAGGER EXIT MOVEMENTS

16m @ 1:10
DOWNWARDS

3.7

Retaining Wall Under

Fall
1:100

SMALL CAR

SMALL CAR

+ex14.30

ex.14.50

Fall
1:100

Fhr Dp

Comms

+15.70

+15.89

Fh

Stair 2

SMALL CAR

LEVEL P1 SSL17.10

Fall
1:100

RL 17.10

ex.15.5

Exit

R5

Retaining Wall

+ex15.70

5.63 m

ALL RAMP MEASUREMENTS ARE TAKEN FROM INSIDE CURVE

PS118400 SK132

MSCP EXIT RAMP LAYOUT DETAILS

C.W. 06.04.2021

0 5 10m

SCALE 1:250 @A3

NORTH

ALL WHEEL STOPS TO BE INSTALLED IN ACCORDANCE WITH AS2890.1

ALL ELECTRIC VEHICLE CHARING POINTS TO BE LOCATED ABOVE VEHICLE BONNET HEIGHT TO ENSURE VEHICLES DO NOT IMPACT THE CHARGE POINT.

NOTE THAT COMPONENTS OF THE FENCING ALONG THIS ROW IMPACTS THE CAR SPACES EFFECTIVELY REDUCING THE LENGTH OF THE CAR SPACES

300mm CLEARANCE REQUIRED BETWEEN CAR SPACE AND RAMP/BARRIER IN ACCORDANCE WITH AS2890.1

300mm CLEARANCE REQUIRED BETWEEN CAR SPACE AND RAMP/BARRIER IN ACCORDANCE WITH AS2890.1

SHIFT STANDARD CAR SPACE AND ADJACENT SMALL CAR SPACE SLIGHTLY NORTH TO ACHIEVE THE FULL 2.3m WIDTH FOR A SMALL CAR SPACE.

NOTE POSSIBLE SIGHTLINE ISSUES WITH VEHICLES TURNING RIGHT FROM BOTH RAMPS AT THE SAME TIME. THIS MAY LEAD TO VEHICLE COLLISIONS AS SHOWN.

PS118400 SK133

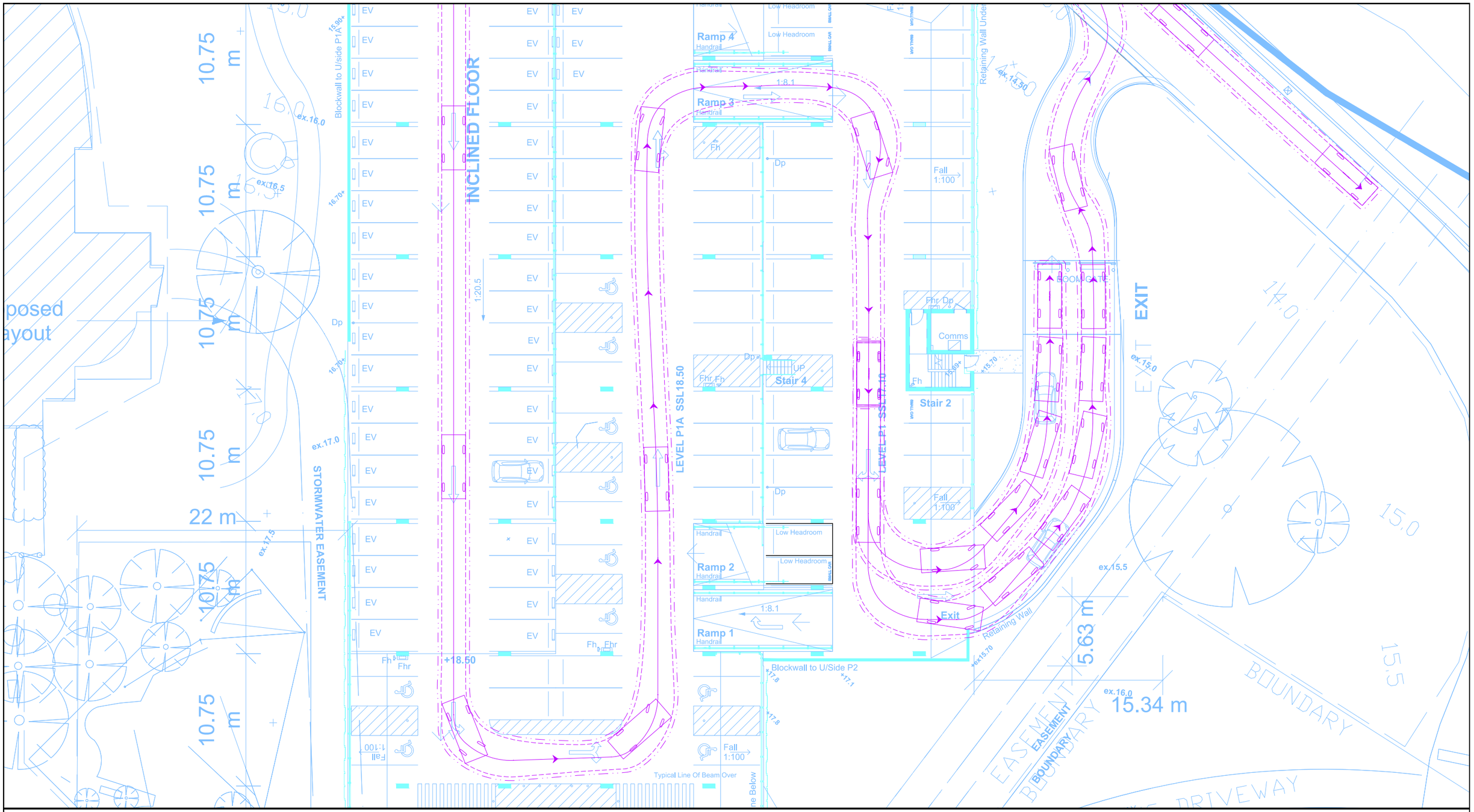
LEVEL P1 & P1A - SITE LAYOUT DETAILS

C.W. 06.04.2021

0 5 10m

SCALE 1:300 @A3

PROPOSED PARKING PROVISION FOR LEVEL P1 & P1A:
- 112 CAR SPACES
- 4 MOTORCYCLE SPACES



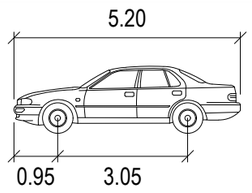
VEHICLE LEGEND

B99CAR 300mm CLEARANCE

B99CAR OVERHANG

B99CAR CENTRELINE

AUSTROADS B99CAR



B99	meters
Width	: 1.94
Track	: 1.84
Lock to Lock Time	: 6.00
Steering Angle	: 33.50

PS118400 SK134

LEVEL P1 & P1A - AUSTROADS B99CAR
INTERNAL CIRCULATION AND EXIT MANOEUVRE
C.W. 06.04.2021

0 5 10m

SCALE 1:300 @A3

wsp

NORTH

INGRESS

EGRESS

Stair 3
Retaining Wall Under
4.03 m
5 m
Landing
+16.4
MSR
+16.4
Fall
1:100
Ramp 4
Ramp 3
Handrail
Low Headroom
1:8.1
EV
Fh
Dp
Fhr
SMALL CAR

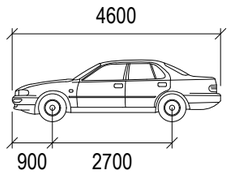
VEHICLE LEGEND

4.6m VECTRA 300mm CLEARANCE

4.6m VECTRA OVERHANG

4.6m VECTRA CENTRELINE

4.6m VECTRA



4.6m VECTRA

	mm
Width	: 1800
Track	: 1530
Lock to Lock Time	: 6.0
Steering Angle	: 36.5

PS118400 SK135

LEVEL P1 & P1A - 4.6m VECTRA

INGRESS/EGRESS MANOEUVRE 01

C.W. 06.04.2021

0 5 8m

SCALE 1:200 @A3

NORTH

INGRESS

EGRESS

Stair 3
Retaining Wall Under
4.03 m
5 m
Retaining Wall Under
Landing
+16.4
MSR
+16.4
ISB
Fh
Dp
Fhr
Fall
1:100
EV
Handrail
Ramp 4
Ramp 3
1:8.1
Low Headroom
SMALL CAR
Fhr Dp
+13.75
+13.70
+ex13.65
+13.94
+ex14.63
+ex14.30

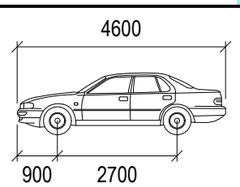
VEHICLE LEGEND

4.6m VECTRA 300mm CLEARANCE

4.6m VECTRA OVERHANG

4.6m VECTRA CENTRELINE

4.6m VECTRA



4.6m VECTRA

	mm
Width	: 1800
Track	: 1530
Lock to Lock Time	: 6.0
Steering Angle	: 36.5

PS118400 SK136

LEVEL P1 & P1A - 4.6m VECTRA
INGRESS/EGRESS MANOEUVRE 02
C.W. 06.04.2021

0 5 8m

SCALE 1:200 @A3

wsp

NORTH

ACCESS TO END PARKING SPACES IS LIMITED AND REQUIRES MULTIPLE MANOEUVRES

ALL WHEEL STOPS TO BE INSTALLED IN ACCORDANCE WITH AS2890.1

300mm CLEARANCE REQUIRED BETWEEN CAR SPACE AND RAMP/BARRIER IN ACCORDANCE WITH AS2890.1

NOTE POSSIBLE SIGHTLINE ISSUES WITH VEHICLES TURNING RIGHT FROM BOTH RAMPS AT THE SAME TIME. THIS MAY LEAD TO VEHICLE COLLISIONS.

300mm CLEARANCE REQUIRED BETWEEN CAR SPACE AND RAMP/BARRIER IN ACCORDANCE WITH AS2890.1

NOTE POSSIBLE SIGHTLINE ISSUES WITH VEHICLES TURNING RIGHT FROM BOTH RAMPS AT THE SAME TIME. THIS MAY LEAD TO VEHICLE COLLISIONS AS SHOWN.

300mm CLEARANCE REQUIRED BETWEEN CAR SPACE AND RAMP/BARRIER IN ACCORDANCE WITH AS2890.1

PROPOSED SMALL CAR SPACE

PROPOSED SMALL CAR SPACE

PS118400 SK137

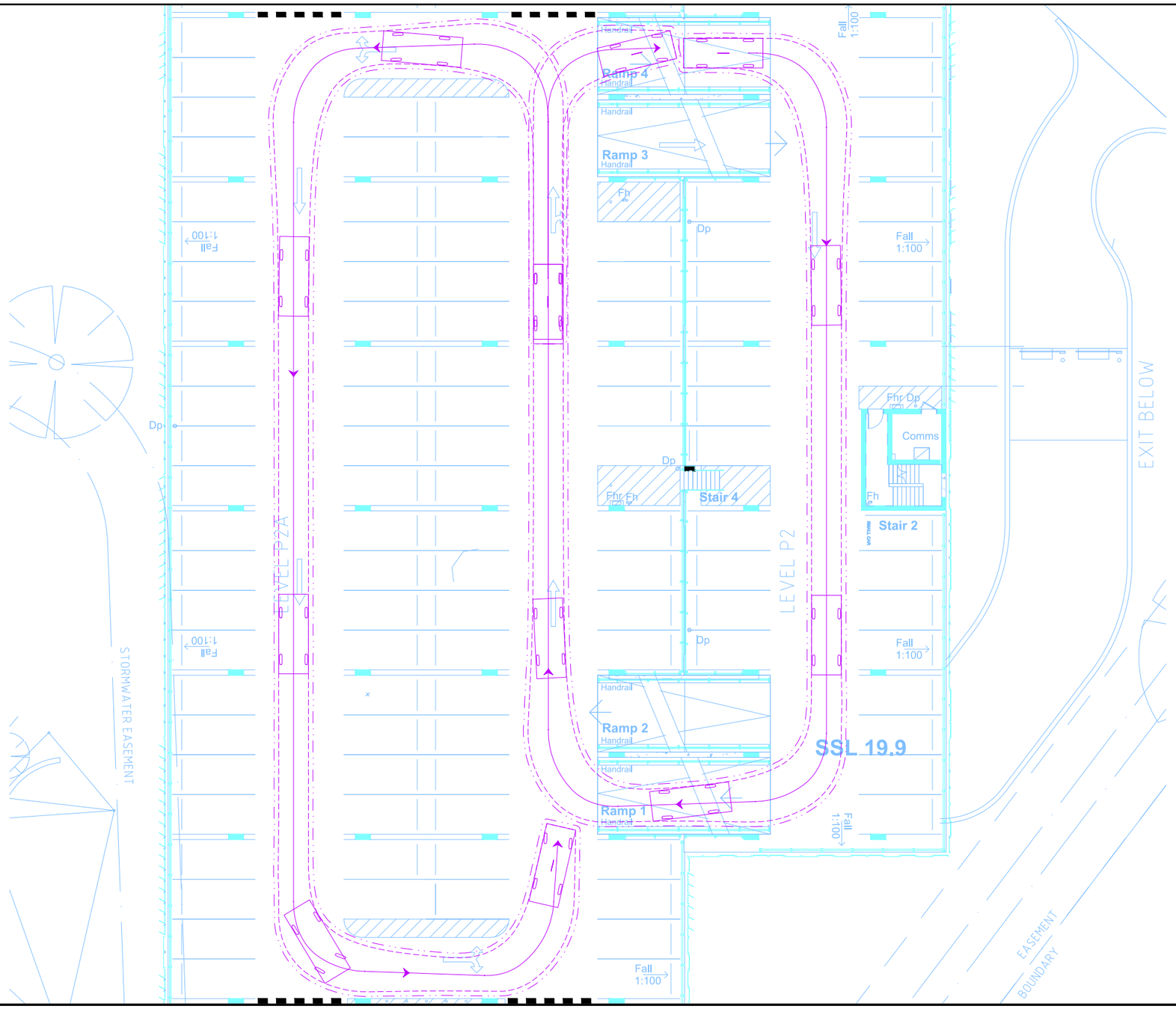
PARKING LEVELS (TYPICAL) - SITE LAYOUT DETAILS

C.W. 06.04.2021

0 5 10m

SCALE 1:300 @A3

PROPOSED PARKING PROVISION FOR LEVELS 2 TO 7:
- 128 CAR SPACES PER LEVEL
- 768 VEHICLES TOTAL ACROSS LEVELS 2 TO 7 (128 X 6 = 768)



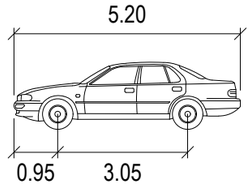
VEHICLE LEGEND

B99CAR 300mm CLEARANCE

B99CAR OVERHANG

B99CAR CENTRELINE

AUSTROADS B99CAR



B99	meters
Width	: 1.94
Track	: 1.84
Lock to Lock Time	: 6.00
Steering Angle	: 33.50

