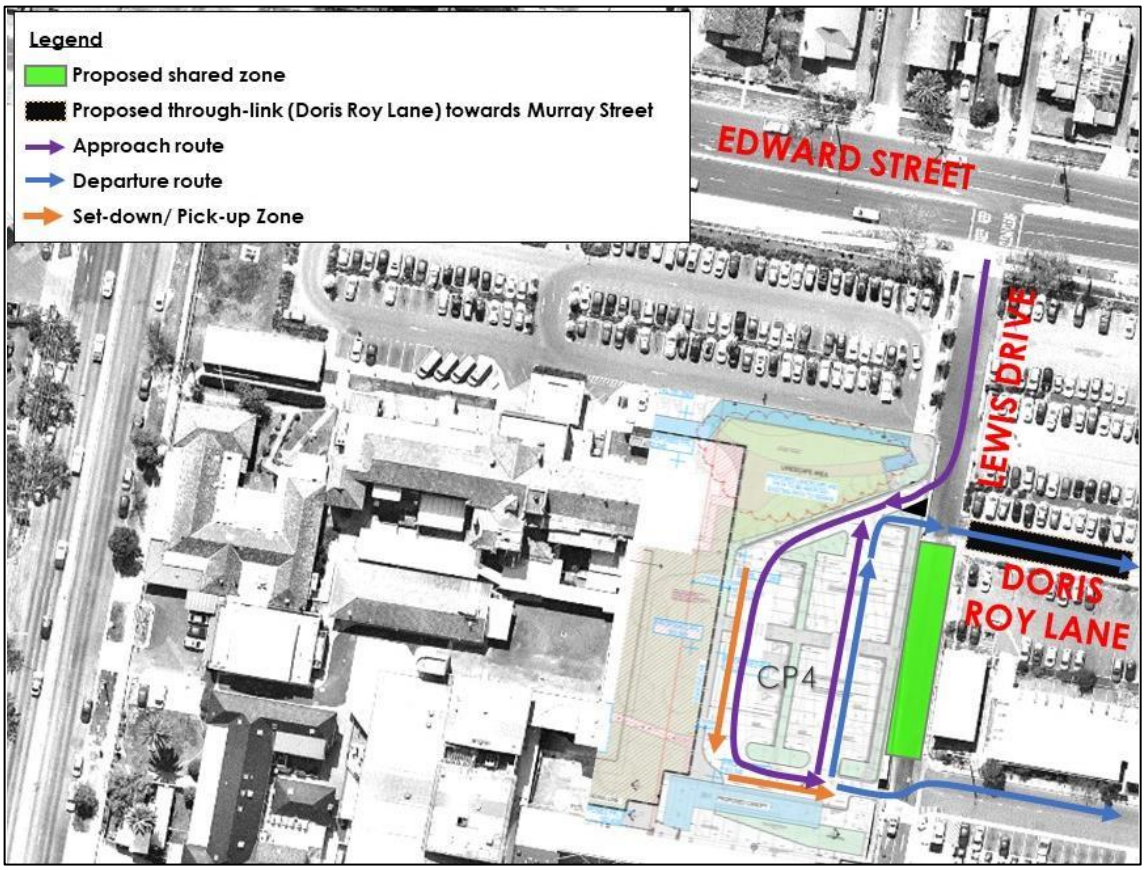
Figure 5.9: Proposed approach and departure routes for set-down/pick-up zone and CP4



Basemap source: Nearmap

5.2.2 Public Access to the Emergency Department via Murray Street and exit via Yabtree Street and Doris Roy Lane

The one-way eastbound only Yabtree Street will be converted to two-way to allow vehicle access to the car parking facilities CP5 and CP6 and the existing set-down/ pick-up zone for the Emergency Department. Appropriate wayfinding signage at the intersections of Edward Street/ Lewis Drive, Edward Street/ Murray Street, Yabtree Street/ Murray Street and Yabtree Street/ Lewis Drive should be provided to guide vehicles associated with the set-down/ pick-up zone via Yabtree Street.

The above proposal will have minimal impact on the existing parking due to the expected low turnover rates of CP5 and CP6. Further, the access to the set-down/ pick-up zone via Yabtree Street removes conflicts between set-down/ pick-up vehicles and vehicles accessing CP1, CP2, CP3, CP4 and Doris Roy Lane.

The existing and proposed approach routes as well as the departure routes for set-down/ pick-up zone, CP5 and CP6 via Yabtree Street, is shown in Figure 5.10.

Figure 5.10: Existing and proposed approach routes for set-down/ pick-up zone, CP5 and CP6

Basemap source: Nearmap

5.2.3 Car Park Management Plan

Several factors require detailed consideration to gain the best and highest utilisation of the final car parking provision. A detailed car park management plan to be implemented and managed by the hospital or a private car parking operator would ensure these objectives are met. This may include consideration for the following:

- Implementation of a parking guidance system and perhaps including an Automatic Number Plate Recognition (ANPR) system to allow efficient car park operation and access arrangements, particularly during peak times.
- Digital and static signage systems to enable clear and concise communication of parking areas and variable on-site conditions that react to demand profiles, events/ functions etc.
- Implementation of parking guidance and information system within the car park facility and near the hospital. Both provide information which aids the decision-making process of the drivers in reaching their destination location and assists them in locating a vacant parking space within the car park facility.

- Visitor parking arrangements that may include specific rates and duration of stay provisions.
- Implementation of smart payment system in the effort to overcome the limitation of the conventional payment methods such as the use of smart cards, debit cards and credit cards, contactless cards, mobile devices.
- Implementation of E-parking provides an alternative for visitors to enquire the availability and/ or reserve a parking space at their desired parking facility to ensure the availability of vacant car park space when they arrive at the parking facility. The system can be accessed via numerous methods such as SMS or through the internet.

6. Sustainable Transport Infrastructure

This chapter discusses potential measures that could encourage alternative means of travel to the private car and encourage the use of more environmentally sustainable forms of travel.

6.1 Better Placed – An Integrated Design Policy for the Build Environment of NSW 2007

Multiple environmental and health benefits are created through walkable access, cycling and public transport by reducing private car usage, traffic impacts and household transport costs. Better Placed has been developed by the Government Architect to deliver the strategic approach needed to ensure that as our cities and towns grow bigger they get even better.

As transport is responsible for around 14 per cent of the state's greenhouse gas emissions, there is a need to provide people with public transport options, and promote walking and cycling for short trips, in order to meet environmental objectives. This is further detailed in the Work Travel Plan in Section 8.

6.2 NSW Planning Guidelines for Walking and Cycling

The Planning Guidelines for Walking and Cycling provide guidance to land-use planners to ensure that walking and cycling improvements are taken into consideration in planning policy and practice. The guidelines provide a walking and cycling focus to the NSW Government's Integrating Land Use & Transport Planning Policy Package.

The guidelines suggest that "*when making planning instruments, councils are encouraged to integrate relevant state and local policies related to walking and cycling*". This includes development policies in the DCPs and LEPs that encourage walking and/or cycling that would be considered during the development assessment stage thereby encourage improvements to walking and cycling facilities.

Bicycle parking spaces would be designed in accordance with the relevant Australian Standard (AS2890.3 – Bicycle Parking Facilities). To comply with the Australian Standard, the bicycle parking spaces for staff would need to be provided as Class 1 bicycle spaces (i.e. individual bicycle lockers with dimensions of 1,840 millimetres by 715 millimetres), while visitor bicycle spaces will need to be provided as Class 3 bicycle spaces (i.e. bicycle racks in public area at 1,200 millimetres centre to centre). Secure racks for use by staff should be provided in a secure location (i.e. individual locker of secure room/ enclosure).

6.3 Pedestrian

A work program for the final Pedestrian Access and Mobility Plan (PAMP) for Wagga Wagga was prepared as part of Council's planning and funding commitments. Table 6.1 summarises the relevant recommended works to implement the PAMP.

Table 6.1: Works Schedule

No.	Location	Treatment	Priority
1	Sturt Highway (Edward Street), Wagga Wagga at Murray Street	Traffic Signals	H
2	Brookong Avenue, Wagga Wagga south of Edward Street.	Pedestrian Refuge	H

Key: H: High priority (now to 5 years)

Further to the above, it is also proposed to convert the section of Lewis Drive south of Doris Roy Lane and Yathong Street west of Peck Street to a shared zone. A shared zone is a street that is designed to give priority to pedestrians while significantly reducing the dominance of vehicles. These vehicles must give way to pedestrians and equally pedestrians should not hinder vehicles.

The proposed changes would provide an environment where access and safety for pedestrians is prioritised and through traffic is minimised. Within a shared zone, drivers must give way to pedestrians at all times. With drivers travelling at a maximum speed limit of 10 kilometres per hour, to enable better control of vehicles and avoid potential conflicts with pedestrians.

The shared zone proposal will be addressed during the detailed design stage.

Given the proposed measures, the existing and proposed pedestrian network and infrastructure is adequate to meet the likely future demand of the proposed development.

6.4 Bicycle

6.4.1 Wagga Wagga Bicycle Plan

The Wagga Wagga Bicycle Plan was released in 2011 and set out the Bicycle Network development priorities within Wagga Wagga LGA. The key vision developed as part of the Bicycle Plan was *"to create an environment where cycling is an easy, enjoyable and convenient way to get about, where there are no barriers, and everyone has the confidence and desire to simply 'pick up a bike and go', whenever they feel like it"*.

It recognises the benefits of cycling, including to Council's quadruple bottom line (environmental, social, economic and governance), as well as to the wider transport network, but also the considerable barriers to cycling, which include major roads, traffic volumes and speeds, and the lack of continuity in the bicycle network.

6.4.2 Cycle Network

The Integrated Movement Study for City of Wagga Wagga (2008) identified proposed cycle routes to be implemented in Wagga Wagga as part of the Wagga Wagga City Bike Plan. These routes would also indirectly benefit cyclists of the subject site by providing appropriate facilities for cyclists and link connections in and around Wagga Wagga. These are shown in Figure 6.1.

Figure 6.1: Wagga Wagga City Bike Plan

Source: https://www.wagga.nsw.gov.au, accessed 19/04/18

Other measures as part of the Integrated Movement Study include:

- All on-road routes shown on the Wagga Wagga City Bike Plan should be surveyed for the design, setout and marking of road centrelines and edge lines to delineate road shoulder pavement and/or exclusive bicycle lanes for the passage of cyclists.

- All pavements should be sealed or constructed in concrete to make the network more attractive and encourage use.
- All structures should provide at least the same width as the approaching pathway.
- Provision of bicycle depots throughout the major residential areas and city centre that bicycles can be hired at one location and return at another location (WWBH) should also be investigated.
- Dialogue with bus operators for provision of bicycle racks on special buses.
- The upgrade of the existing on-road bicycle lanes to three metre wide off-road paths.

Near the hospital, it is recommended that Council survey and design to delineate routes with edge lines, pavement logos and signposting for all on-road routes without delineation.

As part of the Redevelopment Stage 3 project, it is proposed that on-road bicycle lanes be provided along Yathong Lane, Peck Street and Yabtree Street to provide the missing links between the proposed on-road route along Salmon Street and the hospital.

Given the proposed measures, the existing and proposed bicycle network and infrastructure is adequate to meet the likely future demand of the proposed development.

6.4.3 End of Trip Facilities

Given that the DCP 2010 does not specify have any requirements for end of trip facilities, it is recommended that such facilities be considered in the existing buildings (retrofitting existing facilities) or new Stage 3 building. End of trip facilities could be provided in accordance with the following:

- One bathroom and change area shall be provided and shall contain at least one toilet, wash basin, mirror, clothing hooks and power points (including shaving plugs).
- One bathroom and change area(s) per 10 required bicycle parking spaces.
- Clothes lockers to be provided at the rate of one clothes locker for every required bicycle parking space.

Based on the provision of 44 bicycle spaces for staff and visitors, the proposed development could incorporate at least:

- one bathroom and change area
- four shower cubicles
- 40 clothes lockers (given there are four existing lockers).

6.5 Public Transport

Based on the JTW data, only one per cent of the staff currently use public transport. There is an opportunity to encourage the use of public and active transport modes. As such, as part of the Integrated Movement Study for City of Wagga Wagga (2008), it is recommended that the following specific approaches need to be explored for implementation:

- *Strategy 1: Fast Bus Routes: This strategy has briefly been discussed with Fearnes Coaches and requires further discussion among parties. The strategy aims to utilise the available shuttle buses (that are provided by pubs after hours) during normal hours while improving travel time along main bus routes. The strategy involves the use of shuttle buses at a local level to provide a connection to main bus service at a centralised location. This measure will reduce travel time along the main bus route by 20 to 30 minutes, as they no longer need to travel within local roads.*

- *Strategy 4: After Hours Bus Centre: It is understood that during after hours particularly on weekends after closure of pubs in CBD area, a shortage of taxis is experienced. To overcome this shortcoming a number of pubs within Wagga Wagga are providing shuttle bus services for their patrons. This would require an inefficient service with long travelling routes depending on various patrons' destinations. To overcome this issue and provide a more efficient and practical service, the following comments are made for further consideration by appropriate and relevant bodies.*
- *Strategy 7: Bus Routes Review It is anticipated that a review of bus routes (as part of a collaborative work between relevant bodies) could lead in their development of a more efficient and better service. This review could include re-routing certain bus services. For example moving a bus route from Baylis Street to another street such as Forsyth Street would improve its travel time (due to the nature of Baylis Street). Further, a bus interchange could also be accommodated along Forsyth Street opposite the shopping centre which is in the heart of the CBD area.*

The above recommendations would require further investigations and consultation by Roads and Maritime Services, TfNSW and bus operators to ensure there will be sufficient demand. The recommendations could contribute to increasing the use of public transport by staff and discourage the use of private motor vehicles.

As discussed, the proposed development is expected to generate up to 92 vehicle trips during the peak hours. Assuming a vehicle occupancy rate of 1.2, the proposed development would generate up to 110 potential passengers that could use the existing public transport system. The number of potential passengers can be easily accommodated within the remaining capacity of the existing bus system of 420 passengers.

As such, the existing public transport system is adequate to meet the likely future demand of the proposed development.

6.6 Rural and Regional on Demand Transport Request

TfNSW released the Rural and Regional on Demand Transport Request for Expressions of Interest (EOI) in November 2017 and identified Wagga Wagga to implement an on-demand bus service pilot program.

A key result of the EOI is to provide greater flexibility and mobility in the transport services to accommodate the needs of the Wagga Wagga community. As part of the pilot project, TfNSW:

- will work with participants who can contribute innovative systems and ideas in their own right or in partnership with others
- may assist by linking a participant proposing piloting an application that supports and encourages on demand transport with others who may be able to help provide an end-to-end solution.

With the recent trial projects in Sydney region, such program allows the patrons to book an on-demand service over the phone, via an app or in person at key locations. Payment to drivers can be pre-paid by debit/ credit card or cash. An on-demand bus will pick the customer up at the specified origin/ convenient nearby location and transport the customer to the specific destination within the on-demand area.

These on-demand services will supplement the regular bus services.

6.7 Crime Prevention through Environmental Design (CPTED)

There are four main principles of CPTED – natural surveillance, access control, territorial reinforcement and space management. The principles of CPTED can help create a safe and secure environment and assist in minimising the incidence of crime and contribute to perceptions of increased public safety within the hospital site.

HI has generally considered the CPTED principles as a tool in the infrastructure design. It is proposed that the car park be designed in accordance to the NSW Car Park Guidelines for Crime Prevention. The design guidelines which incorporates the CPTED principles are provided in Table 6.2.

Table 6.2: NSW Car Park Guidelines for Crime Prevention

Category	Sub Category	Guidelines
Natural surveillance	Sightlines	○ Configure the layout so cars are parked in grid like rows to allow for good sightlines between vehicles and through the car park. Do this in a way to maximise sightlines from areas with the most pedestrian and vehicular traffic, such as a nearby business or street. ○ Trim or remove foliage that is blocking sightlines into and through the car park. Any landscaping should be above head height, below waist height and set back from pedestrian pathways. ○ Remove or block secluded areas or hidden recesses, such as areas under stairs. ○ Ensure there is minimal obstruction to lines of sight including vehicles, pillars and concrete columns.
	Surveillance	○ Provide a mixture of long term and short term parking to enhance natural surveillance where practical. ○ Incorporate additional security for long term parking areas, such as patrols. ○ Locate long term parking areas in the most visible location in the car park. ○ Incorporate business activity within, or near, the car park, such as a car wash. ○ Ensure facilities, such as public toilets, are monitored, regularly patrolled and located in areas where maximum surveillance is offered. ○ Schedule maintenance at the most vulnerable times for offending, as the maintenance staff are a form of surveillance. ○ Multi-storey car parks should have open sides rather than solid blank walls.
	Lighting	○ Lighting should at least meet minimum requirements under Australian Standards (AS 1158 for external lighting and AS 1680 for interior lighting). ○ Light fixtures should be reliable, easy to maintain, able to withstand the elements and vandal resistant. ○ Incorporate lighting into a regular maintenance plan so as to ensure lights are working, maintaining lux levels and are not obstructed in any way by signs, landscaping or other objects. ○ When selecting and positioning light fixtures, be considerate of glare. Also consider the brightness of the light and effect of passing from light to dark areas. ○ White' light is best for natural surveillance as it allows for clarity of vision. Parked cars can be identified by colour and other details, which is important for crime reporting. Direct lighting to the car park so that guardians or passers-by can see inside the area. Ensure the lighting extends to the edges of the parking areas, not just vehicle and pedestrian routes. ○ Paint the car park interior white. This can assist lighting to be effective and can save money through lower wattage demand. ○ Lights should be bright enough to enable the rear seat of a parked vehicle to be seen before entering and enable the face of a person to be seen 15 metres away.

Category	Sub Category	Guidelines
		○ Ensure there is sufficient lighting to complement the CCTV system (if in place) so that images are captured. ○ Consider the use of sensor lights in certain darker areas.
	Closed Circuit Television (CCTV)	○ Install a quality, vandal resistant system which staff are thoroughly trained to use. ○ Display signage identifying that CCTV is operating. ○ Ensure the cameras are installed so as to maximise surveillance opportunities. ○ Ensure the camera views are not obstructed by anything such as landscaping or signposts. ○ Ensure that cameras are constantly, actively monitored near the site. If a crime is occurring this can make it possible for a perpetrator to be apprehended or interrupted. ○ Camera feeds should be recorded and stored.
Access Control	Vehicle Access	○ Provide a dedicated singular point of entry and a dedicated singular point of exit to the car park. ○ Install boom gates, ticketed entry, one-way spikes or other access control devices to regulate vehicle movement. ○ Locate entry and exit points near guardians in the car park, such as ticket sellers / machines, businesses, or other adjoining properties. ○ Provide clear line marking or parking spaces and clearly number or colour-code the parking bays. ○ Install black or dark green see-through fencing around the perimeter of the car park.
	Pedestrian Access	○ Provide minimal number of pedestrian access / exit points. ○ Provide clearly marked, open, visible pedestrian access ways within the car park to busy destination points. ○ Maintain landscaping along and near pedestrian access ways to ensure clear sightlines. Any landscaping should be above head height, below waist height and set back from pedestrian pathways.
	Design	○ Delineate the boundary and perimeter of the car park in some way. This could be through low shrubbery or dark coloured, see-through fencing around the perimeter of the car park. ○ Implement circular movement of traffic around the car park so that vehicles cannot simply take the shortest route to and from the entry and exit. ○ Clearly mark the car park with the name and street address.
Space and Activity Management	-	○ Clearly number or colour-code the floor levels and parking bays. ○ Ensure a regular maintenance plan is in place including rubbish removal, graffiti removal, repair of light fixtures, maintenance of lux levels, trimming of vegetation and other necessary repairs. ○ Where feasible, incorporate business activity within, or near, the car park, such as a car wash. ○ All staff should undergo crime awareness training - what is suspicious behaviour and what are the reporting procedures for the location. ○ Crime statistics for the car park should be monitored by management and should inform crime prevention initiatives such as the timing and frequency of security patrols.
	Signage	○ Highly visible (should be able to be seen clearly at night – use reflective material). ○ Advise users of installed security measures and where to find them (such as help points or intercom systems). ○ Reminds people to secure their vehicle and remove valuables. These signs should be simple to understand – use of images is best.

