Liverpool Health and Academic Precinct Main Works

State Significant Development Application
Transport and Accessibility Impact Assessment

Prepared by: GTA Consultants (NSW) Pty Ltd for Health Infrastructure
on 6/05/2020
Reference: N170560
Issue #: C

GTAconsultants

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Quality Record

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EXECUTIVE SUMMARY

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Overview

Liverpool Health and Academic Precinct (LHAP) is located within the Liverpool Central Business District (CBD), on the corner of Elizabeth Street and Goulburn Streets, Liverpool. The hospital campus includes land east and west of the main southern railway, which forms an eastern and western campus. The proposed works are located in the western portion of the western hospital campus. The site is legally described as Lot 501 in DP1165217.

The application seeks consent for the construction and operation of a new multi-storey Integrated Services Building providing new treatment and support services that will integrate with the existing hospital. The works also include the refurbishment of certain existing hospital facilities.

A State Significant Development Application (SSDA) is to be lodged with the Department of Planning, Industry and Environment (DPIE). Health Infrastructure commissioned GTA Consultants (GTA) to provide design advice and subsequently prepare a Transport and Accessibility Impact Assessment to support the SSDA.

Pedestrians and Cyclists

The primary pedestrian entrance to the hospital will be located on Goulburn Street, with several other accesses provided from Elizabeth Street, Burnside Drive and Campbell Street. This would spread pedestrian activity across several access locations and facilitate pedestrian connectivity to both Liverpool and Warwick Farm stations, as well as the surrounding pedestrian network and bus stops. Appropriate footpath connections are provided to each access point.

A 10 km/h shared zone is proposed on Campbell Street between Forbes Street and Goulburn Street given the existing high pedestrian activity in this location associated with both the hospital and the nearby Liverpool Girls and Boys High School, with the objective being to create a more pedestrianised area to complement the active frontage proposed as part of the redevelopment, as well as future expansion of the LHAP to the north. The shared zone will be designed to reduce traffic volumes along this section of Campbell Street, with traffic associated with the schools and hospital encouraged to use other roads (including Lachlan Street and Burnside Drive) through the reduced Campbell Street traffic capacity and supporting wayfinding and travel messaging.

Bicycle parking will be provided in various publicly accessible areas around the hospital in the form of bicycle U-rails and/or racks to encourage cycling to the hospital by patients and visitors as appropriate. Additional staff bicycle parking will also be provided in CP1.

Vehicle Access

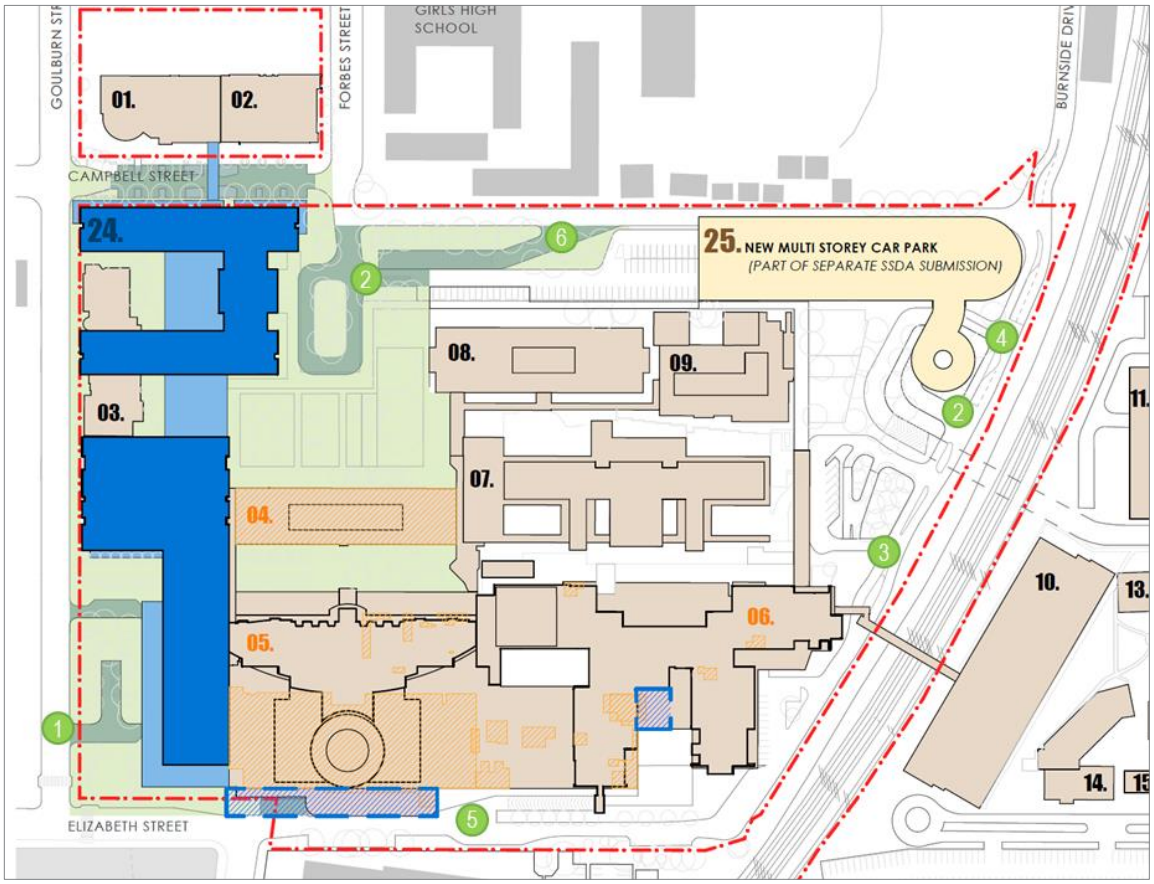
The redevelopment of the LHAP seeks to simplify the access arrangement of the Precinct by separating different users. A summary of the proposed vehicle access arrangements for the different uses is provided in Table E.1 and indicated diagrammatically on Figure E.1. The elements shown in blue in Figure E.1 form part of the Main Works SSDA and assessment in this TAIA.

Table E.1: Proposed vehicle access arrangements

Item	Facility	Proposed access arrangement	Intended user
1	CP1	Goulburn Street – new driveway access to new porte-cochere outside main hospital entrance. Ramps down to CP1 provided via porte-cochere. Infrequent 6.4 metre fuel delivery truck access through main entrance loop to service the back-up generator diesel tank.	• Short term visitors • Fuel delivery vehicles
2	CP2 (new multi-storey and at-grade car park to be delivered as part of a separate planning application)	Forbes Street – access to at-grade car park provided via cancer clinics porte-cochere and pick-up/ drop-off loop. Burnside Drive* – access to multi-storey car park provided via a T-intersection treatment from Burnside Drive. Two lanes in and one lane out of the car park are proposed.	• Long term visitors in the multi-storey car park • Short term cancer clinic/ pathology visitors in the at-grade car park
3	CP3	Burnside Drive* - new unsignalised T-intersection to porte-cochere outside of Brain Injury Rehabilitation Unit. Ramps down to CP3 provided via the porte-cochere. CP1* – a new one-way connection will be provided allowing drivers in CP1 to connect with CP3.	• Short-term visitors • Patient transport vehicles • Mortuary vehicles
4	CP4 and CP5	Burnside Drive* – new unsignalised intersection connecting with the existing Burnside Drive bridge over the railway line. Scrivener Street – access to remain as existing.	• Staff
5	Southern loading dock	Primarily Burnside Drive, with some use of Elizabeth Street – largely the same access treatment with some localised widening at the entry point to allow HRV access to/ from Burnside Drive*.	• Service vehicles
6	New northern loading dock	Burnside Drive* – new unsignalised T-intersection with the northern link road between Forbes Street and Burnside Drive. Access to the loading dock is provided via a ramp on the southern side of the link road.	• Service vehicles • Patient transport vehicles

* Note: Works approved via separate planning pathways and therefore do not form part of this application, but presented for completeness.

Figure E.1: Vehicle Access



Base image source: Main Works SSDA Design Statement prepared by Fitzpatrick + Partners, dated 24 April 2020

Loading Facilities

A new loading dock is proposed in Basement 1 in the north-west corner of the site, with access provided from the internal road along the northern boundary of the site, connecting Forbes Street and Burnside Drive. The new dock would include five service vehicle bays including two for 6.4 metre SRVs and three for vehicles up to 12.5 metre HRVs.

There are currently three loading areas around the hospital; the main loading dock on the southern side of the campus, the Alex Grimson loading dock and a minor loading dock associated with pathology. As part of the redevelopment, the Alex Grimson and pathology loading docks will be demolished. Analysis has been completed of existing deliveries to these loading docks, with surveys indicating that the provision of five additional loading spaces proposed in the new loading dock is satisfactory in meeting the anticipated future loading demand of the hospital.

Emergency Vehicles

Ambulance access to the hospital is proposed to be maintained via the eastern end of Elizabeth Street with the relocation of the main entrance to the hospital to Goulburn Street reducing delay and conflicts at the ambulance access. Service vehicle drivers will be advised to arrive and depart via Burnside Drive to minimise conflicts with ambulances. Some deliveries including those using 19 metre articulated vehicles will be required to travel through this area on infrequent occasions due to limited turn-around facilities from Burnside Drive.

The existing ambulance parking area is proposed to be expanded to allow for additional ambulance bays along the emergency department frontage. The primary ambulance routes to the hospital will be maintained via Goulburn Street, Elizabeth Street and College Street. With the new Burnside Drive extension connecting with Elizabeth Street proposed as part of separate planning approvals, a secondary route will be available along Burnside Drive, with measures in place to allow ambulances through areas controlled by boom gates along this route.

Parking

A new multi-storey car park and adjacent at-grade car park are proposed as part of a separate SSDA in the north-east corner of the site, capable of accommodating 1,097 spaces (equating to a net increase of 386 parking spaces across the campus) to support the additional parking demand anticipated by the Main Works and associated clinical planning forecasts of staff and patient activity. This increase in parking accommodates the forecast 2025/ 26 additional car parking demand of 368 spaces on-site (assuming a five per cent mode shift away from private car travel through travel planning initiatives), with additional capacity to internalise some of the existing off-site car parking demand.

Road Network

SIDRA modelling was completed at surrounding key intersections, with results indicating that the majority of intersections operate at a satisfactory level of service overall. There is currently significant queuing present on the Hume Highway in both peak periods, particularly inbound in the AM peak hour and outbound in the PM peak hour. However, the degree of saturation and level of service indicates that there is some minor available capacity at these intersections.

It is expected that the redevelopment will generate up to an additional 270 vehicle trips in a peak hour. With the anticipated additional traffic generated by the redevelopment, as well as the proposed shared zone in Campbell Street and cumulative impact of the Westfield Shopping Centre redevelopment and 26 Elizabeth Street development, it is expected that the surrounding key intersections near the LHAP will continue to operate satisfactorily in the AM and PM peak periods, with minor increases to delays and queues.

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1. INTRODUCTION

01

1.1. Background

Liverpool Health and Academic Precinct (LHAP) is located within the Liverpool Central Business District (CBD), on the corner of Elizabeth Street and Goulburn Streets, Liverpool. The hospital campus includes land east and west of the Main Southern Railway, which forms an eastern and western campus. The proposed works are located in the western portion of the western hospital campus. The site is legally described as Lot 501 in DP1165217.

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1.2. Purpose of this Report

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

- existing traffic and parking conditions surrounding the site
- suitability of the proposed parking in terms of supply (quantum) and layout
- service vehicle requirements
- pedestrian and bicycle requirements
- the traffic generating characteristics of the proposed development
- suitability of the proposed access arrangements for the site
- the transport impact of the development proposal on the surrounding road network.

1.3. Response to SEARs

The Transport and Accessibility Impact Assessment is required by the SEARs for SSD 10389. Table 1.1 identifies the SEARs and relevant reference within this report.

Table 1.1: SEARs and relevant report reference

SEAR detail	Report reference
Transport and Accessibility Include a transport and accessibility impact assessment, which details, but not limited to the following: • accurate details of the current daily and peak hour vehicle, existing and future public transport networks and pedestrian and cycle movement provided on the road network located adjacent to the proposed development.	Section 2.2, 3.2, 3.3, 3.7, 3.8
• details of estimated total daily and peak hour trips generated by the proposal, including vehicle, public transport, pedestrian and bicycle trips	Section 7.1, 7.2, 7.3, 9.1
• the adequacy of existing public transport or any future public transport infrastructure within the vicinity of the site, pedestrian and bicycle networks and	Section 7.3

SEAR detail	Report reference
associated infrastructure to meet the likely future demand of the proposed development	
• measures to integrate the development with the existing/ future public transport network	Section 7.2.2, 7.3
• the impact of trips generated by the development on the following intersections, including consideration of the cumulative impacts from other approved or proposed developments in the vicinity (including SSD10389 Liverpool Hospital Redevelopment), with full counts including pedestrian (at minimum) and number of buses: o Burnside Drive/ Campbell Street o Campbell Street/ Bigge Street o Elizabeth Street/ Bigge Street o Elizabeth Street/ Goulburn Street o Elizabeth Street/ Moore Street o Moore Street/ Bigge Street o Remembrance Avenue/ Hume Highway o Bigge Street/ Hume Highway o Newbridge Road/ Speed Street o Campbell Street/ Goulburn Street	Section 3.3, 9.4
• the identification of infrastructure required to ameliorate any impacts on traffic efficiency and road safety impacts associated with the proposed development.	Section 9.4
• details of travel demand management measures to minimise the impact on general traffic and bus operations, including details of a location-specific sustainable travel plan (Green Travel Plan and specific Workplace travel plan) and the provision of facilities to increase the non-car mode share for travel to and from the site.	Section 7.1, 10
• the proposed walking and cycling access arrangements and connections to public transport services.	Section 7.1, 7.2
• the proposed access arrangements, including car and bus pick-up/drop-off facilities, and measures to mitigate any associated traffic impacts and impacts on public transport, pedestrian and bicycle networks, including pedestrian crossings and refuges and speed control devices and zones.	Section 5, 7.2
• proposed bicycle parking provision, including end of trip facilities, in secure, convenient, accessible areas close to main entries incorporating lighting and passive surveillance.	Section 7.1, 7.4
• proposed number of on-site car parking spaces for staff and visitors and corresponding compliance with existing parking codes and justification for the level of car parking provided on-site.	Section 6.1
• an assessment of the cumulative on-street parking impacts of cars and bus pick-up/ drop-off, staff parking and any other parking demands associated with the development.	Section 5, 6
• an assessment of road and pedestrian safety adjacent to the proposed development and the details of required road safety measures and personal safety in line with CPTED	Section 7.4
• emergency vehicle access, service vehicle access, delivery and loading arrangements and estimated service vehicle movements (including vehicle type and the likely arrival and departure times).	Section 5.3, 8.1, 8.2, 8.3, 8.4, 8.5
• the preparation of a preliminary Construction Traffic and Pedestrian Management Plan to demonstrate the proposed management of the impact in relation to construction traffic addressing the following:	Section 11

SEAR detail	Report reference
○ assessment of cumulative impacts associated with other construction activities (if any) ○ an assessment of road safety at key intersection and locations 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 on-site car parking and 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.	

1.4. References

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

- an inspection of the site and its surrounds
- Liverpool Development Control Plan (DCP) 2008
- Liverpool Local Environmental Plan (LEP) 2008
- Australian Standard/ New Zealand Standard, Parking Facilities, Part 1: Off-Street Car Parking AS/NZS 2890.1:2004
- Australian Standard, Parking Facilities, Part 2: Off-Street Commercial Vehicle Facilities AS 2890.2:2018
- Australian Standard/ New Zealand Standard, Parking Facilities, Part 6: Off-Street Parking for People with Disabilities AS/NZS 2890.6:2009
- traffic and car parking surveys as referenced in the context of this report
- Liverpool Hospital Parking Demand Study prepared by ptc. dated 20 December 2018
- Liverpool Hospital Concept Design Traffic Report prepared by ptc. dated 11 February 2019
- other documents and data as referenced in this report.

2. STRATEGIC CONTEXT

02

2.1. State and Regional Planning Policies

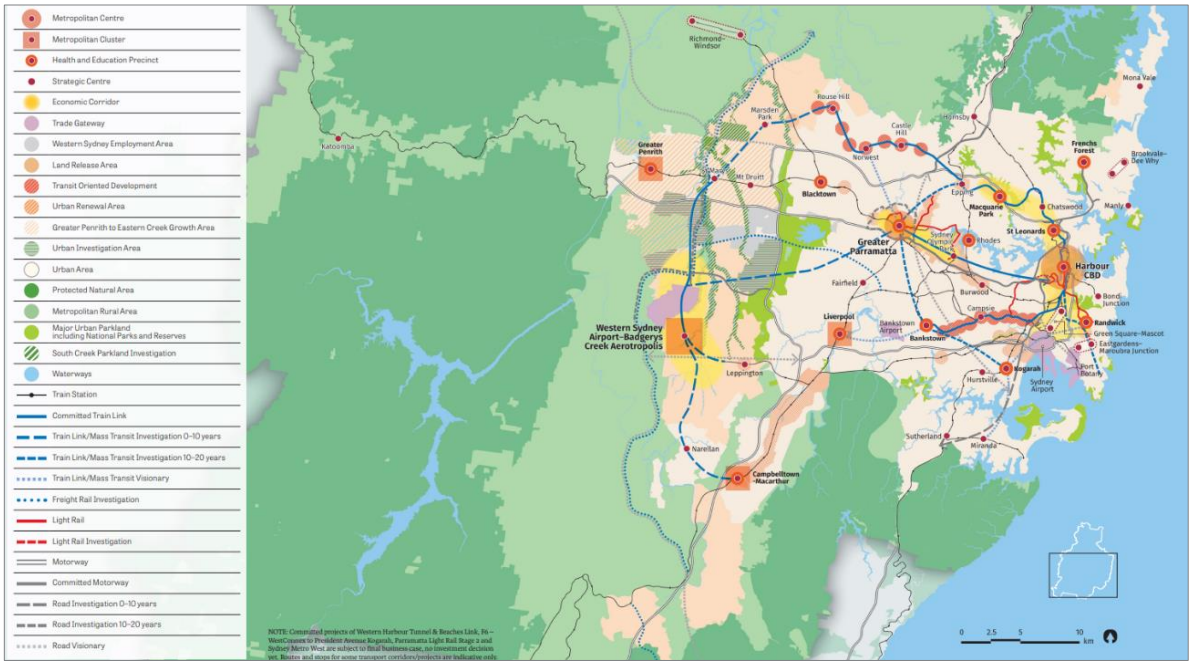
2.1.1. Greater Sydney Region Plan

The Greater Sydney Commission (GSC) is an independent organisation that leads metropolitan planning for Greater Sydney. It has prepared the Greater Sydney Region Plan which outlines how Greater Sydney will manage growth and guide infrastructure delivery. The Greater Sydney Region Plan has been prepared in conjunction with the NSW Government's Future Transport 2056 Strategy and informs Infrastructure NSW's State Infrastructure Strategy.

The GSC's vision is to create three connected cities; a Western Parkland City west of the M7, a Central River City with Greater Parramatta at its heart and an Eastern Harbour City. By integrating land use, transport links and infrastructure across the three cities, more people will have access within 30 minutes to job, school, hospitals and services.

The Greater Sydney Region Plan is a 20-year plan with a 40-year vision and has four key focuses: infrastructure and collaboration, liveability, productivity and sustainability. The Greater Sydney Structure Plan 2056 is shown indicatively in Figure 2.1.

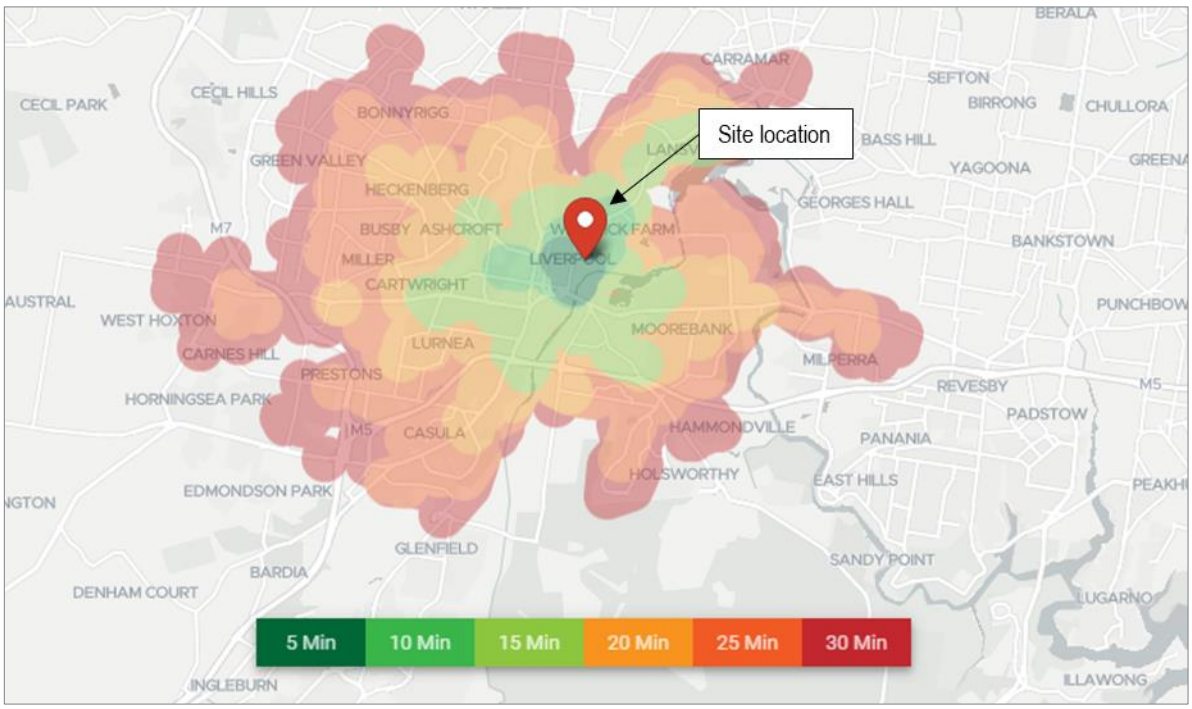
Figure 2.1: Greater Sydney Structure Plan 2056 – The Three Cities



Source: Greater Sydney Commission, accessed 16 December 2018.

The location of the site, in the context of the 30-minute city concept, is shown in Figure 2.2. This is based on public transport being the mode of travel.

Figure 2.2: Travel distance by public transport



Source: https://app.targomo.com/, accessed 26 May 2019

2.1.2. Future Transport 2056

Future Transport 2056 provides a 40-year strategy for how transport will be planned, amended and forecasted within NSW, both regional and metropolitan, for the expected 12 million residents within the state. Future Transport 2056 follows from the 2012 Long Term Transport Master Plan which listed over 700 transport projects, the majority of which are completed or in progress. It also ties in with Greater Sydney Region Plan and the subsequent district plans to support the three cities metropolis vision.

Future Transport 2056 is supported by two key documents, Greater Sydney Services and Infrastructure Plan and Regional NSW Services and Infrastructure Plan, which provide guidance and planning for these areas.

From a metropolitan view, Future Transport 2056 and associated plans include the 30-minute city where jobs and services are within 30 minutes of residents with Greater Sydney. Strategic transport corridors to move people and goods are outlined between metropolitan and strategic centres, clusters and surrounds. The Movement and Place framework is also emphasised to support liveability, productivity and sustainability.

Specific to LHAP, Future Transport 2056 sets out initiatives to encourage sustainable travel by rolling out secure bicycle storage at stations across the railway network and supporting infrastructure upgrades such as rapid bus connections between Liverpool and surrounding areas.

2.1.3. Western City District Plan

The Western City District covers the Blue Mountains, Camden, Campbelltown, Fairfield, Hawkesbury, Liverpool, Penrith and Wollondilly local government areas. It is a 20-year plan to manage growth in the context of economic, social and environmental matters to achieve the 40-year vision for Greater Sydney.

The strategies outlined in the Greater Sydney Region Plan are further developed in the Western City District Plan, which describes the objective and role of key metropolitan centres including Liverpool.

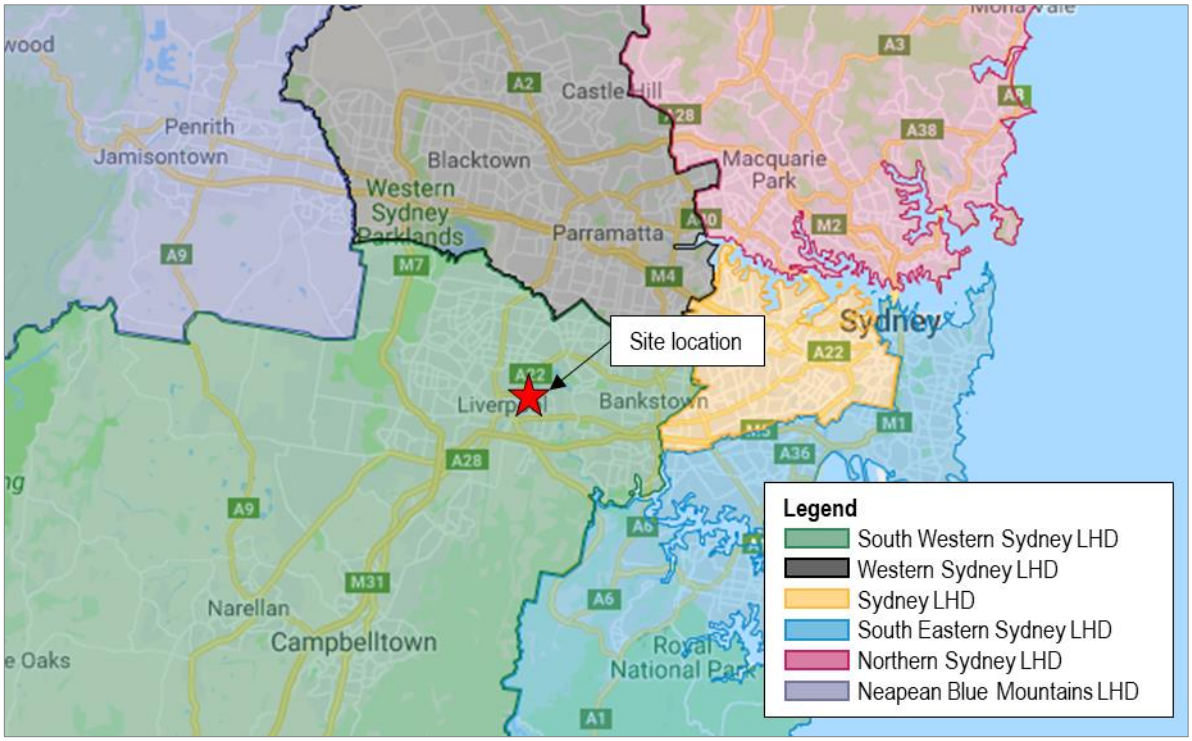
The plan identifies the following key initiatives which have relevance to the LHAP:

- Rapid bus services for Western Sydney to support Western Sydney Airport when it opens in 2026
- Transforming the Western City District by building on natural and community assets and developing a more contained Western City District with a greater choice of jobs, transport and services aligned with growth
- Creating high value employment precincts – State government will deliver a Land Use and Infrastructure Implementation Plan and an associated State Environment Planning Policy to set the planning framework for the Aerotropolis and the broader Western Sydney Airport Growth Area.

2.2. Site Context

LHAP is located in the northern section of the South Western Sydney Local Health District (SWSLHD), with the associated primary health catchment extending to the south and east as shown in Figure 2.3.

Figure 2.3: Site location in the context of the surrounding Local Health Districts



Base image source: https://www.health.nsw.gov.au/lhd/Pages/lhd-maps.aspx, dated 8 June 2017

SWSLHD covers seven Local Government Areas from Bankstown to Wingecarribee and has a population of approximately 820,000 people. The District is among the most rapidly growing populations in NSW and projected to grow to over more than a million people in the next decade.

The LHAP forms part of a broader master plan of the Liverpool Innovation Precinct. Broadly speaking, this Precinct includes the area between Lachlan Street to the north of the site, and Liverpool Station. This plan identifies a strategy to promote sustainability through implementation of Green Spaces and supporting pedestrian focused streets and links. The plan identifies Elizabeth and Campbell Streets as being pedestrianised streets, while much of the north-south traffic ideally being transferred to Bigge Street from Goulburn Street, with the vision for speed limits on roads surrounding the hospital to be reduced. To support this, there is an intention to reinforce the general hospital approach route as being Burnside Drive from the Hume Highway via Bigge Street and Remembrance Avenue.

3. EXISTING CONDITIONS

03

3.1. Location

LHAP is located to the east of Liverpool CBD and generally involves the land bounded by Elizabeth Street to the south, Goulburn Street to the west, Campbell Street to the north and the railway and Scrivener Street to the east. More broadly, the Hume Highway is aligned to the north and west of Liverpool, while Newbridge Road bounds Liverpool on its southern side.

The surrounding properties to LHAP predominantly include residential, educational and industrial uses, while commercial and retail uses are located further towards the Liverpool CBD to the west.

The location of the subject site and its surrounding environs is shown in Figure 3.1.

Figure 3.1: Subject site and its environs

Base image source: Sydway

3.2. Transport Network

3.2.1. Road Hierarchy

Roads are classified according to the functions they perform. The main purpose of defining a road's functional class is to provide a basis for establishing the policies which guide the management of the road according to their intended service or qualities.

In terms of functional road classification, State roads are strategically important as they form the primary network used for the movement of people and goods between regions, and throughout the State. Roads and Maritime Services (Roads and Maritime) responsible for funding, prioritising and carrying out works on State roads. State roads generally include roads classified as freeways, state highways, and main roads under the Roads Act 1993, and the regulation to manage the road system is stated in the Australian Road Rules, most recently amended on 19 March 2018.

Roads and Maritime defines four levels in a typical functional road hierarchy, ranking from high mobility and low accessibility, to high accessibility and low mobility. These road classes are:

Arterial Roads – Controlled by Roads and Maritime, typically no limit in flow and designed to carry vehicles long distance between regional centres.

Sub-Arterial Roads – Managed by either Council or Roads and Maritime under a joint agreement. Typically, their operating capacity ranges between 10,000 and 20,000 vehicles per day, and their aim is to carry through traffic between specific areas in a sub region or provide connectivity from arterial road routes (regional links).

Collector Roads – Provide connectivity between local sites and the sub-arterial road network, and typically carry between 2,000 and 10,000 vehicles per day.

Local Roads – Provide direct access to properties and the collector road system and typically carry between 500 and 4,000 vehicles per day.

3.2.2. Surrounding Road Network

Campbell Street

Campbell Street is a local road aligned in an east-west direction close to the northern boundary of the site. It is a two-way road with one lane in each direction, set within an approximately 13 metre carriageway. Near the site, 2P and accessible parallel parking is permitted on both sides of the road. Campbell Street is signposted as a 40km/h high pedestrian activity area at its eastern end and also involves a school zone near Liverpool Girls High School.

Campbell Street is shown in Figure 3.2 and Figure 3.3.

Figure 3.2: Campbell Street (looking east)

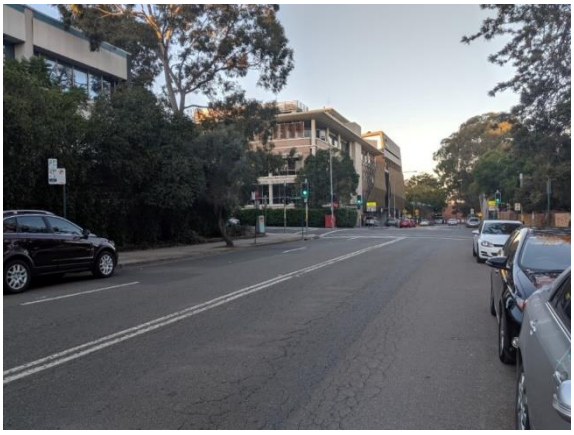


Figure 3.3: Campbell Street (looking west)

Goulburn Street

Goulburn Street is a collector road aligned in a north-south direction to the west of the site. It is a two-way road configured with one lane in each direction, set within an approximately 12.5 metre carriageway. Near the site, 1P parallel parking is permitted on both sides of the road. Campbell Street is signposted as a 40km/h high pedestrian activity area adjacent to the hospital and is a key north-south route through Liverpool, connecting with the Hume Highway to the north.

Goulburn Street is shown in Figure 3.4 and Figure 3.5.

Figure 3.4: Goulburn Street (looking north)

Figure 3.5: Goulburn Street (looking south)

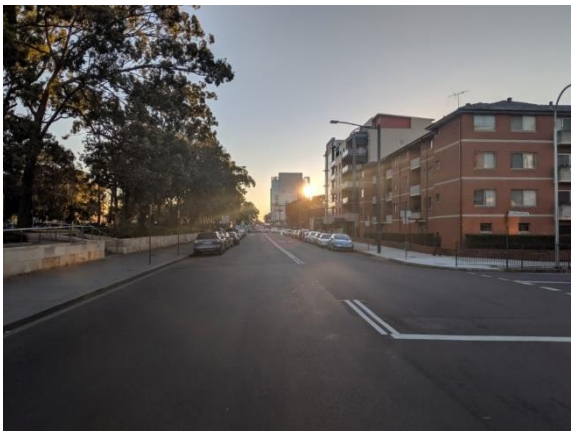
Elizabeth Street

Elizabeth Street is a collector road aligned in an east-west direction to the south of the site. It is a two-way road configured with one lane in each direction, set within an approximately 12.5 metre carriageway. Near the site, 1P parallel parking is permitted on both sides of the road. Elizabeth Street is signposted as a 40km/h high pedestrian activity area near the hospital.

Elizabeth Street is shown in Figure 3.6 and Figure 3.7.

Figure 3.6: Elizabeth Street (looking east)

Figure 3.7: Elizabeth Street (looking west)



Forbes Street

Forbes Street is a local road aligned in a north-south direction to the north of the site. It is a two-way road configured with one lane in each direction, set within an approximately 12.5 metre carriageway. Unrestricted kerbside parking is permitted on both sides of the road outside of school pick-up and drop-off times. An approximately 70-metre-long school bus zone is located on the eastern side of the road at its southern end. Forbes Street is signposted as a 40km/h high pedestrian activity area and also involves a school zone outside of Liverpool Girls and Boys High School.

Forbes Street is shown in Figure 3.8 and Figure 3.9.

Figure 3.8: Forbes Street (looking north)

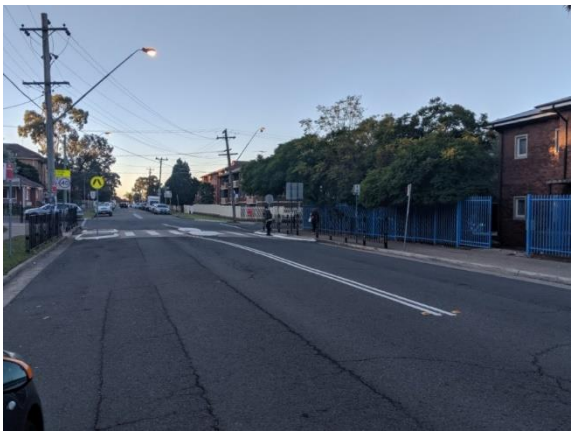


Figure 3.9: Forbes Street (looking south)

Burnside Drive

Burnside Drive is a local road aligned in a north-south direction to the north of the site adjacent to the railway corridor. It is a two-way road configured with one lane in each direction, set within an approximately 7.5 metre carriageway. Burnside Drive provides a key route from the Hume Highway via Remembrance Avenue and Hart Street for staff accessing the existing multi-storey car park, while it also provides access to CP2 and CP3 for visitors. Parking is not permitted on either side of the road.

3.2.3. Surrounding Intersections

The following key intersections currently exist near the site:

1. Hume Highway/ Bigge Street
2. Bigge Street/ Campbell Street
3. Bigge Street/ Elizabeth Street
4. Elizabeth Street/ Goulburn Street
5. Campbell Street/ Goulburn Street
6. Elizabeth Street/ Hospital Access
7. Forbes Street/ Campbell Street/ Hospital Access
8. Burnside Drive/ Hospital Access
9. Lachlan Street/ Hart Street
10. Hume Highway/ Remembrance Avenue
11. Elizabeth Street/ College Street
12. Bigge Street/ Moore Street
13. Speed Street/ Newbridge Road.

Figure 3.10: Key intersections near the site

Base image source: Sydway

3.3. Traffic Volumes

3.3.1. Road Network Peak Hours

Traffic movement counts were completed at the key intersections near the site on Tuesday 23 October 2018, Tuesday 9 April 2019 and Thursday 5 December 2019 during the following peak periods:

- 7:00am and 10:00am
- 4:00pm and 7:00pm.

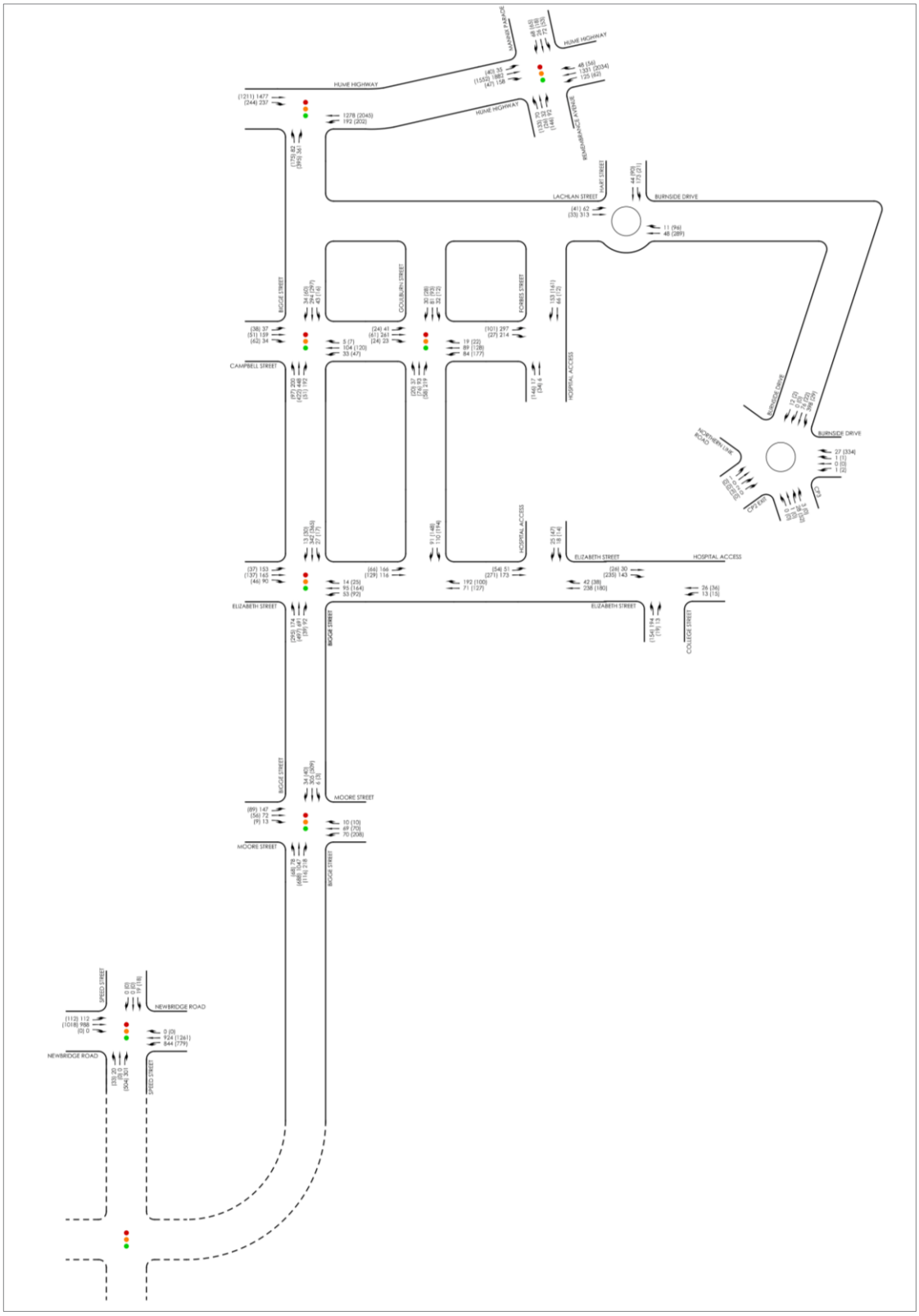
The AM and PM peak hours in relation to immediate road network surrounding the hospital were found to occur from 7:45am to 8:45am and 4:00pm to 5:00pm respectively. These peak hours were identified based on the common road network peak hours identified at the Goulburn Street/ Campbell Street and Goulburn Street/ Elizabeth Street intersections, as they are in close proximity to the existing main entrance to the hospital.

A summary of the traffic volumes through these intersections in summarised in Table 3.1, with turning movements for all surveyed intersection during these peak hours shown in Figure 3.11.