PS118400 SK138

TYPICAL PARKING LEVELS - AUSTROADS B99CAR
INTERNAL CIRCULATION MANOEUVRE
C.W. 06.04.2021

0 5 10m

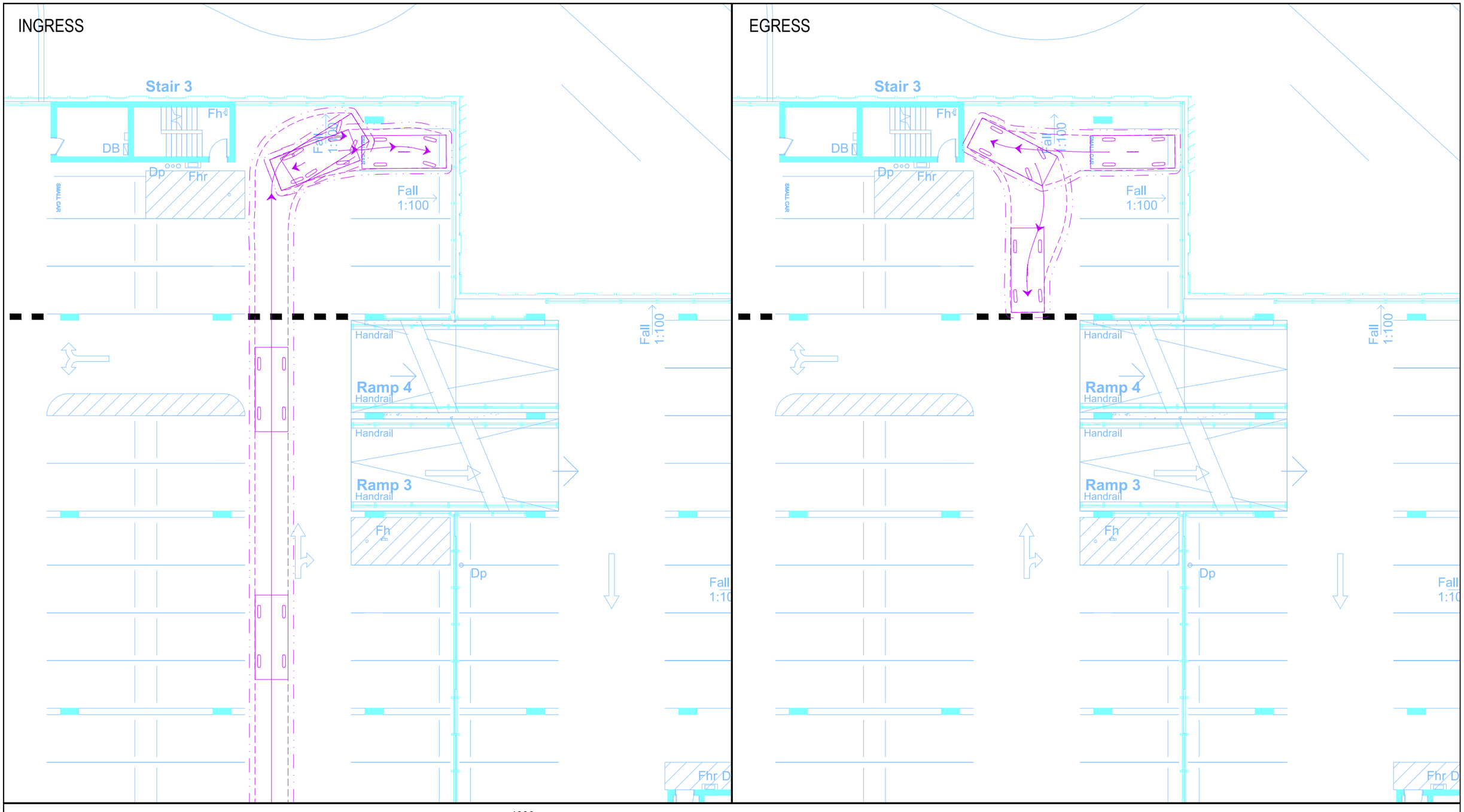
SCALE 1:300 @A3

wsp

NORTH

INGRESS

EGRESS



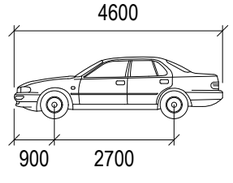
VEHICLE LEGEND

4.6m VECTRA 300mm CLEARANCE

4.6m VECTRA OVERHANG

4.6m VECTRA CENTRELINE

4.6m VECTRA



4.6m VECTRA

	mm
Width	: 1800
Track	: 1530
Lock to Lock Time	: 6.0
Steering Angle	: 36.5

PS118400 SK139

TYPICAL PARKING LEVELS - 4.6m VECTRA

INGRESS/EGRESS MANOEUVRE 01

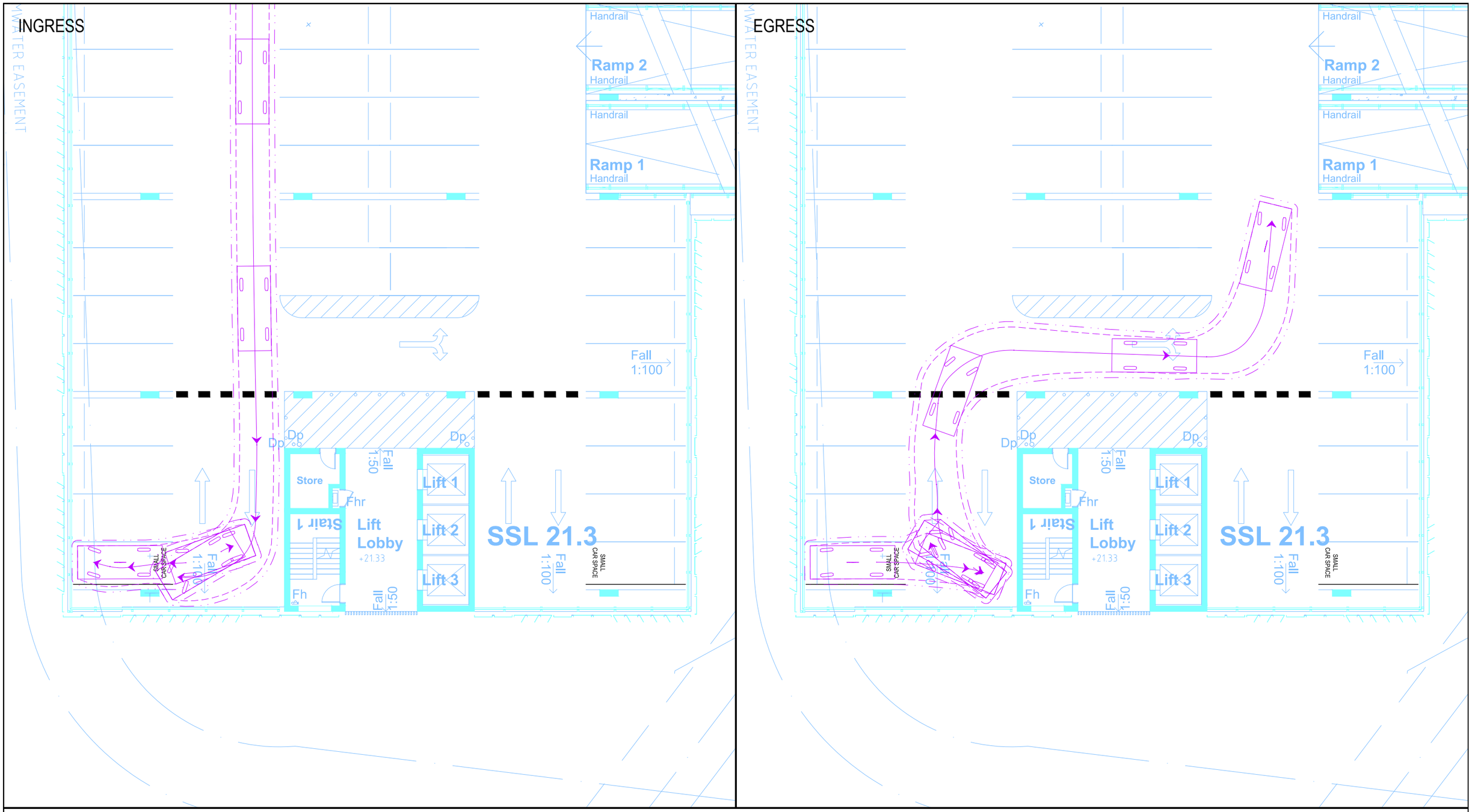
C.W. 06.04.2021

0 5 8m

SCALE 1:200 @A3

INGRESS

EGRESS



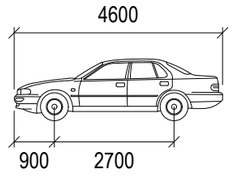
VEHICLE LEGEND

4.6m VECTRA 300mm CLEARANCE

4.6m VECTRA OVERHANG

4.6m VECTRA CENTRELINE

4.6m VECTRA



4.6m VECTRA

		mm
Width	:	1800
Track	:	1530
Lock to Lock Time	:	6.0
Steering Angle	:	36.5

PS118400 SK140

TYPICAL PARKING LEVELS - 4.6m VECTRA

INGRESS/EGRESS MANOEUVRE 02

C.W. 06.04.2021

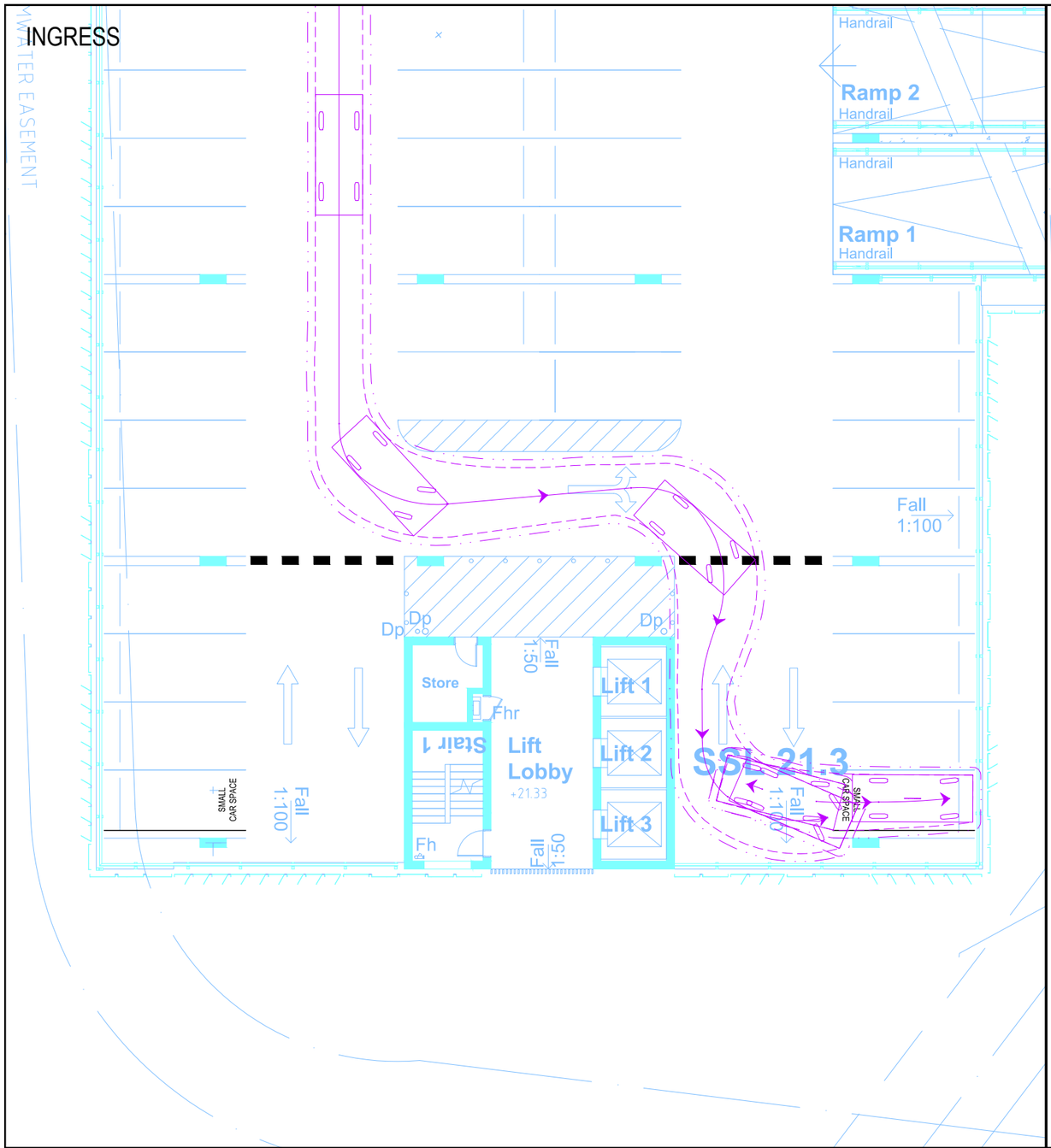
0 5 8m

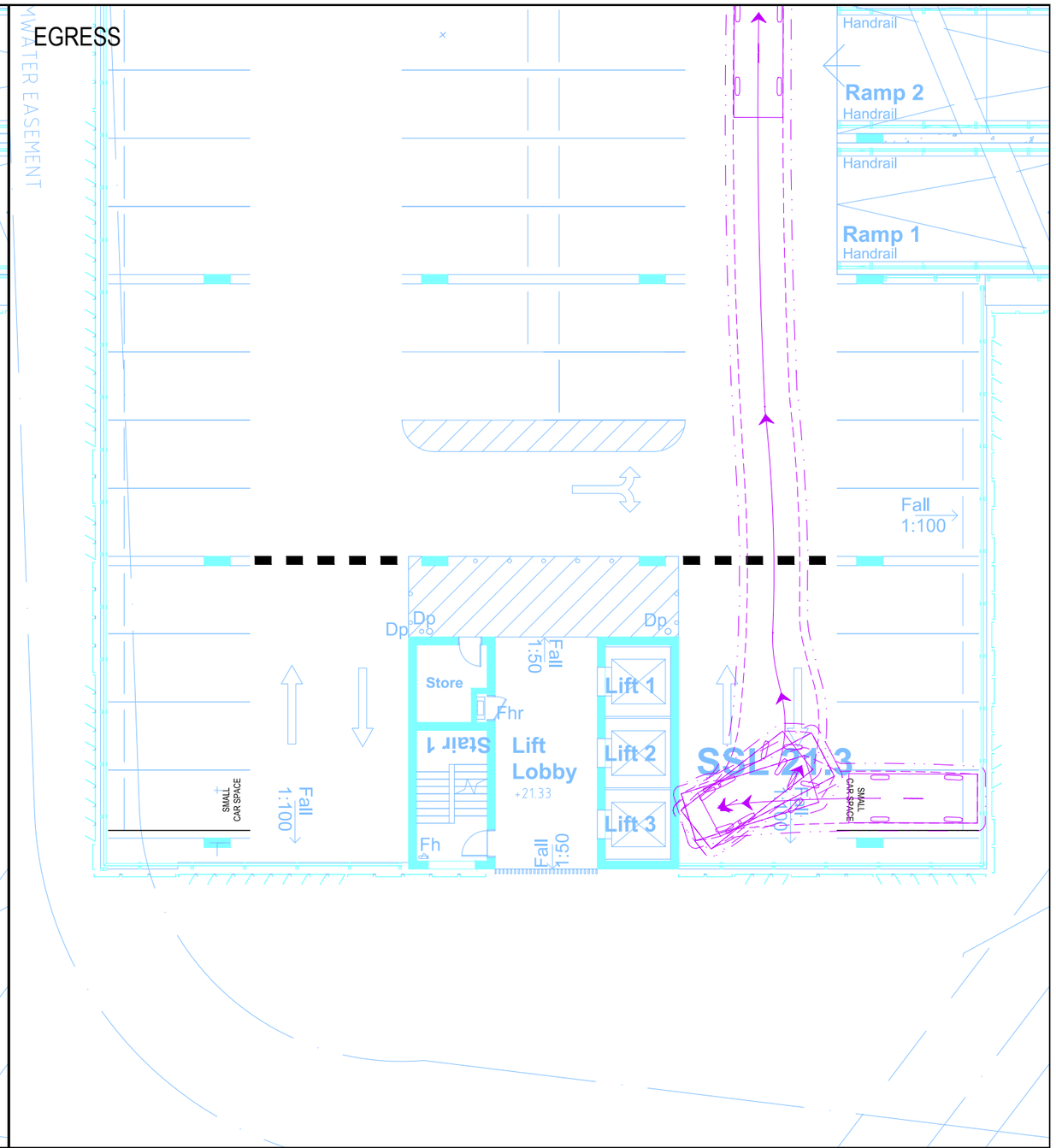
SCALE 1:200 @A3

NORTH

INGRESS

EGRESS





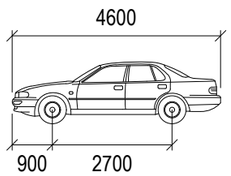
VEHICLE LEGEND

4.6m VECTRA 300mm CLEARANCE

4.6m VECTRA OVERHANG

4.6m VECTRA CENTRELINE

4.6m VECTRA



4.6m VECTRA

	mm
Width	: 1800
Track	: 1530
Lock to Lock Time	: 6.0
Steering Angle	: 36.5

PS118400 SK141

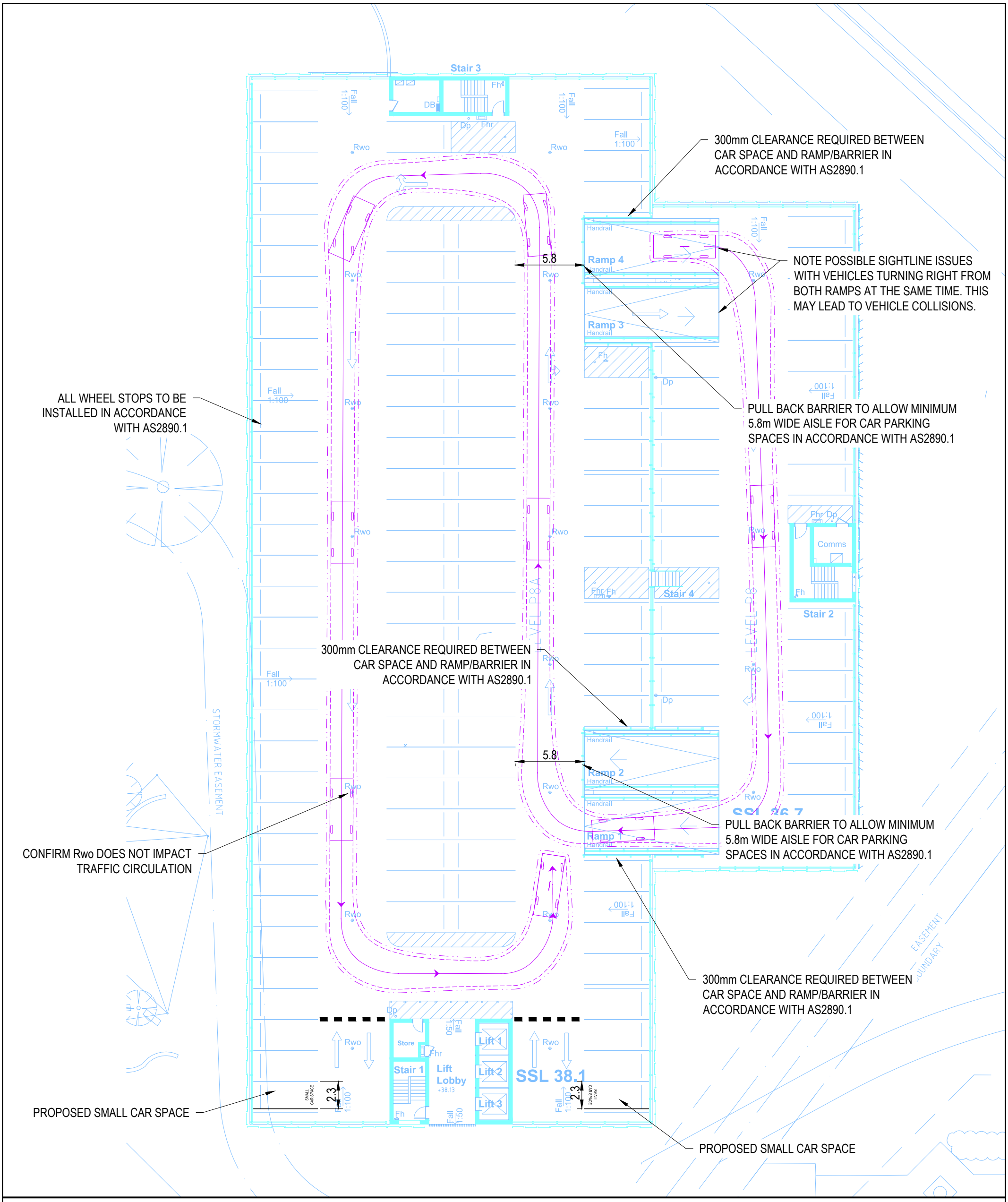
TYPICAL PARKING LEVELS - 4.6m VECTRA

INGRESS/EGRESS MANOEUVRE 03

C.W. 06.04.2021

0 5 8m

SCALE 1:200 @A3



PS118400 SK142

LEVEL P8 & P8A - SITE LAYOUT DETAILS

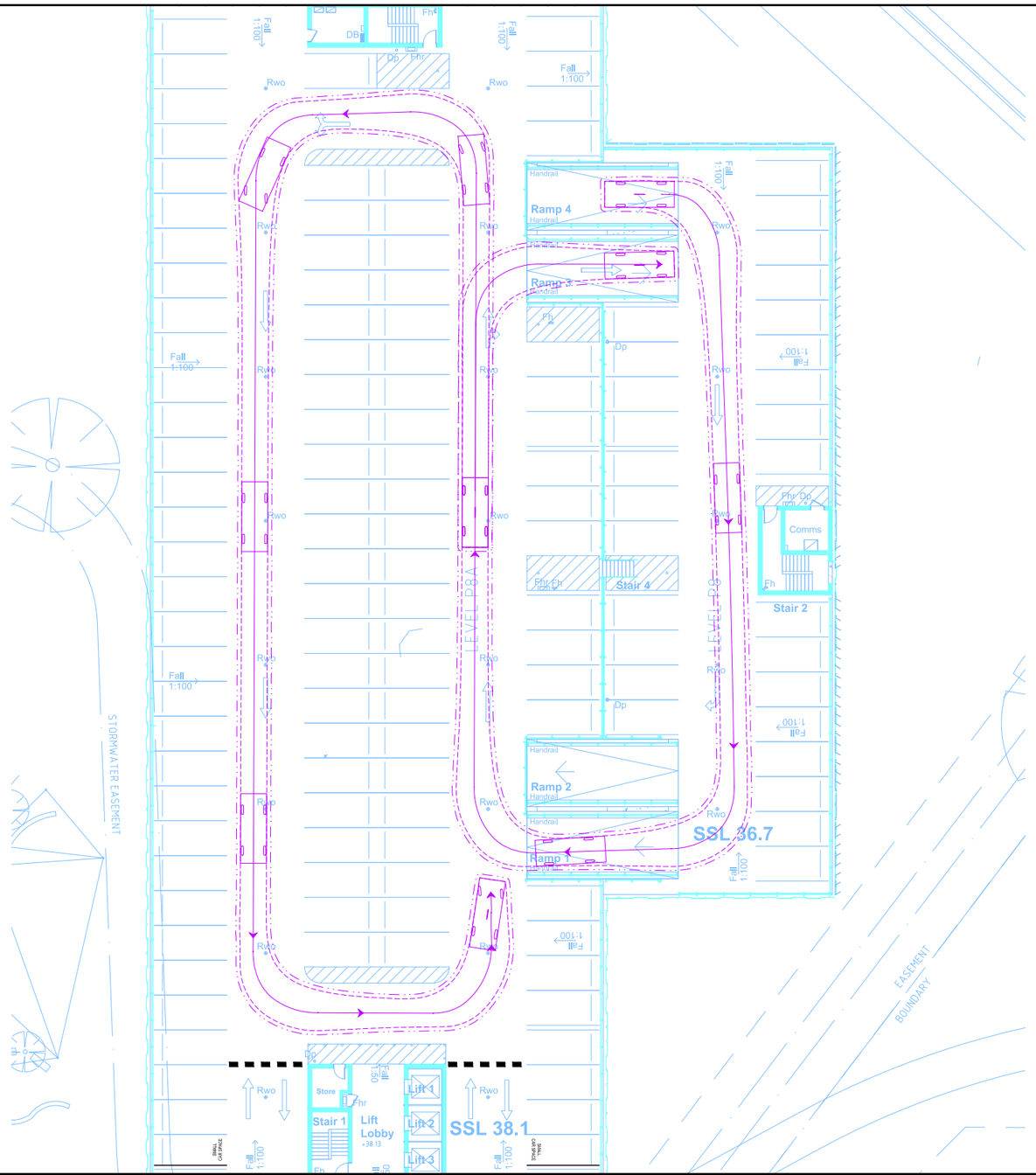
C.W. 06.04.2021

0 5 10m

SCALE 1:300 @A3

NORTH

PROPOSED PARKING PROVISION FOR LEVEL P8 & P8A:
- 131 CAR SPACES PER LEVEL



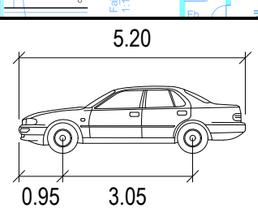
VEHICLE LEGEND

B99CAR 300mm CLEARANCE

B99CAR OVERHANG

B99CAR CENTRELINE

AUSTROADS B99CAR



B99	meters
Width	: 1.94
Track	: 1.84
Lock to Lock Time	: 6.00
Steering Angle	: 33.50

PS118400 SK143

LEVEL P8 & P8A - AUSTROADS B99CAR
INTERNAL CIRCULATION MANOEUVRE
C.W. 06.04.2021

0 10 16m

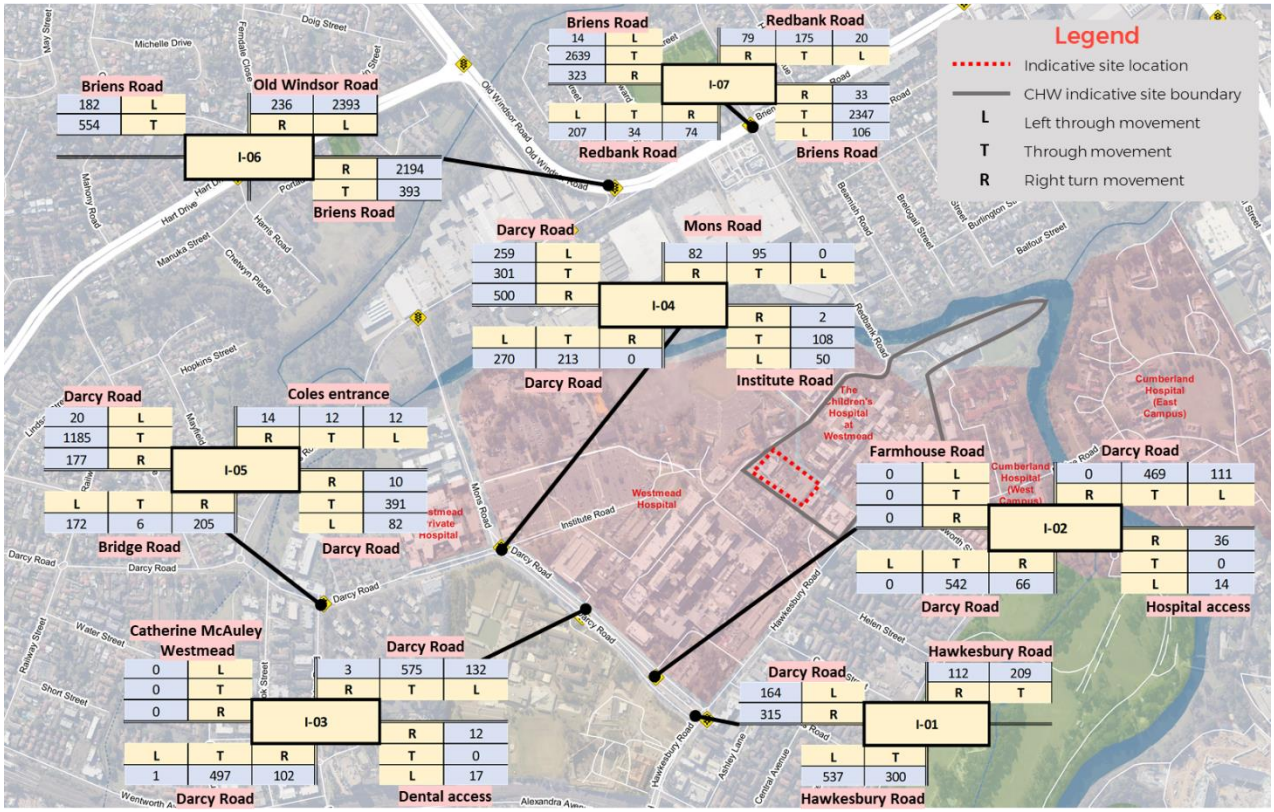
SCALE 1:400 @A3

wsp

NORTH

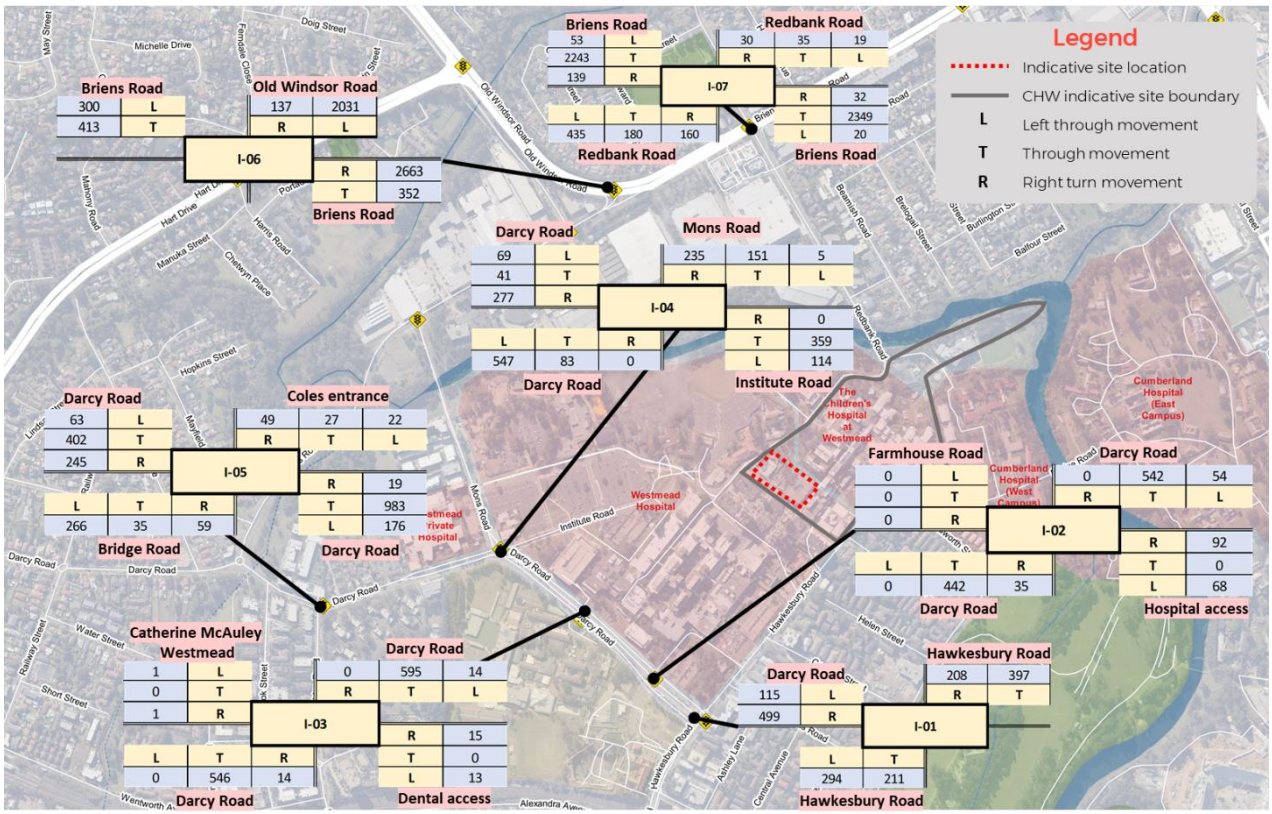
APPENDIX C

FUTURE TRAFFIC VOLUMES ESTIMATES



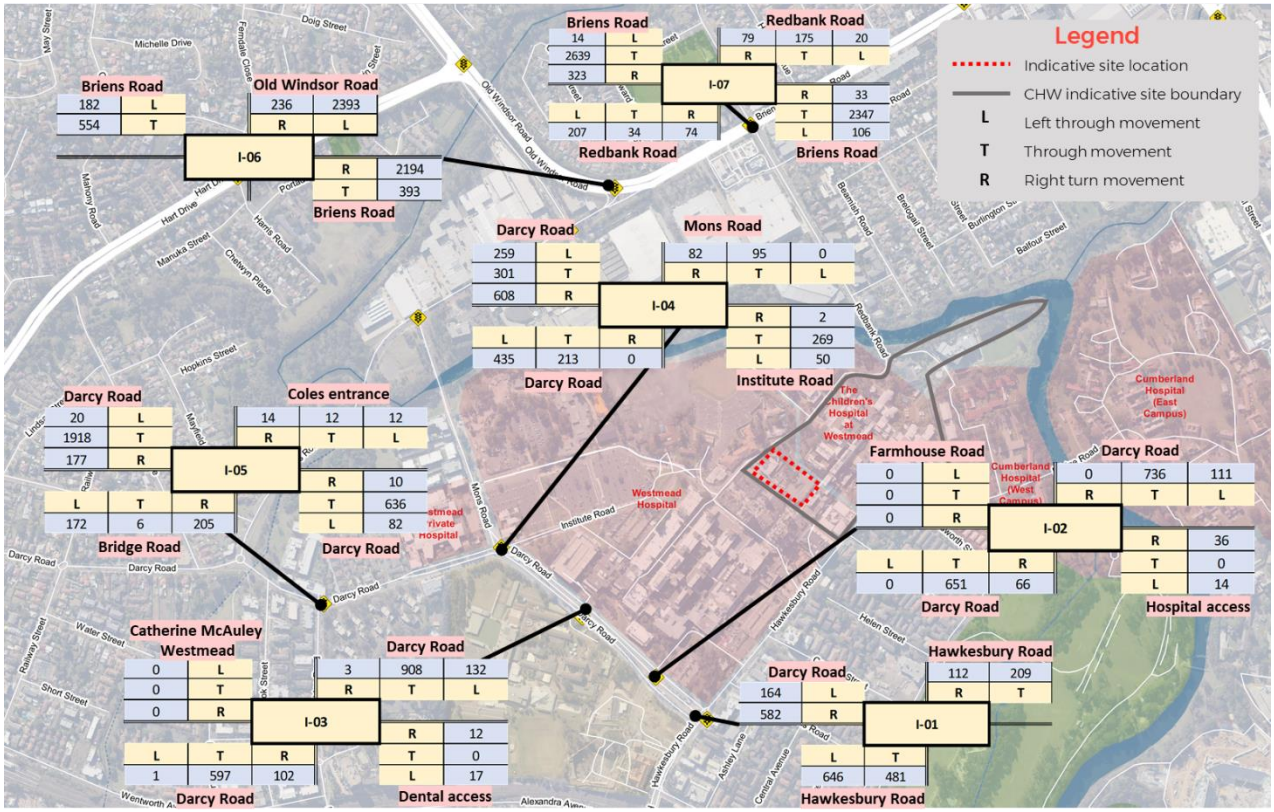
Basemap source: *NSW Department of Lands Spatial Information Exchange*