7. Traffic Impact Assessment

7.1 Traffic Generation

7.1.1 Private Hospital

It is difficult to determine the peak traffic generation, noting the on-street parking demand associated with the hospital. On this basis, the Roads and Maritime Services *Guide to Traffic Generating Developments*, 2002 (Roads and Maritime Guide) has been referenced to understand the impact of the proposed development.

For private hospitals, the Roads and Maritime Guide recommends the following trip generation rates based on the number of beds and the average number of staff per weekday shift:

- Peak Vehicle Trips (PVT) = -14.69 + 0.69B + 0.31ASDS
- AM Peak Vehicle Trips (MVT) = -10.21 + 0.47B + 0.06ASDS
- PM Peak Vehicle Trips (EVT) = -2.84 + 0.25B + 0.40ASDS.

Where 'B' represents the number of beds proposed.

The trip generation rates were developed using survey data collected by Roads and Maritime in 1994 from 19 private hospitals across the Sydney region. The hospitals surveyed had between 30 to 99 beds and an average day shift workforce of between 10 and 102 employees.

Of the 19 hospitals surveyed, the majority recorded their respective daily traffic peak (PVT) between 3pm and 4pm. This time period generally coincided with a staff shift change at the surveyed hospitals and would coincide with the start of the on-road peak near the site.

It should also be noted that of the 19 hospitals surveyed, an average of 87 per cent of people travelling to each hospital did so by private car and the mode share attributed to car-based trips ranged from 67 per cent to 98 per cent. Average vehicle occupancy was 1.3 persons per vehicle.

The Roads and Maritime rates have been applied to the WWBH. This includes an increase of 94 beds/ chair/ rooms and 69 ASDS. The results indicate that the peak hour increase in traffic generation would result in around 39 and 49 additional trips per hour during the AM and PM peak hours, respectively.

7.1.2 Education Area

Roads and Maritime Guide (2002) and Technical Direction TDT 2013/4a do not provide traffic generation rates for Education Area facilities. As such, for the purposes of this assessment, the Roads and Maritime (2002) rate for commercial use has been adopted for the facilities that operate during the surveyed peak periods, which is two vehicle trips per 100 square metres GFA.

Based on 379.2 square metres GFA, the Education Area would result in eight additional trips per hour during the peak periods.

7.1.3 Set-Down/ Pick-Up Operations

The peak demand expected at the set-down/ pick-up area is also anticipated during the AM and PM peaks, with a maximum demand of 15 people during any peak hour. It is assumed that around 50 per cent of visitors will travel as a passenger by car with the other 50 per cent assumed to travel by taxi.

As a result, Lewis Drive is expected to carry an additional 30 vehicle trips associated with the set-down/ pick-up area during any peak hour.

The set-down/ pick-up has been designed to formally accommodate seven 99th percentile cars.

The operations of the set-down/ pick-up area is considered to be critical to the overall functionality of the area including Lewis Drive and adjacent vehicle accesses to car parking facilities and will require implementation of a detailed management plan comprising on-site traffic management as a minimum during peak times.

7.1.4 Summary

The proposed development is expected to generate an additional 76 and 92 vehicle trips during the AM and PM peak hours, respectively. This is equivalent to up to 1,150 vehicle trips per day[11].

Applying the above peak hour and daily traffic generation to the JTW mode share percentage, the number of staff/ visitor anticipated for each mode is summarised in Table 7.1.

Table 7.1: Anticipated Number of Staff/ Visitor by Mode

Mode	Mode share	Anticipated Number of Staff/ Visitor	
		Peak Hour	Daily
Vehicle driver	82%	74	942
Vehicle passenger	8%	8	92
Walked only	6%	6	69
Train	0%	0	0
Bus	1%	1	12
Mode not stated	2%	2	23
Other (Bicycle)	1%	1	12
Total	**100%**	**92**	**1,150**

Data source: JTW Explorer, Bureau of Transport Statistics, 21/12/2017

7.2 Distribution and Assignment

The directional distribution and assignment of existing traffic and traffic generated by the additional uses will be influenced by the following factors:

- Configuration of the internal road network within the site
- Existing operation of intersections providing access between the local and arterial road network, distribution of households near the site
- Surrounding retail centres and schools in relation to the site
- Likely distribution of employees' residences in relation to the site
- Configuration of access points to the site.

7.3 Traffic Impact

The traffic impact assessments in this section provide input which form the basis of the traffic and transport design for the hospital and inform the required civil works to be undertaken to the local road network within and around the hospital site. This section will also identify, if any, appropriate mitigation measures to effectively manage the transport impact of the proposed development.

11 Assuming a peak-to-daily ratio of 8%.

The Integrated Movement Study for City of Wagga Wagga (2008) include traffic modelling projections in addition to traffic volume data for the road network and land use information in Wagga Wagga area.

The future scenarios reflect general growth of the Study Area for a 20-year planning horizon (Year 2026) with respect to planning documents (such as Spatial Plan for Wagga Wagga 2007, Vision 21 Land Use Strategy and Advisory Report - Retail and Commercial Development Strategy, 2007) and other available information. The future scenarios have also taken into consideration the following potential developments within Wagga Wagga:

- Boorooma East: 400 lots. Area is around 64 hectares – assume around 8.5 dwellings/ hectare
- Estella West: 1615 lots. Area is around 190 hectares – assume around 8.5 dwellings/ hectare
- Lloyd West: 1157 lots. Estimates only. Needs considerable further investigation and may be significant reductions in yield
- Lloyd East: 660 lots Estimates only
- Estimates of commercial, retail and industrial land use areas were made as part of the traffic modelling process.

The base daily traffic volumes (2006) and future daily traffic volumes (2026) as well as associated annual growth rate are summarised in Table 7.2. This data shows an average growth of two per cent to 3.9 per cent per year between 2006 and 2026. It is noted that a factor of 3.2 per cent is used to convert the daily traffic volumes to the AM peak hour volumes.

On the basis of this factor, the AM peak hour increase in traffic between 2017 and 2027 is summarised in Table 7.2. These increases were considered in the assessment of the intersection operation to safeguard both intersections layout and operation.

Table 7.2: Annual Growth

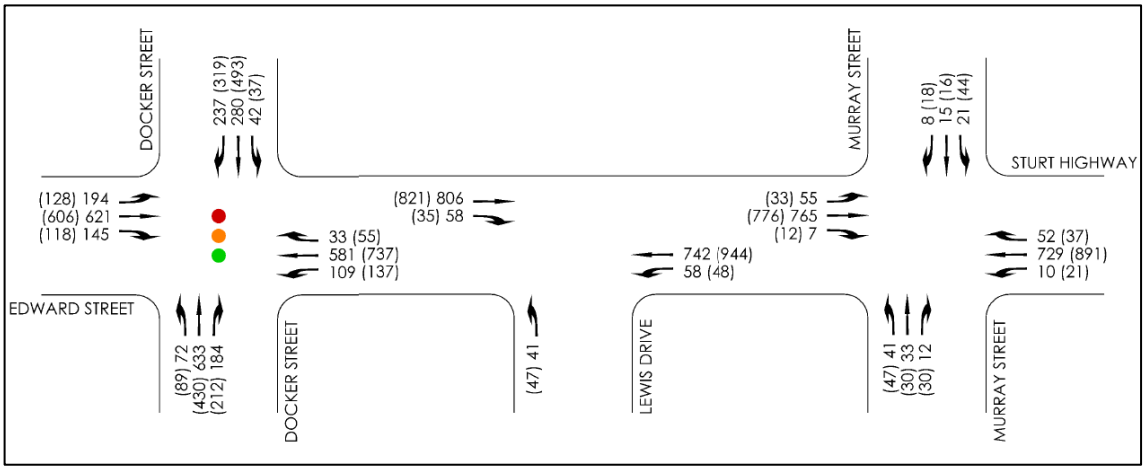
Street	2006 Traffic Volumes (daily)	Projected 2026 Traffic Volumes (daily)	Annual Growth	Projected 2017 Traffic Volumes (daily)	Increase in Traffic Volumes (daily) (2017 -2026)	Increase in Traffic Volumes (AM peak) (2017-2026)
Sturt Highway, East of Docker Street	16,456	30,004	3.0%	22,898	13,548	227
Docker Street, North of Edward Street	15,503	22,875	2.0%	19,202	7,372	118
Edward Street, West of Docker Street (Sturt Highway)	16,504	35,795	3.9%	25,265	19,291	337

Source: Integrated Movement Study for City of Wagga Wagga (2008)

7.4 Year 2027 Intersection Operation without Proposed Development

Considering the future traffic growth, the future Year 2027 AM and PM peak hour traffic volumes are summarised in Figure 7.1.

Figure 7.1: Future weekday AM and PM peak hour traffic volumes without proposed development (2027)



The key intersections along Sturt Highway/ Edward Street were analysed under 2027 traffic conditions without the inclusion of traffic generated by the WWBH Redevelopment Stage 3 to confirm the future intersection operation. A summary of the expected future operating conditions of the key intersections for Year 2027 is shown in Table 7.3.

Table 7.3: Future operating conditions without proposed development (2027)

Intersection	Peak	Leg	Degree of saturation (DOS)	Average delay (sec)	95th percentile queue (m)	Level of service (LOS)
Edward Street/ Docker Street	AM	South	0.96	70	220	E
		East	0.58	34	121	C
		North	0.93	59	199	E
		West	0.94	43	156	D
		Overall	**0.96**	**51**	**220**	**D**
	PM	South	1.02	114	262	F
		East	1.02	114	245	F
		North	1.04	102	525	F
		West	0.9	65	216	E
		Overall	**1.04**	**99**	**525**	**F**
Edward Street/ Lewis Drive[1]	AM	South	0.05	8	2	A
		East	0.23	6	0	A
		West	0.12	12	3	A
	PM	South	0.13	8	2	A
		East	0.28	6	102	A
		West	0.1	14	2	A
Edward Street/ Murray Street[1]	AM	South	1.03	307	43	F
		East	0.27	14	12	A
		North	0.59	160	14	F
		West	0.24	14	2	A
	PM	South	1	243	48	F
		East	0.3	14	34	A
		North	0.78	180	19	F
		West	0.24	16	4	B

[1] Worst movement reported for unsignalised intersection.

Based on Table 7.3, the traffic generation of the proposed development would add additional vehicle delays of up to nine seconds and vehicle queues of up to 75 metres during the peak hours on the operation of the intersection of Edward Street/ Docker Street. These impacts are relatively minor given the high traffic volumes at this major intersection. The intersection will operate at level of service D during the AM peak hour but is expected to operate at a level of service F in the PM peak.

The intersection of Edward Street/ Lewis Drive will remain to operate well with minimal queues and delays on all approaches, with level of service A during the peak hours.

The background traffic growth is anticipated to have notable impacts to the intersection of Edward Street/ Murray Street, with increase in vehicle delays of up to 224 seconds and vehicle queues of up to 30 metres during the peak hours.

This indicates that the intersections of Edward Street/ Docker Street and Edward Street/ Murray Street would operate beyond its capacity under 2027 traffic even without traffic generated by the project.

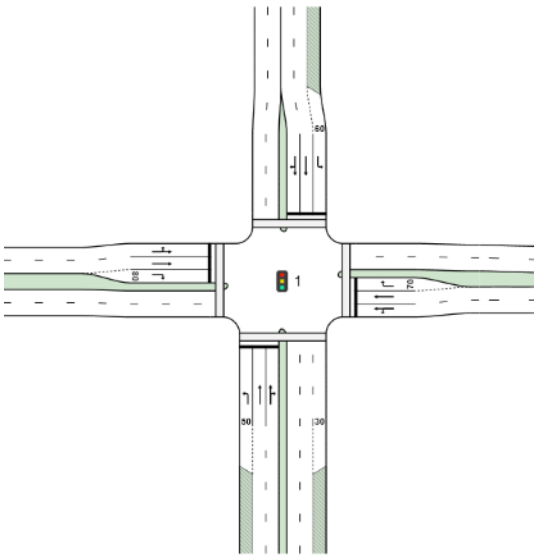
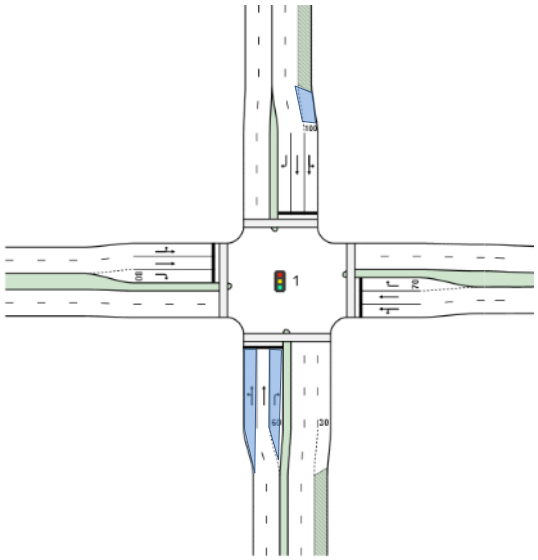
7.4.1 Mitigation Measures

The expected future operation of Edward Street/ Docker Street could be improved via minor widening and signal optimisation, with the applied mitigation measures at the intersection shown in Figure 7.2.

The following mitigation measures are recommended for Edward Street/ Docker Street intersection:

- Convert existing 50-metre northbound left-turn lane to a shared thru and left-turn lane
- Convert existing northbound shared thru and right-turn lane to 60-metre northbound right-turn lane.

Figure 7.2: Edward Street/ Docker Street intersection upgrades (highlighted in blue) due to background traffic growth

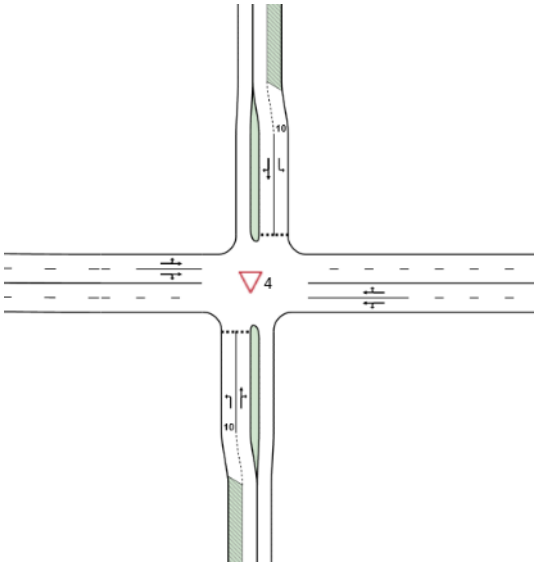
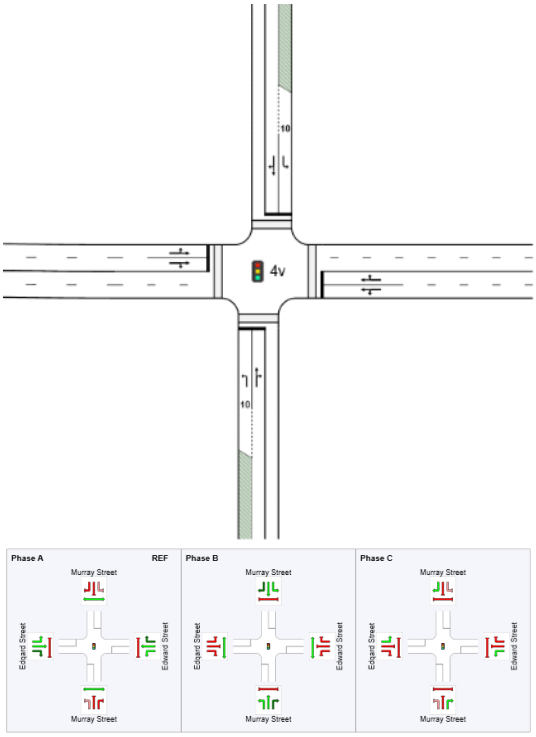
Year 2018 Existing	Year 2027 with Background Traffic Growth (with Upgrades)
	

As discussed in Section 2.10, 12 crashes occurred at the Edward Street/ Murray Street intersection between 2011 and 2016. The additional delays on the approach of Murray Street could contribute to drivers becoming impatient and performing hazardous manoeuvres, resulting in potential crashes.

The Integrated Movement Study for City of Wagga Wagga (2008) (Integrated Movement Study) identified traffic management measures for Edward Street (between Dobney Avenue and Lake Albert Road) as proposed by Roads and Maritime. Roads and Maritime reviewed several options including providing a median along Edward Street with installation of a roundabout at the intersection of Murray Street and Edward Street and providing a continuous median along Edward Street at its intersection with Murray Street. However, Roads and Maritime and Council outline in the Integrated Movement Study that the preference is to install traffic signals at the intersection of Murray Street with Edward Street to provide a better facility for pedestrian and cyclist movements in the area.

The signalisation of Edward Street/ Murray Street intersection with a two-phase operation, in accordance with the Integrated Movement Study are shown in Figure 7.3. This would need to consider signal coordination with the Edward Street / Docker Street intersection.

Figure 7.3: Edward Street/ Murray Street intersection upgrades due to background traffic growth

Existing	Year 2027 with Background Traffic Growth (with Upgrades)
	

It is noted that improvements are required based on forecast traffic growth in the area and not as a result of the Stage 3 development. The signalisation of Murray Street / Edward Street is a high priority item in the Integrated Movement Study works schedule. It is recommended that Council and Roads and Maritime monitor the traffic flow at these two key intersections to ascertain the timing of the required improvements.

Based on the above, the analysis for Stage 3 assumes the proposed improvements have been implemented. The expected future operating conditions of the key intersections with the proposed mitigation measures and without the proposed development, are summarised in Table 7.4.

Table 7.4: Future operating conditions with mitigation measures and without proposed development

Intersection	Peak	Leg	Degree of saturation (DOS)	Average delay (sec)	95th percentile queue (m)	Level of service (LOS)
Edward Street/ Docker Street	AM	South	0.94	63	179	E
		East	0.74	41	135	C
		North	0.7	47	97	D
		West	0.9	53	195	D
		Overall	**0.94**	**52**	**195**	**D**
	PM	South	0.88	62	125	E
		East	0.92	60	237	E
		North	0.96	63	235	E
		West	0.77	44	156	D
		Overall	**0.96**	**57**	**237**	**E**
Edward Street/ Lewis Drive[1]	AM	South	0.05	8	2	A
		East	0.23	6	0	A
		West	0.11	11	3	A
	PM	South	0.11	8	2	A
		East	0.48	6	0	A
		West	0.08	13	2	A
Edward Street/ Murray Street (signalised)	AM	South	0.25	27	17	B
		East	0.39	9	84	A
		North	0.14	27	9	B
		West	0.36	4	37	A
		Overall	0.39	8	84	A
	PM	South	0.25	48	22	D
		East	0.48	14	123	A
		North	0.18	49	18	D
		West	0.4	5	41	A
		Overall	0.48	14	123	A

[1] Worst movement reported for unsignalised intersection.

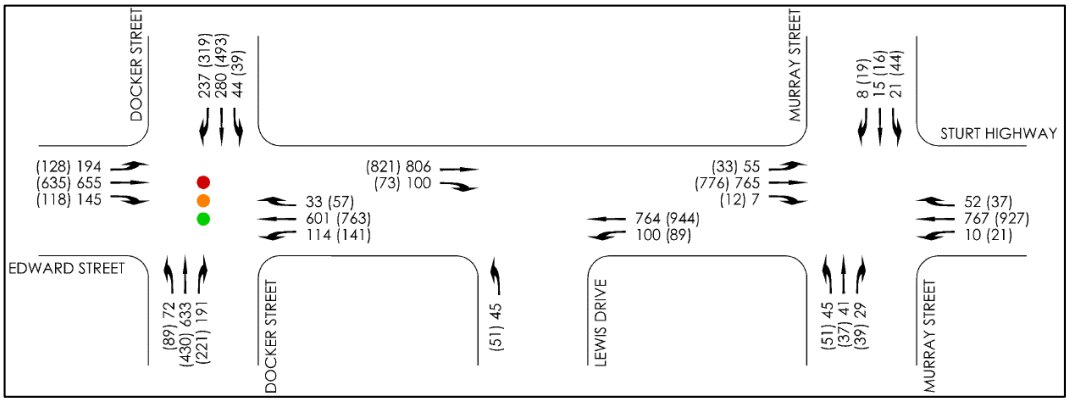
Based on Table 7.4, with the implementation of signals at the intersection of Edward Street/ Murray Street the operation of the Edward Street/ Docker Street intersection would be at levels of service D and E during the AM and PM peak hours, respectively, which are similar to the existing operating conditions.