Table 3.1: Peak hour identification

Peak Hour	Time	Goulburn Street/ Elizabeth Street intersection volumes	Goulburn Street/ Campbell Street intersection volumes	Total
AM	7:00am – 8:00am	620	814	1,434
	7:15am – 8:15am	635	819	1,454
	7:30am – 8:30am	692	916	1,608
	7:45am – 8:45am	**747**	**1010**	**1,757**
	8:00am – 9:00am	728	969	1,697
	8:15am – 9:15am	752	953	1,705
	8:30am – 9:30am	789	897	1,686
	8:45am – 9:45am	816	834	1,650
	9:00am – 10:00am	851	808	1,659
PM	**4:00pm – 5:00pm**	**762**	**727**	**1,489**
	4:15pm – 5:15pm	765	723	1,488
	4:30pm – 5:30pm	741	733	1,474
	4:45pm – 5:45pm	699	669	1,368
	5:00pm – 6:00pm	705	657	1,362
	5:15pm – 6:15pm	698	617	1,315
	5:30pm – 6:30pm	712	592	1,304
	5:45pm – 6:45pm	707	552	1,259
	6:00pm – 7:00pm	687	564	1,251

Figure 3.11: Existing peak hour traffic volumes



Note: AM traffic volumes (PM traffic volumes)

3.4. Intersection Operation

The operation of the key intersections within the study area have been assessed using SIDRA INTERSECTION[1] (SIDRA), a computer-based modelling package which calculates intersection performance.

The commonly used measure of intersection performance, as defined by the Roads and Maritime, is vehicle delay. SIDRA determines the average delay that vehicles encounter and provides a measure of the level of service.

Table 3.2 shows the criteria that SIDRA adopts in assessing the level of service.

Table 3.2: SIDRA level of service criteria

Level of Service (LOS)	Average Delay per vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Sign
A	Less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Near capacity	Near capacity, accident study required
E	57 to 70	At capacity, at signals incidents will cause excessive delays	At capacity, requires other control mode
F	Greater than 70	Extra capacity required	Extreme delay, major treatment required

Table 3.3 presents a summary of the existing operation of the intersection, with full results presented in Appendix A of this report. SIDRA models of signalised intersections were calibrated based on existing signal cycle times observed on site during peak periods. At some intersections, observed phase times were manually entered into the SIDRA model where SIDRA-calculated phase times were not reflective of actual conditions on-site. Models were then checked to ensure calculated queues were similar to what was observed. Observations of queue lengths on-site were done on the basis of recording maximum queues observed at each intersection over several minutes or traffic signal cycles (as required) throughout the peak periods. This then formed the basis of assessing the adequacy of 95th percentile queues as calculated in SIDRA. It is noted that the Hume Highway intersections were set up as a network model, and therefore average queue lengths have been reported for these intersections, as is standard practice.

[1] Program used under license from Akcelik & Associates Pty Ltd.

Table 3.3: Existing operating conditions

Intersection	Peak	Degree of Saturation (DOS)	Average Delay (sec)	95th Percentile Queue (m) [1]	Level of Service (LOS)
Lachlan Street/ Hart Street	AM	0.27	7	12	A
	PM	0.32	9	14	A
Forbes Street/ Campbell Street/ Hospital access	AM	0.15	7	7	A
	PM	0.07	6	1	A
Elizabeth Street/ Hospital access	AM	0.13	7	0	A
	PM	0.19	7	0	A
Hume Highway/ Bigge Street	AM	0.68	20	79	B
	PM	0.75	19	99	B
Burnside Drive/ car park accesses	AM	0.03	9	1	A
	PM	0.06	10	2	A
Bigge Street/ Campbell Street	AM	0.66	13	68	A
	PM	0.47	15	47	A
Bigge Street/ Elizabeth Street	AM	0.55	19	101	B
	PM	0.52	16	65	B
Campbell Street/ Goulburn Street	AM	0.47	16	46	B
	PM	0.24	15	25	B
Elizabeth Street/ Goulburn Street	AM	0.20	6	6	A
	PM	0.32	6	9	A
Bigge Street/ Moore Street	AM	0.68	22	148	B
	PM	0.53	23	126	B
Elizabeth Street/ College Street	AM	0.11	4	5	A
	PM	0.16	4	6	A
Hume Highway/ Remembrance Avenue	AM	0.94	24	189	B
	PM	0.82	26	182	B
Speed Street/ Newbridge Road	AM	0.80	22	286	B
	PM	0.86	24	362	B

[1] Average queue reported for Hume Highway intersections, as these intersections modelled in SIDRA Network

Table 3.3 indicates that the key intersections operate at a satisfactory level of service overall. Some queuing was observed during the PM peak hour at local intersections, relating to residual pick-up activity after the school peak. There is currently significant queuing present on the Hume Highway in both peak periods, particularly inbound in the AM peak hour and outbound in the PM peak hour. However, the degree of saturation and level of service indicates that there is some minor available capacity at this intersection. Site observations and modelling indicate that there is some congestion

along Bigge Street in the PM peak, particularly southbound, however this is largely due to upstream effects around Liverpool Station.

3.5. Existing Hospital Operation

A summary of the existing hospital operational statistics including the number of Full-Time Equivalent (FTE) staff and number of beds is summarised in Table 3.4.

Table 3.4: Existing Hospital operational statistics

Item	2017/ 18
Total staff FTE	4,354
VMO	238
Total Inpatient Beds	807
Outpatient Service Events (per annum)	418,129
Emergency Department Presentations (average per day)	242

3.6. Car Parking

3.6.1. Supply

An inventory of off-street car parking was completed as part of the Parking Demand Study (ptc., 2019). The car parking survey area is shown indicatively in Figure 3.12, with the breakdown of the car parking supply and corresponding restrictions detailed in Table 3.5.

Figure 3.12: Car parking survey area

Base image source: Nearmap

Table 3.5: Car parking supply

Location	Staff and fleet	Public	Total
CP1	0	143	143
CP2	358	239	597
CP3	85	56	141
CP4	780	0	780
CP5	575	0	575
HSB (Health Services Building)	35	0	35
Western Campus Fleet Vehicles car park	24	0	24
Total	**1,857**	**438**	**2,295**
% of total supply	**81%**	**19%**	**100%**

As shown above, a total of 2,295 car parking spaces were identified within the LHAP, with approximately 80 per cent assigned to staff overall. Further to this, car parks with mixed parking allocation between staff and visitors generally had a split of 60 per cent to staff and 40 per cent to visitors.

3.6.2. Demand

Parking demand results from the study (ptc., 2019) for a weekday are summarised in Table 3.6.

Table 3.6: Car parking demand

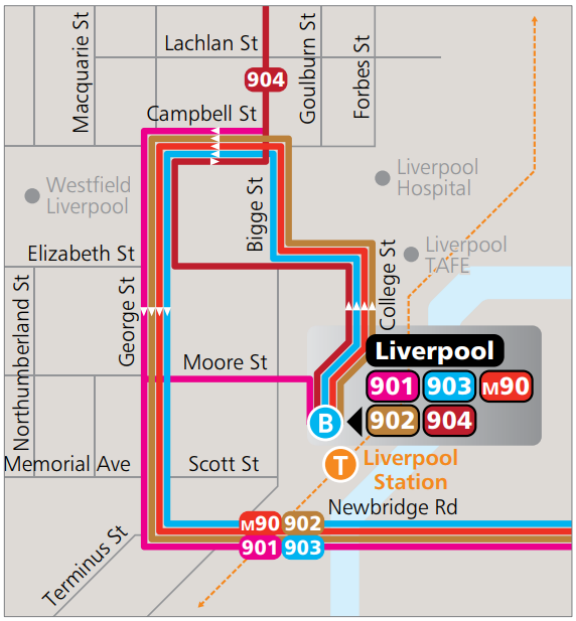
Location	Capacity	Staff and fleet	Public	Peak occupancy		Vacant spaces
CP1	143	0	143	143	100%	0
CP2	597	358	239	585	98%	12
CP3	141	85	56	127	90%	14
CP4	780	780	0	702	90%	78
CP5	575	575	0	514	89%	61
HSB (Health Services Building)	35	35	0	35	100%	0
Western Campus Fleet Vehicles car park	24	24	0	11	46%	13
Total	**2,295**	**1,857**	**438**	**2,117**	**92%**	**178**

Table 3.6 indicates that during the peak period, 92 per cent of the total parking supply is occupied, with approximately 178 spaces still available.

3.7. Public Transport

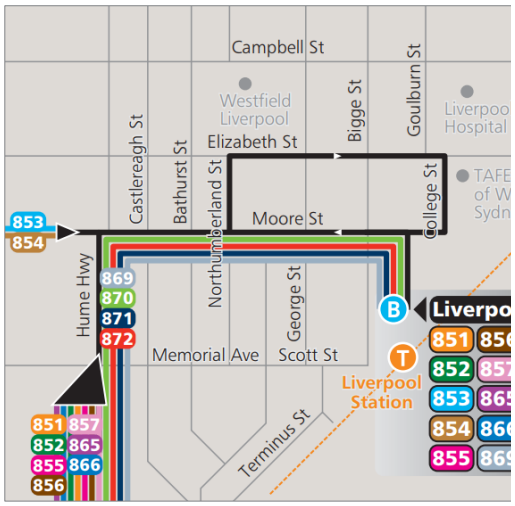
The LHAP is well serviced by public transport, with an extensive bus network servicing the bus stops located on Elizabeth Street, immediately east of Goulburn Street. This includes Transdev NSW, Interline and Transit Systems, with more than 20 different bus routes utilising these stops. No bus routes travel along Goulburn Street, with the majority travelling east-west along Elizabeth Street and either using Bigge Street or College Street to travel north-south. Liverpool and Warwick Farm stations are also located within walking distance of the hospital and provide frequent T2 Inner West and Leppington Line, T3 Bankstown Line and T5 Cumberland Line services.

Figure 3.13: Transdev NSW bus network map



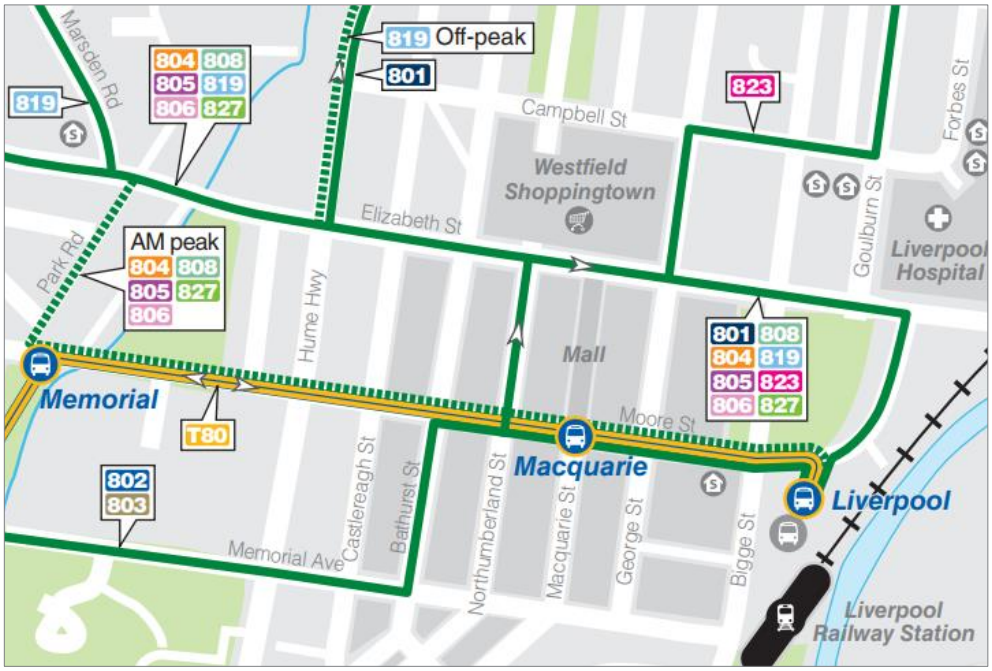
Source: https://www.transdevnsw.com.au/uploads/18638_Region_13_Network_Map_20180212_web.pdf

Figure 3.14: Interline bus network map



Source: https://interlinebus.com.au/img/Network_Map.jpg

Figure 3.15: Transit Systems bus network map



Source: https://static1.squarespace.com/static/5a668f1080bd5e34d18a7e76/t/5b06206e88251b0847afd7a2/1527128181142/17620_TS_R3_network_map_20171126.pdf

3.8. Walking and Cycling Infrastructure

The LHAP is well serviced by surrounding walking infrastructure, with footpaths provided on both sides of most surrounding roads. Campbell Street, Goulburn Street and Elizabeth Street currently act as a key pedestrian desire line for the nearby Liverpool Girls and Boys High Schools, as shown in Figure 3.16. The existing Elizabeth Street pedestrian (zebra) crossing is a key pedestrian facility along this route as it serves as a safe crossing point when travelling between Liverpool Station and the school during peak periods. It also accommodates LHAP visitor and staff movement between the station and the Liverpool Hospital main entrance.

The intersection of Elizabeth Street/ Goulburn Street is also the only unsignalised intersection between the hospital and the CBD, however a pedestrian crossing is provided on the northern leg of the intersection to improve pedestrian amenity and safety at this location.

There is also a strong desire line between the hospital campus and the HSB/ Ingham Institute across Campbell Street between Forbes Street and Goulburn Street, with this section of Campbell Street also a key route for students and staff associated with the Liverpool Girls and Boys High Schools.

Signalised pedestrian crossings are generally provided on all legs of surrounding signalised intersections near the LHAP, further improving the safety of pedestrians surrounding the Precinct.

Figure 3.16: Key pedestrian desire line near the site

Base image source: Nearmap

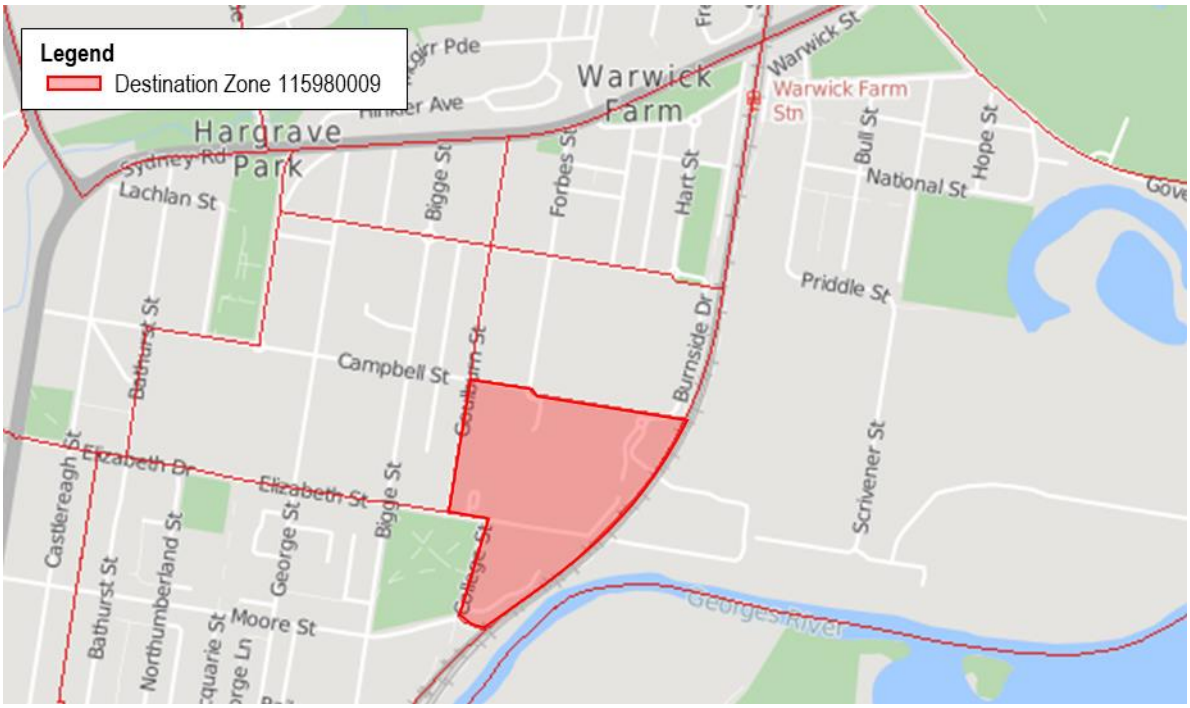
There are marked shared paths along the eastern side of Goulburn Street (north of Campbell Street), which then changes to the western side of Goulburn Street (south of Campbell Street) to divert cyclists away from the hospital frontages. The lower 40km/h speed limit and wide carriageway widths of most surrounding roads are also ideal for encouraging cycling (for more confident riders).

3.9. Journey to Work

The Journey to Work (JTW) data published by the Australian Bureau of Statistics from 2016 Census data provides an understanding of travel patterns to/ from the site and the surrounding area.

JTW data for the Destination Zone 115980009 has been analysed as it largely covers the hospital west of the railway line. The area included in Destination Zone 115980009 is shown in Figure 3.17.

Figure 3.17: Destination Zone 115980009



The mode of travel to work extracted from the JTW data is summarised in Table 3.7.

Table 3.7: Existing mode of travel to Destination Zone 115980009

Mode of Travel	Percentage
Car, as driver	75%
Train	9%
Car, as passenger	5%
Walk	5%
Bus	3%
Other	2%
Bicycle	1%
Total	**100%**

Table 3.7 indicates that private vehicle travel to the site is the most popular mode of travel, with around 75 per cent of people driving and five per cent travelling to the site as a passenger. Travel by train is also a popular mode of travel given the proximity of the site to Liverpool and Warwick Farm stations, making up around nine per cent of the mode share.

4. REDEVELOPMENT PROPOSAL

04

4.1. Land Uses

The application seeks consent for the construction and operation of a new multi-storey Integrated Services Building providing new treatment and support services that will integrate with the existing hospital. The works also include the refurbishment of certain existing hospital facilities.

A perspective of the proposed redevelopment, as viewed from Campbell Street, is shown in Figure 4.1.

Figure 4.1: Redevelopment of the LHAP

Image source: Fitzpatrick + Partners provided 6 May 2020

The key transport elements of the proposal are:

- Alterations and improvements to the existing main entrance in the south-western corner of the campus.
- A new pick-up and drop-off loop on the northern side of the campus.
- A new loading dock on the northern side of the campus.
- Pedestrian amenity improvements on Campbell Street.

4.2. Vehicle Access

The main vehicle entry to the hospital, which is currently on Elizabeth Street, is proposed to be relocated onto Goulburn Street to reduce the number of turning movements near the emergency

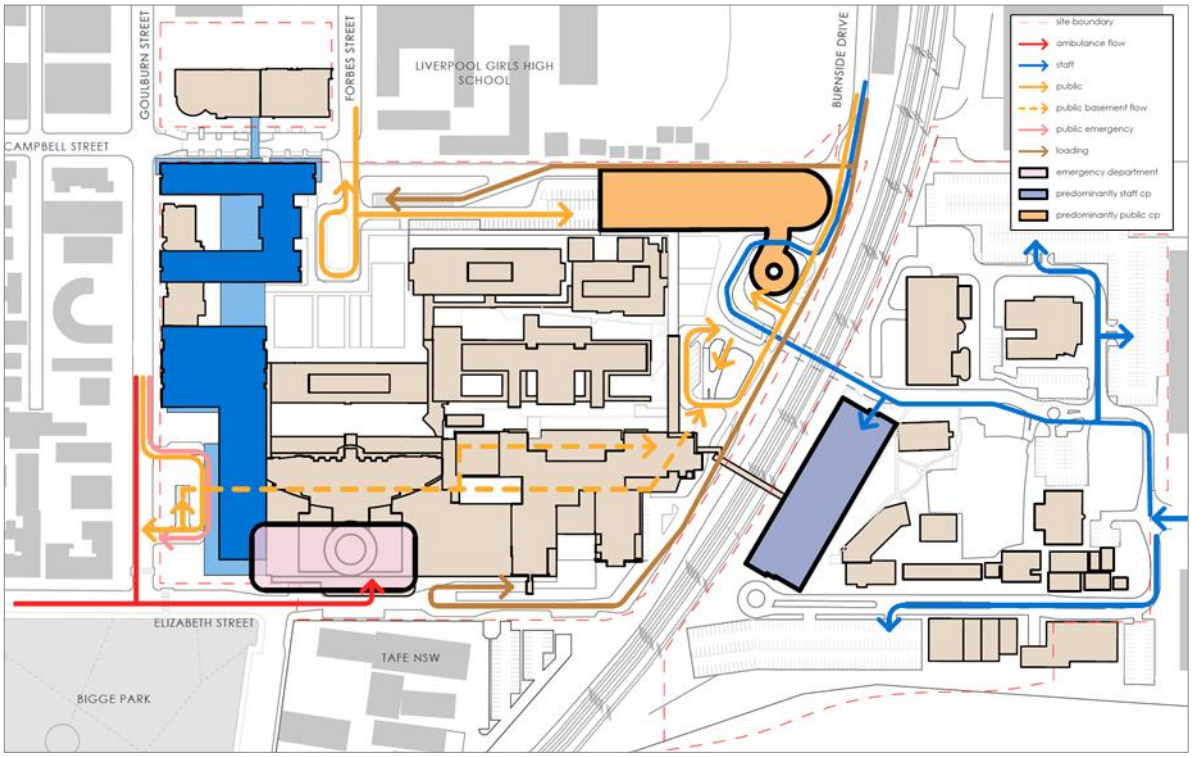
response area on the southern side of the campus. A new one-way basement link between the CP1 and CP3 car parks (approved via a separate planning pathway) would provide vehicles interfacing with the main entrance with access to visitor car parking without unnecessary road network circulation. This would also encourage visitors to depart to the north, reducing future traffic congestion on Elizabeth Street and Goulburn Street.

The Burnside Drive roundabout is also proposed to be removed as part of a separate planning pathway, with T-intersection treatments to maintain access to CP3 and the Burnside Drive connection to staff parking in CP4 and CP5. A new T-intersection will also be provided from Burnside Drive into the proposed multi-storey car park in the north-eastern corner of the campus.

Service vehicle access to the LHAP will primarily involve vehicles entering and exiting via Burnside Drive, with only service vehicles larger than 12.5 metre HRVs entering and/ or exiting via the southern internal road which connects with Elizabeth Street.

A summary of the vehicle access routes is provided in Figure 4.2.

Figure 4.2: LHAP vehicle access



Base image source: Main Works SSDA Design Statement prepared by Fitzpatrick + Partners, dated 24 April 2020

In addition to the above, access through the main entrance loop is required for a 6.4 metre fuel delivery truck to service the back-up generator diesel tank. This vehicle is required to infrequently access a fuel delivery bay on the southern side of the main entrance loop.

4.3. Car Parking

A new multi-storey car park and adjacent at-grade car park are proposed as part of a separate SSDA in the north-east corner of the site, capable of accommodating 1,097 spaces to support the increase in demand associated with the Main Works redevelopment. Access to the ground level will be provided

via Forbes Street, while a ramp will be provided from Burnside Drive providing direct access into Level 2 of the multi-storey car park. The new car park will replace the existing CP2 car park of 597 spaces.

The majority of the other existing car parks on campus will generally be maintained, with a minor modification being made to CP1 to provide one-way internal vehicle connection into CP3.

4.4. Walking and Cycling Facilities

The primary pedestrian entrance to the hospital will be located on Goulburn Street, with several other accesses provided from Elizabeth Street, Burnside Drive and Campbell Street. This would spread pedestrian activity across several access locations and facilitate pedestrian connectivity to both Liverpool and Warwick Farm stations, as well as the surrounding pedestrian network and bus stops. Appropriate footpath connections are provided to each access point.

A 10 km/h shared zone is proposed on Campbell Street between Forbes Street and Goulburn Street, and discussed further in Section 7.2.1.

Bicycle parking will be provided in various publicly accessible areas around the hospital in the form of bicycle U-rails and/or racks to encourage cycling to the hospital by patients and visitors as appropriate. Additional secure staff bicycle parking will also be provided in the basement.

4.5. Loading Facilities

A new loading dock is proposed in Basement 1 in the north-west corner of the site, with access provided from the internal road along the northern boundary of the site, connecting Forbes Street and Burnside Drive. The new dock would include five service vehicle bays including two for 6.4 metre SRVs and three for vehicles up to 12.5 metre HRVs.

The existing dock on the southern side of the campus which currently accommodates up to five 12.5 metre HRVs will be maintained, with slight modifications including widening the entry at ground level to better accommodate the HRVs approaching and departing from/ to the east proposed as part of a separate planning pathway. The existing Alex Grimson loading dock, which is accessed from Goulburn Street and accommodates three formal bays for smaller deliveries, and the existing minor pathology loading dock will be demolished.

4.6. Emergency Vehicle Facilities

The existing ambulance parking area on the southern side of the hospital adjacent to the emergency department will be expanded as part of the redevelopment. As mentioned previously, the relocation of the main hospital access to Goulburn Street will reduce volume of traffic directly adjacent to the ambulance access at the eastern end of Elizabeth Street, improving response time/ reliability to emergencies and reducing conflicts around this intersection. The redistribution of deliveries to primarily use Burnside Drive will also significantly reduce the number of service vehicles travelling through this emergency vehicle area.

5. VEHICLE ACCESS

05

5.1. Vehicle Access Overview

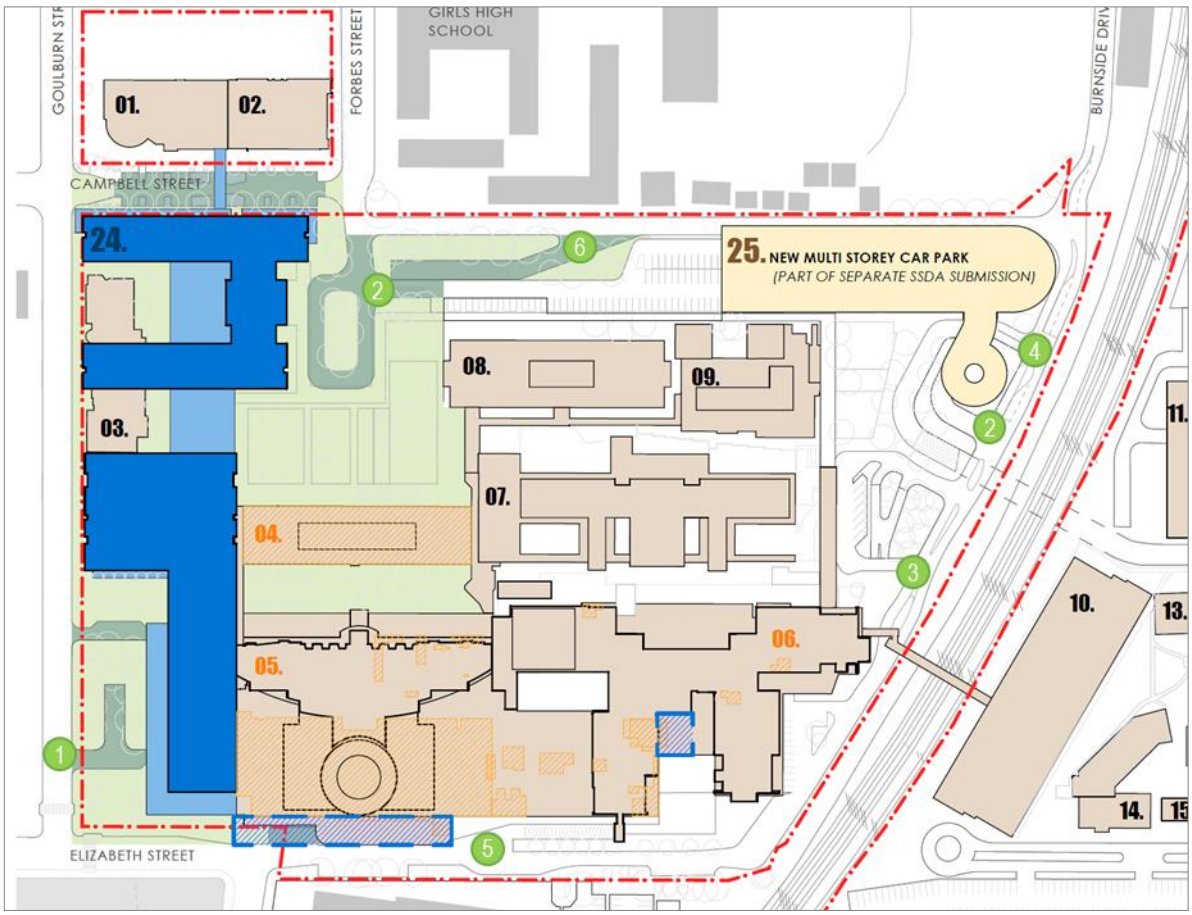
The redevelopment of the LHAP seeks to simplify the access arrangement of the Precinct by separating different users. A summary of the proposed vehicle access arrangements for the different uses is provided in Table 5.1 and indicated diagrammatically on Figure 5.1.

Table 5.1: Proposed vehicle access arrangements

Item	Facility	Proposed access arrangement	Intended user
1	CP1	Goulburn Street – new unsignalised T-intersection to new porte-cochere outside main hospital entrance. Ramps down to CP1 provided via porte-cochere. Infrequent 6.4 metre fuel delivery truck access through main entrance loop to service the back-up generator diesel tank.	• Short term visitors • Fuel delivery vehicles
2	CP2 (new multi-storey and at-grade car park to be delivered as part of a separate planning application)	Forbes Street – access to at-grade car park provided via cancer clinics porte-cochere and pick-up/ drop-off loop. Burnside Drive* – access to multi-storey car park provided via a T-intersection treatment from Burnside Drive. Two lanes in and one lane out of the car park are proposed.	• Long term visitors in the multi-storey car park • Short term cancer clinic/ pathology visitors in the at-grade car park
3	CP3	Burnside Drive* - new unsignalised T-intersection to porte-cochere outside of Brain Injury Rehabilitation Unit. Ramps down to CP3 provided via the porte-cochere. CP1* – a new one-way connection will be provided allowing drivers in CP1 to connect with CP3.	• Short-term visitors • Patient transport vehicles • Mortuary vehicles
4	CP4 and CP5	Burnside Drive* – new unsignalised intersection connecting with the existing Burnside Drive bridge over the railway line. Scrivener Street – access to remain as existing.	• Staff
5	Southern loading dock	Primarily Burnside Drive, with some use of Elizabeth Street – largely the same access treatment with some localised widening at the entry point to allow HRV access to/ from Burnside Drive*.	• Service vehicles
6	New northern loading dock	Burnside Drive* – new unsignalised T-intersection with the northern link road between Forbes Street and Burnside Drive. Access to the loading dock is provided via a ramp on the southern side of the link road.	• Service vehicles • Patient transport vehicles

* Note: Works approved via separate planning pathways and therefore do not form part of this application, but presented for completeness.

Figure 5.1: Vehicle Access



Base image source: Main Works SSDA Design Statement prepared by Fitzpatrick + Partners, dated 24 April 2020

5.2. Pick-Up and Drop-off Arrangements

Three key patient/ visitor interfaces will be located around the hospital at the completion of the redevelopment as follows:

- main entrance
- cancer clinics
- mental health IPU.

Each of these areas have been designed to allow visitors to drop off passengers at the hospital and easily be able to access an adjacent car park. At the main entrance, drivers will be able to continue into CP1, while drivers at the northern and eastern campus pick-up/ drop-off areas are able to easily enter the CP2 (new at-grade and multi-storey car parks) or CP3.

5.3. Emergency Vehicle Arrangements

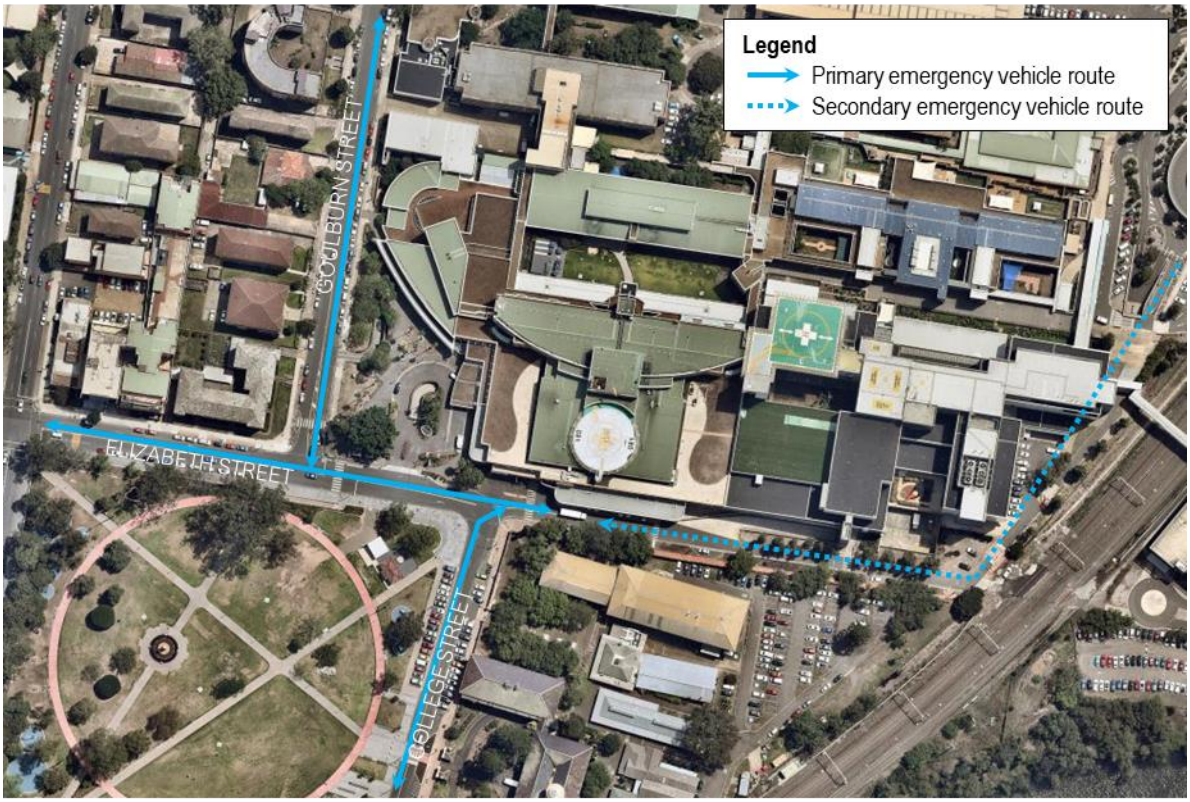
As mentioned previously, ambulance access to the hospital is proposed to be maintained via the eastern end of Elizabeth Street with the relocation of the main entrance to the hospital to Goulburn Street reducing delay and conflicts at the ambulance access.

Service vehicles accessing the southern loading dock currently approach and depart via this access, travelling through this emergency vehicle area. Under the proposal, service vehicle drivers will be advised to arrive and depart via Burnside Drive to minimise conflicts with ambulances. Some deliveries including those using 19 metre articulated vehicles will be required to travel through this area on infrequent occasions due to limited turn-around facilities from Burnside Drive. Access restrictions via Elizabeth Street will be imposed through boom gate control at the eastern end of the ambulance area. It is also recommended that linemarking and signage be implemented in this area to clearly identify this area as an emergency vehicle area and only authorised vehicles are excepted. Boom gates will also be installed at the southern end of Burnside Drive, in the vicinity of the patient transport lounge, to prevent any unintended through vehicle access around the perimeter of the hospital.

The existing ambulance parking area is proposed to be expanded to allow for three additional ambulance bays along the emergency department frontage. The primary ambulance routes to the hospital will be maintained via Goulburn Street, Elizabeth Street and College Street. With the new Burnside Drive extension connecting with Elizabeth Street as part of separate planning approvals, a secondary route will be available along Burnside Drive, with measures in place to allow ambulances through areas controlled by boom gates along this route.

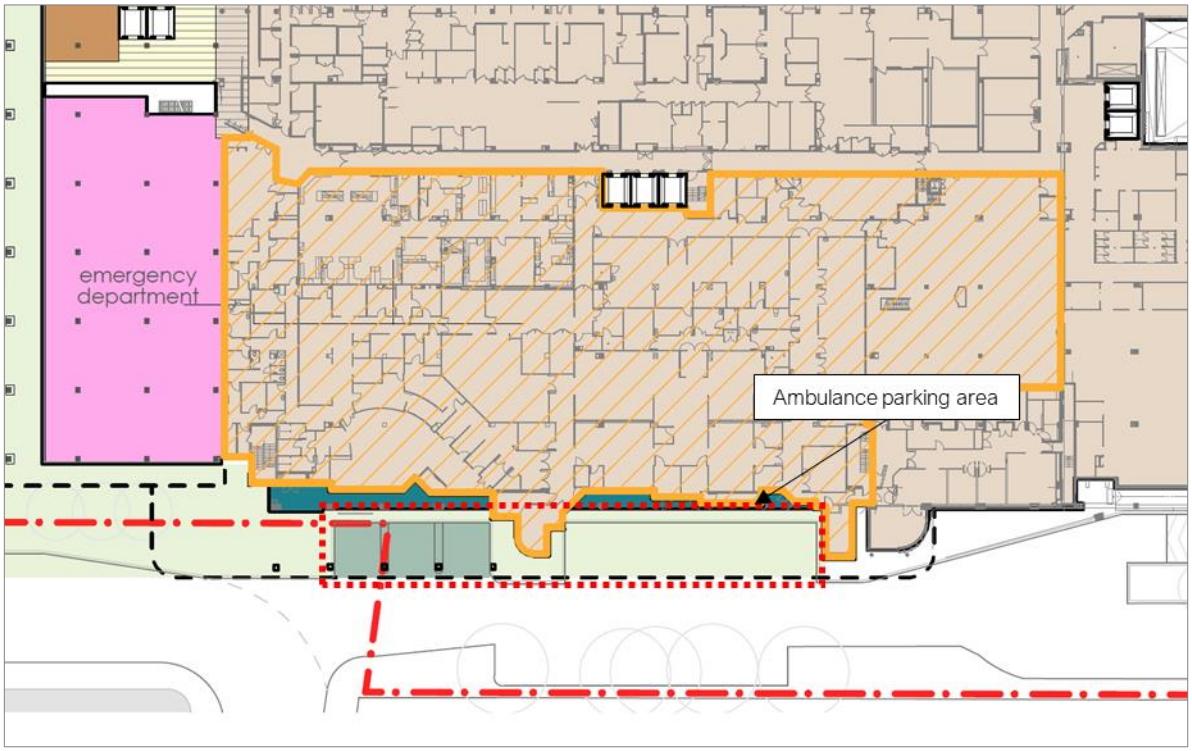
The proposed ambulance access arrangements are indicatively shown in Figure 5.2, with the ambulance parking area shown in Figure 5.3.

Figure 5.2: Ambulance approach and departure routes



Base image source: Nearmap

Figure 5.3: Ambulance parking area



Base image source: Main Works SSDA drawing package prepared by Fitzpatrick + Partners, dated 24 April 2020

6. PARKING ASSESSMENT

06

6.1. Car Parking

The car parking requirements for different types of developments are set out in Liverpool DCP 2008. For hospitals, the DCP 2008 requires a traffic and car parking report to be completed to understand the car parking requirements.

A Parking Demand Study Report dated 31 January 2019 was prepared by ptc. to understand the parking requirements of the redevelopment of the LHAP. The Parking Demand Study estimated the parking requirement for four scenarios:

- Current (2017/18) – Base Case.
- Future (2025/26) – Base Case.
- Future (2025/26) – Sensitivity Analysis 1, assuming a 10% reduction in day shift and administration staff drivers requiring a car space.
- Future (2025/26) – Sensitivity Analysis 2, assuming a 10% increase in day shift and administration staff drivers requiring a car space.

The report found that a net increase of 313 car parking spaces would be required to meet 2025/ 26 demand assuming no change in mode share and shared utilisation of the identified relevant parking zone (RPZ), or an increase of 112 or 514 parking spaces if assuming a reduction or increase of 10 per cent driving mode share respectively. Assuming no utilisation of the surrounding RPZ, the additional spaces required by 2025/ 26 was estimated to be 469 spaces assuming no change in mode share, or an increase of 268 and 670 parking spaces if assuming a reduction or increase of 10 per cent driving mode share respectively. The hospital should be targeting a minimum five per cent reduction in driving mode share through implementation of travel plan initiatives, resulting in a parking requirement of 368 parking spaces.

A new multi-storey car park, subject to a separate SSDA, is proposed in the north-east corner of the site to replace the existing CP2, as shown in Figure 6.1. The new car park will include approximately 1,097 car parking spaces. The redevelopment of the LHAP will require the removal of the existing fleet vehicle parking area near the CP3 access on Burnside Drive, which currently accommodates 24 spaces. Around 62 spaces will also be lost in CP3 and six in CP1 due to various construction works in this area related to the link between the two car parks, construction of the mortuary and main kitchen. It is noted that these parking changes have been approved via separate planning pathways.

A breakdown of the change in the LHAP car parking supply is summarised in Table 6.1.