Figure C.1 AM peak 2020 with development traffic volumes



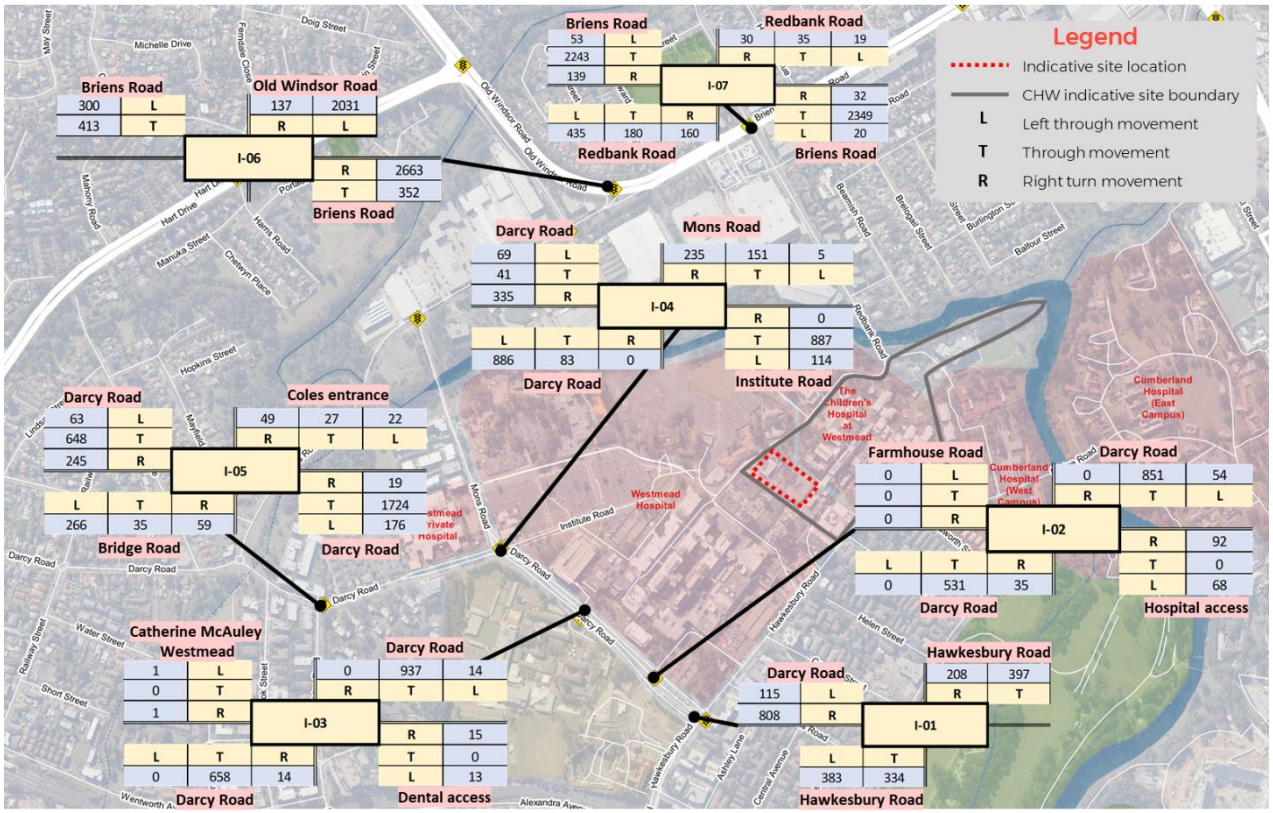
Basemap source: *NSW Department of Lands Spatial Information Exchange*

Figure C.2 PM peak 2020 with development traffic volumes



Basemap source: *NSW Department of Lands Spatial Information Exchange*

Figure C.3 AM peak 2030 with development traffic volumes



Basemap source: *NSW Department of Lands Spatial Information Exchange*

Figure C.4 PM peak 2030 with development traffic volumes

APPENDIX D

SIDRA INTERSECTION MODELLING RESULTS

APPENDIX D-1
2020 AM – WITHOUT DEVELOPMENT

MOVEMENT SUMMARY

Site: I-11 [2020 Base AM I-11 Briens - Redbank]

TCS 3213
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 145 seconds (Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Redbank Road												
21	L2	215	4.4	0.283	33.8	LOS C	9.8	71.4	0.70	0.75	0.70	32.3
22	T1	36	0.0	0.099	52.3	LOS D	2.1	14.6	0.86	0.64	0.86	29.3
23	R2	77	9.6	0.638	77.8	LOS F	5.6	42.4	1.00	0.82	1.07	25.2
Approach		327	5.1	0.638	46.2	LOS D	9.8	71.4	0.79	0.76	0.80	29.6
East: Briens Road												
24	L2	104	2.0	0.933	61.3	LOS E	68.4	500.3	1.00	1.04	1.16	30.7
25	T1	2471	5.7	0.933	54.7	LOS D	68.9	505.8	1.00	1.04	1.15	29.9
26	R2	35	9.1	0.152	67.3	LOS E	2.2	16.6	0.92	0.73	0.92	28.1
Approach		2609	5.6	0.933	55.1	LOS D	68.9	505.8	1.00	1.04	1.15	29.9
North: Redbank Road												
27	L2	21	15.0	0.885	79.6	LOS F	21.8	154.0	1.00	1.03	1.25	25.8
28	T1	172	0.0	0.885	74.8	LOS F	21.8	154.0	1.00	1.03	1.25	24.5
29	R2	83	0.0	0.885	79.3	LOS F	21.8	154.0	1.00	1.03	1.25	22.1
Approach		276	1.1	0.885	76.5	LOS F	21.8	154.0	1.00	1.03	1.25	24.0
West: Briens Road												
30	L2	15	0.0	0.910	45.5	LOS D	68.2	504.7	0.97	0.97	1.05	31.4
31	T1	2778	6.8	0.910	39.1	LOS C	68.2	505.4	0.94	0.94	1.02	35.8
32	R2	317	1.7	1.043	105.2	LOS F	26.5	188.2	1.00	1.08	1.72	14.3
Approach		3109	6.3	1.043	45.9	LOS D	68.2	505.4	0.94	0.95	1.09	31.0
All Vehicles		6322	5.7	1.043	51.1	LOS D	68.9	505.8	0.96	0.98	1.11	30.0

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P5	South Full Crossing	53	66.8	LOS F	0.2	0.2	0.96	0.96
P6	East Full Crossing	53	66.8	LOS F	0.2	0.2	0.96	0.96
P7	North Full Crossing	53	66.8	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		158	66.8	LOS F			0.96	0.96

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.

MOVEMENT SUMMARY

Site: I-14 [I-14 Bridge - Darcy]

Network: N101 [2020 Base AM Darcy Road Network]

TCS 1630
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bridge Road														
1	L2	181	2.3	181	2.3	0.266	30.3	LOS C	4.1	29.4	0.74	0.75	0.74	26.3
2	T1	6	0.0	6	0.0	0.912	70.4	LOS E	8.4	59.8	0.99	1.07	1.47	16.2
3	R2	206	2.6	206	2.6	0.912	69.9	LOS E	8.4	59.8	0.99	1.07	1.47	12.6
Approach		394	2.4	394	2.4	0.912	51.7	LOS D	8.4	59.8	0.87	0.92	1.13	17.8
East: Darcy Road														
4	L2	83	7.6	83	7.6	0.280	26.5	LOS B	6.0	43.7	0.79	0.71	0.79	33.4
5	T1	407	3.7	407	3.7	0.280	24.4	LOS B	6.4	46.2	0.84	0.73	0.84	30.0
6	R2	13	16.7	13	16.7	0.042	22.1	LOS B	0.2	1.6	0.85	0.69	0.85	22.5
Approach		503	4.7	503	4.7	0.280	24.7	LOS B	6.4	46.2	0.83	0.72	0.83	30.2
North: Coles Access														
7	L2	17	25.0	17	25.0	0.029	23.2	LOS B	0.3	2.9	0.66	0.48	0.66	16.0
8	T1	13	0.0	13	0.0	0.112	43.0	LOS D	0.8	5.8	0.88	0.65	0.88	18.7
9	R2	15	14.3	15	14.3	0.112	43.0	LOS D	0.8	5.8	0.88	0.65	0.88	16.2
Approach		44	14.3	44	14.3	0.112	35.5	LOS C	0.8	5.8	0.80	0.59	0.80	17.0
West: Darcy Road														
10	L2	21	5.0	21	5.0	0.821	32.3	LOS C	22.5	159.6	0.92	0.87	0.95	18.6
11	T1	1228	1.5	1228	1.5	0.821	27.5	LOS B	22.5	159.6	0.85	0.81	0.91	15.5
12	R2	186	2.3	186	2.3	0.313	13.7	LOS A	2.3	16.6	0.59	0.71	0.59	35.2
Approach		1435	1.6	1435	1.6	0.821	25.8	LOS B	22.5	159.6	0.81	0.80	0.87	18.6
All Vehicles		2376	2.7	2376	2.7	0.912	30.0	LOS C	22.5	159.6	0.83	0.80	0.90	21.2

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P2	East Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		211	49.3	LOS E			0.95	0.95

MOVEMENT SUMMARY

Site: I-17 [I-17 Darcy - Mons - Institute]

Network: N101 [2020 Base AM Darcy Road Network]

TCS 2393
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Darcy Road														
1	L2	276	2.9	276	2.9	0.137	14.7	LOS B	1.9	13.3	0.41	0.61	0.41	20.5
2	T1	211	14.0	211	14.0	0.720	30.4	LOS C	5.0	35.8	0.81	0.67	0.84	26.7
Approach		487	7.7	487	7.7	0.720	21.5	LOS B	5.0	35.8	0.58	0.63	0.59	24.8
East: Institute Road														
4	L2	53	2.0	53	2.0	0.782	65.7	LOS E	2.9	20.4	1.00	0.91	1.29	16.8
5	T1	108	0.0	108	0.0	0.782	62.1	LOS E	3.0	21.0	1.00	0.91	1.29	17.2
6	R2	2	0.0	2	0.0	0.782	65.5	LOS E	3.0	21.0	1.00	0.91	1.29	24.0
Approach		163	0.6	163	0.6	0.782	63.3	LOS E	3.0	21.0	1.00	0.91	1.29	17.2
North: Mons Road														
7	L2	1	0.0	1	0.0	0.088	23.9	LOS B	1.3	9.7	0.63	0.50	0.63	32.8
8	T1	96	33.0	96	33.0	0.088	20.5	LOS B	1.3	9.7	0.63	0.49	0.63	27.8
9	R2	86	8.5	86	8.5	0.367	46.4	LOS D	2.6	19.2	0.95	0.76	0.95	20.0
Approach		183	21.3	183	21.3	0.367	32.7	LOS C	2.6	19.2	0.78	0.62	0.78	23.6
West: Darcy Road														
10	L2	271	1.2	271	1.2	0.197	4.7	LOS A	1.0	7.4	0.20	0.49	0.20	38.4
11	T1	292	1.2	292	1.2	0.717	44.1	LOS D	10.8	76.6	1.00	0.87	1.01	25.6
12	R2	521	1.6	521	1.6	0.717	37.0	LOS C	14.0	99.3	0.96	0.86	0.96	19.1
Approach		1085	1.4	1085	1.4	0.717	30.8	LOS C	14.0	99.3	0.78	0.77	0.78	26.1
All Vehicles		1917	4.8	1917	4.8	0.782	31.4	LOS C	14.0	99.3	0.75	0.73	0.78	24.6

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	East Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	49.3	LOS E			0.95	0.95

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.

MOVEMENT SUMMARY

Site: I-19 [I-19 Darcy - Dental Hospital - Marist]

Network: N101 [2020 Base AM Darcy Road Network]

TCS 3282
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Darcy Road														
4	L2	1	0.0	1	0.0	0.246	6.1	LOS A	0.8	5.9	0.11	0.10	0.11	21.5
5	T1	508	8.2	508	8.2	0.246	3.1	LOS A	1.1	8.2	0.13	0.11	0.13	33.6
6	R2	107	0.0	107	0.0	0.374	55.8	LOS D	3.5	24.7	1.00	0.79	1.00	10.8
Approach		616	6.7	616	6.7	0.374	12.3	LOS A	3.5	24.7	0.28	0.23	0.28	23.0
East: Dental hospital access														
7	L2	18	17.6	18	17.6	0.028	25.9	LOS B	0.4	2.9	0.65	0.63	0.65	7.4
9	R2	13	0.0	13	0.0	0.054	47.5	LOS D	0.4	2.5	0.89	0.67	0.89	4.7
Approach		31	10.3	31	10.3	0.054	34.9	LOS C	0.4	2.9	0.75	0.65	0.75	5.9
North: Darcy Road														
10	L2	139	0.0	139	0.0	0.363	15.1	LOS B	4.3	30.3	0.41	0.47	0.41	16.2
11	T1	592	7.7	592	7.7	0.363	5.4	LOS A	4.3	30.3	0.20	0.21	0.20	29.0
12	R2	3	0.0	3	0.0	0.011	52.3	LOS D	0.1	0.7	1.00	0.64	1.00	10.9
Approach		734	6.2	734	6.2	0.363	7.5	LOS A	4.3	30.3	0.24	0.26	0.24	24.2
West: Marist HS														
1	L2	1	0.0	1	0.0	0.007	42.9	LOS D	0.1	0.4	0.84	0.60	0.84	5.0
3	R2	1	0.0	1	0.0	0.007	42.7	LOS D	0.1	0.4	0.84	0.60	0.84	5.0
Approach		2	0.0	2	0.0	0.007	42.8	LOS D	0.1	0.4	0.84	0.60	0.84	5.0
All Vehicles		1383	6.5	1383	6.5	0.374	10.3	LOS A	4.3	30.3	0.27	0.25	0.27	23.0

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P3	East Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P4	North Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	49.3	LOS E			0.95	0.95

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.

MOVEMENT SUMMARY

Site: I-23 [I-23 Darcy - Hospital - WSU]

Network: N101 [2020 Base AM Darcy Road Network]

TCS 3281
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Darcy Road														
4	L2	43	4.9	43	4.9	0.301	28.6	LOS C	7.2	51.6	0.84	0.74	0.84	21.4
5	T1	555	6.9	555	6.9	0.301	21.6	LOS B	7.2	51.6	0.79	0.68	0.79	12.3
6	R2	69	1.5	69	1.5	0.297	46.2	LOS D	2.0	13.8	0.87	0.73	0.87	8.8
Approach		668	6.2	668	6.2	0.301	24.6	LOS B	7.2	51.6	0.80	0.69	0.80	12.4
East: Westmead Hospital access														
7	L2	15	0.0	15	0.0	0.036	37.7	LOS C	0.4	2.8	0.80	0.65	0.80	4.8
8	T1	1	0.0	1	0.0	0.036	34.5	LOS C	0.4	2.8	0.80	0.65	0.80	15.0
9	R2	38	2.8	38	2.8	0.381	61.0	LOS E	1.3	9.3	1.00	0.73	1.00	3.3
Approach		54	2.0	54	2.0	0.381	54.1	LOS D	1.3	9.3	0.94	0.71	0.94	3.8
North: Darcy Road														
10	L2	117	0.0	117	0.0	0.301	8.6	LOS A	1.8	12.9	0.21	0.34	0.21	22.3
11	T1	480	9.2	480	9.2	0.301	3.3	LOS A	1.8	12.9	0.13	0.16	0.13	33.1
12	R2	1	0.0	1	0.0	0.004	56.0	LOS D	0.0	0.2	1.00	0.60	1.00	15.9
Approach		598	7.4	598	7.4	0.301	4.4	LOS A	1.8	12.9	0.15	0.19	0.15	29.4
West: Car park														
1	L2	25	8.3	25	8.3	0.059	38.1	LOS C	0.6	4.8	0.78	0.70	0.78	13.1
2	T1	1	0.0	1	0.0	0.059	32.4	LOS C	0.6	4.8	0.78	0.70	0.78	15.3
3	R2	1	0.0	1	0.0	0.010	60.1	LOS E	0.0	0.2	0.96	0.59	0.96	9.1
Approach		27	7.7	27	7.7	0.059	38.7	LOS C	0.6	4.8	0.78	0.69	0.78	13.0
All Vehicles		1347	6.6	1347	6.6	0.381	17.1	LOS B	7.2	51.6	0.52	0.47	0.52	17.4

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P21	South Stage 1	53	49.3	LOS E	0.2	0.2	0.95	0.95
P22	South Stage 2	53	49.3	LOS E	0.2	0.2	0.95	0.95
P3	East Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P41	North Stage 1	53	49.3	LOS E	0.2	0.2	0.95	0.95
P42	North Stage 2	53	49.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	19.2	LOS B	0.1	0.1	0.59	0.59

MOVEMENT SUMMARY

Site: I-30 [I-30 Darcy - Hawkesbury]

Network: N101 [2020 Base AM Darcy Road Network]

TCS 1631
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
East: Hawkesbury Road														
8	T1	218	4.3	218	4.3	0.186	9.5	LOS A	3.0	22.0	0.46	0.39	0.46	26.9
9	R2	117	6.3	117	6.3	0.346	25.6	LOS B	1.8	13.0	0.91	0.75	0.91	17.0
Approach		335	5.0	335	5.0	0.346	15.2	LOS B	3.0	22.0	0.62	0.52	0.62	22.4
North: Darcy Road														
10	L2	167	5.7	167	5.7	0.225	18.8	LOS B	2.7	19.4	0.74	0.72	0.74	23.7
12	R2	324	11.0	324	11.0	0.516	51.3	LOS D	4.7	33.5	0.96	0.79	0.96	6.7
Approach		491	9.2	491	9.2	0.516	40.2	LOS C	4.7	33.5	0.89	0.76	0.89	11.2
West: Hawkesbury Road														
1	L2	551	6.2	551	6.2	0.523	13.5	LOS A	6.2	44.1	0.73	0.78	0.73	21.9
2	T1	307	2.5	307	2.5	0.489	30.1	LOS C	6.9	49.3	0.73	0.68	0.73	21.4
Approach		858	4.9	858	4.9	0.523	19.5	LOS B	6.9	49.3	0.73	0.75	0.73	21.6
All Vehicles		1684	6.2	1684	6.2	0.523	24.7	LOS B	6.9	49.3	0.75	0.71	0.75	17.7

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P3	East Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P41	North Stage 1	53	21.9	LOS C	0.1	0.1	0.89	0.89
P42	North Stage 2	53	49.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		211	42.4	LOS E			0.93	0.93

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

MOVEMENT SUMMARY

Site: I-28 [I-28 Hawkesbury - Railway]

Network: N101 [2020 Base AM Darcy Road Network]

TCS 1571
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)
Common Control Group: CCG1 [TCS 1571]

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Railway Pde														
4	L2	144	1.5	144	1.5	0.274	26.7	LOS B	3.1	21.9	0.69	0.74	0.69	29.1
6	R2	18	0.0	18	0.0	0.056	45.6	LOS D	0.5	3.5	0.86	0.69	0.86	22.5
Approach		162	1.3	162	1.3	0.274	28.7	LOS C	3.1	21.9	0.71	0.73	0.71	28.2
East: Hawkesbury Rd														
7	L2	71	0.0	71	0.0	0.148	25.6	LOS B	2.3	20.5	0.72	0.66	0.72	32.6
8	T1	426	9.1	426	9.1	0.274	24.6	LOS B	6.3	44.7	0.78	0.66	0.78	14.7
Approach		496	7.8	496	7.8	0.274	24.6	LOS B	6.3	44.7	0.77	0.66	0.77	19.2
West: Hawkesbury Rd														
2	T1	884	4.5	884	4.5	0.539	1.9	LOS A	2.5	17.9	0.14	0.17	0.14	33.6
3	R2	234	0.0	234	0.0	0.539	6.8	LOS A	2.2	15.6	0.25	0.44	0.25	44.1
Approach		1118	3.6	1118	3.6	0.539	3.0	LOS A	2.5	17.9	0.17	0.23	0.17	40.2
All Vehicles		1776	4.6	1776	4.6	0.539	11.4	LOS A	6.3	44.7	0.39	0.40	0.39	28.8

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	South Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P3	East Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	49.3	LOS E			0.95	0.95

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.

MOVEMENT SUMMARY

Site: I-27 [I-27 Hawkesbury - Alexandra]

Network: N101 [2020 Base AM Darcy Road Network]

TCS 1571
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)
Common Control Group: CCG1 [TCS 1571]

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Alexandra Ave														
4	L2	31	0.0	31	0.0	0.626	53.8	LOS D	5.2	39.0	0.99	0.82	1.00	15.2
5	T1	66	3.2	66	3.2	0.626	49.3	LOS D	5.2	39.0	0.99	0.82	1.00	24.1
6	R2	219	15.4	219	15.4	0.626	54.1	LOS D	5.2	39.0	0.99	0.82	1.01	9.2
Approach		316	11.3	316	11.3	0.626	53.1	LOS D	5.2	39.0	0.99	0.82	1.01	14.1
East: Hawkesbury Road														
7	L2	200	18.9	200	18.9	0.382	19.7	LOS B	6.4	45.6	0.51	0.61	0.51	23.9
8	T1	348	1.5	348	1.5	0.382	21.9	LOS B	6.4	45.6	0.64	0.62	0.64	20.2
9	R2	49	0.0	49	0.0	0.382	29.8	LOS C	4.5	31.6	0.68	0.60	0.68	30.0
Approach		597	7.2	597	7.2	0.382	21.8	LOS B	6.4	45.6	0.60	0.61	0.60	22.4
North: Alexandra Ave														
10	L2	68	0.0	68	0.0	0.110	31.4	LOS C	1.5	10.7	0.72	0.71	0.72	27.1
11	T1	242	0.9	242	0.9	0.624	44.0	LOS D	7.4	52.2	0.97	0.81	0.97	26.1
Approach		311	0.7	311	0.7	0.624	41.2	LOS C	7.4	52.2	0.91	0.79	0.91	26.3
West: Hawkesbury Road														
1	L2	15	7.1	15	7.1	0.612	36.1	LOS C	11.3	80.0	0.88	0.77	0.88	29.8
2	T1	826	0.6	826	0.6	0.612	31.5	LOS C	11.4	80.3	0.88	0.77	0.88	13.8
Approach		840	0.7	840	0.7	0.612	31.5	LOS C	11.4	80.3	0.88	0.77	0.88	14.3
All Vehicles		2064	4.2	2064	4.2	0.626	33.5	LOS C	11.4	80.3	0.82	0.73	0.82	18.9

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	South Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P4	North Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	49.3	LOS E			0.95	0.95

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.

APPENDIX D-2
2020 AM – WITH DEVELOPMENT

MOVEMENT SUMMARY

Site: I-11 [2020 Dev AM I-11 Briens - Redbank]

TCS 3213
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 145 seconds (Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Redbank Road												
21	L2	218	4.3	0.287	33.9	LOS C	10.0	72.5	0.70	0.75	0.70	32.3
22	T1	36	0.0	0.100	52.4	LOS D	2.1	14.8	0.86	0.65	0.86	29.3
23	R2	78	9.5	0.697	80.7	LOS F	5.8	43.9	1.00	0.84	1.13	24.7
Approach		332	5.1	0.697	46.9	LOS D	10.0	72.5	0.79	0.76	0.82	29.4
East: Briens Road												
24	L2	112	1.9	0.936	62.4	LOS E	69.2	506.1	1.00	1.05	1.16	30.4
25	T1	2471	5.7	0.936	55.8	LOS D	69.7	512.1	1.00	1.05	1.16	29.5
26	R2	35	9.1	0.152	67.3	LOS E	2.2	16.6	0.92	0.73	0.92	28.1
Approach		2617	5.6	0.936	56.2	LOS D	69.7	512.1	1.00	1.04	1.16	29.6
North: Redbank Road												
27	L2	21	15.0	0.922	87.2	LOS F	24.1	170.2	1.00	1.09	1.34	24.5
28	T1	184	0.0	0.922	82.3	LOS F	24.1	170.2	1.00	1.09	1.34	23.4
29	R2	83	0.0	0.922	86.9	LOS F	24.1	170.2	1.00	1.09	1.34	20.9
Approach		288	1.1	0.922	84.0	LOS F	24.1	170.2	1.00	1.09	1.34	22.8
West: Briens Road												
30	L2	15	0.0	0.912	46.1	LOS D	68.9	509.9	0.98	0.98	1.06	31.2
31	T1	2778	6.8	0.912	39.8	LOS C	68.9	510.6	0.94	0.94	1.03	35.5
32	R2	340	1.6	1.117	160.3	LOS F	35.3	250.4	1.00	1.18	2.00	11.2
Approach		3132	6.2	1.117	52.9	LOS D	68.9	510.6	0.94	0.97	1.13	28.7
All Vehicles		6369	5.7	1.117	55.3	LOS D	69.7	512.1	0.96	0.99	1.14	28.7

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P5	South Full Crossing	53	66.8	LOS F	0.2	0.2	0.96	0.96
P6	East Full Crossing	53	66.8	LOS F	0.2	0.2	0.96	0.96
P7	North Full Crossing	53	66.8	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		158	66.8	LOS F			0.96	0.96

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.