With the proposed mitigations, the signalised intersection of Edward Street/ Murray Street would operate at a level of service A during the peak hours.

7.5 Year 2027 Intersection Operation with Proposed Development

The future AM and PM peak hour traffic volumes considering both the future traffic growth and traffic generated by the proposed development, are summarised in Figure 7.4.

Figure 7.4: Future weekday AM and PM peak hour traffic volumes with proposed development



The key intersections along Sturt Highway/ Edward Street were reanalysed under 2027 traffic conditions with the inclusion of traffic caused by the WWBH Redevelopment Stage 3 to confirm the three intersections would continue to operate satisfactorily with the proposed mitigation measures. A summary of the expected future operating conditions of the key intersections for Year 2027 is shown in Table 7.5.

Table 7.5: Future operating conditions with mitigation measures with proposed development

Intersection	Peak	Leg	Degree of saturation (DOS)	Average delay (sec)	95th percentile queue (m)	Level of service (LOS)
Edward Street/ Docker Street	AM	South	0.98	77	203	F
		East	0.72	39	135	C
		North	0.7	47	98	D
		West	0.89	50	199	D
		Overall	**0.98**	**54**	**203**	**D**
	PM	South	0.88	63	125	E
		East	0.94	68	245	E
		North	0.96	64	239	E
		West	0.78	45	161	D
		Overall	**0.96**	**60**	**245**	**E**
Edward Street/ Lewis Drive[1]	AM	South	0.05	8	2	A
		East	0.25	6	0	A
		West	0.19	12	5	A
	PM	South	0.16	10	3	A
		East	0.4	6	16	A
		West	0.2	15	5	A
Edward Street/ Murray Street (signalised)	AM	South	0.45	32	26	C
		East	0.43	11	96	A
		North	0.14	27	9	B
		West	0.38	5	41	A
		Overall	**0.45**	**10**	**96**	**A**
	PM	South	0.36	47	31	D
		East	0.49	14	129	A
		North	0.18	49	18	D
		West	0.4	6	44	A
		Overall	**0.49**	**14**	**129**	**A**

[1] Worst movement reported for unsignalised intersection.

Based on Table 7.4, the Edward Street/ Docker Street intersection would operate at levels of service D and E during the AM and PM peak hours, respectively, which are similar to the existing operating conditions. The traffic generation of the proposed development would add minimal vehicle delays of up to three seconds and vehicle queues of up to eight metres during the peak hours. However, it is noted that during the AM peak hour, the northbound approach is expected to operate at level of service F.

With the proposed mitigations, the Edward Street/ Lewis Drive and Edward Street/ Murray Street intersections would operate at levels of service A during the peak hours when including the proposed development traffic.

7.5.1 Further Mitigation Measures

To improve the operating condition of the southbound traffic at the intersection of Edward Street/ Docker Street, it is proposed that the existing southbound thru lane be converted to a shared through and right-turn lane. The applied mitigation measure at the intersection shown in Figure 7.5.

It is noted that these mitigation measures are required as part of the Stage 3 development, under the scenario when Edward Street/ Docker Street intersection has previously been modified.

Figure 7.5: Edward Street/ Docker Street intersection further upgrades (highlighted in blue) due to development traffic

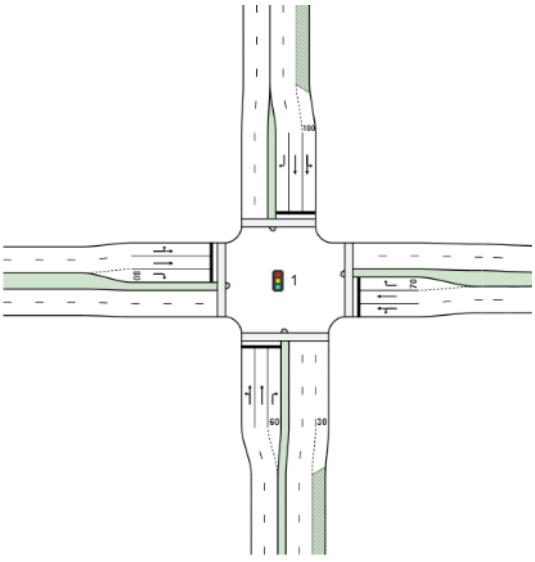
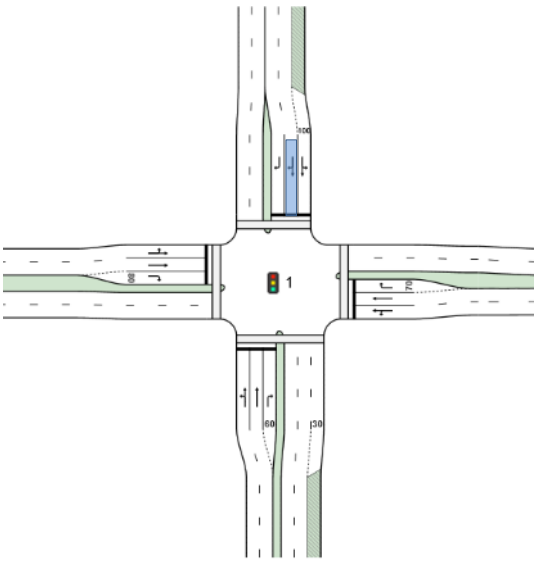
Year 2027 with Background Traffic Growth (with Upgrades)	Year 2027 with Background Traffic Growth (with Further Upgrades)
	

Table 7.6 summarises the expected future operating conditions of the key intersections with the proposed mitigation measures and without the proposed development.

Table 7.6: Future operating conditions with further mitigation measure and with proposed development

Intersection	Peak	Leg	Degree of saturation (DOS)	Average delay (sec)	95th percentile queue (m)	Level of service (LOS)
Edward Street/ Docker Street	AM	South	0.86	52	155	E
		East	0.74	41	139	C
		North	0.7	47	98	D
		West	0.91	54	208	D
		Overall	**0.91**	**49**	**208**	**D**
	PM	South	0.62	47	104	D
		East	0.92	61	245	E
		North	0.96	62	236	E
		West	0.87	46	163	D
		Overall	**0.96**	**55**	**245**	**D**
Edward Street/ Lewis Drive[1]	AM	South	0.05	8	2	A
		East	0.25	6	0	A
		West	0.19	12	5	A
	PM	South	0.16	9	2	A
		East	0.38	6	3	A
		West	0.2	15	5	A
Edward Street/ Murray Street	AM	South	0.45	32	26	C
		East	0.43	11	96	A
		North	0.14	27	9	B
		West	0.38	4	40	A
		Overall	**0.45**	**10**	**96**	**A**
	PM	South	0.37	30	31	C
		East	0.49	14	129	A
		North	0.13	22	13	B
		West	0.4	6	41	A
		Overall	**0.49**	**12**	**129**	**A**

[1] Worst movement reported for unsignalised intersection.

Based on Table 7.6, the Edward Street/ Docker Street intersection would operate at levels of service D during the peak hours, which is considered an acceptable operation.

7.6 SSD Application Mitigation Measures

While the above assessments reviewed the impact of the proposed development based on the signalisation of Murray Street / Edward Street being a high priority item in the Integrated Movement Study works schedule, it is noted that the WWBH Stage 3 redevelopment proposes right turn restrictions out of Murray Street and Brookong Avenue onto Edward Street with a raised median preventing right turns as part of the SSD application.

The proposed turn restrictions will serve as an interim access management strategy to improve the safety of these intersections prior to signalising the intersection of Murray Street/ Edward Street. Restricted and prohibited turn movements at these intersections are expected to reduce the number of turning conflict points at these intersections, which are generally known to reduce crash risk.

Given that the traffic survey data was not available prior to the SSD application submission, the assessment of the right-turn restrictions out of Murray Street and Brookong Avenue onto Edward Street will be completed and submitted to Roads and Maritime and Council for approval, in response to the RFI. Such proposals would require a review of the reconfiguration of the Edward Street/ Docker Street intersection.

Further intersection surveys would be required to analyse the wider impact of this change and will be analysed further in response to the request for RFI from DPE. The additional analysis would include the following intersections:

- Doris Roy Lane/ Murray Street
- Yabtree Street / Murray Street
- Yathong Street/ Murray Street
- Brookong Avenue / Murray Street
- Chaston Street/ Docker Street
- Brookong Avenue / Docker Street
- Rawson/ Docker Street
- Hardy Avenue/ Docker Street
- Brookong Avenue / Edward Street
- Edward Street/ Lewis Drive.

8. Work Travel Plan

8.1 Purpose of a Work Travel Plan

A facility such as a hospital generates a significant level of transport demand, primarily for private vehicle trips. Travel demand management (TDM) aims to modify travel decisions rather than providing costly infrastructure and additional transport services to support the current and future transport demands. TDM has the following key objectives:

- Reduce the need to travel
- Reduce the amount of travel
- Reduce the impact of travel.

In this regard, a Work Travel Plan (WTP) is a tool that hospitals can use to manage the transport mode choices of their staff. The plan aims to promote and encourage sustainable travel and reduce reliance on the private vehicle. The WTP comprises a list of strategies aimed at encouraging walking, cycling, public transport and car-pooling for travel to and from work and aims at a shift away from the reliance on single occupant vehicle travel.

8.2 Typical Challenges for Regional Hospitals

Most staff activity associated with regional hospitals occurs via vehicles due to the nature of staff shift times and the limited availability of convenient public transport. Walking and cycling often proves difficult due to the distance between the home and work place as well as a lack of quality facilities. In this regard, the following factors are typically attributed to a high mode share for private vehicles at regional hospitals:

- Residential locations and hospital locations can have limited access to public transport services
- Driving presents attractive travel time advantages for many key staff origins
- Limited number of locations have access to direct public transport connections that do not require interchanging. This typically results in longer travel times, as well as influencing the perception of a lack of convenience and reliability
- Time of arrival/ departure, due to shift work, potentially limits the access to frequent public transport services. Staff that work in shifts with start/ end times outside peak hours might also experience personal security issues
- Time of arrival/ departure influences perceived comfort of traveling via alternate modes of transport, in particular outside peak hours
- Unpredictable hospital activities may extend staff shift finish times. This can leave staff 'stranded' if public transport options are limited
- Staff may need to drive to efficiently conduct other activities on their way to/ from the hospital such as school set-down/ pick-up activities.

Strategies can be implemented to encourage staff to reduce their reliance on private vehicles.

8.3 Travel Demand Strategies

While it is recognised that the site's location somewhat limits the practicality of using sustainable transport modes, there remains potential for improved utilisation of public transport and associated provision of sustainable transport infrastructure.

Several opportunities exist to provide WWBH staff with incentives to consider alternative modes of travel to and from work. The following recommendations are high level strategies that would need to be developed in greater detail and through consultation with relevant stakeholders closer to the opening of the Stage 3 building:

- **Staff Accommodation**
  - Provide staff accommodation near the site. This may encourage:
    - Walking and/ or cycling to work
    - Car-pooling between staff working the same shifts
  - Provide a shuttle bus service between staff accommodation and the hospital to further reduce reliance on private vehicles.
- **Shuttle Bus Service**
  - Provide a shuttle bus service between the hospital and key public transport interchanges, such as the stops along Baylis Street and Best Street, aligned with staff shifts. A regular, flexible service is likely to increase staff perception of convenience and reliability
  - Develop shuttle bus routes targeting key residential areas near the hospital with low public transport connectivity.
- **Public Transport**
  - Communicate with bus operators to amend bus routes (where possible) to connect public transport nodes with the hospital using the existing on-site bus stop discussed in Section 2.8
  - Arrange public transport trips to be aligned with hospital shifts through consultation with Roads and Maritime Services, TfNSW and bus operators.
- **On Demand Transport**
  - Liaise with TfNSW and other stakeholders to implement the Rural and Regional on Demand Transport pilot project.
- **Active Travel**
  - Provide high quality and prominent bicycle parking and change/ shower facilities
  - Provide clear pedestrian and cyclist wayfinding
  - Provide shelters along walkways or near bus stops and street lighting
  - Encourage cultural change through:
    - Creating a bike user group (targeting staff living within 5 km of the Hospital).
    - Events such as annual 'ride to work' day
    - Providing information detailing opportunities and facilities available to staff. This may include providing maps of the available cycling routes to and within the Hospital site.
- **Promote Car-Pooling**
  - Provide prioritised car pool parking spaces on-site, including consideration for incentives such as prices, location and proximity to services.

9. Consultations

9.1 Council

On-going consultations with Cameron Collins (Development Assessment Coordinator) and Bill Harvey (Senior Traffic Officer) of Council are as detailed in Table 9.1.

Table 9.1: Consultation with Council

Day/ Date	Personnel	Comments

Monday, 19 March 2018	Cameron Collins	○ Traffic counts undertaken in the area by Council and were recently provided to consultants working on the health precinct project.
		○ Provided the boundaries of the health precinct and the location of the counts.
		  ○ Murray Street: 1904 (5 day), 1664 (7 day), 2% HV's, Year 2010
		  ○ Brookong Avenue: 1059 (5 day), 955 (7 day), 3% HV's, Year 2010
		  ○ Brookong Avenue: 3426 (5 day), 3037 (7day), 2% HV's, Year 2010
		  ○ Docker Street: SB 6373 (5 day), 5634 (7 day), 4% HV's, Year 2010, NB 8253 (5 day), 7066 (7 day), 5% HV's, Year 2010
		  ○ Meurant Street: 1669 (5 day), 1926 (7 day), 7% HV's, Year 2013
		  ○ Gormly Avenue: 265 (5 day), 239 (7 day), 17% HV's, Year 2013.

Friday, 19 March 2018	Cameron Collins	○ Reviewed surrounding developments and they do not warrant consideration with regards to the Hospital development. ○ Traffic assessment should be based on the Wagga Integrated Transport Study and relevant traffic studies that have informed this study: https://www.wagga.nsw.gov.au/city-of-wagga-wagga/engineering-services/traffic-and-transport/integrated-transport-study ○ There was some focus on the health precinct around the hospital as part of this work.
Wednesday, 14 March 2018	Cameron Collins	○ There are currently no approved developments that are relevant to the traffic impact assessment around the hospital. ○ There is a medical suite development on the corner of Docker Street/ Chaston Street. ○ There were some redevelopments that has occurred within the Calvary Hospital site. ○ To confirm the release of the above traffic studies and if not, the process to obtain these studies. ○ To confirm the works completed by Council's strategic section on applicable traffic studies.

Monday, 5 March 2018	Bill Harvey	○ To include the following intersections in the traffic assessment with multi-storey car park proposal:
		  ○ Doris Roy Lane/ Murray Street
		  ○ Yabtree Street / Murray Street
		  ○ Yathong Street/ Murray Street.
		○ To include the following intersections in the traffic assessment for SEARs submission:
		  ○ Brookong/ Murray Street.
		○ No traffic survey was carried out for Brookong Avenue/ Docker Street.
		○ Peck Street would be converted to two-way street.
		○ Given the tight SEARs deadline, it is acceptable to mention the applicant's intention to carry out further assessment on the above intersections in the SEARs report and to provide an updated report once the additional assessments are completed.

9.2 Roads and Maritime

On-going consultations with Maurice Morgan (Manager Land Use Regional and Freight) are as detailed in Table 9.2.

Table 9.2: Consultation with Roads and Maritime

Day/ Date	Personnel	Comments
Friday, 16 February 2018	Maurice Morgan	○ Roads and Maritime has no plans for the upgrade of the intersections of Brookong Avenue/ Edward Street and Murray Street/ Edward Street. ○ The intersection of Murray and Edwards Street was raised as an issue as part of the original proposal for the redevelopment of the hospital site and has been a point of discussion with Council in recent years. ○ Roads and Maritime would not object to works at the intersections of Brookong Avenue/ Edward Street and Murray Street/ Edward Street, if proven to be required however an appropriate traffic study and assessment of the various options is needed to support the necessity for any works. ○ To provide for a robust assessment it would be appropriate to undertake a traffic assessment of the precinct surrounding the hospital site. ○ As a minimum the precinct should include the intersections with Edward Street from and including Docker Street to Brookong Avenue and the intersections with Docker Street from and including Edwards Street to Chaston Street.

Monday, 5 March 2018	Maurice Morgan	○ To include the following intersections in the traffic assessment:
		  ○ Chaston Street/ Docker Street
		  ○ Brookong Avenue/ Docker Street
		  ○ Rawson Lane/ Docker Street
		  ○ Hardy Avenue/ Docker Street
		  ○ Brookong Avenue/ Edward Street.
		○ Given the tight SEARs deadline, it is acceptable to mention the applicant's intention to carry out further assessment on the above intersections in the SEARs report and to provide an updated report once the additional assessments are completed.

9.3 TfNSW

On-going consultation with Lee Farrell (Transport Planner) is as detailed in Table 9.3.

Table 9.3: Consultation with TfNSW

Day/ Date	Personnel	Comments
Wednesday, 19 April 2018	Lee Farrell (Transport Planner)	○ Proposed development should encourage the use of public and active transport modes through provision of bicycle parking and end of trip facilities. ○ Proposed development should consider the application of Rural and Regional on Demand Transport Request (not limited to only bus services and may include any form of transport). This application would improve public transport access to staff and visitors as well as to ensure they can utilise public transport to their respective destination quickly, safely, easily and efficiently at a time that suits them.

10. Conclusion

Based on the analysis and discussions presented within this report, the following conclusions are made:

i The proposed Stage 3 redevelopment of WWBH includes:

- An increase of 115 additional staff. This represents an additional ASDS of 69
- An increase of 94 beds/ chairs/ rooms.

ii The intersection of Edward Street/ Lewis Drive currently operates satisfactorily, with spare capacity on all approaches. The intersection of Edward Street/ Docker Street currently operates at capacity with level of service E during the PM peak hour while the intersection of Edward Street/ Murray Street operates at level of service F during both AM and PM peak hours.

iii The hospital currently has 398 car parking spaces. The surveyed peak demand is equal to an occupancy of 340 spaces at 1:30pm with 58 vacant spaces (86 per cent occupancy). Based on the parking survey, 53 out of the 58 vacant spaces consist of parking spaces associated with UNSW (16 per cent), permit only (22 per cent) and authorised vehicles only (53 per cent), which are not accessible to the general public and all WWBH staff. This results in up to five spaces which are available to the general public.

iv A total of 489 on-street parking spaces is available near the hospital, with 428 spaces occupied and 61 spaces vacant (86 per cent occupancy).

v Noting the theoretical capacity of a car parking facility, an 85 per cent occupancy of 929 on-site and on-street parking spaces represents 790 occupied spaces. With the peak demand at 768 spaces, there would be a theoretical supply of 22 vacant spaces before the drivers have to circulate to find parking spaces, which could lead to increased congestion near WWBH.

vi Analysis of parking requirements was assessed based on staff numbers and bed/ chair/ room numbers. The proposed development would provide 95 additional spaces including 85 spaces for the hospital and 10 spaces for the Education Area.

vii The additional parking demand of 95 spaces to be generated by the additional staff and bed numbers could not be accommodated by the existing off-street and on-street parking facilities.

viii The required number of parking spaces can be accommodated by the reinstated car spaces under the existing demountable facilities, reconfigured CP1, proposed Stage 3 parking and north of Harvey House with a total of 107 car parking spaces.

ix The overprovision of 12 spaces is appropriate to displace the loss of parking spaces (a minimum of 10 spaces) along Docker Street due to the potential reconfiguration of the Edward Street/ Docker Street intersection.

x The new parking facilities exceeds HI's commitment to provide 100 car spaces in addition the existing 440 spaces available at the end of the Stage 2 Redevelopment work, as presented in the Final Business Case.

xi The following road design strategies to improve pedestrian safety will be provided during the detailed design stage:

- Reconfiguration of the existing set-down/ pick-up zone and CP4
- Proposed access locations to the undercroft car park of Stage 3 building via CP1
- Public access to the Emergency Department via Murray Street and exit via Yabtree Street and Doris Roy Lane.

xii The proposed site is expected to generate an additional 76 and 92 vehicle trips during the AM and PM peak hours respectively.

xiii The intersections of Edward Street/ Docker Street and Edward Street/ Murray Street would operate beyond its capacity under 2027 traffic even without traffic generated by the project.

xiv The Edward Street/ Docker Street intersection would operate at levels of service D and E during the AM and PM peak hours, respectively, which are similar to the existing operating conditions with the lengthening of the turn lanes, reconfigurations of the full lanes and signal optimisation.

xv Based on the safety concerns as well as the additional vehicle delays and queues at this intersection, it is recommended that consideration should be given to signalising the intersection of Edward Street/ Murray Street with two-phase operation to minimise impact on through traffic along Edward Street, however, it is noted that this is not required as a result on the development but due to existing conditions and expected growth in the area. This proposal is in accordance with the Integrated Movement Study for City of Wagga Wagga (2008).

xvi With the signalisation of Edward Street/ Murray Street intersection, it would operate at levels of service A during the peak hours when including the proposed development traffic.

xvii There is an opportunity to review right turn restrictions out of Murray Street (south) and Brookong Avenue onto Edward Street, instead of signalising the intersection of Murray Street and Edward Street.

xviii Additional surveys and analysis will be undertaken in response to the RFI from DPE to determine the wider impacts and whether this can be a recommended improvement. Overall, the proposed development is not anticipated to have any notable impacts to the surrounding road network, with the implementation of proposed mitigation measures.