Figure 6.1: Summary of future car parking locations

Base image source: Nearmap

Table 6.1: Change in car parking supply

Location	Existing	Future	Change
CP1	143	109	-34[1]
CP2	597	1,097	+500[2]
CP3	141	85	-56[1]
CP4	780	780	0
CP5	575	575	0
HSB (Health Services Building)	35	35	0
Western Campus Fleet Vehicles car park	24	0	-24[1]
Total	**2,295**	**2,681**	**+386**

[1] Removal of parking associated with works approved via separate planning pathways
[2] Additional car parking provided by the new MSCP (separate SSDA)

Table 6.1 indicates the net increase in parking within the LHAP of 386 spaces would meet the 2025/ 26 additional parking requirement of 368 spaces, while also internalising some of the existing off-site car parking demand.

Accessible parking spaces are required at a rate of three spaces per 100 spaces in-line with Liverpool DCP 2008 requirements. On this basis, 33 spaces would be required within the new car parks. The new car park includes a total of 22 accessible car parking spaces which is a shortfall of 11 spaces.

It should be noted that the provision of 22 spaces complies with the BCA requirements of one space per 50 car parking spaces or part thereof for the first 1,000 car parking spaces, then 1 spaces per 100 car parking spaces or part thereof in excess of 1,000 car parking spaces and is therefore considered acceptable. Accessible spaces are required to be a minimum 2.4 metres wide and 5.4 metres long with an adjacent shared area next to the parking space.

Motorcycle parking should be provided at a rate of one motorcycle space per 20 car spaces to meet the requirements of DCP 2008. This represents a requirement of 55 motorcycle spaces. A minimum of 55 motorcycle spaces will be provided in the multi-storey car park. Motorcycle spaces should be 1.2 metres wide and 2.5 metres long.

6.2. Parking and Loading Dock Layout Review

Any new and modified car parking has been reviewed against the requirements of the Australian Standard for Off Street Car Parking (AS/NZS2890.1:2004 and AS/NZS2890.6:2009). This assessment included a review of the following:

- bay and aisle width
- adjacent structures
- turnaround facilities
- circulation roads and ramps
- ramp grades
- internal queuing
- pick-up/ set-down areas
- parking for persons with disabilities.

The review indicates that the new car parking areas in the LHAP are generally consistent with the abovementioned Australian Standards and are expected to operate satisfactorily.

The new basement loading dock has been reviewed against the Australian Standard for Off-Street Commercial Vehicle Facilities (AS2890.2:2018). The loading dock is generally compliant, with 3.5-metre-wide loading bays provided. Swept path analysis confirms vehicles up to 12.5 metre HRVs are able to adequately navigate into the relevant loading bays, with all bays able to be accessed independently. The ramp to the new loading dock will require a signal system to be implemented as detailed further in Section 8.4.

7. SUSTAINABLE TRANSPORT INFRASTRUCTURE

07

7.1. Bicycle Parking

DCP 2008 does not provide a bicycle parking requirement for hospitals. However, in acknowledgement of broader plans to encourage active modes of travel, the potential to incorporate these facilities has been reviewed with reference the *Planning Guidelines for Walking and Cycling* (Department of Planning, 2004). The guidelines suggest the following bicycle parking provisions for a hospital:

- Staff (long-term use) – rate of five to 10 per cent of staff.
- Visitor (short-term use) – rate of five to 10 per cent of staff.

Given the location of the hospital and the limited surrounding cycling infrastructure, it is recommended that a bicycle parking rate of five per cent of staff is adopted for both staff and visitor provisions.

By 2025/ 26, it is estimated that there will be an additional 635 FTE staff working at the LHAP. Assuming average staff per weekday shift (ASDS) is approximately 80 per cent of FTE staff resulting in around 510 ASDS, the redevelopment should provide around 50 bicycle parking spaces (25 bicycle spaces for both staff and visitors). Assuming 50 per cent of the staff spaces are occupied each day, this represents around 24-26 cycling trips per day by staff.

A minimum of 25 additional visitor bicycle parking spaces will be provided at ground level in the public domain. These are dispersed across the three key hospital entry locations (Goulburn Street, Forbes Street and Burnside Drive) and integrated within the landscaping.

A minimum of 25 additional staff bicycle parking spaces will also be provided in the CP1 basement car park, with the location and capacity to be confirmed during detailed design.

End of trip facilities will also be provided, noting the intention is that staff use the available showers throughout the hospital. The location of these facilities will be resolved during detailed design of the project.

7.2. Pedestrian Facilities

As mentioned in Section 3.9, it is estimated that around two per cent of staff that work at the hospital currently walk to work, however noting that other modes including travel by train and bus also include a trip component of walking to the hospital equating to around 17 per cent in total.

Based on the estimated increase in ASDS staff of around 510 staff, this is expected to result in around 87 additional staff walking trips in a peak hour (174 trips per day) either between the hospital and home or surrounding bus stops and train stations. The existing pedestrian connections to surrounding areas including Liverpool Station are considered satisfactory to cater for the anticipated increase in pedestrian volumes, noting the surrounding area has well established footpaths given its proximity to Liverpool CBD.

Various areas around the hospital are being investigated for upgrading to improve pedestrian amenity. This section outlines the options being investigated and possible measures which could be implemented to provide improvement for pedestrians around the hospital campus.

7.2.1. Campbell Street Shared Zone

Campbell Street is already a busy pedestrian environment. The role of Campbell Street will be altered as part of the LHAP redevelopment, with this reduced traffic movement focus reinforced by the broader objectives for the surrounding precinct. As such, a shared zone is proposed along Campbell Street between Forbes Street and Goulburn Street to complement the strong pedestrian activity between the HSB/ Ingham Institute on the northern side of Campbell Street and the main hospital on the southern side of Campbell Street. The shared zone concept also improves pedestrian amenity for students of the Liverpool Girls and Boys High Schools who currently walk through this area to connect with the CBD and Liverpool Station. With the LHAP redevelopment, an active frontage will be provided along this section of Campbell Street and will promote pedestrian links between the Education Research Hub and the new integrated services building.

Given the historical use of Campbell Street to support access to the hospital and facilitate pick-up and drop-off on Forbes Street related to the schools (and associated existing traffic volumes), several measures are proposed to reduce traffic volumes along Campbell Street. These include the following:

- A self-enforcing a 10km/h speed limit for the extent of the shared zone, with audio-tactile entry treatments
- Implementation of a one-lane, two-way slow point within the shared zone to increase travel times through the street and therefore divert traffic to alternate routes including Forbes Street and Burnside Drive
- Modifications to the median at the hospital access to limit access to left-in only, requiring vehicles entering the hospital access to approach from Forbes Street or Burnside Drive.

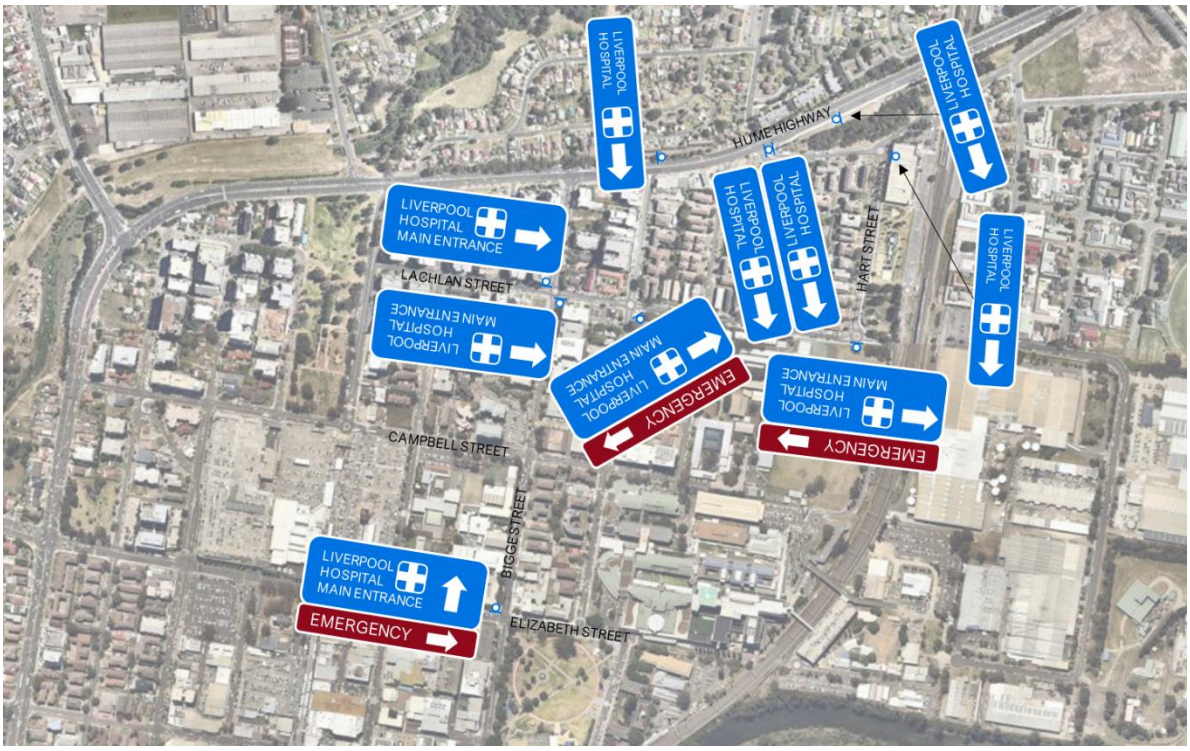
It is noted that this section of Campbell Street is currently used by school buses for the high schools, as well as the 851, 853, 854 and 857 local bus routes. Swept path analysis for a 14.5 metre bus has been completed to ensure these routes are able to be maintained. Notwithstanding, TfNSW will be consulted regarding the possibility of altering these existing public bus routes to instead stop on Goulburn Street. Further, it is understood that there are plans to redevelop the existing Liverpool Girls and Boys High Schools site, with the school pick-up and drop-off strategy to be reviewed, including school bus zones.

In addition to the above, traffic volumes could be reduced through implementation of the following additional measures:

- Provide appropriate directional signage to encourage visitors to use the main entrance on Goulburn Street. Should CP1 be fully occupied, drivers can continue through the internal connection to CP3 or the new multi-storey car park.
- Encourage staff to access the staff car parks from Burnside Drive rather than cutting through the link road to the north of the new multi-storey car park.
- Review directional signage to the hospital and modify in order to encourage more traffic to use Burnside Drive via Bigge Street or Remembrance Avenue from the Hume Highway.
- Consult with Liverpool Girls and Boys High School to relocate the school pick-up and drop-off area onto Lachlan Street and re-route buses via the link road and Burnside Drive.

A potential improved directional signage strategy to encourage more hospital traffic to utilise Burnside Drive via Remembrance Avenue/ Hart Street or Bigge Street/ Lachlan Street is shown indicatively in Figure 7.1. This would be developed further in consultation with TfNSW and Council.

Figure 7.1: Improved wayfinding to encourage more hospital traffic to use Burnside Drive



Base image source: Nearmap

Traffic analysis has been completed in Section 9.5 to assess the impact on the surrounding road network as a result of the redistribution of traffic away from Campbell Street, with results indicating that all key intersections are expected to continue operating satisfactorily, subject to minor modifications at the Lachlan Street/ Forbes Street intersection.

With consideration for the above, Table 7.1 assesses the future characteristics of Campbell Street against the Transport for NSW shared zone criteria.

Table 7.1: Campbell Street compliance with shared zone criteria

Features	Shared zone criteria	Compliance
Current traffic flows	≤ 100 vehicles per hour and ≤ 1,000 vehicles per day	Two-way flow is approximately 700 and 450 vehicles in the AM and PM peak hours respectively. The proposed shared zone will be designed with a one lane, two-way slow point to discourage drivers from using this section of Campbell Street. As a shared zone, Campbell Street will have a 10km/h speed limit which, in conjunction with the slow point, will increase travel times and divert traffic to alternative routes. The central median at the hospital access will also restrict vehicles to left-in only, requiring any vehicles entering at this access to approach via Forbes Street. These measures will reduce the traffic volumes along this section of Campbell Street significantly closer to the typical shared zone requirements.
Current speed limit	≤ 50 km/h	Yes, speed limit is currently 40 km/h

Features	Shared zone criteria	Compliance
Length of proposed Shared Zone	≤ 400 metres	Yes, length is approximately 100 metres
Current speed limit of adjoining roads	≤ 50 km/h	Yes, speed limit of adjoining roads is currently 40 km/h
Current carriageway width	Minimum trafficable width of 2.8 metres	Yes, two-way width is currently approximately 7 metres wide
Route access	Must not be located along bus routes or heavy vehicle routes except delivery or garbage trucks	This section of Campbell Street is currently a bus route for Liverpool Girls and Boys High School, as well as public buses. The proposed shared zone has been designed to accommodate 14.5m buses. Consultation with TfNSW is required to potentially re-route these buses to Goulburn Street, however the limited number of services could be accommodated safely within the shared zone.
Streets with narrow or no footpaths	Where pedestrians are forced to use the road	The anticipated volume of pedestrian crossing movement at various locations along the street are considered sufficient to justify the shared zone, with no need to force longitudinal movements into the carriageway area.
Kerbs	Kerbs must be removed unless excepted by Roads and Maritime Services	Yes, could be incorporated into the design.

Based on the above, the proposed conversion of Campbell Street between Forbes Street and Goulburn Street would meet the intent of the Transport for NSW requirements summarised in Table 7.1.

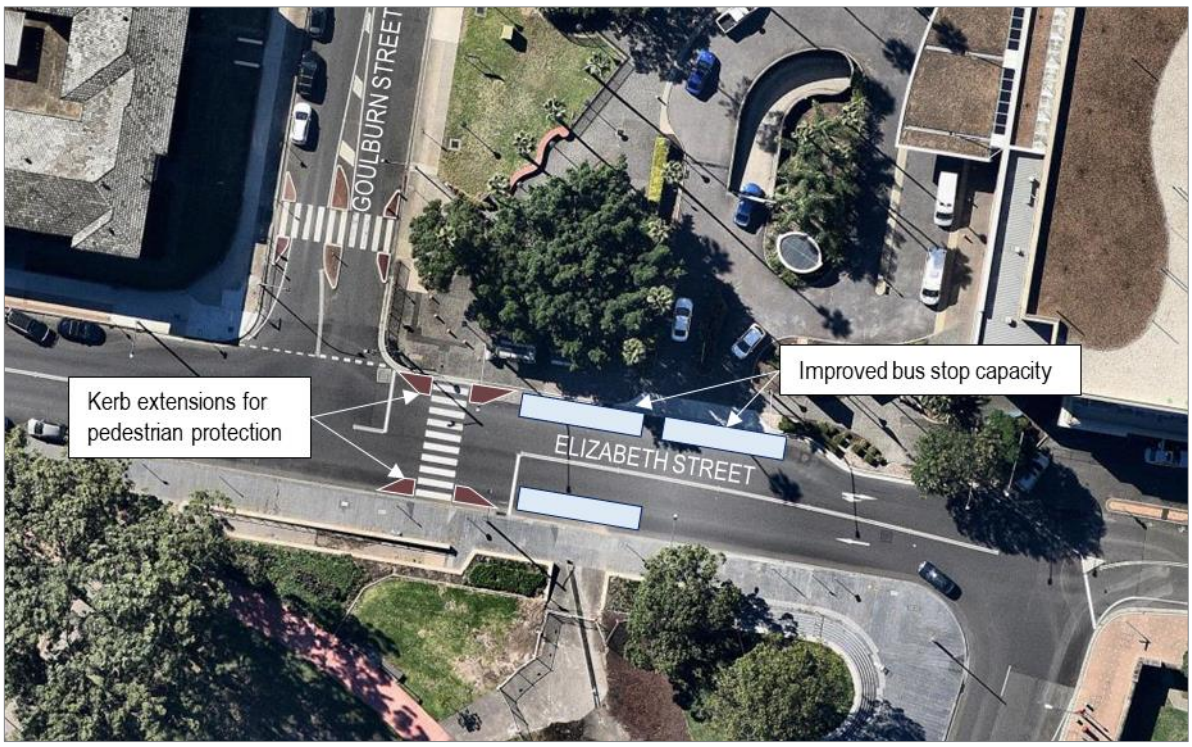
7.2.2. Elizabeth Street Interface

The redevelopment of LHAP seeks to also make the Elizabeth Street frontage of the site more pedestrian friendly and minimise vehicle movements outside the paramedic response area at the corner of Elizabeth Street and College Street. This has been achieved in design by relocating the main hospital access from the existing location on Elizabeth Street to its proposed location on Goulburn Street.

Converting the eastern end of Elizabeth Street into a shared zone was initially investigated, however it would likely not meet Roads and Maritime shared zone requirements due to the likely number of pedestrians crossing at this location, as well as this section of road servicing several bus routes. Instead, the design of the LHAP seeks to improve existing pedestrian amenity in its current form. It is noted that there is currently a distinct pedestrian desire line along the eastern side of Goulburn Street between Liverpool Station and Liverpool Girls High School in the morning and afternoon school peak periods. As such, the existing location of the pedestrian (zebra) crossing on Elizabeth Street is considered the most appropriate location.

To further improve the safety of pedestrians crossing Elizabeth Street, there is opportunity for Council to install kerb extensions at the crossing to improve the visibility and protection of pedestrians when the bus stops adjacent to the hospital are occupied. This is shown indicatively in Figure 7.2. A raised pedestrian crossing in this location is not recommended, as vertical displacement local area traffic management measures are not ideal on roads with regular bus/ heavy vehicle movements such as Elizabeth Street.

Figure 7.2: Improved pedestrian and public transport amenity on Elizabeth Street



Base image source: Nearmap

7.3. Public Transport

Section 3.9 indicates that there is currently around three per cent of staff travelling to the hospital by bus, while around nine per cent of staff's main mode of travel to the hospital is by train. Based on the anticipated increase of around 510 ASDS staff, this equates to up to 15 additional bus trips in a peak hour (30 trips per day) or up to 46 train trips in a peak hour (92 per day). Noting this is conservative as it assumes all new trips occur in the peak hour, this increase in public transport trips is considered minor and could be accommodated on the existing public transport network.

As mentioned in Section 7.2.2, it is recommended that kerb extensions be implemented at the existing pedestrian crossing on Elizabeth Street to increase safety of pedestrians crossing at this location, particularly when the adjacent bus stops are occupied. This, in addition to the proposed relocation of the main entrance to the hospital to Goulburn Street, presents the opportunity for the existing bus stop on the northern side of Elizabeth Street to be upgraded to indented bus bays, as well as allow for increased capacity. Further consultation would be required with TfNSW regarding the potential upgrade of this bus stop.

7.4. 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 7.2.

Table 7.2: NSW Car Park Guidelines for Crime Prevention

Category	Subcategory	Guidelines
Natural surveillance	Sightlines	• Configure the layout so cars are parked in grid like rows to allow for good sight lines between vehicles and through the car park. Do this in a way to maximise sight lines 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 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. • 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.

Category	Subcategory	Guidelines
	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.

8. LOADING & WASTE COLLECTION FACILITIES

08

8.1. Existing Southern Loading Dock

GTA commissioned observational and interview surveys at the existing loading dock on the southern side of the Liverpool Hospital campus from Monday 9 July and Friday 15 July 2019 between 5am and 6pm. This section of the report sets out an assessment of the data, detailing loading dock usage in terms of vehicle type, peak activity, delivery type and vehicle duration of stay. Full analysis of the southern loading dock is provided in Appendix B.

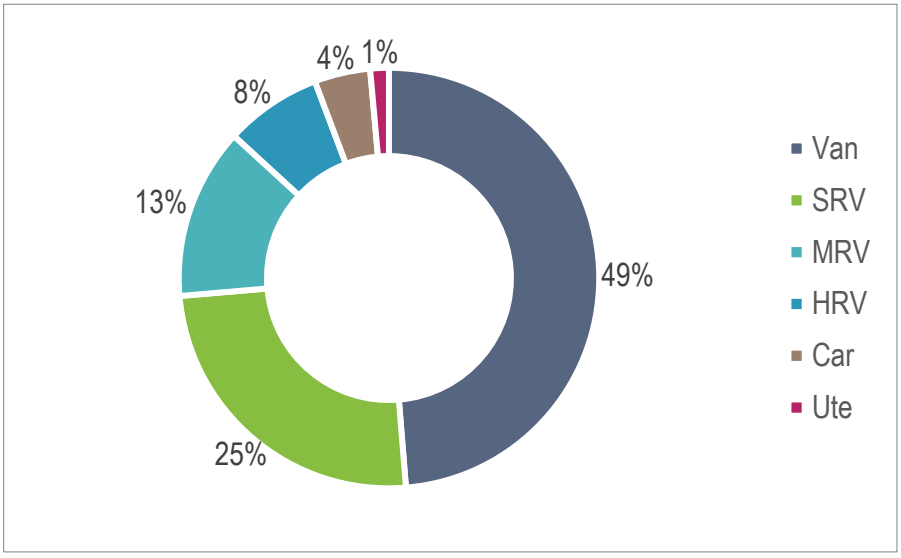
8.1.1. Vehicle types

Vehicles accessing the loading dock were visually classified into the following standard design vehicle categories:

- B99 Car, Van or Ute (5.2-metre-long vehicle that represents 99 per cent of the vehicle fleet on Australian roads)
- Small rigid vehicle (SRV, 6.4-metre-long truck)
- Medium rigid vehicle (MRV, 8.8-metre-long truck)
- Heavy rigid vehicle (HRV, 12.5-metre-long truck).

The surveys showed that that majority of deliveries to the existing loading dock were completed by B99 light vehicles (49 per cent) or small to medium rigid vehicles (38 per cent), with few heavy rigid vehicle deliveries (eight per cent). A summary of trucks used for deliveries throughout the surveyed week is provided in Figure 8.1. While trucks vary in shape and length and therefore do not neatly fit into standard lengths, resulting in some variance in visual classification, the data indicates that around 80 per cent of deliveries are by vehicles less than circa 7 metres long.

Figure 8.1: Types of vehicles used for deliveries in the existing southern loading dock

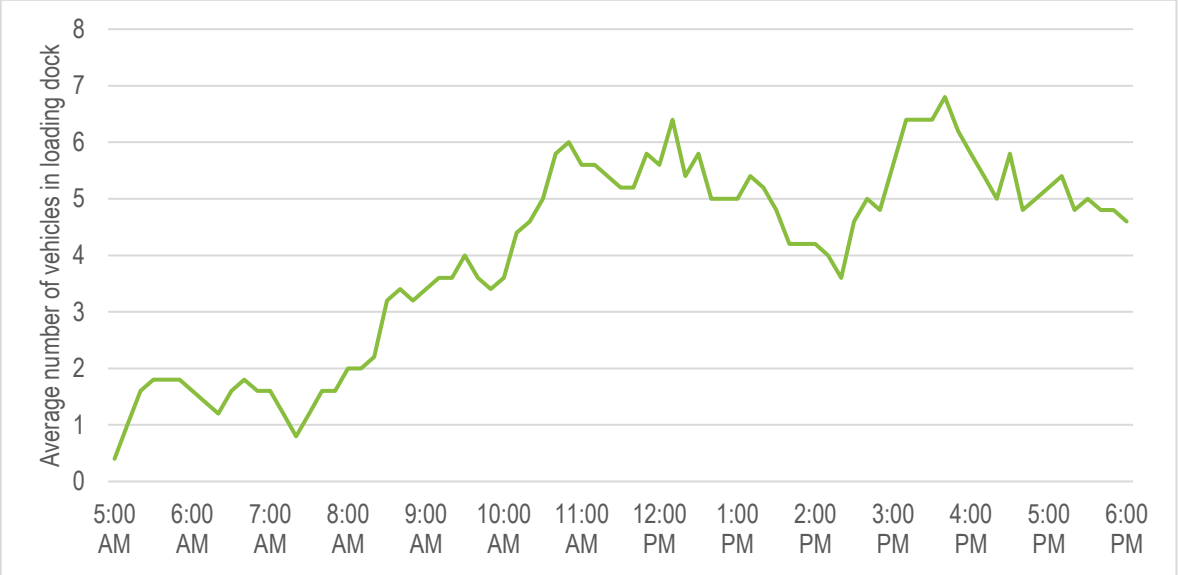


8.1.2. Loading Dock Usage

The survey also confirmed that peak activity in the loading dock occurred between 10am and 5pm. It is understood from historical tube count data collected in October 2018 that the majority of heavy rigid vehicle movements occur late at night or in the early hours of the morning.

A summary of the average vehicle occupancy at the existing loading dock between 5am and 6pm is summarised in Figure 8.2.

Figure 8.2: Existing southern loading dock usage



The results indicate that the existing dock, which contains five formal loading bays, often exceeds its capacity, particularly between 10am and 4pm during the peak loading activity. Observations confirmed that despite loading bays being fully occupied, vehicles would still enter the loading dock and wait until hospital personnel came to pick up the delivery. Thursday was observed to have the highest number of vehicles in the loading dock at any one time with around 12 vehicles.

8.1.3. Delivery type

The breakdown of vehicles by delivery type is detailed in Figure 8.3.

Figure 8.3: Southern loading dock breakdown of vehicles by delivery type

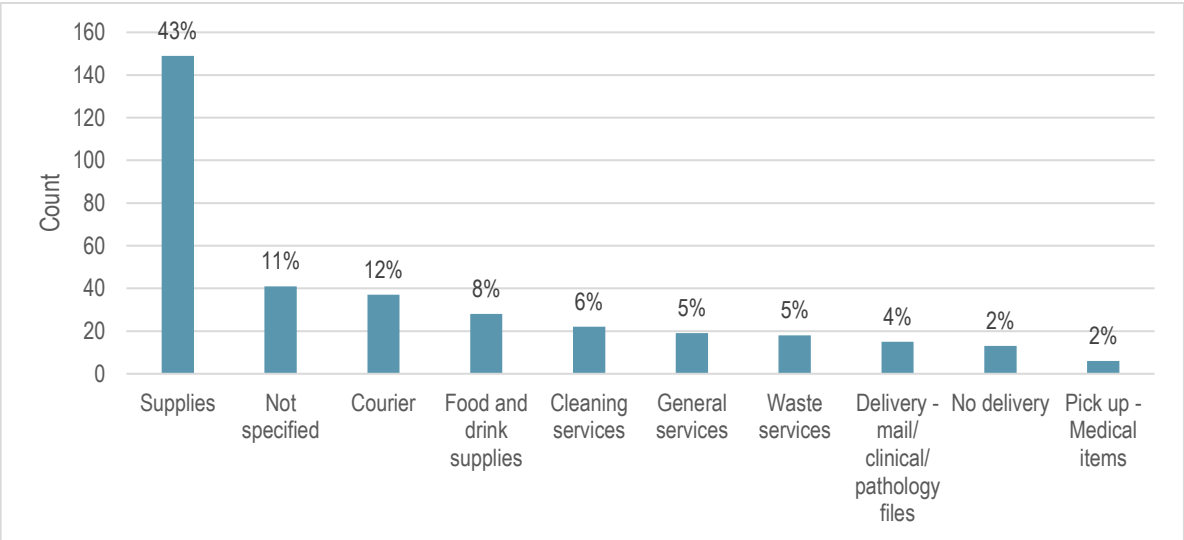


Figure 8.3 indicates that 43 per cent of vehicles involved the delivery/ collection of supplies, including pharmaceuticals, medical products and office supplies, 21 per cent comprised service vehicles, including cleaning, waste and general services, 11 per cent comprised general courier movements and eight per cent comprised delivery of food and drink supplies, including food delivery to wards, soft drink deliveries and food trolleys.

8.1.4. Duration of Stay

Average vehicle duration of stay within the loading dock over the week was in excess of 40 minutes per vehicle, with some vehicles parking for more than nine hours in the loading dock. The average vehicle duration of stay for each delivery type is detailed in Table 8.1.

Table 8.1: Southern loading dock delivery type average duration of stay

Delivery type	Average vehicle duration of stay	Primary vehicle types	Percentage total deliveries[1]
Supplies	31 minutes	Van, SRV, MRV	43%
Not specified	12 minutes	Van, SRV	12%
Courier	10 minutes	Van, SRV	11%
Food and beverages	47 minutes	SRV, Van	8%
Cleaning Services	28 minutes	HRV, Van	6%
General services	2 hours 40 minutes	Van, Car	5%
Waste Services	2 hours 58 minutes	MRV, HRV	5%
Delivery - mail/ clinical/ pathology files	50 minutes	Van, Car	4%
No delivery	42 minutes	Van	4%
Pick up - Medical items	22 minutes	Van, MRV	2%
All vehicles	**43 minutes**	**Van, SRV[1]**	**100%**

Table 8.1 indicates that couriers recorded the shortest average duration of stay of 10 minutes. Furthermore, general and waste service vehicles recorded the highest average duration of stays of 2 hours 40 minutes and 2 hours 58 minutes respectively. Delivery of mail, clinical files and records and pathology files recorded an average duration of stay of 50 minutes, noting this comprised four vehicles with an average duration of stay of 2 hours 17 minutes and the remaining 11 vehicles with an average duration of stay of 18 minutes. Three of the four vehicles with a higher duration of stay were from HealthShare NSW delivering clinical files.

Food and beverage deliveries recorded an average duration of stay of 47 minutes, noting this comprised eight vehicles with an average duration of stay of 1 hours 40 minutes and the remaining 20 vehicles with an average duration of stay of 20 minutes. There was no trend that distinguished the vehicles with a higher duration of stay.

Vehicles with no delivery recorded an average duration of stay of 42 minutes. This comprised three staff with no deliveries parking vans for durations between five minutes and three hours, two patients visiting doctors parking vans for durations of around 15 minutes, one staff member being dropped off in a car for a duration of 50 seconds and one visitor being transferred to ICU in a medium rigid vehicle parked for a duration of 57 minutes. The remaining six no deliveries recorded an average duration of stay of 11 minutes.

Vehicles where the delivery type was not specified (i.e. information could not be obtained from the driver or the driver did not know contents) recorded an average duration of stay of 12 minutes. 74 per cent of vehicles delivered to the Store Department and their supplier companies included couriers such as Go Logistics, Star Track and Direct Freight Express.

As shown in Table 8.1, the primary vehicle type for cleaning services are heavy rigid vehicles. Interrogation of the data indicates that several of the heavy rigid vehicle deliveries are by HealthShare NSW for the delivery of linen.

8.1.5. Future Operation

Under the proposal, service vehicles accessing this loading dock will be told to approach and depart via Burnside Drive to reduce the impact to emergency vehicles at Elizabeth Street. Given the low frequency of 12.5 metre HRVs deliveries and given the existing difficult with approaching the loading dock from the east, HRVs will also have the option to approach from the west. A boom gate is proposed at the eastern end of the emergency vehicle area to restrict traffic approaching from the west to authorised vehicles only.

The existing ramp down to the loading dock does not allow for two-way movement. As such, it is proposed to implement a signal system for this loading dock. Three signal locations will be required for the loading dock: one in the basement loading dock and two at ground level for vehicles approaching from the east and west respectively. On approach to the loading dock, vehicles at ground level will be given a green light to enter the basement. When a driver is looking to exit the basement, an induction loop at the bottom of the ramp in the basement will detect vehicles wishing to exit and will turn the signals at ground level from green to red. Once all vehicles in the process of entering the loading dock are cleared or stopped by the red light, the signal system in the basement will switch from red to green allowing vehicles to exit.

Localised widening at the entrance into the car park is proposed as part of a separate planning pathway to better accommodate HRVs arriving and departing to the east. The existing loading dock layout will be largely maintained, accommodating up to five HRVs.

8.2. Existing Alex Grimson Loading Dock

GTA commissioned observational and interview surveys at the existing Alex Grimson loading dock from Friday 25 October to Thursday 31 October 2019 between 5am and 6pm. This section of the report sets out an assessment of the data, detailing loading dock usage in terms of vehicle type, peak activity, delivery type and vehicle duration of stay.

8.2.1. Vehicle types

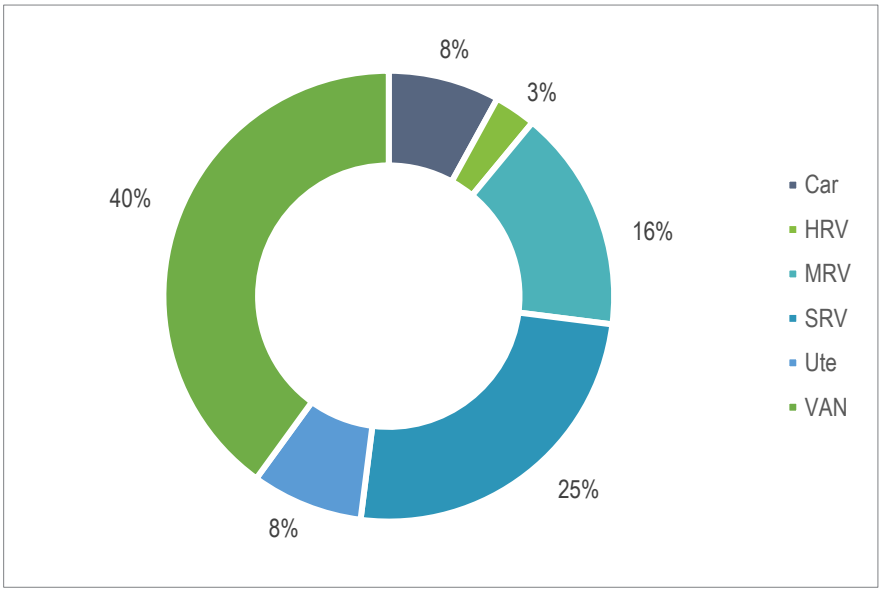
Vehicles accessing the loading dock were visually classified into the following standard design vehicle categories:

- B99 Car, Van or Ute (5.2-metre-long vehicle that represents 99 percent of the vehicle fleet on Australian roads)
- Small rigid vehicle (SRV, 6.4-metre-long truck)
- Medium rigid vehicle (MRV, 8.8-metre-long truck)
- Heavy rigid vehicle (HRV, 12.5-metre-long truck)

The surveys showed that the majority of deliveries were completed by vans (40 per cent) or small rigid vehicles (25 per cent). A summary of trucks used for deliveries throughout the surveyed week is provided in Figure 8.4.

While trucks vary in shape and length and therefore do not neatly fit into standard lengths, resulting in some variance in visual classification, the data indicates that around 65 per cent of deliveries are by vehicles less than circa seven metres long.

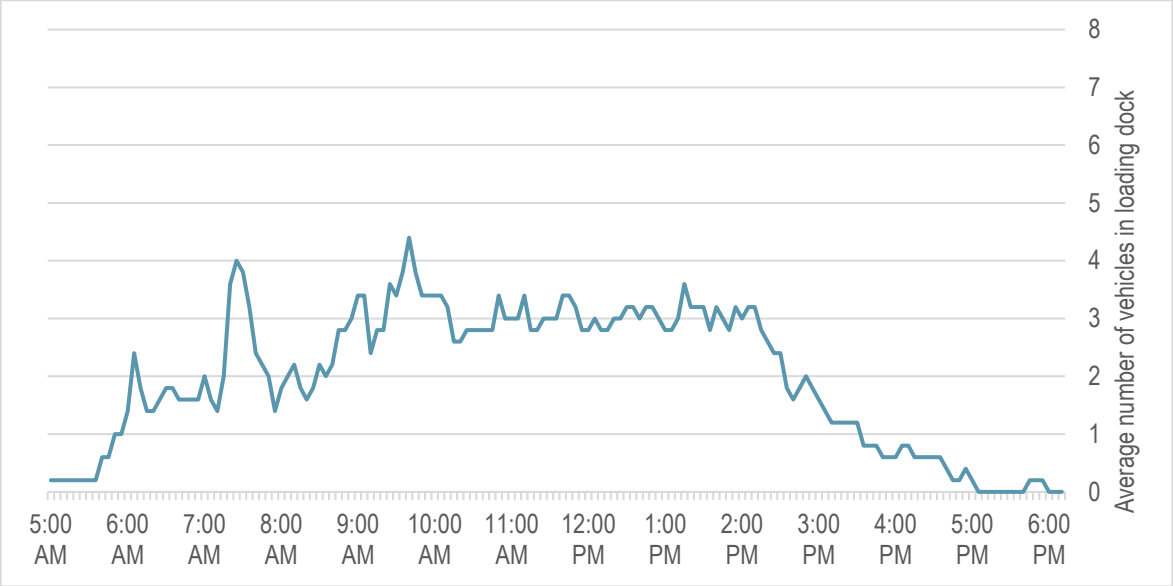
Figure 8.4: Types of vehicles used for deliveries in the Alex Grimson loading dock



8.2.2. Loading Dock Usage

The survey also confirmed that loading activity was generally steady throughout the day, with a small peak between 7am and 8am. A summary of the average vehicle occupancy at the existing loading dock between 5am and 6pm is summarised in Figure 8.5.

Figure 8.5: Existing Alex Grimson loading dock usage



It is understood that while there are three formal (marked) bays, vehicles generally park informally. Figure 8.5 indicates that the average number of vehicles in the loading dock at any one time peaked around 9:30am at around four to five vehicles. Wednesday was observed to have the highest number of vehicles in the loading dock at any one time with around seven vehicles.

8.2.3. Delivery Type

The breakdown of vehicles by delivery type is detailed in Figure 8.6.

Figure 8.6: Alex Grimson loading dock breakdown of vehicles by delivery type

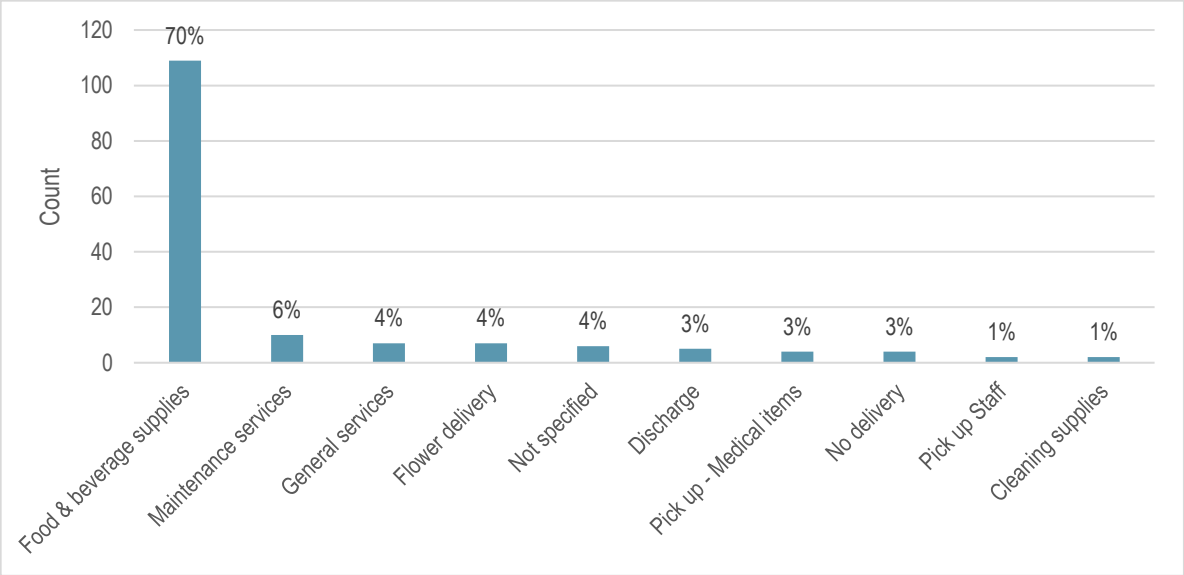


Figure 8.6 indicates that 70 per cent of vehicles involved the delivery of food and beverage supplies, six per cent comprised maintenance vehicles, and four per cent (each) was related to general services deliveries and flower deliveries.

8.2.4. Duration of Stay

Average vehicle duration of stay within the loading dock over the week was in excess of 40 minutes per vehicle, with some vehicles parking for more than nine hours in the loading dock. The average vehicle duration of stay for each delivery type is detailed in Table 8.2.

Table 8.2: Alex Grimson loading dock delivery type average duration of stay

Delivery type	Average vehicle duration of stay	Primary vehicle types	Percentage total deliveries
Food and beverage supplies	42 minutes	Car, Van, Ute, MRV, HRV	70%
Maintenance services	2 hours 59 minutes	Ute, Van, SRV	6%
General services	1 hour 44 minutes	Car, Van, Ute, MRV	5%
Flower delivery	25 minutes	Car, Van	5%
Not specified	2 hours 57 minutes	Car, Van	4%
Discharge	18 minutes	Car, Van	3%
Pick up – Medical items	37 minutes	Van, SRV	3%
No delivery	5 minutes	Van, MRV	3%
Pick up Staff	9 minutes	Car	1%
Cleaning supplies	10 minutes	Van	1%
All vehicles	**53 minutes**	**Van, SRV[1]**	**100%**

Table 8.2 indicates that maintenance services recorded the highest average duration of stay of nearly three hours, while general services recorded an average of 104 minutes. Food and beverage deliveries was the highest reoccurring activity in the loading dock, with an average of 42 minutes. The duration of stay fluctuates significantly, with nine of these vehicles staying for longer than two hours with the highest duration of early eight hours. Vehicles with no delivery recorded an average stay of five minutes. Vehicles where the delivery type was not specified (i.e. information could not be obtained from the driver or the driver did not know contents) recorded an average duration of nearly three hours.