MOVEMENT SUMMARY

Site: I-14 [I-14 Bridge - Darcy]

Network: N101 [2020 Dev AM Darcy Road Network]

TCS 1630
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Bridge Road														
1	L2	181	2.3	181	2.3	0.266	30.3	LOS C	4.1	29.4	0.74	0.75	0.74	26.3
2	T1	6	0.0	6	0.0	0.915	70.5	LOS F	8.8	62.6	0.99	1.07	1.47	16.2
3	R2	216	2.4	216	2.4	0.915	70.1	LOS E	8.8	62.6	0.99	1.07	1.47	12.6
Approach		403	2.4	403	2.4	0.915	52.2	LOS D	8.8	62.6	0.88	0.93	1.14	17.6
East: Darcy Road														
4	L2	86	7.4	86	7.4	0.283	26.1	LOS B	6.0	43.6	0.78	0.70	0.78	33.6
5	T1	411	3.7	411	3.7	0.283	24.2	LOS B	6.4	46.6	0.83	0.72	0.83	30.1
6	R2	13	16.7	13	16.7	0.044	22.5	LOS B	0.2	1.6	0.85	0.69	0.85	22.5
Approach		510	4.6	510	4.6	0.283	24.4	LOS B	6.4	46.6	0.82	0.72	0.82	30.4
North: Coles Access														
7	L2	17	25.0	17	25.0	0.029	23.2	LOS B	0.3	2.9	0.66	0.48	0.66	16.0
8	T1	13	0.0	13	0.0	0.106	42.0	LOS C	0.8	5.8	0.88	0.65	0.88	18.9
9	R2	15	14.3	15	14.3	0.106	42.0	LOS C	0.8	5.8	0.88	0.65	0.88	16.3
Approach		44	14.3	44	14.3	0.106	34.8	LOS C	0.8	5.8	0.79	0.58	0.79	17.0
West: Darcy Road														
10	L2	21	5.0	21	5.0	0.831	33.3	LOS C	23.3	165.1	0.93	0.88	0.97	18.4
11	T1	1243	1.5	1243	1.5	0.831	28.5	LOS C	23.3	165.1	0.85	0.83	0.93	15.1
12	R2	186	2.3	186	2.3	0.324	14.2	LOS A	2.4	17.1	0.60	0.71	0.60	34.9
Approach		1450	1.6	1450	1.6	0.831	26.7	LOS B	23.3	165.1	0.82	0.81	0.89	18.1
All Vehicles		2407	2.6	2407	2.6	0.915	30.7	LOS C	23.3	165.1	0.83	0.81	0.91	21.0

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P2	East Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		211	49.3	LOS E			0.95	0.95

MOVEMENT SUMMARY

Site: I-17 [I-17 Darcy - Mons - Institute]

Network: N101 [2020 Dev AM Darcy Road Network]

TCS 2393
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Darcy Road														
1	L2	277	2.9	277	2.9	0.137	15.3	LOS B	1.9	13.7	0.43	0.61	0.43	20.0
2	T1	224	13.2	224	13.2	0.770	31.3	LOS C	5.6	40.3	0.85	0.72	0.88	26.4
Approach		501	7.5	501	7.5	0.770	22.5	LOS B	5.6	40.3	0.62	0.66	0.63	24.5
East: Institute Road														
4	L2	53	2.0	53	2.0	0.808	66.5	LOS E	3.0	21.3	1.00	0.94	1.34	16.7
5	T1	114	0.0	114	0.0	0.808	62.9	LOS E	3.1	21.9	1.00	0.94	1.34	17.0
6	R2	2	0.0	2	0.0	0.808	66.3	LOS E	3.1	21.9	1.00	0.94	1.33	23.9
Approach		168	0.6	168	0.6	0.808	64.1	LOS E	3.1	21.9	1.00	0.94	1.34	17.1
North: Mons Road														
7	L2	1	0.0	1	0.0	0.093	23.9	LOS B	1.4	10.4	0.64	0.50	0.64	32.8
8	T1	100	31.5	100	31.5	0.093	20.5	LOS B	1.4	10.4	0.63	0.50	0.63	27.8
9	R2	86	8.5	86	8.5	0.367	46.4	LOS D	2.6	19.2	0.95	0.76	0.95	20.0
Approach		188	20.8	188	20.8	0.367	32.4	LOS C	2.6	19.2	0.78	0.62	0.78	23.7
West: Darcy Road														
10	L2	271	1.2	271	1.2	0.199	4.9	LOS A	1.2	8.4	0.22	0.50	0.22	38.3
11	T1	316	1.1	316	1.1	0.740	45.0	LOS D	11.4	80.3	1.00	0.88	1.03	25.4
12	R2	527	1.6	527	1.6	0.740	37.2	LOS C	14.6	103.8	0.96	0.87	0.97	19.0
Approach		1114	1.3	1114	1.3	0.740	31.5	LOS C	14.6	103.8	0.79	0.78	0.80	25.9
All Vehicles		1971	4.7	1971	4.7	0.808	32.1	LOS C	14.6	103.8	0.76	0.75	0.80	24.4

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	East Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	49.3	LOS E			0.95	0.95

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.

MOVEMENT SUMMARY

Site: I-19 [I-19 Darcy - Dental Hospital - Marist]

Network: N101 [2020 Dev AM Darcy Road Network]

TCS 3282
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Darcy Road														
4	L2	1	0.0	1	0.0	0.253	6.0	LOS A	0.8	5.9	0.11	0.10	0.11	21.6
5	T1	522	7.9	522	7.9	0.253	3.0	LOS A	1.2	8.3	0.13	0.11	0.13	33.7
6	R2	107	0.0	107	0.0	0.374	55.9	LOS D	3.5	24.8	1.00	0.79	1.00	10.8
Approach		631	6.6	631	6.6	0.374	12.0	LOS A	3.5	24.8	0.28	0.22	0.28	23.2
East: Dental hospital access														
7	L2	18	17.6	18	17.6	0.028	25.9	LOS B	0.4	2.9	0.65	0.63	0.65	7.4
9	R2	13	0.0	13	0.0	0.054	47.5	LOS D	0.4	2.5	0.89	0.67	0.89	4.7
Approach		31	10.3	31	10.3	0.054	34.9	LOS C	0.4	2.9	0.75	0.65	0.75	5.9
North: Darcy Road														
10	L2	139	0.0	139	0.0	0.368	15.3	LOS B	4.4	31.0	0.42	0.47	0.42	16.2
11	T1	602	7.5	602	7.5	0.368	5.5	LOS A	4.4	31.0	0.20	0.21	0.20	28.9
12	R2	3	0.0	3	0.0	0.011	52.3	LOS D	0.1	0.7	1.00	0.64	1.00	10.9
Approach		744	6.1	744	6.1	0.368	7.5	LOS A	4.4	31.0	0.24	0.26	0.24	24.2
West: Marist HS														
1	L2	1	0.0	1	0.0	0.007	42.9	LOS D	0.1	0.4	0.84	0.60	0.84	5.0
3	R2	1	0.0	1	0.0	0.007	42.7	LOS D	0.1	0.4	0.84	0.60	0.84	5.0
Approach		2	0.0	2	0.0	0.007	42.8	LOS D	0.1	0.4	0.84	0.60	0.84	5.0
All Vehicles		1407	6.4	1407	6.4	0.374	10.2	LOS A	4.4	31.0	0.27	0.25	0.27	23.1

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P3	East Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P4	North Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	49.3	LOS E			0.95	0.95

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.

MOVEMENT SUMMARY

Site: I-23 [I-23 Darcy - Hospital - WSU]

Network: N101 [2020 Dev AM Darcy Road Network]

TCS 3281
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Darcy Road														
4	L2	43	4.9	43	4.9	0.309	28.7	LOS C	7.4	53.0	0.84	0.74	0.84	21.4
5	T1	569	6.7	569	6.7	0.309	21.7	LOS B	7.4	53.0	0.79	0.69	0.79	12.2
6	R2	69	1.5	69	1.5	0.297	46.1	LOS D	2.0	13.8	0.87	0.72	0.87	8.8
Approach		682	6.1	682	6.1	0.309	24.6	LOS B	7.4	53.0	0.81	0.69	0.81	12.4
East: Westmead Hospital access														
7	L2	15	0.0	15	0.0	0.036	37.7	LOS C	0.4	2.8	0.80	0.65	0.80	4.8
8	T1	1	0.0	1	0.0	0.036	34.5	LOS C	0.4	2.8	0.80	0.65	0.80	15.0
9	R2	38	2.8	38	2.8	0.381	61.0	LOS E	1.3	9.3	1.00	0.73	1.00	3.3
Approach		54	2.0	54	2.0	0.381	54.1	LOS D	1.3	9.3	0.94	0.71	0.94	3.8
North: Darcy Road														
10	L2	117	0.0	117	0.0	0.306	8.7	LOS A	1.9	13.6	0.22	0.34	0.22	22.2
11	T1	490	9.0	490	9.0	0.306	3.3	LOS A	1.9	13.6	0.13	0.16	0.13	33.0
12	R2	1	0.0	1	0.0	0.004	56.0	LOS D	0.0	0.2	1.00	0.60	1.00	15.9
Approach		608	7.3	608	7.3	0.306	4.4	LOS A	1.9	13.6	0.15	0.20	0.15	29.3
West: Car park														
1	L2	25	8.3	25	8.3	0.059	38.1	LOS C	0.6	4.8	0.78	0.70	0.78	13.1
2	T1	1	0.0	1	0.0	0.059	32.4	LOS C	0.6	4.8	0.78	0.70	0.78	15.3
3	R2	1	0.0	1	0.0	0.010	60.1	LOS E	0.0	0.2	0.96	0.59	0.96	9.1
Approach		27	7.7	27	7.7	0.059	38.7	LOS C	0.6	4.8	0.78	0.69	0.78	13.0
All Vehicles		1371	6.5	1371	6.5	0.381	17.1	LOS B	7.4	53.0	0.52	0.47	0.52	17.4

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P21	South Stage 1	53	49.3	LOS E	0.2	0.2	0.95	0.95
P22	South Stage 2	53	49.3	LOS E	0.2	0.2	0.95	0.95
P3	East Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P41	North Stage 1	53	49.3	LOS E	0.2	0.2	0.95	0.95
P42	North Stage 2	53	49.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	19.2	LOS B	0.1	0.1	0.59	0.59

MOVEMENT SUMMARY

Site: I-30 [I-30 Darcy - Hawkesbury]

Network: N101 [2020 Dev AM Darcy Road Network]

TCS 1631
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
East: Hawkesbury Road														
8	T1	220	4.3	220	4.3	0.188	9.6	LOS A	3.1	22.2	0.46	0.39	0.46	26.9
9	R2	118	6.3	118	6.3	0.349	25.6	LOS B	1.8	13.1	0.91	0.75	0.91	17.0
Approach		338	5.0	338	5.0	0.349	15.2	LOS B	3.1	22.2	0.62	0.52	0.62	22.4
North: Darcy Road														
10	L2	173	5.5	173	5.5	0.232	19.2	LOS B	2.9	20.7	0.76	0.73	0.76	23.5
12	R2	328	10.9	328	10.9	0.516	51.3	LOS D	4.8	34.0	0.97	0.79	0.97	6.7
Approach		501	9.0	501	9.0	0.516	40.3	LOS C	4.8	34.0	0.90	0.77	0.90	11.2
West: Hawkesbury Road														
1	L2	564	6.0	564	6.0	0.545	13.7	LOS A	6.5	45.9	0.74	0.79	0.74	21.7
2	T1	316	2.4	316	2.4	0.502	30.3	LOS C	7.1	51.1	0.73	0.69	0.73	21.4
Approach		880	4.7	880	4.7	0.545	19.6	LOS B	7.1	51.1	0.73	0.75	0.73	21.5
All Vehicles		1718	6.0	1718	6.0	0.545	24.8	LOS B	7.1	51.1	0.76	0.71	0.76	17.7

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P3	East Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P41	North Stage 1	53	21.9	LOS C	0.1	0.1	0.89	0.89
P42	North Stage 2	53	49.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		211	42.4	LOS E			0.93	0.93

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

MOVEMENT SUMMARY

Site: I-28 [I-28 Hawkesbury - Railway]

Network: N101 [2020 Dev AM Darcy Road Network]

TCS 1571
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)
Common Control Group: CCG1 [TCS 1571]

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Railway Pde														
4	L2	144	1.5	144	1.5	0.267	25.9	LOS B	3.0	21.5	0.68	0.74	0.68	29.4
6	R2	18	0.0	18	0.0	0.056	45.6	LOS D	0.5	3.5	0.86	0.69	0.86	22.5
Approach		162	1.3	162	1.3	0.267	28.1	LOS B	3.0	21.5	0.70	0.73	0.70	28.5
East: Hawkesbury Rd														
7	L2	71	0.0	71	0.0	0.151	26.1	LOS B	2.3	20.6	0.73	0.67	0.73	32.3
8	T1	426	9.1	426	9.1	0.268	25.0	LOS B	6.4	45.5	0.78	0.67	0.78	14.5
Approach		496	7.8	496	7.8	0.268	25.0	LOS B	6.4	45.5	0.78	0.67	0.78	19.0
West: Hawkesbury Rd														
2	T1	884	4.5	884	4.5	0.537	2.0	LOS A	2.5	17.8	0.15	0.18	0.15	33.5
3	R2	234	0.0	234	0.0	0.537	6.8	LOS A	2.2	15.8	0.25	0.44	0.25	44.1
Approach		1118	3.6	1118	3.6	0.537	3.0	LOS A	2.5	17.8	0.17	0.23	0.17	40.1
All Vehicles		1776	4.6	1776	4.6	0.537	11.5	LOS A	6.4	45.5	0.39	0.40	0.39	28.7

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	South Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P3	East Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	49.3	LOS E			0.95	0.95

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.

MOVEMENT SUMMARY

Site: I-27 [I-27 Hawkesbury - Alexandra]

Network: N101 [2020 Dev AM Darcy Road Network]

TCS 1571
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)
Common Control Group: CCG1 [TCS 1571]

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Alexandra Ave														
4	L2	31	0.0	31	0.0	0.626	53.8	LOS D	5.2	39.0	0.99	0.82	1.00	15.2
5	T1	66	3.2	66	3.2	0.626	49.3	LOS D	5.2	39.0	0.99	0.82	1.00	24.1
6	R2	219	15.4	219	15.4	0.626	54.1	LOS D	5.2	39.0	0.99	0.82	1.01	9.2
Approach		316	11.3	316	11.3	0.626	53.1	LOS D	5.2	39.0	0.99	0.82	1.01	14.1
East: Hawkesbury Road														
7	L2	200	18.9	200	18.9	0.382	19.7	LOS B	6.4	45.6	0.51	0.61	0.51	23.9
8	T1	348	1.5	348	1.5	0.382	21.9	LOS B	6.4	45.6	0.64	0.62	0.64	20.3
9	R2	49	0.0	49	0.0	0.382	29.8	LOS C	4.5	31.5	0.68	0.60	0.68	30.0
Approach		597	7.2	597	7.2	0.382	21.8	LOS B	6.4	45.6	0.60	0.61	0.60	22.4
North: Alexandra Ave														
10	L2	68	0.0	68	0.0	0.110	31.4	LOS C	1.5	10.7	0.72	0.71	0.72	27.1
11	T1	242	0.9	242	0.9	0.624	44.0	LOS D	7.4	52.2	0.97	0.81	0.97	26.1
Approach		311	0.7	311	0.7	0.624	41.2	LOS C	7.4	52.2	0.91	0.79	0.91	26.3
West: Hawkesbury Road														
1	L2	15	7.1	15	7.1	0.612	36.1	LOS C	11.3	80.0	0.88	0.77	0.88	29.8
2	T1	826	0.6	826	0.6	0.612	31.5	LOS C	11.4	80.3	0.88	0.77	0.88	13.8
Approach		840	0.7	840	0.7	0.612	31.5	LOS C	11.4	80.3	0.88	0.77	0.88	14.3
All Vehicles		2064	4.2	2064	4.2	0.626	33.5	LOS C	11.4	80.3	0.82	0.73	0.82	18.9

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	South Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P4	North Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	49.3	LOS E			0.95	0.95

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.

APPENDIX D-3
2020 PM – WITHOUT DEVELOPMENT

MOVEMENT SUMMARY

Site: I-11 [2020 Base PM I-11 Briens - Redbank]

TCS 3213
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 140 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Redbank Road												
21	L2	444	0.7	0.701	47.1	LOS D	26.1	183.8	0.93	0.86	0.93	28.2
22	T1	184	0.0	0.668	53.9	LOS D	11.2	78.7	0.93	0.78	0.95	28.9
23	R2	171	4.3	0.804	69.1	LOS E	11.8	85.5	0.98	0.91	1.17	27.1
Approach		799	1.3	0.804	53.4	LOS D	26.1	183.8	0.94	0.85	0.98	28.1
East: Briens Road												
24	L2	21	10.0	0.785	31.2	LOS C	43.8	322.4	0.84	0.78	0.84	41.4
25	T1	2473	5.9	0.785	24.4	LOS B	43.9	323.1	0.84	0.77	0.84	43.8
26	R2	34	9.4	0.193	70.3	LOS E	2.2	16.4	0.95	0.73	0.95	27.4
Approach		2527	6.0	0.785	25.1	LOS B	43.9	323.1	0.84	0.77	0.84	43.4
North: Redbank Road												
27	L2	20	5.3	0.399	63.2	LOS E	5.5	38.9	0.94	0.77	0.94	28.9
28	T1	36	0.0	0.399	58.6	LOS E	5.5	38.9	0.94	0.77	0.94	27.3
29	R2	32	0.0	0.399	63.1	LOS E	5.5	38.9	0.94	0.77	0.94	25.0
Approach		87	1.2	0.399	61.3	LOS E	5.5	38.9	0.94	0.77	0.94	26.9
West: Briens Road												
30	L2	56	0.0	0.740	29.9	LOS C	40.0	287.4	0.81	0.75	0.81	37.7
31	T1	2361	3.4	0.740	23.5	LOS B	40.2	289.4	0.81	0.75	0.81	44.4
32	R2	143	2.2	0.783	78.4	LOS F	10.3	73.2	1.00	0.87	1.17	22.2
Approach		2560	3.2	0.783	26.7	LOS B	40.2	289.4	0.82	0.75	0.83	41.8
All Vehicles		5974	4.1	0.804	30.1	LOS C	43.9	323.1	0.84	0.77	0.85	39.2

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P5	South Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
P6	East Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
P7	North Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		158	64.3	LOS F			0.96	0.96

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.

MOVEMENT SUMMARY

Site: I-14 [I-14 Bridge - Darcy]

Network: N101 [2020 Base PM Darcy Road Network]

TCS 1630
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Bridge Road														
1	L2	280	1.5	280	1.5	0.489	33.3	LOS C	7.3	51.4	0.78	0.78	0.78	25.2
2	T1	38	2.8	38	2.8	0.462	58.6	LOS E	3.3	23.9	0.97	0.78	0.97	17.4
3	R2	58	5.5	58	5.5	0.462	58.1	LOS E	3.3	23.9	0.97	0.78	0.97	14.4
Approach		376	2.2	376	2.2	0.489	39.7	LOS C	7.3	51.4	0.82	0.78	0.82	21.8
East: Darcy Road														
4	L2	178	3.0	178	3.0	0.659	28.5	LOS B	14.8	104.7	0.74	0.71	0.74	32.6
5	T1	1020	1.0	1020	1.0	0.659	23.8	LOS B	14.8	104.7	0.74	0.68	0.74	30.3
6	R2	20	5.3	20	5.3	0.031	10.5	LOS A	0.2	1.1	0.34	0.60	0.34	24.6
Approach		1218	1.3	1218	1.3	0.659	24.3	LOS B	14.8	104.7	0.74	0.69	0.74	30.5
North: Coles Access														
7	L2	23	4.5	23	4.5	0.034	24.4	LOS B	0.5	3.7	0.65	0.48	0.65	15.8
8	T1	28	3.7	28	3.7	0.552	58.4	LOS E	3.0	21.4	1.00	0.78	1.00	17.1
9	R2	54	3.9	54	3.9	0.552	58.4	LOS E	3.0	21.4	1.00	0.78	1.00	14.8
Approach		105	4.0	105	4.0	0.552	50.9	LOS D	3.0	21.4	0.92	0.71	0.92	15.7
West: Darcy Road														
10	L2	67	1.6	67	1.6	0.304	23.9	LOS B	5.9	42.3	0.64	0.60	0.64	19.7
11	T1	424	2.8	424	2.8	0.304	18.9	LOS B	5.9	42.3	0.62	0.56	0.62	19.4
12	R2	258	4.1	258	4.1	0.743	26.7	LOS B	6.0	43.6	0.94	0.89	1.04	27.9
Approach		749	3.1	749	3.1	0.743	22.0	LOS B	6.0	43.6	0.73	0.68	0.77	23.1
All Vehicles		2448	2.1	2448	2.1	0.743	27.1	LOS B	14.8	104.7	0.76	0.70	0.77	25.7

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P2	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		211	54.3	LOS E			0.95	0.95

MOVEMENT SUMMARY

Site: I-17 [I-17 Darcy - Mons - Institute]

Network: N101 [2020 Base PM Darcy Road Network]

TCS 2393
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Darcy Road														
1	L2	569	0.8	569	0.8	0.430	23.9	LOS B	6.4	45.3	0.55	0.67	0.55	15.7
2	T1	89	36.5	89	36.5	0.460	59.5	LOS E	2.3	17.6	1.00	0.75	1.00	20.2
Approach		658	5.7	658	5.7	0.460	28.7	LOS C	6.4	45.3	0.61	0.68	0.61	17.1
East: Institute Road														
4	L2	121	0.9	121	0.9	0.989	98.4	LOS F	11.6	81.5	0.99	1.29	1.69	13.1
5	T1	354	0.0	354	0.0	0.989	94.7	LOS F	11.7	82.2	0.99	1.33	1.68	13.3
6	R2	2	0.0	2	0.0	0.989	98.0	LOS F	11.7	82.2	0.99	1.35	1.68	19.8
Approach		477	0.2	477	0.2	0.989	95.7	LOS F	11.7	82.2	0.99	1.32	1.68	13.2
North: Mons Road														
7	L2	5	0.0	5	0.0	0.163	27.9	LOS B	2.8	20.0	0.68	0.56	0.68	31.6
8	T1	141	15.7	141	15.7	0.163	24.0	LOS B	2.8	20.0	0.67	0.54	0.67	26.4
9	R2	249	2.1	249	2.1	0.637	46.4	LOS D	7.9	56.2	0.96	0.89	1.08	20.0
Approach		396	6.9	396	6.9	0.637	38.1	LOS C	7.9	56.2	0.85	0.76	0.93	22.1
West: Darcy Road														
10	L2	97	0.3	97	0.3	0.068	4.0	LOS A	0.2	1.7	0.13	0.46	0.13	38.7
11	T1	105	0.3	105	0.3	0.338	28.5	LOS C	3.4	24.0	0.66	0.59	0.66	29.1
12	R2	190	2.1	190	2.1	0.338	32.6	LOS C	3.4	24.0	0.68	0.66	0.68	20.4
Approach		392	1.2	392	1.2	0.338	24.4	LOS B	3.4	24.0	0.54	0.59	0.54	28.1
All Vehicles		1923	3.7	1923	3.7	0.989	46.4	LOS D	11.7	82.2	0.74	0.84	0.93	18.6

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	54.3	LOS E			0.95	0.95

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.

MOVEMENT SUMMARY

Site: I-19 [I-19 Darcy - Dental Hospital - Marist]

Network: N101 [2020 Base PM Darcy Road Network]

TCS 3282
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Darcy Road														
4	L2	1	0.0	1	0.0	0.189	3.9	LOS A	0.3	1.8	0.03	0.03	0.03	22.8
5	T1	568	6.1	568	6.1	0.189	0.5	LOS A	0.3	1.8	0.03	0.02	0.03	38.8
6	R2	15	0.0	15	0.0	0.190	68.9	LOS E	0.6	3.9	1.00	0.69	1.00	9.3
Approach		584	6.0	584	6.0	0.190	2.2	LOS A	0.6	3.9	0.05	0.04	0.05	35.1
East: Dental hospital access														
7	L2	17	18.8	17	18.8	0.059	48.1	LOS D	0.5	4.1	0.86	0.68	0.86	4.4
9	R2	16	0.0	16	0.0	0.112	60.1	LOS E	0.5	3.8	0.95	0.69	0.95	3.8
Approach		33	9.7	33	9.7	0.112	53.9	LOS D	0.5	4.1	0.91	0.68	0.91	4.1
North: Darcy Road														
10	L2	15	0.0	15	0.0	0.206	6.9	LOS A	1.9	13.4	0.20	0.19	0.20	20.1
11	T1	601	5.1	601	5.1	0.206	3.0	LOS A	1.9	13.4	0.17	0.16	0.17	33.2
12	R2	3	0.0	3	0.0	0.041	67.3	LOS E	0.1	0.8	1.00	0.63	1.00	9.0
Approach		618	5.0	618	5.0	0.206	3.5	LOS A	1.9	13.4	0.18	0.16	0.18	32.0
West: Marist HS														
1	L2	1	0.0	1	0.0	0.012	54.3	LOS D	0.1	0.5	0.90	0.61	0.90	4.0
3	R2	1	0.0	1	0.0	0.012	54.1	LOS D	0.1	0.5	0.90	0.61	0.90	4.0
Approach		2	0.0	2	0.0	0.012	54.2	LOS D	0.1	0.5	0.90	0.61	0.90	4.0
All Vehicles		1237	5.6	1237	5.6	0.206	4.3	LOS A	1.9	13.4	0.14	0.12	0.14	31.0

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P3	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	North Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	54.3	LOS E			0.95	0.95

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.