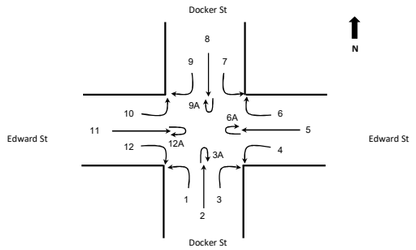
Appendix A

Survey Results

Data Audit Systems
FOR INFORMED DECISION MAKING
TRAFFIC SURVEYS

Location: Edward St / Docker St
Weather: Fine
Date: Tuesday, 5 December 2017
Survey Period : 6:30am - 9:30am and 2:30pm - 6:30pm

AM Peak: 8:15am-9:15am
PM Peak: 3:15pm-4:15pm



TIME	1			2			3			3A			4			5			6			6A			7			8			9			9A			10			11			12			12A			AM PEAK	
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Hour	Total
06:30	14	0	14	22	1	23	18	0	18	0	0	0	6	2	8	37	9	46	0	0	0	0	0	0	3	0	3	11	1	12	8	0	8	0	0	0	9	1	10	64	4	68	8	0	8	0	0	0	6:30 - 7:30	1114
06:45	10	0	10	51	1	52	18	0	18	0	0	0	11	0	11	50	8	58	1	0	1	0	0	0	7	0	7	23	0	23	25	0	25	0	0	0	25	0	25	59	7	66	14	0	14	0	0	0	6:45 - 7:45	1268
07:00	6	1	7	27	0	27	17	0	17	0	0	0	9	0	9	59	14	73	1	0	1	0	0	0	5	0	5	21	0	21	16	0	16	0	0	0	6	0	6	50	8	58	8	0	8	0	0	0	7:00 - 8:00	1475
07:15	3	1	4	55	0	55	17	0	17	0	0	0	11	0	11	67	19	86	2	0	2	0	0	0	6	0	6	25	0	25	22	0	22	0	0	0	21	1	22	66	7	73	13	2	15	0	0	0	7:15 - 8:15	1796
07:30	5	1	6	73	2	75	25	2	27	0	0	0	14	1	15	70	16	86	3	0	3	0	0	0	4	0	4	24	0	24	18	0	18	0	0	0	21	0	21	73	11	84	8	1	9	0	0	0	7:30 - 8:30	2130
07:45	25	0	25	100	1	101	31	1	32	0	0	0	14	1	15	77	15	92	8	0	8	0	0	0	2	0	2	51	0	51	37	0	37	0	0	0	26	0	26	94	14	108	20	0	20	0	0	0	7:45 - 8:45	2436
08:00	8	0	8	121	0	121	39	2	41	0	0	0	24	1	25	82	11	93	10	0	10	0	0	0	5	0	5	51	0	51	29	1	30	0	0	0	52	1	53	99	13	112	20	0	20	0	0	0	8:00 - 9:00	2632
08:15	11	0	11	154	3	157	37	0	37	0	0	0	20	1	21	96	15	111	6	0	6	0	0	0	11	0	11	54	1	55	46	1	47	0	0	0	52	1	53	124	9	133	26	0	26	3	1	4	8:15 - 9:15	2719
08:30	6	0	6	146	1	147	31	1	32	0	0	0	18	1	19	97	15	112	5	0	5	0	0	0	8	0	8	67	1	68	43	0	43	0	0	0	61	0	61	136	7	143	34	0	34	0	0	0	8:30 - 9:30	2675
08:45	21	0	21	166	2	168	42	2	44	0	0	0	28	0	28	98	9	107	5	1	6	0	0	0	10	0	10	69	0	69	52	0	52	0	0	0	48	2	50	119	11	130	28	0	28	0	0	0		
09:00	15	0	15	136	0	136	41	0	41	0	0	0	25	1	26	104	12	116	5	0	5	0	0	0	13	0	13	64	1	65	68	0	68	0	0	0	23	3	26	108	9	117	26	0	26	1	1	2		
09:15	10	0	10	118	0	118	41	3	44	0	0	0	25	1	26	101	6	107	10	0	10	0	0	0	9	0	9	61	1	62	58	1	59	0	0	0	42	1	43	111	14	125	15	0	15	0	0	0		
TOTAL	134	3	137	1169	11	1180	357	11	368	0	0	0	205	9	214	938	149	1087	56	1	57	0	0	0	83	0	83	521	5	526	422	3	425	0	0	0	386	10	396	1103	114	1217	220	3	223	4	2	6		
AM PEAK	53	0	53	602	6	608	151	3	154	0	0	0	91	3	94	395	51	446	21	1	22	0	0	0	42	0	42	254	3	257	209	1	210	0	0	0	184	6	190	487	36	523	114	0	114	4	2	6		
COMMON AM PEAK	52	0	52	566	3	569	155	6	161	0	0	0	96	3	99	400	42	442	25	1	26	0	0	0	40	0	40	261	3	264	221	1	222	0	0	0	174	6	180	474	41	515	103	0	103	1	1	2		

TIME	1			2			3			3A			4			5			6			6A			7			8			9			9A			10			11			12			12A			PM PEAK	
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Hour	Total
14:30	6	0	6	66	0	66	53	3	56	0	0	0	31	2	33	128	14	142	10	0	10	0	0	0	11	0	11	82	3	85	75	1	76	0	0	0	20	0	20	96	15	111	27	2	29	2	0	2	14:30 - 15:30	2747
14:45	11	0	11	96	1	97	55	3	58	0	0	0	33	0	33	116	12	128	13	0	13	0	0	0	5	0	5	88	0	88	74	0	74	0	0	0	26	0	26	117	6	123	25	0	25	1	0	1	14:45 - 15:45	2850
15:00	7	0	7	72	1	73	42	3	45	0	0	0	27	2	29	101	6	107	4	1	5	0	0	0	8	0	8	112	0	112	83	0	83	0	0	0	33	3	36	128	12	140	26	0	26	0	0	0	15:00 - 16:00	2892
15:15	3	0	3	107	0	107	55	0	55	0	0	0	26	0	26	141	15	156	7	0	7	0	0	0	21	0	21	111	0	111	94	1	95	0	0	0	31	0	31	87	11	98	35	2	37	0	0	0	15:15 - 16:15	2959
15:30	20	0	20	120	1	121	53	0	53	0	0	0	34	1	35	144	15	159	9	2	11	0	0	0	5	0	5	104	3	107	76	3	79	0	0	0	34	0	34	96	10	106	19	1	20	0	0	0	15:30 - 16:30	2908
15:45	4	0	4	117	0	117	40	2	42	0	0	0	31	0	31	146	10	156	12	0	12	0	0	0	8	0	8	105	0	105	75	1	76	0	0	0	17	0	17	116	9	125	31	0	31	0	0	0	15:45 - 16:45	2853
16:00	12	0	12	98	2	100	45	0	45	0	0	0	26	1	27	151	10	161	9	1	10	0	0	0	12	0	12	107	0	107	75	0	75	0	0	0	35	3	38	119	8	127	21	0	21	2	1	3	16:00 - 17:00	2877
16:15	10	1	11	75	1	76	59	3	62	0	0	0	21	0	21	144	11	155	20	0	20	0	0	0	5	0	5	109	1	110	74	1	75	0	0	0	23	1	24	103	6	109	26	0	26	2	0	2	16:15 - 17:15	2777
16:30	8	0	8	46	0	46	42	0	42	0	0	0	31	1	32	165	7	172	8	0	8	0	0	0	14	0	14	115	0	115	69	0	69	0	0	0	23	0	23	123	7	130	33	0	33	2	1	3	16:30 - 17:30	2735
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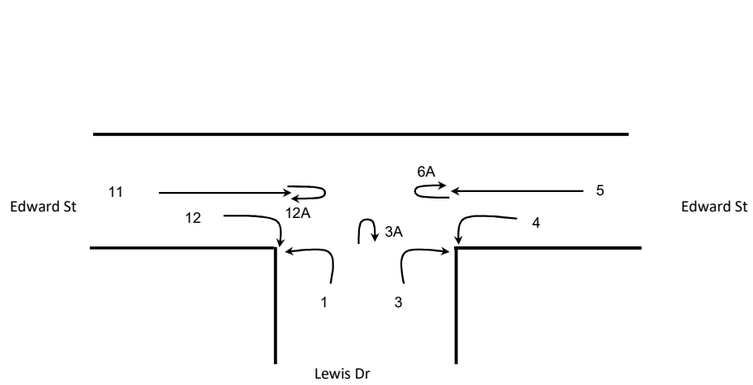
17:15	7	0	7	71	0	71	36	0	36	0	0	0	31	1	32	151	9	160	6	0	6	0	0	0	5	0	5	105	0	105	80	0	80	0	0	0	25	0	25	99	6	105	22	0	22	0	0	0	17:15 - 18:15	2283
17:30	9	0	9	65	0	65	33	0	33	0	0	0	22	0	22	136	6	142	5	0	5	0	0	0	3	0	3	133	0	133	84	1	85	0	0	0	9	0	9	88	7	95	39	1	40	0	0	0	17:30 - 18:30	2027
17:45	6	0	6	53	0	53	31	1	32	0	0	0	23	0	23	113	6	119	4	0	4	0	0	0	6	0	6	86	0	86	58	1	59	0	0	0	19	0	19	80	7	87	31	0	31	0	0	0		
18:00	9	1	10	69	0	69	34	0	34	0	0	0	20	1	21	86	11	97	4	0	4	0	0	0	12	0	12	70	0	70	51	0	51	0	0	0	6	0	6	69	2	71	18	0	18	0	0	0		
18:15	12	0	12	55	0	55	26	0	26	0	0	0	16	0	16	89	2	91	2	0	2	0	0	0	5	0	5	35	0	35	46	0	46	0	0	0	15	0	15	76	3	79	16	0	16	0	0	0		
TOTAL	138	2	140	1247	7	1254	682	18	700	0	0	0	437	11	448	2113	143	2256	125	4	129	0	0	0	135	0	135	1603	7	1610	1176	11	1187	0	0	0	373	8	381	1612	123	1735	425	6	431	9	2	11		
PM PEAK	39	0	39	442	3	445	193	2	195	0	0	0	117	2	119	582	50	632	37	3	40	0	0	0	46	0	46	427	3	430	320	5	325	0	0	0	117	3	120	418	38	456	106	3	109	2	1	3		
COMMON PM PEAK	46	1	47	410	4	414	197	5	202	0	0	0	112	2	114	585	46	631	50	3	53	0	0	0	30	0	30	425	4	429	300	5	305	0	0	0	109	4	113	434	33	467	97	1	98	4	1	5		

Data Audit Systems
FOR INFORMED DECISION MAKING
TRAFFIC SURVEYS

Location: Edward St & Lewis Dr
Weather: Fine
Date: Tuesday, 5 December 2017
Survey Period : 6:30am - 9:30am and 2:30pm - 6:30pm

AM Peak: 8:30am-9:30am
PM Peak: 3:45pm-4:45pm



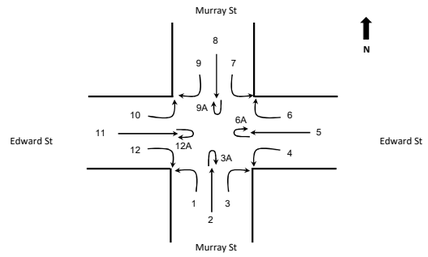
TIME Starting	1			3			3A			4			5			6A			11			12			12A			AM PEAK	
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Hour	Total
06:30	0	0	**0**	0	0	**0**	0	0	**0**	14	0	**14**	47	10	**57**	0	0	**0**	70	5	**75**	17	0	**17**	0	0	**0**	**6:30 - 7:30**	**710**
06:45	0	0	**0**	0	0	**0**	0	0	**0**	8	0	**8**	65	10	**75**	0	0	**0**	65	7	**72**	17	0	**17**	0	0	**0**	**6:45 - 7:45**	**779**
07:00	0	0	**0**	0	0	**0**	0	0	**0**	7	0	**7**	69	10	**79**	0	0	**0**	65	9	**74**	5	0	**5**	1	0	**1**	**7:00 - 8:00**	**881**
07:15	0	0	**0**	0	0	**0**	0	0	**0**	9	0	**9**	76	23	**99**	0	0	**0**	83	9	**92**	9	0	**9**	0	0	**0**	**7:15 - 8:15**	**1003**
07:30	0	0	**0**	0	0	**0**	0	0	**0**	10	0	**10**	88	17	**105**	0	0	**0**	99	12	**111**	6	0	**6**	0	0	**0**	**7:30 - 8:30**	**1138**
07:45	0	0	**0**	0	0	**0**	0	0	**0**	11	0	**11**	100	16	**116**	0	0	**0**	113	15	**128**	19	0	**19**	0	0	**0**	**7:45 - 8:45**	**1235**
08:00	0	0	**0**	0	0	**0**	0	0	**0**	10	0	**10**	119	7	**126**	0	0	**0**	120	17	**137**	15	0	**15**	0	0	**0**	**8:00 - 9:00**	**1313**
08:15	0	0	**0**	0	0	**0**	0	0	**0**	18	1	**19**	126	17	**143**	0	0	**0**	154	9	**163**	19	0	**19**	0	0	**0**	**8:15 - 9:15**	**1373**
08:30	0	0	**0**	0	0	**0**	0	0	**0**	9	0	**9**	126	17	**143**	0	0	**0**	154	9	**163**	14	0	**14**	0	0	**0**	**8:30 - 9:30**	**1376**
08:45	0	0	**0**	0	0	**0**	0	0	**0**	13	0	**13**	137	12	**149**	0	0	**0**	156	16	**172**	18	0	**18**	0	0	**0**		
09:00	0	0	**0**	0	0	**0**	0	0	**0**	20	0	**20**	135	16	**151**	0	0	**0**	153	10	**163**	14	0	**14**	0	0	**0**		
09:15	0	0	**0**	0	0	**0**	0	0	**0**	16	0	**16**	137	6	**143**	0	0	**0**	157	19	**176**	12	0	**12**	0	0	**0**		
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**145**	**1**	**146**	**1225**	**161**	**1386**	**0**	**0**	**0**	**1389**	**137**	**1526**	**165**	**0**	**165**	**1**	**0**	**1**		
AM PEAK	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**58**	**0**	**58**	**535**	**51**	**586**	**0**	**0**	**0**	**620**	**54**	**674**	**58**	**0**	**58**	**0**	**0**	**0**		
COMMON AM PEAK	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**58**	**0**	**58**	**535**	**51**	**586**	**0**	**0**	**0**	**620**	**54**	**674**	**58**	**0**	**58**	**0**	**0**	**0**		

TIME Starting	1			3			3A			4			5			6A			11			12			12A			PM PEAK	
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Hour	Total
14:30	0	0	**0**	0	0	**0**	0	0	**0**	12	0	**12**	167	12	**179**	0	0	**0**	147	11	**158**	14	0	**14**	0	0	**0**	**14:30 - 15:30**	**1473**
14:45	0	0	**0**	0	0	**0**	0	0	**0**	18	0	**18**	156	12	**168**	0	0	**0**	172	9	**181**	10	0	**10**	0	0	**0**	**14:45 - 15:45**	**1503**
15:00	0	0	**0**	0	0	**0**	0	0	**0**	15	0	**15**	138	9	**147**	0	0	**0**	158	12	**170**	16	0	**16**	0	0	**0**	**15:00 - 16:00**	**1519**
15:15	0	0	**0**	0	0	**0**	0	0	**0**	13	0	**13**	185	15	**200**	0	0	**0**	151	9	**160**	12	0	**12**	0	0	**0**	**15:15 - 16:15**	**1568**
15:30	0	0	**0**	0	0	**0**	0	0	**0**	16	0	**16**	196	14	**210**	0	0	**0**	147	8	**155**	12	0	**12**	0	0	**0**	**15:30 - 16:30**	**1572**
15:45	0	0	**0**	0	0	**0**	0	0	**0**	13	0	**13**	193	10	**203**	0	0	**0**	160	10	**170**	7	0	**7**	0	0	**0**	**15:45 - 16:45**	**1599**
16:00	0	0	**0**	0	0	**0**	0	0	**0**	7	0	**7**	195	11	**206**	0	0	**0**	164	8	**172**	12	0	**12**	0	0	**0**	**16:00 - 17:00**	**1543**
16:15	0	0	**0**	0	0	**0**	0	0	**0**	11	1	**12**	178	15	**193**	0	0	**0**	159	9	**168**	16	0	**16**	0	0	**0**	**16:15 - 17:15**	**1542**
16:30	0	0	**0**	0	0	**0**	0	0	**0**	13	0	**13**	207	7	**214**	0	0	**0**	173	7	**180**	13	0	**13**	0	0	**0**	**16:30 - 17:30**	**1509**
16:45	0	0	**0**	0	0	**0**	0	0	**0**	6	0	**6**	163	7	**170**	0	0	**0**	138	14	**152**	9	0	**9**	0	0	**0**	**16:45 - 17:45**	**1411**
17:00	0	0	**0**	0	0	**0**	0	0	**0**	12	0	**12**	215	7	**222**	0	0	**0**	150	5	**155**	7	0	**7**	0	0	**0**	**17:00 - 18:00**	**1356**
17:15	0	0	**0**	0	0	**0**	0	0	**0**	13	0	**13**	188	9	**197**	0	0	**0**	135	4	**139**	7	0	**7**	0	0	**0**	**17:15 - 18:15**	**1198**
17:30	0	0	**0**	0	0	**0**	0	0	**0**	16	1	**17**	156	7	**163**	0	0	**0**	129	8	**137**	4	0	**4**	1	0	**1**	**17:30 - 18:30**	**1065**
17:45	0	0	**0**	0	0	**0**	0	0	**0**	8	0	**8**	141	5	**146**	0	0	**0**	114	9	**123**	5	0	**5**	0	0	**0**		
18:00	0	0	**0**	0	0	**0**	0	0	**0**	6	0	**6**	112	11	**123**	0	0	**0**	102	2	**104**	5	0	**5**	0	0	**0**		
18:15	0	0	**0**	0	0	**0**	0	0	**0**	3	1	**4**	108	2	**110**	0	0	**0**	104	2	**106**	3	0	**3**	0	0	**0**		
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**182**	**3**	**185**	**2698**	**153**	**2851**	**0**	**0**	**0**	**2303**	**127**	**2430**	**152**	**0**	**152**	**1**	**0**	**1**		
PM PEAK	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**44**	**1**	**45**	**773**	**43**	**816**	**0**	**0**	**0**	**656**	**34**	**690**	**48**	**0**	**48**	**0**	**0**	**0**		
COMMON PM PEAK	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**47**	**1**	**48**	**762**	**50**	**812**	**0**	**0**	**0**	**630**	**35**	**665**	**47**	**0**	**47**	**0**	**0**	**0**		