8.3. Loading Requirements

8.3.1. Existing and Future Demand

In the absence of rates for loading provision for hospitals in Liverpool DCP 2008, an empirical assessment has been completed based on the existing usage of the southern and Alex Grimson loading docks.

Existing surveys indicate that peak loading demand across the hospital currently occurs around 12pm, with an average of around 10 service vehicles on site at one time between the Alex Grimson loading dock and the main (southern) loading dock. Peak loading demand for a single loading dock occurs at 4pm with an average of seven vehicles in the southern loading dock. While it is recognised that there is also a small pathology loading dock, deliveries to this dock throughout the day is understood to be minor in the context of overall service vehicle activity.

The redevelopment of the LHAP is expected to add an additional 187 impatient beds from the existing 807 beds, equating to an increase of around 23 per cent. Assuming loading demand will proportionally increase at the same rate, it is expected that the average loading demand throughout the week would increase from 10 vehicles at any one time to 12 vehicles.

During the surveys, it was observed that there was up to five MRVs/ HRVs on-site at any one time. With the redevelopment, all truck deliveries should be completed in formal basement loading areas. In addition, the surveys indicate that there generally a minimum of two long stay vehicles (duration of stay over two hours) between the Alex Grimson and southern loading dock at around 12pm (when typical peak loading activity occurs on-site). As such, removing long stay demand from the loading docks would result in the peak average demand reducing from 10 vehicles to eight vehicles at any one time, with estimated future demand following the redevelopment therefore expected to be on average around 10 vehicles at any one time. The management measures discussed later in this report will assist in removing or accommodating long stay demand elsewhere within the LHAP, as well as distributing the loading demand of the hospital more evenly throughout the day and between loading facilities.

Based on the above and considering that the main loading dock is already operating over capacity and the Alex Grimson and pathology loading docks will be removed as part of the redevelopment, a new basement loading area is required to accommodate existing overflow loading demand as well as the anticipated increase in loading demand. The new loading dock would be required to accommodate HRVs, with associated minimum spatial requirements to accommodate the swept path of these vehicles. Four loading bays is considered the minimum provision for a new hospital loading dock whereby the manoeuvrability of an HRV is one of the key determining factors for the loading dock size.

8.3.2. Future Loading Provisions and Distribution of Activity

A minimum of five basement loading bays, in addition to the existing five bays in the southern loading dock, in the basement will be required to meet the anticipated average future loading demand of 10 vehicles at any one time within the LHAP. It will also allow all HRV and MRV deliveries to be accommodated within a basement loading dock.

Based on the survey data received at the Alex Grimson and southern loading docks as well as the layout of departments in the hospital, Table 8.3 estimates the key deliveries which would likely be accommodated in each loading dock assuming the new dock is located on the northern side of the hospital.

Table 8.3: Recommended loading dock deliveries

New loading dock	Southern loading dock
• Central store deliveries • General food and beverage* • Retail store • Oncology and cancer clinics • Pathology • Waste • Trade/ maintenance vehicles**	• General food and beverage* • Retail outlets • Furniture and equipment • Kitchen deliveries • Mail room • Pharmacy • Waste

* Not associated with kitchen activity

** That cannot be suitably relocated to general car parking (e.g. emergency response or requiring frequent access to equipment and/or supplies)

Noting that the predominant existing delivery types (by number) are general supplies (southern dock) and food and beverage supplies (Alex Grimson), the proposed locations of the kitchen, central store and food and beverage retail will result in a relatively equal future usage of both the northern and southern loading docks.

In addition, the following vehicle activity should be removed and/ or relocated from the hospital loading dock facilities:

- Staff pick-up and drop-off should be relocated to the formal pick-up and drop-off facilities access from Goulburn Street (main entrance), Forbes Street (new northern loop) or Burnside Drive (existing eastern loop).
- Any staff parking should be removed from loading docks, with infringement notices issued if possible. Staff should be using the relevant car parks or considering alternate modes of travel.
- LHD waste, NSW Health Support Services and HealthShare truck layover/ parking should be relocated to the proposed fleet vehicle parking area on the eastern campus.
- General trade and maintenance contractors should be given access to visitor car parking.

Several of the above recommendations are discussed further in the following section.

8.3.3. Loading Dock Demand Management

Less than half the service vehicle activity in the southern loading dock was associated with the Central Store, with many deliveries being taken directly to specific locations across the campus. There is an opportunity for this central facility (which will be co-located with the northern loading dock) to be better leveraged for better internal hospital management and workflow, as well as greater supplier and loading dock efficiency by reducing delivery distances and vehicle duration of stay.

It is inefficient for the loading dock to be used for trade/ service/ maintenance contractors who require a longer duration of stay. Contractors could be given free parking within visitor car parks or alternatively, specific parking spaces could be allocated/ marked for contractor use, close to typical destinations.

The loading dock would ideally not be used for layover/ vehicle storage activities. For example, MRV waste collection vehicles operated by Liverpool hospital were recorded 10 times in the southern loading dock over the five days, with an average duration of stay of nearly five hours and a maximum duration of stay of over nine hours. SRV deliveries operated by NSW Health Support Services for the purpose of delivering food for patients were recorded using the Alex Grimson loading dock as a layover for more than two hours at a time. This occurred eight times over the five-day period, with an average duration of three hours and 52 minutes with the highest recorded stay of seven hours and 43 minutes. Such vehicles could be more effectively parked/ stored in an external at-grade location, accessing the dock only when actually collecting waste.

Implementing the above demand management recommendations, in conjunction with the new northern loading dock and rationalised distribution of activity between the available loading facilities, would allow peak loading dock demand during the week to be more readily accommodated and provide some minor spare capacity for further future growth.

8.4. Proposed New Northern Loading Dock

A new loading dock is proposed within the basement level in the north-west corner of the site, accommodating up to three HRVs and two SRVs, and would service the main hospital. Waste collection will be completed by private contractors using vehicles up to 12.5 metre HRVs.

The new loading dock will be accessed via a ramp to the internal road that links Forbes Street and Burnside Drive. Access at the entrance into the loading dock will be controlled by a stop-go signal. Inbound vehicles will be prioritised and given a green light. On exit, an induction loop in the basement loading dock at the bottom of the ramp will trigger the light at the entrance to turn red, allowing vehicles to exit the basement.

The new basement loading dock is shown in Figure 8.7.

Figure 8.7: New northern loading dock

Source: Fitzpatrick + Partners, Project Number 21807 Drawing Number LHAP-AR-FPA-DRG-MW-30B100 dated 22 April 2020

The internal connections within the basement would allow goods to be transferred from the loading docks to the required location, regardless of what loading dock the goods were delivered to.

8.5. Loading and Servicing Summary

Existing and future loading dock operation (and associated recommendations) can be summarised as follows:

- Existing peak average service vehicle demand between the southern (main) and Alex Grimson loading docks is 10 vehicles, with up to five large trucks on site at any one time during the week.
- Existing loading dock capacity is eight vehicles between the two docks, which will reduce to five vehicles with the redevelopment (which removes the Alex Grimson building).

- Removing existing long stay demand in the loading docks generally associated with trade/ service/ maintenance contractors and the management of waste and NSW Health Support Services vehicles (such that they are only accessing the loading bays when actually making a delivery or collection) is expected to reduce the existing peak average service vehicle demand from 10 vehicles to eight vehicles at any one time during a typical week.
- The LHAP redevelopment is expected to increase service vehicle demand by about 25 percent, requiring at least 10 loading bays and therefore a minimum of five additional loading bays.
- The proposed new northern loading dock has five loading bays, increases overall supply to 10 loading bays and meeting the above requirement.
- Noting that the predominant existing delivery types (by number) are general supplies (southern dock) and food and beverage supplies (Alex Grimson), the proposed locations of the kitchen, central store and food and beverage retail will result in a relatively equal future usage of both the northern and southern loading docks.
- It is recommended that service vehicle demand management measures are implemented, including access restrictions and relocating non-loading and layover activity that can occur elsewhere.
- Implementing these demand management recommendations, in conjunction with the new northern loading dock and rationalised distribution of activity between the available loading facilities, would allow peak loading dock demand during the week to be more readily accommodated and provide some minor spare capacity for further future growth.

9. TRAFFIC IMPACT ASSESSMENT

09

9.1. Traffic Generation

Traffic generation for hospitals is generally influenced by car parking supply. As such, an assessment has been completed based on the existing traffic generation of the CP2 which the new MSCP and adjacent at-grade car park will be replacing.

As mentioned previously, traffic counts were completed at the hospital accesses around the campus. This assists not only in understanding the operation of these intersections, but also in understanding the traffic generation characteristics of the hospital.

Table 9.1 summarises the traffic volumes in and out of the existing CP2 multi-storey and at-grade car park. The surveyed traffic volumes from these car parks were used for this assessment as it is considered likely that the new car parks, which will be located in the same location on campus, will generate traffic at a similar rate.

Table 9.1: Existing hospital access traffic volumes

Peak Hour	Forbes Street access		Burnside Drive CP2 access		Total	
	In	Out	In	Out	In	Out
AM	280	23	15	3	**295**	**26**
PM	39	180	3	3	**42**	**183**

Table 9.1 indicates that the CP2 car park generates around 320 and 225 trips in the AM and PM peak hours respectively. It is noted that some drivers would also use the Forbes Street access to cut through to Burnside Drive and therefore would be double-counted. Some vehicles may also drop passengers off at the existing porte-cochere near the Forbes Street access before leaving without parking. As such, this assessment is considered conservative.

Based on the 597 car parking spaces in CP2, this results in a traffic generation rate of 0.54 and 0.38 trips per car space in the AM and PM peak hours respectively. A 90 per cent inbound and 10 per cent outbound directional split was observed in the AM peak hour, while a 20 per cent inbound and 80 per cent outbound directional split was observed in the PM peak hour.

Adopting the above rates and direction distribution for the additional car parking spaces to be provided in the new multi-storey car park results in traffic generation estimates as set out in Table 9.2. As mentioned in Section 6.1, it is expected that there will be some loss of spaces in various locations around the hospital due to the redevelopment, however it is expected that this will be replaced in a new car parking area on the hospital campus as part of a separate planning pathway, with a minor redistribution of existing traffic as a result. As such, for the purpose of this assessment it has been assumed that the net increase in parking is related to the 500 spaces being increased in CP2.

Table 9.2: Redevelopment traffic generation estimates

Peak hour	Net increase in parking	Traffic generation rate (trips/ hour)	Traffic generation estimates (trips/ hour)		
			In	Out	Total
AM	500 spaces	0.54	243	27	**270**
PM		0.38	38	152	**190**

Table 9.2 indicates that the site could potentially generate an additional 270 and 190 vehicle trips in the AM and PM peak hours respectively.

9.2. Surrounding Developments

To ensure a robust traffic assessment, nearby proposed developments have been considered and assessed in a cumulative manner. This cumulative traffic assessment has been informed through consultation with Council, who has indicated that the proposed expansion of Westfield Shopping Centre and the development of 26 Elizabeth Street should be considered.

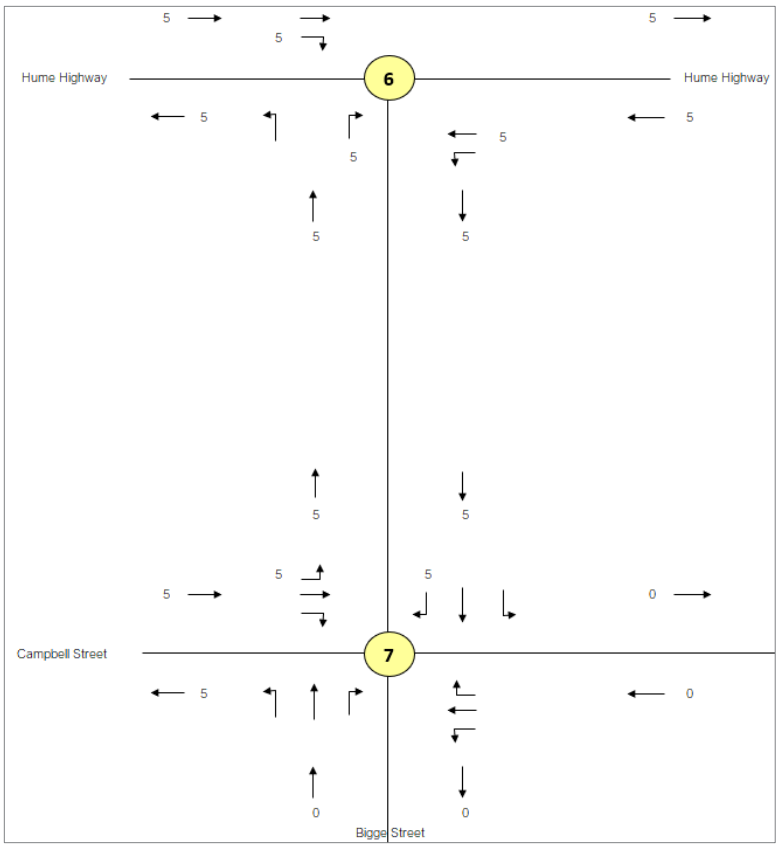
9.2.1. Westfield Shopping Centre

Colston Budd Rogers & Kafes prepared a Traffic Report dated December 2018 for the proposed Entertainment and Lifestyle Precinct and office tower on the roof of the existing Westfield Shopping Centre. The precinct will increase the shopping centre floor area by approximately 5,000 square metres, whilst the office tower will provide an additional 11,000 square metres of floor area.

It is noted that the peak period for the Westfield Shopping Centre, which the traffic report has modelled, is Thursday afternoon and midday Saturday. As such, potential traffic generated by the expansion of the shopping centre has only been added to the weekday PM peak for the cumulative assessment.

Figure 9.1 outlines the anticipated increase in turning movements at the key surveyed intersections relevant to this assessment. These turning movements also extend to the Hume Highway/ Remembrance Avenue intersection which was also analysed in this assessment.

Figure 9.1: Increase in PM peak hour traffic associated with Westfield Shopping Centre redevelopment



9.2.2. 26 Elizabeth Street, Liverpool

ptc. prepared a Traffic Impact Assessment dated January 2020 for the proposed development at 26 Elizabeth Street, Liverpool. The proposed development involves the construction of a mixed-use building, comprising of 179 residential apartments, 113 hotel rooms and around 5,000 square metres of commercial space.

The anticipated increase in turning movements near the site is shown in Figure 9.2 and Figure 9.3. This indicates an increase in traffic further afield travelling from Newbridge Road to connect with Bigge Street from the south, and traffic travelling to the northeast along the Hume Highway via Bigge Street.

Figure 9.2: Increase in AM peak hour traffic associated with 26 Elizabeth Street development

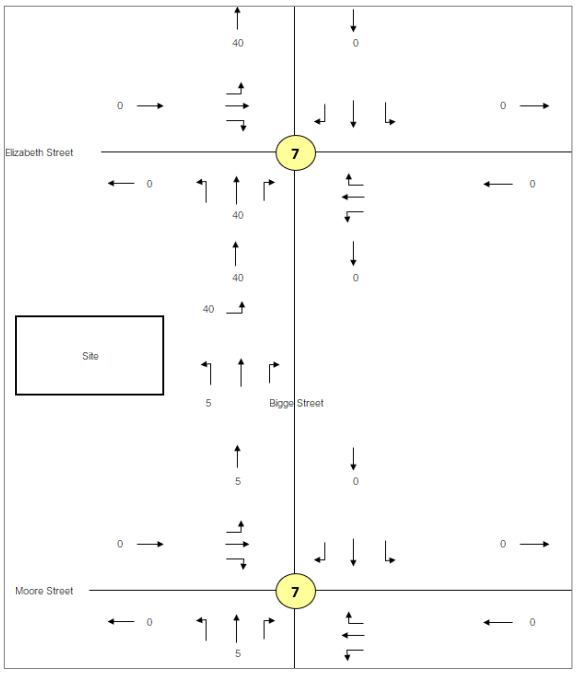
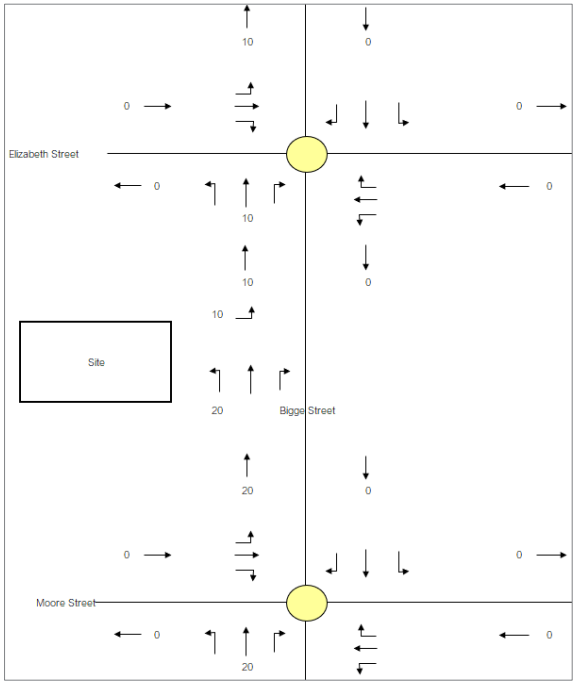


Figure 9.3: Increase in PM peak hour traffic associated with 26 Elizabeth Street development



9.3. Distribution and Assignment

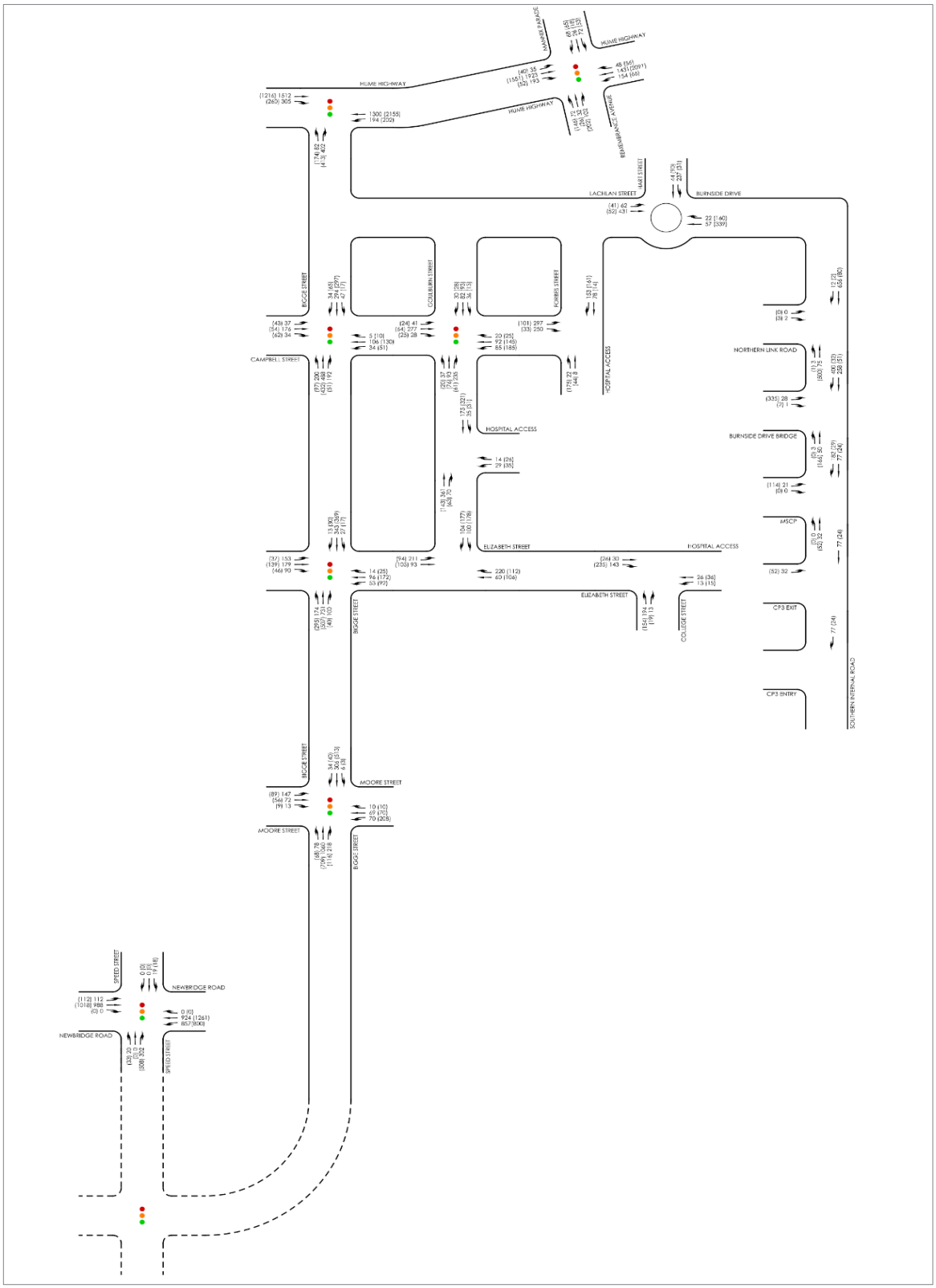
The directional distribution and assignment of traffic generated by the proposed development will be influenced by a number of factors, including the:

- Configuration of the arterial road network in the immediate vicinity of the site
- Existing operation of intersections providing access between the local and arterial road network
- Distribution of households in the vicinity of the site
- Likely distribution of staff and patient/ visitor residences in relation to the site
- Configuration of access points to the site.

It has been assumed that the majority of new traffic will enter via Burnside Drive, with approximately 25 per cent of traffic approaching/ departing to the west via the CBD. Of this 25 per cent, it has been assumed that five per cent will enter via the main entrance, travel through the new basement connection and exit via the CP3 access near Burnside Drive, before entering the MSCP. This accounts for drivers dropping off passengers before finding a long-stay car parking space.

Based on the above, Figure 9.4 shows the future AM and PM peak hour traffic volumes including the additional traffic generated from the redevelopment.

Figure 9.4: AM and PM peak hour traffic volumes with LHAP redevelopment and surrounding development traffic



Note: AM traffic volumes (PM traffic volumes)

9.4. Traffic Impact

9.4.1. Existing Conditions with Surrounding Developments

The surrounding key intersections have been analysed in SIDRA to understand the impact of the Westfield Shopping centre redevelopment and 26 Elizabeth Street development. The anticipated increase in traffic generated by these developments are expected to largely impact intersections in the assessment area along Bigge Street, the Hume Highway and the Newbridge Road/ Speed Street intersection. A summary of the SIDRA modelling results for these intersections is provided in Table 9.3.

Table 9.3: Intersection operation following Westfield and 26 Elizabeth Street developments

Intersection	Peak	Degree of Saturation (DOS)	Average Delay (sec)	95th Percentile Queue (m) [1]	Level of Service (LOS)
Hume Highway/ Bigge Street	AM	0.89	27	94	B
	PM	0.77	20	105	B
Bigge Street/ Campbell Street	AM	0.70	13	69	A
	PM	0.48	15	47	A
Bigge Street/ Elizabeth Street	AM	0.57	19	102	B
	PM	0.52	16	65	B
Bigge Street/ Moore Street	AM	0.69	22	149	B
	PM	0.54	23	126	B
Hume Highway/ Remembrance Avenue	AM	0.96	27	243	B
	PM	0.82	26	186	B
Speed Street/ Newbridge Road	AM	0.80	22	286	B
	PM	0.87	24	374	B

[1] Average queue reported for Hume Highway intersections, as these intersections modelled in SIDRA Network

Table 9.3 indicates the key intersections along Bigge Street, the Hume Highway and Newbridge Road are expected to continue operating similar to existing conditions with the additional traffic generated from the Westfield Shopping Centre redevelopment and the 26 Elizabeth Street developments, with minor increases to delay and queues overall. These results are also consistent with the findings in the Traffic Impact Assessment (ptc., January 2020) prepared to support the development application for the 26 Elizabeth Street development.

9.4.2. Cumulative Assessment with LHAP Redevelopment

The additional traffic generated by the redevelopment of the LHAP has been modelled in SIDRA, along with the additional traffic generated by the Westfield Shopping Centre redevelopment and the 26 Elizabeth Street development. Modelling has been completed based on existing traffic being redistributed based on the relocation of the main hospital access plus the new traffic generated from the additional car parking.

SIDRA modelling results for surrounding key intersection with the additional traffic is summarised in Table 9.4. It is noted that as part of separate LHAP works, the existing Burnside Drive roundabout will

be removed, with separate intersections provided for the northern link road, the multi-storey car park access, CP3 access and the Burnside Drive bridge over the railway corridor. As such, new SIDRA models have been completed for these future intersections.

Table 9.4: Intersection operation with surrounding developments and LHAP

Intersection	Peak	Degree of Saturation (DOS)	Average Delay (sec)	95th Percentile Queue (m) [1]	Level of Service (LOS)
Lachlan Street/ Hart Street	AM	0.36	7	17	A
	PM	0.40	9	20	A
Forbes Street/ Campbell Street/ Hospital access	AM	0.16	7	7	A
	PM	0.11	6	4	A
Goulburn Street/ hospital access	AM	0.12	7	0	A
	PM	0.19	7	0	A
Hume Highway/ Bigge Street	AM	0.93	31	106	C
	PM	0.81	20	113	B
Burnside Drive/ northern access road	AM	0.01	12	1	A
	PM	0.01	9	1	A
Burnside Drive/ Burnside drive bridge	AM	0.02	11	1	A
	PM	0.25	7	8	A
Burnside Drive/ Multi-storey car park access	AM	0.02	6	0	A
	PM	0.03	6	0	A
Bigge Street/ Campbell Street	AM	0.70	14	74	A
	PM	0.49	15	52	B
Bigge Street/ Elizabeth Street	AM	0.61	19	110	B
	PM	0.52	16	65	B
Campbell Street/ Goulburn Street	AM	0.40	16	35	B
	PM	0.20	14	22	A
Elizabeth Street/ Goulburn Street	AM	0.21	6	6	A
	PM	0.33	6	10	A
Bigge Street/ Moore Street	AM	0.69	22	150	B
	PM	0.54	23	127	B
Elizabeth Street/ College Street	AM	0.11	4	5	A
	PM	0.16	4	6	A
Hume Highway/ Remembrance Avenue	AM	0.96	27	244	B
	PM	0.83	27	187	B

Intersection	Peak	Degree of Saturation (DOS)	Average Delay (sec)	95th Percentile Queue (m) [1]	Level of Service (LOS)
Speed Street/ Newbridge Road	AM	0.80	22	288	B
	PM	0.87	24	374	B

[1] Average queue reported for Hume Highway intersections, as these intersections modelled in SIDRA Network

Table 9.4 indicates that the surrounding key intersections near the LHAP will continue to operate satisfactorily in the AM and PM peak periods, with minor increases to delays and queues. The new hospital access on Goulburn Street is expected to operate satisfactorily, with minimal queuing on Goulburn Street forming when vehicles are waiting to turn right into the site.

The new intersections on Burnside Drive providing access to the northern link road, Burnside Drive bridge and multi-storey car park are also expected to operate efficiently with minimal delays and queues overall, while the queues for the right turns are expected to be accommodated in the provided turning bays.

The Hume Highway/ Bigge Street intersection which currently experiences significant queuing in the AM and PM peak periods is expected to experience a very minor increase in average queuing of approximately 12 metres (two cars), and a minor increase in average delay of up to four seconds compared to the SIDRA results assessing just the Westfield and 26 Elizabeth Street developments.

The Hume Highway/ Remembrance Avenue intersection is expected to continue to operate satisfactorily overall, with similar levels of delay and queuing in both peak periods. The Speed Street/ Newbridge Road intersection is also expected to continue to operate similar to existing conditions in both the AM and PM peak hours.

It is understood that Council is investigating the opportunity to improve the operation of the Bigge Street/ Elizabeth Street intersection through implementation of right turn traffic signal arrows on the Bigge Street approaches and the addition of a dedicated right turn phase. It is noted that the anticipated increase in traffic at this location from the LHAP redevelopment itself is considered minor in comparison to the traffic generated by the surrounding proposed developments. Notwithstanding, SIDRA modelling indicates that the additional traffic generated by the LHAP redevelopment and surrounding developments could be accommodated at the intersection under its current arrangement. These results are also consistent with the findings in the Traffic Impact Assessment (ptc., January 2020) prepared to support the 26 Elizabeth Street development. Further to this, preliminary modelling indicates that the additional phase would not improve the intersection operation from its current arrangement. It is recommended that TfNSW advise further on any potential upgrades to this intersection.

Overall, SIDRA modelling considering the surrounding developments and the LHAP redevelopment indicates that the anticipated increase in traffic can be accommodated on the surrounding road network, with minor increases to average delay and queuing expected at the key intersections.

9.5. Campbell Street Shared Zone Analysis

9.5.1. Overview

An additional assessment has been completed to understand the likely traffic impact on surrounding key intersections as a result of the conversion of Campbell Street between Goulburn Street and Forbes Street to a shared zone.

Campbell Street, between Goulburn Street and Forbes Street, is predominantly used for trips to the Liverpool Girls and Boys High Schools, or the Liverpool Hospital P2 car park and pathology pick-up/ drop-off area. In reducing the traffic capacity of Campbell Street, drivers have two key options in adjusting their trips:

- Maintain their general approach and departure route to the schools and hospital and use Goulburn Street/ Lachlan Street instead of Campbell Street
- Adjust their approach and departure route more broadly to minimise travel time, distance and the number of turning movements at intersections.

The following intersections have been modelled as a network in SIDRA to identify any interaction between the intersections and the associated impact on intersection operations:

- Lachlan Street/ Burnside Drive/ Hart Street
- Lachlan Street/ Forbes Street
- Lachlan Street/ Goulburn Street
- Campbell Street/ Goulburn Street.

It is expected that the above broader travel route adjustments will occur outside of these four intersections, with several approach routes altering at Bigge Street. It is noted that the existing intersections along Bigge Street are currently operating satisfactorily, with adequate capacity to accommodate some additional traffic. Therefore, the Bigge Street intersections were not included in this assessment.

9.5.2. Journey to Work Data

2016 ABS Census Journey to Work (JTW) data was used to understand the likely travel routes for staff and visitors to Liverpool Hospital. The data indicated that majority of people working at Liverpool Hospital reside within Liverpool LGA. Other key origins recorded were Campbelltown, Fairfield, Camden and Canterbury-Bankstown.

Interpretation of the JTW data indicates that around 75 per cent of vehicles travelling to Liverpool Hospital would approach from the north/west (Hume Highway), while the remaining 25 per cent would approach from the south (Newbridge Road).

9.5.3. Campbell Street Traffic Redistribution

Existing traffic volumes indicate there are currently around 700 and 450 vehicle movements per hour (two-way) that use the section of Campbell Street between Goulburn Street and Forbes Street in the AM and PM peak hours respectively. Of this, around 230 (33 per cent) and 170 (38 per cent) in the AM and PM peak hours are considered related to the Liverpool Hospital car parking, with the remaining movements related to other uses, primarily along Forbes Street including Liverpool Girls and Boys High

Schools (including pick up and drop off arrangements), as well as a minor contribution from church and residential land uses.

The redistribution of traffic, as a result of the two Campbell Street treatment options, is based on the existing survey data, the JTW data analysis and the following assumptions:

- The existing traffic on Campbell Street is either school or hospital traffic for simplicity. As mentioned, it is expected that a minor proportion of trips are related to other purposes, however will not impact overall assessment outcomes.
- All traffic currently using Campbell Street would travel via Bigge Street to connect with the north or the south in future.
- With any eastbound school related trips that are transferred from Campbell Street to Lachlan Street, 50 per cent of these trips would make a U-turn at the Hart Street roundabout and drop off on the southern side of Lachlan Street. The remaining 50 per cent would travel towards Burnside Drive and loop around the block to the pick-up/ drop-off area on Forbes Street.
- For the shared zone treatment on Campbell Street, a maximum 100 vehicles per hour (two-way) will remain on Campbell Street.

The estimated traffic redistribution percentages (by direction on Campbell Street) as a result of shared zone for both the AM and PM peak hours are presented in Figure 9.5 to Figure 9.8, while the total redistributed traffic is shown in Figure 9.9 and Figure 9.10 for the AM and PM peak hours respectively.

Figure 9.5: Redistribution (percentage) of eastbound Campbell Street AM peak hour traffic

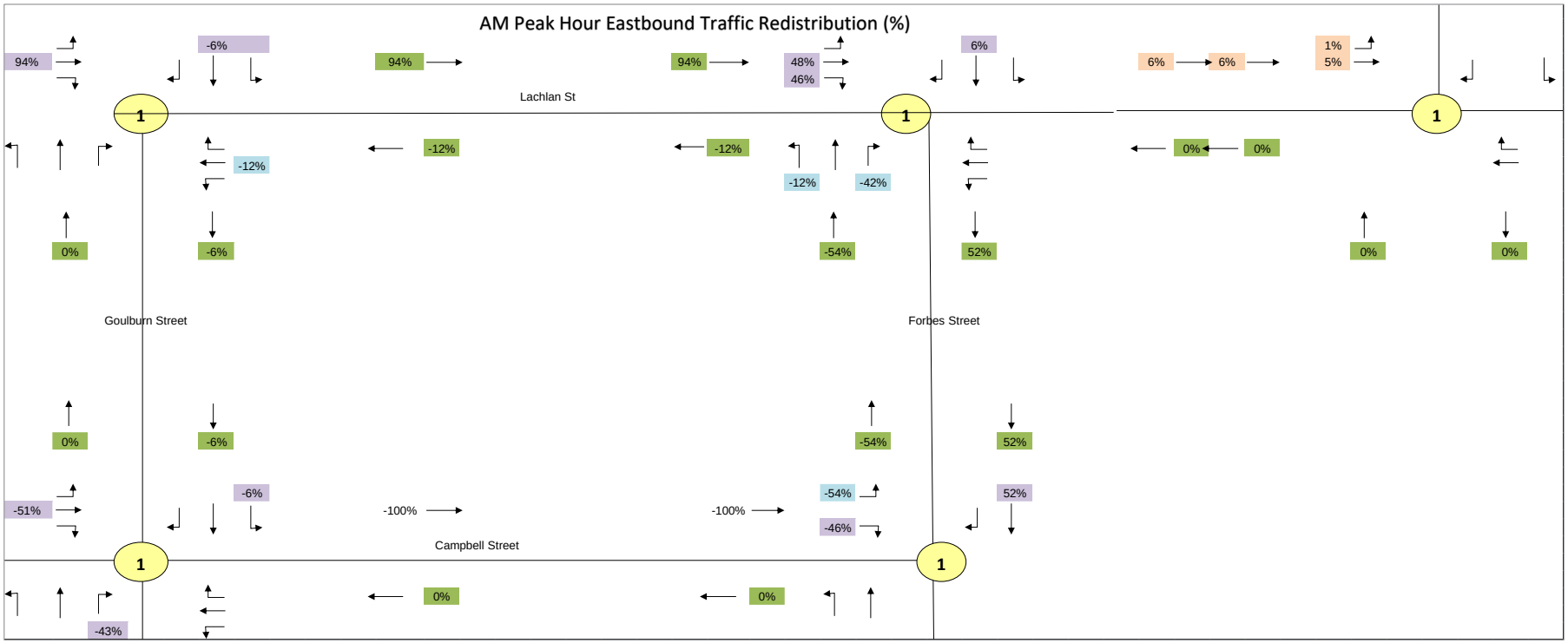


Figure 9.6: Redistribution (percentage) of westbound Campbell Street AM peak hour traffic

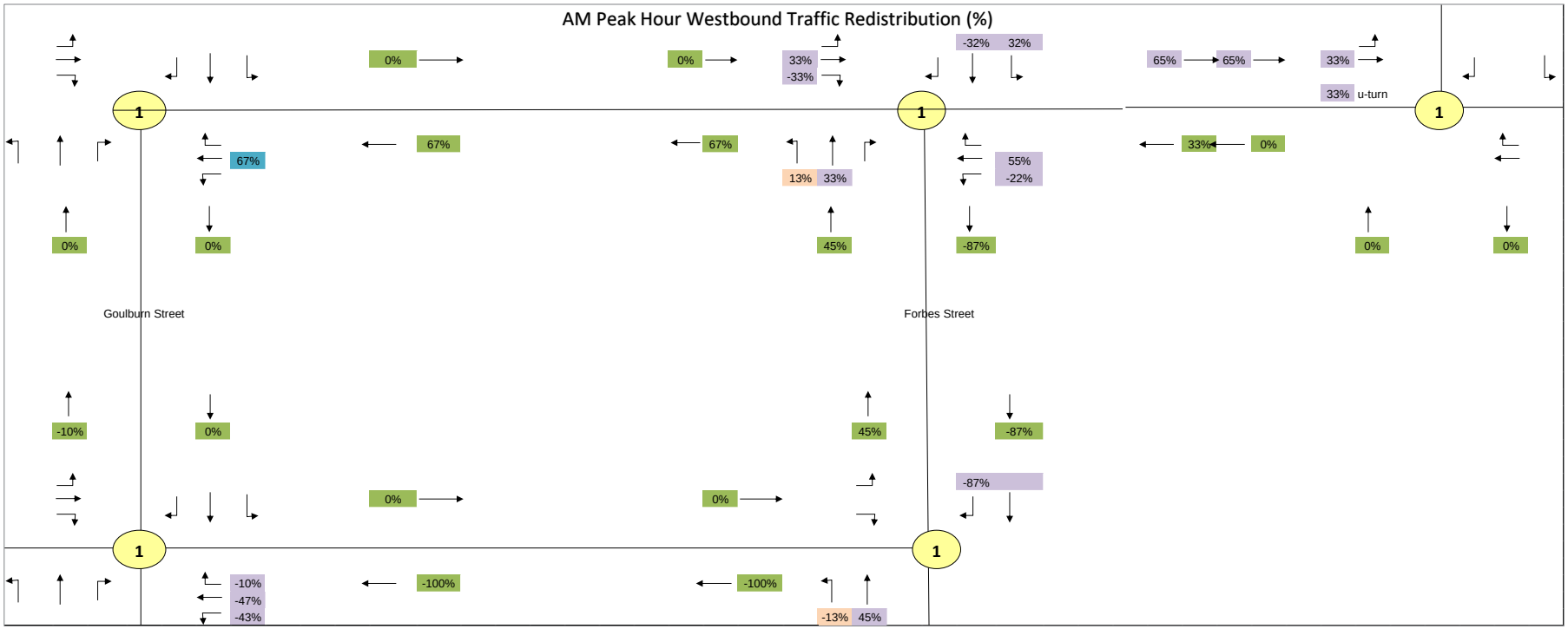


Figure 9.7: Redistribution (percentage) of eastbound Campbell Street PM peak hour traffic

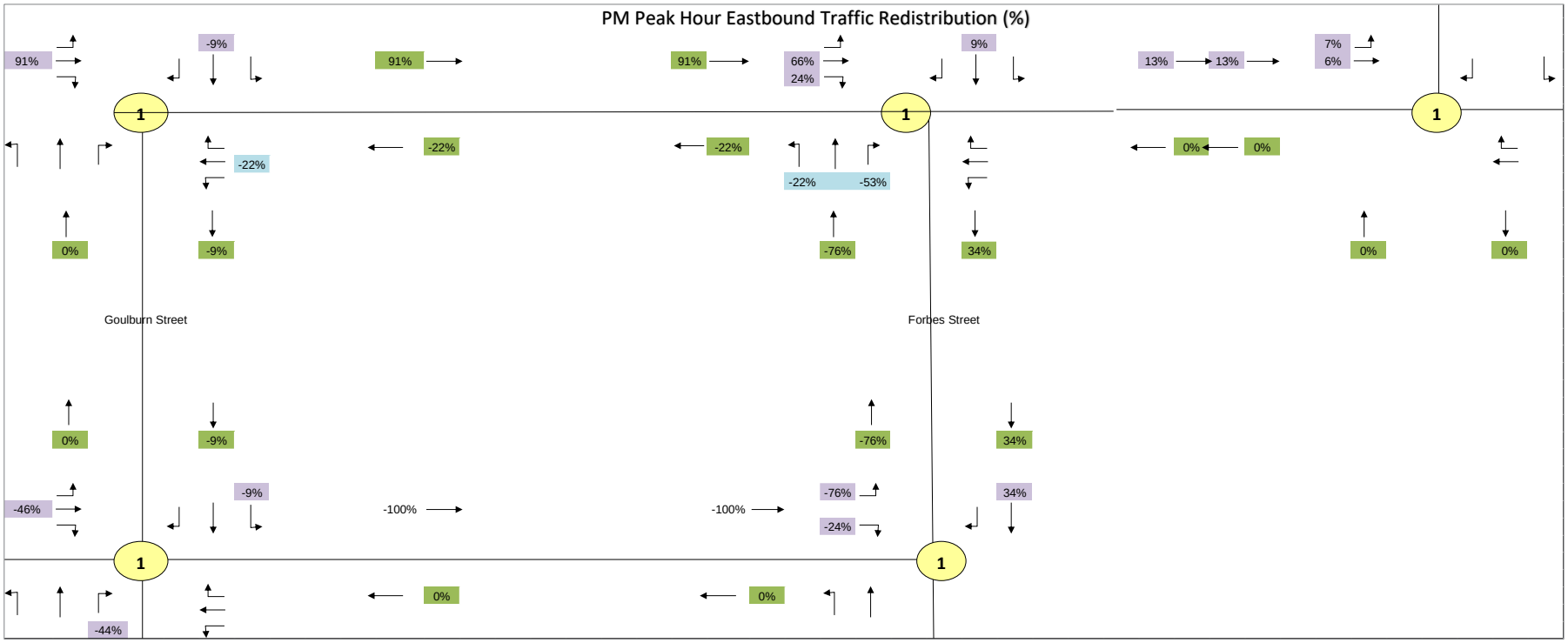


Figure 9.8: Redistribution (percentage) of westbound Campbell Street PM peak hour traffic

