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Prepared for

ERILYAN ON BEHALF OF RAMSAY HEALTH CARE LTD

Transport Impact Assessment

Westmead Private Hospital – Stage 4 Planning Proposal
12, 12A, 14 & 14B Mons Road and 13 Darcy Road, Westmead

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1 Introduction

1.1 Background

Ason Group has been engaged by Erilyan on behalf of Ramsay Health Care Ltd to prepare a Transport Impact Assessment (TIA) in relation to Westmead Private Hospital located at 12, 12A, 14 & 14B Mons Road and 13 Darcy Road, Westmead (the Site). It is proposed to expand the Site for additional health services facilities which would require additional building height and a floor space ratio exceeding the maximum currently allowed by the Parramatta Local Environmental Plan 2011 (the Proposal).

1.2 Site Planning Context

1.2.1 Westmead Redevelopment

The Westmead Health and Education Precinct (the Precinct) dominates the local context as one of the largest integrated health, research, education and training precincts in the world. At the local, precinct- wide level, more than $3 billion has been committed by government, universities and the private sector to upgrade and expand the Precinct's health services, education and medical research facilities over the coming years.

Westmead has been identified by the NSW Government as a State Significant Development site due to the size, economic value and importance to Parramatta and Western Sydney. By 2036 the number of full-time staff working across Westmead will increase to more than 30,000 and the number of students will expand to more than 10,000.

An important part of the Westmead Redevelopment is developing a transport solution that makes Westmead more workable, liveable and accessible. Throughout 2015 a comprehensive review of transport options was undertaken across the Precinct and the region. A range of future transport solutions were analysed against the needs of the Precinct including the Parramatta Light Rail, cross-regional bus routes to strengthen the reach of public transport as well as improvements to the walking and cycling networks with a focus on connecting the precinct with the Westmead train station and Parramatta CBD.

The long term plan for the Westmead Redevelopment is to ease parking stress by creating new car parking, working with Government to improve public transport and improving existing parking areas, roads and wayfinding. The car parking solution was jointly led by Western Sydney Local Health District, The Children's Hospital at Westmead and Health Infrastructure. The project has committed to no net loss of car parking spaces during the Westmead Redevelopment.

1.2.2 NSW Long Term Transport Master Plan

The NSW Government released the NSW Long Term Transport Master Plan (LTTMP) in December 2012, with the first annual update released in December 2013. The LTTMP presents a 20-year vision for transport planning through to 2031 and sets out 220 short, medium and long term actions to integrate, grow, modernise and manage the transport network across NSW.

The LTTMP provides integrated advice with regards to transport policy; identifying solutions to develop and manage the NSW's transport system. Forming part of the LTTMP is Sydney's Rail Future, a long-term plan to increase the capacity of Sydney's rail network and update existing infrastructure.

The importance of Westmead as part of the broader Parramatta region was recognised, with the following relevant transport actions identified:

- Improved cycleways and better connections developed through or around Cumberland Hospital to Westmead.
- Better public transport links to Westmead Hospital and Cumberland Hospital and Heritage Precinct.
- Improved frequency of public transport services between Parramatta CBD and Westmead.

The above actions have significant emphasis on non-car travel modes, with the overall intention to improve the competitiveness of public transport compared to car travel. Figure 4.44 from the LTTMP (shown in Figure **1**) also demonstrates that more than two million of the car trips made every weekday are less than two kilometres—generally considered a comfortable walking distance for most people.

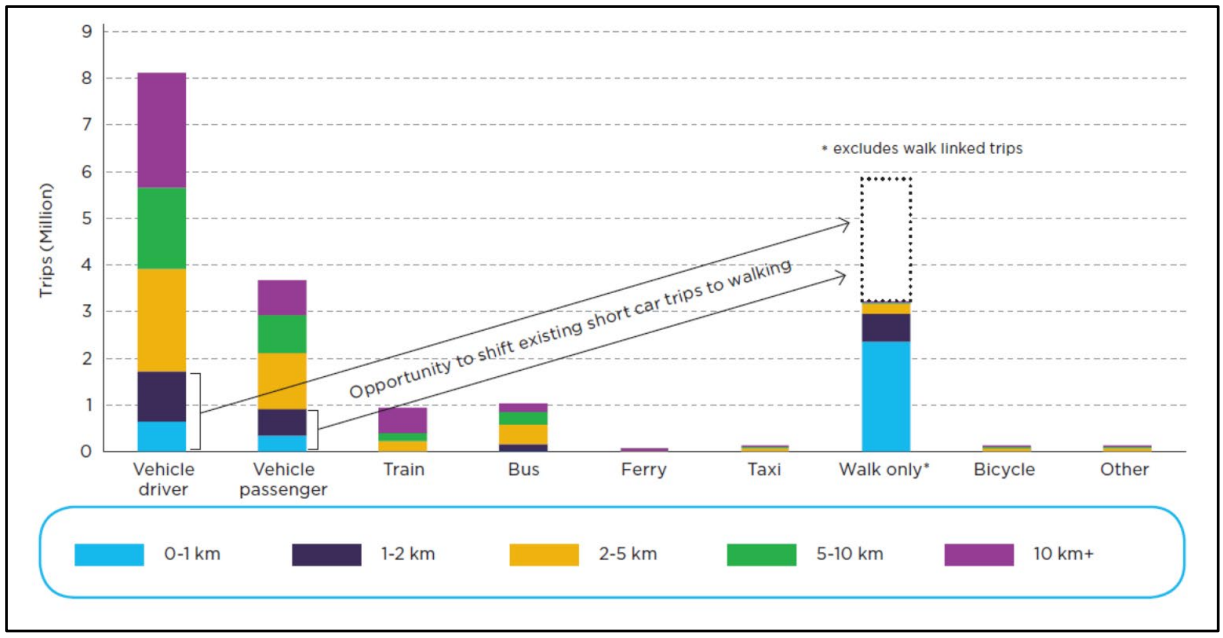

Figure 1: Opportunity to replace short car trips with walking

1.2.3 Sydney's Bus Future

Sydney's Bus Future, December 2013 outlines the NSW Government's long term plan for the bus network to meet customer needs. The proposed upgrade for the Sydney bus network will include the addition of new rapid bus routes while maintaining and improving elements of the existing bus network, such as cross-city services on Metro bus routes.

Rapid bus routes will offer faster and more reliable bus travel for commuters between major city centres as extra services are planned to be implemented and bus stops to be further dispersed along routes (generally spaced 800m to 1km apart). Existing suburban and local service routes will continue to provide commuter access to local, neighbourhood destinations. An additional 20 suburban routes are to be introduced. Proposed network upgrades would fill the gaps in the heavy rail network, strengthening links from the Parramatta region to areas including Norwest, Castle Hill, Macquarie Park, Ryde, Bankstown, and Liverpool. The proposed rapid bus routes connecting with Parramatta are shown in

Figure 2. The Rouse Hill / Norwest route is along the T-way adjacent to the Site.

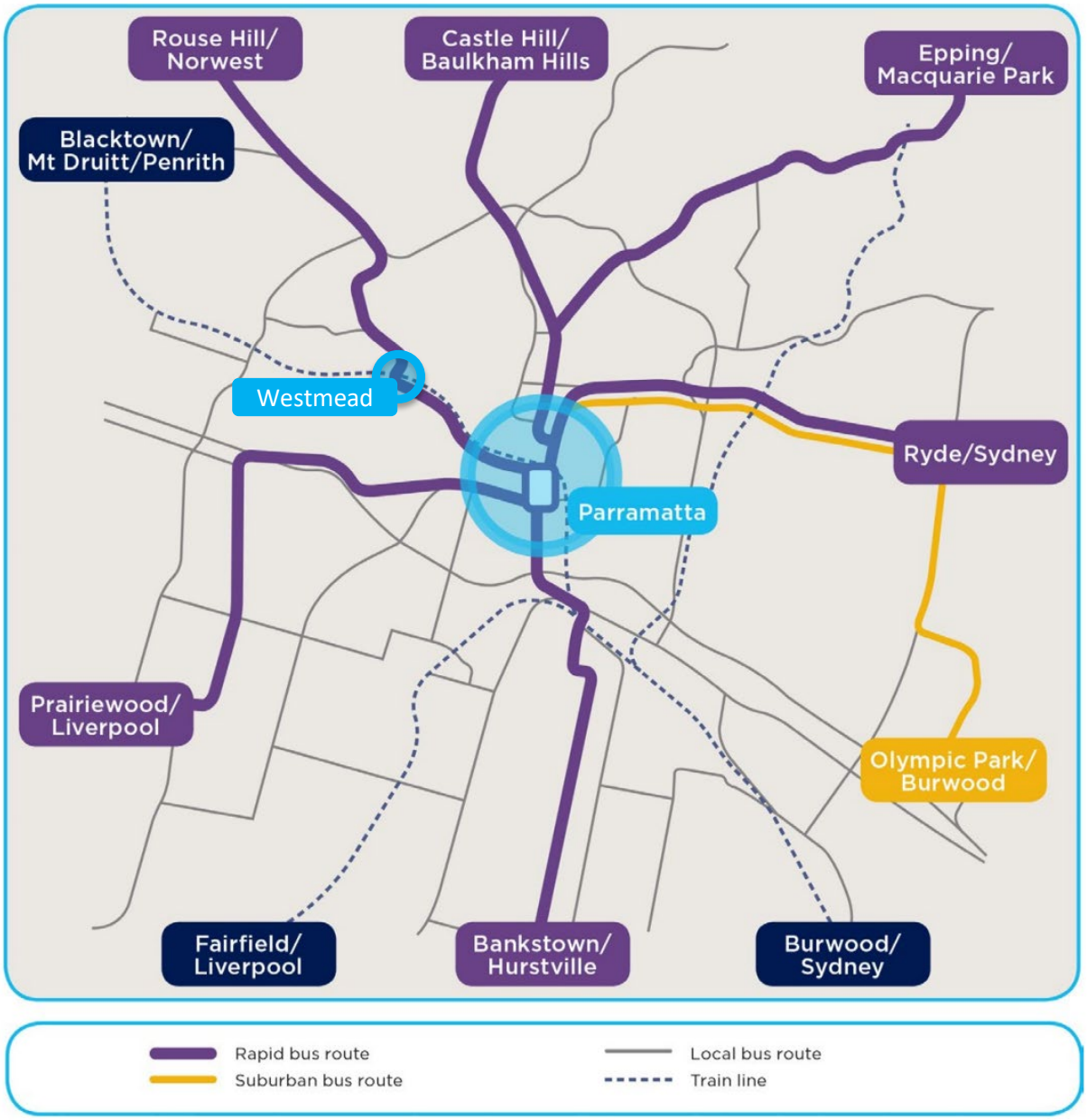

Figure 2: Rapid and Suburban Bus Routes Supporting Parramatta

port for NSW (TfNSW) has indicated that future bus timetabling is expected to include significant increases to the number of bus services along the North-West T-way, which extends along Mons Road, east of the Site, and continues down Darcy Road towards Parramatta.

1.2.4 Parramatta Light Rail

Parramatta Light Rail (PLR) is one of the NSW Government's latest major infrastructure projects being delivered to serve a growing Sydney. Stage 1 will connect Westmead to Carlingford via Parramatta CBD and Camellia with a two-way track spanning 12 kilometres. This will be the first stage of the PLR project and is expected to open in 2023. The route will link Parramatta's CBD and Train Station to the

Precinct, Parramatta North Urban Transformation Program, the new Western Sydney Stadium, the Camellia Precinct, the new Powerhouse Museum and Riverside Theatres Cultural Hub, the private and social housing redevelopment at Telopea, Rosehill Gardens Racecourse and three Western Sydney University campuses. Planning work for Stage 2 is being developed in collaboration with Sydney Metro West. An extension from Carlingford to Epping is also being investigated. **Figure 3** shows the proposed stops in relation to the Precinct and Site.

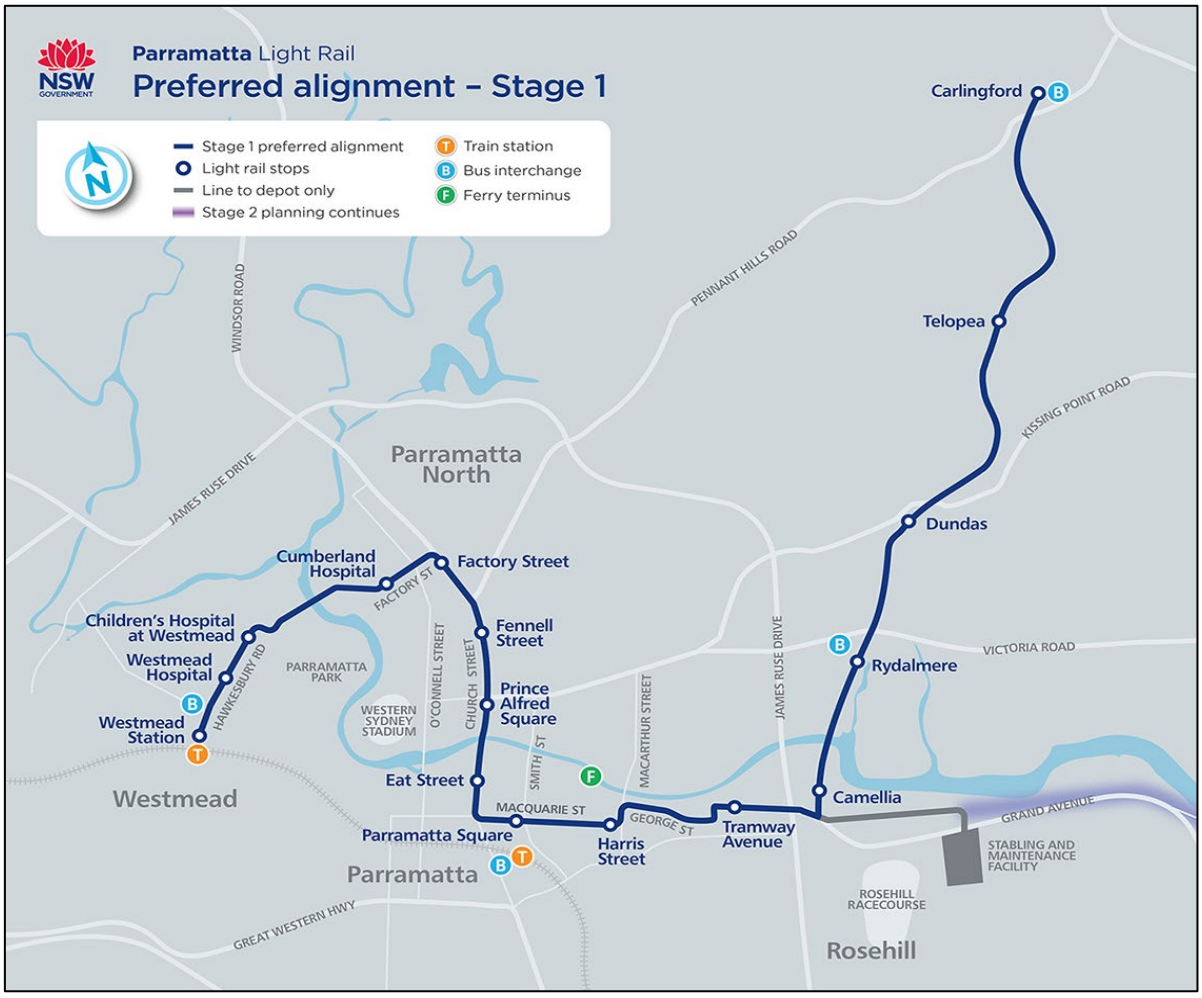

Figure 3: Parramatta Light Rail

1.3 Document References

This TIA report provides an assessment of the relevant traffic, transport and parking implications of the Proposal. In preparing this TIA, Ason Group has referenced key planning documents, these include:

- Parramatta Development Control Plan 2011 (PDCP)
- Parramatta Local Environmental Plan 2011 (PLEP)

This TIA also references general access, traffic and parking guidelines, including:

- Roads and Maritime Services, Guide to Traffic Generating Developments (RMS Guide)
- RMS Technical Direction TDT 2013/04a – Updated Traffic Surveys (RMS TDT/04a)
- Australian Standards 2980 series (AS2890).