Data Audit Systems
FOR INFORMED DECISION MAKING
TRAFFIC SURVEYS

Location: Edward St / Murray St
Weather: Fine
Date: Tuesday, 5 December 2017
Survey Period : 6:30am - 9:30am and 2:30pm - 6:30pm

Thu AM Peak: 8:30am-9:30am
Thu PM Peak: 3:30pm-4:30pm



TIME	1			2			3			3A			4			5			6			6A			7			8			9			9A			10			11			12			12A			AM PEAK	
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Hour	Total
06:30	2	0	**2**	0	0	**0**	1	1	**2**	0	0	**0**	1	0	**1**	60	13	**73**	3	0	**3**	0	0	**0**	3	0	**3**	1	0	**1**	0	0	**0**	0	0	**0**	6	0	**6**	58	7	**65**	2	0	**2**	0	0	**0**	**6:30 - 7:30**	**751**
06:45	11	0	**11**	3	0	**3**	3	0	**3**	0	0	**0**	5	0	**5**	59	11	**70**	3	0	**3**	0	0	**0**	6	0	**6**	2	0	**2**	3	0	**3**	0	0	**0**	1	0	**1**	64	8	**72**	3	0	**3**	0	0	**0**	**6:45 - 7:45**	**845**
07:00	7	1	**8**	5	0	**5**	3	0	**3**	0	0	**0**	5	0	**5**	71	13	**84**	3	0	**3**	0	0	**0**	5	2	**7**	5	0	**5**	3	0	**3**	0	0	**0**	2	0	**2**	60	10	**70**	3	0	**3**	0	0	**0**	**7:00 - 8:00**	**939**
07:15	8	0	**8**	1	0	**1**	2	0	**2**	0	0	**0**	6	0	**6**	68	21	**89**	4	1	**5**	0	0	**0**	3	0	**3**	1	1	**2**	4	0	**4**	0	0	**0**	3	0	**3**	82	8	**90**	0	0	**0**	0	0	**0**	**7:15 - 8:15**	**1035**
07:30	22	0	**22**	5	0	**5**	3	0	**3**	0	0	**0**	5	0	**5**	74	20	**94**	2	1	**3**	0	0	**0**	7	0	**7**	2	1	**3**	2	0	**2**	0	0	**0**	5	0	**5**	90	12	**102**	0	1	**1**	0	0	**0**	**7:30 - 8:30**	**1178**
07:45	14	0	**14**	2	0	**2**	3	0	**3**	0	0	**0**	3	0	**3**	89	16	**105**	9	0	**9**	0	0	**0**	6	0	**6**	0	0	**0**	1	0	**1**	0	0	**0**	7	0	**7**	106	16	**122**	4	0	**4**	0	0	**0**	**7:45 - 8:45**	**1276**
08:00	11	0	**11**	4	0	**4**	3	0	**3**	0	0	**0**	1	0	**1**	112	12	**124**	10	0	**10**	0	0	**0**	4	0	**4**	2	0	**2**	0	0	**0**	0	0	**0**	12	0	**12**	105	17	**122**	1	0	**1**	0	0	**0**	**8:00 - 9:00**	**1393**
08:15	13	0	**13**	4	0	**4**	5	0	**5**	0	0	**0**	4	0	**4**	126	18	**144**	7	0	**7**	0	0	**0**	6	0	**6**	2	0	**2**	4	0	**4**	0	0	**0**	16	0	**16**	136	11	**147**	4	0	**4**	0	0	**0**	**8:15 - 9:15**	**1482**
08:30	12	0	**12**	11	0	**11**	4	0	**4**	0	0	**0**	2	0	**2**	117	19	**136**	15	2	**17**	0	0	**0**	2	0	**2**	1	0	**1**	5	0	**5**	0	0	**0**	9	0	**9**	141	9	**150**	1	0	**1**	0	0	**0**	**8:30 - 9:30**	**1502**
08:45	12	1	**13**	10	0	**10**	2	1	**3**	0	0	**0**	3	0	**3**	141	13	**154**	13	0	**13**	0	0	**0**	9	0	**9**	4	0	**4**	2	0	**2**	0	0	**0**	20	0	**20**	144	16	**160**	2	0	**2**	0	0	**0**		
09:00	15	0	**15**	11	0	**11**	2	0	**2**	0	0	**0**	4	0	**4**	141	16	**157**	13	0	**13**	0	0	**0**	6	1	**7**	5	0	**5**	1	0	**1**	0	0	**0**	7	0	**7**	150	10	**160**	0	1	**1**	0	0	**0**		
09:15	26	0	**26**	1	0	**1**	3	0	**3**	0	0	**0**	1	0	**1**	137	6	**143**	8	1	**9**	0	0	**0**	3	0	**3**	5	0	**5**	0	0	**0**	0	0	**0**	9	1	**10**	155	18	**173**	2	0	**2**	0	0	**0**		
TOTAL	**153**	**2**	**155**	**57**	**0**	**57**	**34**	**2**	**36**	**0**	**0**	**0**	**40**	**0**	**40**	**1195**	**178**	**1373**	**90**	**5**	**95**	**0**	**0**	**0**	**60**	**3**	**63**	**30**	**2**	**32**	**25**	**0**	**25**	**0**	**0**	**0**	**97**	**1**	**98**	**1291**	**142**	**1433**	**22**	**2**	**24**	**0**	**0**	**0**		
AM PEAK	**65**	**1**	**66**	**33**	**0**	**33**	**11**	**1**	**12**	**0**	**0**	**0**	**10**	**0**	**10**	**536**	**54**	**590**	**49**	**3**	**52**	**0**	**0**	**0**	**20**	**1**	**21**	**15**	**0**	**15**	**8**	**0**	**8**	**0**	**0**	**0**	**45**	**1**	**46**	**590**	**53**	**643**	**5**	**1**	**6**	**0**	**0**	**0**		
COMMON AM PEAK	**65**	**1**	**66**	**33**	**0**	**33**	**11**	**1**	**12**	**0**	**0**	**0**	**10**	**0**	**10**	**536**	**54**	**590**	**49**	**3**	**52**	**0**	**0**	**0**	**20**	**1**	**21**	**15**	**0**	**15**	**8**	**0**	**8**	**0**	**0**	**0**	**45**	**1**	**46**	**590**	**53**	**643**	**5**	**1**	**6**	**0**	**0**	**0**		

TIME	1			2			3			3A			4			5			6			6A			7			8			9			9A			10			11			12			12A			PM PEAK	
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Hour	Total
14:30	20	0	**20**	1	0	**1**	11	0	**11**	0	0	**0**	7	0	**7**	152	13	**165**	7	0	**7**	0	0	**0**	7	0	**7**	5	0	**5**	7	0	**7**	0	0	**0**	4	1	**5**	142	13	**155**	1	0	**1**	0	0	**0**	**14:30 - 15:30**	**1599**
14:45	16	0	**16**	5	0	**5**	4	0	**4**	0	0	**0**	8	0	**8**	154	14	**168**	5	0	**5**	0	0	**0**	9	0	**9**	7	0	**7**	7	0	**7**	0	0	**0**	10	0	**10**	158	10	**168**	1	0	**1**	0	0	**0**	**14:45 - 15:45**	**1649**
15:00	17	0	**17**	7	0	**7**	6	0	**6**	0	0	**0**	2	0	**2**	133	12	**145**	5	0	**5**	0	0	**0**	16	0	**16**	3	0	**3**	4	0	**4**	0	0	**0**	8	0	**8**	149	14	**163**	1	0	**1**	0	0	**0**	**15:00 - 16:00**	**1664**
15:15	23	0	**23**	7	0	**7**	7	0	**7**	0	0	**0**	9	0	**9**	170	14	**184**	9	0	**9**	0	0	**0**	12	0	**12**	2	0	**2**	2	0	**2**	0	0	**0**	7	0	**7**	145	11	**156**	5	0	**5**	0	0	**0**	**15:15 - 16:15**	**1709**
15:30	26	0	**26**	10	0	**10**	9	0	**9**	0	0	**0**	4	0	**4**	190	18	**208**	9	0	**9**	0	0	**0**	7	0	**7**	8	0	**8**	1	0	**1**	0	0	**0**	6	0	**6**	141	10	**151**	2	0	**2**	0	0	**0**	**15:30 - 16:30**	**1714**
15:45	20	0	**20**	7	0	**7**	6	0	**6**	0	0	**0**	8	0	**8**	178	10	**188**	8	0	**8**	0	0	**0**	14	0	**14**	0	0	**0**	2	0	**2**	0	0	**0**	6	1	**7**	150	9	**159**	4	0	**4**	0	0	**0**	**15:45 - 16:45**	**1704**
16:00	17	0	**17**	7	0	**7**	7	0	**7**	0	0	**0**	5	0	**5**	183	11	**194**	8	0	**8**	0	0	**0**	9	2	**11**	1	0	**1**	5	1	**6**	0	0	**0**	5	0	**5**	148	10	**158**	3	0	**3**	0	0	**0**	**16:00 - 17:00**	**1661**
16:15	18	0	**18**	6	0	**6**	8	0	**8**	0	0	**0**	4	0	**4**	170	14	**184**	12	0	**12**	0	0	**0**	12	0	**12**	7	0	**7**	7	0	**7**	0	0	**0**	9	0	**9**	151	9	**160**	1	0	**1**	0	0	**0**	**16:15 - 17:15**	**1658**
16:30	20	0	**20**	2	0	**2**	5	0	**5**	0	0	**0**	4	0	**4**	193	6	**199**	8	0	**8**	0	0	**0**	9	0	**9**	1	0	**1**	6	0	**6**	0	0	**0**	8	0	**8**	157	10	**167**	2	0	**2**	0	0	**0**	**16:30 - 17:30**	**1621**
16:45	11	0	**11**	2	0	**2**	9	0	**9**	0	0	**0**	6	0	**6**	159	6	**165**	4	0	**4**	0	0	**0**	11	0	**11**	5	0	**5**	3	0	**3**	0	0	**0**	14	1	**15**	136	11	**147**	2	0	**2**	0	0	**0**	**16:45 - 17:45**	**1547**
17:00	14	0	**14**	5	0	**5**	7	0	**7**	0	0	**0**	5	0	**5**	209	8	**217**	3	0	**3**	0	0	**0**	10	0	**10**	5	0	**5**	6	0	**6**	0	0	**0**	9	0	**9**	133	5	**138**	0	0	**0**	0	0	**0**	**17:00 - 18:00**	**1483**
17:15	16	0	**16**	5	0	**5**	5	0	**5**	0	0	**0**	7	0	**7**	172	9	**181**	7	0	**7**	0	0	**0**	8	0	**8**	8	0	**8**	8	0	**8**	0	0	**0**	5	0	**5**	136	4	**140**	1	0	**1**	0	0	**0**	**17:15 - 18:15**	**1327**
17:30	10	0	**10**	5	0	**5**	3	0	**3**	0	0	**0**	6	0	**6**	160	9	**169**	3	0	**3**	0	0	**0**	7	0	**7**	8	0	**8**	4	0	**4**	0	0	**0**	3	0	**3**	131	8	**139**	0	0	**0**	0	0	**0**	**17:30 - 18:30**	**1193**
17:45	11	0	**11**	4	0	**4**	8	0	**8**	0	0	**0**	5	0	**5**	131	6	**137**	4	0	**4**	0	0	**0**	8	0	**8**	5	0	**5**	4	0	**4**	0	0	**0**	5	0	**5**	114	10	**124**	1	0	**1**	0	0	**0**		
18:00	7	0	**7**	6	0	**6**	8	0	**8**	0	0	**0**	4	0	**4**	109	12	**121**	1	0	**1**	0	0	**0**	5	0	**5**	3	0	**3**	2	0	**2**	0	0	**0**	0	0	**0**	103	2	**105**	1	0	**1**	0	0	**0**		
18:15	7	0	**7**	6	0	**6**	8	0	**8**	0	0	**0**	5	0	**5**	106	2	**108**	2	0	**2**	0	0	**0**	10	0	**10**	4	0	**4**	1	0	**1**	0	0	**0**	8	0	**8**	96	2	**98**	0	0	**0**	0	0	**0**		
TOTAL	**253**	**0**	**253**	**85**	**0**	**85**	**111**	**0**	**111**	**0**	**0**	**0**	**89**	**0**	**89**	**2569**	**164**	**2733**	**95**	**0**	**95**	**0**	**0**	**0**	**154**	**2**	**156**	**72**	**0**	**72**	**69**	**1**	**70**	**0**	**0**	**0**	**107**	**3**	**110**	**2190**	**138**	**2328**	**25**	**0**	**25**	**0**	**0**	**0**		
PM PEAK	**81**	**0**	**81**	**30**	**0**	**30**	**30**	**0**	**30**	**0**	**0**	**0**	**21**	**0**	**21**	**721**	**53**	**774**	**37**	**0**	**37**	**0**	**0**	**0**	**42**	**2**	**44**	**16**	**0**	**16**	**15**	**1**	**16**	**0**	**0**	**0**	**26**	**1**	**27**	**590**	**38**	**628**	**10**	**0**	**10**	**0**	**0**	**0**		
COMMON PM PEAK	**81**	**0**	**81**	**30**	**0**	**30**	**30**	**0**	**30**	**0**	**0**	**0**	**21**	**0**	**21**	**721**	**53**	**774**	**37**	**0**	**37**	**0**	**0**	**0**	**42**	**2**	**44**	**16**	**0**	**16**	**15**	**1**	**16**	**0**	**0**	**0**	**26**	**1**	**27**	**590**	**38**	**628**	**10**	**0**	**10**	**0**	**0**	**0**		

Appendix B

SIDRA Intersection Results

MOVEMENT SUMMARY

Site: 1 [1 Edward/ Docker AM (B)]

Network: N101 [AM Network Background]

Signals - Fixed Time Isolated Cycle Time = 110 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Docker Street													
1	L2	76	0.0	76	0.0	0.187	42.5	LOS D	3.3	23.3	0.85	0.74	30.4
2	T1	666	0.5	666	0.5	0.953	70.6	LOS F	30.9	219.7	1.00	1.21	22.8
3	R2	194	3.3	194	3.3	0.953	75.4	LOS F	30.9	219.7	1.00	1.17	12.3
Approach		936	1.0	936	1.0	0.953	69.3	LOS E	30.9	219.7	0.99	1.16	21.6
East: Edward Street													
4	L2	115	2.8	115	2.8	0.575	37.9	LOS C	15.8	115.8	0.88	0.78	25.6
5	T1	612	7.2	612	7.2	0.575	31.9	LOS C	16.2	120.6	0.87	0.77	33.1
6	R2	35	3.0	35	3.0	0.275	53.6	LOS D	1.8	12.7	0.93	0.75	24.0
Approach		761	6.4	761	6.4	0.575	33.8	LOS C	16.2	120.6	0.88	0.77	31.5
North: Docker Street													
7	L2	44	0.0	44	0.0	0.109	41.7	LOS C	1.9	13.3	0.84	0.72	23.6
8	T1	295	1.1	295	1.1	0.927	52.5	LOS D	28.3	199.0	0.94	0.93	26.2
9	R2	249	0.4	249	0.4	0.927	67.6	LOS E	28.3	199.0	1.00	1.10	27.3
Approach		588	0.7	588	0.7	0.927	58.1	LOS E	28.3	199.0	0.96	0.98	26.6
West: Edward Street													
10	L2	204	3.1	204	3.1	0.733	40.7	LOS C	21.3	155.8	0.94	0.85	34.7
11	T1	654	6.6	654	6.6	0.733	34.0	LOS C	21.3	155.8	0.91	0.82	28.4
12	R2	153	0.0	153	0.0	0.932	83.1	LOS F	11.0	76.9	1.00	1.11	21.8
Approach		1011	4.9	1011	4.9	0.932	42.8	LOS D	21.3	155.8	0.93	0.87	28.4
All Vehicles		3296	3.4	3296	3.4	0.953	51.0	LOS D	30.9	219.7	0.94	0.95	26.2

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.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %
Number of Iterations: 5 (maximum specified: 10)

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow	Average Delay	Level of Service	Average Back of Queue Pedestrian	Distance	Prop. Queued	Effective Stop Rate
		ped/h	sec		ped	m		per ped
P1	South Full Crossing	53	36.1	LOS D	0.1	0.1	0.81	0.81
P2	East Full Crossing	53	43.8	LOS E	0.1	0.1	0.89	0.89
P3	North Full Crossing	53	34.5	LOS D	0.1	0.1	0.79	0.79
P4	West Full Crossing	53	43.8	LOS E	0.1	0.1	0.89	0.89
All Pedestrians		211	39.5	LOS D			0.85	0.85

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: 3 [2 Edward/ Lewis AM (B)]

Network: N101 [AM Network Background]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Lewis Drive													
1	L2	43	0.0	43	0.0	0.047	7.2	LOS A	0.2	1.2	0.41	0.64	48.7
Approach		43	0.0	43	0.0	0.047	7.2	LOS A	0.2	1.2	0.41	0.64	48.7
East: Edward Street													
4	L2	61	0.0	61	0.0	0.226	5.6	LOS A	0.0	0.0	0.00	0.09	48.7
5	T1	781	6.9	781	6.9	0.226	0.0	LOS A	0.0	0.0	0.00	0.04	57.6
Approach		842	6.4	842	6.4	0.226	0.4	NA	0.0	0.0	0.00	0.04	56.5
West: Edward Street													
11	T1	848	6.7	848	6.7	0.227	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	61	0.0	61	0.0	0.114	11.2	LOS A	0.3	2.4	0.65	0.85	26.5
Approach		909	6.3	909	6.3	0.227	0.8	NA	0.3	2.4	0.04	0.06	53.2
All Vehicles		1795	6.2	1795	6.2	0.227	0.8	NA	0.3	2.4	0.03	0.06	54.2

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %
Number of Iterations: 5 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 4 [3 Edward/ Murray AM (B)]

Network: N101 [AM Network Background]

Giveway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Murray Street													
1	L2	43	2.4	43	2.4	0.057	7.2	LOS A	0.2	1.4	0.48	0.68	36.0
2	T1	35	0.0	35	0.0	1.028	261.6	LOS F	6.0	42.9	1.00	1.42	6.0
3	R2	13	8.3	13	8.3	1.028	307.0	LOS F	6.0	42.9	1.00	1.42	7.3
Approach		91	2.3	91	2.3	1.028	146.6	LOS F	6.0	42.9	0.75	1.06	8.4
East: Edward Street													
4	L2	11	0.0	11	0.0	0.266	5.6	LOS A	0.0	0.0	0.00	0.01	57.2
5	T1	767	7.4	767	7.4	0.266	1.3	LOS A	1.6	11.8	0.15	0.05	55.5
6	R2	55	5.8	55	5.8	0.266	13.8	LOS A	1.6	11.8	0.40	0.13	48.9
Approach		833	7.2	833	7.2	0.266	2.2	NA	1.6	11.8	0.16	0.06	54.7
North: Murray Street													
7	L2	22	4.8	22	4.8	0.026	6.5	LOS A	0.1	0.6	0.42	0.60	46.4
8	T1	16	0.0	16	0.0	0.590	117.4	LOS F	1.9	13.2	0.98	1.06	11.0
9	R2	11	0.0	11	0.0	0.590	159.9	LOS F	1.9	13.2	0.98	1.06	6.6
Approach		48	2.2	48	2.2	0.590	76.0	LOS F	1.9	13.2	0.73	0.85	17.1
West: Edqard Street													
10	L2	58	1.8	58	1.8	0.239	5.6	LOS A	0.0	0.0	0.00	0.08	54.2
11	T1	805	6.9	805	6.9	0.239	0.2	LOS A	0.2	1.9	0.03	0.04	58.8
12	R2	7	14.3	7	14.3	0.239	13.8	LOS A	0.2	1.9	0.05	0.01	50.4
Approach		871	6.7	871	6.7	0.239	0.7	NA	0.2	1.9	0.03	0.04	58.5
All Vehicles		1842	6.6	1842	6.6	1.028	10.5	NA	6.0	42.9	0.14	0.12	43.3

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %
Number of Iterations: 5 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 1 [1 Edward/ Docker PM (B)]

Network: N102 [PM Network Background]