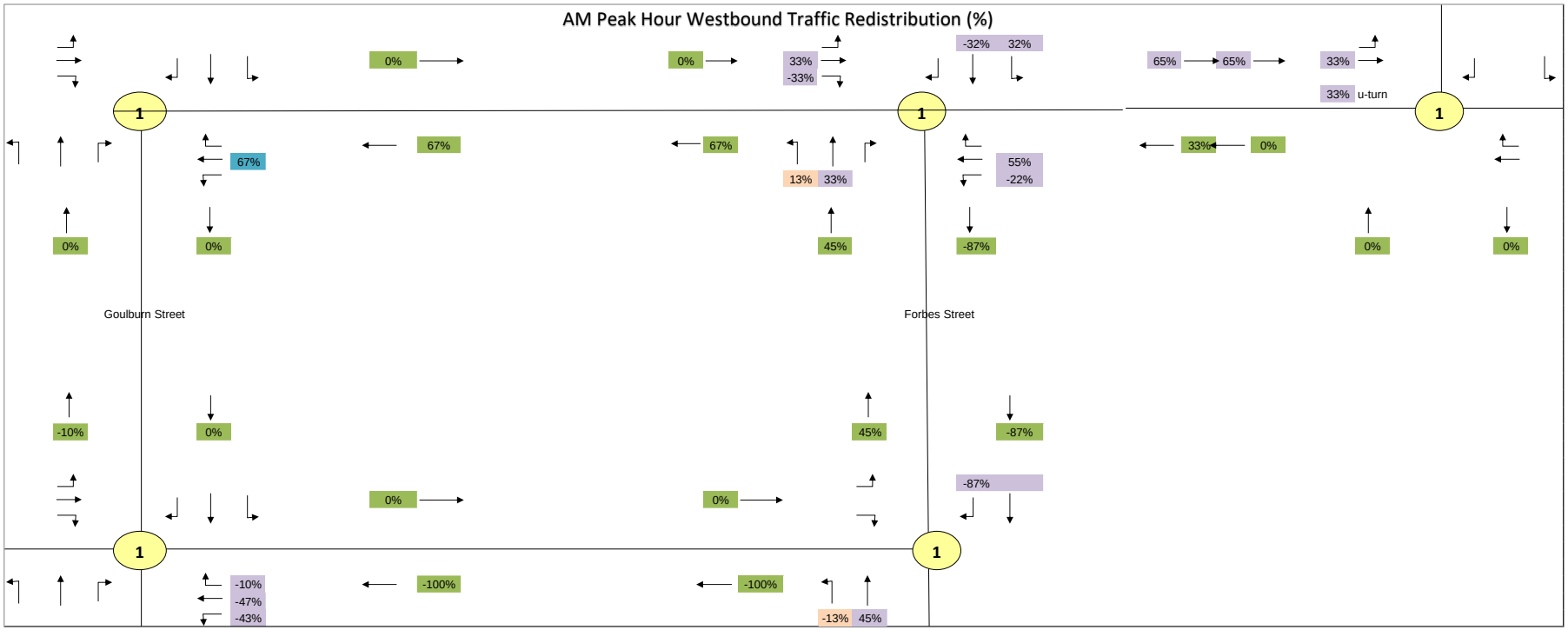


Figure 9.9: Redistributed AM peak hour traffic as a result of implementation of Campbell Street shared zone

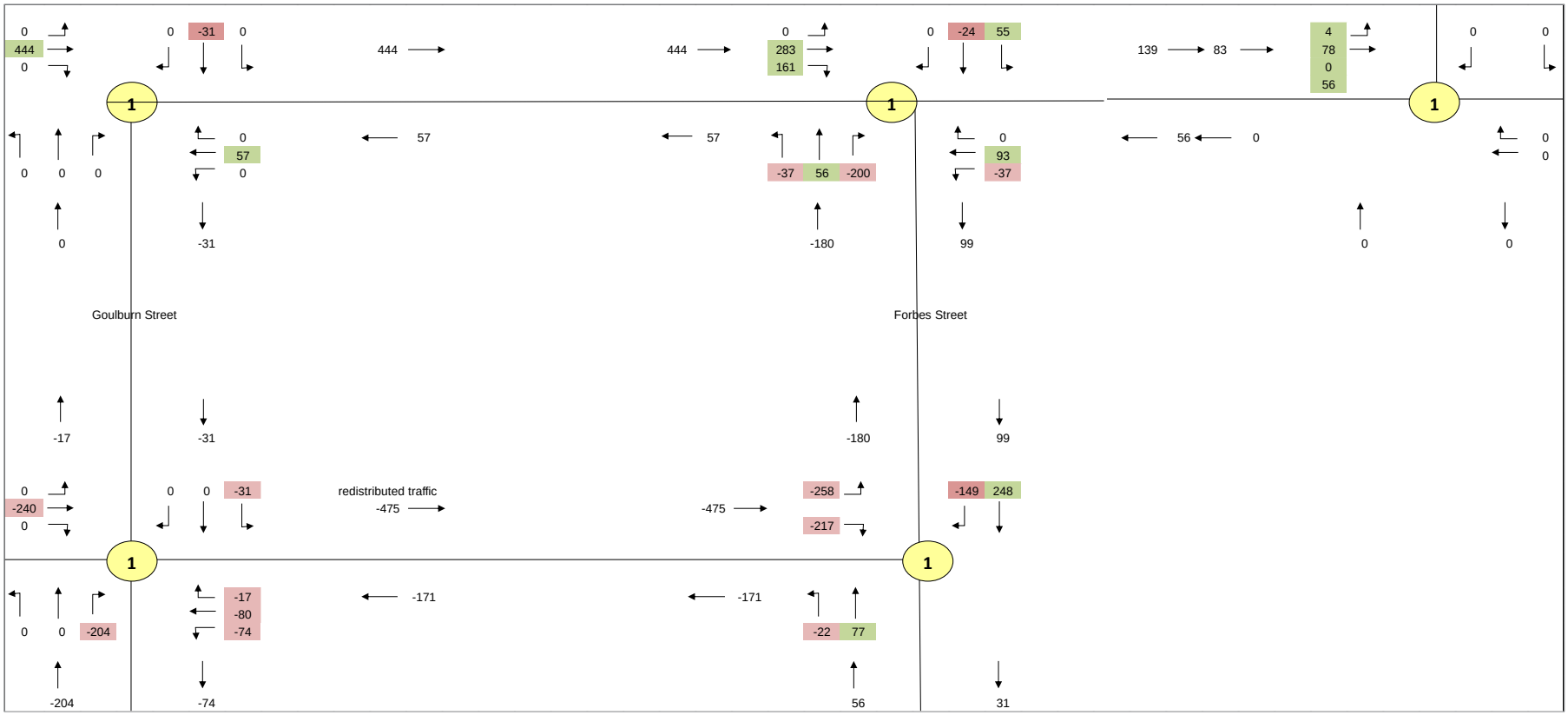
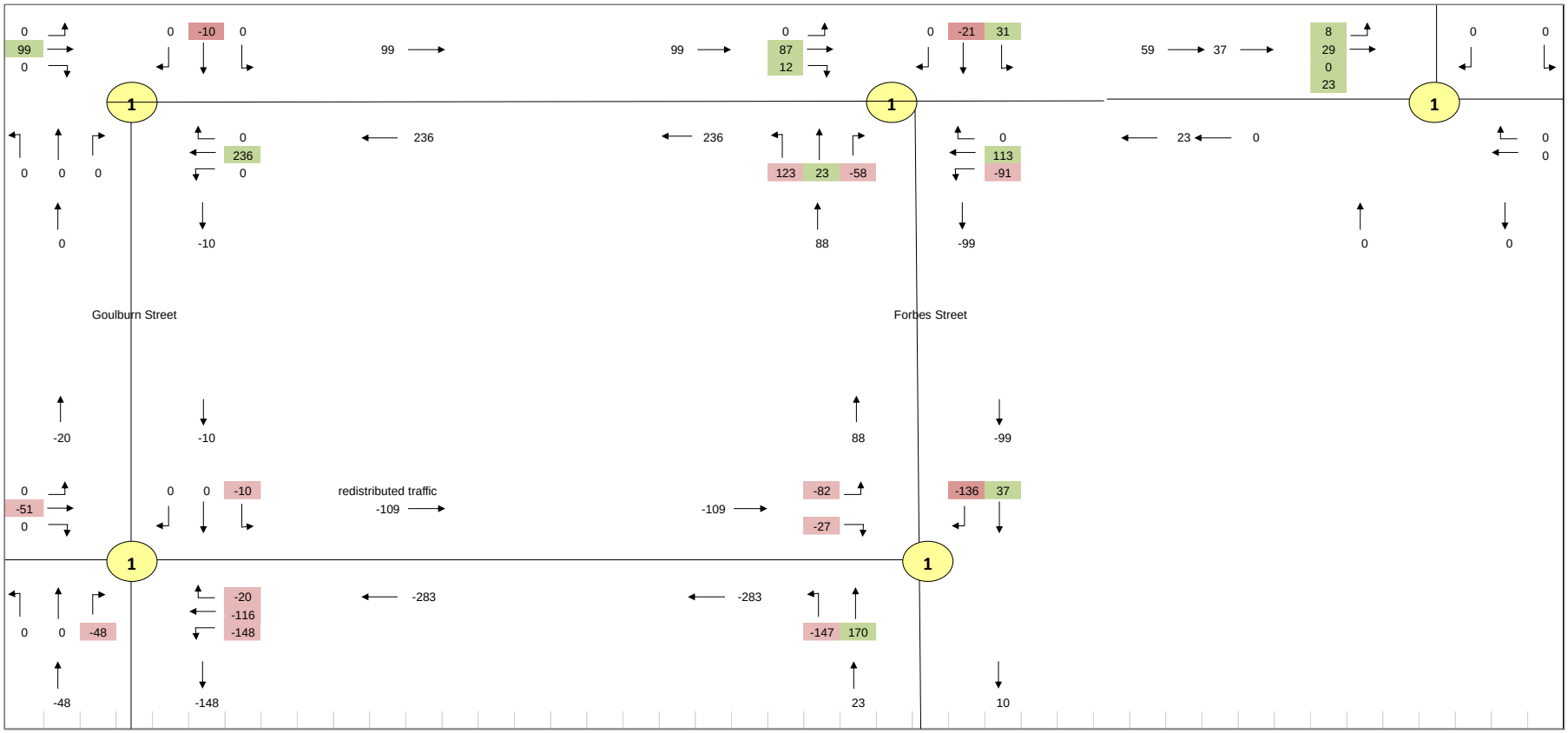


Figure 9.10: Redistributed PM peak hour traffic as a result of implementation of Campbell Street shared zone



9.5.4. Traffic Impact of Shared Zone (Existing Intersection Layouts)

The SIDRA Network assessment results for the proposed shared zone treatment of Campbell Street is presented in Table 9.5 and Table 9.6 for AM and PM peak hours respectively. It is noted that for priority-controlled intersections, the results are reported for the worst movement based on average delay.

Table 9.5: Network performance results AM peak – Campbell Street shared zone

Intersection	Control	Degree of Saturation	Average delay (seconds)	Average queue (metres)	Level of Service
Lachlan Street/ Burnside Drive/ Hart Street	Roundabout	0.24	9	4	LOS A
Lachlan Street/ Forbes Street	Priority	0.93	30	78	LOS C
Lachlan Street/ Goulburn Street	Roundabout	0.13	15	2	LOS A
Campbell Street/ Goulburn Street	Signals	0.16	14	9	LOS A

Table 9.6: Network performance results PM peak – Campbell Street shared zone

Intersection	Control	Degree of Saturation	Average delay (seconds)	Average queue (metres)	Level of Service
Lachlan Street/ Burnside Drive/ Hart Street	Roundabout	0.46	8	9	LOS A
Lachlan Street/ Forbes Street	Priority	0.32	19	4	LOS B
Lachlan Street/ Goulburn Street	Roundabout	0.23	11	4	LOS A
Campbell Street/ Goulburn Street	Signals	0.12	14	6	LOS A

The SIDRA results indicate that with the increased traffic volumes on Lachlan Street following redistribution from Campbell Street, all intersections are expected to operate at satisfactory levels with the redistributed traffic.

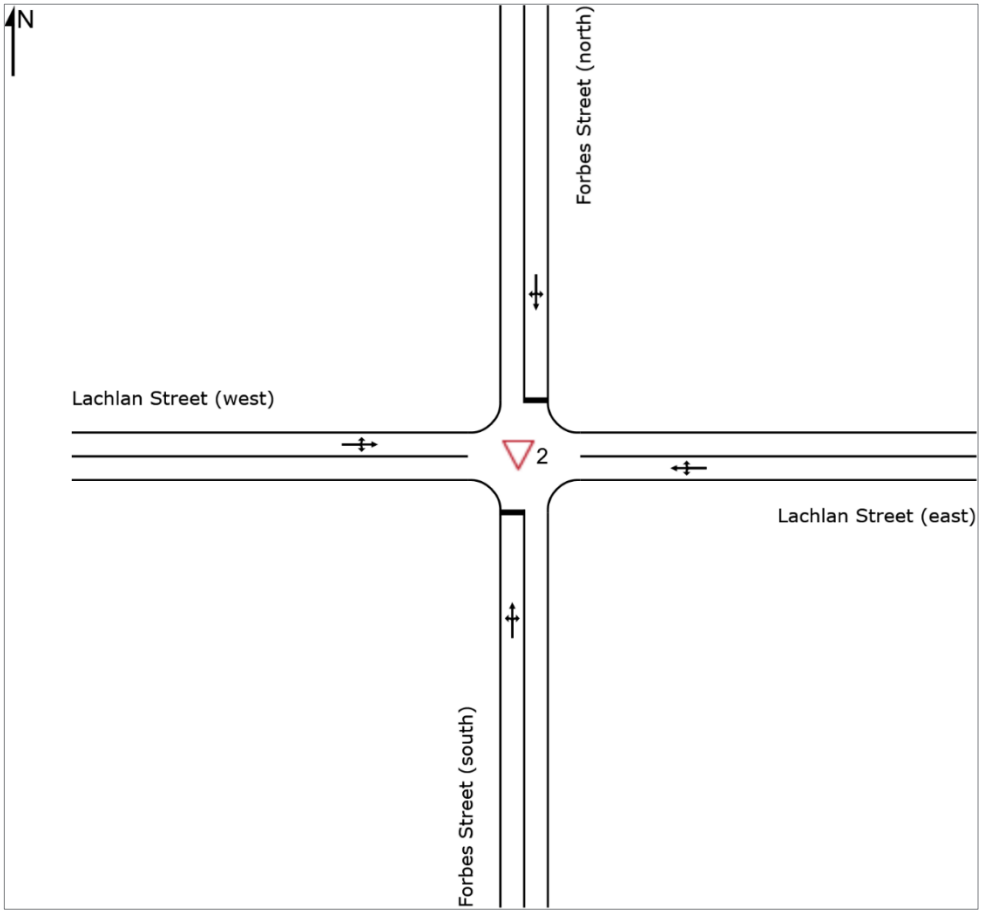
The Lachlan Street/ Forbes Street intersection is expected to operate close to capacity as indicated by the degree of saturation of 0.9, with an average queue length of approximately 80 metres on the west approach during the AM peak hour. As such, any further increase in traffic could result in significant delays and queues, which in-turn may impact the adjacent Lachlan Street/ Goulburn Street intersection operation.

9.5.5. Lachlan Street/ Forbes Street Mitigation Measures

Potential mitigation measures were investigated to improve the operation of the Lachlan Street/ Forbes Street intersection considering the additional traffic on Lachlan Street. Given that through traffic volumes on Lachlan Street would be higher than through traffic volumes on Forbes Street under future arrangements, intersection performance was tested with reversed priority (i.e. making Lachlan Street the continuous road and installing stop signs on Forbes Street, as shown in Figure 9.11). As noted above, the Lachlan Street/ Goulburn Street roundabout would be impacted by queuing from the

Lachlan Street/ Forbes Street, so addressing Lachlan Street/ Forbes Street also resolves any potential issues at the Lachlan Street/ Goulburn Street intersection.

Figure 9.11: Proposed Lachlan Street/ Forbes Street intersection alternate layout



SIDRA Network assessment results with the proposed mitigation measures at the Lachlan Street/ Forbes Street intersection are presented in Table 9.7 and Table 9.8 for the AM and PM peak hours respectively.

Table 9.7: Network performance results with mitigation AM peak - Campbell Street shared zone

Intersection	Control	Degree of Saturation	Average delay (seconds)	Average queue (metres)	Level of Service
Lachlan Street/ Burnside Drive/ Hart Street	Roundabout	0.25	9	4	LOS A
Lachlan Street/ Forbes Street	Reversed Priority	0.42	26	5	LOS B
Lachlan Street/ Goulburn Street	Roundabout	0.12	15	2	LOS B
Campbell Street/ Goulburn Street	Signals	0.16	14	9	LOS A

Table 9.8: Network performance results with mitigation PM peak - Campbell Street shared zone

Intersection	Control	Degree of Saturation	Average delay (seconds)	Average queue (metres)	Level of Service
Lachlan Street/ Burnside Drive/ Hart Street	Roundabout	0.46	8	9	LOS A
Lachlan Street/ Forbes Street	Reversed Priority	0.15	15	2	LOS B
Lachlan Street/ Goulburn Street	Roundabout	0.23	11	4	LOS A
Campbell Street/ Goulburn Street	Signals	0.12	14	6	LOS A

SIDRA results indicate that with the proposed mitigation measures, the redistributed traffic following implementation of the proposed shared zone treatment in Campbell Street can be accommodated by the surrounding road network.

It is noted that Section 5.2.2 of the *Austroads Guide to Traffic Management Part 6* indicates that stop signs are normally installed only where justified on the basis of sight distance requirements. A review of available sight lines at the intersection indicates there could be potential for give-way controls to be implemented at the intersection on the north and south approaches to the intersection instead of stop sign controls, which would further improve the operation of the intersection. This could be reviewed further in consultation with Council. Notwithstanding, SIDRA modelling completed has been completed on the basis of stop-controls on the north and south approaches to the intersection for a conservative assessment.

9.5.6. Campbell Street Shared Zone Analysis Summary

The above traffic analysis indicates the following:

- With the proposed shared zone treatment of Campbell Street between Forbes Street and Goulburn Street, it is expected that traffic movements along Lachlan Street will increase by around 500 and 330 vehicles per hour in the AM and PM peak hours respectively.
- The proposed Campbell Street shared zone can be accommodated by the surrounding road network, however the current priority-controlled intersection at Lachlan Street/ Forbes Street would be approaching capacity.
- With reversed priority at Lachlan Street/ Forbes Street (i.e. making Lachlan Street the continuous road and installing stop signs on Forbes Street), all intersections are expected to operate satisfactorily with minor queuing and delays.

10. OVERVIEW GREEN TRAVEL PLAN

10

10.1. Introduction

10.1.1. Travel Plan Framework

Transport is a necessary part of life, but it has economic, public health and environmental consequences. The transport sector is one of the fastest growing emissions sectors in Australia, and therefore is one of the key opportunities for reducing greenhouse gases. As well as delivering better environmental outcomes, providing a range of travel choices with a focus on walking, cycling and public transport will have major public health benefits and will ensure a strong and prosperous community.

The physical infrastructure being provided as part of the development is only part of the solution. A green travel plan (GTP) will ensure that the transport infrastructure, services and policies both within and external to the site are tailored to the users and co-ordinated to achieve the most sustainable outcome possible.

10.1.2. What is a GTP?

A GTP is a package of measures aimed at promoting sustainable travel and reducing reliance on the private car. It is not designed to be 'anti-car' however it will encourage and support people's aspirations for carrying out their daily business in a more sustainable way. Travel plans can provide both:

- measures which restrict car use (disincentives or 'sticks')
- measures which encourage or support sustainable travel, reduce the need to travel or make travelling more efficient (incentives or 'carrots').

The travel plan would promote the use of transport, other than the private car, provide choice for staff to travel to and from the site, which is more sustainable and environmentally friendly.

Indeed, there are a range of "non-car" transport options that are available at the site which have been described in this report.

Given the developments aim to reduce private travel to the site, the implementation of a GTP would be beneficial.

10.2. Key Objectives

The aim of the GTP is to bring about better transport arrangements for living and working at the site. The key objectives of the Travel Plan are:

- To encourage walking.
- To encourage cycling.
- To encourage the use of public transport.
- To reduce the use of the car, in particular single car occupancy.
- Where it is necessary to use the car, encourage more efficient use.

It is the intention therefore that the travel plan will deliver the following benefits:

- Enable higher public and active travel mode share targets to be achieved.
- Contribute to greenhouse gas emission reductions and carbon footprint minimisation.

- Contribute to healthy living for all.
- Contribute to social equity and reduction in social exclusion.
- Improve knowledge and contribute to learning.

10.3. Site Specific Measures

The location of the site, in terms of its proximity to a wide range of sustainable transport including the frequent bus services along Elizabeth Street and train services at the nearby Liverpool and Warwick Farm Stations, is a key consideration for development of the LHAP. A GTP will put in place measures to raise awareness and further influence the travel patterns of people travelling to/ from the site with a view to encouraging modal shift away from cars.

The following potential measures and initiatives could be implemented to encourage more sustainable travel modes:

- 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 five kilometres 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.
- Promote Car-Pooling
  - Provide prioritised carpool parking spaces on-site, including consideration for incentives such as prices, location and proximity to services.
  - Limiting on-site parking allocation to staff.
  - Encouraging staff that drive to work and park on surrounding roads to carpool through creation of a carpooling club or registry/ forum.
- Public Transport
  - Provide a Travel Access Guide (TAG) which would be provided to all staff and publicly available to all visitors. The document would be based on facilities available at the site and include detail on the surrounding public transport services and active transport initiatives. The TAG would be updated as the surrounding transport environment changes.
  - Providing public transport information boards/ apps to inform staff and visitors of alternative transport options (the format of such information boards would be based upon the TAG).

10.3.1. Travel Access Guide

A TAG provides information to staff and visitors on how to travel to the site using sustainable transport modes such as walking and public transport. The information is presented visually in the format of a map (or app) showing the site location and nearby transport modes highlighting available pedestrian and cycle routes. The information is usually presented as a brochure (or app) to be included in a welcome pack or on the back of company stationery and business cards.

10.3.2. Information and Communication

Several opportunities exist to provide staff and visitors with information about nearby transport options. Connecting staff and visitors with information would help to facilitate journey planning and increase their awareness of convenient and inexpensive transport options which support change in travel behaviour.

These include:

- Transport NSW provides bus, train and ferry routes, timetables and journey planning through their Transport Info website: http://www.transportnsw.info.
- Council provides a number of services and a range of information and events to encourage people of all levels of experience to travel by bicycle: https://bikeliverpool.org.au/our-rides/.

In addition, connecting staff and visitors via social media may provide a platform to informally pilot new programs or create travel-buddy networks and communication.

10.3.3. Monitoring of the GTP

There is no standard methodology for monitoring the GTP, but it is suggested that it be monitored to ensure that it is achieving the desired benefits and modify it if required. It will not be possible at this stage to state what additional modifications might be made as this will be dependent upon the particular circumstances prevailing at that time.

The GTP should be monitored on a regular basis, e.g. yearly, by carrying out travel surveys. Travel surveys will allow the most effective initiatives of the GTP to be identified, and conversely less effective initiatives can be modified or replaced to ensure the best outcomes are achieved. It will clearly be important to understand people's reasons for travelling the way they do; any barriers to changing their behaviour, and their propensity to change.

To ensure the successful implementation of the GTP, a Travel Plan Coordinator (TPC) should be appointed to ensure the successful implementation of the GTP. This could be the building manager or a member of the body corporate.

10.4. Summary

The proposed development would be able to develop and utilise a travel plan to actively promote increased use of sustainable transport modes. Although it is difficult to predict what measures might be achievable, the above measures provide a framework for the site and implementation of a future travel plan.

11. OVERVIEW CONSTRUCTION TRAFFIC MANAGEMENT PLAN

11

11.1. Overview

This overview of construction traffic impacts associated with construction activity aims to ensure the safety of all workers and road users in the vicinity of the construction site. The primary objectives of the Construction Traffic Management Plan (CTMP) outline below includes the following:

- To identify the need for adequate and compliant traffic management requirements within the vicinity of the LHAP.
- To ensure continuous, safe and efficient movement of traffic for both the general public and construction workers.
- Establishment of a safe pedestrian environment in the vicinity of the site.
- To inform the Contractor and set the ground rules for managing the construction traffic associated with the construction site.

11.2. Key Objectives

The overall principles of traffic management during the construction activity include:

- Provide an appropriate and convenient environment for pedestrians.
- Minimise the impact on pedestrian movements.
- Maintain appropriate capacity for pedestrians at all times on footpaths around the site.
- Maintain appropriate public transport access.
- Maintain current levels of parking within the precinct.
- Maintain permanent access to/ from the hospital accesses for emergency services.
- Restrict construction vehicle movements to designated routes to/ from the site.
- Manage and control construction vehicle activity in the vicinity of the site.
- Minimise impacts to general traffic in the vicinity of the site.

11.3. Description of Construction Activities

Construction of Main Works component of the redevelopment is expected to occur between January 2021 and February 2026. It is noted that construction of the new MSCP (separate SSDA) is expected to occur concurrently and REF approvals, with all works being completed over six years. The key work packages and dates are summarised are shown in Table 11.1.

Table 11.1:Construction stages of the LHAP redevelopment

Stage	Description	Start Date	End Date	Duration
Multi-Storey Car Park (MSCP, separate planning pathway)	• New multi-storey car park and external at-grade parking comprising 1,097 spaces	Sep 2020	Dec 2021	15 months
Main Works, Stage 1	• Upgrade of select main hospital buildings • Temporary re-allocation of services to be affected by Main Works Stage 2	Jan 2021	Jun 2023	29 months
Main Works, Stage 2	• Upgrade of select main hospital buildings	Jun 2023	Feb 2026	32 months

11.4. Work Hours

It is anticipated that work associated with the development will generally be carried out between the following hours of construction:

- Monday to Friday 7:00am and 6:00pm
- Saturday 8:00am and 3:00pm
- Sunday/ public holiday no work.

In addition to regular work hours, there will be occasions where specific out-of-hours works are required. The contractor will be responsible for instructing and controlling all subcontractors regarding the hours of work. Any work outside the approved construction hours would be subject to specific prior approval from Council.

11.5. Construction Worker Parking and Traffic

The number of construction workers for each stage is currently unknown, however it is expected that the peak number of workers on site would occur during the construction overlap of the multi-storey car park and Main Works Stage 1.

Liverpool Hospital is highly constrained with limited space to provide on-site parking for all construction workers and construction worker vehicles will not be permitted to park on local streets. Health Infrastructure is exploring options to enable workers to park in a location that is accessible to the works site. This includes various parking stations such as Remembrance Avenue car park, Warwick Farm Commuter car park, Collimore Park garage, Bathurst St garage, Liverpool Westfield car park, Warren Service Way car park and Liverpool Plaza car park. A Construction Worker Transport Parking Management Plan will be developed with partners during design development that will outline worker parking arrangements during construction.

Given the hospital's proximity to high frequency public transport services with a range of origins/ destinations, workers would be encouraged to use public transport to access the site where practical. During site induction, workers should be informed of the existing bus and train network servicing the site. Appropriate arrangements should be made for any equipment/ tool storage and drop-off requirements.

Any construction worker arrivals and departures by vehicle would typically be outside of road network peak hours and as such is unlikely to impact the surrounding road network. The Principal Contractor would be required to outline a schedule of worker start and finish times and demonstrate that this does not have any significant impact on local traffic activity as well as hospital staff arrivals and departures. It is also expected that the Principal Contractor would also be required to implement measures to reduce worker car travel, such as shuttle buses from key transport nodes or designated remote pick-up points.

11.6. Construction Traffic Volumes

The site will have various types of construction vehicles accessing the site. The largest construction vehicles regularly accessing the hospital will include 12.5-metre heavy rigid vehicles and 19-metre articulated vehicles. It is likely that a limited number of larger special-purpose vehicles (e.g. floats for plant and equipment) will be required, however these would be subject to a separate oversize and over-mass application process, with analysis of the specific vehicle access and manoeuvring requirements.

It is expected that peak vehicle activity would occur between January 2021 and December 2021 during construction of both the multi-storey car park and Main Works Stage 1 with up to 100 vehicles per day or around 10 vehicles per hour between the two work areas. That said, the location and separation of these work areas across the hospital will allow some distribution of construction traffic between surrounding roads near the hospital, with vehicles associated with the multi-storey car park approaching via Burnside Drive and exiting via either Burnside Drive or Forbes Street while Main Works Stage 1 traffic will approach via Goulburn Street (north) and existing via Goulburn Street (south). As such, the construction program and strategy should ensure construction traffic impact on the operation of the surrounding road network is minimised as much as possible.

11.7. Site Access

Construction access will vary depending on the stage of construction, considering the various work areas.

Main Works Stage 1

During Stage 1 of the Main Works, two site accesses will be provided on Goulburn Street, with one for entry and the other for exit. A-Class hoarding will be used to provide separation from the construction site, with B-Class hoarding provided above the footpath on Elizabeth Street. The existing ramps to CP1 from Elizabeth Street and Goulburn Street will be closed at the start of Stage 1 of the Main Works, with visitors seeking to access CP1 required to enter and exit via CP3. Given the significant on-road travel distance between the hospital main entrance and the CP3 access, it is recommended that any pick-up/ drop-off activity not associated with ED is relocated to the eastern side of the hospital. A work zone will be located on Goulburn Street.

Main Works Stage 2

During Stage 2 of the Main Works, the CP2 multi-storey car park will be closed. During demolition and early works, two construction vehicle accesses will be provided from Campbell Street at the same location as existing accesses to the multi-storey car park and pathology pick-up and drop-off area. The oncology bunkers will remain operational during Stage 2 of the Main Works, with pedestrian access provided via the existing footpath on the southern side of the building. A-Class hoarding will be installed around the perimeter of the site, as well as B-Class hoarding above the footpaths on Campbell Street and Elizabeth Street to maintain pedestrian movement around the site. During construction of the ISB in Main Works Stage 2, the number of construction vehicle accesses will be reduced from two to one on Campbell Street. A work zone will be located on Goulburn Street.

11.8. On-Street Work Zones

It is anticipated that work zones will be required along the Goulburn Street frontage for the duration of the proposed works. Work zones would likely be active for the same hours as the approved work hours. Outside work zone periods, existing kerbside parking restrictions would generally be reinstated.

11.9. Construction Vehicle Routes

Generally, construction vehicles will have origins and destinations from a wide variety of locations throughout Sydney. However, all construction vehicles will be restricted to the State and Regional Road network where practicable. Broadly speaking, vehicles would approach the hospital from the Hume Highway and require use of local roads to reach the relevant access point.

The construction vehicle routes are detailed below and shown in Figure 11.1. No queuing or marshalling of construction vehicle will be permitted on public roads.

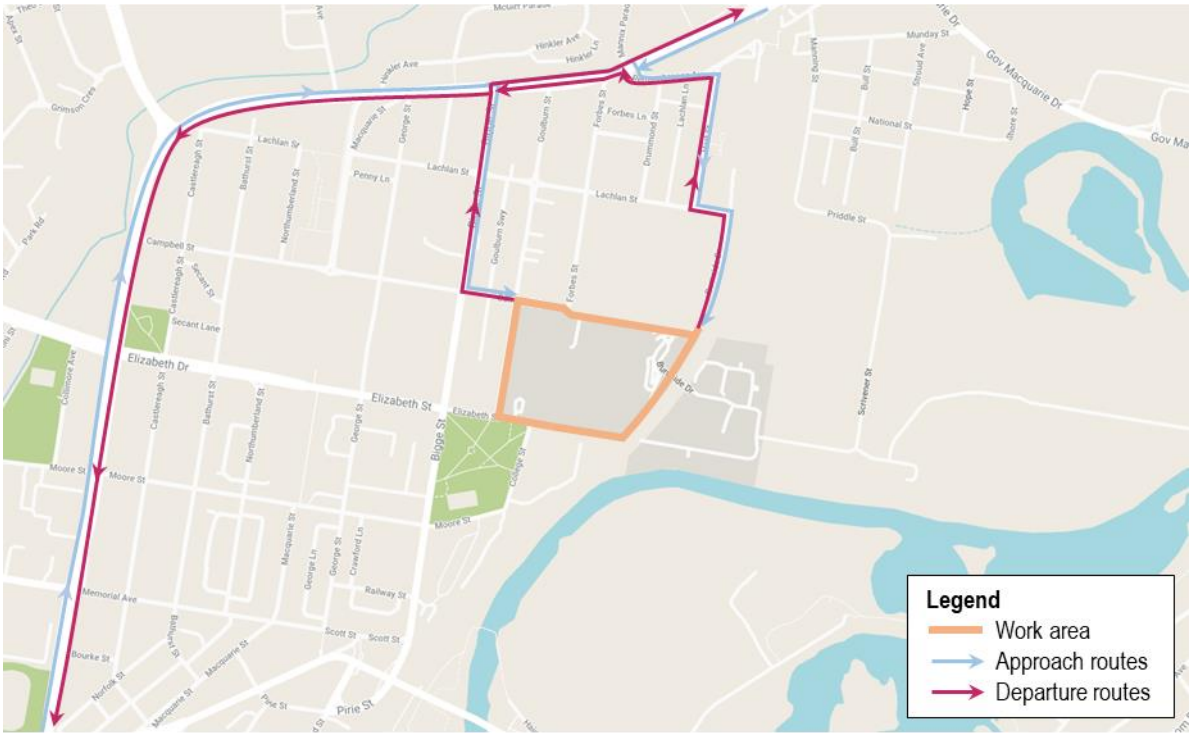
Approach Routes

- Hume Highway, Remembrance Avenue, Hart Street, Burnside Drive
- Hume Highway, Bigge Street, Campbell Street.

Departure Routes

- Burnside Drive: Burnside Drive, Hart Street, Remembrance Avenue, Hume Highway
- Campbell Street, Bigge Street, Hume Highway.

Figure 11.1: Construction vehicle approach routes



11.10. Traffic Control Plans

Detailed information for work site operations is contained in the Traffic Control at Work Sites manual (Roads and Maritime, 2018). The control of traffic at work sites must be undertaken with reference to WorkCover requirements and any other Workplace Health and Safety manuals.

The Principal Contractor will be required to provide TCPs for the proposed works which will generally consider the following:

- Construction vehicle activity, including the loading/ unloading of trucks to be conducted within the work site.
- Pedestrians and all passing vehicles will maintain priority.
- Clear definition of the work site boundary to be provided by erection of A and B Class hoardings around the site boundaries.
- All construction vehicle activity will be minimised during peak periods, where possible.

11.11. Pedestrian and Cyclist Management

During the construction period, pedestrian and cyclist movements throughout are to be maintained as much as feasible. Where works require the closure of an existing pedestrian route, a suitable alternative is to be provided. Class A hoarding/ fencing would be provided between pedestrian paths and any work site. Where overhead works are occurring, B-Class hoarding will be provided where pedestrian movement is being maintained. It is not expected that cyclist routes will be impacted by the proposed construction works.

11.12. Public Transport

Given the infrequent heavy vehicle movements associated with the construction works, the overall impact to existing public transport services is expected to be negligible. This includes the impact on the identified local area bus services.

11.13. Emergency Vehicles and Heavy Vehicles

During construction, the Principal Contractor will ensure that there is no disruption to emergency vehicles on public and internal Hospital roads.

The sites location, well distanced from emergency services and departments associated with Liverpool Hospital, will ensure any potential impacts on emergency access would be able to be effectively managed throughout the works.

11.14. Existing and Future Developments

It is the Principal Contractor's responsibility to liaise with Health Infrastructure and other landowners etc. should there be other potential future developments under construction at the same time. A coordinated approach to traffic management and wayfinding signage is logical in such instances.

11.15. Traffic Movements in Adjoining Areas

No adverse effects are expected from the movement of heavy vehicles through adjacent council areas.

12. CONCLUSION

12

CONCLUSION

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

1. The key transport elements of the proposal are:
    - Alterations and improvements to the existing main entrance in the south-western corner of the campus.
    - A new pick-up and drop-off loop on the northern side of the campus.
    - A new loading dock on the northern side of the campus.
    - Pedestrian amenity improvements on Campbell Street.
2. The proposed new multi-storey car park and adjacent at-grade car park (subject to a separate SSDA) include 1,097 car parking spaces, a net increase of 386 spaces across the campus, to accommodate the increase in parking demand associated with the redevelopment and clinical planning forecasts of staff and patient activity.
3. The proposed increase in car parking supply will accommodate the forecast 2025/ 26 additional car parking demand of 368 spaces, assuming the hospital achieves the targeted five per cent mode shift away from the existing car mode share.
4. The proposed accesses and parking layout are generally consistent with the dimensional requirements as set out in the Australian/New Zealand Standard for Off Street Car Parking (AS/NZS2890.1:2004 and AS/NZS2890.6:2009).
5. A minimum of 50 bicycle parking spaces will be provided, with at least 25 secure spaces to be provided for staff in the P1 basement car park and 25 spaces for visitors in the public domain.
6. The one-way basement link between the CP1 and CP3 car parks (approved via a separate planning pathway) will improve connectivity between the hospital main entrance and visitor car parks, and likely reduce Campbell Street and Goulburn Street traffic activity.
7. The proposed provision of five loading bays in the new basement loading dock is considered acceptable for assisting in meeting the current loading and servicing demand of the hospital, as well catering for a future increase in demand.
8. New main entrance arrangements from Goulburn Street are expected to function efficiently and remove some conflicting traffic movements in the vicinity of the Elizabeth Street emergency vehicle access and bus stops.
9. The site is expected to generate up to an additional 270 and 190 vehicle trips in the AM and PM peak hours respectively.
10. There is adequate capacity in the surrounding road network to cater for the additional traffic generated by the LHAP redevelopment, as well as the nearby Westfield Shopping Centre redevelopment and 26 Elizabeth Street development.
11. Campbell Street between Forbes Street and Goulburn Street is proposed to be converted to a shared zone given the existing pedestrian desire lines, the proposed activation of the hospital frontage and future expansion of the LHAP. The proposed design would significantly reduce existing traffic volumes and meets the intent of the relevant Transport for NSW requirements.
12. Additional traffic modelling indicates that the surrounding road network is expected to continue operating satisfactorily with the redistribution of traffic from Campbell Street to Lachlan Street. Minor modifications to reverse the priority at the Lachlan Street/ Forbes Street intersection (i.e. making Lachlan Street the continuous road) would mitigate the traffic impact at this location.

13. Construction planning indicates that the works can completed with only minor impacts on the surrounding transport network, assuming the nominated management measures are implemented.
14. It is recommended that ongoing green travel initiatives be implemented to reduce private vehicle travel to the hospital, building on the existing travel planning and promotion conducted by the SWSLHD.