2 Overview of Proposal

2.1 Summary of the Planning Proposal

Whilst a health services facility is already permitted with consent in the B4 zone pursuant to the PLEP2011, potential expansion of Westmead Private Hospital necessitates additional building height and FSR on the Site.

As such, it is proposed to amend the Parramatta Local Environmental Plan 2011 (PLEP2011) to allow additional building height and FSR to support the future development of the site for the extension of Westmead Private Hospital, as summarised below.

Table 1: Summary of Planning Proposal Changes

Control	PLEP2011	Proposed
FSR	1.5 : 1	2.0:1
Building Height	12m	68.05m

2.2 Indicative Yield

The Proposal includes the addition of a further level of consultation suites over Stage 3, an attached building with Emergency Department (ED) to the ground floor; Intensive Care Unit (ICU), Critical Care Unit (CCU) wards, car parking and 9 In levels.

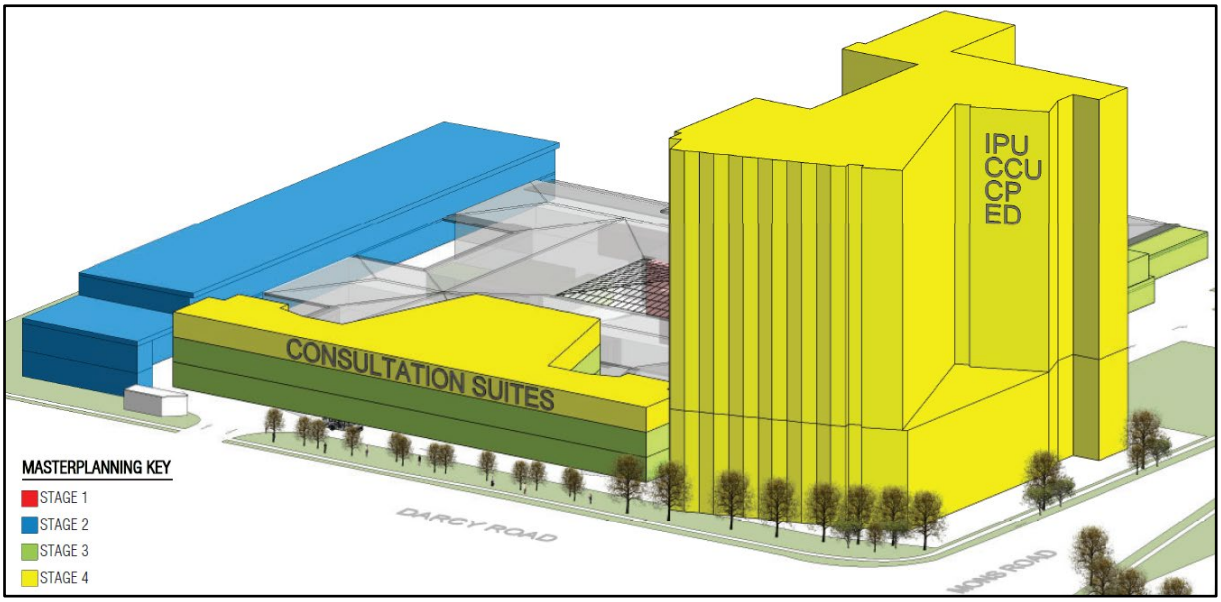

Figure 4: Indicative Concept Master Plan

The stacking and massing for Stage 4 has generally been developed in reference to the urban planning recommendations of having the Darcy Road elevation at a lower height and the Mons Road elevation stacked higher to create a gateway for Mons Road.

Table 2 demonstrates this concept and shows 8 floors of parking over the Emergency Department, and 9 floors of 'In Patient Unit' facilities (IPU) above this. This reflects the most desirable outcome with both hospital and parking incorporated on-site. Each parking level has approximately 60 spaces.

Table 2: Proposed

Level	Use	GFA (m^2)
Stage 3		
00	New foyer and entry space	218
01	29 bed IPU, 2 operating rooms, associated clinical and staff areas	1,601
02	13 consulting suites	1,356
	Total	3,175
Stage 4		
00	12 treatment bay ED, 2 resus bays, clinical/staff areas	1,429
01	Car park, ICU expansion	1,070
02	Car park	1,456
03	Car park, 13 consulting suites	100
04	Car park	100
05	Car park	100
06	Car park	100
07	Car park	100
08	Car park	100
09	34 bed CCU, associated clinical and staff areas	1,550
10	34 bed IPU, associated clinical and staff areas	1,550
11	34 bed IPU, associated clinical and staff areas	1,550
12	34 bed IPU, associated clinical and staff areas	1,550
13	34 bed IPU, associated clinical and staff areas	1,550
14	34 bed IPU, associated clinical and staff areas	1,550
15	34 bed IPU, associated clinical and staff areas	1,550
16	34 bed IPU, associated clinical and staff areas	1,550
17	34 bed IPU, associated clinical and staff areas	1,550
18	Plant room	0
	Total	18,505

3 Existing Conditions

3.1 Site and Location

The Site — known as Westmead Private Hospital — includes consolidated areas of 12, 12a, 14 and 14B Mons Road and 13 Darcy Road. It has frontages to Mons Road to the east and Darcy Road to the south. To the north, the Site adjoins the Westmead Specialist Centre providing a variety of medical suites and services. A currently vacant allotment is located to the east forming an at-grade car park. To the south there are sports fields located on the opposite side of Darcy Road and to the west the site is a dwelling house and the Mayflower Retirement Village.

In its existing state, Westmead Private Hospital occupies a 2-3 storey building comprising a total of 191 overnight beds and 23 procedural rooms. These facilities allow the hospital to offer a multitude of services and specialties. The Site and its location are shown in **Figure 5**.

Figure 5: Site and Location

The Westmead precinct (the Precinct) is one of the largest health, education, research and training precincts in Australia and a key provider of jobs for the greater Parramatta and western Sydney region. The Precinct includes the following key services as shown in **Figure 6**.

- Westmead Hospital
- The Children's Hospital at Westmead
- Cumberland Hospital
- Pathology West - ICPMR Westmead
- The University of Sydney
- The Westmead Institute for Medical Research
- Children's Medical Research Institute
- Westmead Research Hub
- Westmead Private Hospital
- Western Sydney University
- Ronald McDonald House at Westmead

The Precinct is located in the southern section of the Western Sydney Local Area Health District (WSLHD), with the associated primary health catchment currently extending to the west and north. An increasing number of specialist services and expanding state-of-the-art research and teaching facilities planned for the Precinct would attract staff, students and visitors from a broader catchment, including areas on a regional, national, and global scale.

Figure 6: Westmead Precinct Key Services

The hospital has a full range of medical services, a number of theatres and associated consulting suites. General visiting hours are from 10am to 12pm and 3pm to 8pm. Maternity visiting hours for friends and relatives are from 11am to 12pm and 6pm to 8pm. Consulting suites typically schedule consults between 9am and 5pm Monday to Friday.

3.2 Active Transport Network

3.2.1 Pedestrian Network

The accessibility of the Site to surrounding land-uses is shown in **Figure 7** which demonstrates 2.0km walkable catchment, as nominated by Sydney's Walking Future, to and from the Site. This walking catchment includes many of the key Precinct services shown in **Figure 6**.

In 2017, City of Parramatta, in partnership with the NSW Government, delivered a final Parramatta CBD Pedestrian Strategy designed to enhance the walking experience within Parramatta.

As the CBD undergoes significant redevelopment, the Pedestrian Strategy aims to guide City planning for streets and city areas that are accessible, safe and prioritised for pedestrians. Drawing on best practice, walkable city centres and the unique character and opportunities of Parramatta, the key objective for walking in the CBD is to:

- prioritise the time, safety and amenities of pedestrians
- enhance and activate spaces and streets to support the economy
- capitalise on the city transformation to benefit walking
- improve the current and future pedestrian network
- grow walking mode share and support the use of public transport.

The Site is contained within a well-defined and accessible pedestrian network.

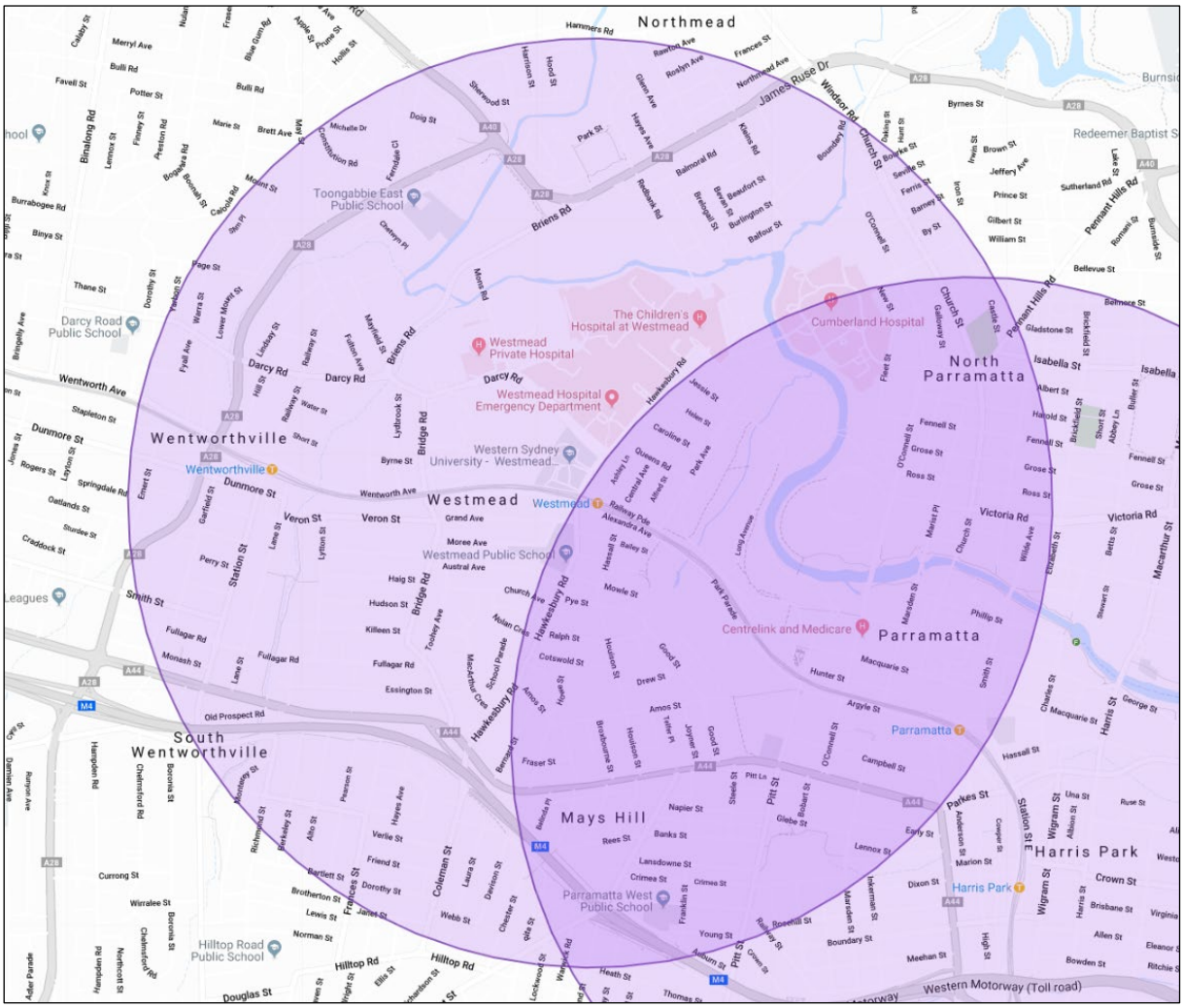

Figure 7: 2km Walking Catchment for the Site

3.2.2 Bicycle Network

The City of Parramatta is planning to deliver active transport infrastructure through the release of the Parramatta Bike Plan and the Parramatta Ways Walking Strategy. The flat surrounds and connecting cycleways of Parramatta's CBD and suburbs make it relatively easy to travel by bicycle.

Parramatta has an extensive network of cycleways including:

- The Parramatta Valley Cycleway which follows the Parramatta River from Parramatta Park to Morrison Bay Park in Ryde and heads west along dedicated bike paths. Cyclists can continue to Parramatta CBD or utilise the connection to Sydney Olympic Park via the Silverwater Bridge.
- Transitways to the North-West and Liverpool both include shared pedestrian and cycle paths offering a good route to Liverpool via Wetherill Park and Rouse Hill adjacent to Old Windsor Road.

- M4 Motorway Viaduct Route links Auburn, Granville, Holroyd and the Parramatta CBD via Good Street or Mays Hill.
- Parramatta to Liverpool Rail Trail is nearly 17km long and runs parallel to the railway line through Merrylands, Yennora and Fairfield to Liverpool.

The local bicycle network is illustrated in **Figure 8**.