Signals - Fixed Time Isolated Cycle Time = 150 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Docker Street													
1	L2	94	1.1	94	1.1	0.246	32.7	LOS C	3.3	23.4	0.87	0.75	33.8
2	T1	453	0.9	453	0.9	1.016	123.0	LOS F	36.9	262.0	1.00	1.30	16.2
3	R2	223	2.4	223	2.4	1.016	126.6	LOS F	36.9	262.0	1.00	1.22	7.9
Approach		769	1.4	769	1.4	1.016	113.1	LOS F	36.9	262.0	0.98	1.21	15.1
East: Edward Street													
4	L2	144	1.5	144	1.5	1.012	122.1	LOS F	33.6	244.8	1.00	1.24	11.4
5	T1	776	6.2	776	6.2	1.012	117.0	LOS F	33.6	244.8	1.00	1.27	15.2
6	R2	58	5.5	58	5.5	0.384	49.4	LOS D	3.1	22.4	0.97	0.75	25.1
Approach		978	5.5	978	5.5	1.012	113.8	LOS F	33.6	244.8	1.00	1.24	15.0
North: Docker Street													
7	L2	39	0.0	39	0.0	0.052	32.8	LOS C	1.7	11.8	0.63	0.68	26.5
8	T1	519	0.8	519	0.8	1.031	91.8	LOS F	74.2	524.5	0.92	1.04	19.4
9	R2	336	1.6	336	1.6	1.031	125.3	LOS F	74.2	524.5	1.00	1.25	19.0
Approach		894	1.1	894	1.1	1.031	101.8	LOS F	74.2	524.5	0.94	1.10	19.3
West: Edward Street													
10	L2	135	3.1	135	3.1	0.851	70.1	LOS E	29.6	215.6	1.00	0.95	27.3
11	T1	638	5.4	638	5.4	0.851	63.5	LOS E	29.6	215.6	0.99	0.96	19.7
12	R2	124	0.8	124	0.8	0.895	62.2	LOS E	7.6	53.5	1.00	0.92	25.7
Approach		897	4.5	897	4.5	0.895	64.3	LOS E	29.6	215.6	1.00	0.95	22.1
All Vehicles		3538	3.2	3538	3.2	1.031	98.1	LOS F	74.2	524.5	0.98	1.12	17.6

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.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 3.8 %
Number of Iterations: 10 (maximum specified: 10)

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow	Average Delay	Level of Service	Average Back of Queue Pedestrian	Distance	Prop. Queued	Effective Stop Rate
		ped/h	sec		ped	m		per ped
P1	South Full Crossing	53	54.7	LOS E	0.2	0.2	0.86	0.86
P2	East Full Crossing	53	42.7	LOS E	0.2	0.2	0.75	0.75
P3	North Full Crossing	53	53.0	LOS E	0.2	0.2	0.84	0.84
P4	West Full Crossing	53	62.7	LOS F	0.2	0.2	0.92	0.92
All Pedestrians		211	53.3	LOS E			0.84	0.84

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: 3 [2 Edward/ Lewis PM (B)]

Network: N102 [PM Network Background]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Lewis Drive													
1	L2	49	0.0	49	0.0	0.124	8.0	LOS A	0.2	1.5	0.47	0.72	47.7
Approach		49	0.0	49	0.0	0.124	8.0	LOS A	0.2	1.5	0.47	0.72	47.7
East: Edward Street													
4	L2	51	2.1	51	2.1	0.277	5.6	LOS A	14.0	101.9	0.00	0.06	49.3
5	T1	994	5.3	994	5.3	0.277	0.0	LOS A	14.2	103.8	0.00	0.03	58.4
Approach		1044	5.1	1044	5.1	0.277	0.3	NA	14.2	103.8	0.00	0.03	57.6
West: Edward Street													
11	T1	864	4.3	861	4.3	0.227	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	37	0.0	37	0.0	0.092	13.8	LOS A	0.3	1.9	0.74	0.89	24.7
Approach		901	4.1	898 N1	4.1	0.227	0.6	NA	0.3	1.9	0.03	0.04	55.0
All Vehicles		1995	4.5	1991 N1	4.5	0.277	0.6	NA	14.2	103.8	0.03	0.05	55.6

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 3.8 %
Number of Iterations: 10 (maximum specified: 10)

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

MOVEMENT SUMMARY

Site: 4 [3 Edward/ Murray PM (B)]

Network: N102 [PM Network Background]

Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival 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 per veh	Average Speed km/h
South: Murray Street													
1	L2	49	0.0	49	0.0	0.082	7.5	LOS A	0.2	1.6	0.50	0.71	35.6
2	T1	32	0.0	32	0.0	1.000	235.7	LOS F	6.8	47.9	1.00	1.43	6.8
3	R2	32	0.0	32	0.0	1.000	242.9	LOS F	6.8	47.9	1.00	1.43	8.2
Approach		113	0.0	113	0.0	1.000	137.5	LOS F	6.8	47.9	0.78	1.11	9.4
East: Edward Street													
4	L2	22	0.0	22	0.0	0.292	5.6	LOS A	47.6	349.2	0.00	0.02	57.1
5	T1	938	5.9	938	5.9	0.292	0.8	LOS A	47.6	349.2	0.10	0.04	56.8
6	R2	39	0.0	39	0.0	0.292	13.3	LOS A	47.4	347.1	0.24	0.06	51.4
Approach		999	5.6	999	5.6	0.292	1.4	NA	47.6	349.2	0.11	0.04	56.4
North: Murray Street													
7	L2	46	4.5	46	4.5	0.056	6.7	LOS A	0.2	1.4	0.44	0.64	46.2
8	T1	17	0.0	17	0.0	0.777	161.4	LOS F	2.6	19.0	0.99	1.14	9.0
9	R2	19	5.6	19	5.6	0.777	179.6	LOS F	2.6	19.0	0.99	1.14	5.4
Approach		82	3.8	82	3.8	0.777	78.4	LOS F	2.6	19.0	0.68	0.86	17.1
West: Edqard Street													
10	L2	35	3.0	35	3.0	0.239	5.6	LOS A	0.0	0.0	0.00	0.05	54.4
11	T1	817	4.9	814	4.9	0.239	0.4	LOS A	0.5	3.6	0.05	0.03	58.5
12	R2	13	0.0	13	0.0	0.239	15.2	LOS B	0.5	3.6	0.10	0.02	49.8
Approach		864	4.8	861 N1	4.8	0.239	0.9	NA	0.5	3.6	0.05	0.03	58.2
All Vehicles		2058	4.9	2055 N1	4.9	1.000	11.7	NA	47.6	349.2	0.14	0.13	42.0

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 3.8 %
Number of Iterations: 10 (maximum specified: 10)

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

MOVEMENT SUMMARY

Site: 1 [1 Edward/ Docker AM - Mitigated (B)]

Network: N103 [AM Mitigated Network Background]

Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival 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 per veh	Average Speed km/h
South: Docker Street													
1	L2	76	0.0	76	0.0	0.932	73.2	LOS F	25.5	178.8	1.00	1.19	23.9
2	T1	666	0.5	666	0.5	0.932	66.9	LOS E	25.5	178.8	1.00	1.18	23.5
3	R2	194	3.3	194	3.3	0.489	45.7	LOS D	9.2	66.4	0.93	0.80	17.1
Approach		936	1.0	936	1.0	0.932	63.0	LOS E	25.5	178.8	0.98	1.10	22.7
East: Edward Street													
4	L2	115	2.8	115	2.8	0.734	46.1	LOS D	18.3	134.2	0.96	0.86	22.9
5	T1	612	7.2	612	7.2	0.734	40.4	LOS C	18.3	134.2	0.97	0.86	29.7
6	R2	35	3.0	35	3.0	0.144	32.1	LOS C	1.1	7.9	0.87	0.71	30.6
Approach		761	6.4	761	6.4	0.734	40.9	LOS C	18.3	134.2	0.96	0.85	28.8
North: Docker Street													
7	L2	44	0.0	44	0.0	0.180	42.5	LOS C	3.1	22.0	0.85	0.71	23.9
8	T1	295	1.1	295	1.1	0.692	44.6	LOS D	13.7	96.9	0.97	0.83	28.6
9	R2	249	0.4	249	0.4	0.674	49.5	LOS D	12.7	89.2	0.98	0.84	31.0
Approach		588	0.7	588	0.7	0.692	46.5	LOS D	13.7	96.9	0.97	0.83	29.4
West: Edward Street													
10	L2	204	3.1	204	3.1	0.898	60.0	LOS E	26.7	194.7	1.00	1.09	29.4
11	T1	654	6.6	654	6.6	0.898	54.6	LOS D	26.7	194.7	0.99	1.08	21.6
12	R2	153	0.0	153	0.0	0.553	32.8	LOS C	5.5	38.4	0.95	0.79	34.4
Approach		1011	4.9	1011	4.9	0.898	52.4	LOS D	26.7	194.7	0.99	1.04	25.5
All Vehicles		3296	3.4	3296	3.4	0.932	51.7	LOS D	26.7	194.7	0.98	0.98	26.0

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.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.1 %
Number of Iterations: 7 (maximum specified: 10)

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 per ped
P1	South Full Crossing	53	42.9	LOS E	0.1	0.1	0.88	0.88
P2	East Full Crossing	53	48.3	LOS E	0.2	0.2	0.94	0.94
P3	North Full Crossing	53	41.1	LOS E	0.1	0.1	0.87	0.87
P4	West Full Crossing	53	46.5	LOS E	0.2	0.2	0.92	0.92
All Pedestrians		211	44.7	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: 3 [2 Edward/ Lewis AM (B)]

Network: N103 [AM Mitigated Network Background]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Lewis Drive													
1	L2	43	0.0	43	0.0	0.046	7.2	LOS A	0.2	1.2	0.40	0.62	48.7
Approach		43	0.0	43	0.0	0.046	7.2	LOS A	0.2	1.2	0.40	0.62	48.7
East: Edward Street													
4	L2	61	0.0	61	0.0	0.226	5.6	LOS A	0.0	0.0	0.00	0.09	48.7
5	T1	781	6.9	781	6.9	0.226	0.0	LOS A	0.0	0.0	0.00	0.04	57.6
Approach		842	6.4	842	6.4	0.226	0.4	NA	0.0	0.0	0.00	0.04	56.5
West: Edward Street													
11	T1	848	6.7	848	6.7	0.227	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	61	0.0	61	0.0	0.102	10.4	LOS A	0.3	2.3	0.61	0.82	27.1
Approach		909	6.3	909	6.3	0.227	0.7	NA	0.3	2.3	0.04	0.06	53.4
All Vehicles		1795	6.2	1795	6.2	0.227	0.7	NA	0.3	2.3	0.03	0.06	54.4

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.1 %
Number of Iterations: 7 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 4v [3 Edward/ Murray AM - Conversion (B)]

Network: N103 [AM Mitigated Network Background]

Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival 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 per veh	Average Speed km/h
South: Murray Street													
1	L2	43	2.4	43	2.4	0.068	6.5	LOS A	0.4	2.7	0.26	0.59	37.0
2	T1	35	0.0	35	0.0	0.247	43.6	LOS D	2.3	16.1	0.95	0.72	22.9
3	R2	13	8.3	13	8.3	0.247	48.3	LOS D	2.3	16.1	0.95	0.72	26.1
Approach		91	2.3	91	2.3	0.247	26.6	LOS B	2.3	16.1	0.62	0.66	26.6
East: Edward Street													
4	L2	11	0.0	11	0.0	0.389	13.8	LOS A	11.2	83.2	0.47	0.43	45.8
5	T1	767	7.4	767	7.4	0.389	8.5	LOS A	11.2	83.2	0.48	0.45	43.8
6	R2	55	5.8	55	5.8	0.389	14.6	LOS B	8.3	61.9	0.49	0.48	44.6
Approach		833	7.2	833	7.2	0.389	9.0	LOS A	11.2	83.2	0.48	0.45	43.9
North: Murray Street													
7	L2	22	4.8	22	4.8	0.034	5.5	LOS A	0.1	0.8	0.18	0.57	47.3
8	T1	16	0.0	16	0.0	0.140	42.9	LOS D	1.2	8.6	0.93	0.69	22.9
9	R2	11	0.0	11	0.0	0.140	47.5	LOS D	1.2	8.6	0.93	0.69	15.7
Approach		48	2.2	48	2.2	0.140	26.9	LOS B	1.2	8.6	0.59	0.63	30.2
West: Edqard Street													
10	L2	58	1.8	58	1.8	0.355	9.9	LOS A	5.0	36.8	0.23	0.26	44.5
11	T1	805	6.9	805	6.9	0.355	2.6	LOS A	5.0	36.8	0.14	0.16	54.9
12	R2	7	14.3	7	14.3	0.355	6.8	LOS A	1.3	9.8	0.06	0.07	49.4
Approach		871	6.7	871	6.7	0.355	3.2	LOS A	5.0	36.8	0.15	0.17	54.2
All Vehicles		1842	6.6	1842	6.6	0.389	7.6	LOS A	11.2	83.2	0.33	0.33	46.7

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.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.1 %
Number of Iterations: 7 (maximum specified: 10)

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 per ped
P1	South Full Crossing	53	8.4	LOS A	0.1	0.1	0.39	0.39
P2	East Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	8.4	LOS A	0.1	0.1	0.39	0.39
P4	West Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		211	28.8	LOS C			0.67	0.67

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: 1 [1 Edward/ Docker PM - Mitigated (B)]

Network: N104 [PM Mitigated Network Background]

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Docker Street													
1	L2	94	1.1	94	1.1	0.873	67.2	LOS E	17.0	119.9	1.00	1.08	24.9
2	T1	453	0.9	453	0.9	0.873	62.5	LOS E	17.6	124.1	1.00	1.05	24.3
3	R2	223	2.4	223	2.4	0.733	58.5	LOS E	13.0	93.0	1.00	0.87	14.5
Approach		769	1.4	769	1.4	0.873	61.9	LOS E	17.6	124.1	1.00	1.00	22.3
East: Edward Street													
4	L2	144	1.5	144	1.5	0.912	66.6	LOS E	32.5	236.8	1.00	1.06	18.0
5	T1	776	6.2	776	6.2	0.912	60.8	LOS E	32.5	236.8	1.00	1.08	23.7
6	R2	58	5.5	58	5.5	0.199	28.0	LOS B	1.8	13.1	0.77	0.72	32.3
Approach		978	5.5	978	5.5	0.912	59.7	LOS E	32.5	236.8	0.99	1.05	23.3
North: Docker Street													
7	L2	39	0.0	39	0.0	0.249	43.3	LOS D	5.3	37.5	0.84	0.71	24.0
8	T1	519	0.8	519	0.8	0.954	70.1	LOS E	33.3	234.9	0.98	1.13	23.0
9	R2	336	1.6	336	1.6	0.757	52.3	LOS D	19.0	134.6	0.99	0.88	30.3
Approach		894	1.1	894	1.1	0.954	62.2	LOS E	33.3	234.9	0.98	1.02	25.7
West: Edward Street													
10	L2	135	3.1	135	3.1	0.766	49.9	LOS D	21.4	155.9	0.98	0.92	32.2
11	T1	638	5.4	638	5.4	0.766	43.9	LOS D	21.4	155.9	0.96	0.89	24.7
12	R2	124	0.8	124	0.8	0.466	34.9	LOS C	4.5	31.9	0.96	0.78	33.6
Approach		897	4.5	897	4.5	0.766	43.5	LOS D	21.4	155.9	0.97	0.88	27.6
All Vehicles		3538	3.2	3538	3.2	0.954	56.7	LOS E	33.3	236.8	0.98	0.99	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.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 3.2 %
Number of Iterations: 10 (maximum specified: 10)

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow	Average Delay	Level of Service	Average Back of Queue Pedestrian	Distance	Prop. Queued	Effective Stop Rate
		ped/h	sec		ped	m		per ped
P1	South Full Crossing	53	44.3	LOS E	0.2	0.2	0.86	0.86
P2	East Full Crossing	53	46.9	LOS E	0.2	0.2	0.89	0.89
P3	North Full Crossing	53	42.6	LOS E	0.2	0.2	0.84	0.84
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		211	47.0	LOS E			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.

MOVEMENT SUMMARY

Site: 3 [2 Edward/ Lewis PM (B)]

Network: N104 [PM Mitigated Network Background]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Lewis Drive													
1	L2	49	0.0	49	0.0	0.109	7.7	LOS A	0.2	1.5	0.46	0.68	48.0
Approach		49	0.0	49	0.0	0.109	7.7	LOS A	0.2	1.5	0.46	0.68	48.0
East: Edward Street													
4	L2	51	2.1	51	2.1	0.476	5.6	LOS A	0.0	0.0	0.00	0.06	49.1
5	T1	994	5.3	994	5.3	0.476	0.0	LOS A	0.0	0.0	0.00	0.03	58.2
Approach		1044	5.1	1044	5.1	0.476	0.3	NA	0.0	0.0	0.00	0.03	57.4
West: Edward Street													
11	T1	864	4.3	864	4.3	0.228	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	37	0.0	37	0.0	0.078	12.3	LOS A	0.2	1.7	0.69	0.87	25.7
Approach		901	4.1	901	4.1	0.228	0.5	NA	0.2	1.7	0.03	0.04	55.3
All Vehicles		1995	4.5	1995	4.5	0.476	0.6	NA	0.2	1.7	0.02	0.05	55.7

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 3.2 %
Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 4v [3 Edward/ Murray PM - Conversion (B)]

Network: N104 [PM Mitigated Network Background]

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Murray Street													
1	L2	49	0.0	49	0.0	0.180	53.2	LOS D	2.6	18.0	0.91	0.74	12.9
2	T1	32	0.0	32	0.0	0.247	41.5	LOS C	3.0	21.3	0.90	0.72	23.2
3	R2	32	0.0	32	0.0	0.247	46.0	LOS D	3.0	21.3	0.90	0.72	26.5
Approach		113	0.0	113	0.0	0.247	47.9	LOS D	3.0	21.3	0.90	0.73	20.1
East: Edward Street													
4	L2	22	0.0	22	0.0	0.472	18.5	LOS B	16.7	122.6	0.57	0.53	41.8
5	T1	938	5.9	938	5.9	0.472	13.3	LOS A	16.7	122.6	0.58	0.54	38.4
6	R2	39	0.0	39	0.0	0.472	19.3	LOS B	14.4	105.3	0.59	0.55	41.4
Approach		999	5.6	999	5.6	0.472	13.6	LOS A	16.7	122.6	0.58	0.54	38.7
North: Murray Street													
7	L2	46	4.5	46	4.5	0.172	53.2	LOS D	2.4	17.5	0.91	0.73	24.5
8	T1	17	0.0	17	0.0	0.130	39.8	LOS C	1.7	12.0	0.87	0.69	23.6
9	R2	19	5.6	19	5.6	0.130	44.4	LOS D	1.7	12.0	0.87	0.69	16.4
Approach		82	3.8	82	3.8	0.172	48.4	LOS D	2.4	17.5	0.89	0.71	23.0
West: Edqard Street													
10	L2	35	3.0	35	3.0	0.391	10.9	LOS A	5.6	40.7	0.23	0.24	43.6
11	T1	817	4.9	817	4.9	0.391	4.7	LOS A	5.6	40.7	0.21	0.21	52.1
12	R2	13	0.0	13	0.0	0.391	9.7	LOS A	3.9	28.5	0.18	0.17	45.2
Approach		864	4.8	864	4.8	0.391	5.0	LOS A	5.6	40.7	0.21	0.21	51.7
All Vehicles		2058	4.9	2058	4.9	0.472	13.3	LOS A	16.7	122.6	0.45	0.42	40.4

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.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 3.2 %
Number of Iterations: 10 (maximum specified: 10)

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow	Average Delay	Level of Service	Average Back of Queue Pedestrian	Distance	Prop. Queued	Effective Stop Rate
		ped/h	sec		ped	m		per ped
P1	South Full Crossing	53	11.7	LOS B	0.1	0.1	0.44	0.44
P2	East Full Crossing	53	49.6	LOS E	0.2	0.2	0.91	0.91
P3	North Full Crossing	53	11.7	LOS B	0.1	0.1	0.44	0.44
P4	West Full Crossing	53	49.6	LOS E	0.2	0.2	0.91	0.91
All Pedestrians		211	30.7	LOS D			0.68	0.68

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: 1 [1 Edward/ Docker AM - Mitigated (Dev)]

Network: N101 [AM Mitigated Network Development]

Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival 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 per veh	Average Speed km/h
South: Docker Street													
1	L2	76	0.0	76	0.0	0.923	70.9	LOS F	23.6	165.4	1.00	1.17	24.3
2	T1	666	0.5	666	0.5	0.923	64.8	LOS E	24.3	170.9	1.00	1.16	23.9
3	R2	201	3.1	201	3.1	0.529	46.9	LOS D	9.8	70.1	0.94	0.81	16.8
Approach		943	1.0	943	1.0	0.923	61.5	LOS E	24.3	170.9	0.99	1.08	23.0
East: Edward Street													
4	L2	120	2.6	120	2.6	0.733	45.3	LOS D	18.7	137.5	0.96	0.85	23.1
5	T1	633	7.0	633	7.0	0.733	39.5	LOS C	18.7	137.5	0.96	0.86	30.0
6	R2	36	2.9	36	2.9	0.149	32.0	LOS C	1.2	8.3	0.92	0.71	30.7
Approach		788	6.1	788	6.1	0.733	40.1	LOS C	18.7	138.1	0.96	0.85	29.1
North: Docker Street													
7	L2	46	0.0	46	0.0	0.181	42.5	LOS C	3.2	22.2	0.85	0.72	23.8
8	T1	295	1.1	295	1.1	0.695	44.7	LOS D	13.8	97.5	0.97	0.84	28.5
9	R2	249	0.4	249	0.4	0.674	49.5	LOS D	12.7	89.2	0.98	0.84	31.0
Approach		591	0.7	591	0.7	0.695	46.6	LOS D	13.8	97.5	0.97	0.83	29.4
West: Edward Street													
10	L2	204	3.1	204	3.1	0.907	61.6	LOS E	28.5	207.9	1.00	1.11	29.0
11	T1	689	6.3	689	6.3	0.907	56.0	LOS D	28.5	207.9	0.99	1.09	21.3
12	R2	153	0.0	153	0.0	0.552	32.4	LOS C	5.4	37.8	0.95	0.79	34.6
Approach		1046	4.7	1046	4.7	0.907	53.6	LOS D	28.5	207.9	0.99	1.05	25.1
All Vehicles		3368	3.3	3368	3.3	0.923	51.4	LOS D	28.5	207.9	0.98	0.97	26.0

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.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.1 %
Number of Iterations: 7 (maximum specified: 10)

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 per ped
P1	South Full Crossing	53	42.0	LOS E	0.1	0.1	0.87	0.87
P2	East Full Crossing	53	48.3	LOS E	0.2	0.2	0.94	0.94
P3	North Full Crossing	53	40.3	LOS E	0.1	0.1	0.86	0.86
P4	West Full Crossing	53	47.4	LOS E	0.2	0.2	0.93	0.93
All Pedestrians		211	44.5	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.