A.INTERSECTION ANALYSIS RESULTS

A

USER REPORT FOR SITE

Project: 200401-N170560 SIDRA - Existing

Template: Movement Summary Only

Site: 1 [1 Lachlan/ Hart AM]

Site Category: -
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Burnside Drive												
5	T1	51	2.1	0.051	2.4	LOS A	0.3	1.9	0.22	0.36	0.22	38.6
6	R2	12	0.0	0.051	5.8	LOS A	0.3	1.9	0.22	0.36	0.22	38.8
6u	U	1	0.0	0.051	7.2	LOS A	0.3	1.9	0.22	0.36	0.22	39.6
Approach		63	1.7	0.051	3.1	LOS A	0.3	1.9	0.22	0.36	0.22	38.7
North: Hart Street												
7	L2	182	0.0	0.242	4.4	LOS A	1.4	9.5	0.52	0.61	0.52	36.9
9	R2	46	2.3	0.242	7.6	LOS A	1.4	9.5	0.52	0.61	0.52	37.4
9u	U	12	0.0	0.242	8.9	LOS A	1.4	9.5	0.52	0.61	0.52	38.4
Approach		240	0.4	0.242	5.2	LOS A	1.4	9.5	0.52	0.61	0.52	37.0
West: Lachlan Street												
10	L2	65	0.0	0.267	2.4	LOS A	1.7	11.6	0.13	0.30	0.13	37.8
11	T1	329	0.3	0.267	2.2	LOS A	1.7	11.6	0.13	0.30	0.13	39.2
12u	U	9	0.0	0.267	6.9	LOS A	1.7	11.6	0.13	0.30	0.13	40.3
Approach		404	0.3	0.267	2.3	LOS A	1.7	11.6	0.13	0.30	0.13	39.1
All Vehicles		707	0.4	0.267	3.4	LOS A	1.7	11.6	0.27	0.41	0.27	38.3

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

Site: 1 [1 Lachlan/ Hart PM]

Site Category: -
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Burnside Drive												
5	T1	304	0.0	0.317	4.1	LOS A	2.0	13.7	0.32	0.49	0.32	42.3
6	R2	101	0.0	0.317	7.6	LOS A	2.0	13.7	0.32	0.49	0.32	45.0
6u	U	1	0.0	0.317	9.2	LOS A	2.0	13.7	0.32	0.49	0.32	46.4
Approach		406	0.0	0.317	5.0	LOS A	2.0	13.7	0.32	0.49	0.32	43.0
North: Hart Street												
7	L2	22	0.0	0.094	3.6	LOS A	0.5	3.4	0.16	0.58	0.16	43.1
9	R2	95	1.1	0.094	7.2	LOS A	0.5	3.4	0.16	0.58	0.16	40.3
9u	U	9	0.0	0.094	8.8	LOS A	0.5	3.4	0.16	0.58	0.16	44.1
Approach		126	0.8	0.094	6.7	LOS A	0.5	3.4	0.16	0.58	0.16	41.1
West: Lachlan Street												
10	L2	43	0.0	0.071	2.8	LOS A	0.4	2.5	0.28	0.39	0.28	40.4
11	T1	35	0.0	0.071	2.6	LOS A	0.4	2.5	0.28	0.39	0.28	42.8
12u	U	6	0.0	0.071	7.4	LOS A	0.4	2.5	0.28	0.39	0.28	39.5
Approach		84	0.0	0.071	3.1	LOS A	0.4	2.5	0.28	0.39	0.28	41.4
All Vehicles		617	0.2	0.317	5.1	LOS A	2.0	13.7	0.28	0.50	0.28	42.4

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

Site: 2 [2 Forbes/ Campbell/ Hospital AM]

Site Category: -
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Hospital Access												
1	L2	18	0.0	0.024	0.5	LOS A	0.1	0.6	0.29	0.16	0.29	12.3
2	T1	6	16.7	0.024	4.5	LOS A	0.1	0.6	0.29	0.16	0.29	19.9
Approach		24	4.3	0.024	1.5	LOS A	0.1	0.6	0.29	0.16	0.29	14.8
North: RoadName												
8	T1	69	0.0	0.153	6.5	LOS A	0.9	6.8	0.36	0.51	0.36	20.1
9	R2	161	10.5	0.153	4.5	LOS A	0.9	6.8	0.36	0.51	0.36	36.1
Approach		231	7.3	0.153	5.1	NA	0.9	6.8	0.36	0.51	0.36	28.4
West: RoadName												
10	L2	313	0.0	0.301	3.6	LOS A	1.3	9.0	0.12	0.55	0.12	37.0
12	R2	225	0.0	0.301	6.0	LOS A	1.3	9.0	0.12	0.55	0.12	12.5
Approach		538	0.0	0.301	4.6	NA	1.3	9.0	0.12	0.55	0.12	23.9
All Vehicles		793	2.3	0.301	4.7	NA	1.3	9.0	0.19	0.53	0.19	24.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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.

Site: 2 [2 Forbes/ Campbell/ Hospital PM]

Site Category: -
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Hospital Access												
1	L2	154	0.0	0.144	0.6	LOS A	0.6	4.2	0.29	0.17	0.29	12.4
2	T1	36	0.0	0.144	1.4	LOS A	0.6	4.2	0.29	0.17	0.29	20.1
Approach		189	0.0	0.144	0.7	LOS A	0.6	4.2	0.29	0.17	0.29	14.3
North: RoadName												
8	T1	13	0.0	0.103	5.7	LOS A	0.6	4.2	0.10	0.49	0.10	20.4
9	R2	169	0.0	0.103	3.6	LOS A	0.6	4.2	0.10	0.49	0.10	36.9
Approach		182	0.0	0.103	3.8	NA	0.6	4.2	0.10	0.49	0.10	34.6
West: RoadName												
10	L2	106	1.0	0.074	3.4	LOS A	0.1	0.9	0.02	0.52	0.02	37.5
12	R2	28	0.0	0.074	5.8	LOS A	0.1	0.9	0.02	0.52	0.02	12.6
Approach		135	0.8	0.074	3.9	NA	0.1	0.9	0.02	0.52	0.02	30.1
All Vehicles		506	0.2	0.144	2.7	NA	0.6	4.2	0.15	0.38	0.15	23.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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.

Site: 3 [3 Elizabeth/ Hospital AM]

Site Category: -
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Elizabeth Street												
5	T1	251	4.2	0.163	0.2	LOS A	0.4	2.6	0.12	0.13	0.12	38.9
6	R2	44	0.0	0.163	6.7	LOS A	0.4	2.6	0.12	0.13	0.12	24.5
Approach		295	3.6	0.163	1.2	NA	0.4	2.6	0.12	0.13	0.12	36.0
North: Hospital access												
7	L2	19	0.0	0.045	0.6	LOS A	0.2	1.2	0.32	0.21	0.32	23.2
9	R2	26	0.0	0.045	2.0	LOS A	0.2	1.2	0.32	0.21	0.32	16.3
Approach		45	0.0	0.045	1.4	LOS A	0.2	1.2	0.32	0.21	0.32	19.7
West: Elizabeth Street												
10	L2	54	0.0	0.134	7.2	LOS A	0.0	0.0	0.00	0.24	0.00	35.6
11	T1	182	19.1	0.134	0.0	LOS A	0.0	0.0	0.00	0.24	0.00	38.5
Approach		236	14.7	0.134	1.6	NA	0.0	0.0	0.00	0.24	0.00	38.1
All Vehicles		576	7.9	0.163	1.4	NA	0.4	2.6	0.09	0.18	0.09	35.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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.

Site: 3 [3 Elizabeth/ Hospital PM]

Site Category: -
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Elizabeth Street												
5	T1	189	10.0	0.134	0.4	LOS A	0.3	2.5	0.16	0.15	0.16	38.6
6	R2	40	0.0	0.134	7.1	LOS A	0.3	2.5	0.16	0.15	0.16	24.4
Approach		229	8.3	0.134	1.6	NA	0.3	2.5	0.16	0.15	0.16	35.3
North: Hospital access												
7	L2	15	0.0	0.073	1.0	LOS A	0.3	1.8	0.42	0.32	0.42	23.1
9	R2	49	0.0	0.073	2.3	LOS A	0.3	1.8	0.42	0.32	0.42	16.1
Approach		64	0.0	0.073	2.0	LOS A	0.3	1.8	0.42	0.32	0.42	18.2
West: Elizabeth Street												
10	L2	57	0.0	0.187	7.2	LOS A	0.0	0.0	0.00	0.18	0.00	36.5
11	T1	285	10.3	0.187	0.0	LOS A	0.0	0.0	0.00	0.18	0.00	38.9
Approach		342	8.6	0.187	1.2	NA	0.0	0.0	0.00	0.18	0.00	38.7
All Vehicles		636	7.6	0.187	1.4	NA	0.3	2.5	0.10	0.18	0.10	34.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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.

Site: 5 [5 Burnside roundabout AM]

Site Category: -
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Burnside Drive												
1b	L3	1	0.0	0.027	4.4	LOS A	0.1	0.9	0.24	0.58	0.24	37.9
1a	L1	1	0.0	0.027	3.7	LOS A	0.1	0.9	0.24	0.58	0.24	41.6
3	R2	28	3.7	0.027	7.4	LOS A	0.1	0.9	0.24	0.58	0.24	43.2
3u	U	1	0.0	0.027	8.9	LOS A	0.1	0.9	0.24	0.58	0.24	42.8
Approach		32	3.3	0.027	7.2	LOS A	0.1	0.9	0.24	0.58	0.24	43.0
East: Burnside Drive												
4	L2	419	0.3	0.315	3.6	LOS A	2.0	13.7	0.07	0.46	0.07	45.3
4a	L1	80	0.0	0.315	3.3	LOS A	2.0	13.7	0.07	0.46	0.07	45.2
6a	R1	13	0.0	0.315	6.2	LOS A	2.0	13.7	0.07	0.46	0.07	45.8
6u	U	1	0.0	0.315	8.5	LOS A	2.0	13.7	0.07	0.46	0.07	47.7
Approach		513	0.2	0.315	3.6	LOS A	2.0	13.7	0.07	0.46	0.07	45.3
West: P2 exit												
10b	L3	1	0.0	0.004	0.4	LOS A	0.0	0.1	0.21	0.07	0.21	23.4
11	T1	1	0.0	0.004	0.4	LOS A	0.0	0.1	0.21	0.07	0.21	28.6
12	R2	2	0.0	0.004	0.4	LOS A	0.0	0.1	0.21	0.07	0.21	25.0
12b	R3	1	0.0	0.004	0.4	LOS A	0.0	0.1	0.21	0.07	0.21	12.9
Approach		5	0.0	0.004	0.4	LOS A	0.0	0.1	0.21	0.07	0.21	23.1
SouthWest: P3 Entry												
30	L2	1	0.0	0.028	3.8	LOS A	0.1	0.9	0.16	0.57	0.16	38.4
32a	R1	29	0.0	0.028	6.3	LOS A	0.1	0.9	0.16	0.57	0.16	41.8
32b	R3	3	0.0	0.028	7.9	LOS A	0.1	0.9	0.16	0.57	0.16	40.8
32u	U	2	0.0	0.028	8.7	LOS A	0.1	0.9	0.16	0.57	0.16	22.4
Approach		36	0.0	0.028	6.5	LOS A	0.1	0.9	0.16	0.57	0.16	40.6
All Vehicles		585	0.4	0.315	4.0	LOS A	2.0	13.7	0.09	0.47	0.09	44.7

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

Site: 5 [5 Burnside roundabout PM]

Site Category: -
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Burnside Drive												
1b	L3	2	0.0	0.239	4.1	LOS A	1.3	9.4	0.13	0.60	0.13	38.2
1a	L1	1	0.0	0.239	3.4	LOS A	1.3	9.4	0.13	0.60	0.13	41.8
3	R2	352	0.0	0.239	7.0	LOS A	1.3	9.4	0.13	0.60	0.13	43.5
3u	U	1	0.0	0.239	8.6	LOS A	1.3	9.4	0.13	0.60	0.13	43.1
Approach		356	0.0	0.239	7.0	LOS A	1.3	9.4	0.13	0.60	0.13	43.4
East: Burnside Drive												
4	L2	31	0.0	0.039	3.6	LOS A	0.2	1.3	0.05	0.45	0.05	45.3
4a	L1	23	0.0	0.039	3.3	LOS A	0.2	1.3	0.05	0.45	0.05	45.3
6a	R1	2	0.0	0.039	6.1	LOS A	0.2	1.3	0.05	0.45	0.05	45.9
6u	U	1	0.0	0.039	8.5	LOS A	0.2	1.3	0.05	0.45	0.05	47.7
Approach		57	0.0	0.039	3.6	LOS A	0.2	1.3	0.05	0.45	0.05	45.4
West: P2 exit												
10b	L3	1	0.0	0.007	2.0	LOS A	0.0	0.2	0.49	0.27	0.49	22.6
11	T1	1	0.0	0.007	2.0	LOS A	0.0	0.2	0.49	0.27	0.49	27.7
12	R2	3	0.0	0.007	2.0	LOS A	0.0	0.2	0.49	0.27	0.49	24.2
12b	R3	1	0.0	0.007	2.0	LOS A	0.0	0.2	0.49	0.27	0.49	12.5
Approach		6	0.0	0.007	2.0	LOS A	0.0	0.2	0.49	0.27	0.49	22.6
SouthWest: P3 Entry												
30	L2	1	0.0	0.059	5.4	LOS A	0.3	2.0	0.47	0.64	0.47	37.2
32a	R1	55	0.0	0.059	7.9	LOS A	0.3	2.0	0.47	0.64	0.47	40.7
32b	R3	1	0.0	0.059	9.5	LOS A	0.3	2.0	0.47	0.64	0.47	39.5
32u	U	1	0.0	0.059	10.3	LOS A	0.3	2.0	0.47	0.64	0.47	21.7
Approach		58	0.0	0.059	8.0	LOS A	0.3	2.0	0.47	0.64	0.47	40.4
All Vehicles		477	0.0	0.239	6.7	LOS A	1.3	9.4	0.17	0.58	0.17	43.0

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

Site: 6 [6 Bigge/ Campbell AM]

Site Category: -
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bigge Street												
1	L2	211	5.5	0.171	5.3	LOS A	1.0	7.6	0.10	0.49	0.10	35.3
2	T1	472	4.7	0.660	3.0	LOS A	7.2	52.1	0.22	0.31	0.22	36.6
3	R2	202	0.5	0.660	6.4	LOS A	7.2	52.1	0.22	0.31	0.22	35.8
Approach		884	3.9	0.660	4.3	LOS A	7.2	52.1	0.19	0.35	0.19	36.2
East: Campbell Street												
4	L2	35	6.1	0.098	42.3	LOS C	1.5	11.3	0.85	0.70	0.85	17.3
5	T1	109	4.8	0.336	41.9	LOS C	5.4	39.2	0.91	0.73	0.91	14.9
6	R2	5	0.0	0.336	45.4	LOS D	5.4	39.2	0.91	0.73	0.91	17.4
Approach		149	4.9	0.336	42.1	LOS C	5.4	39.2	0.89	0.72	0.89	15.6
North: Bigge Street												
7	L2	45	2.3	0.059	5.1	LOS A	0.3	2.4	0.09	0.32	0.09	36.1
8	T1	309	4.8	0.296	2.0	LOS A	1.8	13.2	0.11	0.17	0.11	37.8
9	R2	36	5.9	0.296	5.5	LOS A	1.8	13.2	0.12	0.15	0.12	37.8
Approach		391	4.6	0.296	2.7	LOS A	1.8	13.2	0.11	0.18	0.11	37.7
West: Campbell Street												
10	L2	39	2.7	0.142	42.7	LOS D	2.3	16.7	0.86	0.70	0.86	19.0
11	T1	167	0.6	0.660	45.4	LOS D	9.6	67.6	0.96	0.81	0.99	14.0
12	R2	36	0.0	0.660	49.3	LOS D	9.6	67.6	0.97	0.82	1.00	17.9
Approach		242	0.9	0.660	45.5	LOS D	9.6	67.6	0.94	0.80	0.97	15.5
All Vehicles		1666	3.7	0.660	13.3	LOS A	9.6	67.6	0.34	0.41	0.35	29.6

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

Site: 6 [6 Bigge/ Campbell PM]

Site Category: -
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bigge Street												
1	L2	102	14.4	0.093	6.0	LOS A	0.7	5.2	0.12	0.48	0.12	34.9
2	T1	444	1.9	0.466	3.3	LOS A	4.6	32.5	0.17	0.20	0.17	36.9
3	R2	54	2.0	0.466	6.7	LOS A	4.6	32.5	0.17	0.20	0.17	36.2
Approach		600	4.0	0.466	4.1	LOS A	4.6	32.5	0.16	0.25	0.16	36.6
East: Campbell Street												
4	L2	49	0.0	0.118	43.2	LOS D	2.3	16.1	0.83	0.71	0.83	17.1
5	T1	126	1.7	0.355	42.1	LOS C	6.6	46.7	0.88	0.72	0.88	14.8
6	R2	7	0.0	0.355	45.5	LOS D	6.6	46.7	0.88	0.72	0.88	17.3
Approach		183	1.1	0.355	42.5	LOS D	6.6	46.7	0.87	0.71	0.87	15.6
North: Bigge Street												
7	L2	17	0.0	0.062	5.9	LOS A	0.5	3.4	0.11	0.18	0.11	36.8
8	T1	313	0.7	0.310	3.2	LOS A	2.8	19.4	0.15	0.21	0.15	36.8
9	R2	63	0.0	0.310	6.8	LOS A	2.8	19.4	0.16	0.22	0.16	36.3
Approach		393	0.5	0.310	3.9	LOS A	2.8	19.4	0.15	0.21	0.15	36.7
West: Campbell Street												
10	L2	40	5.3	0.099	43.0	LOS D	1.9	13.6	0.83	0.70	0.83	18.7
11	T1	54	5.9	0.452	47.1	LOS D	6.3	45.3	0.93	0.77	0.93	13.5
12	R2	65	1.6	0.452	50.5	LOS D	6.3	45.3	0.93	0.77	0.93	17.4
Approach		159	4.0	0.452	47.5	LOS D	6.3	45.3	0.90	0.75	0.90	16.5
All Vehicles		1335	2.6	0.466	14.5	LOS A	6.6	46.7	0.35	0.36	0.35	29.3

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

Site: 7 [7 Bigge/ Elizabeth AM]

Site Category: -
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bigge Street												
1	L2	183	2.9	0.555	16.1	LOS B	14.0	100.8	0.51	0.53	0.51	27.9
2	T1	727	3.6	0.555	13.4	LOS A	14.0	100.8	0.52	0.53	0.52	29.1
3	R2	97	1.1	0.555	17.6	LOS B	12.0	86.4	0.54	0.53	0.54	25.5
Approach		1007	3.2	0.555	14.3	LOS A	14.0	100.8	0.52	0.53	0.52	28.7
East: Elizabeth Street												
4	L2	56	3.8	0.150	27.7	LOS B	2.9	21.4	0.60	0.58	0.60	19.9
5	T1	100	6.3	0.150	27.6	LOS B	2.9	21.4	0.64	0.57	0.64	18.5
6	R2	15	7.1	0.150	33.4	LOS C	2.5	18.5	0.67	0.56	0.67	20.6
Approach		171	5.6	0.150	28.1	LOS B	2.9	21.4	0.63	0.57	0.63	19.2
North: Bigge Street												
7	L2	28	7.4	0.167	13.1	LOS A	2.9	20.8	0.34	0.34	0.34	30.5
8	T1	360	3.5	0.275	11.3	LOS A	4.9	35.5	0.39	0.36	0.39	30.7
9	R2	14	7.7	0.275	15.8	LOS B	4.9	35.5	0.42	0.38	0.42	30.1
Approach		402	3.9	0.275	11.6	LOS A	4.9	35.5	0.39	0.36	0.39	30.7
West: Elizabeth Street												
10	L2	161	3.3	0.250	28.7	LOS C	5.1	37.0	0.63	0.69	0.63	22.7
11	T1	174	11.5	0.551	32.7	LOS C	10.9	81.7	0.80	0.72	0.80	16.9
12	R2	95	1.1	0.551	36.1	LOS C	10.9	81.7	0.80	0.72	0.80	19.2
Approach		429	6.1	0.551	32.0	LOS C	10.9	81.7	0.74	0.71	0.74	19.7
All Vehicles		2009	4.2	0.555	18.7	LOS B	14.0	100.8	0.55	0.54	0.55	25.9

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

Site: 7 [7 Bigge/ Elizabeth PM]

Site Category: -
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bigge Street												
1	L2	312	3.4	0.274	8.4	LOS A	3.5	25.1	0.23	0.55	0.23	31.8
2	T1	523	2.6	0.506	6.0	LOS A	8.5	60.6	0.31	0.30	0.31	34.4
3	R2	41	0.0	0.506	9.4	LOS A	8.5	60.6	0.31	0.30	0.31	32.5
Approach		876	2.8	0.506	7.0	LOS A	8.5	60.6	0.28	0.39	0.28	33.5
East: Elizabeth Street												
4	L2	97	0.0	0.357	38.8	LOS C	6.6	46.6	0.78	0.70	0.78	16.4
5	T1	173	3.0	0.357	37.6	LOS C	6.6	46.6	0.80	0.69	0.80	15.7
6	R2	26	44.0	0.357	42.7	LOS D	5.5	42.4	0.82	0.68	0.82	18.0
Approach		296	5.7	0.357	38.4	LOS C	6.6	46.6	0.80	0.69	0.80	16.1
North: Bigge Street												
7	L2	18	5.9	0.160	8.0	LOS A	1.9	13.5	0.20	0.20	0.20	35.1
8	T1	384	0.5	0.264	5.3	LOS A	3.1	21.5	0.23	0.24	0.23	34.9
9	R2	32	0.0	0.264	9.3	LOS A	3.1	21.5	0.26	0.27	0.26	34.5
Approach		434	0.7	0.264	5.7	LOS A	3.1	21.5	0.23	0.24	0.23	34.8
West: Elizabeth Street												
10	L2	39	0.0	0.104	36.3	LOS C	1.8	13.0	0.70	0.64	0.70	20.6
11	T1	144	19.0	0.518	40.3	LOS C	8.2	64.5	0.86	0.73	0.86	15.0
12	R2	48	0.0	0.518	44.3	LOS D	8.2	64.5	0.87	0.74	0.87	17.1
Approach		232	11.8	0.518	40.5	LOS C	8.2	64.5	0.84	0.72	0.84	16.5
All Vehicles		1837	3.9	0.518	16.0	LOS B	8.5	64.5	0.42	0.44	0.42	27.1

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

Site: 8 [8 Campbell/ Goulburn AM]

Site Category: -
Signals - Fixed Time Isolated Cycle Time = 60 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Goulburn Street												
1	L2	39	2.7	0.099	13.7	LOS A	1.4	9.7	0.60	0.56	0.60	29.4
2	T1	98	1.1	0.458	11.6	LOS A	6.0	41.9	0.68	0.66	0.68	30.5
3	R2	231	0.0	0.458	16.1	LOS B	6.0	41.9	0.74	0.73	0.74	27.2
Approach		367	0.6	0.458	14.6	LOS B	6.0	41.9	0.71	0.69	0.71	28.4
East: Campbell Street												
4	L2	88	13.1	0.184	21.4	LOS B	2.0	15.6	0.79	0.72	0.79	24.1
5	T1	94	4.5	0.209	15.8	LOS B	2.4	17.8	0.75	0.62	0.75	21.7
6	R2	20	5.3	0.209	19.2	LOS B	2.4	17.8	0.75	0.62	0.75	26.6
Approach		202	8.3	0.209	18.6	LOS B	2.4	17.8	0.77	0.66	0.77	23.5
North: Goulburn Street												
7	L2	34	0.0	0.042	13.9	LOS A	0.6	4.0	0.60	0.63	0.60	28.1
8	T1	85	4.9	0.161	10.6	LOS A	2.1	15.0	0.62	0.55	0.62	31.8
9	R2	32	6.7	0.161	14.1	LOS A	2.1	15.0	0.62	0.55	0.62	29.6
Approach		151	4.2	0.161	12.1	LOS A	2.1	15.0	0.62	0.57	0.62	30.6
West: Campbell Street												
10	L2	43	2.4	0.102	19.2	LOS B	1.2	8.7	0.74	0.65	0.74	25.6
11	T1	275	0.0	0.472	16.5	LOS B	6.6	46.0	0.81	0.70	0.81	21.4
12	R2	24	4.3	0.472	20.0	LOS B	6.6	46.0	0.82	0.70	0.82	26.4
Approach		342	0.6	0.472	17.1	LOS B	6.6	46.0	0.80	0.69	0.80	22.5
All Vehicles		1062	2.6	0.472	15.8	LOS B	6.6	46.0	0.74	0.67	0.74	26.2

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

Site: 8 [8 Campbell/ Goulburn PM]

Site Category: -
Signals - Fixed Time Isolated Cycle Time = 60 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Goulburn Street												
1	L2	21	0.0	0.050	16.7	LOS B	0.6	4.5	0.67	0.59	0.67	27.2
2	T1	80	3.9	0.233	14.3	LOS A	2.7	19.0	0.72	0.64	0.72	29.4
3	R2	61	0.0	0.233	17.9	LOS B	2.7	19.0	0.73	0.65	0.73	26.8
Approach		162	1.9	0.233	16.0	LOS B	2.7	19.0	0.72	0.64	0.72	28.3
East: Campbell Street												
4	L2	186	0.0	0.241	15.8	LOS B	3.6	25.0	0.69	0.71	0.69	27.0
5	T1	135	0.0	0.202	11.5	LOS A	2.9	20.3	0.66	0.56	0.66	24.8
6	R2	23	0.0	0.202	14.9	LOS B	2.9	20.3	0.66	0.56	0.66	29.3
Approach		344	0.0	0.241	14.0	LOS A	3.6	25.0	0.67	0.64	0.67	26.5
North: Goulburn Street												
7	L2	13	0.0	0.040	16.6	LOS B	0.5	3.5	0.67	0.56	0.67	27.6
8	T1	98	0.0	0.184	14.0	LOS A	2.3	16.3	0.71	0.60	0.71	30.0
9	R2	29	7.1	0.184	17.6	LOS B	2.3	16.3	0.71	0.61	0.71	27.4
Approach		140	1.5	0.184	15.0	LOS B	2.3	16.3	0.71	0.60	0.71	29.3
West: Campbell Street												
10	L2	25	8.3	0.036	15.2	LOS B	0.5	3.4	0.63	0.63	0.63	27.3
11	T1	64	1.6	0.138	11.8	LOS A	1.6	11.6	0.65	0.56	0.65	24.1
12	R2	25	0.0	0.138	15.2	LOS B	1.6	11.6	0.65	0.56	0.65	28.8
Approach		115	2.8	0.138	13.3	LOS A	1.6	11.6	0.65	0.58	0.65	26.2
All Vehicles		761	1.1	0.241	14.5	LOS B	3.6	25.0	0.68	0.62	0.68	27.5

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

Site: 9 [9 Elizabeth/ Goulburn AM]

Site Category: -
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Elizabeth Street												
5	T1	75	8.5	0.189	1.9	LOS A	1.1	8.0	0.43	0.44	0.43	37.4
6	R2	202	2.1	0.189	4.8	LOS A	1.1	8.0	0.43	0.44	0.43	37.5
Approach		277	3.8	0.189	4.0	NA	1.1	8.0	0.43	0.44	0.43	37.5
North: Goulburn Street												
7	L2	116	11.8	0.202	4.3	LOS A	0.8	5.6	0.23	0.53	0.23	38.2
9	R2	96	3.3	0.202	6.0	LOS A	0.8	5.6	0.23	0.53	0.23	34.8
Approach		212	8.0	0.202	5.1	LOS A	0.8	5.6	0.23	0.53	0.23	37.1
West: Elizabeth Street												
10	L2	175	0.0	0.164	3.6	LOS A	0.0	0.0	0.00	0.29	0.00	38.7
11	T1	122	18.1	0.164	0.1	LOS A	0.0	0.0	0.00	0.29	0.00	40.0
Approach		297	7.4	0.164	2.2	NA	0.0	0.0	0.00	0.29	0.00	39.4
All Vehicles		785	6.3	0.202	3.6	NA	1.1	8.0	0.21	0.41	0.21	38.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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.

Site: 9 [9 Elizabeth/ Goulburn PM]

Site Category: -
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Elizabeth Street												
5	T1	134	12.6	0.145	1.4	LOS A	0.7	5.5	0.29	0.31	0.29	39.1
6	R2	105	2.0	0.145	4.4	LOS A	0.7	5.5	0.29	0.31	0.29	38.8
Approach		239	7.9	0.145	2.7	NA	0.7	5.5	0.29	0.31	0.29	38.9
North: Goulburn Street												
7	L2	204	1.0	0.317	4.0	LOS A	1.3	9.3	0.26	0.53	0.26	37.4
9	R2	156	0.0	0.317	5.8	LOS A	1.3	9.3	0.26	0.53	0.26	34.4
Approach		360	0.6	0.317	4.8	LOS A	1.3	9.3	0.26	0.53	0.26	36.5
West: Elizabeth Street												
10	L2	69	1.5	0.117	3.7	LOS A	0.0	0.0	0.00	0.20	0.00	40.5
11	T1	136	20.2	0.117	0.2	LOS A	0.0	0.0	0.00	0.20	0.00	41.8
Approach		205	13.8	0.117	1.4	NA	0.0	0.0	0.00	0.20	0.00	41.5
All Vehicles		804	6.2	0.317	3.3	NA	1.3	9.3	0.20	0.38	0.20	38.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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.

Site: [10 Bigge/ Moore AM]

Site Category: -
Signals - Fixed Time Isolated Cycle Time = 90 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: VV1481_14C - applied
Reference Phase: Phase A
Input Phase Sequence: A, D, E
Output Phase Sequence: A, D, E

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bigge Street												
1	L2	82	2.6	0.683	25.4	LOS B	20.3	144.1	0.85	0.77	0.85	23.4
2	T1	1102	1.6	0.683	20.8	LOS B	20.8	147.9	0.85	0.76	0.85	20.0
3	R2	229	2.8	0.325	11.7	LOS A	3.6	25.7	0.60	0.72	0.60	34.7
Approach		1414	1.9	0.683	19.6	LOS B	20.8	147.9	0.81	0.76	0.81	24.2
East: Moore Street												
4	L2	74	1.4	0.322	38.3	LOS C	4.0	32.9	0.91	0.75	0.91	24.8
5	T1	73	72.5	0.322	38.2	LOS C	4.0	32.9	0.93	0.74	0.93	23.6
6	R2	11	0.0	0.322	43.7	LOS D	2.3	24.3	0.94	0.73	0.94	21.5
Approach		157	34.2	0.322	38.6	LOS C	4.0	32.9	0.92	0.74	0.92	24.0
North: Bigge Street												
7	L2	6	0.0	0.396	20.8	LOS B	9.4	69.2	0.70	0.61	0.70	30.3
8	T1	321	5.6	0.396	17.3	LOS B	9.4	69.2	0.70	0.61	0.70	22.4
9	R2	36	0.0	0.076	13.3	LOS A	0.6	3.9	0.66	0.67	0.66	23.3
Approach		363	4.9	0.396	17.0	LOS B	9.4	69.2	0.70	0.62	0.70	22.8
West: Moore Street												
10	L2	155	2.0	0.337	30.9	LOS C	5.9	43.4	0.83	0.76	0.83	7.2
11	T1	76	51.4	0.337	35.5	LOS C	5.9	43.4	0.91	0.73	0.91	24.5
12	R2	14	0.0	0.337	40.6	LOS C	3.1	29.3	0.92	0.73	0.92	16.7
Approach		244	17.2	0.337	32.9	LOS C	5.9	43.4	0.86	0.75	0.86	13.1
All Vehicles		2178	6.4	0.683	22.0	LOS B	20.8	147.9	0.80	0.73	0.80	21.7

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

Site: [10 Bigge/ Moore PM]

Site Category: -
Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: VV1481_14C - applied
Reference Phase: Phase A
Input Phase Sequence: A, D, E
Output Phase Sequence: A, D, E

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bigge Street												
1	L2	72	1.5	0.360	19.0	LOS B	12.1	86.7	0.58	0.55	0.58	27.2
2	T1	724	2.8	0.360	14.2	LOS A	12.2	87.4	0.57	0.52	0.57	24.7
3	R2	122	9.5	0.213	11.9	LOS A	1.9	14.0	0.52	0.69	0.52	34.6
Approach		918	3.6	0.360	14.2	LOS A	12.2	87.4	0.56	0.55	0.56	27.5
East: Moore Street												
4	L2	219	0.5	0.491	43.6	LOS D	11.2	80.4	0.89	0.80	0.89	23.4
5	T1	74	71.4	0.491	53.9	LOS D	11.2	80.4	0.97	0.77	0.97	20.5
6	R2	11	0.0	0.491	58.8	LOS E	4.4	47.3	0.98	0.77	0.98	18.6
Approach		303	17.7	0.491	46.6	LOS D	11.2	80.4	0.92	0.79	0.92	22.5
North: Bigge Street												
7	L2	3	0.0	0.533	18.7	LOS B	17.9	126.1	0.62	0.56	0.62	31.3
8	T1	536	0.8	0.533	15.3	LOS B	17.9	126.1	0.62	0.56	0.62	24.0
9	R2	42	0.0	0.075	9.0	LOS A	0.6	4.2	0.44	0.62	0.44	27.4
Approach		581	0.7	0.533	14.8	LOS B	17.9	126.1	0.61	0.56	0.61	24.3
West: Moore Street												
10	L2	94	2.2	0.424	51.8	LOS D	6.4	52.9	0.94	0.78	0.94	5.8
11	T1	59	82.1	0.424	56.0	LOS D	6.4	52.9	0.97	0.76	0.97	19.9
12	R2	9	0.0	0.424	65.9	LOS E	2.5	27.2	1.00	0.76	1.00	11.7
Approach		162	31.2	0.424	54.1	LOS D	6.4	52.9	0.95	0.77	0.95	11.4
All Vehicles		1964	7.2	0.533	22.7	LOS B	17.9	126.1	0.66	0.61	0.66	22.3

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

Site: [11 Elizabeth/ College AM]

Site Category: -
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: College Street												
1	L2	204	4.6	0.121	3.4	LOS A	0.1	0.6	0.02	0.45	0.02	36.9
3	R2	14	0.0	0.121	3.6	LOS A	0.1	0.6	0.02	0.45	0.02	36.4
Approach		218	4.3	0.121	3.5	NA	0.1	0.6	0.02	0.45	0.02	36.8
East: Hospital Access												
4	L2	14	0.0	0.045	0.5	LOS A	0.2	1.2	0.35	0.23	0.35	35.7
5	T1	27	19.2	0.045	2.2	LOS A	0.2	1.2	0.35	0.23	0.35	24.5
Approach		41	12.8	0.045	1.6	LOS A	0.2	1.2	0.35	0.23	0.35	31.0
West: Elizabeth Street												
11	T1	32	10.0	0.113	3.0	LOS A	0.6	4.6	0.07	0.46	0.07	23.9
12	R2	151	22.4	0.113	3.7	LOS A	0.6	4.6	0.07	0.46	0.07	36.0
Approach		182	20.2	0.113	3.6	NA	0.6	4.6	0.07	0.46	0.07	35.2
All Vehicles		441	11.7	0.121	3.3	NA	0.6	4.6	0.07	0.43	0.07	35.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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.

Site: [11 Elizabeth/ College PM]

Site Category: -
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: College Street												
1	L2	162	9.1	0.104	3.5	LOS A	0.1	0.9	0.02	0.45	0.02	36.7
3	R2	20	0.0	0.104	3.6	LOS A	0.1	0.9	0.02	0.45	0.02	36.3
Approach		182	8.1	0.104	3.5	NA	0.1	0.9	0.02	0.45	0.02	36.7
East: Hospital Access												
4	L2	16	0.0	0.057	0.8	LOS A	0.2	1.4	0.41	0.30	0.41	35.6
5	T1	38	0.0	0.057	2.1	LOS A	0.2	1.4	0.41	0.30	0.41	25.3
Approach		54	0.0	0.057	1.8	LOS A	0.2	1.4	0.41	0.30	0.41	31.0
West: Elizabeth Street												
11	T1	27	0.0	0.162	3.0	LOS A	0.8	6.3	0.09	0.46	0.09	23.7
12	R2	247	9.4	0.162	3.7	LOS A	0.8	6.3	0.09	0.46	0.09	35.9
Approach		275	8.4	0.162	3.6	NA	0.8	6.3	0.09	0.46	0.09	35.5
All Vehicles		511	7.4	0.162	3.4	NA	0.8	6.3	0.10	0.44	0.10	35.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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.

Site: [13 Speed Street/ Newbridge Road AM]

Site Category: -
Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Newbridge Road												
1	L2	888	2.8	0.796	14.9	LOS B	32.4	232.9	0.74	0.82	0.74	41.5
2	T1	973	5.4	0.796	19.9	LOS B	39.0	285.5	0.84	0.79	0.84	40.8
Approach		1861	4.2	0.796	17.5	LOS B	39.0	285.5	0.79	0.80	0.79	41.1
NorthEast: Terminus Street												
4	L2	15	100.0	0.204	64.8	LOS E	0.9	11.5	0.98	0.70	0.98	19.6
Approach		15	100.0	0.204	64.8	LOS E	0.9	11.5	0.98	0.70	0.98	19.6
NorthWest: Terminus Street												
7	L2	128	0.0	0.122	14.4	LOS A	3.1	21.7	0.41	0.63	0.41	15.8
8	T1	1040	9.7	0.612	25.9	LOS B	22.5	170.5	0.81	0.72	0.81	37.5
Approach		1168	8.6	0.612	24.7	LOS B	22.5	170.5	0.76	0.71	0.76	35.4
SouthWest: Speed Street												
10	L2	21	5.0	0.293	37.0	LOS C	7.3	53.2	0.79	0.77	0.79	19.2
12	R2	317	5.0	0.293	37.0	LOS C	7.4	54.1	0.79	0.77	0.79	28.4
Approach		338	5.0	0.293	37.0	LOS C	7.4	54.1	0.79	0.77	0.79	28.0
All Vehicles		3382	6.2	0.796	22.1	LOS B	39.0	285.5	0.78	0.77	0.78	37.3

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

Site: [13 Speed Street/ Newbridge Road PM]

Site Category: -
Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Newbridge Road												
1	L2	820	4.5	0.858	18.8	LOS B	43.3	314.1	0.82	0.86	0.86	39.2
2	T1	1327	4.0	0.858	18.1	LOS B	50.0	362.0	0.85	0.83	0.87	41.8
Approach		2147	4.2	0.858	18.3	LOS B	50.0	362.0	0.84	0.84	0.87	40.9
NorthEast: Terminus Street												
4	L2	14	100.0	0.117	57.6	LOS E	0.8	9.9	0.93	0.70	0.93	21.1
Approach		14	100.0	0.117	57.6	LOS E	0.8	9.9	0.93	0.70	0.93	21.1
NorthWest: Terminus Street												
7	L2	118	0.0	0.112	12.7	LOS A	2.5	17.8	0.37	0.62	0.37	16.2
8	T1	1072	1.8	0.560	22.6	LOS B	21.5	153.0	0.75	0.67	0.75	39.4
Approach		1189	1.6	0.560	21.6	LOS B	21.5	153.0	0.71	0.67	0.71	37.3
SouthWest: Speed Street												
10	L2	35	3.0	0.622	48.0	LOS D	14.6	103.7	0.94	0.83	0.94	16.3
12	R2	531	1.2	0.622	47.9	LOS D	15.0	106.1	0.94	0.83	0.94	24.9
Approach		565	1.3	0.622	48.0	LOS D	15.0	106.1	0.94	0.83	0.94	24.5
All Vehicles		3916	3.3	0.858	23.7	LOS B	50.0	362.0	0.82	0.79	0.83	36.6

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

USER REPORT FOR NETWORK SITE

Project: 200401-N170560 SIDRA - Existing | **Template: Movement Summary Only**

Site: 4 [4 Hume/ Bigge AM] | Network: 3 [AM Network]

Site Category: -
Signals - Fixed Time Coordinated Cycle Time = 150 seconds (Network Site User-Given Phase Times)

Timings based on settings in the Network Timing dialog
Phase Times specified by the user
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bigge Street														
1	L2	86	2.4	86	2.4	0.111	31.8	LOS C	2.3	16.3	0.63	0.70	0.63	26.6
3	R2	380	2.2	380	2.2	0.624	65.8	LOS E	8.5	60.3	0.97	0.82	0.97	8.3
Approach		466	2.3	466	2.3	0.624	59.5	LOS E	8.5	60.3	0.91	0.80	0.91	11.0
East: Hume Highway														
4	L2	202	7.3	202	7.3	0.159	7.6	LOS A	0.4	3.1	0.05	0.62	0.05	46.4
5	T1	1345	12.7	1345	12.7	0.505	21.1	LOS B	10.1	78.5	0.55	0.49	0.55	40.7
Approach		1547	12.0	1547	12.0	0.505	19.3	LOS B	10.1	78.5	0.49	0.51	0.49	41.3
West: Hume Highway														
11	T1	1555	5.8	1555	5.8	0.633	1.0	LOS A	2.1	15.7	0.06	0.06	0.06	65.7
12	R2	249	1.7	249	1.7	0.680	66.7	LOS E	10.1	71.7	0.95	0.83	0.95	17.7
Approach		1804	5.3	1804	5.3	0.680	10.1	LOS A	10.1	71.7	0.19	0.17	0.19	42.7
All Vehicles		3818	7.6	3818	7.6	0.680	19.9	LOS B	10.1	78.5	0.40	0.38	0.40	35.0

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.