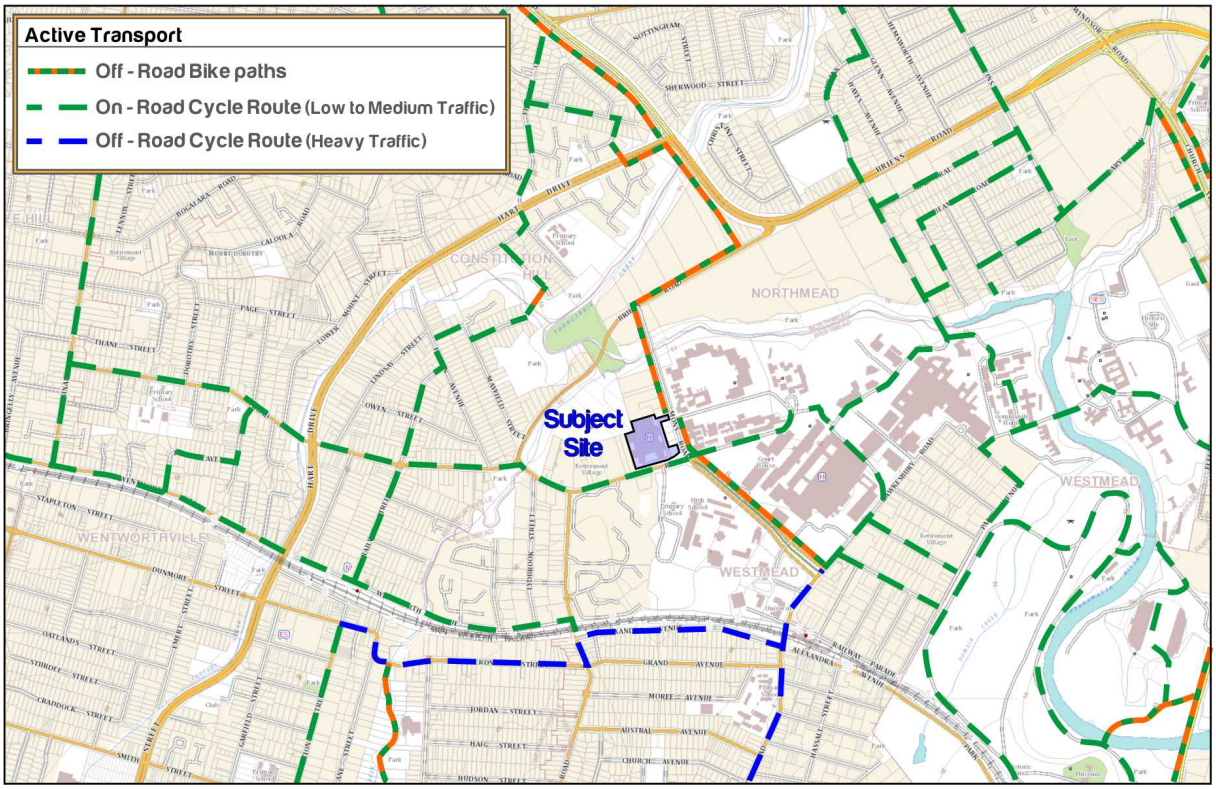

Figure 8: Existing Bicycle Network

3.3 Public Transport

The Integrated Public Transport Service Planning Guidelines, Sydney Metropolitan Area (TfNSW, December 2013), states that train services influence the travel mode choices of areas within 800 metres walking distance (approximately 10 minutes) of a train station. Sections 3.2.1 and 3.2.2 demonstrate that the proximity of the Site to Westmead Station easily satisfies this criterion and therefore, provides an excellent opportunity to affect mode shift away from car use.

3.3.1 Rail Services

It is noteworthy that the Site is located approximately 800m to the north-west of Westmead Railway Station and 2.5km north-west of Parramatta Railway Station. These two stations are serviced by the Airport, Inner West & South Line services and provide connections to the Liverpool, Campbelltown,

Fairfield, Bankstown, and Sydney CBD areas. Proximity to this existing rail infrastructure is shown in **Figure 9**.

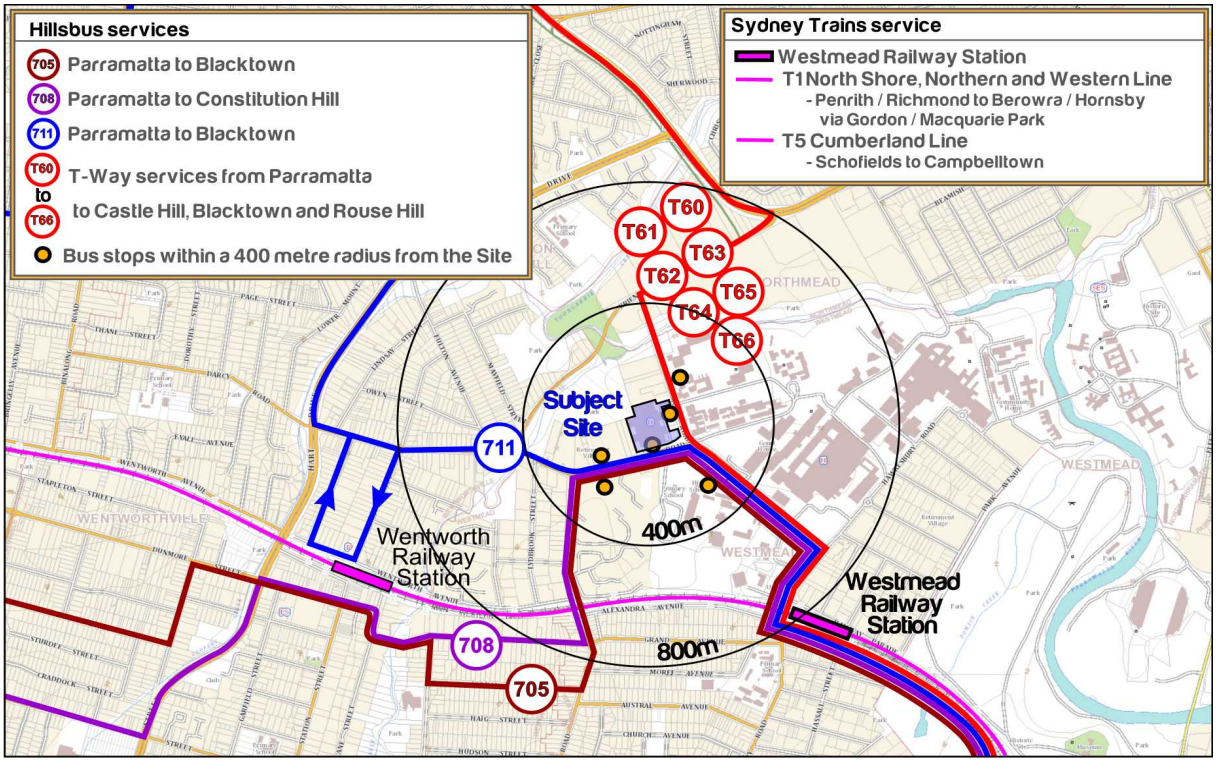

Figure 9: Existing Public Transport Network

The frequency of services at Westmead Station on the T1 and T5 lines is generally every 15 minutes during the peak periods and every 30 minutes off-peak.

3.3.2 Bus Services

Having regard to the standard bus travel, the *Integrated Public Transport Service Planning Guidelines* state that bus services influence the travel mode choices of sites within 400 metres (approximately 5 minutes) of a bus stop. The Site is well serviced by six bus stops within 400 metres walking distance as shown in **Figure 9** and also benefits from the North-west T-way being located along its eastern perimeter, which makes access easier for workers who live outside of the area.

Table 3: Bus Frequency

Route	Frequency
T60 Parramatta - Castle Hill via Crestwood (renumbered 660 28 July 2019)	Peak: 20 minutes Off-peak: Hourly
T61 Parramatta - Blacktown via Kings Langley (renumbered 661 28 July 2019)	Peak: 20 minutes Off-peak: Hourly
T62 Parramatta - Castle Hill via Bella Vista and Tuckwell Road (renumbered 662 28 July 2019)	Peak: 20 minutes Off-peak: Hourly
T63 Parramatta - Rouse Hill Town Centre via Glenwood and Stanhope Gardens (renumbered 663 28 July 2019)	Peak: 20 minutes Off-peak: Hourly
T64 Parramatta - Rouse Hill Town Centre via Norwest Business Park and Kellyville (renumbered 664 28 July 2019)	Peak: 20 minutes Off-peak: Hourly
T65 Parramatta - Rouse Hill Town Centre (renumbered 665 28 July 2019)	Peak: 20 minutes Off-peak: Hourly
T66 Parramatta - Rouse Hill via Rouse Hill Town Centre (amalgamated with T65 as 665 28 July 2019)	Peak: 20 minutes Off-peak: Hourly
705 Parramatta to Blacktown via Seven Hills	Peak: 30 minutes Off-peak: Hourly
708 Constitution Hill to Parramatta via Pendle Hill	9am-10am, 2pm-3pm: 10 minutes
711 Parramatta to Blacktown via Wentworthville	Peak: 30 minutes Off-peak: Hourly

3.4 Private Transport

3.4.1 Road Network

The Westmead precinct is strategically located within Sydney's orbital motorway network. It has direct links via the M4 to the Sydney City Centre, Port Botany, and Sydney Airport, other employment areas within the greater metropolitan region and interstate freeways.

The key roads provided in the vicinity of the Site are summarised below:

Table 4: Road Network

Road	Classification	Authority	Characteristics
Darcy Road	Regional Road	Council	Two-way, 4-lane road connecting to Hawkesbury Road to the south with an additional Transit Way (T-way) running through the median.
Mons Road	Local Road	Council RMS - T-Way and Bus Lanes	Two-way, 2-lane road with marked kerbside parking for the southern portion and is an exclusive T-Way for the northern portion. Mons Road connects to Briens Road to the north and Institute Road and Darcy Street to the south.
Institute Road	Private Access Road	HI / LHD	Provides local access into a hospital staff car park with boom gates limiting access.
Briens Road	Local Road	Council RMS - Bus Lanes	Generally, a 4-lane road with bus lanes between Mons Road to the west and Cumberland Highway to the east. Arterial road further to the east (also known as Cumberland Highway) with 3-lanes in each direction.
Hawkesbury Road	Local Road/ Regional Road	Council RMS west of Darcy Road	Two-way, two lane road with kerbside parking. At intersections, parking is removed to allow additional traffic lanes and bus only lanes. It connects to the Great Western Highway to the south and is an RMS Regional Road west of Darcy Road. Two-way, two lane road with kerbside parking. At intersections, parking is removed to allow additional traffic lanes and bus only lanes. It connects to the Great Western Highway to the south and is an RMS Regional Road west of Darcy Road.

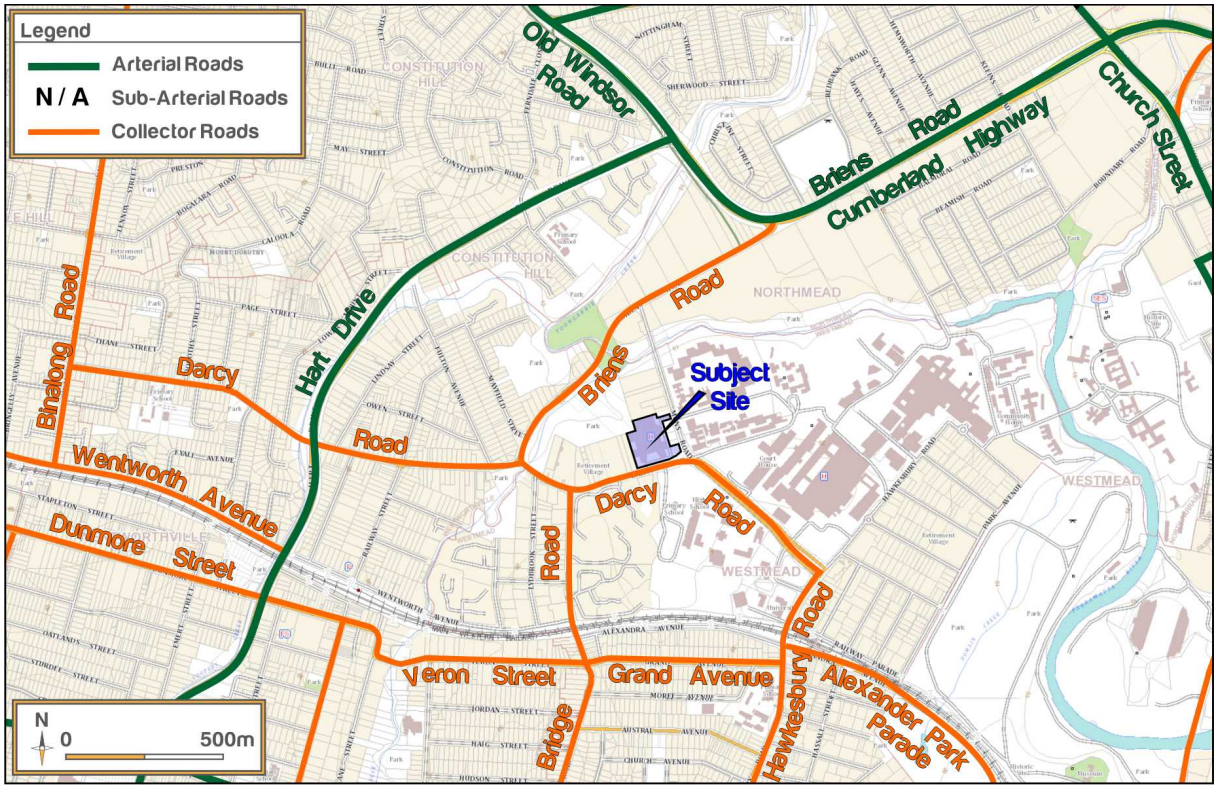

Figure 10: Site and Road Hierarchy

3.4.2 Traffic Volumes

In order to establish a base case of existing conditions, the existing traffic on the surrounding road network—which includes Stage 1 and Stage 2 traffic—was surveyed during the road network weekday morning and evening peaks on Thursday, 25th July 2019.

Accordingly, the existing traffic volumes within the study network are shown in **Figure 11** to **Figure 12**.