MOVEMENT SUMMARY

Site: 3 [2 Edward/ Lewis AM (Dev)]

Network: N101 [AM Mitigated Network Development]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Lewis Drive													
1	L2	47	0.0	47	0.0	0.050	7.1	LOS A	0.2	1.3	0.40	0.62	48.7
Approach		47	0.0	47	0.0	0.050	7.1	LOS A	0.2	1.3	0.40	0.62	48.7
East: Edward Street													
4	L2	105	0.0	105	0.0	0.243	5.6	LOS A	0.0	0.0	0.00	0.14	47.4
5	T1	804	6.7	804	6.7	0.243	0.0	LOS A	0.0	0.0	0.00	0.06	56.5
Approach		909	5.9	909	5.9	0.243	0.7	NA	0.0	0.0	0.00	0.07	54.7
West: Edward Street													
11	T1	848	6.7	848	6.7	0.227	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	105	0.0	105	0.0	0.190	11.3	LOS A	0.6	4.3	0.66	0.86	26.4
Approach		954	6.0	954	6.0	0.227	1.3	NA	0.6	4.3	0.07	0.09	49.7
All Vehicles		1911	5.8	1911	5.8	0.243	1.1	NA	0.6	4.3	0.05	0.10	51.8

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.1 %
Number of Iterations: 7 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 4v [3 Edward/ Murray AM - Conversion (Dev)]

Network: N101 [AM Mitigated Network Development]

Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival 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 per veh	Average Speed km/h
South: Murray Street													
1	L2	47	2.2	47	2.2	0.075	6.9	LOS A	0.5	3.4	0.28	0.60	36.4
2	T1	43	0.0	43	0.0	0.443	44.7	LOS D	3.6	25.4	0.96	0.75	22.4
3	R2	31	3.4	31	3.4	0.443	49.3	LOS D	3.6	25.4	0.96	0.75	25.7
Approach		121	1.7	121	1.7	0.443	31.1	LOS C	3.6	25.4	0.70	0.69	25.8
East: Edward Street													
4	L2	11	0.0	11	0.0	0.422	15.4	LOS B	12.8	95.1	0.52	0.47	44.4
5	T1	807	7.0	807	7.0	0.422	10.2	LOS A	12.8	95.1	0.52	0.49	41.8
6	R2	55	5.8	55	5.8	0.422	16.2	LOS B	9.7	71.6	0.53	0.52	43.3
Approach		873	6.9	873	6.9	0.422	10.6	LOS A	12.8	95.1	0.52	0.49	42.0
North: Murray Street													
7	L2	22	4.8	22	4.8	0.033	5.6	LOS A	0.1	0.9	0.19	0.57	47.2
8	T1	16	0.0	16	0.0	0.139	42.9	LOS D	1.2	8.6	0.93	0.69	22.9
9	R2	11	0.0	11	0.0	0.139	47.5	LOS D	1.2	8.6	0.93	0.69	15.7
Approach		48	2.2	48	2.2	0.139	26.9	LOS B	1.2	8.6	0.59	0.63	30.2
West: Edqard Street													
10	L2	58	1.8	58	1.8	0.371	10.5	LOS A	5.4	39.7	0.25	0.28	43.7
11	T1	805	6.9	805	6.9	0.371	3.5	LOS A	5.4	39.7	0.18	0.19	53.7
12	R2	7	14.3	7	14.3	0.371	7.8	LOS A	2.3	16.9	0.11	0.11	47.9
Approach		871	6.7	871	6.7	0.371	4.0	LOS A	5.4	39.7	0.18	0.19	53.1
All Vehicles		1913	6.3	1913	6.3	0.443	9.3	LOS A	12.8	95.1	0.38	0.37	44.6

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.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.1 %
Number of Iterations: 7 (maximum specified: 10)

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 per ped
P1	South Full Crossing	53	9.6	LOS A	0.1	0.1	0.42	0.42
P2	East Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	9.6	LOS A	0.1	0.1	0.42	0.42
P4	West Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		211	29.5	LOS C			0.68	0.68

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: 1 [1 Edward/ Docker PM - Mitigated (Dev)]

Network: N101 [PM Mitigated Network Development]

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival 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 per veh	Average Speed km/h
South: Docker Street													
1	L2	94	1.1	94	1.1	0.612	49.3	LOS D	13.3	94.2	0.95	0.87	29.3
2	T1	453	0.9	453	0.9	0.612	44.7	LOS D	14.6	103.1	0.95	0.83	28.4
3	R2	233	2.3	233	2.3	0.546	48.4	LOS D	12.1	86.2	0.93	0.82	16.5
Approach		779	1.4	779	1.4	0.612	46.4	LOS D	14.6	103.1	0.94	0.83	25.8
East: Edward Street													
4	L2	148	1.4	148	1.4	0.917	67.2	LOS E	33.6	244.8	1.00	1.07	17.9
5	T1	803	6.0	803	6.0	0.917	61.4	LOS E	33.6	244.8	1.00	1.09	23.6
6	R2	60	5.3	60	5.3	0.351	34.1	LOS C	2.2	16.4	0.85	0.73	29.8
Approach		1012	5.3	1012	5.3	0.917	60.7	LOS E	33.6	244.8	0.99	1.06	23.1
North: Docker Street													
7	L2	41	0.0	41	0.0	0.248	43.3	LOS D	5.3	37.4	0.84	0.71	24.0
8	T1	519	0.8	519	0.8	0.952	69.6	LOS E	33.4	235.2	0.98	1.13	23.1
9	R2	336	1.6	336	1.6	0.757	52.3	LOS D	19.0	134.6	0.99	0.88	30.3
Approach		896	1.1	896	1.1	0.952	61.9	LOS E	33.4	235.2	0.98	1.01	25.7
West: Edward Street													
10	L2	135	3.1	135	3.1	0.774	50.9	LOS D	22.4	162.7	0.98	0.94	31.9
11	T1	668	5.2	668	5.2	0.774	44.1	LOS D	22.4	162.7	0.96	0.90	24.7
12	R2	124	0.8	124	0.8	0.866	51.2	LOS D	5.9	41.6	1.00	0.92	28.4
Approach		927	4.3	927	4.3	0.866	46.0	LOS D	22.4	162.7	0.97	0.91	26.7
All Vehicles		3614	3.1	3614	3.1	0.952	54.1	LOS D	33.6	244.8	0.97	0.96	25.2

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.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 4.9 %
Number of Iterations: 10 (maximum specified: 10)

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 per ped
P1	South Full Crossing	53	43.4	LOS E	0.2	0.2	0.85	0.85
P2	East Full Crossing	53	46.9	LOS E	0.2	0.2	0.89	0.89
P3	North Full Crossing	53	41.8	LOS E	0.1	0.1	0.84	0.84
P4	West Full Crossing	53	47.8	LOS E	0.2	0.2	0.89	0.89
All Pedestrians		211	45.0	LOS E			0.87	0.87

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: 3 [2 Edward/ Lewis PM (Dev)]

Network: N101 [PM Mitigated Network Development]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival 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 per veh	Average Speed km/h
South: Lewis Drive													
1	L2	54	0.0	54	0.0	0.155	9.0	LOS A	0.3	2.0	0.54	0.78	46.4
Approach		54	0.0	54	0.0	0.155	9.0	LOS A	0.3	2.0	0.54	0.78	46.4
East: Edward Street													
4	L2	94	1.1	94	1.1	0.376	5.6	LOS A	0.3	2.5	0.00	0.08	48.8
5	T1	1019	5.2	1019	5.2	0.376	0.0	LOS A	0.3	2.5	0.00	0.05	57.2
Approach		1113	4.8	1113	4.8	0.376	0.5	NA	0.3	2.5	0.00	0.05	56.0
West: Edward Street													
11	T1	864	4.3	864	4.3	0.228	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	77	0.0	77	0.0	0.192	14.4	LOS A	0.6	4.1	0.76	0.90	24.3
Approach		941	3.9	941	3.9	0.228	1.2	NA	0.6	4.1	0.06	0.07	50.8
All Vehicles		2107	4.3	2107	4.3	0.376	1.0	NA	0.6	4.1	0.04	0.08	52.9

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 4.9 %
Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 4v [3 Edward/ Murray PM - Conversion (Dev)]

Network: N101 [PM Mitigated Network Development]

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival 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 per veh	Average Speed km/h
South: Murray Street													
1	L2	54	0.0	54	0.0	0.082	7.8	LOS A	0.7	4.8	0.31	0.61	35.1
2	T1	39	0.0	39	0.0	0.362	40.6	LOS C	4.4	30.6	0.90	0.74	23.3
3	R2	52	0.0	52	0.0	0.362	45.2	LOS D	4.4	30.6	0.90	0.74	26.7
Approach		144	0.0	144	0.0	0.362	30.0	LOS C	4.4	30.6	0.68	0.69	26.8
East: Edward Street													
4	L2	22	0.0	22	0.0	0.488	18.7	LOS B	17.6	128.6	0.58	0.53	41.7
5	T1	976	5.7	976	5.7	0.488	13.2	LOS A	17.6	128.6	0.59	0.54	38.4
6	R2	39	0.0	39	0.0	0.488	18.9	LOS B	14.9	109.2	0.59	0.55	41.6
Approach		1037	5.4	1037	5.4	0.488	13.6	LOS A	17.6	128.6	0.59	0.54	38.7
North: Murray Street													
7	L2	46	4.5	46	4.5	0.063	5.7	LOS A	0.3	2.1	0.19	0.58	47.2
8	T1	17	0.0	17	0.0	0.128	38.9	LOS C	1.7	12.2	0.86	0.69	23.9
9	R2	20	5.3	20	5.3	0.128	43.5	LOS D	1.7	12.2	0.86	0.69	16.6
Approach		83	3.8	83	3.8	0.128	21.5	LOS B	1.7	12.2	0.49	0.63	33.3
West: Edqard Street													
10	L2	35	3.0	35	3.0	0.392	10.8	LOS A	5.5	40.4	0.23	0.24	43.7
11	T1	817	4.9	817	4.9	0.392	5.0	LOS A	5.5	40.4	0.22	0.22	51.7
12	R2	13	0.0	13	0.0	0.392	10.4	LOS A	4.5	33.0	0.21	0.20	44.2
Approach		864	4.8	864	4.8	0.392	5.3	LOS A	5.5	40.4	0.22	0.22	51.3
All Vehicles		2128	4.7	2128	4.7	0.488	11.7	LOS A	17.6	128.6	0.44	0.42	41.9

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.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 4.9 %
Number of Iterations: 10 (maximum specified: 10)

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 per ped
P1	South Full Crossing	53	11.7	LOS B	0.1	0.1	0.44	0.44
P2	East Full Crossing	53	49.6	LOS E	0.2	0.2	0.91	0.91
P3	North Full Crossing	53	11.7	LOS B	0.1	0.1	0.44	0.44
P4	West Full Crossing	53	49.6	LOS E	0.2	0.2	0.91	0.91
All Pedestrians		211	30.7	LOS D			0.68	0.68

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 C

Preliminary Construction Traffic Management Plan

Reference: #N138820

7 May 2018

Health Infrastructure
c/o Savills Project Management
1 Farrer Place
SYDNEY NSW 2000

Attention: Mr. Dan Herbertson (Project Director Savills Project Management)

Dear Dan

RE: WAGGA WAGGA BASE HOSPITAL REDEVELOPMENT STAGE 3 – PRELIMINARY CONSTRUCTION TRAFFIC MANAGEMENT PLAN

This letter has been prepared to address specific requirements detailed in the Secretary's Environmental Assessment Requirements (SEARs) – Schedule 2 of the Environmental Planning and Assessment Regulation 2000 as it relates to the proposed development located at 260-280 Edward Street, Wagga Wagga, NSW 2650. The relevant requirements are set out below.

- *Assessment of cumulative impacts associated with other construction activities*
- *An assessment of road safety at key intersection and location subject to heavy vehicle construction traffic movements and high pedestrian activity*
- *Details of construction program detailing the anticipated construction duration and highlighting significant and milestone stages and events during the construction process*
- *Details of anticipated peak hour and daily construction vehicle movements to and from the site*
- *Details of access arrangements of construction vehicles, construction workers to and from the site, emergency vehicles and service vehicle*
- *Details of temporary cycling and pedestrian access during construction*
- *Details of the proposed construction vehicle access arrangements at all stages of construction*
- *Traffic and transport impacts during construction, including cumulative impacts associated with other construction activities, and how these impacts will be mitigated for any associated traffic, pedestrian, cyclists, parking and public transport, including the preparation of a draft Construction Traffic Management Plan to demonstrate the proposed management of the impact (which must include vehicle routes, number of trucks, hours of operation, access arrangements and traffic control measures for all demolition/ construction activities)*
- *Preliminary Construction Management Plan, inclusive of a preliminary Construction Traffic Management Plan detailing vehicle routes, number of trucks, hours of operation, access arrangements and traffic control measures.*

The proposed Stage 3 development provides for a mix of new buildings for aged care rehabilitation, aged care/ generation evaluation and management, mental health, extended ambulatory care, renal unit and lecture theatre.

The construction works comprise of the demolition of the existing Old Hospital Building, Robinson House and Hydrotherapy Pool buildings and construction of a six-storey Ambulatory Care Building above a semi-basement parking level. The new building will contain aged care, rehabilitation, older person's mental health, ambulatory clinics, rehabilitation and allied

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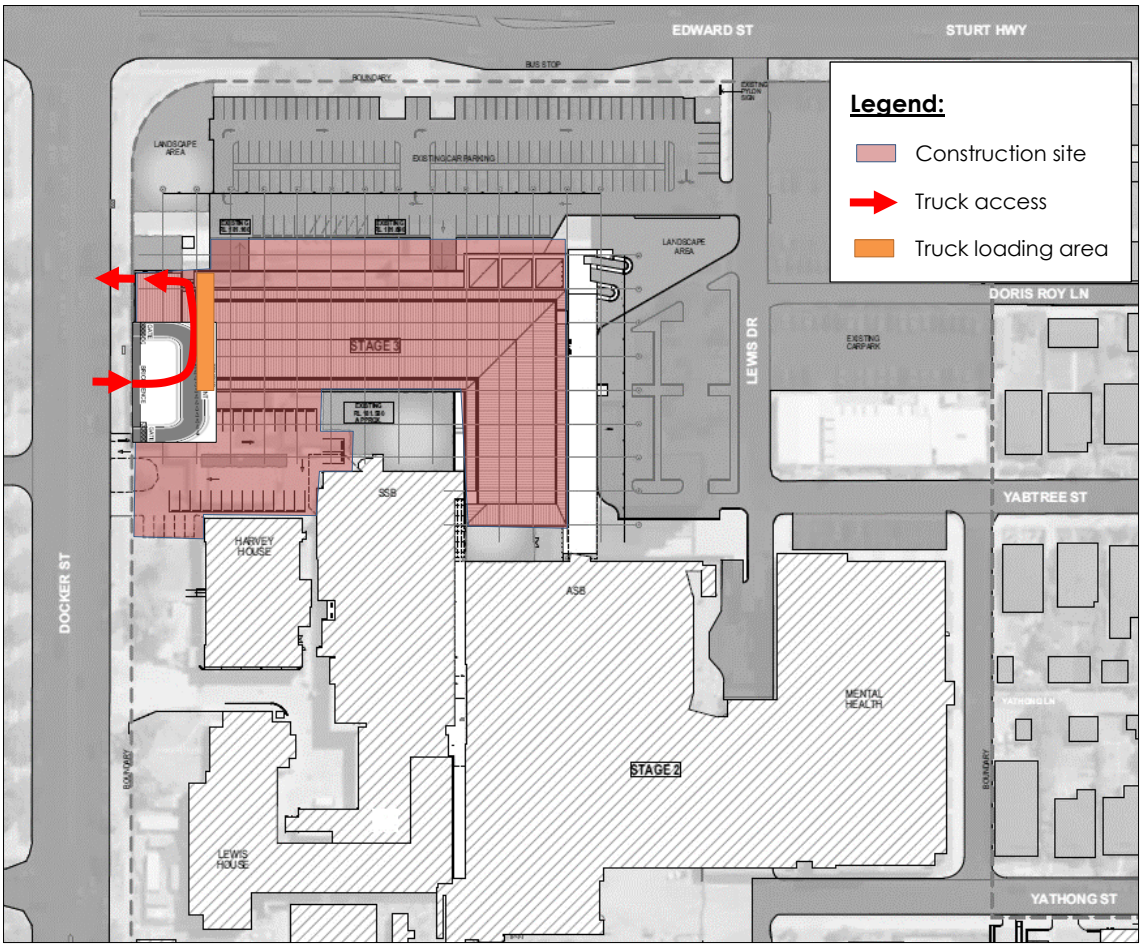
health therapy, education and research and hospital offices. Works will comprise of a new public entry, ground level and a bridge connection to the existing hospital building, new forecourt and new outdoor carpark and associated site landscaping. The site plan for the construction works is shown in Figure 1.

Construction works are expected to commence in 2018 and be completed in 2020. The commencement date has not been determined at this stage. All construction equipment/ machinery storage will occur within the works area. The number of construction workers on site is expected to be on average 140 workers, with a maximum of 320 workers during peak construction.

Figure 1: Overview of Construction Site Layout



Source: Martin & Ollmann Architects, Stage 3 Development, Wagga Wagga Health Service Redevelopment, Issue 01, 15/03/2018.

This Preliminary Construction Traffic Management Plan (PCTMP) provides an overview of the initiatives to be implemented as part of the construction works associated with Stage 3 works.

Specifically, the PCTMP considers the following:

- construction site access arrangements
- anticipated truck volumes during construction stages
- truck routes to/ from the site
- requirements for Works Zones
- pedestrian and cyclist access

- site personnel parking
- traffic control measures
- overview of CTMP requirements.