MOVEMENT SUMMARY

Site: I-23 [I-23 Darcy - Hospital - WSU]

Network: N101 [2020 Base PM Darcy Road Network]

TCS 3281
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Darcy Road														
4	L2	43	4.9	43	4.9	0.382	47.9	LOS D	7.6	53.6	0.96	0.81	0.96	15.0
5	T1	459	7.1	459	7.1	0.382	44.1	LOS D	8.0	56.2	0.98	0.82	0.98	7.1
6	R2	38	2.8	38	2.8	0.083	32.6	LOS C	0.8	6.0	0.64	0.64	0.64	11.4
Approach		540	6.6	540	6.6	0.382	43.6	LOS D	8.0	56.2	0.95	0.81	0.95	8.1
East: Westmead Hospital access														
7	L2	72	1.5	72	1.5	0.100	27.0	LOS B	1.6	11.4	0.66	0.67	0.66	6.3
8	T1	1	0.0	1	0.0	0.100	23.8	LOS B	1.6	11.4	0.66	0.67	0.66	18.7
9	R2	98	1.1	98	1.1	0.596	60.7	LOS E	3.5	24.6	0.99	0.79	1.02	3.3
Approach		171	1.2	171	1.2	0.596	46.3	LOS D	3.5	24.6	0.85	0.74	0.86	4.2
North: Darcy Road														
10	L2	57	0.0	57	0.0	0.471	38.1	LOS C	7.8	54.5	0.81	0.71	0.81	12.4
11	T1	545	5.4	545	5.4	0.471	36.6	LOS C	9.1	64.1	0.88	0.75	0.88	12.3
12	R2	1	0.0	1	0.0	0.002	43.9	LOS D	0.0	0.2	0.89	0.60	0.89	18.8
Approach		603	4.9	603	4.9	0.471	36.7	LOS C	9.1	64.1	0.87	0.75	0.87	12.3
West: Car park														
1	L2	25	8.3	25	8.3	0.044	32.9	LOS C	0.6	4.6	0.69	0.68	0.69	14.7
2	T1	1	0.0	1	0.0	0.044	27.3	LOS B	0.6	4.6	0.69	0.68	0.69	17.1
3	R2	1	0.0	1	0.0	0.006	57.9	LOS E	0.0	0.2	0.92	0.59	0.92	9.4
Approach		27	7.7	27	7.7	0.044	33.6	LOS C	0.6	4.6	0.70	0.68	0.70	14.5
All Vehicles		1340	5.2	1340	5.2	0.596	40.7	LOS C	9.1	64.1	0.90	0.77	0.90	9.6

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P21	South Stage 1	53	54.3	LOS E	0.2	0.2	0.95	0.95
P22	South Stage 2	53	54.3	LOS E	0.2	0.2	0.95	0.95
P3	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P41	North Stage 1	53	54.3	LOS E	0.2	0.2	0.95	0.95
P42	North Stage 2	53	54.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	34.6	LOS D	0.1	0.1	0.76	0.76

MOVEMENT SUMMARY

Site: I-30 [I-30 Darcy - Hawkesbury]

Network: N101 [2020 Base PM Darcy Road Network]

TCS 1631
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
East: Hawkesbury Road														
8	T1	416	1.5	416	1.5	0.386	15.8	LOS B	8.2	58.5	0.60	0.53	0.60	22.2
9	R2	218	2.4	218	2.4	0.428	23.4	LOS B	4.0	28.4	0.85	0.76	0.85	17.9
Approach		634	1.8	634	1.8	0.428	18.4	LOS B	8.2	58.5	0.69	0.61	0.69	20.5
North: Darcy Road														
10	L2	121	7.8	121	7.8	0.110	11.7	LOS A	1.1	7.7	0.43	0.60	0.43	28.7
12	R2	505	5.5	505	5.5	0.731	26.2	LOS B	7.2	50.4	0.66	0.70	0.68	11.6
Approach		626	5.9	626	5.9	0.731	23.4	LOS B	7.2	50.4	0.62	0.68	0.63	14.5
West: Hawkesbury Road														
1	L2	304	9.4	304	9.4	0.311	14.5	LOS B	2.9	20.3	0.56	0.70	0.56	21.0
2	T1	216	4.4	216	4.4	0.651	43.5	LOS D	6.8	49.4	0.91	0.78	0.91	17.4
Approach		520	7.3	520	7.3	0.651	26.6	LOS B	6.8	49.4	0.70	0.73	0.70	18.6
All Vehicles		1780	4.9	1780	4.9	0.731	22.6	LOS B	8.2	58.5	0.67	0.67	0.67	17.9

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P3	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P41	North Stage 1	53	25.8	LOS C	0.1	0.1	0.90	0.90
P42	North Stage 2	53	54.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		211	47.1	LOS E			0.94	0.94

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

MOVEMENT SUMMARY

Site: I-28 [I-28 Hawkesbury - Railway]

Network: N101 [2020 Base PM Darcy Road Network]

TCS 1571
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)
Common Control Group: CCG1 [TCS 1571]

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Railway Pde														
4	L2	284	0.7	284	0.7	0.692	33.0	LOS C	8.2	57.9	0.84	0.83	0.85	26.5
6	R2	37	0.0	37	0.0	0.149	54.9	LOS D	1.2	8.3	0.92	0.72	0.92	20.2
Approach		321	0.7	321	0.7	0.692	35.5	LOS C	8.2	57.9	0.85	0.82	0.86	25.6
East: Hawkesbury Rd														
7	L2	59	0.0	59	0.0	0.153	31.0	LOS C	2.5	22.6	0.78	0.68	0.78	30.4
8	T1	855	4.5	855	4.5	0.742	45.6	LOS D	18.5	130.0	0.97	0.87	0.98	9.3
Approach		914	4.2	914	4.2	0.742	44.6	LOS D	18.5	130.0	0.96	0.86	0.97	11.0
West: Hawkesbury Rd														
2	T1	512	6.8	512	6.8	0.329	2.4	LOS A	3.3	23.8	0.13	0.12	0.13	32.0
3	R2	151	1.4	151	1.4	0.329	19.4	LOS B	3.3	23.8	0.72	0.71	0.72	34.4
Approach		663	5.6	663	5.6	0.329	6.3	LOS A	3.3	23.8	0.26	0.25	0.26	33.7
All Vehicles		1898	4.1	1898	4.1	0.742	29.7	LOS C	18.5	130.0	0.70	0.64	0.70	18.2

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	South Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P3	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	54.3	LOS E			0.95	0.95

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.

MOVEMENT SUMMARY

Site: I-27 [I-27 Hawkesbury - Alexandra]

Network: N101 [2020 Base PM Darcy Road Network]

TCS 1571
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)
Common Control Group: CCG1 [TCS 1571]

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Alexandra Ave														
4	L2	40	7.9	40	7.9	0.512	44.2	LOS D	8.2	58.0	0.90	0.77	0.90	17.8
5	T1	229	0.5	229	0.5	0.512	39.6	LOS C	8.2	58.0	0.90	0.77	0.90	27.3
6	R2	216	18.0	216	18.0	0.477	44.0	LOS D	6.5	52.6	0.89	0.80	0.89	10.8
Approach		485	8.9	485	8.9	0.512	41.9	LOS C	8.2	58.0	0.89	0.78	0.89	20.9
East: Hawkesbury Road														
7	L2	228	15.2	228	15.2	0.777	29.9	LOS C	7.8	55.0	0.73	0.75	0.73	19.6
8	T1	838	0.4	838	0.4	0.777	21.8	LOS B	7.8	55.0	0.72	0.78	0.91	20.5
9	R2	96	0.0	96	0.0	0.777	17.3	LOS B	7.8	55.0	0.58	0.78	0.97	36.8
Approach		1162	3.3	1162	3.3	0.777	23.0	LOS B	7.8	55.0	0.71	0.78	0.88	21.8
North: Alexandra Ave														
10	L2	37	0.0	37	0.0	0.047	25.9	LOS B	0.8	5.3	0.61	0.67	0.61	29.5
11	T1	156	2.7	156	2.7	0.513	50.8	LOS D	5.2	37.4	0.97	0.78	0.97	24.4
Approach		193	2.2	193	2.2	0.513	46.0	LOS D	5.2	37.4	0.90	0.76	0.90	25.0
West: Hawkesbury Road														
1	L2	29	3.6	29	3.6	0.735	60.2	LOS E	7.4	52.5	1.00	0.88	1.09	22.9
2	T1	389	1.2	389	1.2	0.735	55.5	LOS D	7.7	54.3	1.00	0.88	1.08	8.8
Approach		418	1.3	418	1.3	0.735	55.8	LOS D	7.7	54.3	1.00	0.88	1.08	10.3
All Vehicles		2258	4.0	2258	4.0	0.777	35.1	LOS C	8.2	58.0	0.82	0.80	0.92	19.4

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	South Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	North Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	54.3	LOS E			0.95	0.95

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.

APPENDIX D-4
2020 PM – WITH DEVELOPMENT

MOVEMENT SUMMARY

Site: I-11 [2020 Dev PM I-11 Briens - Redbank]

TCS 3213
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 140 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Redbank Road												
21	L2	457	0.7	0.722	47.6	LOS D	27.1	191.0	0.94	0.86	0.94	28.1
22	T1	190	0.0	0.670	54.1	LOS D	11.6	81.3	0.94	0.78	0.95	28.9
23	R2	175	4.2	0.779	66.9	LOS E	11.7	85.2	0.97	0.88	1.12	27.5
Approach		823	1.3	0.779	53.2	LOS D	27.1	191.0	0.94	0.85	0.98	28.2
East: Briens Road												
24	L2	22	9.8	0.785	31.2	LOS C	43.8	322.5	0.84	0.78	0.84	41.4
25	T1	2473	5.9	0.785	24.4	LOS B	43.9	323.2	0.84	0.77	0.84	43.8
26	R2	34	9.4	0.193	70.3	LOS E	2.2	16.4	0.95	0.73	0.95	27.4
Approach		2528	6.0	0.785	25.1	LOS B	43.9	323.2	0.84	0.77	0.84	43.3
North: Redbank Road												
27	L2	20	5.3	0.829	83.8	LOS F	6.6	46.9	1.00	0.93	1.32	24.9
28	T1	37	0.0	0.829	79.1	LOS F	6.6	46.9	1.00	0.93	1.32	23.7
29	R2	32	0.0	0.829	83.7	LOS F	6.6	46.9	1.00	0.93	1.32	21.2
Approach		88	1.2	0.829	81.8	LOS F	6.6	46.9	1.00	0.93	1.32	23.2
West: Briens Road												
30	L2	56	0.0	0.740	29.9	LOS C	40.0	287.4	0.81	0.75	0.81	37.7
31	T1	2361	3.4	0.740	23.5	LOS B	40.2	289.4	0.81	0.75	0.81	44.4
32	R2	147	2.2	0.801	79.2	LOS F	10.6	75.5	1.00	0.88	1.19	22.0
Approach		2563	3.2	0.801	26.9	LOS B	40.2	289.4	0.82	0.75	0.83	41.8
All Vehicles		6002	4.1	0.829	30.5	LOS C	43.9	323.2	0.85	0.78	0.86	39.0

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P5	South Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
P6	East Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
P7	North Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		158	64.3	LOS F			0.96	0.96

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.

MOVEMENT SUMMARY

Site: I-14 [I-14 Bridge - Darcy]

Network: N101 [2020 Dev PM Darcy Road Network]

TCS 1630
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bridge Road														
1	L2	280	1.5	280	1.5	0.495	33.3	LOS C	7.3	51.4	0.78	0.78	0.78	25.2
2	T1	38	2.8	38	2.8	0.489	58.9	LOS E	3.5	25.2	0.97	0.79	0.97	17.3
3	R2	63	5.0	63	5.0	0.489	58.4	LOS E	3.5	25.2	0.97	0.79	0.97	14.4
Approach		381	2.2	381	2.2	0.495	40.0	LOS C	7.3	51.4	0.83	0.78	0.83	21.7
East: Darcy Road														
4	L2	187	2.8	185	2.8	0.664	28.3	LOS B	14.9	105.4	0.74	0.71	0.74	32.6
5	T1	1035	0.9	1023	1.0	0.664	23.8	LOS B	14.9	105.4	0.74	0.69	0.74	30.3
6	R2	20	5.3	20	5.3	0.030	10.1	LOS A	0.1	1.1	0.31	0.59	0.31	24.7
Approach		1242	1.3	1227 N1	1.3	0.664	24.3	LOS B	14.9	105.4	0.74	0.69	0.74	30.5
North: Coles Access														
7	L2	23	4.5	23	4.5	0.034	24.4	LOS B	0.5	3.7	0.65	0.48	0.65	15.8
8	T1	28	3.7	28	3.7	0.552	58.4	LOS E	3.0	21.4	1.00	0.78	1.00	17.1
9	R2	54	3.9	54	3.9	0.552	58.4	LOS E	3.0	21.4	1.00	0.78	1.00	14.8
Approach		105	4.0	105	4.0	0.552	50.9	LOS D	3.0	21.4	0.92	0.71	0.92	15.7
West: Darcy Road														
10	L2	67	1.6	67	1.6	0.352	24.5	LOS B	7.1	50.4	0.66	0.61	0.66	19.6
11	T1	430	2.8	430	2.8	0.352	19.2	LOS B	7.1	50.4	0.63	0.56	0.63	19.3
12	R2	258	4.1	258	4.1	0.743	27.2	LOS B	6.0	43.7	0.94	0.90	1.05	27.6
Approach		755	3.1	755	3.1	0.743	22.4	LOS B	7.1	50.4	0.74	0.68	0.78	22.9
All Vehicles		2483	2.1	2468 N1	2.1	0.743	27.3	LOS B	14.9	105.4	0.76	0.70	0.77	25.6

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P2	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95

MOVEMENT SUMMARY

Site: I-17 [I-17 Darcy - Mons - Institute]

Network: N101 [2020 Dev PM Darcy Road Network]

TCS 2393
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Darcy Road														
1	L2	570	0.8	570	0.8	0.431	22.9	LOS B	6.2	44.0	0.53	0.67	0.53	16.1
2	T1	94	34.8	94	34.8	0.490	59.6	LOS E	2.4	18.4	0.99	0.75	0.99	20.2
Approach		664	5.6	664	5.6	0.490	28.1	LOS B	6.2	44.0	0.59	0.68	0.59	17.5
East: Institute Road														
4	L2	121	0.9	121	0.9	1.041	130.8	LOS F	14.7	103.1	1.00	1.45	1.92	10.5
5	T1	378	0.0	378	0.0	1.041	127.2	LOS F	14.9	104.2	1.00	1.51	1.91	10.7
6	R2	2	0.0	2	0.0	1.041	130.5	LOS F	14.9	104.2	1.00	1.53	1.91	16.7
Approach		501	0.2	501	0.2	1.041	128.1	LOS F	14.9	104.2	1.00	1.49	1.91	10.7
North: Mons Road														
7	L2	5	0.0	5	0.0	0.184	27.5	LOS B	3.2	22.8	0.68	0.56	0.68	31.7
8	T1	159	13.9	159	13.9	0.184	23.7	LOS B	3.2	22.8	0.67	0.55	0.67	26.5
9	R2	249	2.1	249	2.1	0.637	46.4	LOS D	7.9	56.2	0.96	0.89	1.08	20.0
Approach		413	6.6	413	6.6	0.637	37.4	LOS C	7.9	56.2	0.85	0.75	0.92	22.3
West: Darcy Road														
10	L2	71	0.3	71	0.3	0.050	4.3	LOS A	0.3	2.0	0.20	0.48	0.20	38.6
11	T1	42	0.2	42	0.2	0.388	33.3	LOS C	4.4	30.8	0.76	0.70	0.76	27.5
12	R2	291	2.1	291	2.1	0.388	41.5	LOS C	5.1	36.6	0.84	0.75	0.84	18.0
Approach		405	1.6	405	1.6	0.388	34.1	LOS C	5.1	36.6	0.72	0.70	0.72	23.1
All Vehicles		1983	3.6	1983	3.6	1.041	56.5	LOS E	14.9	104.2	0.77	0.90	1.02	16.1

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	54.3	LOS E			0.95	0.95

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.

MOVEMENT SUMMARY

Site: I-19 [I-19 Darcy - Dental Hospital - Marist]

Network: N101 [2020 Dev PM Darcy Road Network]

TCS 3282
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Darcy Road														
4	L2	1	0.0	1	0.0	0.191	3.9	LOS A	0.3	1.8	0.03	0.03	0.03	22.8
5	T1	574	6.1	574	6.1	0.191	0.5	LOS A	0.3	1.8	0.03	0.02	0.03	38.9
6	R2	15	0.0	15	0.0	0.190	68.9	LOS E	0.6	3.9	1.00	0.69	1.00	9.3
Approach		589	5.9	589	5.9	0.191	2.2	LOS A	0.6	3.9	0.05	0.04	0.05	35.1
East: Dental hospital access														
7	L2	17	18.8	17	18.8	0.059	48.1	LOS D	0.5	4.1	0.86	0.68	0.86	4.4
9	R2	16	0.0	16	0.0	0.112	60.1	LOS E	0.5	3.8	0.95	0.69	0.95	3.8
Approach		33	9.7	33	9.7	0.112	53.9	LOS D	0.5	4.1	0.91	0.68	0.91	4.1
North: Darcy Road														
10	L2	15	0.0	15	0.0	0.213	5.9	LOS A	1.4	9.8	0.14	0.14	0.14	20.6
11	T1	624	4.9	619	5.0	0.213	2.1	LOS A	1.4	9.8	0.12	0.11	0.12	35.0
12	R2	3	0.0	3	0.0	0.040	67.3	LOS E	0.1	0.8	1.00	0.63	1.00	9.0
Approach		641	4.8	637 N1	4.8	0.213	2.5	LOS A	1.4	9.8	0.12	0.12	0.12	33.7
West: Marist HS														
1	L2	1	0.0	1	0.0	0.012	54.3	LOS D	0.1	0.5	0.90	0.61	0.90	4.0
3	R2	1	0.0	1	0.0	0.012	54.1	LOS D	0.1	0.5	0.90	0.61	0.90	4.0
Approach		2	0.0	2	0.0	0.012	54.2	LOS D	0.1	0.5	0.90	0.61	0.90	4.0
All Vehicles		1266	5.4	1261 N1	5.5	0.213	3.8	LOS A	1.4	9.8	0.11	0.10	0.11	31.8

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P3	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	North Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	54.3	LOS E			0.95	0.95

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.

MOVEMENT SUMMARY

Site: I-23 [I-23 Darcy - Hospital - WSU]

Network: N101 [2020 Dev PM Darcy Road Network]

TCS 3281
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Darcy Road														
4	L2	43	4.9	43	4.9	0.387	47.5	LOS D	7.6	53.8	0.95	0.81	0.95	15.1
5	T1	464	7.0	464	7.0	0.387	43.9	LOS D	8.1	56.8	0.97	0.82	0.97	7.1
6	R2	38	2.8	38	2.8	0.083	32.6	LOS C	0.8	6.0	0.64	0.64	0.64	11.4
Approach		545	6.6	545	6.6	0.387	43.4	LOS D	8.1	56.8	0.95	0.81	0.95	8.1
East: Westmead Hospital access														
7	L2	72	1.5	72	1.5	0.100	27.0	LOS B	1.6	11.4	0.66	0.67	0.66	6.3
8	T1	1	0.0	1	0.0	0.100	23.8	LOS B	1.6	11.4	0.66	0.67	0.66	18.7
9	R2	98	1.1	98	1.1	0.596	60.7	LOS E	3.5	24.6	0.99	0.79	1.02	3.3
Approach		171	1.2	171	1.2	0.596	46.3	LOS D	3.5	24.6	0.85	0.74	0.86	4.2
North: Darcy Road														
10	L2	57	0.0	56	0.0	0.486	38.3	LOS C	8.8	61.5	0.89	0.77	0.89	12.3
11	T1	568	5.2	564	5.3	0.486	39.6	LOS C	9.8	68.5	0.93	0.80	0.93	11.6
12	R2	1	0.0	1	0.0	0.002	43.9	LOS D	0.0	0.2	0.89	0.60	0.89	18.8
Approach		626	4.7	621 N1	4.8	0.486	39.5	LOS C	9.8	68.5	0.93	0.79	0.93	11.7
West: Car park														
1	L2	25	8.3	25	8.3	0.044	32.9	LOS C	0.6	4.6	0.69	0.68	0.69	14.7
2	T1	1	0.0	1	0.0	0.044	27.3	LOS B	0.6	4.6	0.69	0.68	0.69	17.1
3	R2	1	0.0	1	0.0	0.006	57.9	LOS E	0.0	0.2	0.92	0.59	0.92	9.4
Approach		27	7.7	27	7.7	0.044	33.6	LOS C	0.6	4.6	0.70	0.68	0.70	14.5
All Vehicles		1369	5.1	1364 N1	5.1	0.596	41.8	LOS C	9.8	68.5	0.92	0.79	0.92	9.5

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P21	South Stage 1	53	54.3	LOS E	0.2	0.2	0.95	0.95
P22	South Stage 2	53	54.3	LOS E	0.2	0.2	0.95	0.95
P3	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P41	North Stage 1	53	54.3	LOS E	0.2	0.2	0.95	0.95
P42	North Stage 2	53	54.3	LOS E	0.2	0.2	0.95	0.95

MOVEMENT SUMMARY

Site: I-30 [I-30 Darcy - Hawkesbury]

Network: N101 [2020 Dev PM Darcy Road Network]

TCS 1631
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Hawkesbury Road														
8	T1	418	1.5	418	1.5	0.388	15.8	LOS B	8.3	58.9	0.61	0.53	0.61	22.2
9	R2	219	2.4	219	2.4	0.434	23.5	LOS B	4.1	28.6	0.86	0.77	0.86	17.8
Approach		637	1.8	637	1.8	0.434	18.4	LOS B	8.3	58.9	0.69	0.61	0.69	20.5
North: Darcy Road														
10	L2	126	7.5	126	7.5	0.114	10.8	LOS A	0.9	6.7	0.37	0.58	0.37	29.4
12	R2	523	5.3	519	5.3	0.759	23.3	LOS B	7.0	49.2	0.61	0.69	0.64	12.7
Approach		649	5.7	645 N1	5.7	0.759	20.9	LOS B	7.0	49.2	0.57	0.67	0.59	15.6
West: Hawkesbury Road														
1	L2	308	9.2	308	9.2	0.318	18.3	LOS B	4.5	31.5	0.86	0.79	0.86	18.3
2	T1	224	4.2	224	4.2	0.676	52.8	LOS D	7.8	56.6	1.00	0.85	1.02	15.4
Approach		533	7.1	533	7.1	0.676	32.8	LOS C	7.8	56.6	0.92	0.82	0.93	16.4
All Vehicles		1819	4.8	1815 N1	4.8	0.759	23.5	LOS B	8.3	58.9	0.71	0.69	0.72	17.5

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P3	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P41	North Stage 1	53	25.8	LOS C	0.1	0.1	0.90	0.90
P42	North Stage 2	53	54.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		211	47.1	LOS E			0.94	0.94

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

MOVEMENT SUMMARY

Site: I-28 [I-28 Hawkesbury - Railway]

Network: N101 [2020 Dev PM Darcy Road Network]

TCS 1571
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)
Common Control Group: CCG1 [TCS 1571]

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Railway Pde														
4	L2	284	0.7	284	0.7	0.692	33.0	LOS C	8.2	57.9	0.84	0.83	0.85	26.5
6	R2	37	0.0	37	0.0	0.149	54.9	LOS D	1.2	8.3	0.92	0.72	0.92	20.2
Approach		321	0.7	321	0.7	0.692	35.5	LOS C	8.2	57.9	0.85	0.82	0.86	25.6
East: Hawkesbury Rd														
7	L2	59	0.0	59	0.0	0.153	31.0	LOS C	2.4	22.6	0.78	0.68	0.78	30.4
8	T1	855	4.5	853	4.5	0.673	43.8	LOS D	18.5	130.0	0.96	0.85	0.96	9.5
Approach		914	4.2	911 N1	4.2	0.673	42.9	LOS D	18.5	130.0	0.95	0.84	0.95	11.4
West: Hawkesbury Rd														
2	T1	512	6.8	512	6.8	0.325	2.3	LOS A	3.2	22.8	0.13	0.12	0.13	32.3
3	R2	151	1.4	151	1.4	0.325	18.0	LOS B	3.2	22.8	0.70	0.70	0.70	35.2
Approach		663	5.6	663	5.6	0.325	5.9	LOS A	3.2	22.8	0.26	0.25	0.26	34.3
All Vehicles		1898	4.1	1895 N1	4.1	0.692	28.8	LOS C	18.5	130.0	0.69	0.63	0.69	18.5

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	South Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P3	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	54.3	LOS E			0.95	0.95

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.