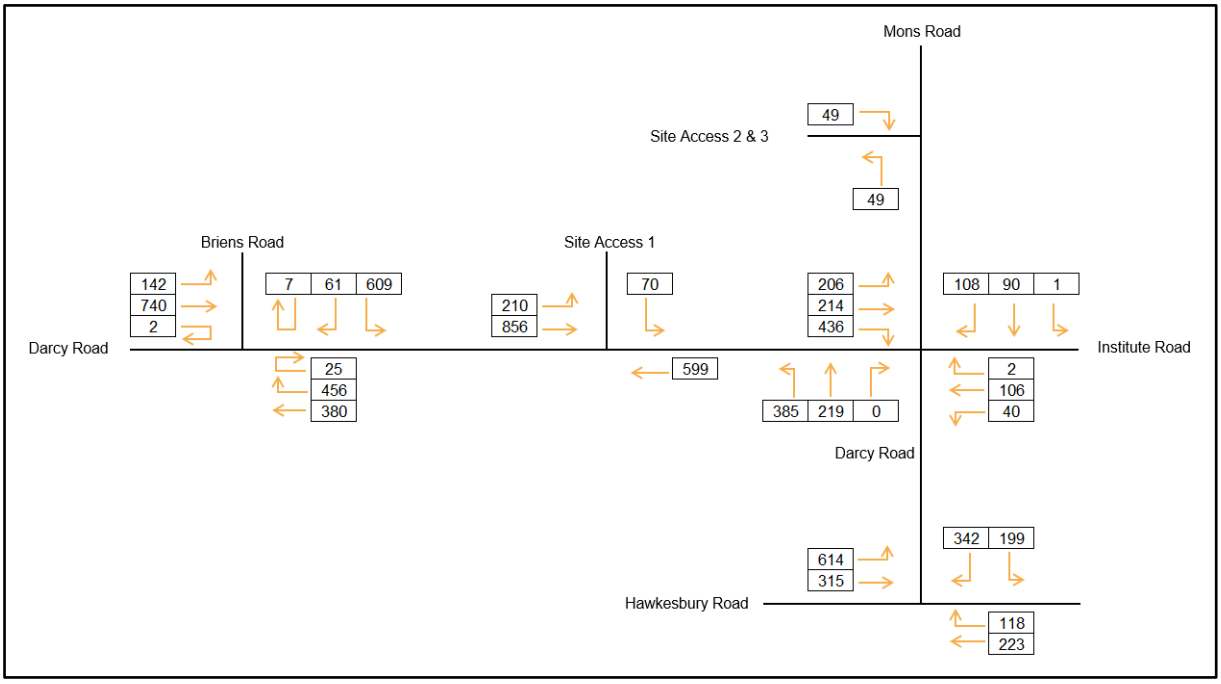

Figure 11: Existing Weekday Morning Peak Traffic Volumes

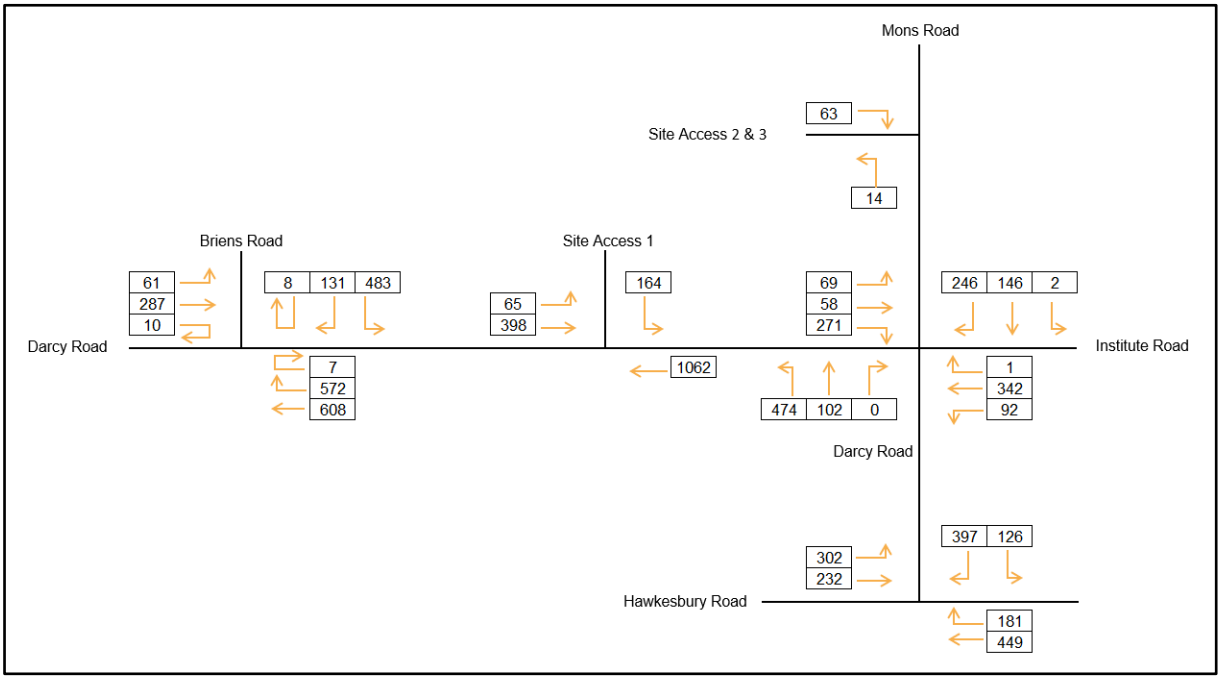

Figure 12: Existing Weekday Evening Peak Traffic Volumes

3.4.3 Existing Intersection Performance

The performance of the above key intersection has been analysed using the SIDRA Intersection software. SIDRA modelling outputs a range of performance measures, in particular:

- *Average Vehicle Delay (AVD)* – The AVD (or average delay per vehicle in seconds) for intersections also provides a measure of the operational performance of an intersection and is used to determine an intersection's Level of Service (see below). For signalised intersections, the AVD reported relates to the average of all vehicle movements through the intersection. For priority (Give Way, Stop & Roundabout controlled) intersections, the AVD reported is that for the movement with the highest AVD.
- *Level of Service (LOS)* – This is a comparative measure that provides an indication of the operating performance, based on AVD.

The following table provides a recommended baseline for assessment as per the RMS Guide:

Table 5: RMS Level of Service Summary

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays. Roundabouts require other control mode	At capacity, requires other control mode
F	More than 70	Unsatisfactory and requires additional capacity.	Unsatisfactory and requires other control mode or major treatment.

The local network performance is provided in **Table 6** which presents the SIDRA intersection modelling results of the key intersections under the existing "baseline" scenario.

Table 6: Existing Intersection Performance

Intersection	Period	Average delay, seconds (Level of Service)
Darcy Road / Briens Road	AM	15 (B)
	PM	10 (A)
Darcy Road / Mons Road	AM	35 (C)
	PM	40 (C)
Hawkesbury Road / Darcy Road	AM	22 (B)
	PM	25 (B)

The operation of the intersections in the study area during the weekday morning and afternoon peak periods were confirmed with site inspections and indicate that all intersections perform at a satisfactory or better level of service during each peak period.

3.4.4 Parking Facilities and Demand

The surrounding local area is likely to undergo considerable transformation over the next 5-10 years, not only associated with the Precinct upgrades but also associated with modifications to other nearby sites.

In December 2017 the Westmead Multi-storey Car Park (WMSCP) opened on the corner of Darcy Road and Institute Road, opposite the Site, and provides parking for a total of 1,254 spaces, including 12 disabled spaces over 8 levels. The WMSCP presents a practical solution to the anticipated future parking conditions in and around the Precinct and will be able to accommodate a significant proportion of the forecast growth in short to medium term staff and visitor demand for parking.

In addition, the car park helps to improve the current parking conditions, including the following specifics:

- reduces the current Precinct impact to publicly available parking in the surrounding areas
- extent of Precinct related parking on the surrounding road network
- consolidates parking to one accessible location with direct access
- improves the efficiency of existing parking by potentially reducing the level of informal parking which occurs across the Precinct.

4 Future Context (without Proposal)

4.1 Committed Upgrades and Services

4.1.1 Parramatta Light Rail

TfNSW forecasts that the PLR will take the equivalent of 25,000 cars off the road by 2041, resulting in 188,000 fewer car kilometres each day. A majority of visitors and staff to the Westmead Health Precinct currently use private vehicles to access the site. With this figure at 76% and the precinct forecast to grow, access and parking on the basis of current travel patterns is unsustainable in the long term.

Light rail running approximately every 7.5 minutes between 7am and 7pm will create a new way of travelling to the Westmead Health Precinct, decreasing the reliance on cars.

The benefits of the PLR in Westmead include:

- Regular, on-time and reliable connectivity between Westmead Station, Westmead Hospital, the Children's Hospital at Westmead and other critical health services in the Westmead Health Precinct.
- Connection between education precincts in Westmead, Parramatta CBD and Rydalmere.
- Modern and comfortable air-conditioned vehicles, 45m long and driver-operated, carrying up to 300 customers, the equivalent of six buses.
- High frequency 'turn-up-and-go' services seven days a week from 5am to 1am.

4.2 Background Growth

Comparison of the previous traffic surveys conducted in 2017 with the most recent 2019 traffic surveys shows an annual increase of 1% per year. For the purpose of this analysis a more conservative 2% per year rate has been adopted. For the purposes of this study relevant future base year is assumed to be the estimated opening year of 2021, subject to planning approvals.

4.3 Intersection Performance

The future operation of the intersections in the study area during the weekday morning and afternoon peak periods was modelled in SIDRA and the results shown in **Table 7** indicate that all intersections continue to perform at a satisfactory or better level of service during each peak period with very little increase in delay.

Table 7: 2021 Intersection Performance without Proposal

Intersection	Period	Average delay, seconds (Level of Service)	
		Existing	2021 without Development
Darcy Road / Briens Road	AM	15 (B)	16 (B)
	PM	10 (A)	14 (A)
Darcy Road / Mons Road	AM	35 (C)	40 (C)
	PM	40 (C)	41 (C)
Hawkesbury Road / Darcy Road	AM	22 (B)	23 (B)
	PM	25 (B)	25 (B)

5 Operational Impacts (with Proposal)

5.1 Active Transport

Provision of bicycle parking and end-of-trip facility is a matter for the DA stage. Furthermore, stuiable provision for cyclists will be dependent on the number of employees for the proposed uses, which will be determined at later stages of the project. Nevertheless, suitable provision of showers, lockers and change rooms should be provided in due course.

5.2 Public Transport

The public transport network for the Site provides connectivity to a range of key employment centres within the local and regional area, giving options for the future residents.

The public transport principles developed for Westmead have been developed to support the key TIA objectives and the overall planning process. These include:

- Providing a network that supports a high level of accessibility and connectivity from day one of the development, eventually realising its full potential upon full build-out.
- Taking advantage of areas of the existing bus and rail network with spare capacity and leverage additional capacity provided by future new infrastructure investments e.g. PLR and Sydney Metro West.
- Connect to destinations and interchanges within the local and regional area and aim to provide 30-minute public transport access to strategic centres.

5.3 Private Transport

5.3.1 Traffic Generation

Consulting Suites

There is no data available for professional consulting rooms in the RMS Guide to Traffic Generating Developments (RMS Guide) or in subsequent updated rates in accordance with Technical Direction 04a. For the purpose of this analysis, development traffic generation is estimated based on the proposed occupancy of the additional consulting suites.

The assumptions for a worst case analysis are:

- All consulting suites will be in concurrent operation during morning and evening peak periods
- All staff working in the consulting suites will commute by driving, which will result in a traffic generation rate of 2 per consulting suites (one health care professional, and one other employee).

Application of these assumptions results in a future increase in traffic generation from the consulting suites of 26 vehicles per hour in both peak periods.

Emergency Department, Intensive Care, Critical Care and Inpatient Units

Surveys have been undertaken by RMS of 19 private hospitals in the Sydney region to provide data for the RMS Guide and the best indicator of peak traffic generation or peak vehicle trips was found to be a combination of the number of beds (B) and the number of staff per weekday day shift. If the average number of staff per weekday day shift is unknown or unavailable, the number of beds (B) alone was found to be a good indicator of peak traffic generation or peak vehicle trips.

Accordingly, the following formulae have been used to calculate the morning vehicle trips (MVT) and the evening vehicle trips (EVT):

$$MVT = -12.41 + 0.57\ B$$
$$EVT = -11.96 + 0.69\ B$$

A summary of the total trip generation from the proposed development, including Stage 3 and Stage 4 is shown in **Table 8**.

Table 8: Stage 3 Trip Generation

Use	No. Beds/Area	Rate	AM	PM
Stage 3				
IPU	29	MVT = -12.41 + 0.57 B EVT = -11.96 + 0.69 B	5	9
OR	2			
Consulting Suites	13	2	26	26
Stage 4				
ED	14	MVT = -12.41 + 0.57 B EVT = -11.96 + 0.69 B	175	214
ICU	8			
CCU	34			
IPU	272			
Consulting Suites	13	2	26	26
		Total	**232**	**276**

5.3.2 Trip Distribution and Assignment

An Origin Destination (OD) survey was conducted to determine the distribution and direction of traffic to and from the Site. Accordingly, the existing volumes based on this trip distribution is shown in **Figure 13** and **Figure 14**.