Site: [12 Hume Highway/ Remembrance Avenue AM]

Network: 3 [AM Network]

Site Category: -
Signals - Fixed Time Coordinated Cycle Time = 150 seconds (Network Site User-Given Phase Times)

Timings based on settings in the Network Timing dialog
Phase Times specified by the user
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B, D, E, G
Output Phase Sequence: A, B, D, E, G

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Remembrance Avenue														
4	L2	74	4.3	74	4.3	0.348	60.1	LOS E	3.9	27.7	0.92	0.87	1.26	9.6
5	T1	34	0.0	34	0.0	0.348	55.5	LOS D	3.9	27.7	0.92	0.87	1.26	17.4
6	R2	97	2.2	97	2.2	0.441	81.4	LOS F	2.2	15.7	1.00	0.75	1.00	20.3
Approach		204	2.6	204	2.6	0.441	69.5	LOS E	3.9	27.7	0.96	0.81	1.13	17.1
NorthEast: Hume Highway														
7	L2	132	1.6	132	1.6	0.090	6.8	LOS A	0.1	0.7	0.02	0.59	0.02	54.5
8	T1	1401	11.6	1401	11.6	0.561	21.3	LOS B	12.0	92.4	0.56	0.50	0.56	38.8
9	R2	51	6.3	51	6.3	0.328	78.0	LOS F	2.1	15.9	0.96	0.75	0.96	22.2
Approach		1583	10.6	1583	10.6	0.561	21.9	LOS B	12.0	92.4	0.53	0.52	0.53	38.7
NorthWest: Mannix Parade														
10	L2	76	5.6	76	5.6	0.324	62.6	LOS E	4.1	29.4	0.92	0.76	0.92	24.8
11	T1	27	0.0	27	0.0	0.324	58.0	LOS E	4.1	29.4	0.92	0.76	0.92	16.9
12	R2	72	2.9	72	2.9	0.656	83.7	LOS F	3.3	24.0	1.00	0.80	1.08	9.0
Approach		175	3.6	175	3.6	0.656	70.5	LOS E	4.1	29.4	0.95	0.78	0.98	17.4
SouthWest: Hume Highway														
1	L2	37	5.7	37	5.7	0.944	20.3	LOS B	22.2	165.1	0.41	0.46	0.49	40.4
2	T1	1981	7.0	1981	7.0	0.944	14.2	LOS A	25.5	188.5	0.45	0.50	0.53	51.7
3	R2	166	0.0	166	0.0	0.707	51.7	LOS D	4.9	34.2	0.97	0.86	1.17	21.1
Approach		2184	6.5	2184	6.5	0.944	17.1	LOS B	25.5	188.5	0.49	0.52	0.58	48.3
All Vehicles		4146	7.7	4146	7.7	0.944	23.8	LOS B	25.5	188.5	0.55	0.55	0.61	40.2

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.

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USER REPORT FOR NETWORK SITE

Project: 200401-N170560 SIDRA - Existing

Template: Movement Summary Only

Site: 4 [4 Hume/ Bigge PM]

Network: 4 [PM Network]

Site Category: -
Signals - Fixed Time Coordinated Cycle Time = 150 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Aver. Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bigge Street														
1	L2	182	3.5	182	3.5	0.251	36.3	LOS C	5.4	38.6	0.71	0.75	0.71	24.7
3	R2	416	2.0	416	2.0	0.751	71.4	LOS F	9.3	66.5	1.00	0.88	1.08	7.7
Approach		598	2.5	598	2.5	0.751	60.7	LOS E	9.3	66.5	0.91	0.84	0.96	12.1
East: Hume Highway														
4	L2	213	2.0	213	2.0	0.158	9.3	LOS A	1.2	8.2	0.13	0.64	0.13	44.3
5	T1	2153	4.1	2153	4.1	0.746	8.3	LOS A	13.7	99.1	0.38	0.35	0.38	54.5
Approach		2365	3.9	2365	3.9	0.746	8.4	LOS A	13.7	99.1	0.36	0.38	0.36	53.6
West: Hume Highway														
11	T1	1275	5.9	1275	5.9	0.521	8.3	LOS A	11.7	85.7	0.45	0.41	0.45	45.5
12	R2	257	1.2	257	1.2	0.747	70.7	LOS F	11.2	79.3	1.00	0.86	1.05	17.0
Approach		1532	5.1	1532	5.1	0.747	18.8	LOS B	11.7	85.7	0.54	0.49	0.55	32.6
All Vehicles		4495	4.1	4495	4.1	0.751	18.9	LOS B	13.7	99.1	0.50	0.48	0.51	37.3

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

Site: [12 Hume Highway/ Remembrance Avenue PM]

Network: 4 [PM Network]

Site Category: -
Signals - Fixed Time Coordinated Cycle Time = 150 seconds (Network Site User-Given Phase Times)

Timings based on settings in the Network Timing dialog
Phase Times specified by the user
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, D, E, G
Output Phase Sequence: A, D, E, G

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Remembrance Avenue														
4	L2	140	0.0	140	0.0	0.526	65.1	LOS E	6.9	48.1	0.96	0.81	0.96	8.9
5	T1	27	0.0	27	0.0	0.526	60.5	LOS E	6.9	48.1	0.96	0.81	0.96	16.3
6	R2	154	0.7	154	0.7	0.390	73.3	LOS F	3.3	23.1	0.97	0.77	0.97	21.8
Approach		321	0.3	321	0.3	0.526	68.6	LOS E	6.9	48.1	0.97	0.79	0.97	16.8
NorthEast: Hume Highway														
7	L2	65	1.6	65	1.6	0.041	6.7	LOS A	0.0	0.3	0.02	0.59	0.02	54.6
8	T1	2141	4.7	2141	4.7	0.731	18.9	LOS B	19.4	141.4	0.61	0.56	0.61	40.9
9	R2	59	3.6	59	3.6	0.542	84.0	LOS F	2.7	19.3	1.00	0.76	1.00	21.2
Approach		2265	4.6	2265	4.6	0.731	20.2	LOS B	19.4	141.4	0.61	0.57	0.61	39.9
NorthWest: Mannix Parade														
10	L2	56	5.7	56	5.7	0.238	61.5	LOS E	2.9	21.2	0.90	0.74	0.90	25.4
11	T1	19	5.6	19	5.6	0.238	56.9	LOS E	2.9	21.2	0.90	0.74	0.90	17.0
12	R2	68	3.1	68	3.1	0.353	73.1	LOS F	2.9	20.9	0.97	0.76	0.97	10.1
Approach		143	4.4	143	4.4	0.353	66.4	LOS E	2.9	21.2	0.93	0.75	0.93	17.5
SouthWest: Hume Highway														
1	L2	42	10.0	42	10.0	0.816	26.7	LOS B	24.3	179.0	0.73	0.68	0.73	35.4
2	T1	1614	5.5	1614	5.5	0.816	20.6	LOS B	24.8	181.7	0.73	0.68	0.73	46.2
3	R2	49	0.0	49	0.0	0.444	83.4	LOS F	2.2	15.5	0.99	0.75	0.99	15.1
Approach		1705	5.5	1705	5.5	0.816	22.6	LOS B	24.8	181.7	0.74	0.68	0.74	44.4
All Vehicles		4435	4.6	4435	4.6	0.816	26.1	LOS B	24.8	181.7	0.69	0.63	0.69	37.8

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

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USER REPORT FOR SITE

Project: 200428-N170560 SIDRA - Surrounding Developments

Template: Movement Summary Only

Site: 6 [6 Bigge/ Campbell AM]

Site Category: -
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bigge Street												
1	L2	211	5.5	0.168	4.9	LOS A	0.9	6.4	0.08	0.49	0.08	35.6
2	T1	514	4.3	0.682	2.6	LOS A	7.0	50.3	0.20	0.29	0.20	37.0
3	R2	202	0.5	0.682	6.0	LOS A	7.0	50.3	0.20	0.29	0.20	36.3
Approach		926	3.8	0.682	3.9	LOS A	7.0	50.3	0.17	0.33	0.17	36.6
East: Campbell Street												
4	L2	35	6.1	0.102	43.2	LOS D	1.5	11.4	0.86	0.70	0.86	17.1
5	T1	109	4.8	0.354	43.0	LOS D	5.5	39.8	0.92	0.73	0.92	14.6
6	R2	5	0.0	0.354	46.4	LOS D	5.5	39.8	0.92	0.73	0.92	17.1
Approach		149	4.9	0.354	43.2	LOS D	5.5	39.8	0.90	0.73	0.90	15.3
North: Bigge Street												
7	L2	45	2.3	0.059	4.8	LOS A	0.3	2.0	0.07	0.31	0.07	36.5
8	T1	309	4.8	0.296	1.7	LOS A	1.5	11.2	0.10	0.15	0.10	38.1
9	R2	36	5.9	0.296	5.1	LOS A	1.5	11.2	0.10	0.13	0.10	38.2
Approach		391	4.6	0.296	2.3	LOS A	1.5	11.2	0.09	0.17	0.09	38.0
West: Campbell Street												
10	L2	39	2.7	0.150	43.6	LOS D	2.4	17.0	0.87	0.71	0.87	18.8
11	T1	167	0.6	0.695	47.1	LOS D	9.8	69.1	0.97	0.84	1.03	13.7
12	R2	36	0.0	0.695	51.1	LOS D	9.8	69.1	0.98	0.85	1.04	17.5
Approach		242	0.9	0.695	47.1	LOS D	9.8	69.1	0.95	0.82	1.00	15.2
All Vehicles		1708	3.6	0.695	13.1	LOS A	9.8	69.1	0.33	0.40	0.34	29.8

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

Site: 6 [6 Bigge/ Campbell PM]

Site Category: -
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bigge Street												
1	L2	102	14.4	0.095	6.0	LOS A	0.7	5.3	0.12	0.47	0.12	34.9
2	T1	455	1.9	0.475	3.3	LOS A	4.7	33.3	0.17	0.20	0.17	36.9
3	R2	54	2.0	0.475	6.8	LOS A	4.7	33.3	0.18	0.20	0.18	36.2
Approach		611	4.0	0.475	4.1	LOS A	4.7	33.3	0.16	0.25	0.16	36.6
East: Campbell Street												
4	L2	49	0.0	0.118	43.2	LOS D	2.3	16.1	0.83	0.71	0.83	17.1
5	T1	126	1.7	0.355	42.1	LOS C	6.6	46.7	0.88	0.72	0.88	14.8
6	R2	7	0.0	0.355	45.5	LOS D	6.6	46.7	0.88	0.72	0.88	17.3
Approach		183	1.1	0.355	42.5	LOS D	6.6	46.7	0.87	0.71	0.87	15.6
North: Bigge Street												
7	L2	17	0.0	0.064	5.9	LOS A	0.5	3.5	0.11	0.17	0.11	36.8
8	T1	313	0.7	0.320	3.2	LOS A	2.8	19.9	0.16	0.22	0.16	36.7
9	R2	68	0.0	0.320	6.9	LOS A	2.8	19.9	0.17	0.23	0.17	36.2
Approach		398	0.5	0.320	4.0	LOS A	2.8	19.9	0.16	0.22	0.16	36.7
West: Campbell Street												
10	L2	45	4.7	0.112	43.2	LOS D	2.1	15.3	0.83	0.71	0.83	18.6
11	T1	54	5.9	0.455	47.1	LOS D	6.3	45.3	0.93	0.77	0.93	13.5
12	R2	65	1.6	0.455	50.5	LOS D	6.3	45.3	0.93	0.77	0.93	17.4
Approach		164	3.8	0.455	47.4	LOS D	6.3	45.3	0.90	0.75	0.90	16.6
All Vehicles		1356	2.6	0.475	14.5	LOS A	6.6	46.7	0.35	0.36	0.35	29.3

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

Site: 7 [7 Bigge/ Elizabeth AM]

Site Category: -
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bigge Street												
1	L2	183	2.9	0.565	15.5	LOS B	14.2	102.3	0.50	0.52	0.50	28.3
2	T1	769	3.4	0.565	12.8	LOS A	14.2	102.3	0.51	0.52	0.51	29.5
3	R2	97	1.1	0.565	17.0	LOS B	12.4	88.8	0.53	0.52	0.53	26.0
Approach		1049	3.1	0.565	13.6	LOS A	14.2	102.3	0.51	0.52	0.51	29.0
East: Elizabeth Street												
4	L2	56	3.8	0.154	28.6	LOS C	3.0	22.0	0.61	0.59	0.61	19.6
5	T1	100	6.3	0.154	28.5	LOS C	3.0	22.0	0.65	0.58	0.65	18.2
6	R2	15	7.1	0.154	34.4	LOS C	2.5	18.8	0.68	0.57	0.68	20.2
Approach		171	5.6	0.154	29.1	LOS C	3.0	22.0	0.64	0.58	0.64	18.8
North: Bigge Street												
7	L2	28	7.4	0.165	12.6	LOS A	2.8	20.0	0.33	0.33	0.33	31.0
8	T1	360	3.5	0.272	10.7	LOS A	4.7	34.0	0.38	0.35	0.38	31.1
9	R2	14	7.7	0.272	15.1	LOS B	4.7	34.0	0.41	0.36	0.41	30.5
Approach		402	3.9	0.272	11.0	LOS A	4.7	34.0	0.37	0.35	0.37	31.1
West: Elizabeth Street												
10	L2	161	3.3	0.257	29.7	LOS C	5.3	37.9	0.65	0.69	0.65	22.4
11	T1	174	11.5	0.567	33.9	LOS C	11.2	83.5	0.82	0.73	0.82	16.6
12	R2	95	1.1	0.567	37.3	LOS C	11.2	83.5	0.82	0.73	0.82	18.9
Approach		429	6.1	0.567	33.1	LOS C	11.2	83.5	0.75	0.72	0.75	19.4
All Vehicles		2052	4.1	0.567	18.5	LOS B	14.2	102.3	0.55	0.53	0.55	26.1

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

Site: 7 [7 Bigge/ Elizabeth PM]

Site Category: -
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bigge Street												
1	L2	311	3.4	0.273	8.4	LOS A	3.5	25.0	0.23	0.55	0.23	31.8
2	T1	534	2.6	0.515	6.1	LOS A	8.7	62.5	0.31	0.30	0.31	34.4
3	R2	41	0.0	0.515	9.5	LOS A	8.7	62.5	0.31	0.30	0.31	32.5
Approach		885	2.7	0.515	7.0	LOS A	8.7	62.5	0.28	0.39	0.28	33.5
East: Elizabeth Street												
4	L2	97	0.0	0.356	38.8	LOS C	6.6	46.6	0.78	0.70	0.78	16.4
5	T1	173	3.0	0.356	37.6	LOS C	6.6	46.6	0.80	0.69	0.80	15.7
6	R2	26	44.0	0.356	42.7	LOS D	5.5	42.4	0.82	0.68	0.82	18.0
Approach		296	5.7	0.356	38.4	LOS C	6.6	46.6	0.80	0.69	0.80	16.1
North: Bigge Street												
7	L2	18	5.9	0.160	8.0	LOS A	1.9	13.6	0.20	0.20	0.20	35.1
8	T1	384	0.5	0.265	5.3	LOS A	3.0	21.4	0.23	0.24	0.23	34.9
9	R2	32	0.0	0.265	9.3	LOS A	3.0	21.4	0.26	0.27	0.26	34.5
Approach		434	0.7	0.265	5.7	LOS A	3.0	21.4	0.23	0.24	0.23	34.8
West: Elizabeth Street												
10	L2	39	0.0	0.104	36.3	LOS C	1.8	13.0	0.70	0.64	0.70	20.6
11	T1	144	19.0	0.518	40.3	LOS C	8.2	64.5	0.86	0.73	0.86	15.0
12	R2	48	0.0	0.518	44.3	LOS D	8.2	64.5	0.87	0.74	0.87	17.1
Approach		232	11.8	0.518	40.5	LOS C	8.2	64.5	0.84	0.72	0.84	16.5
All Vehicles		1846	3.9	0.518	15.9	LOS B	8.7	64.5	0.42	0.44	0.42	27.2

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

Site: [10 Bigge/ Moore AM]

Site Category: -
Signals - Fixed Time Isolated Cycle Time = 90 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: VV1481_14C - applied
Reference Phase: Phase A
Input Phase Sequence: A, D, E
Output Phase Sequence: A, D, E

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bigge Street												
1	L2	82	2.6	0.686	25.5	LOS B	20.4	145.0	0.85	0.77	0.85	23.3
2	T1	1107	1.6	0.686	20.9	LOS B	21.0	148.8	0.85	0.77	0.85	20.0
3	R2	229	2.8	0.325	11.7	LOS A	3.6	25.7	0.60	0.72	0.60	34.7
Approach		1419	1.9	0.686	19.7	LOS B	21.0	148.8	0.81	0.76	0.81	24.1
East: Moore Street												
4	L2	74	1.4	0.322	38.3	LOS C	4.0	32.9	0.91	0.75	0.91	24.8
5	T1	73	72.5	0.322	38.2	LOS C	4.0	32.9	0.93	0.74	0.93	23.6
6	R2	11	0.0	0.322	43.7	LOS D	2.3	24.3	0.94	0.73	0.94	21.5
Approach		157	34.2	0.322	38.6	LOS C	4.0	32.9	0.92	0.74	0.92	24.0
North: Bigge Street												
7	L2	6	0.0	0.396	20.8	LOS B	9.4	69.2	0.70	0.61	0.70	30.3
8	T1	321	5.6	0.396	17.3	LOS B	9.4	69.2	0.70	0.61	0.70	22.4
9	R2	36	0.0	0.076	13.3	LOS A	0.6	3.9	0.66	0.67	0.66	23.3
Approach		363	4.9	0.396	17.0	LOS B	9.4	69.2	0.70	0.62	0.70	22.8
West: Moore Street												
10	L2	155	2.0	0.337	30.9	LOS C	5.9	43.4	0.83	0.76	0.83	7.2
11	T1	76	51.4	0.337	35.5	LOS C	5.9	43.4	0.91	0.73	0.91	24.5
12	R2	14	0.0	0.337	40.6	LOS C	3.1	29.3	0.92	0.73	0.92	16.7
Approach		244	17.2	0.337	32.9	LOS C	5.9	43.4	0.86	0.75	0.86	13.1
All Vehicles		2183	6.4	0.686	22.1	LOS B	21.0	148.8	0.81	0.73	0.81	21.7

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

Site: [10 Bigge/ Moore PM]

Site Category: -
Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: VV1481_14C - applied
Reference Phase: Phase A
Input Phase Sequence: A, D, E
Output Phase Sequence: A, D, E

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bigge Street												
1	L2	72	1.5	0.369	19.1	LOS B	12.5	89.6	0.58	0.55	0.58	27.1
2	T1	745	2.7	0.369	14.3	LOS A	12.6	90.2	0.57	0.52	0.57	24.6
3	R2	122	9.5	0.213	11.9	LOS A	1.9	14.0	0.52	0.69	0.52	34.6
Approach		939	3.5	0.369	14.3	LOS A	12.6	90.2	0.57	0.55	0.57	27.4
East: Moore Street												
4	L2	219	0.5	0.491	43.6	LOS D	11.2	80.4	0.89	0.80	0.89	23.4
5	T1	74	71.4	0.491	53.9	LOS D	11.2	80.4	0.97	0.77	0.97	20.5
6	R2	11	0.0	0.491	58.8	LOS E	4.4	47.3	0.98	0.77	0.98	18.6
Approach		303	17.7	0.491	46.6	LOS D	11.2	80.4	0.92	0.79	0.92	22.5
North: Bigge Street												
7	L2	3	0.0	0.535	18.7	LOS B	17.9	126.1	0.62	0.56	0.62	31.3
8	T1	536	0.8	0.535	15.3	LOS B	17.9	126.1	0.62	0.56	0.62	24.0
9	R2	42	0.0	0.076	9.0	LOS A	0.6	4.2	0.44	0.62	0.44	27.4
Approach		581	0.7	0.535	14.8	LOS B	17.9	126.1	0.61	0.56	0.61	24.3
West: Moore Street												
10	L2	94	2.2	0.424	51.8	LOS D	6.4	52.9	0.94	0.78	0.94	5.8
11	T1	59	82.1	0.424	56.0	LOS D	6.4	52.9	0.97	0.76	0.97	19.9
12	R2	9	0.0	0.424	65.9	LOS E	2.5	27.2	1.00	0.76	1.00	11.7
Approach		162	31.2	0.424	54.1	LOS D	6.4	52.9	0.95	0.77	0.95	11.4
All Vehicles		1985	7.1	0.535	22.7	LOS B	17.9	126.1	0.66	0.61	0.66	22.3

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

Site: [13 Speed Street/ Newbridge Road AM]

Site Category: -
Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Newbridge Road												
1	L2	894	2.8	0.797	15.0	LOS B	32.7	234.9	0.74	0.82	0.74	41.4
2	T1	973	5.4	0.797	19.9	LOS B	39.1	286.4	0.84	0.79	0.84	40.8
Approach		1866	4.2	0.797	17.5	LOS B	39.1	286.4	0.79	0.80	0.79	41.1
NorthEast: Terminus Street												
4	L2	15	100.0	0.204	64.8	LOS E	0.9	11.5	0.98	0.70	0.98	19.6
Approach		15	100.0	0.204	64.8	LOS E	0.9	11.5	0.98	0.70	0.98	19.6
NorthWest: Terminus Street												
7	L2	128	0.0	0.122	14.4	LOS A	3.1	21.7	0.41	0.63	0.41	15.8
8	T1	1040	9.7	0.612	25.9	LOS B	22.5	170.5	0.81	0.72	0.81	37.5
Approach		1168	8.6	0.612	24.7	LOS B	22.5	170.5	0.76	0.71	0.76	35.4
SouthWest: Speed Street												
10	L2	21	5.0	0.293	37.0	LOS C	7.3	53.2	0.79	0.77	0.79	19.2
12	R2	317	5.0	0.293	37.0	LOS C	7.4	54.1	0.79	0.77	0.79	28.4
Approach		338	5.0	0.293	37.0	LOS C	7.4	54.1	0.79	0.77	0.79	28.0
All Vehicles		3387	6.2	0.797	22.1	LOS B	39.1	286.4	0.78	0.77	0.78	37.3

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

Site: [13 Speed Street/ Newbridge Road PM]

Site Category: -
Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Newbridge Road												
1	L2	841	4.4	0.865	19.4	LOS B	44.7	324.4	0.83	0.87	0.87	38.7
2	T1	1327	4.0	0.865	19.0	LOS B	51.7	373.8	0.86	0.84	0.89	41.2
Approach		2168	4.1	0.865	19.2	LOS B	51.7	373.8	0.85	0.85	0.88	40.3
NorthEast: Terminus Street												
4	L2	14	100.0	0.126	58.9	LOS E	0.8	10.0	0.94	0.70	0.94	20.8
Approach		14	100.0	0.126	58.9	LOS E	0.8	10.0	0.94	0.70	0.94	20.8
NorthWest: Terminus Street												
7	L2	118	0.0	0.110	11.7	LOS A	2.3	16.2	0.34	0.61	0.34	16.5
8	T1	1072	1.8	0.551	21.9	LOS B	21.2	150.7	0.74	0.66	0.74	39.9
Approach		1189	1.6	0.551	20.9	LOS B	21.2	150.7	0.70	0.66	0.70	37.8
SouthWest: Speed Street												
10	L2	35	3.0	0.622	48.0	LOS D	14.6	103.7	0.94	0.83	0.94	16.3
12	R2	531	1.2	0.622	47.9	LOS D	15.0	106.1	0.94	0.83	0.94	24.9
Approach		565	1.3	0.622	48.0	LOS D	15.0	106.1	0.94	0.83	0.94	24.5
All Vehicles		3937	3.3	0.865	24.0	LOS B	51.7	373.8	0.82	0.79	0.84	36.5

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

USER REPORT FOR NETWORK SITE

Project: 200428-N170560 SIDRA - Surrounding Developments

Template: Movement Summary Only

Site: 4 [4 Hume/ Bigge AM]

Network: 3 [AM Network]

Site Category: -
Signals - Fixed Time Coordinated Cycle Time = 150 seconds (Network Site User-Given Phase Times)

Timings based on settings in the Network Timing dialog
Phase Times specified by the user
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bigge Street														
1	L2	86	2.4	86	2.4	0.107	30.5	LOS C	2.2	15.9	0.62	0.70	0.62	27.1
3	R2	422	2.0	422	2.0	0.888	85.3	LOS F	11.6	82.9	1.00	1.01	1.31	6.6
Approach		508	2.1	508	2.1	0.888	76.0	LOS F	11.6	82.9	0.94	0.96	1.19	8.9
East: Hume Highway														
4	L2	202	7.3	202	7.3	0.159	7.6	LOS A	0.4	3.1	0.05	0.62	0.05	46.4
5	T1	1356	12.6	1356	12.6	0.522	22.8	LOS B	10.8	83.6	0.58	0.52	0.58	39.4
Approach		1558	11.9	1558	11.9	0.522	20.8	LOS B	10.8	83.6	0.51	0.53	0.51	40.0
West: Hume Highway														
11	T1	1555	5.8	1555	5.8	0.885	11.0	LOS A	12.8	94.1	0.29	0.32	0.35	40.8
12	R2	249	1.7	249	1.7	0.680	66.7	LOS E	10.1	71.7	0.95	0.83	0.95	17.7
Approach		1804	5.3	1804	5.3	0.885	18.7	LOS B	12.8	94.1	0.38	0.39	0.43	32.4
All Vehicles		3871	7.5	3871	7.5	0.888	27.1	LOS B	12.8	94.1	0.51	0.52	0.56	29.7

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.

Site: [12 Hume Highway/ Remembrance Avenue AM]

Network: 3 [AM Network]

Site Category: -
Signals - Fixed Time Coordinated Cycle Time = 150 seconds (Network Site User-Given Phase Times)

Timings based on settings in the Network Timing dialog
Phase Times specified by the user
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B, D, E, G
Output Phase Sequence: A, B, D, E, G

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Remembrance Avenue														
4	L2	74	4.3	74	4.3	0.348	60.1	LOS E	3.9	27.7	0.92	0.87	1.26	9.6
5	T1	34	0.0	34	0.0	0.348	55.5	LOS D	3.9	27.7	0.92	0.87	1.26	17.4
6	R2	97	2.2	97	2.2	0.441	81.4	LOS F	2.2	15.7	1.00	0.75	1.00	20.3
Approach		204	2.6	204	2.6	0.441	69.5	LOS E	3.9	27.7	0.96	0.81	1.13	17.1
NorthEast: Hume Highway														
7	L2	132	1.6	132	1.6	0.090	6.8	LOS A	0.1	0.7	0.02	0.59	0.02	54.5
8	T1	1412	11.5	1412	11.5	0.565	21.4	LOS B	12.1	93.4	0.56	0.50	0.56	38.8
9	R2	51	6.3	51	6.3	0.328	78.0	LOS F	2.1	15.9	0.96	0.75	0.96	22.2
Approach		1594	10.5	1594	10.5	0.565	22.0	LOS B	12.1	93.4	0.53	0.52	0.53	38.7
NorthWest: Mannix Parade														
10	L2	76	5.6	76	5.6	0.324	62.6	LOS E	4.1	29.4	0.92	0.76	0.92	24.8
11	T1	27	0.0	27	0.0	0.324	58.0	LOS E	4.1	29.4	0.92	0.76	0.92	16.9
12	R2	72	2.9	72	2.9	0.656	83.7	LOS F	3.3	24.0	1.00	0.80	1.08	9.0
Approach		175	3.6	175	3.6	0.656	70.5	LOS E	4.1	29.4	0.95	0.78	0.98	17.4
SouthWest: Hume Highway														
1	L2	37	5.7	37	5.7	0.963	26.1	LOS B	29.4	218.2	0.52	0.59	0.64	35.9
2	T1	2023	6.9	2023	6.9	0.963	20.0	LOS B	32.8	242.6	0.56	0.63	0.68	46.8
3	R2	166	0.0	166	0.0	0.707	51.7	LOS D	4.9	34.2	0.97	0.86	1.17	21.1
Approach		2226	6.3	2226	6.3	0.963	22.4	LOS B	32.8	242.6	0.59	0.64	0.72	44.2
All Vehicles		4199	7.6	4199	7.6	0.963	26.6	LOS B	32.8	242.6	0.60	0.61	0.68	38.4

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.

USER REPORT FOR NETWORK SITE

Project: 200428-N170560 SIDRA - Surrounding Developments

Template: Movement Summary Only

Site: 4 [4 Hume/ Bigge PM]

Network: 4 [PM Network]

Site Category: -
Signals - Fixed Time Coordinated Cycle Time = 150 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bigge Street														
1	L2	182	3.5	182	3.5	0.247	35.6	LOS C	5.3	38.1	0.70	0.75	0.70	24.9
3	R2	432	2.0	432	2.0	0.769	71.7	LOS F	9.8	69.6	1.00	0.89	1.09	7.7
Approach		614	2.4	614	2.4	0.769	61.0	LOS E	9.8	69.6	0.91	0.85	0.98	12.0
East: Hume Highway														
4	L2	213	2.0	213	2.0	0.158	9.2	LOS A	1.1	8.0	0.13	0.64	0.13	44.4
5	T1	2195	4.0	2195	4.0	0.774	8.9	LOS A	14.5	104.7	0.42	0.38	0.42	53.7
Approach		2407	3.8	2407	3.8	0.774	8.9	LOS A	14.5	104.7	0.39	0.41	0.39	53.0
West: Hume Highway														
11	T1	1275	5.9	1275	5.9	0.538	8.9	LOS A	12.2	89.4	0.47	0.43	0.47	44.4
12	R2	262	1.2	262	1.2	0.763	71.5	LOS F	11.5	81.7	1.00	0.87	1.06	16.8
Approach		1537	5.1	1537	5.1	0.763	19.5	LOS B	12.2	89.4	0.56	0.51	0.57	31.9
All Vehicles		4558	4.1	4558	4.1	0.774	19.5	LOS B	14.5	104.7	0.52	0.50	0.53	36.8

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

Site: [12 Hume Highway/ Remembrance Avenue PM]

Network: 4 [PM Network]

Site Category: -
Signals - Fixed Time Coordinated Cycle Time = 150 seconds (Network Site User-Given Phase Times)

Timings based on settings in the Network Timing dialog
Phase Times specified by the user
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, D, E, G
Output Phase Sequence: A, D, E, G

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Remembrance Avenue														
4	L2	140	0.0	140	0.0	0.526	65.1	LOS E	6.9	48.1	0.96	0.81	0.96	8.9
5	T1	27	0.0	27	0.0	0.526	60.5	LOS E	6.9	48.1	0.96	0.81	0.96	16.3
6	R2	154	0.7	154	0.7	0.390	73.3	LOS F	3.3	23.1	0.97	0.77	0.97	21.8
Approach		321	0.3	321	0.3	0.526	68.6	LOS E	6.9	48.1	0.97	0.79	0.97	16.8
NorthEast: Hume Highway														
7	L2	65	1.6	65	1.6	0.041	6.7	LOS A	0.0	0.3	0.02	0.59	0.02	54.6
8	T1	2188	4.6	2188	4.6	0.746	19.1	LOS B	20.3	147.8	0.63	0.57	0.63	40.7
9	R2	59	3.6	59	3.6	0.542	84.0	LOS F	2.7	19.3	1.00	0.76	1.00	21.2
Approach		2313	4.5	2313	4.5	0.746	20.4	LOS B	20.3	147.8	0.62	0.58	0.62	39.7
NorthWest: Mannix Parade														
10	L2	56	5.7	56	5.7	0.238	61.5	LOS E	2.9	21.2	0.90	0.74	0.90	25.4
11	T1	19	5.6	19	5.6	0.238	56.9	LOS E	2.9	21.2	0.90	0.74	0.90	17.0
12	R2	68	3.1	68	3.1	0.353	73.1	LOS F	2.9	20.9	0.97	0.76	0.97	10.1
Approach		143	4.4	143	4.4	0.353	66.4	LOS E	2.9	21.2	0.93	0.75	0.93	17.5
SouthWest: Hume Highway														
1	L2	42	10.0	42	10.0	0.823	26.9	LOS B	24.9	183.1	0.74	0.69	0.74	35.3
2	T1	1629	5.5	1629	5.5	0.823	20.8	LOS B	25.4	185.8	0.74	0.69	0.74	46.1
3	R2	49	0.0	49	0.0	0.444	83.4	LOS F	2.2	15.5	0.99	0.75	0.99	15.1
Approach		1721	5.4	1721	5.4	0.823	22.7	LOS B	25.4	185.8	0.75	0.69	0.75	44.3
All Vehicles		4498	4.6	4498	4.6	0.823	26.2	LOS B	25.4	185.8	0.70	0.64	0.70	37.7

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.

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USER REPORT FOR SITE

Project: 200427-N170560 SIDRA - Future

Template: Movement Summary Only

Site: 1 [1 Lachlan/ Hart AM]

Site Category: -
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Burnside Drive												
5	T1	60	1.8	0.068	2.4	LOS A	0.4	2.6	0.23	0.39	0.23	38.4
6	R2	23	0.0	0.068	5.8	LOS A	0.4	2.6	0.23	0.39	0.23	38.6
6u	U	1	0.0	0.068	7.2	LOS A	0.4	2.6	0.23	0.39	0.23	39.5
Approach		84	1.3	0.068	3.4	LOS A	0.4	2.6	0.23	0.39	0.23	38.5
North: Hart Street												
7	L2	249	0.0	0.342	5.5	LOS A	2.1	14.8	0.64	0.70	0.64	36.3
9	R2	46	2.3	0.342	8.7	LOS A	2.1	14.8	0.64	0.70	0.64	36.7
9u	U	12	0.0	0.342	10.0	LOS A	2.1	14.8	0.64	0.70	0.64	37.8
Approach		307	0.3	0.342	6.1	LOS A	2.1	14.8	0.64	0.70	0.64	36.4
West: Lachlan Street												
10	L2	65	0.0	0.355	2.5	LOS A	2.4	16.9	0.18	0.31	0.18	37.7
11	T1	454	0.2	0.355	2.2	LOS A	2.4	16.9	0.18	0.31	0.18	39.1
12u	U	9	0.0	0.355	7.0	LOS A	2.4	16.9	0.18	0.31	0.18	40.1
Approach		528	0.2	0.355	2.4	LOS A	2.4	16.9	0.18	0.31	0.18	39.0
All Vehicles		920	0.3	0.355	3.7	LOS A	2.4	16.9	0.34	0.45	0.34	38.0

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

Site: 1 [1 Lachlan/ Hart PM]

Site Category: -
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Burnside Drive												
5	T1	357	0.0	0.404	4.2	LOS A	2.8	19.6	0.36	0.51	0.36	42.0
6	R2	168	0.0	0.404	7.7	LOS A	2.8	19.6	0.36	0.51	0.36	44.7
6u	U	1	0.0	0.404	9.3	LOS A	2.8	19.6	0.36	0.51	0.36	46.1
Approach		526	0.0	0.404	5.3	LOS A	2.8	19.6	0.36	0.51	0.36	42.9
North: Hart Street												
7	L2	33	0.0	0.106	3.7	LOS A	0.6	4.0	0.21	0.57	0.21	43.1
9	R2	95	1.1	0.106	7.3	LOS A	0.6	4.0	0.21	0.57	0.21	40.3
9u	U	9	0.0	0.106	8.9	LOS A	0.6	4.0	0.21	0.57	0.21	44.1
Approach		137	0.8	0.106	6.5	LOS A	0.6	4.0	0.21	0.57	0.21	41.3
West: Lachlan Street												
10	L2	43	0.0	0.093	3.2	LOS A	0.5	3.4	0.36	0.43	0.36	40.1
11	T1	55	0.0	0.093	3.0	LOS A	0.5	3.4	0.36	0.43	0.36	42.5
12u	U	6	0.0	0.093	7.7	LOS A	0.5	3.4	0.36	0.43	0.36	39.2
Approach		104	0.0	0.093	3.4	LOS A	0.5	3.4	0.36	0.43	0.36	41.4
All Vehicles		767	0.1	0.404	5.3	LOS A	2.8	19.6	0.33	0.51	0.33	42.4

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

Site: 2 [2 Forbes/ Campbell/ Hospital AM]

Site Category: -
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Hospital Access												
1	L2	23	0.0	0.032	0.5	LOS A	0.1	0.8	0.30	0.17	0.30	12.3
2	T1	8	12.5	0.032	4.8	LOS A	0.1	0.8	0.30	0.17	0.30	19.9
Approach		32	3.3	0.032	1.6	LOS A	0.1	0.8	0.30	0.17	0.30	14.9
North: RoadName												
8	T1	82	0.0	0.164	6.7	LOS A	1.0	7.3	0.39	0.51	0.39	20.1
9	R2	161	10.5	0.164	4.7	LOS A	1.0	7.3	0.39	0.51	0.39	35.9
Approach		243	6.9	0.164	5.4	NA	1.0	7.3	0.39	0.51	0.39	27.6
West: RoadName												
10	L2	313	0.0	0.325	3.6	LOS A	1.5	10.6	0.14	0.55	0.14	36.9
12	R2	263	0.0	0.325	6.1	LOS A	1.5	10.6	0.14	0.55	0.14	12.5
Approach		576	0.0	0.325	4.8	NA	1.5	10.6	0.14	0.55	0.14	22.9
All Vehicles		851	2.1	0.325	4.8	NA	1.5	10.6	0.22	0.53	0.22	24.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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.

Site: 2 [2 Forbes/ Campbell/ Hospital PM]

Site Category: -
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Hospital Access												
1	L2	184	0.0	0.176	0.6	LOS A	0.8	5.3	0.30	0.18	0.30	12.4
2	T1	46	0.0	0.176	1.4	LOS A	0.8	5.3	0.30	0.18	0.30	20.1
Approach		231	0.0	0.176	0.8	LOS A	0.8	5.3	0.30	0.18	0.30	14.4
North: RoadName												
8	T1	15	0.0	0.105	5.8	LOS A	0.6	4.3	0.12	0.49	0.12	20.3
9	R2	169	0.0	0.105	3.6	LOS A	0.6	4.3	0.12	0.49	0.12	36.9
Approach		184	0.0	0.105	3.8	NA	0.6	4.3	0.12	0.49	0.12	34.2
West: RoadName												
10	L2	106	1.0	0.077	3.4	LOS A	0.2	1.1	0.03	0.53	0.03	37.4
12	R2	35	0.0	0.077	5.8	LOS A	0.2	1.1	0.03	0.53	0.03	12.6
Approach		141	0.7	0.077	4.0	NA	0.2	1.1	0.03	0.53	0.03	28.9
All Vehicles		556	0.2	0.176	2.6	NA	0.8	5.3	0.17	0.37	0.17	22.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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.

Site: 3a [3a Goulburn/ Hospital access AM]

Site Category: -
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Goulburn Street												
2	T1	380	1.1	0.248	0.2	LOS A	0.6	4.3	0.15	0.14	0.15	37.4
3	R2	74	0.0	0.248	6.7	LOS A	0.6	4.3	0.15	0.14	0.15	22.0
Approach		454	0.9	0.248	1.3	NA	0.6	4.3	0.15	0.14	0.15	35.1
East: Hospital access												
4	L2	31	0.0	0.044	0.6	LOS A	0.2	1.1	0.30	0.19	0.30	18.4
6	R2	15	0.0	0.044	3.3	LOS A	0.2	1.1	0.30	0.19	0.30	21.2
Approach		45	0.0	0.044	1.5	LOS A	0.2	1.1	0.30	0.19	0.30	19.4
North: Goulburn Street												
7	L2	37	0.0	0.119	7.2	LOS A	0.0	0.0	0.00	0.18	0.00	23.4
8	T1	183	9.2	0.119	0.0	LOS A	0.0	0.0	0.00	0.18	0.00	37.7
Approach		220	7.7	0.119	1.2	NA	0.0	0.0	0.00	0.18	0.00	34.9
All Vehicles		719	2.9	0.248	1.3	NA	0.6	4.3	0.11	0.16	0.11	33.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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.

Site: 3a [3a Goulburn/ Hospital access PM]

Site Category: -
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Goulburn Street												
2	T1	151	2.1	0.132	0.7	LOS A	0.5	3.7	0.30	0.26	0.30	35.3
3	R2	66	0.0	0.132	7.2	LOS A	0.5	3.7	0.30	0.26	0.30	20.6
Approach		217	1.5	0.132	2.7	NA	0.5	3.7	0.30	0.26	0.30	31.0
East: Hospital access												
4	L2	37	0.0	0.068	1.2	LOS A	0.2	1.7	0.42	0.32	0.42	18.2
6	R2	27	0.0	0.068	2.7	LOS A	0.2	1.7	0.42	0.32	0.42	21.0
Approach		64	0.0	0.068	1.8	LOS A	0.2	1.7	0.42	0.32	0.42	19.5
North: Goulburn Street												
7	L2	33	0.0	0.192	7.2	LOS A	0.0	0.0	0.00	0.10	0.00	23.9
8	T1	338	0.6	0.192	0.0	LOS A	0.0	0.0	0.00	0.10	0.00	38.8
Approach		371	0.6	0.192	0.6	NA	0.0	0.0	0.00	0.10	0.00	37.3
All Vehicles		652	0.8	0.192	1.4	NA	0.5	3.7	0.14	0.17	0.14	33.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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.