MOVEMENT SUMMARY

Site: I-27 [I-27 Hawkesbury - Alexandra]

Network: N101 [2020 Dev PM Darcy Road Network]

TCS 1571
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)
Common Control Group: CCG1 [TCS 1571]

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Alexandra Ave														
4	L2	40	7.9	40	7.9	0.512	44.2	LOS D	8.2	58.0	0.90	0.77	0.90	17.8
5	T1	229	0.5	229	0.5	0.512	39.6	LOS C	8.2	58.0	0.90	0.77	0.90	27.3
6	R2	216	18.0	216	18.0	0.477	44.0	LOS D	6.5	52.6	0.89	0.80	0.89	10.8
Approach		485	8.9	485	8.9	0.512	41.9	LOS C	8.2	58.0	0.89	0.78	0.89	20.9
East: Hawkesbury Road														
7	L2	228	15.2	228	15.2	0.775	28.3	LOS B	7.8	55.0	0.71	0.74	0.72	20.2
8	T1	838	0.4	835	0.4	0.775	34.1	LOS C	7.8	55.0	0.89	0.92	1.08	15.6
9	R2	96	0.0	96	0.0	0.775	44.0	LOS D	7.8	55.0	0.94	1.06	1.34	24.9
Approach		1162	3.3	1159[N1]	3.3	0.775	33.8	LOS C	7.8	55.0	0.86	0.89	1.03	17.3
North: Alexandra Ave														
10	L2	37	0.0	37	0.0	0.047	25.9	LOS B	0.8	5.3	0.61	0.67	0.61	29.5
11	T1	156	2.7	156	2.7	0.513	50.8	LOS D	5.2	37.4	0.97	0.78	0.97	24.4
Approach		193	2.2	193	2.2	0.513	46.0	LOS D	5.2	37.4	0.90	0.76	0.90	25.0
West: Hawkesbury Road														
1	L2	29	3.6	29	3.6	0.735	60.2	LOS E	7.4	52.5	1.00	0.88	1.09	22.9
2	T1	389	1.2	389	1.2	0.735	55.5	LOS D	7.7	54.3	1.00	0.88	1.08	8.8
Approach		418	1.3	418	1.3	0.735	55.8	LOS D	7.7	54.3	1.00	0.88	1.08	10.3
All Vehicles		2258	4.0	2255[N1]	4.0	0.775	40.7	LOS C	8.2	58.0	0.89	0.86	1.00	17.7

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	South Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	North Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	54.3	LOS E			0.95	0.95

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

APPENDIX D-5
2030 AM – WITHOUT DEVELOPMENT

MOVEMENT SUMMARY

Site: I-11 [2030 Base AM I-11 Briens - Redbank]

TCS 3213
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 145 seconds (Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Redbank Road												
21	L2	215	4.4	0.283	33.8	LOS C	9.8	71.4	0.70	0.75	0.70	32.3
22	T1	36	0.0	0.099	52.3	LOS D	2.1	14.6	0.86	0.64	0.86	29.3
23	R2	77	9.6	0.638	77.8	LOS F	5.6	42.4	1.00	0.82	1.07	25.2
Approach		327	5.1	0.638	46.2	LOS D	9.8	71.4	0.79	0.76	0.80	29.6
East: Briens Road												
24	L2	104	2.0	0.933	61.3	LOS E	68.4	500.3	1.00	1.04	1.16	30.7
25	T1	2471	5.7	0.933	54.7	LOS D	68.9	505.8	1.00	1.04	1.15	29.9
26	R2	35	9.1	0.152	67.3	LOS E	2.2	16.6	0.92	0.73	0.92	28.1
Approach		2609	5.6	0.933	55.1	LOS D	68.9	505.8	1.00	1.04	1.15	29.9
North: Redbank Road												
27	L2	21	15.0	0.885	79.6	LOS F	21.8	154.0	1.00	1.03	1.25	25.8
28	T1	172	0.0	0.885	74.8	LOS F	21.8	154.0	1.00	1.03	1.25	24.5
29	R2	83	0.0	0.885	79.3	LOS F	21.8	154.0	1.00	1.03	1.25	22.1
Approach		276	1.1	0.885	76.5	LOS F	21.8	154.0	1.00	1.03	1.25	24.0
West: Briens Road												
30	L2	15	0.0	0.910	45.5	LOS D	68.2	504.7	0.97	0.97	1.05	31.4
31	T1	2778	6.8	0.910	39.1	LOS C	68.2	505.4	0.94	0.94	1.02	35.8
32	R2	317	1.7	1.043	105.2	LOS F	26.5	188.2	1.00	1.08	1.72	14.3
Approach		3109	6.3	1.043	45.9	LOS D	68.2	505.4	0.94	0.95	1.09	31.0
All Vehicles		6322	5.7	1.043	51.1	LOS D	68.9	505.8	0.96	0.98	1.11	30.0

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P5	South Full Crossing	53	66.8	LOS F	0.2	0.2	0.96	0.96
P6	East Full Crossing	53	66.8	LOS F	0.2	0.2	0.96	0.96
P7	North Full Crossing	53	66.8	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		158	66.8	LOS F			0.96	0.96

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.

MOVEMENT SUMMARY

Site: I-14 [I-14 Bridge - Darcy]

Network: N101 [2030 Base AM Darcy Road Network]

TCS 1630
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Bridge Road														
1	L2	181	2.3	181	2.3	0.489	41.4	LOS C	5.0	35.4	0.88	0.79	0.88	22.5
2	T1	6	0.0	6	0.0	1.428	441.6	LOS F	24.0	171.4	1.00	2.18	3.74	5.2
3	R2	206	2.6	206	2.6	1.428	441.2	LOS F	24.0	171.4	1.00	2.18	3.74	2.5
Approach		394	2.4	394	2.4	1.428	257.3	LOS F	24.0	171.4	0.94	1.54	2.42	4.9
East: Darcy Road														
4	L2	83	7.6	78	8.0	0.310	15.4	LOS B	5.4	39.0	0.51	0.51	0.51	39.7
5	T1	665	2.6	625	2.7	0.310	12.2	LOS A	6.9	49.4	0.59	0.54	0.59	37.4
6	R2	13	16.7	12	17.1	0.051	28.6	LOS C	0.2	1.8	0.74	0.63	0.74	21.5
Approach		761	3.4	716[N1]	3.5	0.310	12.9	LOS A	6.9	49.4	0.58	0.54	0.58	37.0
North: Coles Access														
7	L2	17	25.0	17	25.0	0.042	33.1	LOS C	0.4	3.5	0.78	0.56	0.78	14.7
8	T1	13	0.0	13	0.0	0.248	56.0	LOS D	0.9	6.8	0.98	0.71	0.98	17.3
9	R2	15	14.3	15	14.3	0.248	56.0	LOS D	0.9	6.8	0.98	0.71	0.98	14.9
Approach		44	14.3	44	14.3	0.248	47.3	LOS D	0.9	6.8	0.91	0.65	0.91	15.6
West: Darcy Road														
10	L2	21	5.0	21	5.0	1.042	104.9	LOS F	70.7	501.4	1.00	1.46	1.66	11.9
11	T1	1998	1.4	1998	1.4	1.042	104.6	LOS F	70.7	501.4	1.00	1.49	1.71	5.2
12	R2	186	2.3	186	2.3	0.339	10.6	LOS A	1.7	12.1	0.51	0.69	0.51	37.6
Approach		2206	1.5	2206	1.5	1.042	96.7	LOS F	70.7	501.4	0.96	1.42	1.61	6.5
All Vehicles		3405	2.2	3359[N1]	2.3	1.428	97.0	LOS F	70.7	501.4	0.88	1.23	1.47	9.0

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P2	East Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95

MOVEMENT SUMMARY

Site: I-17 [I-17 Darcy - Mons - Institute]

Network: N101 [2030 Base AM Darcy Road Network]

TCS 2393
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Darcy Road														
1	L2	450	2.9	402	3.1	0.221	20.8	LOS B	4.2	29.9	0.67	0.71	0.67	17.0
2	T1	211	14.0	187	13.8	0.806	46.1	LOS D	5.5	39.5	0.97	0.82	1.03	22.7
Approach		660	6.5	589[N1]	6.5	0.806	28.8	LOS C	5.5	39.5	0.76	0.75	0.78	20.3
East: Institute Road														
4	L2	53	2.0	53	2.0	0.909	70.0	LOS E	6.3	44.7	1.00	1.13	1.49	16.4
5	T1	278	0.0	278	0.0	0.909	66.4	LOS E	6.4	44.9	1.00	1.13	1.49	16.6
6	R2	2	0.0	2	0.0	0.909	69.7	LOS E	6.4	44.9	1.00	1.13	1.49	23.3
Approach		333	0.3	333	0.3	0.909	67.0	LOS E	6.4	44.9	1.00	1.13	1.49	16.6
North: Mons Road														
7	L2	1	0.0	1	0.0	0.094	25.9	LOS B	1.4	10.2	0.66	0.52	0.66	32.2
8	T1	96	33.0	96	33.0	0.094	22.5	LOS B	1.4	10.2	0.66	0.51	0.66	27.0
9	R2	86	8.5	86	8.5	0.364	46.3	LOS D	2.6	19.2	0.95	0.76	0.95	20.0
Approach		183	21.3	183	21.3	0.364	33.7	LOS C	2.6	19.2	0.79	0.63	0.79	23.3
West: Darcy Road														
10	L2	271	1.2	254	1.2	0.186	4.4	LOS A	0.8	5.9	0.17	0.48	0.17	38.5
11	T1	292	1.2	273	1.2	0.813	38.0	LOS C	11.1	78.8	0.90	0.88	1.03	26.8
12	R2	635	1.5	595	1.5	0.813	42.1	LOS C	15.5	109.9	0.94	0.90	1.02	17.8
Approach		1198	1.4	1122[N1]	1.4	0.813	32.6	LOS C	15.5	109.9	0.76	0.80	0.83	25.2
All Vehicles		2375	4.2	2227[N1]	4.4	0.909	36.8	LOS C	15.5	109.9	0.80	0.82	0.91	22.3

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	East Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	49.3	LOS E			0.95	0.95

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

MOVEMENT SUMMARY

Site: I-19 [I-19 Darcy - Dental Hospital - Marist]

Network: N101 [2030 Base AM Darcy Road Network]

TCS 3282
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Darcy Road														
4	L2	1	0.0	1	0.0	0.243	7.7	LOS A	1.5	10.9	0.19	0.17	0.19	20.6
5	T1	613	7.2	540	7.2	0.243	4.4	LOS A	1.7	11.9	0.20	0.17	0.20	31.4
6	R2	107	0.0	95	0.0	0.467	54.8	LOS D	3.1	21.9	1.00	0.78	1.00	11.0
Approach		721	6.1	636[N1]	6.1	0.467	11.9	LOS A	3.1	21.9	0.32	0.26	0.32	23.3
East: Dental hospital access														
7	L2	18	17.6	18	17.6	0.032	29.4	LOS C	0.4	3.1	0.70	0.64	0.70	6.7
9	R2	13	0.0	13	0.0	0.054	47.5	LOS D	0.4	2.5	0.89	0.67	0.89	4.7
Approach		31	10.3	31	10.3	0.054	36.9	LOS C	0.4	3.1	0.78	0.65	0.78	5.6
North: Darcy Road														
10	L2	139	0.0	134	0.0	0.479	15.3	LOS B	7.1	50.5	0.47	0.49	0.47	16.3
11	T1	943	5.6	908	5.7	0.479	7.1	LOS A	7.1	50.5	0.31	0.30	0.31	26.7
12	R2	3	0.0	3	0.0	0.015	55.3	LOS D	0.1	0.7	1.00	0.63	1.00	10.5
Approach		1085	4.8	1044[N1]	5.0	0.479	8.3	LOS A	7.1	50.5	0.33	0.33	0.33	24.1
West: Marist HS														
1	L2	1	0.0	1	0.0	0.007	42.9	LOS D	0.1	0.4	0.84	0.60	0.84	5.0
3	R2	1	0.0	1	0.0	0.007	42.8	LOS D	0.1	0.4	0.84	0.60	0.84	5.0
Approach		2	0.0	2	0.0	0.007	42.8	LOS D	0.1	0.4	0.84	0.60	0.84	5.0
All Vehicles		1839	5.4	1713[N1]	5.8	0.479	10.2	LOS A	7.1	50.5	0.34	0.31	0.34	23.2

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P3	East Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P4	North Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	49.3	LOS E			0.95	0.95

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.

MOVEMENT SUMMARY

Site: I-23 [I-23 Darcy - Hospital - WSU]

Network: N101 [2030 Base AM Darcy Road Network]

TCS 3281
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Darcy Road														
4	L2	43	4.9	38	5.1	0.283	22.1	LOS B	6.3	44.8	0.70	0.63	0.70	25.1
5	T1	670	6.0	581	6.0	0.283	16.2	LOS B	6.3	44.8	0.68	0.60	0.68	14.8
6	R2	69	1.5	60	1.6	0.451	59.1	LOS E	2.0	14.2	0.99	0.75	0.99	7.3
Approach		783	5.5	679[N1]	5.6	0.451	20.3	LOS B	6.3	44.8	0.71	0.61	0.71	13.9
East: Westmead Hospital access														
7	L2	15	0.0	15	0.0	0.042	40.4	LOS C	0.4	2.9	0.83	0.66	0.83	4.5
8	T1	1	0.0	1	0.0	0.042	37.3	LOS C	0.4	2.9	0.83	0.66	0.83	14.2
9	R2	38	2.8	38	2.8	0.381	61.0	LOS E	1.3	9.3	1.00	0.73	1.00	3.3
Approach		54	2.0	54	2.0	0.381	54.9	LOS D	1.3	9.3	0.95	0.71	0.95	3.8
North: Darcy Road														
10	L2	117	0.0	112	0.0	0.452	6.8	LOS A	2.4	17.2	0.17	0.25	0.17	23.9
11	T1	761	6.7	734	6.8	0.452	2.3	LOS A	2.4	17.2	0.12	0.15	0.12	34.4
12	R2	1	0.0	1	0.0	0.007	60.2	LOS E	0.0	0.2	1.00	0.59	1.00	15.0
Approach		879	5.8	847[N1]	5.9	0.452	3.0	LOS A	2.4	17.2	0.13	0.16	0.13	32.0
West: Car park														
1	L2	25	8.3	25	8.3	0.069	42.4	LOS C	0.7	5.1	0.82	0.70	0.82	12.1
2	T1	1	0.0	1	0.0	0.069	36.8	LOS C	0.7	5.1	0.82	0.70	0.82	14.1
3	R2	1	0.0	1	0.0	0.010	60.1	LOS E	0.0	0.2	0.96	0.59	0.96	9.1
Approach		27	7.7	27	7.7	0.069	42.9	LOS D	0.7	5.1	0.83	0.70	0.83	12.0
All Vehicles		1743	5.6	1607[N1]	6.0	0.452	12.7	LOS A	6.3	44.8	0.41	0.38	0.41	20.5

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P21	South Stage 1	53	49.3	LOS E	0.2	0.2	0.95	0.95
P22	South Stage 2	53	49.3	LOS E	0.2	0.2	0.95	0.95
P3	East Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P41	North Stage 1	53	49.3	LOS E	0.2	0.2	0.95	0.95
P42	North Stage 2	53	49.3	LOS E	0.2	0.2	0.95	0.95

MOVEMENT SUMMARY

Site: I-30 [I-30 Darcy - Hawkesbury]

Network: N101 [2030 Base AM Darcy Road Network]

TCS 1631
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
East: Hawkesbury Road														
8	T1	218	4.3	218	4.3	0.207	13.0	LOS A	3.5	25.7	0.54	0.45	0.54	24.0
9	R2	117	6.3	117	6.3	0.346	25.9	LOS B	1.9	14.0	0.91	0.75	0.91	16.9
Approach		335	5.0	335	5.0	0.346	17.5	LOS B	3.5	25.7	0.67	0.56	0.67	21.0
North: Darcy Road														
10	L2	167	5.7	161	5.8	0.187	15.5	LOS B	1.9	13.5	0.57	0.66	0.57	25.6
12	R2	605	7.0	583	7.2	0.802	44.9	LOS D	9.3	66.0	0.92	0.86	1.00	7.5
Approach		772	6.7	745 N1	6.9	0.802	38.6	LOS C	9.3	66.0	0.84	0.81	0.91	10.5
West: Hawkesbury Road														
1	L2	666	5.4	561	5.4	0.538	14.9	LOS B	6.9	49.1	0.79	0.81	0.79	20.7
2	T1	498	2.0	419	2.0	0.826	46.8	LOS D	13.6	96.7	0.98	0.93	1.08	16.7
Approach		1164	3.9	980 N1	4.0	0.826	28.5	LOS C	13.6	96.7	0.87	0.86	0.92	17.9
All Vehicles		2270	5.0	2060 N1	5.6	0.826	30.4	LOS C	13.6	96.7	0.83	0.79	0.87	15.3

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P3	East Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P41	North Stage 1	53	22.5	LOS C	0.1	0.1	0.89	0.89
P42	North Stage 2	53	49.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		211	42.6	LOS E			0.93	0.93

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

MOVEMENT SUMMARY

Site: I-28 [I-28 Hawkesbury - Railway]

Network: N101 [2030 Base AM Darcy Road Network]

TCS 1571
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)
Common Control Group: CCG1 [TCS 1571]

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Railway Pde														
4	L2	144	1.5	144	1.5	0.384	29.6	LOS C	3.4	24.0	0.74	0.76	0.74	27.8
6	R2	18	0.0	18	0.0	0.101	52.6	LOS D	0.5	3.8	0.92	0.70	0.92	20.7
Approach		162	1.3	162	1.3	0.384	32.1	LOS C	3.4	24.0	0.76	0.76	0.76	26.8
East: Hawkesbury Rd														
7	L2	71	0.0	69	0.0	0.139	22.6	LOS B	1.7	14.8	0.53	0.56	0.53	34.0
8	T1	707	6.4	689	6.5	0.541	31.4	LOS C	12.5	88.6	0.93	0.82	0.93	12.4
Approach		777	5.8	757 N1	5.9	0.541	30.5	LOS C	12.5	88.6	0.89	0.80	0.89	15.3
West: Hawkesbury Rd														
2	T1	1536	3.1	1292	3.2	0.734	4.2	LOS A	7.4	53.4	0.33	0.32	0.33	26.2
3	R2	234	0.0	196	0.0	0.734	14.7	LOS B	5.6	40.1	0.72	0.70	0.73	38.1
Approach		1770	2.7	1488 N1	2.8	0.734	5.5	LOS A	7.4	53.4	0.38	0.37	0.38	31.7
All Vehicles		2709	3.5	2408 N1	4.0	0.734	15.2	LOS B	12.5	88.6	0.57	0.53	0.57	22.8

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	South Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P3	East Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	49.3	LOS E			0.95	0.95

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.

MOVEMENT SUMMARY

Site: I-27 [I-27 Hawkesbury - Alexandra]

Network: N101 [2030 Base AM Darcy Road Network]

TCS 1571
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)
Common Control Group: CCG1 [TCS 1571]

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Alexandra Ave														
4	L2	31	0.0	31	0.0	1.188	237.8	LOS F	12.6	93.5	1.00	1.69	2.77	4.3
5	T1	66	3.2	66	3.2	1.188	233.2	LOS F	12.6	93.5	1.00	1.69	2.77	8.2
6	R2	219	15.4	219	15.4	1.188	237.9	LOS F	12.6	93.5	1.00	1.69	2.77	2.3
Approach		316	11.3	316	11.3	1.188	236.9	LOS F	12.6	99.2	1.00	1.69	2.77	3.9
East: Hawkesbury Road														
7	L2	200	18.9	196	19.1	0.590	12.1	LOS A	7.7	55.0	0.37	0.48	0.37	30.7
8	T1	629	1.9	615	1.9	0.590	18.2	LOS B	7.7	55.0	0.55	0.55	0.57	22.6
9	R2	49	0.0	48	0.0	0.590	59.2	LOS E	5.6	39.5	1.00	0.86	1.11	20.9
Approach		878	5.7	860 N1	5.7	0.590	19.1	LOS B	7.7	55.0	0.54	0.55	0.56	23.6
North: Alexandra Ave														
10	L2	68	0.0	68	0.0	0.276	41.1	LOS C	1.9	13.0	0.84	0.76	0.84	23.7
11	T1	242	0.9	242	0.9	0.858	58.1	LOS E	8.8	61.9	1.00	1.01	1.28	22.7
Approach		311	0.7	311	0.7	0.858	54.4	LOS D	8.8	61.9	0.97	0.96	1.18	22.9
West: Hawkesbury Road														
1	L2	15	7.1	15	7.1	1.193	242.2	LOS F	50.8	358.1	1.00	2.21	2.64	8.2
2	T1	1459	0.6	1459	0.6	1.193	233.2	LOS F	74.5	524.2	1.00	2.19	2.60	2.4
Approach		1474	0.7	1474	0.7	1.193	233.3	LOS F	74.5	524.2	1.00	2.19	2.60	2.5
All Vehicles		2979	3.3	2961 N1	3.3	1.193	152.7	LOS F	74.5	524.2	0.86	1.53	1.88	5.2

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	South Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P4	North Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	49.3	LOS E			0.95	0.95

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

APPENDIX D-6
2030 AM – WITH DEVELOPMENT

MOVEMENT SUMMARY

Site: I-11 [2030 Dev AM I-11 Briens - Redbank]

TCS 3213
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 145 seconds (Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Redbank Road												
21	L2	218	4.3	0.287	33.9	LOS C	10.0	72.5	0.70	0.75	0.70	32.3
22	T1	36	0.0	0.100	52.4	LOS D	2.1	14.8	0.86	0.65	0.86	29.3
23	R2	78	9.5	0.697	80.7	LOS F	5.8	43.9	1.00	0.84	1.13	24.7
Approach		332	5.1	0.697	46.9	LOS D	10.0	72.5	0.79	0.76	0.82	29.4
East: Briens Road												
24	L2	112	1.9	0.936	62.4	LOS E	69.2	506.1	1.00	1.05	1.16	30.4
25	T1	2471	5.7	0.936	55.8	LOS D	69.7	512.1	1.00	1.05	1.16	29.5
26	R2	35	9.1	0.152	67.3	LOS E	2.2	16.6	0.92	0.73	0.92	28.1
Approach		2617	5.6	0.936	56.2	LOS D	69.7	512.1	1.00	1.04	1.16	29.6
North: Redbank Road												
27	L2	21	15.0	0.922	87.2	LOS F	24.1	170.2	1.00	1.09	1.34	24.5
28	T1	184	0.0	0.922	82.3	LOS F	24.1	170.2	1.00	1.09	1.34	23.4
29	R2	83	0.0	0.922	86.9	LOS F	24.1	170.2	1.00	1.09	1.34	20.9
Approach		288	1.1	0.922	84.0	LOS F	24.1	170.2	1.00	1.09	1.34	22.8
West: Briens Road												
30	L2	15	0.0	0.912	46.1	LOS D	68.9	509.9	0.98	0.98	1.06	31.2
31	T1	2778	6.8	0.912	39.8	LOS C	68.9	510.6	0.94	0.94	1.03	35.5
32	R2	340	1.6	1.117	160.3	LOS F	35.3	250.4	1.00	1.18	2.00	11.2
Approach		3132	6.2	1.117	52.9	LOS D	68.9	510.6	0.94	0.97	1.13	28.7
All Vehicles		6369	5.7	1.117	55.3	LOS D	69.7	512.1	0.96	0.99	1.14	28.7

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P5	South Full Crossing	53	66.8	LOS F	0.2	0.2	0.96	0.96
P6	East Full Crossing	53	66.8	LOS F	0.2	0.2	0.96	0.96
P7	North Full Crossing	53	66.8	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		158	66.8	LOS F			0.96	0.96

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.