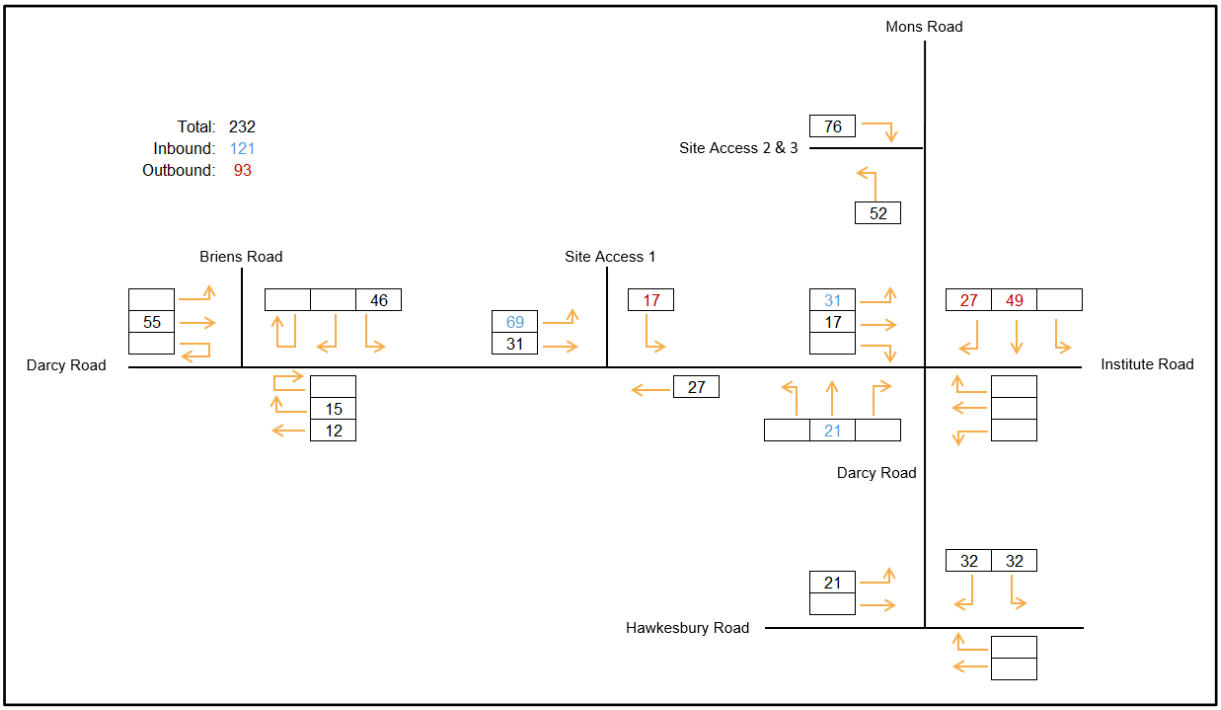

Figure 13: AM Peak Existing Development Traffic Volumes

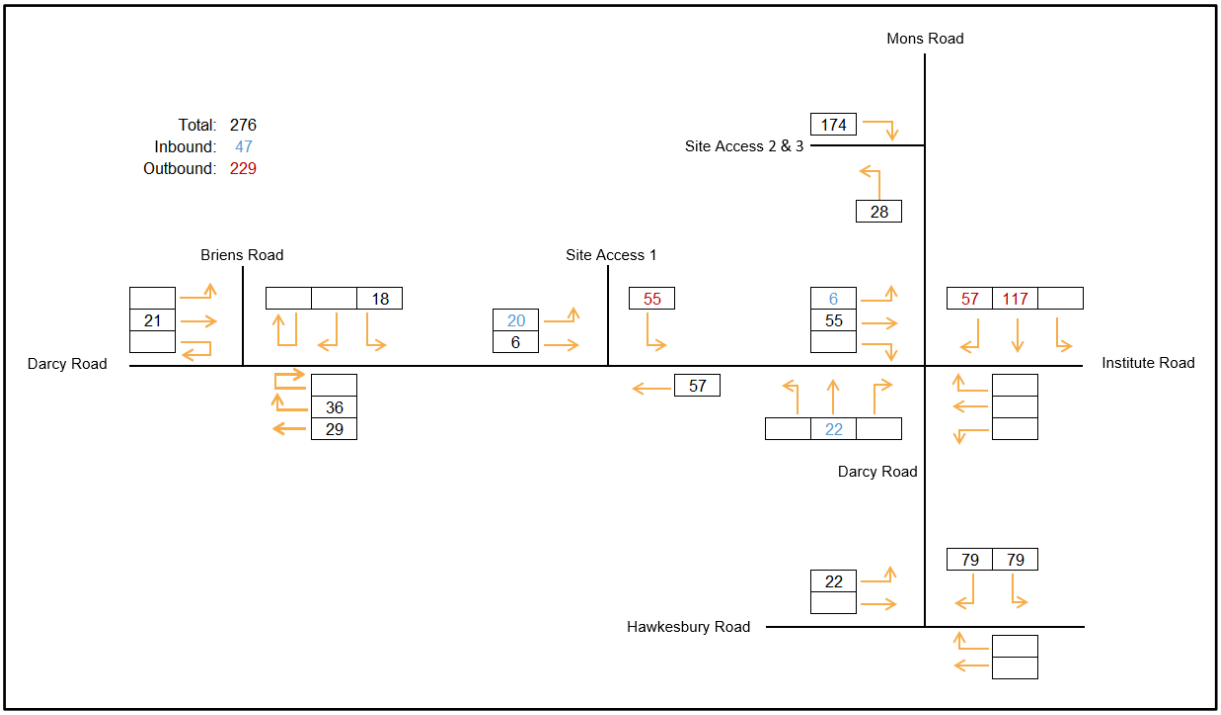

Figure 14: PM Peak Existing Development Traffic Volumes

5.3.3 Traffic Volume Forecasts

The distribution from the OD surveys was apportioned to the forecast traffic generated by the Proposal (plus Stage 3) and traffic surveys conducted in 2017 and 2019 show an annual increase of 1% per year. Accordingly, with consideration of this nominal annual increase in background traffic, the forecast increase in traffic in the study network with the Proposal are shown in **Figure 15** and **Figure 16**.

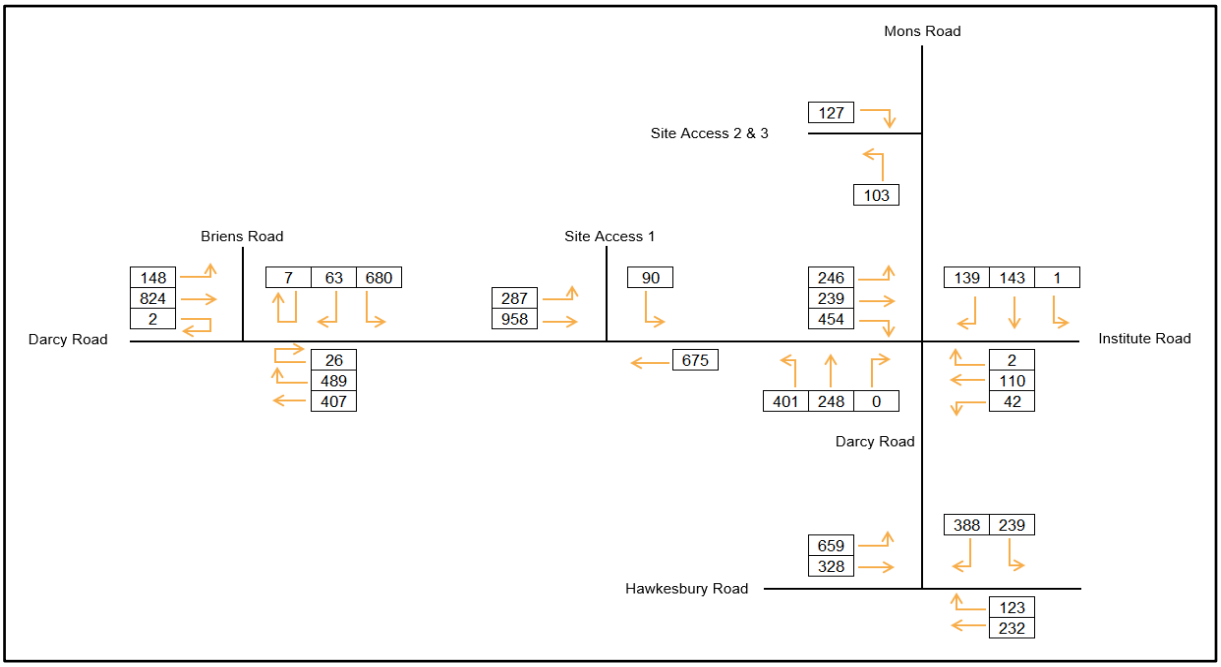

Figure 15: 2021 Weekday Morning Peak Traffic Volumes (with Proposal)

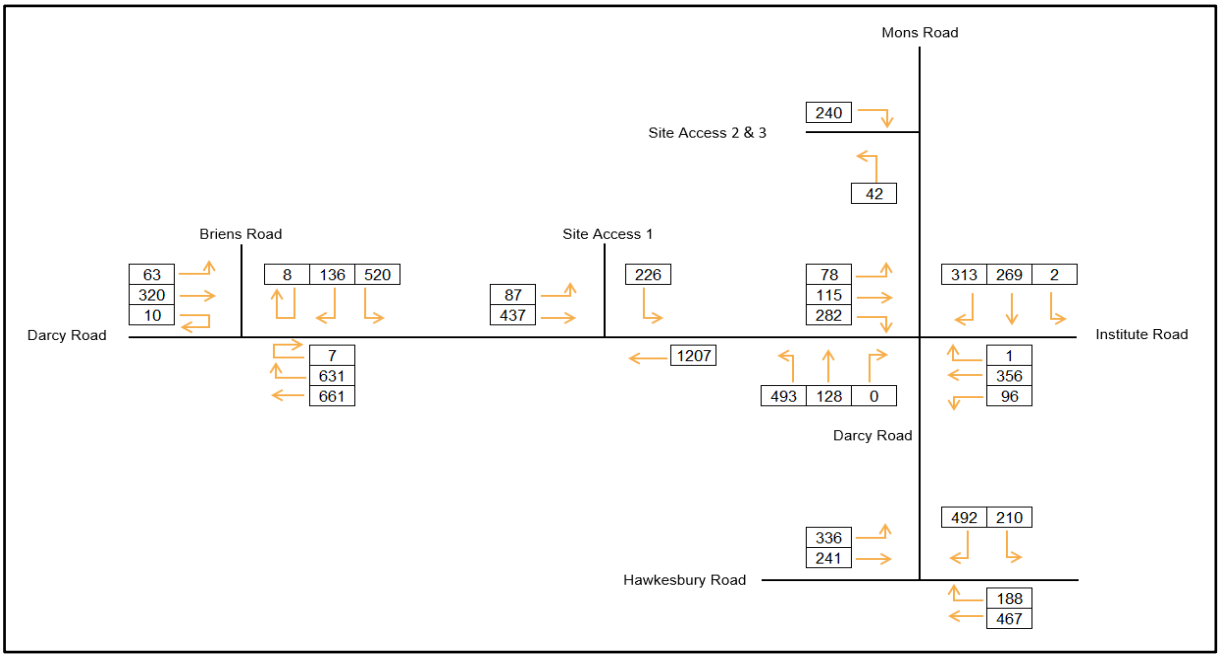

Figure 16: 2021 Weekday Evening Peak Traffic Volumes (with Proposal)

5.3.4 Capacity and Level of Service

A SIDRA analysis of the intersections within the study area was undertaken for the weekday morning, afternoon peak periods for the future scenario with the Proposal and the results are shown in **Table 9**.

Table 9: 2021 Intersection Performance with Proposal

Intersection	Period	Average delay, seconds (Level of Service)		
		Existing	2021 without Development	2021 with Development
Darcy Road / Briens Road	AM	15 (B)	16 (B)	18 (B)
	PM	10 (A)	14 (A)	14 (A)
Darcy Road / Mons Road	AM	35 (C)	40 (C)	41 (C)
	PM	40 (C)	41 (C)	44 (C)
Hawkesbury Road / Darcy Road	AM	22 (B)	23 (B)	23 (B)
	PM	25 (B)	25 (B)	26 (B)

The analysis indicates that the net increase in traffic volumes would result in minimal increases in delay at all key intersections in the study area with no change in Level of Service. It also demonstrates that the traffic volumes are of a sufficiently low order that once distributed on to the surrounding road network, the impacts of these volumes at the key intersections would be negligible and the intersections would operate as they currently do.

5.4 Car Parking

It is noted that the detailed parking demand / supply assessment is anticipated to be undertaken as part of the DA stage when the development yield and the development site plans are finalised. However, this section of the TIA provides general guidance on the applicable parking rates and will conclude a possible range for the parking requirement in accordance with the proposed land-uses.

5.4.1 Consulting Suites

The PDCP and Sydney Regional Environmental Plan No 28 – Parramatta do not have specific parking rates for hospitals. Furthermore, the RMS Guide has no data on the parking demand for professional consulting rooms. As a guide, 3 spaces per suite is suggested to be adequate in several Local Government Areas. Application of this rate to the proposed 13 additional consulting suites results in a requirement of 39 car parking spaces. However, all consulting suites will not likely be in concurrent

operation, based on the occupancy of existing suites at WPH and the proposed use of the new suites within the hospital.

Furthermore, a review of council parking requirements relating to consulting suites was undertaken by Mott Macdonald in 2016. The review indicated that the rate used by councils varies and depends on their situation and their relationship to other uses and their connectivity potential. **Table 10** shows the findings from some councils with similar characteristics to City of Parramatta.

Table 10: Parking Rates Based on Consulting Suites from Other Councils

Unit	Council		
	Randwick	**Willoughby**	**Lane Cove**
Land use surrounding heath hub	Low to medium density	Medium to high density / Low density areas	Low to medium density
Transport	Bus	Rail and Bus	Rail and Bus
Accounts for Health Precinct Clustering	Yes	Yes	Yes
Spaces per health care professional	-	2.0	1.0
Spaces per 2 additional employees	-	1.0	1.0
Spaces per individual consulting suite	2.0	-	0.3
Effective Spaces per consulting suite	**2.0**	**2.3**	**1.7**

Application of the average rate of 2 from above **Table 10** to the 13 proposed consulting suites will result in a requirement of 26 parking spaces if occupancy is 100 per cent.

5.4.2 Emergency Department, Intensive Care, Critical Care and Inpatient Units

The proposed Emergency Department, Intensive Care, Critical Care and Inpatient Units will provide a mix of acute and sub-acute beds with the ability to manage specific patient types and the average length of stay will vary according to the purpose. Staff numbers and proposed shift times have not been finalised at this stage. Therefore, projected car parking demands for the IPU and operating theatres has been calculated in accordance with the RMS Guide peak parking accumulation for private hospitals when the average number of staff per weekday day shift is unknown. This calculation assumes an average length of stay for a member of staff i.e. nurses, doctors etc will be 5.1 hours and an average length of stay for visitors to the hospital will be 1.1 hours. The peak parking accumulation (PPA) has been estimated by:

$$PPA = -26.52 + 1.18B$$

Where B is the proposed number of beds.

Application of the formula to the proposed 320 additional beds results in a requirement of 352 additional car parking spaces. In response, the following parking will be provided through the stage transitions.

Table 11: Proposed Parking Provision

Phase/Stage	Change in parking	Parking Spaces
Existing		349
After Stage 3	+49	398
At commencement of Stage 4 (parking lost as a result of Stage 4)	-112	286
Stage 4	**+480**	**766**

It can be seen from above that Stage 4 is expected to increase overall parking by 368 spaces; which can readily accommodate the increased parking requirements outlined above (352 spaces).

5.4.3 Accessible Parking

Under Section 3.6 of the PDCP, the number of accessible carparking spaces to be provided as prescribed in Table D3.5 of the Building Code of Australia. Table D3.5 of the Building Code of Australia states that the number of accessible carparking spaces required for a Class 3 building is 1 space for every 50 carparking spaces or part thereof. It is noted that the existing parking for the Site included 21 accessible spaces, more than satisfying this requirement

Application of the above rate to the 480 spaces proposed as part of Stage 4 results in a requirement of 10 accessible car parking spaces. In response, it is proposed to provide a minimum of 10 accessible spaces.

6 Design Commentary

6.1 Relevant Design Standards

The existing Site access and loading areas will be utilised to service the proposed development. In addition, the new car parking areas shall be designed to comply with the requirements of Council's DCP, as well as the following relevant Australian Standards:

- AS2890.1 for car parking areas;
- AS2890.2 for commercial vehicle loading areas;
- AS2890.3 for bicycle parking; and
- AS2890.6 for accessible (disabled) parking.

It is expected that any detailed construction drawings in relation to any modified areas of the car park or Site access would comply with these Standards. The following characteristics are noteworthy regarding the design of the Site access driveway and car park.

6.2 Site Access Arrangements

Vehicular access to the Site is proposed via the existing driveway from/to Darcy Road on the southern boundary of the Site, the existing driveway from/to Mons Road on the eastern boundary of the Site, and the proposed new driveway from/to Mons Road approximately 40 metres to the south of the existing driveway. The proposed driveway will serve the 113 parking spaces in the south-east corner of the Site, generally reserved for staff and visitors, as well as the obstetrician and ambulance parking. This access driveway is located so that there is adequate sight distance along Mons Road available to drivers leaving the driveway.

The new access—proposed with the Stage 3 DA—is required for the following reasons:

- The construction of Dragonfly Drive to the east of the Site has effectively placed the existing access in a prohibited location according to section 3.2.3 of AS2890.1. The additional access will reduce any potential impacts from this.
- Section 3.2.1 of AS2890.1 states that access for a Class 3 parking facility with the number of parking spaces in the eastern car park must have separation of entry and exit driveways. With the addition of the new access driveway, the separation would be entry via Darcy Road, exit via Mons Road and/or entry via the proposed new southern access on Mons Road and exit via the existing northern access on Mons Road.

On this basis, the proposed service vehicle and parking provisions are deemed acceptable.