A detailed CTMP will need to be prepared prior to the issue of construction certificate and contain confirmed construction details developed in coordination with the appointed contractor/ builder.

Principles of traffic management

The general principles of traffic management during construction activities are as follows:

- minimise the impact on pedestrian and cyclist movements
- maintain appropriate public transport access
- minimise the loss of on-street parking
- minimise the impact on adjacent and surrounding buildings
- maintain access to/ from adjacent buildings
- restrict construction vehicle movements to designated routes to/ from the site
- manage and control construction vehicle activity near the site
- carry out construction activity in accordance with approved hours of works.

Work hours

Construction work would be undertaken in accordance to development consent conditions. The typical work hours are expected to be:

- Monday to Friday: 7am to 6pm
- Saturday: 7:30am to 5pm
- Sundays and public holidays: No work.

The contractor will be responsible for instructing and controlling all sub-contractors regarding the hours of work, to minimise disruption to daily traffic and disturbance to surrounding land owners and businesses. It may be necessary to carry out some work outside of these hours. Prior notice would be given to the community if any works are planned to be undertaken outside typical hours. Such activities would include delivery of cranes, large plant or equipment to the site.

Site access

Vehicle access would be left-in and left-out via Docker Street with a truck loading area proposed to the east of Docker Street.

Docker Street functions as a collector road in a north-south direction on the western boundary of the site. Adjacent to the hospital, Docker Street is a two-way road with two traffic lanes and one parking lane in each direction, set within a carriageway of around 15-metres wide, with footpaths provided on both sides of the road and a posted speed limit of 50 kilometres per hour. Kerbside parking is permitted on both sides of the road under 2P time restrictions.

Construction staff parking

No on-site parking will be provided for construction workers. Workers required to drive to/ from the site will be instructed to park on-street near the construction site to minimise the parking impacts within the on-site parking facilities. Appropriate arrangements would be made for any equipment/ tool storage requirements.

Car-pooling by the construction workers during construction will be encouraged.

The site is also within close walking distance of several bus services with bus stops on the western side of Docker Street south of Hardy Avenue, the eastern side of Docker Street south of Darlow Street and the northern side of Edward Street east of Docker Street. The bus stops are currently serviced by at least seven bus services (1W, 3W, 22, 24, 961, 962 and 963) operated by Busabout Wagga and Junee Buses, providing local connections to Bourkelands, Glenfield Park, Springvale and the greater Wagga Wagga LGA.

Heavy vehicle traffic generation

Heavy vehicle traffic would mainly be generated by activities associated with the following:

- Delivery of construction materials
- Delivery and removal of construction equipment and machinery
- Movement of construction personnel, including contractors, site labour force and specialist supervisory personnel.

Construction vehicles are expected to include excavators, truck and dogs and semi-trailers. An average of two trucks per day is expected, with a maximum of eight trucks per day during peak construction (16 movements per day). The heavy vehicle movements are likely to be spread through the day. However, in the worst-case assessment it has been assumed that 25 per cent, or two vehicles (four two-way vehicle movements), would occur during the peak hour.

The primary routes for construction vehicles are along the Sturt Highway and Olympic Highway from the east/ west and north/ south respectively. The main access roads are State Roads, which carry high daily traffic volumes. As such, any additional construction vehicle traffic would have a minimal traffic impact as this additional construction vehicle traffic would be within the range of daily variation in traffic on these routes.

Vehicle access will be provided to the site via two crossover points on Docker Street. Vehicles will use the southern access as an entry only and exit via the northern access in a left in left out operation.

The movement of materials should be managed through the scheduling of deliveries and availability of fleet to minimise the number of haulage and delivery vehicles during peak periods and on weekends.

Based on the low volumes of truck movements per day, it is anticipated that the construction traffic would have a minimal impact on the surrounding road network.

Light vehicle generation

Light vehicle traffic generation would be largely generated by construction worker traffic movements to and from the site. Given the number of construction workers on site is expected to be on average 140 workers, with a maximum of 320 workers during peak construction, it is expected the parking demand would be up to 320 vehicles.

Heavy vehicle access routes

Truck movements will be restricted to designated routes and confined to State Roads in the broader road network. Truck routes to/ from the site have been identified with the aim of minimising

the impact of construction traffic on roads near the site. No queueing of trucks is allowed in any local road or regional roads within Wagga Wagga LGA.

The directional distribution and assignment of construction traffic generated by the proposed development will be influenced by a number of factors, most notably the origin/ destination of materials, configuration of access points to the site and the configuration of the arterial road network in the immediate vicinity.

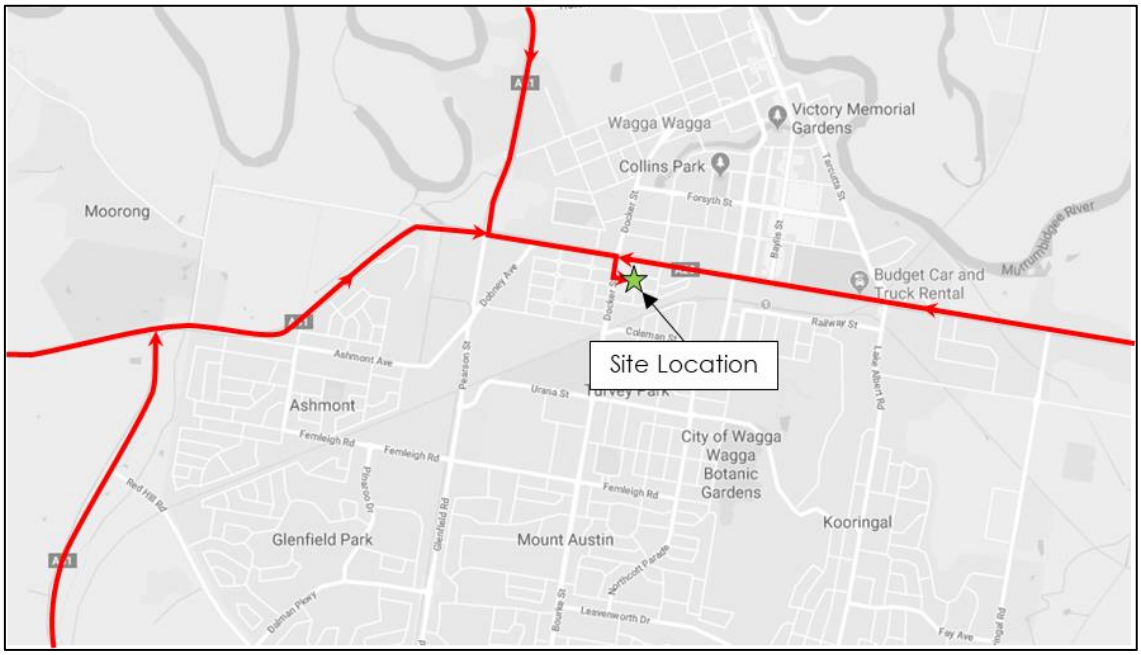
Truck drivers will be advised of the designated truck routes to/ from the site. The approach and departure routes are subject to change if the designated routes result in significant traffic congestion.

Approach routes

The construction traffic approach routes are detailed as follows and illustrated in Figure 2:

- North: Olympic Highway, Sturt Highway/ Edward Street, Docker Street
- South: Olympic Highway, Sturt Highway/ Edward Street, Docker Street
- East: Sturt Highway/ Edward Street, Docker Street
- West: Sturt Highway/ Edward Street, Docker Street.

Figure 2: Construction vehicle approach routes



Basemap source: Google Maps

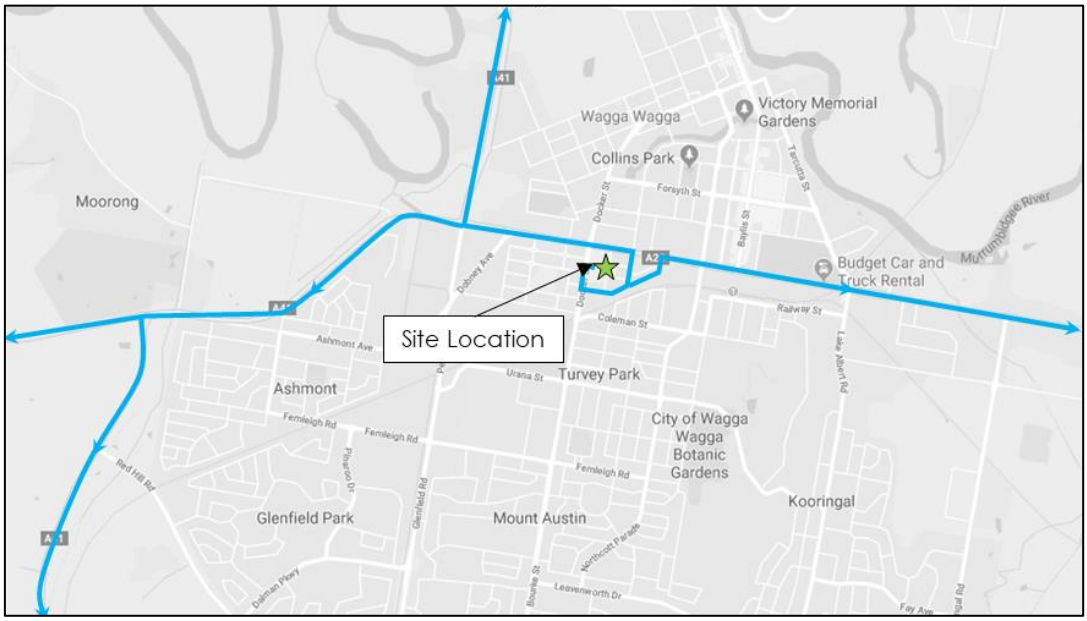
Departure Routes

The construction traffic departure routes are detailed as follows and illustrated in Figure 3:

- North: Docker Street, Brookong Avenue, Murray Street, Sturt Highway/ Edward Street, Olympic Highway
- South: Docker Street, Brookong Avenue, Murray Street, Sturt Highway/ Edward Street, Olympic Highway
- East: Docker Street, Brookong Avenue, Sturt Highway/ Edward Street

- West: Docker Street, Brookong Avenue, Murray Street, Sturt Highway/ Edward Street.

Figure 3: Construction vehicle departure routes



Basemap source: Google Maps

Transport Impacts

Cumulative traffic impacts

The additional eight heavy vehicles per day expected during construction of the main works is expected to have a minimal impact on the surrounding road network. As discussed, the expected number of construction workers on site is expected to be up to 320 workers during peak construction period. This equates to up to a maximum of 320 vehicles per day during peak construction with 320 inbound and 320 outbound movements during the AM and PM peak hours respectively.

It is expected that the workers would arrive before the AM peak hour and depart before the PM peak hour. Based on these travel patterns, it is not expected the construction works will significantly contribute to the existing and future traffic within the Wagga Wagga LGA, therefore minimising the impact on the surrounding road network during the peak hours.

The impact to pedestrians is expected to be minimal and potentially only impact where pedestrians will cross the construction driveway access.

There are two other major planned construction sites that would likely be active during the construction period of the proposed development. Notable projects include the medical suite development on the corner of Docker Street and Chaston Street as well as the redevelopment work within the Calvary Hospital Site.

With only up to eight heavy vehicles per day along the approach and departure routes via Sturt Highway, Edward Street and Docker Street, there will be only minor construction vehicle traffic impact along these roads.

Also, given the smaller scale of the medical suite and redevelopment work within the Calvary Hospital site, the traffic impact of these developments will be minor.

Parking

To accommodate the site accesses, it is proposed to temporarily remove four 2P on-street parallel parking spaces along the site frontage on Docker Street.

The temporary loss of any time restricted parking is considered acceptable, given the spaces would have primarily serviced the site itself.

Pedestrian and Cyclist

During construction, the pedestrian footpath along Docker Street west of the site will be maintained. Pedestrians would be provided with convenient and safe routes at all times. There would be no loading and unloading on footpath reserves. Accredited site personnel would be provided at each site access to ensure the safety of pedestrians. Special care will be taken when truck movements are occurring. The pathways along the full frontage would be swept and kept clean at all times during normal work periods.

Given there is currently no bicycle route along Docker Street, no cyclist management will be required.

Emergency Vehicle

Access to the site via Brookong Avenue by emergency vehicles would not be affected by the works as the road would be unaffected.

Other emergency access (police and fire) for to the site will be available at all times via the site access point on Lewis Drive.

Emergency protocols on the site would include a requirement for the traffic controller to assist with emergency access from the street. All truck movements to the site and/ or incident point would be suspended and cleared.

Consequently, any potential impacts on emergency access would be effectively managed throughout the works.

Consultation with the police and emergency services agencies will be carried out throughout the construction period and a 24-hour contact would be made available for 'out-of-hours' emergencies and access.

Therefore, no adverse impacts on the provision of existing emergency vehicle access to other neighbouring properties resulting from the proposed construction activities is expected.

Service vehicles

Existing loading arrangements are via Docker Street, towards the south of the construction site accesses, this would not be affected by the works as Docker Street.

Traffic guidance scheme (TGS)

A traffic guidance scheme (TGS) (formerly a traffic control plan) has been prepared by Riverina Traffic Services in accordance with the principles of the Roads and Maritime Traffic Control at Work Sites manual. The traffic guidance scheme would primarily show where “Trucks” signs would be located at the construction access along Docker Street to warn other road users of the increase in

construction vehicle movements. The TGS is provided in Attachment 1. The plan presents the principles of traffic management and is subject to WorkCover requirements.

The TGS details the following considerations:

- Construction vehicle activity, including the loading/ unloading of trucks and all materials handling to be provided within the construction site boundaries or within the proposed works zone at all times.
- The movement of trucks to/ from the construction site would be managed and controlled by accredited site personnel with no through traffic to be affected during construction.
- Construction site accesses would provide appropriate sight distances and a safe environment for all users.
- Accredited site personnel will be required at key locations surrounding the site to maintain safety and manage construction vehicles if and as required.
- Pedestrian safety to be maintained at all times.

I trust that the above provides the information you require. Naturally, should you have any questions or require any further information, please do not hesitate to contact me in our Sydney office on (02) 8448 1800.

Yours sincerely

GTA CONSULTANTS

Karen McNatty
Associate
encl.
Attachment 1 – Traffic Guidance Scheme (TGS)

Attachment 1

Traffic Guidance Scheme (TGS)

RIVERINA TRAFFIC SERVICES Pty. Ltd.

"THE SAFER OPTION"

02 6925 5267

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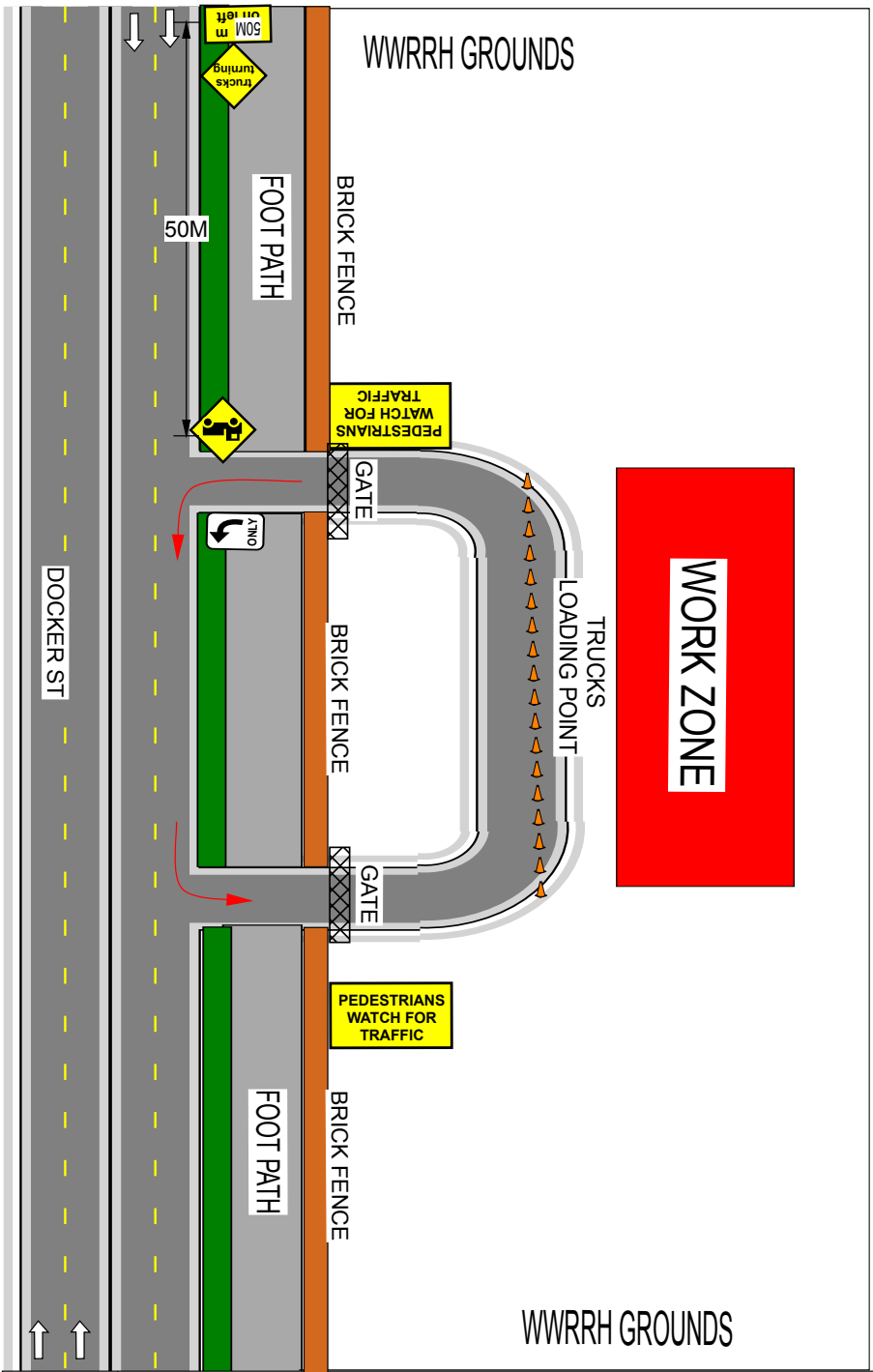
NOTE:

60

POSTED SPEED LIMIT

N



NOTES;

1. TRUCK TURNING INTO WWRRH FOR DEMOLITION WORKS
2. PLAN AS PER TCP 195 RMS TRAFFIC CONTROL @ WORK SITES MANUAL V4
3. ALL SIGNS AND SPACING'S AS PER TCP UNLESS MODIFIED BY AUTHORISED PERSON
4. ALL EMERGENCY VEHICLES TO HAVE RIGHT OF WAY
5. ALL EXITING TRAFFIC TO STOP BEFORE ENTERING DOCKER ST
6. ALL PEDESTRIANS TO HAVE RIGHT OF WAY
7. DURING PEAK TIME SPOTER TO CONTROL TRUCKS EXITING
8. CONSTRUCTION AREA TO BE CONED OFF AT ALL TIMES
9. TRUCK ENTRIES TO BE RESTRICTED DURING PEAK TIMES 0730-0900 &AFTER 1500

Designed by Shane Egan	RTA LIC No: 0031546879	RTA Lic Exp Date: 16-05-19
AUTHORITY TO COMPLILE TCP: R.T.A DESIGN & INSPECT TRAFFIC PLANS		
TCP No: RTS195	Scale: N.T.S	Date: 25-01-18
SHANE EGAN 0458 981 482		

CLIENT: RICHARD CROOKES CONSTRUCTIONS

NOTES:

1. All signage displayed on this traffic control plan is in accordance with Australian Standard AS/NZ 1742-3 209 & RTA Traffic Control @ WS manual V4
2. All existing speed and other sgns to be covered if they conflict with TCP
3. It is the client's responsibility to have this TCP checked by a Riverina Traffic Services representive after the set up but prior to commencement of work to ensure compliance with AS/NZ 1742-3 2009 & Traffic control @ WS manual V4.
4. This Traffic Control Plan is a controlled document and as such cannot be altered without notifying the designer.

Revision:	Sheet No:	MODIFIED BY:	DATE	TIME
B				

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