MOVEMENT SUMMARY

Site: I-14 [I-14 Bridge - Darcy]

Network: N101 [2030 Dev AM Darcy Road Network]

TCS 1630
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bridge Road														
1	L2	181	2.3	181	2.3	0.493	41.4	LOS C	5.0	35.4	0.88	0.79	0.88	22.5
2	T1	6	0.0	6	0.0	1.487	493.2	LOS F	26.5	189.5	1.00	2.28	3.95	4.8
3	R2	216	2.4	216	2.4	1.487	492.8	LOS F	26.5	189.5	1.00	2.28	3.95	2.2
Approach		403	2.4	403	2.4	1.487	289.9	LOS F	26.5	189.5	0.94	1.61	2.57	4.4
East: Darcy Road														
4	L2	86	7.4	81	7.7	0.314	15.6	LOS B	5.5	39.9	0.52	0.51	0.52	39.6
5	T1	669	2.6	631	2.7	0.314	12.3	LOS A	7.0	50.1	0.59	0.54	0.59	37.3
6	R2	13	16.7	12	17.0	0.051	29.5	LOS C	0.2	1.8	0.76	0.64	0.76	21.4
Approach		768	3.4	724 N1	3.5	0.314	13.0	LOS A	7.0	50.1	0.59	0.54	0.59	36.9
North: Coles Access														
7	L2	17	25.0	17	25.0	0.042	33.1	LOS C	0.4	3.5	0.78	0.56	0.78	14.7
8	T1	13	0.0	13	0.0	0.248	56.0	LOS D	0.9	6.8	0.98	0.71	0.98	17.3
9	R2	15	14.3	15	14.3	0.248	56.0	LOS D	0.9	6.8	0.98	0.71	0.98	14.9
Approach		44	14.3	44	14.3	0.248	47.3	LOS D	0.9	6.8	0.91	0.65	0.91	15.6
West: Darcy Road														
10	L2	21	5.0	21	5.0	1.051	111.1	LOS F	73.2	518.9	1.00	1.50	1.71	11.5
11	T1	2014	1.4	2014	1.4	1.051	110.8	LOS F	73.2	518.9	1.00	1.52	1.75	5.0
12	R2	186	2.3	186	2.3	0.341	10.7	LOS A	1.7	12.1	0.51	0.69	0.51	37.6
Approach		2221	1.5	2221	1.5	1.051	102.4	LOS F	73.2	518.9	0.96	1.45	1.65	6.1
All Vehicles		3436	2.2	3392 N1	2.2	1.487	104.9	LOS F	73.2	518.9	0.88	1.27	1.52	8.4

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P2	East Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95

MOVEMENT SUMMARY

Site: I-17 [I-17 Darcy - Mons - Institute]

Network: N101 [2030 Dev AM Darcy Road Network]

TCS 2393
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Darcy Road														
1	L2	451	2.9	401	3.1	0.221	21.0	LOS B	4.2	30.4	0.67	0.72	0.67	16.9
2	T1	224	13.2	198	13.0	0.858	47.7	LOS D	6.0	43.3	0.98	0.85	1.07	22.4
Approach		675	6.3	600[N1]	6.4	0.858	29.8	LOS C	6.0	43.3	0.78	0.76	0.81	20.2
East: Institute Road														
4	L2	53	2.0	53	2.0	0.938	75.6	LOS F	6.8	47.6	1.00	1.19	1.59	15.7
5	T1	284	0.0	284	0.0	0.938	72.1	LOS F	6.8	47.8	1.00	1.19	1.59	15.8
6	R2	2	0.0	2	0.0	0.938	75.4	LOS F	6.8	47.8	1.00	1.19	1.59	22.5
Approach		338	0.3	338	0.3	0.938	72.6	LOS F	6.8	47.8	1.00	1.19	1.59	15.8
North: Mons Road														
7	L2	1	0.0	1	0.0	0.100	25.9	LOS B	1.5	10.9	0.67	0.53	0.67	32.2
8	T1	100	31.5	100	31.5	0.100	22.5	LOS B	1.5	10.9	0.66	0.52	0.66	27.0
9	R2	86	8.5	86	8.5	0.364	46.3	LOS D	2.6	19.2	0.95	0.76	0.95	20.0
Approach		188	20.8	188	20.8	0.364	33.5	LOS C	2.6	19.2	0.79	0.63	0.79	23.3
West: Darcy Road														
10	L2	271	1.2	251	1.2	0.186	4.6	LOS A	0.9	6.5	0.18	0.49	0.18	38.4
11	T1	316	1.1	292	1.1	0.827	39.3	LOS C	11.6	82.2	0.90	0.90	1.05	26.5
12	R2	640	1.5	592	1.5	0.827	43.1	LOS D	16.1	113.9	0.95	0.91	1.04	17.6
Approach		1228	1.3	1136[N1]	1.3	0.827	33.6	LOS C	16.1	113.9	0.77	0.81	0.85	24.9
All Vehicles		2428	4.1	2262[N1]	4.4	0.938	38.4	LOS C	16.1	113.9	0.81	0.84	0.94	22.0

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	East Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	49.3	LOS E			0.95	0.95

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

MOVEMENT SUMMARY

Site: I-19 [I-19 Darcy - Dental Hospital - Marist]

Network: N101 [2030 Dev AM Darcy Road Network]

TCS 3282
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Darcy Road														
4	L2	1	0.0	1	0.0	0.247	7.7	LOS A	1.5	11.0	0.19	0.17	0.19	20.6
5	T1	627	7.0	549	7.1	0.247	4.4	LOS A	1.7	12.0	0.20	0.17	0.20	31.4
6	R2	107	0.0	94	0.0	0.464	54.8	LOS D	3.1	21.8	1.00	0.78	1.00	11.0
Approach		736	6.0	644[N1]	6.0	0.464	11.7	LOS A	3.1	21.8	0.31	0.26	0.31	23.4
East: Dental hospital access														
7	L2	18	17.6	18	17.6	0.032	29.4	LOS C	0.4	3.1	0.70	0.64	0.70	6.7
9	R2	13	0.0	13	0.0	0.054	47.5	LOS D	0.4	2.5	0.89	0.67	0.89	4.7
Approach		31	10.3	31	10.3	0.054	36.9	LOS C	0.4	3.1	0.78	0.65	0.78	5.6
North: Darcy Road														
10	L2	139	0.0	133	0.0	0.480	15.2	LOS B	7.1	50.3	0.47	0.49	0.47	16.3
11	T1	953	5.5	911	5.7	0.480	7.1	LOS A	7.1	50.3	0.31	0.30	0.31	26.8
12	R2	3	0.0	3	0.0	0.015	55.3	LOS D	0.1	0.7	1.00	0.63	1.00	10.5
Approach		1095	4.8	1047[N1]	4.9	0.480	8.3	LOS A	7.1	50.3	0.33	0.32	0.33	24.2
West: Marist HS														
1	L2	1	0.0	1	0.0	0.007	42.9	LOS D	0.1	0.4	0.84	0.60	0.84	5.0
3	R2	1	0.0	1	0.0	0.007	42.8	LOS D	0.1	0.4	0.84	0.60	0.84	5.0
Approach		2	0.0	2	0.0	0.007	42.8	LOS D	0.1	0.4	0.84	0.60	0.84	5.0
All Vehicles		1863	5.4	1723[N1]	5.8	0.480	10.1	LOS A	7.1	50.3	0.33	0.31	0.33	23.3

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P3	East Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P4	North Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	49.3	LOS E			0.95	0.95

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.

MOVEMENT SUMMARY

Site: I-23 [I-23 Darcy - Hospital - WSU]

Network: N101 [2030 Dev AM Darcy Road Network]

TCS 3281
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Darcy Road														
4	L2	43	4.9	37	5.1	0.287	22.1	LOS B	6.4	45.6	0.70	0.63	0.70	25.1
5	T1	685	5.9	590	5.9	0.287	16.2	LOS B	6.4	45.6	0.69	0.60	0.69	14.8
6	R2	69	1.5	60	1.6	0.449	59.1	LOS E	2.0	14.1	0.99	0.75	0.99	7.3
Approach		797	5.4	688[N1]	5.5	0.449	20.3	LOS B	6.4	45.6	0.71	0.61	0.71	13.9
East: Westmead Hospital access														
7	L2	15	0.0	15	0.0	0.042	40.4	LOS C	0.4	2.9	0.83	0.66	0.83	4.5
8	T1	1	0.0	1	0.0	0.042	37.3	LOS C	0.4	2.9	0.83	0.66	0.83	14.2
9	R2	38	2.8	38	2.8	0.381	61.0	LOS E	1.3	9.3	1.00	0.73	1.00	3.3
Approach		54	2.0	54	2.0	0.381	54.9	LOS D	1.3	9.3	0.95	0.71	0.95	3.8
North: Darcy Road														
10	L2	117	0.0	112	0.0	0.457	6.8	LOS A	2.5	17.8	0.18	0.25	0.18	23.9
11	T1	771	6.6	739	6.8	0.457	2.4	LOS A	2.5	17.8	0.12	0.15	0.12	34.3
12	R2	1	0.0	1	0.0	0.007	60.2	LOS E	0.0	0.2	1.00	0.59	1.00	15.0
Approach		889	5.7	851[N1]	5.9	0.457	3.0	LOS A	2.5	17.8	0.13	0.16	0.13	32.0
West: Car park														
1	L2	25	8.3	25	8.3	0.069	42.4	LOS C	0.7	5.1	0.82	0.70	0.82	12.1
2	T1	1	0.0	1	0.0	0.069	36.8	LOS C	0.7	5.1	0.82	0.70	0.82	14.1
3	R2	1	0.0	1	0.0	0.010	60.1	LOS E	0.0	0.2	0.96	0.59	0.96	9.1
Approach		27	7.7	27	7.7	0.069	42.9	LOS D	0.7	5.1	0.83	0.70	0.83	12.0
All Vehicles		1767	5.5	1620[N1]	6.0	0.457	12.7	LOS A	6.4	45.6	0.42	0.38	0.42	20.5

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P21	South Stage 1	53	49.3	LOS E	0.2	0.2	0.95	0.95
P22	South Stage 2	53	49.3	LOS E	0.2	0.2	0.95	0.95
P3	East Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P41	North Stage 1	53	49.3	LOS E	0.2	0.2	0.95	0.95
P42	North Stage 2	53	49.3	LOS E	0.2	0.2	0.95	0.95

MOVEMENT SUMMARY

Site: I-30 [I-30 Darcy - Hawkesbury]

Network: N101 [2030 Dev AM Darcy Road Network]

TCS 1631
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
East: Hawkesbury Road														
8	T1	220	4.3	220	4.3	0.206	12.5	LOS A	3.5	25.4	0.53	0.45	0.53	24.4
9	R2	118	6.3	118	6.3	0.349	25.8	LOS B	1.9	13.9	0.91	0.75	0.91	16.9
Approach		338	5.0	338	5.0	0.349	17.1	LOS B	3.5	25.4	0.66	0.55	0.66	21.2
North: Darcy Road														
10	L2	173	5.5	165	5.6	0.195	15.9	LOS B	2.0	14.5	0.59	0.66	0.59	25.4
12	R2	609	6.9	584	7.1	0.840	47.5	LOS D	9.7	69.4	0.94	0.89	1.05	7.1
Approach		782	6.6	750 N1	6.8	0.840	40.5	LOS C	9.7	69.4	0.86	0.84	0.95	10.1
West: Hawkesbury Road														
1	L2	679	5.3	571	5.3	0.548	14.7	LOS B	7.0	49.6	0.79	0.80	0.79	20.9
2	T1	506	2.0	425	2.0	0.810	45.1	LOS D	13.5	95.8	0.97	0.91	1.05	17.1
Approach		1185	3.9	996 N1	3.9	0.810	27.7	LOS B	13.5	95.8	0.86	0.85	0.90	18.3
All Vehicles		2305	5.0	2084 N1	5.5	0.840	30.6	LOS C	13.5	95.8	0.83	0.80	0.88	15.3

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P3	East Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P41	North Stage 1	53	22.3	LOS C	0.1	0.1	0.89	0.89
P42	North Stage 2	53	49.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		211	42.5	LOS E			0.93	0.93

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

MOVEMENT SUMMARY

Site: I-28 [I-28 Hawkesbury - Railway]

Network: N101 [2030 Dev AM Darcy Road Network]

TCS 1571
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)
Common Control Group: CCG1 [TCS 1571]

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Railway Pde														
4	L2	144	1.5	144	1.5	0.384	29.6	LOS C	3.4	24.0	0.74	0.76	0.74	27.8
6	R2	18	0.0	18	0.0	0.104	52.7	LOS D	0.5	3.8	0.92	0.70	0.92	20.7
Approach		162	1.3	162	1.3	0.384	32.1	LOS C	3.4	24.0	0.76	0.76	0.76	26.8
East: Hawkesbury Rd														
7	L2	71	0.0	68	0.0	0.139	22.5	LOS B	1.6	14.7	0.53	0.56	0.53	34.0
8	T1	707	6.4	686	6.5	0.538	31.3	LOS C	12.4	88.2	0.93	0.82	0.93	12.4
Approach		777	5.8	754 N1	6.0	0.538	30.4	LOS C	12.4	88.2	0.89	0.80	0.89	15.4
West: Hawkesbury Rd														
2	T1	1536	3.1	1292	3.2	0.738	4.2	LOS A	7.5	54.2	0.33	0.32	0.33	26.2
3	R2	234	0.0	196	0.0	0.738	14.9	LOS B	5.6	40.1	0.72	0.71	0.73	37.9
Approach		1770	2.7	1489 N1	2.8	0.738	5.6	LOS A	7.5	54.2	0.38	0.37	0.39	31.6
All Vehicles		2709	3.5	2405 N1	4.0	0.738	15.2	LOS B	12.4	88.2	0.57	0.53	0.57	22.8

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	South Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P3	East Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	49.3	LOS E			0.95	0.95

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.

MOVEMENT SUMMARY

Site: I-27 [I-27 Hawkesbury - Alexandra]

Network: N101 [2030 Dev AM Darcy Road Network]

TCS 1571
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)
Common Control Group: CCG1 [TCS 1571]

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Alexandra Ave														
4	L2	31	0.0	31	0.0	1.195	244.4	LOS F	12.7	94.4	1.00	1.71	2.81	4.2
5	T1	66	3.2	66	3.2	1.195	239.8	LOS F	12.7	94.4	1.00	1.71	2.81	8.0
6	R2	219	15.4	219	15.4	1.195	244.4	LOS F	12.8	101.4	1.00	1.71	2.81	2.3
Approach		316	11.3	316	11.3	1.195	243.5	LOS F	12.8	101.4	1.00	1.71	2.81	3.8
East: Hawkesbury Road														
7	L2	200	18.9	196	19.2	0.588	12.1	LOS A	7.7	55.0	0.37	0.48	0.37	30.6
8	T1	629	1.9	613	1.9	0.588	18.2	LOS B	7.7	55.0	0.55	0.55	0.57	22.6
9	R2	49	0.0	48	0.0	0.588	59.1	LOS E	5.6	39.4	1.00	0.85	1.11	21.0
Approach		878	5.7	857 N1	5.7	0.588	19.1	LOS B	7.7	55.0	0.53	0.55	0.56	23.6
North: Alexandra Ave														
10	L2	68	0.0	68	0.0	0.284	41.2	LOS C	1.9	13.1	0.84	0.76	0.84	23.7
11	T1	242	0.9	242	0.9	0.858	58.1	LOS E	8.8	61.9	1.00	1.01	1.28	22.7
Approach		311	0.7	311	0.7	0.858	54.4	LOS D	8.8	61.9	0.97	0.96	1.18	22.8
West: Hawkesbury Road														
1	L2	15	7.1	15	7.1	1.206	253.9	LOS F	51.3	361.5	1.00	2.26	2.71	7.9
2	T1	1459	0.6	1459	0.6	1.206	244.8	LOS F	77.2	543.0	1.00	2.24	2.67	2.3
Approach		1474	0.7	1474	0.7	1.206	244.9	LOS F	77.2	543.0	1.00	2.24	2.67	2.4
All Vehicles		2979	3.3	2958 N1	3.3	1.206	159.3	LOS F	77.2	543.0	0.86	1.56	1.92	5.0

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	South Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P4	North Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	49.3	LOS E			0.95	0.95

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

APPENDIX D-7
2030 PM – WITHOUT DEVELOPMENT

MOVEMENT SUMMARY

Site: I-11 [2030 Base PM I-11 Briens - Redbank]

TCS 3213
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 140 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Redbank Road												
21	L2	444	0.7	0.701	47.1	LOS D	26.1	183.8	0.93	0.86	0.93	28.2
22	T1	184	0.0	0.639	53.5	LOS D	11.2	78.2	0.93	0.77	0.93	29.0
23	R2	171	4.3	0.744	65.2	LOS E	11.2	81.3	0.97	0.86	1.07	27.8
Approach		799	1.3	0.744	52.5	LOS D	26.1	183.8	0.94	0.84	0.96	28.3
East: Briens Road												
24	L2	21	10.0	0.785	31.2	LOS C	43.8	322.4	0.84	0.78	0.84	41.4
25	T1	2473	5.9	0.785	24.4	LOS B	43.9	323.1	0.84	0.77	0.84	43.8
26	R2	34	9.4	0.193	70.3	LOS E	2.2	16.4	0.95	0.73	0.95	27.4
Approach		2527	6.0	0.785	25.1	LOS B	43.9	323.1	0.84	0.77	0.84	43.4
North: Redbank Road												
27	L2	20	5.3	0.828	83.7	LOS F	6.6	46.5	1.00	0.93	1.32	24.9
28	T1	36	0.0	0.828	79.1	LOS F	6.6	46.5	1.00	0.93	1.32	23.7
29	R2	32	0.0	0.828	83.6	LOS F	6.6	46.5	1.00	0.93	1.32	21.2
Approach		87	1.2	0.828	81.8	LOS F	6.6	46.5	1.00	0.93	1.32	23.2
West: Briens Road												
30	L2	56	0.0	0.740	29.9	LOS C	40.0	287.4	0.81	0.75	0.81	37.7
31	T1	2361	3.4	0.740	23.5	LOS B	40.2	289.4	0.81	0.75	0.81	44.4
32	R2	143	2.2	0.783	78.4	LOS F	10.3	73.2	1.00	0.87	1.17	22.2
Approach		2560	3.2	0.783	26.7	LOS B	40.2	289.4	0.82	0.75	0.83	41.8
All Vehicles		5974	4.1	0.828	30.3	LOS C	43.9	323.1	0.84	0.77	0.86	39.1

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P5	South Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
P6	East Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
P7	North Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		158	64.3	LOS F			0.96	0.96

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.

MOVEMENT SUMMARY

Site: I-14 [I-14 Bridge - Darcy]

Network: N101 [2030 Base PM Darcy Road Network]

TCS 1630
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bridge Road														
1	L2	280	1.5	280	1.5	0.489	33.3	LOS C	7.3	51.4	0.78	0.78	0.78	25.2
2	T1	38	2.8	38	2.8	0.462	58.6	LOS E	3.3	23.9	0.97	0.78	0.97	17.4
3	R2	58	5.5	58	5.5	0.462	58.1	LOS E	3.3	23.9	0.97	0.78	0.97	14.4
Approach		376	2.2	376	2.2	0.489	39.7	LOS C	7.3	51.4	0.82	0.78	0.82	21.8
East: Darcy Road														
4	L2	178	3.0	138	3.8	0.826	32.4	LOS C	22.6	160.4	0.87	0.82	0.89	31.2
5	T1	1799	0.6	1381	0.8	0.826	28.3	LOS B	22.6	160.4	0.86	0.81	0.88	28.4
6	R2	20	5.3	16	6.8	0.031	14.4	LOS A	0.1	1.0	0.48	0.62	0.48	23.8
Approach		1997	0.9	1535 N1	1.2	0.826	28.5	LOS B	22.6	160.4	0.86	0.81	0.88	28.6
North: Coles Access														
7	L2	23	4.5	23	4.5	0.034	24.4	LOS B	0.5	3.7	0.65	0.48	0.65	15.8
8	T1	28	3.7	28	3.7	0.552	58.4	LOS E	3.0	21.4	1.00	0.78	1.00	17.1
9	R2	54	3.9	54	3.9	0.552	58.4	LOS E	3.0	21.4	1.00	0.78	1.00	14.8
Approach		105	4.0	105	4.0	0.552	50.9	LOS D	3.0	21.4	0.92	0.71	0.92	15.7
West: Darcy Road														
10	L2	67	1.6	67	1.6	0.488	26.3	LOS B	10.8	76.8	0.72	0.66	0.72	19.4
11	T1	683	1.7	683	1.7	0.488	20.7	LOS B	10.8	76.8	0.68	0.61	0.68	18.5
12	R2	258	4.1	258	4.1	0.849	51.6	LOS D	7.2	52.4	0.97	1.04	1.43	19.9
Approach		1008	2.3	1008	2.3	0.849	29.0	LOS C	10.8	76.8	0.76	0.73	0.88	19.2
All Vehicles		3487	1.5	3024 N1	1.8	0.849	30.8	LOS C	22.6	160.4	0.82	0.77	0.87	24.1

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P2	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95

MOVEMENT SUMMARY

Site: I-17 [I-17 Darcy - Mons - Institute]

Network: N101 [2030 Base PM Darcy Road Network]

TCS 2393
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Darcy Road														
1	L2	926	0.8	926	0.8	0.700	26.4	LOS B	12.5	88.3	0.71	0.76	0.71	14.7
2	T1	89	36.5	89	36.5	0.460	59.5	LOS E	2.3	17.2	0.99	0.75	0.99	20.2
Approach		1016	4.0	1016	4.0	0.700	29.3	LOS C	12.5	88.3	0.73	0.76	0.73	15.9
East: Institute Road														
4	L2	121	0.9	121	0.9	2.138	1072.8	LOS F	89.1	625.1	1.00	3.91	5.12	1.6
5	T1	911	0.0	911	0.0	2.138	1069.4	LOS F	89.8	628.7	1.00	3.99	5.12	1.7
6	R2	2	0.0	2	0.0	2.138	1072.7	LOS F	89.8	628.7	1.00	4.05	5.12	3.1
Approach		1034	0.1	1034	0.1	2.138	1069.8	LOS F	89.8	628.7	1.00	3.98	5.12	1.7
North: Mons Road														
7	L2	5	0.0	5	0.0	0.163	27.9	LOS B	2.8	20.0	0.68	0.56	0.68	31.6
8	T1	141	15.7	141	15.7	0.163	24.0	LOS B	2.8	20.0	0.67	0.54	0.67	26.4
9	R2	249	2.1	249	2.1	0.637	46.4	LOS D	7.9	56.2	0.96	0.89	1.08	20.0
Approach		396	6.9	396	6.9	0.637	38.1	LOS C	7.9	56.2	0.85	0.76	0.93	22.1
West: Darcy Road														
10	L2	71	0.3	71	0.3	0.050	4.7	LOS A	0.4	3.0	0.31	0.53	0.31	38.3
11	T1	37	0.3	37	0.3	0.459	42.5	LOS D	5.4	38.2	0.84	0.75	0.84	25.4
12	R2	348	1.8	348	1.8	0.459	39.9	LOS C	5.4	38.2	0.79	0.74	0.79	18.3
Approach		455	1.4	455	1.4	0.459	34.6	LOS C	5.4	38.2	0.72	0.71	0.72	22.5
All Vehicles		2901	2.6	2901	2.6	2.138	402.1	LOS F	89.8	628.7	0.84	1.90	2.32	3.3

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	54.3	LOS E			0.95	0.95

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.

MOVEMENT SUMMARY

Site: I-19 [I-19 Darcy - Dental Hospital - Marist]

Network: N101 [2030 Base PM Darcy Road Network]

TCS 3282
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Darcy Road														
4	L2	1	0.0	1	0.0	0.230	4.1	LOS A	0.4	3.0	0.04	0.04	0.04	22.7
5	T1	686	5.2	686	5.2	0.230	0.6	LOS A	0.4	3.0	0.03	0.03	0.03	38.6
6	R2	15	0.0	15	0.0	0.190	68.9	LOS E	0.6	3.9	1.00	0.69	1.00	9.3
Approach		702	5.1	702	5.1	0.230	2.0	LOS A	0.6	3.9	0.05	0.04	0.05	35.5
East: Dental hospital access														
7	L2	17	18.8	17	18.8	0.117	50.3	LOS D	0.5	4.3	0.87	0.70	0.87	4.2
9	R2	16	0.0	16	0.0	0.110	60.0	LOS E	0.5	3.8	0.95	0.69	0.95	3.8
Approach		33	9.7	33	9.7	0.117	55.0	LOS D	0.5	4.3	0.91	0.69	0.91	4.0
North: Darcy Road														
10	L2	15	0.0	14	0.0	0.615	8.7	LOS A	4.9	34.5	0.33	0.31	0.33	19.2
11	T1	960	3.4	897	3.5	0.615	5.0	LOS A	4.9	34.5	0.32	0.29	0.32	30.0
12	R2	3	0.0	3	0.0	0.038	67.2	LOS E	0.1	0.8	1.00	0.62	1.00	9.0
Approach		978	3.3	914 N1	3.5	0.615	5.3	LOS A	4.9	34.5	0.32	0.30	0.32	29.4
West: Marist HS														
1	L2	1	0.0	1	0.0	0.018	56.4	LOS D	0.1	0.5	0.91	0.62	0.91	3.9
3	R2	1	0.0	1	0.0	0.018	56.3	LOS D	0.1	0.5	0.91	0.62	0.91	3.9
Approach		2	0.0	2	0.0	0.018	56.4	LOS D	0.1	0.5	0.91	0.62	0.91	3.9
All Vehicles		1715	4.1	1650 N1	4.3	0.615	4.9	LOS A	4.9	34.5	0.22	0.20	0.22	30.1

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P3	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	North Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	54.3	LOS E			0.95	0.95

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.