6.3 Internal Design

A detailed review of the car park and related areas will be undertaken for the Stage 4 Development Application, with the following characteristics noteworthy:

- The primary vehicular access is to service between 101 and 300 User Class 3 parking spaces, with access to a local road. Accordingly, a Category 4 driveway is required by AS2890.1; requiring an entry width of 6.0–8.0 metres and an exit width of between 6.0–8.0 metres. The proposed access complies with this requirement.
- Adequate sight distance to pedestrians at the site boundary will be provided at the vehicular egress. No unacceptable permanent obstructions to sight lines for pedestrians occur within the 2.0m x 2.5m sight triangle areas.
- Parking spaces are generally designed in accordance with a User Class 3, as nominated by AS2890.1. This requires a space width of 2.6 metres.
- Dead-end aisles are to be provided with the required 1.0 metre aisle extension in accordance with Figure 2.3 of AS2890.1.
- All accessible parking spaces are to comply with AS2890.6, which requires:
    - Space width of 2.4 metres adjacent to a Shared Area of 2.4 metres; and
    - Minimum headroom of 2.5 metres above the space and associated Shared Area.

The internal configuration of the Site—including light and heavy vehicular access, car parking and servicing areas—shall be designed generally in accordance with the requirements of Council's DCP and the relevant Australian Standards (AS2890.1, AS2890.2 and AS2890.6). It is expected that a standard condition of consent will require compliance with these Standards, prior to issue of a Construction Certificate. Accordingly, any minor changes to the plans (if any) can be made prior to construction.

7 Impact Mitigation

7.1 Improvements to Accommodate Existing Demand

7.1.1 Sydney Metro West

Sydney Metro West will service the key precincts of Greater Parramatta, Sydney Olympic Park, The Bays Precinct and the Sydney CBD. However, following extensive community and industry consultation in 2016, 2017 and 2018, the Sydney Metro West scope of works has been expanded and refined. It now includes a new underground metro station at Westmead, to support the growing residential area as well as the health, research and education precinct. The Sydney Metro West project is expected to be operational in the late 2020s.

7.1.2 Parramatta Light Rail

The first stage of the Parramatta Light Rail is expected to begin operations in 2023 and will connect Westmead to Carlingford via the Parramatta CBD and Camellia over 12 kilometres, with 16 stops. It will connect the Parramatta CBD to the Westmead Precinct, Bankwest Stadium, the new Powerhouse Museum and cultural precinct on the Parramatta River, the Rosehill Gardens Racecourse and three Western Sydney University campuses at Westmead, Parramatta and Rydalmere. It will also traverse the Cumberland Precinct, the Camellia Town Centre and the private and social housing redevelopment at Telopea. The Parramatta Light Rail is forecast to take 25,000 cars off the road by 2041, resulting in 188,000 fewer car kilometres each day.

7.1.3 Hawkesbury Road Widening

To enable the construction and operation of the Parramatta Light Rail project, Hawkesbury Road will be widened. This work will also support future development in the Westmead Precinct. On Hawkesbury Road between Darcy Road and Jessie Street, construction and traffic works will include:

- The relocation of utilities and parking
- Removal of roundabouts, median strips and median kerbs
- Modification or installation of traffic lights
- New footpath, street lighting and landscaping
- Modifications to the existing traffic network
- Trimming or removal of some trees

Construction works to widen Hawkesbury Road will begin in 2019, with major construction on the Parramatta Light Rail to follow in 2020.

8 Findings and Conclusions

8.1 Key Findings

The key findings of this Transport Impact Assessment are:

- It is proposed to expand the Westmead Private Hospital located at 12, 12A, 14 & 14B Mons Road and 13 Darcy Road, Westmead (the Site) for additional health services facilities which would require the additional building height and floor space ratio in the table below.

Control	PLEP2011	Proposed
FSR	1.5 : 1	2.0:1
Building Height	12m	68.05m

- The Site is located within the City of Parramatta LGA and is well serviced by local public and active transport infrastructure and located 800 metres from Westmead train station and the future Westmead Light Rail stop also in close proximity.
- The Proposal includes the addition of a further level of consulting over Stage 3, an attached building with indicative uses shown in the table below.

Stage	Level	Use
3	00	New foyer and entry space
	01	29 bed Inpatient Unit, 2 operating rooms, associated clinical and staff areas
	02	13 consulting suites
4	00	12 treatment bay Emergency Department, 2 resus bays, clinical/staff areas
	01	Car park, Intensive Care Unit expansion
	02	Car park
	03	Car park, 13 consulting suites
	04	Car park
	05	Car park
	06	Car park
	07	Car park
	08	Car park
	09	34 bed Critical Care Unit, associated clinical and staff areas
	10	34 bed Inpatient Unit, associated clinical and staff areas
	11	34 bed Inpatient Unit, associated clinical and staff areas
	12	34 bed Inpatient Unit, associated clinical and staff areas
	13	34 bed Inpatient Unit, associated clinical and staff areas
	14	34 bed Inpatient Unit, associated clinical and staff areas
	15	34 bed Inpatient Unit, associated clinical and staff areas
	16	34 bed Inpatient Unit, associated clinical and staff areas
	17	34 bed Inpatient Unit, associated clinical and staff areas
	18	Plant room

- It is expected that the on-site parking provisions will be assessed as part of the Development Application (DA) stage of the project. However, it is anticipated that the Proposal will provide sufficient off-street parking to satisfy Council RMS/DCP requirements.
- Currently, key intersections within the study area operate with acceptable delays and spare capacity during the morning and evening peak periods.
- A worst case assessment of the Proposal with full occupancy during the peak periods will result in 232 additional trips in the morning peak and 276 in the evening peak. The SIDRA analysis below shows that these net traffic volumes would result in minimal increases in delay at key intersections.

Intersection	Period	Average delay, seconds (Level of Service)		
		Existing	2021 without Development	2021 with Development
Darcy Road / Briens Road	AM	15 (B)	16 (B)	18 (B)
	PM	10 (A)	14 (A)	14 (A)
Darcy Road / Mons Road	AM	35 (C)	40 (C)	41 (C)
	PM	40 (C)	41 (C)	44 (C)
Hawkesbury Road / Darcy Road	AM	22 (B)	23 (B)	23 (B)
	PM	25 (B)	25 (B)	26 (B)

8.2 Conclusions

The key conclusions of this TIA are:

- The scale of development envisaged for the Site presents manageable impacts for road and public transport infrastructure and services. Net traffic volume change will not have a material impact on the surrounding intersections, which continue to operate with similar delays and no change to existing Level of Service.
- The proposed transport infrastructure improvements such as the Parramatta Light Rail, Hawkesbury Road upgrades and Metro West can accommodate the development yields.
- In summary, the Proposal is supportable on traffic and transport planning grounds and will not result in any adverse impacts on the surrounding road network or the availability of on-street parking.

Appendix A

SIDRA Outputs

MOVEMENT SUMMARY

Site: 101 [[2019 Existing_AM] Darcy x Briens]

Darcy Road / Briens Road Three-way Intersection, Westmead

Site Category: (None)
Roundabout

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
SouthEast: Darcy Road (SE)												
21a	L1	400	7.6	0.323	4.1	LOS A	2.4	17.7	0.28	0.44	0.28	44.5
23a	R1	480	1.3	0.347	6.5	LOS A	2.7	19.3	0.27	0.57	0.27	44.2
23u	U	26	0.0	0.347	8.8	LOS A	2.7	19.3	0.27	0.57	0.27	40.8
Approach		906	4.1	0.347	5.5	LOS A	2.7	19.3	0.28	0.52	0.28	44.3
North: Briens Road (N)												
7a	L1	641	1.3	0.555	9.5	LOS A	3.8	27.0	0.77	0.94	0.95	43.0
9	R2	64	1.6	0.555	13.8	LOS A	3.7	26.1	0.77	0.96	0.96	43.4
9u	U	7	0.0	0.555	15.2	LOS B	3.7	26.1	0.77	0.96	0.96	45.1
Approach		713	1.3	0.555	10.0	LOS A	3.8	27.0	0.77	0.95	0.95	43.1
West: Darcy Road (W)												
10	L2	149	4.2	0.508	9.1	LOS A	5.1	36.5	0.87	0.75	0.87	43.0
12a	R1	779	1.2	0.508	11.2	LOS A	5.1	36.5	0.87	0.76	0.87	39.0
12u	U	2	0.0	0.508	13.7	LOS A	4.9	34.5	0.87	0.78	0.87	41.6
Approach		931	1.7	0.508	10.9	LOS A	5.1	36.5	0.87	0.76	0.87	39.9
All Vehicles		2549	2.4	0.555	8.7	LOS A	5.1	36.5	0.63	0.73	0.68	42.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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 SUMMARY

Site: 102 [[2019 Existing_AM] Darcy x Mons]

Darcy Road / Mons Road / Institute Road Four-way Intersection, Westmead
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 100 seconds (Site Optimum Cycle Time - Minimum Delay)

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
SouthEast: Darcy Road (SE)												
21a	L1	405	2.3	0.211	17.0	LOS B	5.4	38.6	0.58	0.67	0.58	32.6
23a	R1	231	12.8	0.825	53.4	LOS D	10.7	75.4	0.99	0.97	1.22	22.9
Approach		636	6.1	0.825	30.2	LOS C	10.7	75.4	0.73	0.78	0.81	28.5
East: Institute Road (E)												
4b	L3	42	0.0	0.702	59.3	LOS E	3.9	27.4	1.00	0.86	1.20	21.9
5	T1	112	0.0	0.702	54.9	LOS D	4.3	30.2	1.00	0.86	1.18	20.2
6	R2	2	0.0	0.702	58.1	LOS E	4.3	30.2	1.00	0.86	1.18	19.3
Approach		156	0.0	0.702	56.1	LOS D	4.3	30.2	1.00	0.86	1.19	20.7
North: Mons Road (N)												
7	L2	1	0.0	0.075	20.6	LOS B	1.8	12.1	0.61	0.58	0.61	29.2
7a	L1	95	35.6	0.075	19.0	LOS B	1.8	12.1	0.61	0.57	0.61	32.1
9	R2	114	14.8	0.832	60.6	LOS E	6.2	48.9	1.00	1.00	1.38	19.6
Approach		209	24.1	0.832	41.6	LOS C	6.2	48.9	0.82	0.80	1.02	24.4
West: Darcy Road (W)												
10	L2	217	1.9	0.755	33.7	LOS C	18.9	133.1	0.95	0.91	1.11	26.2
11	T1	225	0.0	0.755	30.6	LOS C	18.9	133.1	0.95	0.91	1.11	25.6
12a	R1	459	1.8	0.755	36.1	LOS C	20.4	145.0	0.96	0.88	1.00	27.6
Approach		901	1.4	0.755	34.2	LOS C	20.4	145.0	0.96	0.89	1.06	26.9
All Vehicles		1902	5.4	0.832	35.5	LOS C	20.4	145.0	0.87	0.84	0.98	26.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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	44.3	LOS E	0.1	0.1	0.94	0.94
P3	North Full Crossing	53	33.7	LOS D	0.1	0.1	0.82	0.82
P4	West Full Crossing	53	44.3	LOS E	0.1	0.1	0.94	0.94
All Pedestrians		158	40.7	LOS E			0.90	0.90

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: 103 [[2019 Existing_AM] Hawkesbury x Darcy]

Hawkesbury Road / Darcy Road T-intersection, Westmead

Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 100 seconds (Site Optimum Cycle Time - Minimum Delay)

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
NorthEast: Hawkesbury Road (NE)												
25	T1	235	2.7	0.306	21.3	LOS B	7.7	54.9	0.72	0.61	0.72	19.9
26	R2	124	5.9	0.339	22.8	LOS B	2.7	19.4	0.90	0.75	0.90	28.2
Approach		359	3.8	0.339	21.8	LOS B	7.7	54.9	0.78	0.65	0.78	23.8
NorthWest: Darcy Road (NW)												
27	L2	209	2.5	0.192	13.4	LOS A	4.6	32.3	0.49	0.65	0.49	31.7
29	R2	360	10.5	0.325	34.7	LOS C	6.5	45.6	0.84	0.75	0.84	25.3
Approach		569	7.6	0.325	26.9	LOS B	6.5	45.6	0.71	0.71	0.71	27.1
SouthWest: Hawkesbury Road (SW)												
30	L2	646	5.7	0.654	13.2	LOS A	11.9	83.7	0.77	0.79	0.77	32.6
31	T1	332	1.3	0.592	33.0	LOS C	14.0	98.5	0.91	0.78	0.91	15.6
Approach		978	4.2	0.654	19.9	LOS B	14.0	98.5	0.82	0.78	0.82	27.7
All Vehicles		1906	5.1	0.654	22.3	LOS B	14.0	98.5	0.78	0.74	0.78	26.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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
P6	NorthEast Full Crossing	53	35.4	LOS D	0.1	0.1	0.84	0.84
P71	NorthWest Stage 1	53	29.7	LOS C	0.1	0.1	0.77	0.77
P72	NorthWest Stage 2	53	40.6	LOS E	0.1	0.1	0.90	0.90
P8	SouthWest Full Crossing	53	44.3	LOS E	0.1	0.1	0.94	0.94
All Pedestrians		211	37.5	LOS D			0.86	0.86

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: 101 [[2019 Existing_PM] Darcy x Briens]

Darcy Road / Briens Road Three-way Intersection, Westmead

Site Category: (None)
Roundabout

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
SouthEast: Darcy Road (SE)												
21a	L1	640	4.8	0.494	4.7	LOS A	4.2	31.0	0.43	0.50	0.43	43.9
23a	R1	602	1.0	0.509	7.6	LOS A	4.4	30.9	0.45	0.62	0.45	43.8
23u	U	7	0.0	0.509	9.9	LOS A	4.4	30.9	0.45	0.62	0.45	40.1
Approach		1249	2.9	0.509	6.1	LOS A	4.4	31.0	0.44	0.56	0.44	43.8
North: Briens Road (N)												
7a	L1	508	1.7	0.340	5.1	LOS A	2.0	14.1	0.54	0.63	0.54	45.4
9	R2	138	0.8	0.340	8.9	LOS A	2.0	13.9	0.54	0.68	0.54	45.5
9u	U	8	0.0	0.340	10.3	LOS A	2.0	13.9	0.54	0.68	0.54	46.8
Approach		655	1.4	0.340	6.0	LOS A	2.0	14.1	0.54	0.64	0.54	45.5
West: Darcy Road (W)												
10	L2	64	9.8	0.239	9.2	LOS A	2.0	15.0	0.82	0.73	0.82	42.9
12a	R1	302	3.1	0.239	11.2	LOS A	2.0	15.0	0.82	0.75	0.82	38.9
12u	U	11	0.0	0.239	13.6	LOS A	1.9	13.9	0.82	0.76	0.82	41.5
Approach		377	4.2	0.239	10.9	LOS A	2.0	15.0	0.82	0.75	0.82	40.0
All Vehicles		2281	2.7	0.509	6.9	LOS A	4.4	31.0	0.53	0.61	0.53	43.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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 SUMMARY

Site: 102 [[2019 Existing_PM] Darcy x Mons]

Darcy Road / Mons Road / Institute Road Four-way Intersection, Westmead
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 100 seconds (Site Optimum Cycle Time - Minimum Delay)

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
SouthEast: Darcy Road (SE)												
21a	L1	499	1.9	0.455	34.2	LOS C	10.1	71.9	0.87	0.79	0.87	27.5
23a	R1	107	27.5	0.702	56.8	LOS E	4.2	29.5	1.00	0.82	1.13	22.3
Approach		606	6.4	0.702	38.2	LOS C	10.1	71.9	0.89	0.79	0.92	26.5
East: Institute Road (E)												
4b	L3	97	0.0	0.720	49.2	LOS D	10.7	75.1	1.00	0.89	1.09	24.0
5	T1	360	0.0	0.720	44.9	LOS D	11.6	81.2	1.00	0.89	1.08	22.2
6	R2	1	0.0	0.720	48.2	LOS D	11.6	81.2	1.00	0.89	1.08	21.3
Approach		458	0.0	0.720	45.8	LOS D	11.6	81.2	1.00	0.89	1.08	22.6
North: Mons Road (N)												
7	L2	2	0.0	0.136	18.8	LOS B	3.3	22.9	0.59	0.59	0.59	30.0
7a	L1	154	21.9	0.136	17.0	LOS B	3.3	22.9	0.58	0.58	0.58	32.8
9	R2	259	6.5	0.758	48.3	LOS D	12.8	94.5	1.00	0.90	1.11	21.9
Approach		415	12.2	0.758	36.5	LOS C	12.8	94.5	0.84	0.78	0.91	25.5
West: Darcy Road (W)												
10	L2	73	5.8	0.672	39.8	LOS C	9.0	64.4	0.99	0.85	1.06	24.5
11	T1	61	0.0	0.672	36.6	LOS C	9.0	64.4	0.99	0.85	1.06	23.9
12a	R1	285	3.0	0.672	43.6	LOS D	10.1	72.1	0.99	0.85	1.04	25.9
Approach		419	3.0	0.672	41.9	LOS C	10.1	72.1	0.99	0.85	1.04	25.4
All Vehicles		1898	5.4	0.758	40.5	LOS C	12.8	94.5	0.93	0.83	0.98	25.1

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
P2	East Full Crossing	53	44.3	LOS E	0.1	0.1	0.94	0.94
P3	North Full Crossing	53	44.3	LOS E	0.1	0.1	0.94	0.94
P4	West Full Crossing	53	44.3	LOS E	0.1	0.1	0.94	0.94
All Pedestrians		158	44.3	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: 103 [[2019 Existing_PM] Hawkesbury x Darcy]

Hawkesbury Road / Darcy Road T-intersection, Westmead

Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 100 seconds (Site Optimum Cycle Time - Minimum Delay)

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
NorthEast: Hawkesbury Road (NE)												
25	T1	473	1.3	0.520	20.4	LOS B	15.5	109.8	0.77	0.67	0.77	20.2
26	R2	191	3.9	0.520	21.8	LOS B	4.8	34.1	0.91	0.78	0.91	28.7
Approach		663	2.1	0.520	20.8	LOS B	15.5	109.8	0.81	0.70	0.81	23.7
NorthWest: Darcy Road (NW)												
27	L2	133	4.0	0.119	12.5	LOS A	2.7	18.9	0.45	0.62	0.45	32.1
29	R2	418	9.1	0.508	41.2	LOS C	8.8	61.9	0.92	0.79	0.92	23.6
Approach		551	7.8	0.508	34.3	LOS C	8.8	61.9	0.81	0.75	0.81	25.1
SouthWest: Hawkesbury Road (SW)												
30	L2	318	11.6	0.354	13.5	LOS A	4.9	34.5	0.69	0.72	0.69	32.4
31	T1	244	1.7	0.452	32.2	LOS C	9.9	69.9	0.87	0.73	0.87	15.8
Approach		562	7.3	0.452	21.6	LOS B	9.9	69.9	0.77	0.73	0.77	26.3
All Vehicles		1776	5.5	0.520	25.2	LOS B	15.5	109.8	0.80	0.72	0.80	25.0

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
P6	NorthEast Full Crossing	53	40.6	LOS E	0.1	0.1	0.90	0.90
P71	NorthWest Stage 1	53	30.5	LOS D	0.1	0.1	0.78	0.78
P72	NorthWest Stage 2	53	41.5	LOS E	0.1	0.1	0.91	0.91
P8	SouthWest Full Crossing	53	44.3	LOS E	0.1	0.1	0.94	0.94
All Pedestrians		211	39.2	LOS D			0.88	0.88

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: 101 [[2021_AM] Darcy x Briens]

Darcy Road / Briens Road Three-way Intersection, Westmead

Site Category: (None)
Roundabout

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
SouthEast: Darcy Road (SE)												
21a	L1	416	7.3	0.336	4.1	LOS A	2.5	18.7	0.29	0.45	0.29	44.4
23a	R1	499	1.3	0.362	6.5	LOS A	2.9	20.6	0.28	0.57	0.28	44.2
23u	U	27	0.0	0.362	8.8	LOS A	2.9	20.6	0.28	0.57	0.28	40.8
Approach		942	3.9	0.362	5.5	LOS A	2.9	20.6	0.29	0.52	0.29	44.2
North: Briens Road (N)												
7a	L1	667	1.3	0.597	10.3	LOS A	4.3	30.5	0.79	0.97	1.02	42.5
9	R2	66	1.6	0.597	14.7	LOS B	4.1	29.3	0.79	0.99	1.03	43.0
9u	U	7	0.0	0.597	16.1	LOS B	4.1	29.3	0.79	0.99	1.03	44.7
Approach		741	1.3	0.597	10.8	LOS A	4.3	30.5	0.79	0.98	1.02	42.6
West: Darcy Road (W)												
10	L2	156	4.1	0.538	9.5	LOS A	5.6	40.1	0.90	0.77	0.91	42.7
12a	R1	811	1.2	0.538	12.0	LOS A	5.6	39.9	0.90	0.79	0.93	38.4
12u	U	2	0.0	0.538	14.7	LOS B	5.6	39.9	0.90	0.81	0.95	40.9
Approach		968	1.6	0.538	11.6	LOS A	5.6	40.1	0.90	0.79	0.93	39.4
All Vehicles		2652	2.3	0.597	9.2	LOS A	5.6	40.1	0.65	0.74	0.72	42.0

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.
Roundabout Capacity Model: SIDRA Standard.
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 SUMMARY

Site: 102 [[2021_AM] Darcy x Mons]

Darcy Road / Mons Road / Institute Road Four-way Intersection, Westmead
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 105 seconds (Site Optimum Cycle Time - Minimum Delay)

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
SouthEast: Darcy Road (SE)												
21a	L1	422	2.2	0.210	16.3	LOS B	5.6	40.2	0.56	0.66	0.56	32.9
23a	R1	303	9.7	0.849	54.3	LOS D	15.4	108.2	0.99	0.99	1.21	22.7
Approach		725	5.4	0.849	32.2	LOS C	15.4	108.2	0.74	0.80	0.83	27.9
East: Institute Road (E)												
4b	L3	44	0.0	0.768	63.5	LOS E	4.3	30.3	1.00	0.91	1.29	21.2
5	T1	116	0.0	0.768	59.0	LOS E	4.8	33.5	1.00	0.90	1.27	19.5
6	R2	2	0.0	0.768	62.2	LOS E	4.8	33.5	1.00	0.90	1.27	18.5
Approach		162	0.0	0.768	60.3	LOS E	4.8	33.5	1.00	0.90	1.28	20.0
North: Mons Road (N)												
7	L2	1	0.0	0.076	19.8	LOS B	1.9	12.9	0.58	0.57	0.58	29.6
7a	L1	99	34.0	0.076	18.2	LOS B	1.9	12.9	0.58	0.56	0.58	32.4
9	R2	118	14.3	0.903	69.2	LOS E	7.2	55.9	1.00	1.10	1.56	18.3
Approach		218	23.2	0.903	45.8	LOS D	7.2	55.9	0.81	0.85	1.11	23.5
West: Darcy Road (W)												
10	L2	225	1.9	0.825	41.7	LOS C	22.9	161.7	0.99	1.00	1.26	24.1
11	T1	235	0.0	0.825	38.5	LOS C	22.9	161.7	0.99	1.00	1.26	23.5
12a	R1	478	1.8	0.825	43.3	LOS D	24.4	172.9	0.99	0.97	1.12	25.9
Approach		938	1.3	0.825	41.7	LOS C	24.4	172.9	0.99	0.98	1.19	25.0
All Vehicles		2043	5.0	0.903	40.3	LOS C	24.4	172.9	0.88	0.90	1.06	25.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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	46.8	LOS E	0.1	0.1	0.94	0.94
P3	North Full Crossing	53	36.1	LOS D	0.1	0.1	0.83	0.83
P4	West Full Crossing	53	46.8	LOS E	0.1	0.1	0.94	0.94
All Pedestrians		158	43.2	LOS E			0.91	0.91

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: 103 [[2021_AM] Hawkesbury x Darcy]

Hawkesbury Road / Darcy Road T-intersection, Westmead

Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 100 seconds (Site Optimum Cycle Time - Minimum Delay)

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
NorthEast: Hawkesbury Road (NE)												
25	T1	244	2.6	0.318	21.4	LOS B	8.0	57.4	0.72	0.61	0.72	19.8
26	R2	129	5.7	0.354	22.9	LOS B	2.8	20.3	0.90	0.75	0.90	28.2
Approach		374	3.7	0.354	21.9	LOS B	8.0	57.4	0.78	0.66	0.78	23.8
NorthWest: Darcy Road (NW)												
27	L2	218	2.4	0.199	13.5	LOS A	4.8	33.8	0.49	0.65	0.49	31.6
29	R2	375	10.1	0.340	34.9	LOS C	6.8	47.9	0.84	0.75	0.84	25.2
Approach		593	7.3	0.340	27.0	LOS B	6.8	47.9	0.71	0.71	0.71	27.1
SouthWest: Hawkesbury Road (SW)												
30	L2	673	5.5	0.682	13.4	LOS A	12.7	89.2	0.79	0.80	0.79	32.5
31	T1	345	1.2	0.616	33.3	LOS C	14.7	103.5	0.92	0.79	0.92	15.5
Approach		1018	4.0	0.682	20.1	LOS B	14.7	103.5	0.84	0.79	0.84	27.6
All Vehicles		1984	4.9	0.682	22.5	LOS B	14.7	103.5	0.79	0.74	0.79	26.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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
P6	NorthEast Full Crossing	53	35.4	LOS D	0.1	0.1	0.84	0.84
P71	NorthWest Stage 1	53	29.7	LOS C	0.1	0.1	0.77	0.77
P72	NorthWest Stage 2	53	40.6	LOS E	0.1	0.1	0.90	0.90
P8	SouthWest Full Crossing	53	44.3	LOS E	0.1	0.1	0.94	0.94
All Pedestrians		211	37.5	LOS D			0.86	0.86

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: 101 [[2021_PM] Darcy x Briens]

Darcy Road / Briens Road Three-way Intersection, Westmead

Site Category: (None)
Roundabout

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
SouthEast: Darcy Road (SE)												
21a	L1	666	4.6	0.517	4.8	LOS A	4.6	33.3	0.45	0.51	0.45	43.8
23a	R1	626	1.0	0.533	7.7	LOS A	4.7	33.3	0.47	0.62	0.47	43.8
23u	U	7	0.0	0.533	10.0	LOS A	4.7	33.3	0.47	0.62	0.47	40.0
Approach		1300	2.8	0.533	6.2	LOS A	4.7	33.3	0.46	0.56	0.46	43.8
North: Briens Road (N)												
7a	L1	529	1.6	0.358	5.2	LOS A	2.1	15.0	0.56	0.64	0.56	45.4
9	R2	143	0.7	0.358	9.0	LOS A	2.1	14.8	0.56	0.69	0.56	45.5
9u	U	8	0.0	0.358	10.4	LOS A	2.1	14.8	0.56	0.69	0.56	46.7
Approach		681	1.4	0.358	6.1	LOS A	2.1	15.0	0.56	0.65	0.56	45.4
West: Darcy Road (W)												
10	L2	66	9.5	0.256	9.5	LOS A	2.2	16.2	0.84	0.75	0.84	42.8
12a	R1	315	3.0	0.256	11.6	LOS A	2.2	16.2	0.84	0.76	0.84	38.7
12u	U	11	0.0	0.256	14.0	LOS A	2.1	15.1	0.84	0.78	0.84	41.3
Approach		392	4.0	0.256	11.3	LOS A	2.2	16.2	0.84	0.76	0.84	39.8
All Vehicles		2373	2.6	0.533	7.0	LOS A	4.7	33.3	0.55	0.62	0.55	43.7

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.
Roundabout Capacity Model: SIDRA Standard.
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 SUMMARY

Site: 102 [[2021_PM] Darcy x Mons]

Darcy Road / Mons Road / Institute Road Four-way Intersection, Westmead
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 100 seconds (Site Optimum Cycle Time - Minimum Delay)

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
SouthEast: Darcy Road (SE)												
21a	L1	519	1.8	0.473	34.4	LOS C	10.6	75.3	0.87	0.79	0.87	27.5
23a	R1	112	26.4	0.739	57.3	LOS E	4.4	31.3	1.00	0.85	1.17	22.2
Approach		631	6.2	0.739	38.4	LOS C	10.6	75.3	0.90	0.80	0.93	26.4
East: Institute Road (E)												
4b	L3	101	0.0	0.756	50.5	LOS D	11.5	80.6	1.00	0.92	1.13	23.7
5	T1	375	0.0	0.756	46.0	LOS D	12.2	85.5	1.00	0.92	1.12	22.0
6	R2	1	0.0	0.756	49.3	LOS D	12.2	85.5	1.00	0.92	1.12	21.0
Approach		477	0.0	0.756	47.0	LOS D	12.2	85.5	1.00	0.92	1.12	22.4
North: Mons Road (N)												
7	L2	2	0.0	0.143	18.8	LOS B	3.5	24.1	0.59	0.59	0.59	30.0
7a	L1	160	21.1	0.143	17.1	LOS B	3.5	24.1	0.58	0.58	0.58	32.8
9	R2	269	6.3	0.787	49.6	LOS D	13.6	100.3	1.00	0.93	1.15	21.7
Approach		432	11.7	0.787	37.4	LOS C	13.6	100.3	0.84	0.80	0.94	25.2
West: Darcy Road (W)												
10	L2	76	5.6	0.699	40.8	LOS C	9.5	68.2	0.99	0.87	1.09	24.3
11	T1	63	0.0	0.699	37.6	LOS C	9.5	68.2	0.99	0.87	1.09	23.7
12a	R1	297	2.8	0.699	44.3	LOS D	10.6	75.9	0.99	0.87	1.07	25.7
Approach		436	2.9	0.699	42.7	LOS D	10.6	75.9	0.99	0.87	1.07	25.2
All Vehicles		1975	5.2	0.787	41.2	LOS C	13.6	100.3	0.93	0.84	1.01	25.0