MOVEMENT SUMMARY

Site: I-23 [I-23 Darcy - Hospital - WSU]

Network: N101 [2030 Base PM Darcy Road Network]

TCS 3281
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Darcy Road														
4	L2	43	4.9	43	4.9	0.458	40.0	LOS C	7.8	54.8	0.82	0.72	0.82	17.1
5	T1	552	6.0	552	6.0	0.458	39.1	LOS C	9.2	64.7	0.90	0.77	0.90	7.9
6	R2	38	2.8	38	2.8	0.083	38.9	LOS C	0.9	6.3	0.68	0.65	0.68	10.0
Approach		633	5.7	633	5.7	0.458	39.2	LOS C	9.2	64.7	0.88	0.76	0.88	8.7
East: Westmead Hospital access														
7	L2	72	1.5	72	1.5	0.199	28.7	LOS C	1.7	12.2	0.69	0.70	0.69	6.0
8	T1	1	0.0	1	0.0	0.199	25.6	LOS B	1.7	12.2	0.69	0.70	0.69	18.0
9	R2	98	1.1	98	1.1	0.674	61.7	LOS E	3.5	25.0	0.99	0.84	1.10	3.3
Approach		171	1.2	171	1.2	0.674	47.6	LOS D	3.5	25.0	0.86	0.78	0.92	4.1
North: Darcy Road														
10	L2	57	0.0	53	0.0	1.329	363.0	LOS F	23.5	165.0	1.00	2.52	3.12	2.0
11	T1	870	3.6	814	3.8	1.329	349.4	LOS F	23.5	165.0	1.00	2.48	3.05	2.1
12	R2	1	0.0	1	0.0	0.002	42.5	LOS D	0.0	0.2	0.86	0.60	0.86	19.2
Approach		928	3.4	868[N1]	3.6	1.329	349.9	LOS F	23.5	165.0	1.00	2.48	3.05	1.8
West: Car park														
1	L2	25	8.3	25	8.3	0.044	32.9	LOS C	0.6	4.6	0.69	0.68	0.69	14.7
2	T1	1	0.0	1	0.0	0.044	27.3	LOS B	0.6	4.6	0.69	0.68	0.69	17.1
3	R2	1	0.0	1	0.0	0.006	57.9	LOS E	0.0	0.2	0.92	0.59	0.92	9.4
Approach		27	7.7	27	7.7	0.044	33.6	LOS C	0.6	4.6	0.70	0.68	0.70	14.5
All Vehicles		1760	4.1	1700[N1]	4.2	1.329	198.7	LOS F	23.5	165.0	0.93	1.64	1.99	2.4

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P21	South Stage 1	53	54.3	LOS E	0.2	0.2	0.95	0.95
P22	South Stage 2	53	54.3	LOS E	0.2	0.2	0.95	0.95
P3	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P41	North Stage 1	53	54.3	LOS E	0.2	0.2	0.95	0.95
P42	North Stage 2	53	54.3	LOS E	0.2	0.2	0.95	0.95

MOVEMENT SUMMARY

Site: I-30 [I-30 Darcy - Hawkesbury]

Network: N101 [2030 Base PM Darcy Road Network]

TCS 1631
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
East: Hawkesbury Road														
8	T1	416	1.5	416	1.5	0.550	18.2	LOS B	9.1	64.3	0.69	0.62	0.69	20.6
9	R2	218	2.4	218	2.4	0.550	24.3	LOS B	4.6	32.8	0.89	0.79	0.89	17.6
Approach		634	1.8	634	1.8	0.550	20.3	LOS B	9.1	64.3	0.76	0.68	0.76	19.5
North: Darcy Road														
10	L2	121	7.8	90	9.9	0.081	12.7	LOS A	1.0	7.2	0.54	0.63	0.54	28.2
12	R2	830	3.5	611	4.7	1.085	138.0	LOS F	12.8	90.0	1.00	1.42	1.87	2.7
Approach		952	4.0	701 N1	5.3	1.085	121.9	LOS F	12.8	90.0	0.94	1.32	1.70	3.6
West: Hawkesbury Road														
1	L2	397	7.2	397	7.2	0.426	16.4	LOS B	5.3	37.2	0.77	0.78	0.77	19.5
2	T1	346	2.7	346	2.7	1.032	86.3	LOS F	17.0	121.7	1.00	1.20	1.47	10.8
Approach		743	5.1	743	5.1	1.032	48.9	LOS D	17.0	121.7	0.88	0.97	1.09	12.6
All Vehicles		2329	3.8	2078 N1	4.2	1.085	64.8	LOS E	17.0	121.7	0.86	1.00	1.20	8.6

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P3	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P41	North Stage 1	53	25.8	LOS C	0.1	0.1	0.90	0.90
P42	North Stage 2	53	54.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		211	47.1	LOS E			0.94	0.94

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

MOVEMENT SUMMARY

Site: I-28 [I-28 Hawkesbury - Railway]

Network: N101 [2030 Base PM Darcy Road Network]

TCS 1571
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)
Common Control Group: CCG1 [TCS 1571]

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Railway Pde														
4	L2	284	0.7	284	0.7	0.953	88.4	LOS F	14.4	101.4	1.00	1.14	1.55	14.8
6	R2	37	0.0	37	0.0	0.326	61.3	LOS E	1.3	9.1	0.96	0.75	0.96	18.9
Approach		321	0.7	321	0.7	0.953	85.3	LOS F	14.4	101.4	1.00	1.09	1.48	15.2
East: Hawkesbury Rd														
7	L2	59	0.0	46	0.0	0.103	21.9	LOS B	1.8	16.9	0.65	0.60	0.65	34.6
8	T1	1181	3.4	925	4.2	0.829	39.0	LOS C	17.1	120.2	0.94	0.92	1.03	10.5
Approach		1240	3.2	971 N1	4.0	0.829	38.1	LOS C	17.1	120.2	0.93	0.91	1.01	12.0
West: Hawkesbury Rd														
2	T1	907	4.0	907	4.0	0.579	2.9	LOS A	5.1	36.0	0.13	0.12	0.14	30.6
3	R2	151	1.4	151	1.4	0.579	33.9	LOS C	5.1	36.0	0.94	0.88	1.08	27.7
Approach		1058	3.7	1058	3.7	0.579	7.3	LOS A	5.1	36.0	0.25	0.23	0.28	28.8
All Vehicles		2619	3.1	2350 N1	3.4	0.953	30.7	LOS C	17.1	120.2	0.63	0.63	0.75	16.1

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	South Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P3	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	54.3	LOS E			0.95	0.95

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.

MOVEMENT SUMMARY

Site: I-27 [I-27 Hawkesbury - Alexandra]

Network: N101 [2030 Base PM Darcy Road Network]

TCS 1571
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)
Common Control Group: CCG1 [TCS 1571]

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Alexandra Ave														
4	L2	40	7.9	40	7.9	0.813	61.4	LOS E	10.2	72.2	1.00	0.95	1.15	14.1
5	T1	229	0.5	229	0.5	0.813	56.7	LOS E	10.2	72.2	1.00	0.95	1.15	22.8
6	R2	216	18.0	216	18.0	0.813	63.1	LOS E	10.2	72.2	1.00	0.93	1.20	8.1
Approach		485	8.9	485	8.9	0.813	60.0	LOS E	10.2	72.2	1.00	0.95	1.17	16.7
East: Hawkesbury Road														
7	L2	228	15.2	193	17.9	0.657	21.1	LOS B	7.8	55.0	0.58	0.65	0.58	23.8
8	T1	1163	0.4	951	0.5	0.657	16.8	LOS B	7.8	55.0	0.61	0.65	0.72	23.7
9	R2	96	0.0	78	0.0	0.657	16.3	LOS B	7.7	53.9	0.50	0.63	0.73	37.5
Approach		1487	2.7	1222[N1]	3.2	0.657	17.4	LOS B	7.8	55.0	0.60	0.65	0.70	25.0
North: Alexandra Ave														
10	L2	37	0.0	37	0.0	0.047	25.9	LOS B	0.8	5.3	0.61	0.67	0.61	29.5
11	T1	156	2.7	156	2.7	0.610	54.3	LOS D	5.4	38.8	0.99	0.80	0.99	23.5
Approach		193	2.2	193	2.2	0.610	48.9	LOS D	5.4	38.8	0.92	0.78	0.92	24.3
West: Hawkesbury Road														
1	L2	29	3.6	29	3.6	0.823	55.5	LOS D	14.4	101.6	1.00	0.96	1.12	24.0
2	T1	727	1.0	727	1.0	0.823	51.2	LOS D	14.4	101.6	1.00	0.96	1.12	9.5
Approach		756	1.1	756	1.1	0.823	51.4	LOS D	14.4	101.6	1.00	0.96	1.12	10.3
All Vehicles		2921	3.3	2655[N1]	3.6	0.823	37.1	LOS C	14.4	101.6	0.81	0.80	0.92	17.9

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	South Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	North Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	54.3	LOS E			0.95	0.95

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

APPENDIX D-8
2030 PM – WITH DEVELOPMENT

MOVEMENT SUMMARY

Site: I-11 [2030 Dev PM I-11 Briens - Redbank]

TCS 3213
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 140 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Redbank Road												
21	L2	457	0.7	0.722	47.6	LOS D	27.1	191.0	0.94	0.86	0.94	28.1
22	T1	190	0.0	0.670	54.1	LOS D	11.6	81.3	0.94	0.78	0.95	28.9
23	R2	175	4.2	0.779	66.9	LOS E	11.7	85.2	0.97	0.88	1.12	27.5
Approach		823	1.3	0.779	53.2	LOS D	27.1	191.0	0.94	0.85	0.98	28.2
East: Briens Road												
24	L2	22	9.8	0.785	31.2	LOS C	43.8	322.5	0.84	0.78	0.84	41.4
25	T1	2473	5.9	0.785	24.4	LOS B	43.9	323.2	0.84	0.77	0.84	43.8
26	R2	34	9.4	0.193	70.3	LOS E	2.2	16.4	0.95	0.73	0.95	27.4
Approach		2528	6.0	0.785	25.1	LOS B	43.9	323.2	0.84	0.77	0.84	43.3
North: Redbank Road												
27	L2	20	5.3	0.829	83.8	LOS F	6.6	46.9	1.00	0.93	1.32	24.9
28	T1	37	0.0	0.829	79.1	LOS F	6.6	46.9	1.00	0.93	1.32	23.7
29	R2	32	0.0	0.829	83.7	LOS F	6.6	46.9	1.00	0.93	1.32	21.2
Approach		88	1.2	0.829	81.8	LOS F	6.6	46.9	1.00	0.93	1.32	23.2
West: Briens Road												
30	L2	56	0.0	0.740	29.9	LOS C	40.0	287.4	0.81	0.75	0.81	37.7
31	T1	2361	3.4	0.740	23.5	LOS B	40.2	289.4	0.81	0.75	0.81	44.4
32	R2	147	2.2	0.801	79.2	LOS F	10.6	75.5	1.00	0.88	1.19	22.0
Approach		2563	3.2	0.801	26.9	LOS B	40.2	289.4	0.82	0.75	0.83	41.8
All Vehicles		6002	4.1	0.829	30.5	LOS C	43.9	323.2	0.85	0.78	0.86	39.0

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P5	South Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
P6	East Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
P7	North Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		158	64.3	LOS F			0.96	0.96

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.

MOVEMENT SUMMARY

Site: I-14 [I-14 Bridge - Darcy]

Network: N101 [2030 Dev PM Darcy Road Network]

TCS 1630
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bridge Road														
1	L2	280	1.5	280	1.5	0.495	33.3	LOS C	7.3	51.4	0.78	0.78	0.78	25.2
2	T1	38	2.8	38	2.8	0.489	58.9	LOS E	3.5	25.2	0.97	0.79	0.97	17.3
3	R2	63	5.0	63	5.0	0.489	58.4	LOS E	3.5	25.2	0.97	0.79	0.97	14.4
Approach		381	2.2	381	2.2	0.495	40.0	LOS C	7.3	51.4	0.83	0.78	0.83	21.7
East: Darcy Road														
4	L2	187	2.8	143	3.7	0.828	33.3	LOS C	23.1	163.3	0.88	0.83	0.90	30.8
5	T1	1815	0.6	1379	0.8	0.828	29.1	LOS C	23.1	163.3	0.87	0.82	0.90	28.0
6	R2	20	5.3	15	6.8	0.031	14.5	LOS A	0.1	1.0	0.48	0.62	0.48	23.8
Approach		2022	0.9	1538 N1	1.2	0.828	29.3	LOS C	23.1	163.3	0.86	0.82	0.89	28.2
North: Coles Access														
7	L2	23	4.5	23	4.5	0.034	24.4	LOS B	0.5	3.7	0.65	0.48	0.65	15.8
8	T1	28	3.7	28	3.7	0.552	58.4	LOS E	3.0	21.4	1.00	0.78	1.00	17.1
9	R2	54	3.9	54	3.9	0.552	58.4	LOS E	3.0	21.4	1.00	0.78	1.00	14.8
Approach		105	4.0	105	4.0	0.552	50.9	LOS D	3.0	21.4	0.92	0.71	0.92	15.7
West: Darcy Road														
10	L2	67	1.6	67	1.6	0.492	26.3	LOS B	10.9	77.6	0.72	0.66	0.72	19.4
11	T1	689	1.7	689	1.7	0.492	20.7	LOS B	10.9	77.6	0.69	0.61	0.69	18.5
12	R2	258	4.1	258	4.1	0.852	52.2	LOS D	7.3	52.7	0.97	1.05	1.44	19.7
Approach		1014	2.3	1014	2.3	0.852	29.1	LOS C	10.9	77.6	0.76	0.73	0.88	19.1
All Vehicles		3522	1.5	3038 N1	1.8	0.852	31.3	LOS C	23.1	163.3	0.83	0.78	0.88	23.9

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P2	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95

MOVEMENT SUMMARY

Site: I-17 [I-17 Darcy - Mons - Institute]

Network: N101 [2030 Dev PM Darcy Road Network]

TCS 2393
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Darcy Road														
1	L2	927	0.8	927	0.8	0.701	26.1	LOS B	12.5	88.0	0.70	0.75	0.70	14.8
2	T1	94	34.8	94	34.8	0.490	59.6	LOS E	2.4	18.2	0.99	0.75	0.99	20.2
Approach		1021	3.9	1021	3.9	0.701	29.2	LOS C	12.5	88.0	0.73	0.75	0.73	16.0
East: Institute Road														
4	L2	121	0.9	121	0.9	2.186	1116.2	LOS F	92.5	648.8	1.00	3.97	5.20	1.6
5	T1	934	0.0	934	0.0	2.186	1112.7	LOS F	93.2	652.5	1.00	4.05	5.20	1.6
6	R2	2	0.0	2	0.0	2.186	1116.1	LOS F	93.2	652.5	1.00	4.11	5.20	3.0
Approach		1057	0.1	1057	0.1	2.186	1113.1	LOS F	93.2	652.5	1.00	4.04	5.20	1.6
North: Mons Road														
7	L2	5	0.0	5	0.0	0.184	27.5	LOS B	3.2	22.8	0.68	0.56	0.68	31.7
8	T1	159	13.9	159	13.9	0.184	23.7	LOS B	3.2	22.8	0.67	0.55	0.67	26.5
9	R2	249	2.1	249	2.1	0.637	46.4	LOS D	7.9	56.2	0.96	0.89	1.08	20.0
Approach		413	6.6	413	6.6	0.637	37.4	LOS C	7.9	56.2	0.85	0.75	0.92	22.3
West: Darcy Road														
10	L2	71	0.3	71	0.3	0.050	4.8	LOS A	0.4	3.0	0.32	0.53	0.32	38.3
11	T1	42	0.2	42	0.2	0.474	42.6	LOS D	5.6	39.4	0.85	0.75	0.85	25.4
12	R2	353	1.8	353	1.8	0.474	41.6	LOS C	5.6	39.4	0.82	0.75	0.82	17.9
Approach		466	1.4	466	1.4	0.474	36.0	LOS C	5.6	39.7	0.75	0.72	0.75	22.1
All Vehicles		2958	2.5	2958	2.5	2.186	418.8	LOS F	93.2	652.5	0.85	1.92	2.36	3.2

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	54.3	LOS E			0.95	0.95

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.

MOVEMENT SUMMARY

Site: I-19 [I-19 Darcy - Dental Hospital - Marist]

Network: N101 [2030 Dev PM Darcy Road Network]

TCS 3282
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Darcy Road														
4	L2	1	0.0	1	0.0	0.232	4.1	LOS A	0.4	3.0	0.04	0.04	0.04	22.7
5	T1	691	5.1	691	5.1	0.232	0.6	LOS A	0.4	3.0	0.03	0.03	0.03	38.6
6	R2	15	0.0	15	0.0	0.190	68.9	LOS E	0.6	3.9	1.00	0.69	1.00	9.3
Approach		707	5.0	707	5.0	0.232	2.0	LOS A	0.6	3.9	0.05	0.04	0.05	35.5
East: Dental hospital access														
7	L2	17	18.8	17	18.8	0.117	50.3	LOS D	0.5	4.3	0.87	0.70	0.87	4.2
9	R2	16	0.0	16	0.0	0.110	60.0	LOS E	0.5	3.8	0.95	0.69	0.95	3.8
Approach		33	9.7	33	9.7	0.117	55.0	LOS D	0.5	4.3	0.91	0.69	0.91	4.0
North: Darcy Road														
10	L2	15	0.0	14	0.0	0.630	8.9	LOS A	5.3	37.1	0.35	0.33	0.35	19.1
11	T1	983	3.3	919	3.4	0.630	5.1	LOS A	5.3	37.1	0.33	0.30	0.33	29.8
12	R2	3	0.0	3	0.0	0.038	67.2	LOS E	0.1	0.8	1.00	0.62	1.00	9.0
Approach		1001	3.2	936 N1	3.4	0.630	5.4	LOS A	5.3	37.1	0.33	0.31	0.33	29.2
West: Marist HS														
1	L2	1	0.0	1	0.0	0.018	56.4	LOS D	0.1	0.5	0.91	0.62	0.91	3.9
3	R2	1	0.0	1	0.0	0.018	56.3	LOS D	0.1	0.5	0.91	0.62	0.91	3.9
Approach		2	0.0	2	0.0	0.018	56.4	LOS D	0.1	0.5	0.91	0.62	0.91	3.9
All Vehicles		1743	4.1	1677 N1	4.2	0.630	5.0	LOS A	5.3	37.1	0.23	0.20	0.23	30.0

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P3	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	North Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	54.3	LOS E			0.95	0.95

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.

MOVEMENT SUMMARY

Site: I-23 [I-23 Darcy - Hospital - WSU]

Network: N101 [2030 Dev PM Darcy Road Network]

TCS 3281
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Darcy Road														
4	L2	43	4.9	43	4.9	0.463	40.1	LOS C	7.8	55.0	0.82	0.71	0.82	17.1
5	T1	558	5.9	558	5.9	0.463	39.1	LOS C	9.3	65.2	0.90	0.77	0.90	7.9
6	R2	38	2.8	38	2.8	0.083	39.0	LOS C	0.9	6.3	0.68	0.65	0.68	10.0
Approach		639	5.6	639	5.6	0.463	39.2	LOS C	9.3	65.2	0.88	0.76	0.88	8.7
East: Westmead Hospital access														
7	L2	72	1.5	72	1.5	0.199	28.7	LOS C	1.7	12.2	0.69	0.70	0.69	6.0
8	T1	1	0.0	1	0.0	0.199	25.6	LOS B	1.7	12.2	0.69	0.70	0.69	18.0
9	R2	98	1.1	98	1.1	0.674	61.7	LOS E	3.5	25.0	0.99	0.84	1.10	3.3
Approach		171	1.2	171	1.2	0.674	47.6	LOS D	3.5	25.0	0.86	0.78	0.92	4.1
North: Darcy Road														
10	L2	57	0.0	53	0.0	1.364	393.3	LOS F	23.5	165.0	1.00	2.62	3.26	1.8
11	T1	893	3.5	836	3.7	1.364	379.1	LOS F	23.5	165.0	1.00	2.59	3.18	1.9
12	R2	1	0.0	1	0.0	0.002	42.5	LOS C	0.0	0.2	0.86	0.60	0.86	19.2
Approach		951	3.3	890[N1]	3.5	1.364	379.5	LOS F	23.5	165.0	1.00	2.59	3.18	1.6
West: Car park														
1	L2	25	8.3	25	8.3	0.044	32.9	LOS C	0.6	4.6	0.69	0.68	0.69	14.7
2	T1	1	0.0	1	0.0	0.044	27.3	LOS B	0.6	4.6	0.69	0.68	0.69	17.1
3	R2	1	0.0	1	0.0	0.006	57.9	LOS E	0.0	0.2	0.92	0.59	0.92	9.4
Approach		27	7.7	27	7.7	0.044	33.6	LOS C	0.6	4.6	0.70	0.68	0.70	14.5
All Vehicles		1788	4.0	1727[N1]	4.1	1.364	215.4	LOS F	23.5	165.0	0.93	1.70	2.07	2.3

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P21	South Stage 1	53	54.3	LOS E	0.2	0.2	0.95	0.95
P22	South Stage 2	53	54.3	LOS E	0.2	0.2	0.95	0.95
P3	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P41	North Stage 1	53	54.3	LOS E	0.2	0.2	0.95	0.95
P42	North Stage 2	53	54.3	LOS E	0.2	0.2	0.95	0.95

MOVEMENT SUMMARY

Site: I-30 [I-30 Darcy - Hawkesbury]

Network: N101 [2030 Dev PM Darcy Road Network]

TCS 1631
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
East: Hawkesbury Road														
8	T1	418	1.5	418	1.5	0.528	17.2	LOS B	8.8	62.2	0.66	0.58	0.66	21.3
9	R2	219	2.4	219	2.4	0.528	24.1	LOS B	4.5	31.6	0.88	0.78	0.88	17.6
Approach		637	1.8	637	1.8	0.528	19.6	LOS B	8.8	62.2	0.73	0.65	0.73	19.9
North: Darcy Road														
10	L2	126	7.5	92	9.6	0.083	12.7	LOS A	1.0	7.3	0.54	0.63	0.54	28.2
12	R2	848	3.4	610	4.7	0.960	66.2	LOS E	12.7	89.8	0.99	1.07	1.33	5.3
Approach		974	4.0	701 N1	5.3	0.960	59.2	LOS E	12.7	89.8	0.93	1.01	1.23	6.9
West: Hawkesbury Road														
1	L2	402	7.1	402	7.1	0.432	16.5	LOS B	5.4	37.8	0.77	0.78	0.77	19.5
2	T1	354	2.7	354	2.7	1.057	103.2	LOS F	18.2	130.0	1.00	1.29	1.59	9.4
Approach		756	5.0	756	5.0	1.057	57.1	LOS E	18.2	130.0	0.88	1.02	1.15	11.2
All Vehicles		2368	3.7	2094 N1	4.2	1.057	46.4	LOS D	18.2	130.0	0.85	0.91	1.05	11.2

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P3	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P41	North Stage 1	53	25.8	LOS C	0.1	0.1	0.90	0.90
P42	North Stage 2	53	54.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		211	47.1	LOS E			0.94	0.94

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

MOVEMENT SUMMARY

Site: I-28 [I-28 Hawkesbury - Railway]

Network: N101 [2030 Dev PM Darcy Road Network]

TCS 1571
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)
Common Control Group: CCG1 [TCS 1571]

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Railway Pde														
4	L2	284	0.7	284	0.7	0.935	80.7	LOS F	13.7	96.6	1.00	1.11	1.48	15.8
6	R2	37	0.0	37	0.0	0.366	62.1	LOS E	1.3	9.2	0.97	0.75	0.97	18.7
Approach		321	0.7	321	0.7	0.935	78.5	LOS F	13.7	96.6	1.00	1.07	1.43	16.1
East: Hawkesbury Rd														
7	L2	59	0.0	44	0.0	0.103	22.2	LOS B	1.7	16.6	0.65	0.60	0.65	34.5
8	T1	1181	3.4	894	4.3	0.829	38.9	LOS C	16.3	114.3	0.93	0.92	1.03	10.6
Approach		1240	3.2	938[N1]	4.1	0.829	38.0	LOS C	16.3	114.3	0.92	0.91	1.01	12.0
West: Hawkesbury Rd														
2	T1	907	4.0	907	4.0	0.581	2.9	LOS A	4.9	34.8	0.13	0.12	0.14	30.8
3	R2	151	1.4	151	1.4	0.581	34.0	LOS C	4.9	34.8	0.93	0.87	1.07	27.7
Approach		1058	3.7	1058	3.7	0.581	7.3	LOS A	4.9	34.8	0.24	0.23	0.27	28.9
All Vehicles		2619	3.1	2317[N1]	3.5	0.935	29.6	LOS C	16.3	114.3	0.62	0.62	0.73	16.5

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	South Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P3	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	54.3	LOS E			0.95	0.95

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.

MOVEMENT SUMMARY

Site: I-27 [I-27 Hawkesbury - Alexandra]

Network: N101 [2030 Dev PM Darcy Road Network]

TCS 1571
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)
Common Control Group: CCG1 [TCS 1571]

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Alexandra Ave														
4	L2	40	7.9	40	7.9	0.780	58.7	LOS E	9.9	70.5	1.00	0.92	1.11	14.6
5	T1	229	0.5	229	0.5	0.780	54.1	LOS D	9.9	70.5	1.00	0.92	1.11	23.4
6	R2	216	18.0	216	18.0	0.780	60.3	LOS E	9.9	70.5	1.00	0.91	1.14	8.4
Approach		485	8.9	485	8.9	0.780	57.2	LOS E	9.9	70.5	1.00	0.92	1.12	17.2
East: Hawkesbury Road														
7	L2	228	15.2	192	18.0	0.666	21.7	LOS B	7.8	55.0	0.61	0.66	0.61	23.5
8	T1	1163	0.4	946	0.5	0.666	18.1	LOS B	7.8	55.0	0.65	0.69	0.76	22.9
9	R2	96	0.0	78	0.0	0.666	18.1	LOS B	7.8	55.0	0.55	0.67	0.79	36.3
Approach		1487	2.7	1216 N1	3.2	0.666	18.7	LOS B	7.8	55.0	0.64	0.68	0.74	24.1
North: Alexandra Ave														
10	L2	37	0.0	37	0.0	0.048	26.5	LOS B	0.8	5.4	0.62	0.67	0.62	29.2
11	T1	156	2.7	156	2.7	0.610	54.3	LOS D	5.4	38.8	0.99	0.80	0.99	23.5
Approach		193	2.2	193	2.2	0.610	49.0	LOS D	5.4	38.8	0.92	0.78	0.92	24.2
West: Hawkesbury Road														
1	L2	29	3.6	29	3.6	0.827	55.8	LOS D	14.5	102.5	1.00	0.96	1.12	23.9
2	T1	727	1.0	727	1.0	0.827	51.6	LOS D	14.5	102.5	1.00	0.97	1.13	9.4
Approach		756	1.1	756	1.1	0.827	51.7	LOS D	14.5	102.5	1.00	0.97	1.13	10.3
All Vehicles		2921	3.3	2649 N1	3.6	0.827	37.4	LOS C	14.5	102.5	0.83	0.81	0.93	17.8

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	South Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	North Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P1	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	54.3	LOS E			0.95	0.95

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

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