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
P2	East Full Crossing	53	44.3	LOS E	0.1	0.1	0.94	0.94
P3	North Full Crossing	53	44.3	LOS E	0.1	0.1	0.94	0.94
P4	West Full Crossing	53	44.3	LOS E	0.1	0.1	0.94	0.94
All Pedestrians		158	44.3	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: 103 [[2021_PM] Hawkesbury x Darcy]

Hawkesbury Road / Darcy Road T-intersection, Westmead

Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 100 seconds (Site Optimum Cycle Time - Minimum Delay)

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
NorthEast: Hawkesbury Road (NE)												
25	T1	492	1.3	0.526	19.9	LOS B	15.9	112.7	0.76	0.67	0.76	20.5
26	R2	198	3.7	0.526	21.9	LOS B	5.1	36.0	0.91	0.78	0.91	28.7
Approach		689	2.0	0.526	20.5	LOS B	15.9	112.7	0.81	0.70	0.81	23.9
NorthWest: Darcy Road (NW)												
27	L2	138	3.8	0.124	12.5	LOS A	2.8	19.8	0.46	0.62	0.46	32.1
29	R2	435	8.7	0.539	41.4	LOS C	9.4	66.4	0.93	0.79	0.93	23.6
Approach		573	7.5	0.539	34.4	LOS C	9.4	66.4	0.82	0.75	0.82	25.0
SouthWest: Hawkesbury Road (SW)												
30	L2	331	11.1	0.369	13.6	LOS A	5.3	37.5	0.70	0.72	0.70	32.4
31	T1	254	1.7	0.469	32.4	LOS C	10.3	73.0	0.88	0.74	0.88	15.8
Approach		584	7.0	0.469	21.7	LOS B	10.3	73.0	0.78	0.73	0.78	26.2
All Vehicles		1846	5.3	0.539	25.2	LOS B	15.9	112.7	0.80	0.73	0.80	25.1

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
P6	NorthEast Full Crossing	53	40.6	LOS E	0.1	0.1	0.90	0.90
P71	NorthWest Stage 1	53	30.5	LOS D	0.1	0.1	0.78	0.78
P72	NorthWest Stage 2	53	41.5	LOS E	0.1	0.1	0.91	0.91
P8	SouthWest Full Crossing	53	44.3	LOS E	0.1	0.1	0.94	0.94
All Pedestrians		211	39.2	LOS D			0.88	0.88

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: 101 [[2021+Dev_AM] Darcy x Briens]

Darcy Road / Briens Road Three-way Intersection, Westmead

Site Category: (None)
Roundabout

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
SouthEast: Darcy Road (SE)												
21a	L1	428	7.1	0.346	4.1	LOS A	2.6	19.6	0.30	0.45	0.30	44.4
23a	R1	515	1.2	0.373	6.5	LOS A	3.1	21.6	0.29	0.57	0.29	44.2
23u	U	27	0.0	0.373	8.8	LOS A	3.1	21.6	0.29	0.57	0.29	40.7
Approach		971	3.8	0.373	5.5	LOS A	3.1	21.6	0.29	0.52	0.29	44.2
North: Briens Road (N)												
7a	L1	716	1.2	0.672	12.1	LOS A	5.3	37.4	0.83	1.03	1.15	41.5
9	R2	66	1.6	0.672	16.6	LOS B	5.1	35.7	0.84	1.05	1.17	42.0
9u	U	7	0.0	0.672	18.0	LOS B	5.1	35.7	0.84	1.05	1.17	43.9
Approach		789	1.2	0.672	12.5	LOS A	5.3	37.4	0.83	1.04	1.15	41.6
West: Darcy Road (W)												
10	L2	156	4.1	0.578	10.8	LOS A	6.8	48.7	0.94	0.81	1.01	42.1
12a	R1	867	1.1	0.578	13.4	LOS A	6.8	48.7	0.94	0.84	1.04	37.4
12u	U	2	0.0	0.578	16.1	LOS B	6.8	47.8	0.94	0.86	1.06	40.0
Approach		1025	1.5	0.578	13.0	LOS A	6.8	48.7	0.94	0.83	1.03	38.5
All Vehicles		2785	2.2	0.672	10.2	LOS A	6.8	48.7	0.68	0.78	0.81	41.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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 SUMMARY

Site: 102 [[2021+Dev_AM] Darcy x Mons]

Darcy Road / Mons Road / Institute Road Four-way Intersection, Westmead
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 105 seconds (Site Optimum Cycle Time - Minimum Delay)

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
SouthEast: Darcy Road (SE)												
21a	L1	422	2.2	0.218	17.5	LOS B	5.9	41.9	0.58	0.67	0.58	32.5
23a	R1	261	11.3	0.863	57.4	LOS E	13.3	93.6	0.99	1.02	1.27	22.2
Approach		683	5.7	0.863	32.7	LOS C	13.3	93.6	0.74	0.80	0.84	27.8
East: Institute Road (E)												
4b	L3	44	0.0	0.768	63.5	LOS E	4.3	30.3	1.00	0.91	1.29	21.2
5	T1	116	0.0	0.768	59.0	LOS E	4.8	33.5	1.00	0.90	1.27	19.5
6	R2	2	0.0	0.768	62.2	LOS E	4.8	33.5	1.00	0.90	1.27	18.5
Approach		162	0.0	0.768	60.3	LOS E	4.8	33.5	1.00	0.90	1.28	20.0
North: Mons Road (N)												
7	L2	1	0.0	0.138	20.9	LOS B	3.5	24.1	0.61	0.60	0.61	29.1
7a	L1	151	22.4	0.138	19.2	LOS B	3.5	24.1	0.61	0.59	0.61	32.0
9	R2	146	11.5	0.882	65.6	LOS E	8.7	66.3	1.00	1.05	1.45	18.8
Approach		298	17.0	0.882	42.0	LOS C	8.7	66.3	0.80	0.82	1.02	24.4
West: Darcy Road (W)												
10	L2	259	1.6	0.866	45.1	LOS D	26.6	187.5	1.00	1.05	1.31	23.3
11	T1	252	0.0	0.866	41.9	LOS C	26.6	187.5	1.00	1.05	1.31	22.7
12a	R1	478	1.8	0.817	42.0	LOS C	24.5	173.8	0.99	0.95	1.09	26.2
Approach		988	1.3	0.866	42.8	LOS D	26.6	187.5	0.99	1.00	1.21	24.7
All Vehicles		2132	4.8	0.882	40.8	LOS C	26.6	187.5	0.89	0.90	1.07	25.2

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
P2	East Full Crossing	53	46.8	LOS E	0.1	0.1	0.94	0.94
P3	North Full Crossing	53	35.3	LOS D	0.1	0.1	0.82	0.82
P4	West Full Crossing	53	46.8	LOS E	0.1	0.1	0.94	0.94
All Pedestrians		158	42.9	LOS E			0.90	0.90

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: 103 [[2021+Dev_AM] Hawkesbury x Darcy]

Hawkesbury Road / Darcy Road T-intersection, Westmead

Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 100 seconds (Site Optimum Cycle Time - Minimum Delay)

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
NorthEast: Hawkesbury Road (NE)												
25	T1	244	2.6	0.318	21.4	LOS B	8.0	57.4	0.72	0.61	0.72	19.8
26	R2	129	5.7	0.354	22.9	LOS B	2.8	20.3	0.90	0.75	0.90	28.2
Approach		374	3.7	0.354	21.9	LOS B	8.0	57.4	0.78	0.66	0.78	23.8
NorthWest: Darcy Road (NW)												
27	L2	252	2.1	0.230	13.7	LOS A	5.7	39.9	0.50	0.66	0.50	31.5
29	R2	408	9.3	0.373	35.2	LOS C	7.6	53.2	0.85	0.76	0.85	25.2
Approach		660	6.5	0.373	27.0	LOS B	7.6	53.2	0.72	0.72	0.72	27.1
SouthWest: Hawkesbury Road (SW)												
30	L2	694	5.3	0.704	13.6	LOS A	13.3	93.8	0.81	0.80	0.81	32.4
31	T1	345	1.2	0.616	33.3	LOS C	14.7	103.5	0.92	0.79	0.92	15.5
Approach		1039	4.0	0.704	20.1	LOS B	14.7	103.5	0.84	0.80	0.84	27.7
All Vehicles		2073	4.7	0.704	22.6	LOS B	14.7	103.5	0.79	0.75	0.79	26.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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
P6	NorthEast Full Crossing	53	35.4	LOS D	0.1	0.1	0.84	0.84
P71	NorthWest Stage 1	53	29.7	LOS C	0.1	0.1	0.77	0.77
P72	NorthWest Stage 2	53	40.6	LOS E	0.1	0.1	0.90	0.90
P8	SouthWest Full Crossing	53	44.3	LOS E	0.1	0.1	0.94	0.94
All Pedestrians		211	37.5	LOS D			0.86	0.86

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: 101 [[2021+Dev_PM] Darcy x Briens]

Darcy Road / Briens Road Three-way Intersection, Westmead

Site Category: (None)
Roundabout

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
SouthEast: Darcy Road (SE)												
21a	L1	696	4.4	0.539	4.9	LOS A	4.9	35.9	0.46	0.51	0.46	43.7
23a	R1	664	1.0	0.563	7.7	LOS A	5.2	36.9	0.49	0.62	0.49	43.8
23u	U	7	0.0	0.563	10.0	LOS A	5.2	36.9	0.49	0.62	0.49	40.0
Approach		1367	2.7	0.563	6.3	LOS A	5.2	36.9	0.48	0.57	0.48	43.7
North: Briens Road (N)												
7a	L1	547	1.5	0.376	5.4	LOS A	2.2	15.9	0.58	0.66	0.58	45.3
9	R2	143	0.7	0.376	9.1	LOS A	2.2	15.7	0.58	0.70	0.58	45.4
9u	U	8	0.0	0.376	10.6	LOS A	2.2	15.7	0.58	0.70	0.58	46.7
Approach		699	1.4	0.376	6.2	LOS A	2.2	15.9	0.58	0.67	0.58	45.4
West: Darcy Road (W)												
10	L2	66	9.5	0.282	10.0	LOS A	2.5	18.4	0.88	0.77	0.88	42.5
12a	R1	337	2.8	0.282	12.1	LOS A	2.5	18.4	0.87	0.78	0.87	38.3
12u	U	11	0.0	0.282	14.6	LOS B	2.4	17.0	0.87	0.80	0.87	40.9
Approach		414	3.8	0.282	11.8	LOS A	2.5	18.4	0.88	0.78	0.88	39.3
All Vehicles		2480	2.5	0.563	7.2	LOS A	5.2	36.9	0.57	0.63	0.57	43.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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 SUMMARY

Site: 102 [[2021+Dev_PM] Darcy x Mons]

Darcy Road / Mons Road / Institute Road Four-way Intersection, Westmead
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 100 seconds (Site Optimum Cycle Time - Minimum Delay)

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
SouthEast: Darcy Road (SE)												
21a	L1	519	1.8	0.458	33.4	LOS C	10.4	74.1	0.86	0.79	0.86	27.7
23a	R1	135	21.9	0.808	57.6	LOS E	5.7	40.5	1.00	0.91	1.26	22.1
Approach		654	6.0	0.808	38.4	LOS C	10.4	74.1	0.89	0.81	0.94	26.4
East: Institute Road (E)												
4b	L3	101	0.0	0.863	58.3	LOS E	12.8	89.3	1.00	1.05	1.32	22.2
5	T1	375	0.0	0.863	53.8	LOS D	13.3	93.1	1.00	1.06	1.32	20.4
6	R2	1	0.0	0.863	56.9	LOS E	13.3	93.1	1.00	1.07	1.31	19.5
Approach		477	0.0	0.863	54.8	LOS D	13.3	93.1	1.00	1.06	1.32	20.8
North: Mons Road (N)												
7	L2	2	0.0	0.270	18.8	LOS B	7.0	49.1	0.62	0.62	0.62	30.0
7a	L1	283	11.9	0.270	17.0	LOS B	7.0	49.1	0.61	0.61	0.61	32.8
9	R2	329	5.1	0.908	60.9	LOS E	19.3	140.7	1.00	1.07	1.39	19.6
Approach		615	8.2	0.908	40.5	LOS C	19.3	140.7	0.82	0.86	1.03	24.7
West: Darcy Road (W)												
10	L2	82	5.1	0.799	46.4	LOS D	12.0	85.4	1.00	0.97	1.24	23.0
11	T1	121	0.0	0.799	43.2	LOS D	12.0	85.4	1.00	0.97	1.24	22.4
12a	R1	297	2.8	0.799	49.1	LOS D	12.9	92.3	1.00	0.97	1.19	24.7
Approach		500	2.5	0.799	47.2	LOS D	12.9	92.3	1.00	0.97	1.21	24.0
All Vehicles		2245	4.5	0.908	44.4	LOS D	19.3	140.7	0.92	0.91	1.10	24.2

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
P2	East Full Crossing	53	44.3	LOS E	0.1	0.1	0.94	0.94
P3	North Full Crossing	53	44.3	LOS E	0.1	0.1	0.94	0.94
P4	West Full Crossing	53	44.3	LOS E	0.1	0.1	0.94	0.94
All Pedestrians		158	44.3	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: 103 [[2021+Dev_PM] Hawkesbury x Darcy]

Hawkesbury Road / Darcy Road T-intersection, Westmead

Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 100 seconds (Site Optimum Cycle Time - Minimum Delay)

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
NorthEast: Hawkesbury Road (NE)												
25	T1	492	1.3	0.584	23.7	LOS B	17.3	122.4	0.83	0.73	0.83	18.7
26	R2	198	3.7	0.584	22.6	LOS B	5.5	39.3	0.93	0.79	0.93	28.5
Approach		689	2.0	0.584	23.4	LOS B	17.3	122.4	0.86	0.75	0.86	22.6
NorthWest: Darcy Road (NW)												
27	L2	221	2.4	0.187	11.2	LOS A	4.3	30.1	0.43	0.63	0.43	32.8
29	R2	518	7.3	0.585	38.3	LOS C	11.9	83.9	0.91	0.79	0.91	24.3
Approach		739	5.8	0.585	30.2	LOS C	11.9	83.9	0.77	0.74	0.77	26.2
SouthWest: Hawkesbury Road (SW)												
30	L2	354	10.4	0.398	13.7	LOS A	5.7	40.0	0.71	0.73	0.71	32.3
31	T1	254	1.7	0.548	36.3	LOS C	11.0	77.6	0.93	0.78	0.93	14.7
Approach		607	6.8	0.548	23.1	LOS B	11.0	77.6	0.80	0.75	0.80	25.8
All Vehicles		2036	4.8	0.585	25.8	LOS B	17.3	122.4	0.81	0.75	0.81	25.1

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
P6	NorthEast Full Crossing	53	37.1	LOS D	0.1	0.1	0.86	0.86
P71	NorthWest Stage 1	53	33.7	LOS D	0.1	0.1	0.82	0.82
P72	NorthWest Stage 2	53	44.3	LOS E	0.1	0.1	0.94	0.94
P8	SouthWest Full Crossing	53	44.3	LOS E	0.1	0.1	0.94	0.94
All Pedestrians		211	39.8	LOS D			0.89	0.89

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.