Site: 5a [5a Burnside/ Northern Access Road AM]

Site Category: -
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Burnside Drive												
1	L2	3	0.0	0.042	3.0	LOS A	0.0	0.0	0.00	0.02	0.00	47.9
2	T1	79	0.0	0.042	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	49.8
Approach		82	0.0	0.042	0.1	NA	0.0	0.0	0.00	0.02	0.00	49.7
North: Burnside Drive												
8	T1	691	0.0	0.354	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
9	R2	13	0.0	0.008	4.8	LOS A	0.0	0.2	0.18	0.51	0.18	43.1
Approach		703	0.0	0.354	0.1	NA	0.0	0.2	0.00	0.01	0.00	49.7
West: Northern Access Road												
10	L2	1	0.0	0.006	4.8	LOS A	0.0	0.1	0.32	0.57	0.32	40.4
12	R2	2	0.0	0.006	11.6	LOS A	0.0	0.1	0.32	0.57	0.32	31.4
Approach		3	0.0	0.006	9.3	LOS A	0.0	0.1	0.32	0.57	0.32	35.6
All Vehicles		788	0.0	0.354	0.2	NA	0.0	0.2	0.00	0.01	0.00	49.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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.

Site: 5a [5a Burnside/ Northern Access Road PM]

Site Category: -
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Burnside Drive												
1	L2	1	0.0	0.270	3.0	LOS A	0.0	0.0	0.00	0.00	0.00	48.1
2	T1	526	0.0	0.270	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		527	0.0	0.270	0.0	NA	0.0	0.0	0.00	0.00	0.00	49.9
North: Burnside Drive												
8	T1	84	0.0	0.043	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
9	R2	2	0.0	0.002	6.5	LOS A	0.0	0.1	0.50	0.56	0.50	42.0
Approach		86	0.0	0.043	0.2	NA	0.0	0.1	0.01	0.01	0.01	49.7
West: Northern Access Road												
10	L2	1	0.0	0.007	6.5	LOS A	0.0	0.2	0.55	0.64	0.55	41.0
12	R2	3	0.0	0.007	9.1	LOS A	0.0	0.2	0.55	0.64	0.55	32.4
Approach		4	0.0	0.007	8.4	LOS A	0.0	0.2	0.55	0.64	0.55	35.6
All Vehicles		618	0.0	0.270	0.1	NA	0.0	0.2	0.01	0.01	0.01	49.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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.

Site: 5b [5b Burnside/ Bridge AM]

Site Category: -
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Burnside Drive												
1	L2	3	0.0	0.029	3.0	LOS A	0.0	0.0	0.00	0.03	0.00	48.0
2	T1	53	0.0	0.029	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	48.4
Approach		56	0.0	0.029	0.2	NA	0.0	0.0	0.00	0.03	0.00	48.3
North: Burnside Drive												
8	T1	272	0.0	0.140	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
9	R2	421	0.0	0.245	3.1	LOS A	1.4	9.5	0.17	0.49	0.17	40.7
Approach		693	0.0	0.245	1.9	NA	1.4	9.5	0.10	0.30	0.10	41.7
West: Burnside Drive												
10	L2	29	0.0	0.021	4.7	LOS A	0.1	0.6	0.12	0.50	0.12	38.2
12	R2	1	0.0	0.021	10.7	LOS A	0.1	0.6	0.12	0.50	0.12	37.8
Approach		31	0.0	0.021	4.9	LOS A	0.1	0.6	0.12	0.50	0.12	38.2
All Vehicles		779	0.0	0.245	1.9	NA	1.4	9.5	0.10	0.29	0.10	41.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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.

Site: 5b [5b Burnside/ Bridge PM]

Site Category: -
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Burnside Drive												
1	L2	1	0.0	0.090	3.0	LOS A	0.0	0.0	0.00	0.00	0.00	48.3
2	T1	175	0.0	0.090	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.8
Approach		176	0.0	0.090	0.0	NA	0.0	0.0	0.00	0.00	0.00	49.8
North: Burnside Drive												
8	T1	54	0.0	0.028	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
9	R2	34	0.0	0.022	3.4	LOS A	0.1	0.7	0.28	0.50	0.28	40.3
Approach		87	0.0	0.028	1.3	NA	0.1	0.7	0.11	0.19	0.11	42.6
West: Burnside Drive												
10	L2	353	0.0	0.253	5.2	LOS A	1.2	8.4	0.31	0.55	0.31	37.1
12	R2	2	0.0	0.253	6.5	LOS A	1.2	8.4	0.31	0.55	0.31	36.7
Approach		355	0.0	0.253	5.3	LOS A	1.2	8.4	0.31	0.55	0.31	37.1
All Vehicles		618	0.0	0.253	3.2	NA	1.2	8.4	0.19	0.34	0.19	38.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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.

Site: 5c [5c Burnside/ MSCP AM]

Site Category: -
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Burnside Drive												
1	L2	1	0.0	0.018	6.3	LOS A	0.0	0.0	0.00	0.04	0.00	26.6
2	T1	34	0.0	0.018	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	48.3
Approach		35	0.0	0.018	0.2	NA	0.0	0.0	0.00	0.04	0.00	46.9
North: Burnside Drive												
8	T1	81	0.0	0.042	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
9	R2	192	0.0	0.110	4.9	LOS A	0.5	3.8	0.11	0.69	0.11	13.0
Approach		273	0.0	0.110	3.4	NA	0.5	3.8	0.08	0.48	0.08	16.4
West: MSCP												
10	L2	22	0.0	0.015	0.1	LOS A	0.1	0.4	0.09	0.02	0.09	12.3
12	R2	1	0.0	0.015	1.7	LOS A	0.1	0.4	0.09	0.02	0.09	12.3
Approach		23	0.0	0.015	0.2	LOS A	0.1	0.4	0.09	0.02	0.09	12.3
All Vehicles		331	0.0	0.110	2.8	NA	0.5	3.8	0.07	0.40	0.07	17.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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.

Site: 5c [5c Burnside/ MSCP PM]

Site Category: -
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Burnside Drive												
1	L2	1	0.0	0.029	6.3	LOS A	0.0	0.0	0.00	0.03	0.00	26.8
2	T1	55	0.0	0.029	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	48.9
Approach		56	0.0	0.029	0.1	NA	0.0	0.0	0.00	0.03	0.00	48.0
North: Burnside Drive												
8	T1	25	0.0	0.013	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
9	R2	31	0.0	0.018	4.9	LOS A	0.1	0.6	0.14	0.67	0.14	13.0
Approach		56	0.0	0.018	2.7	NA	0.1	0.6	0.08	0.37	0.08	19.0
West: MSCP												
10	L2	120	0.0	0.078	0.2	LOS A	0.3	2.3	0.14	0.05	0.14	12.2
12	R2	1	0.0	0.078	0.6	LOS A	0.3	2.3	0.14	0.05	0.14	12.2
Approach		121	0.0	0.078	0.2	LOS A	0.3	2.3	0.14	0.05	0.14	12.2
All Vehicles		233	0.0	0.078	0.8	NA	0.3	2.3	0.09	0.12	0.09	16.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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.

Site: 6 [6 Bigge/ Campbell AM]

Site Category: -
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bigge Street												
1	L2	211	5.5	0.171	5.3	LOS A	1.0	7.6	0.10	0.49	0.10	35.3
2	T1	514	4.3	0.699	3.7	LOS A	9.5	68.5	0.27	0.35	0.27	36.2
3	R2	202	0.5	0.699	7.2	LOS A	9.5	68.5	0.27	0.35	0.27	35.2
Approach		926	3.8	0.699	4.8	LOS A	9.5	68.5	0.23	0.38	0.23	35.8
East: Campbell Street												
4	L2	36	5.9	0.100	42.3	LOS C	1.6	11.6	0.85	0.70	0.85	17.3
5	T1	112	4.7	0.344	42.0	LOS C	5.5	40.0	0.91	0.73	0.91	14.8
6	R2	5	0.0	0.344	45.4	LOS D	5.5	40.0	0.91	0.73	0.91	17.4
Approach		153	4.8	0.344	42.2	LOS C	5.5	40.0	0.89	0.72	0.89	15.6
North: Bigge Street												
7	L2	49	2.1	0.061	5.1	LOS A	0.3	2.4	0.09	0.34	0.09	36.0
8	T1	309	4.8	0.304	2.7	LOS A	2.4	17.4	0.15	0.19	0.15	37.3
9	R2	36	5.9	0.304	6.3	LOS A	2.4	17.4	0.15	0.18	0.15	37.1
Approach		395	4.5	0.304	3.4	LOS A	2.4	17.4	0.14	0.21	0.14	37.1
West: Campbell Street												
10	L2	39	2.7	0.152	42.8	LOS D	2.5	17.9	0.86	0.70	0.86	19.0
11	T1	185	0.6	0.704	45.7	LOS D	10.5	73.9	0.96	0.84	1.02	13.9
12	R2	36	0.0	0.704	49.8	LOS D	10.5	73.9	0.97	0.86	1.04	17.8
Approach		260	0.8	0.704	45.9	LOS D	10.5	73.9	0.95	0.82	1.00	15.3
All Vehicles		1734	3.6	0.704	13.9	LOS A	10.5	73.9	0.38	0.44	0.38	29.3

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

Site: 6 [6 Bigge/ Campbell PM]

Site Category: -
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bigge Street												
1	L2	102	14.4	0.097	6.4	LOS A	0.8	6.0	0.13	0.47	0.13	34.7
2	T1	455	1.9	0.485	3.8	LOS A	5.2	36.9	0.19	0.22	0.19	36.6
3	R2	54	2.0	0.485	7.2	LOS A	5.2	36.9	0.19	0.21	0.19	35.7
Approach		611	4.0	0.485	4.5	LOS A	5.2	36.9	0.18	0.26	0.18	36.2
East: Campbell Street												
4	L2	54	0.0	0.124	42.4	LOS C	2.5	17.3	0.83	0.71	0.83	17.3
5	T1	137	1.5	0.400	42.5	LOS C	7.3	51.9	0.89	0.73	0.89	14.7
6	R2	11	0.0	0.400	45.9	LOS D	7.3	51.9	0.89	0.73	0.89	17.2
Approach		201	1.0	0.400	42.6	LOS D	7.3	51.9	0.87	0.72	0.87	15.6
North: Bigge Street												
7	L2	18	0.0	0.065	6.2	LOS A	0.6	3.9	0.12	0.19	0.12	36.4
8	T1	313	0.7	0.325	3.7	LOS A	3.1	21.9	0.17	0.23	0.17	36.4
9	R2	68	0.0	0.325	7.3	LOS A	3.1	21.9	0.18	0.24	0.18	35.9
Approach		399	0.5	0.325	4.4	LOS A	3.1	21.9	0.17	0.23	0.17	36.3
West: Campbell Street												
10	L2	45	4.7	0.108	42.3	LOS C	2.1	15.1	0.82	0.71	0.82	18.9
11	T1	57	5.6	0.482	48.1	LOS D	6.5	47.0	0.94	0.77	0.94	13.3
12	R2	65	1.6	0.482	51.5	LOS D	6.5	47.0	0.94	0.77	0.94	17.2
Approach		167	3.8	0.482	47.9	LOS D	6.5	47.0	0.91	0.75	0.91	16.4
All Vehicles		1378	2.5	0.485	15.3	LOS B	7.3	51.9	0.37	0.38	0.37	28.8

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

Site: 7 [7 Bigge/ Elizabeth AM]

Site Category: -
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bigge Street												
1	L2	183	2.9	0.584	16.4	LOS B	15.3	110.0	0.53	0.54	0.53	27.8
2	T1	769	3.4	0.584	14.0	LOS A	15.3	110.0	0.55	0.55	0.55	28.8
3	R2	105	1.0	0.584	18.6	LOS B	13.3	95.7	0.57	0.56	0.57	24.9
Approach		1058	3.1	0.584	14.9	LOS B	15.3	110.0	0.55	0.55	0.55	28.3
East: Elizabeth Street												
4	L2	56	3.8	0.157	27.8	LOS B	3.1	22.6	0.60	0.58	0.60	19.9
5	T1	101	6.3	0.157	28.9	LOS C	3.1	22.6	0.66	0.58	0.66	18.1
6	R2	15	7.1	0.157	36.3	LOS C	2.5	18.6	0.71	0.59	0.71	19.6
Approach		172	5.5	0.157	29.2	LOS C	3.1	22.6	0.64	0.58	0.64	18.8
North: Bigge Street												
7	L2	28	7.4	0.169	13.2	LOS A	2.9	21.1	0.34	0.34	0.34	30.5
8	T1	361	3.5	0.278	11.3	LOS A	4.9	35.4	0.39	0.36	0.39	30.7
9	R2	14	7.7	0.278	15.8	LOS B	4.9	35.4	0.42	0.38	0.42	30.1
Approach		403	3.9	0.278	11.6	LOS A	4.9	35.4	0.39	0.36	0.39	30.6
West: Elizabeth Street												
10	L2	161	3.3	0.250	28.7	LOS C	5.1	37.0	0.63	0.69	0.63	22.7
11	T1	188	10.6	0.605	35.3	LOS C	12.1	90.4	0.84	0.75	0.84	16.2
12	R2	95	1.1	0.605	38.7	LOS C	12.1	90.4	0.84	0.75	0.84	18.5
Approach		444	5.9	0.605	33.6	LOS C	12.1	90.4	0.77	0.73	0.77	19.1
All Vehicles		2077	4.1	0.605	19.4	LOS B	15.3	110.0	0.57	0.55	0.57	25.6

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

Site: 7 [7 Bigge/ Elizabeth PM]

Site Category: -
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bigge Street												
1	L2	311	3.4	0.273	8.4	LOS A	3.5	25.0	0.23	0.55	0.23	31.8
2	T1	534	2.6	0.517	6.1	LOS A	8.8	62.8	0.31	0.30	0.31	34.3
3	R2	42	0.0	0.517	9.5	LOS A	8.8	62.8	0.31	0.30	0.31	32.4
Approach		886	2.7	0.517	7.0	LOS A	8.8	62.8	0.28	0.39	0.28	33.5
East: Elizabeth Street												
4	L2	97	0.0	0.362	38.8	LOS C	6.6	47.0	0.78	0.70	0.78	16.4
5	T1	181	2.9	0.362	37.2	LOS C	6.6	47.0	0.80	0.69	0.80	15.8
6	R2	26	44.0	0.362	41.9	LOS C	5.8	44.1	0.82	0.68	0.82	18.2
Approach		304	5.5	0.362	38.1	LOS C	6.6	47.0	0.79	0.69	0.79	16.2
North: Bigge Street												
7	L2	18	5.9	0.162	8.0	LOS A	1.9	13.7	0.20	0.20	0.20	35.1
8	T1	388	0.5	0.267	5.3	LOS A	3.1	21.7	0.23	0.24	0.23	34.9
9	R2	32	0.0	0.267	9.3	LOS A	3.1	21.7	0.26	0.27	0.26	34.5
Approach		438	0.7	0.267	5.7	LOS A	3.1	21.7	0.23	0.24	0.23	34.8
West: Elizabeth Street												
10	L2	39	0.0	0.102	36.3	LOS C	1.8	12.8	0.70	0.65	0.70	20.6
11	T1	146	18.7	0.509	39.5	LOS C	8.2	64.5	0.85	0.73	0.85	15.2
12	R2	48	0.0	0.509	43.4	LOS D	8.2	64.5	0.86	0.73	0.86	17.3
Approach		234	11.7	0.509	39.8	LOS C	8.2	64.5	0.83	0.72	0.83	16.6
All Vehicles		1862	3.8	0.517	15.9	LOS B	8.8	64.5	0.42	0.44	0.42	27.2

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

Site: 8 [8 Campbell/ Goulburn AM]

Site Category: -
Signals - Fixed Time Isolated Cycle Time = 60 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Goulburn Street												
1	L2	39	5.4	0.109	14.4	LOS A	1.5	10.7	0.62	0.57	0.62	29.0
2	T1	98	2.2	0.503	12.4	LOS A	6.6	46.0	0.70	0.67	0.70	30.1
3	R2	247	0.0	0.503	17.1	LOS B	6.6	46.0	0.77	0.75	0.77	26.6
Approach		384	1.1	0.503	15.6	LOS B	6.6	46.0	0.74	0.71	0.74	27.8
East: Campbell Street												
4	L2	89	25.9	0.190	20.8	LOS B	2.0	17.1	0.78	0.71	0.78	24.4
5	T1	97	8.7	0.212	15.1	LOS B	2.5	18.6	0.74	0.62	0.74	22.1
6	R2	21	5.0	0.212	18.5	LOS B	2.5	18.6	0.74	0.62	0.74	27.0
Approach		207	15.7	0.212	17.9	LOS B	2.5	18.6	0.76	0.66	0.76	23.8
North: Goulburn Street												
7	L2	38	0.0	0.049	14.6	LOS B	0.7	4.6	0.62	0.64	0.62	27.7
8	T1	86	4.9	0.171	11.3	LOS A	2.1	15.9	0.64	0.56	0.64	31.4
9	R2	32	13.3	0.171	14.8	LOS B	2.1	15.9	0.64	0.56	0.64	29.1
Approach		156	5.4	0.171	12.8	LOS A	2.1	15.9	0.64	0.58	0.64	30.2
West: Campbell Street												
10	L2	43	4.9	0.105	18.5	LOS B	1.3	9.4	0.72	0.64	0.72	26.1
11	T1	292	0.0	0.487	15.9	LOS B	6.9	48.3	0.80	0.69	0.80	21.7
12	R2	29	7.1	0.487	19.4	LOS B	6.9	48.3	0.81	0.69	0.81	26.7
Approach		364	1.2	0.487	16.5	LOS B	6.9	48.3	0.79	0.69	0.79	22.9
All Vehicles		1112	4.5	0.503	15.9	LOS B	6.9	48.3	0.75	0.67	0.75	26.1

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

Site: 8 [8 Campbell/ Goulburn PM]

Site Category: -
Signals - Fixed Time Isolated Cycle Time = 60 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Goulburn Street												
1	L2	21	0.0	0.051	16.7	LOS B	0.7	4.7	0.67	0.59	0.67	27.2
2	T1	80	5.3	0.238	14.3	LOS A	2.7	19.5	0.72	0.65	0.72	29.4
3	R2	64	0.0	0.238	18.0	LOS B	2.7	19.5	0.73	0.66	0.73	26.7
Approach		165	2.5	0.238	16.0	LOS B	2.7	19.5	0.72	0.64	0.72	28.2
East: Campbell Street												
4	L2	195	0.0	0.252	15.8	LOS B	3.8	26.3	0.69	0.71	0.69	27.0
5	T1	153	0.0	0.229	11.6	LOS A	3.3	23.3	0.66	0.57	0.66	24.6
6	R2	26	0.0	0.229	15.0	LOS B	3.3	23.3	0.66	0.57	0.66	29.2
Approach		374	0.0	0.252	14.1	LOS A	3.8	26.3	0.68	0.64	0.68	26.4
North: Goulburn Street												
7	L2	14	0.0	0.040	17.3	LOS B	0.5	3.6	0.68	0.58	0.68	27.1
8	T1	98	0.0	0.187	14.1	LOS A	2.3	16.7	0.71	0.60	0.71	29.9
9	R2	29	14.3	0.187	17.6	LOS B	2.3	16.7	0.71	0.61	0.71	27.4
Approach		141	3.0	0.187	15.2	LOS B	2.3	16.7	0.71	0.60	0.71	29.3
West: Campbell Street												
10	L2	25	16.7	0.038	15.3	LOS B	0.5	3.6	0.63	0.63	0.63	27.2
11	T1	67	1.6	0.146	12.5	LOS A	1.8	12.5	0.67	0.58	0.67	23.6
12	R2	26	0.0	0.146	15.9	LOS B	1.8	12.5	0.67	0.58	0.67	28.3
Approach		119	4.4	0.146	13.9	LOS A	1.8	12.5	0.66	0.59	0.66	25.8
All Vehicles		799	1.7	0.252	14.6	LOS B	3.8	26.3	0.69	0.63	0.69	27.4

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

Site: 9 [9 Elizabeth/ Goulburn AM]

Site Category: -
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Elizabeth Street												
5	T1	63	10.0	0.208	1.3	LOS A	1.2	8.8	0.45	0.46	0.45	36.7
6	R2	232	1.8	0.208	4.9	LOS A	1.2	8.8	0.45	0.46	0.45	37.1
Approach		295	3.6	0.208	4.2	NA	1.2	8.8	0.45	0.46	0.45	37.0
North: Goulburn Street												
7	L2	105	13.0	0.212	3.9	LOS A	0.8	5.8	0.21	0.52	0.21	37.2
9	R2	109	2.9	0.212	6.2	LOS A	0.8	5.8	0.21	0.52	0.21	34.2
Approach		215	7.8	0.212	5.1	LOS A	0.8	5.8	0.21	0.52	0.21	36.1
West: Elizabeth Street												
10	L2	222	0.0	0.177	3.4	LOS A	0.0	0.0	0.00	0.32	0.00	37.4
11	T1	98	22.6	0.177	0.0	LOS A	0.0	0.0	0.00	0.32	0.00	38.0
Approach		320	6.9	0.177	2.4	NA	0.0	0.0	0.00	0.32	0.00	37.7
All Vehicles		829	6.0	0.212	3.7	NA	1.2	8.8	0.22	0.42	0.22	37.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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.

Site: 9 [9 Elizabeth/ Goulburn PM]

Site Category: -
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Elizabeth Street												
5	T1	112	15.1	0.141	0.6	LOS A	0.8	5.7	0.32	0.27	0.32	37.6
6	R2	118	1.8	0.141	4.4	LOS A	0.8	5.7	0.32	0.27	0.32	37.8
Approach		229	8.3	0.141	2.6	NA	0.8	5.7	0.32	0.27	0.32	37.7
North: Goulburn Street												
7	L2	187	1.1	0.333	3.9	LOS A	1.4	9.8	0.24	0.53	0.24	37.3
9	R2	186	0.0	0.333	5.7	LOS A	1.4	9.8	0.24	0.53	0.24	34.4
Approach		374	0.6	0.333	4.8	LOS A	1.4	9.8	0.24	0.53	0.24	36.3
West: Elizabeth Street												
10	L2	99	1.1	0.119	3.4	LOS A	0.0	0.0	0.00	0.22	0.00	38.2
11	T1	111	24.8	0.119	0.0	LOS A	0.0	0.0	0.00	0.22	0.00	38.6
Approach		209	13.6	0.119	1.6	NA	0.0	0.0	0.00	0.22	0.00	38.4
All Vehicles		813	6.1	0.333	3.4	NA	1.4	9.8	0.20	0.37	0.20	37.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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.

Site: [10 Bigge/ Moore AM]

Site Category: -
Signals - Fixed Time Isolated Cycle Time = 90 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: VV1481_14C - applied
Reference Phase: Phase A
Input Phase Sequence: A, D, E
Output Phase Sequence: A, D, E

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bigge Street												
1	L2	82	2.6	0.691	25.5	LOS B	20.6	146.5	0.85	0.77	0.85	23.3
2	T1	1116	1.6	0.691	21.0	LOS B	21.2	150.3	0.85	0.77	0.85	20.0
3	R2	229	2.8	0.325	11.7	LOS A	3.6	25.7	0.60	0.72	0.60	34.7
Approach		1427	1.8	0.691	19.7	LOS B	21.2	150.3	0.81	0.76	0.81	24.1
East: Moore Street												
4	L2	74	1.4	0.322	38.3	LOS C	4.0	32.9	0.91	0.75	0.91	24.8
5	T1	73	72.5	0.322	38.2	LOS C	4.0	32.9	0.93	0.74	0.93	23.6
6	R2	11	0.0	0.322	43.7	LOS D	2.3	24.3	0.94	0.73	0.94	21.5
Approach		157	34.2	0.322	38.6	LOS C	4.0	32.9	0.92	0.74	0.92	24.0
North: Bigge Street												
7	L2	6	0.0	0.399	20.8	LOS B	9.5	69.5	0.70	0.61	0.70	30.3
8	T1	322	5.6	0.399	17.3	LOS B	9.5	69.5	0.70	0.61	0.70	22.4
9	R2	36	0.0	0.076	13.3	LOS A	0.6	3.9	0.66	0.67	0.66	23.3
Approach		364	4.9	0.399	17.0	LOS B	9.5	69.5	0.70	0.62	0.70	22.8
West: Moore Street												
10	L2	155	2.0	0.337	30.9	LOS C	5.9	43.4	0.83	0.76	0.83	7.2
11	T1	76	51.4	0.337	35.5	LOS C	5.9	43.4	0.91	0.73	0.91	24.5
12	R2	14	0.0	0.337	40.6	LOS C	3.1	29.3	0.92	0.73	0.92	16.7
Approach		244	17.2	0.337	32.9	LOS C	5.9	43.4	0.86	0.75	0.86	13.1
All Vehicles		2193	6.4	0.691	22.1	LOS B	21.2	150.3	0.81	0.73	0.81	21.6

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

Site: [10 Bigge/ Moore PM]

Site Category: -
Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: VV1481_14C - applied
Reference Phase: Phase A
Input Phase Sequence: A, D, E
Output Phase Sequence: A, D, E

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bigge Street												
1	L2	72	1.5	0.370	19.1	LOS B	12.5	89.7	0.58	0.55	0.58	27.1
2	T1	746	2.7	0.370	14.3	LOS A	12.6	90.4	0.57	0.52	0.57	24.6
3	R2	122	9.5	0.214	11.9	LOS A	1.9	14.0	0.52	0.69	0.52	34.6
Approach		940	3.5	0.370	14.3	LOS A	12.6	90.4	0.57	0.55	0.57	27.4
East: Moore Street												
4	L2	219	0.5	0.491	43.6	LOS D	11.2	80.4	0.89	0.80	0.89	23.4
5	T1	74	71.4	0.491	53.9	LOS D	11.2	80.4	0.97	0.77	0.97	20.5
6	R2	11	0.0	0.491	58.8	LOS E	4.4	47.3	0.98	0.77	0.98	18.6
Approach		303	17.7	0.491	46.6	LOS D	11.2	80.4	0.92	0.79	0.92	22.5
North: Bigge Street												
7	L2	3	0.0	0.539	18.7	LOS B	18.1	127.4	0.62	0.56	0.62	31.3
8	T1	540	0.8	0.539	15.3	LOS B	18.1	127.4	0.62	0.56	0.62	24.0
9	R2	42	0.0	0.076	9.0	LOS A	0.6	4.2	0.44	0.62	0.44	27.4
Approach		585	0.7	0.539	14.9	LOS B	18.1	127.4	0.61	0.56	0.61	24.3
West: Moore Street												
10	L2	94	2.2	0.424	51.8	LOS D	6.4	52.9	0.94	0.78	0.94	5.8
11	T1	59	82.1	0.424	56.0	LOS D	6.4	52.9	0.97	0.76	0.97	19.9
12	R2	9	0.0	0.424	65.9	LOS E	2.5	27.2	1.00	0.76	1.00	11.7
Approach		162	31.2	0.424	54.1	LOS D	6.4	52.9	0.95	0.77	0.95	11.4
All Vehicles		1991	7.1	0.539	22.6	LOS B	18.1	127.4	0.66	0.61	0.66	22.3

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

Site: [11 Elizabeth/ College AM]

Site Category: -
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: College Street												
1	L2	204	4.6	0.121	3.4	LOS A	0.1	0.6	0.02	0.45	0.02	36.9
3	R2	14	0.0	0.121	3.6	LOS A	0.1	0.6	0.02	0.45	0.02	36.4
Approach		218	4.3	0.121	3.5	NA	0.1	0.6	0.02	0.45	0.02	36.8
East: Hospital Access												
4	L2	14	0.0	0.045	0.5	LOS A	0.2	1.2	0.35	0.23	0.35	35.7
5	T1	27	19.2	0.045	2.2	LOS A	0.2	1.2	0.35	0.23	0.35	24.5
Approach		41	12.8	0.045	1.6	LOS A	0.2	1.2	0.35	0.23	0.35	31.0
West: Elizabeth Street												
11	T1	32	10.0	0.113	3.0	LOS A	0.6	4.6	0.07	0.46	0.07	23.9
12	R2	151	22.4	0.113	3.7	LOS A	0.6	4.6	0.07	0.46	0.07	36.0
Approach		182	20.2	0.113	3.6	NA	0.6	4.6	0.07	0.46	0.07	35.2
All Vehicles		441	11.7	0.121	3.3	NA	0.6	4.6	0.07	0.43	0.07	35.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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.

Site: [11 Elizabeth/ College PM]

Site Category: -
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: College Street												
1	L2	162	9.1	0.104	3.5	LOS A	0.1	0.9	0.02	0.45	0.02	36.7
3	R2	20	0.0	0.104	3.6	LOS A	0.1	0.9	0.02	0.45	0.02	36.3
Approach		182	8.1	0.104	3.5	NA	0.1	0.9	0.02	0.45	0.02	36.7
East: Hospital Access												
4	L2	16	0.0	0.057	0.8	LOS A	0.2	1.4	0.41	0.30	0.41	35.6
5	T1	38	0.0	0.057	2.1	LOS A	0.2	1.4	0.41	0.30	0.41	25.3
Approach		54	0.0	0.057	1.8	LOS A	0.2	1.4	0.41	0.30	0.41	31.0
West: Elizabeth Street												
11	T1	27	0.0	0.162	3.0	LOS A	0.8	6.3	0.09	0.46	0.09	23.7
12	R2	247	9.4	0.162	3.7	LOS A	0.8	6.3	0.09	0.46	0.09	35.9
Approach		275	8.4	0.162	3.6	NA	0.8	6.3	0.09	0.46	0.09	35.5
All Vehicles		511	7.4	0.162	3.4	NA	0.8	6.3	0.10	0.44	0.10	35.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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.

Site: [13 Speed Street/ Newbridge Road AM]

Site Category: -
Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Newbridge Road												
1	L2	902	2.8	0.799	15.0	LOS B	33.2	238.2	0.74	0.82	0.74	41.4
2	T1	973	5.4	0.799	20.0	LOS B	39.3	287.6	0.84	0.79	0.84	40.7
Approach		1875	4.2	0.799	17.6	LOS B	39.3	287.6	0.79	0.80	0.79	41.0
NorthEast: Terminus Street												
4	L2	15	100.0	0.204	64.8	LOS E	0.9	11.5	0.98	0.70	0.98	19.6
Approach		15	100.0	0.204	64.8	LOS E	0.9	11.5	0.98	0.70	0.98	19.6
NorthWest: Terminus Street												
7	L2	128	0.0	0.122	14.4	LOS A	3.1	21.7	0.41	0.63	0.41	15.8
8	T1	1040	9.7	0.612	25.9	LOS B	22.5	170.5	0.81	0.72	0.81	37.5
Approach		1168	8.6	0.612	24.7	LOS B	22.5	170.5	0.76	0.71	0.76	35.4
SouthWest: Speed Street												
10	L2	21	5.0	0.293	37.0	LOS C	7.3	53.3	0.79	0.77	0.79	19.2
12	R2	318	5.0	0.293	37.0	LOS C	7.4	54.3	0.79	0.77	0.79	28.4
Approach		339	5.0	0.293	37.0	LOS C	7.4	54.3	0.79	0.77	0.79	28.0
All Vehicles		3397	6.2	0.799	22.2	LOS B	39.3	287.6	0.78	0.77	0.78	37.3

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

Site: [13 Speed Street/ Newbridge Road PM]

Site Category: -
Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Newbridge Road												
1	L2	842	4.4	0.865	19.5	LOS B	44.8	324.9	0.83	0.87	0.87	38.7
2	T1	1327	4.0	0.865	19.1	LOS B	51.7	374.4	0.86	0.84	0.89	41.1
Approach		2169	4.1	0.865	19.2	LOS B	51.7	374.4	0.85	0.85	0.88	40.3
NorthEast: Terminus Street												
4	L2	14	100.0	0.126	58.9	LOS E	0.8	10.0	0.94	0.70	0.94	20.8
Approach		14	100.0	0.126	58.9	LOS E	0.8	10.0	0.94	0.70	0.94	20.8
NorthWest: Terminus Street												
7	L2	118	0.0	0.110	11.7	LOS A	2.3	16.2	0.34	0.61	0.34	16.5
8	T1	1072	1.8	0.551	21.9	LOS B	21.2	150.7	0.74	0.66	0.74	39.9
Approach		1189	1.6	0.551	20.9	LOS B	21.2	150.7	0.70	0.66	0.70	37.8
SouthWest: Speed Street												
10	L2	35	3.0	0.626	48.0	LOS D	14.8	104.6	0.95	0.83	0.95	16.3
12	R2	535	1.2	0.626	48.0	LOS D	15.1	107.0	0.95	0.83	0.95	24.9
Approach		569	1.3	0.626	48.0	LOS D	15.1	107.0	0.95	0.83	0.95	24.5
All Vehicles		3942	3.3	0.865	24.0	LOS B	51.7	374.4	0.82	0.79	0.84	36.4

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

USER REPORT FOR NETWORK SITE

Project: 200427-N170560 SIDRA - Future | **Template: Movement Summary Only**

Site: 4 [4 Hume/ Bigge AM] | Network: 5 [AM Network]

Site Category: -
Signals - Fixed Time Coordinated Cycle Time = 150 seconds (Network Site User-Given Phase Times)

Timings based on settings in the Network Timing dialog
Phase Times specified by the user
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bigge Street														
1	L2	86	2.4	86	2.4	0.109	31.2	LOS C	2.2	16.1	0.63	0.70	0.63	26.8
3	R2	423	2.0	423	2.0	0.930	96.4	LOS F	12.5	89.2	1.00	1.07	1.42	6.0
Approach		509	2.1	509	2.1	0.930	85.4	LOS F	12.5	89.2	0.94	1.00	1.28	8.1
East: Hume Highway														
4	L2	204	7.2	204	7.2	0.161	7.6	LOS A	0.4	3.1	0.05	0.62	0.05	46.4
5	T1	1368	12.5	1368	12.5	0.520	22.0	LOS B	10.7	82.5	0.57	0.51	0.57	40.0
Approach		1573	11.8	1573	11.8	0.520	20.1	LOS B	10.7	82.5	0.50	0.52	0.50	40.6
West: Hume Highway														
11	T1	1592	5.7	1592	5.7	0.906	15.2	LOS B	14.4	106.0	0.28	0.33	0.37	35.3
12	R2	321	1.3	321	1.3	0.872	77.0	LOS F	15.0	106.0	1.00	0.91	1.15	15.9
Approach		1913	5.0	1913	5.0	0.906	25.6	LOS B	15.0	106.0	0.40	0.43	0.50	27.4
All Vehicles		3995	7.3	3995	7.3	0.930	31.1	LOS C	15.0	106.0	0.51	0.54	0.60	27.5

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

Site: [12 Hume Highway/ Remembrance Avenue AM]

Network: 5 [AM Network]

Site Category: -
Signals - Fixed Time Coordinated Cycle Time = 150 seconds (Network Site User-Given Phase Times)

Timings based on settings in the Network Timing dialog
Phase Times specified by the user
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B, D, E, G
Output Phase Sequence: A, B, D, E, G

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Remembrance Avenue														
4	L2	76	4.2	76	4.2	0.352	60.1	LOS E	3.9	28.2	0.92	0.87	1.26	9.6
5	T1	34	0.0	34	0.0	0.352	55.5	LOS D	3.9	28.2	0.92	0.87	1.26	17.4
6	R2	107	2.0	107	2.0	0.489	81.8	LOS F	2.5	17.4	1.00	0.75	1.00	20.2
Approach		217	2.4	217	2.4	0.489	70.1	LOS E	3.9	28.2	0.96	0.81	1.13	17.2
NorthEast: Hume Highway														
7	L2	162	1.3	162	1.3	0.113	6.8	LOS A	0.1	0.9	0.02	0.59	0.02	54.5
8	T1	1487	10.9	1487	10.9	0.599	21.8	LOS B	13.4	102.4	0.58	0.52	0.58	38.5
9	R2	51	6.3	51	6.3	0.328	78.0	LOS F	2.1	15.9	0.96	0.75	0.96	22.2
Approach		1700	9.8	1700	9.8	0.599	22.0	LOS B	13.4	102.4	0.54	0.53	0.54	38.7
NorthWest: Mannix Parade														
10	L2	76	5.6	76	5.6	0.324	62.6	LOS E	4.1	29.4	0.92	0.76	0.92	24.8
11	T1	27	0.0	27	0.0	0.324	58.0	LOS E	4.1	29.4	0.92	0.76	0.92	16.9
12	R2	72	2.9	72	2.9	0.656	83.7	LOS F	3.3	24.0	1.00	0.80	1.08	9.0
Approach		175	3.6	175	3.6	0.656	70.5	LOS E	4.1	29.4	0.95	0.78	0.98	17.4
SouthWest: Hume Highway														
1	L2	37	5.7	37	5.7	0.963	26.3	LOS B	29.6	219.8	0.53	0.60	0.65	35.8
2	T1	2024	6.9	2024	6.9	0.963	20.1	LOS B	33.0	244.2	0.57	0.63	0.69	46.6
3	R2	203	0.0	203	0.0	0.864	60.6	LOS E	6.4	44.9	1.00	0.94	1.38	19.0
Approach		2264	6.2	2264	6.2	0.963	23.9	LOS B	33.0	244.2	0.61	0.66	0.75	43.0
All Vehicles		4356	7.3	4356	7.3	0.963	27.3	LOS B	33.0	244.2	0.61	0.62	0.70	37.8

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

USER REPORT FOR NETWORK SITE

Project: 200427-N170560 SIDRA - Future

Template: Movement Summary Only

Site: 4 [4 Hume/ Bigge PM]

Network: 6 [PM Network]

Site Category: -
Signals - Fixed Time Coordinated Cycle Time = 150 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Aver. Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bigge Street														
1	L2	183	3.4	183	3.4	0.253	36.4	LOS C	5.4	38.8	0.71	0.75	0.71	24.7
3	R2	435	1.9	435	1.9	0.808	75.1	LOS F	10.2	72.4	1.00	0.91	1.14	7.4
Approach		618	2.4	618	2.4	0.808	63.6	LOS E	10.2	72.4	0.91	0.87	1.01	11.6
East: Hume Highway														
4	L2	213	2.0	213	2.0	0.158	9.3	LOS A	1.2	8.3	0.13	0.64	0.13	44.3
5	T1	2268	3.9	2268	3.9	0.792	9.7	LOS A	15.6	112.8	0.44	0.40	0.44	52.7
Approach		2481	3.7	2481	3.7	0.792	9.6	LOS A	15.6	112.8	0.41	0.42	0.41	52.0
West: Hume Highway														
11	T1	1280	5.8	1280	5.8	0.538	8.5	LOS A	12.0	88.0	0.46	0.42	0.46	45.2
12	R2	274	1.2	274	1.2	0.796	73.4	LOS F	12.3	87.2	1.00	0.88	1.09	16.5
Approach		1554	5.0	1554	5.0	0.796	19.9	LOS B	12.3	88.0	0.56	0.50	0.57	31.6
All Vehicles		4653	4.0	4653	4.0	0.808	20.2	LOS B	15.6	112.8	0.53	0.51	0.54	36.2

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.

Site: [12 Hume Highway/ Remembrance Avenue PM]

Network: 6 [PM Network]

Site Category: -
Signals - Fixed Time Coordinated Cycle Time = 150 seconds (Network Site User-Given Phase Times)

Timings based on settings in the Network Timing dialog
Phase Times specified by the user
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, D, E, G
Output Phase Sequence: A, D, E, G

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Remembrance Avenue														
4	L2	154	0.0	154	0.0	0.562	65.5	LOS E	7.5	52.4	0.96	0.81	0.96	8.8
5	T1	27	0.0	27	0.0	0.562	61.0	LOS E	7.5	52.4	0.96	0.81	0.96	16.2
6	R2	213	0.5	213	0.5	0.539	74.7	LOS F	4.6	32.6	0.99	0.79	0.99	21.5
Approach		394	0.3	394	0.3	0.562	70.2	LOS E	7.5	52.4	0.98	0.80	0.98	17.3
NorthEast: Hume Highway														
7	L2	69	1.5	69	1.5	0.044	6.7	LOS A	0.0	0.3	0.02	0.59	0.02	54.6
8	T1	2201	4.6	2201	4.6	0.751	19.2	LOS B	20.6	150.0	0.63	0.58	0.63	40.6
9	R2	59	3.6	59	3.6	0.542	84.0	LOS F	2.7	19.3	1.00	0.76	1.00	21.2
Approach		2329	4.5	2329	4.5	0.751	20.5	LOS B	20.6	150.0	0.62	0.58	0.62	39.7
NorthWest: Mannix Parade														
10	L2	56	5.7	56	5.7	0.238	61.5	LOS E	2.9	21.2	0.90	0.74	0.90	25.4
11	T1	19	5.6	19	5.6	0.238	56.9	LOS E	2.9	21.2	0.90	0.74	0.90	17.0
12	R2	68	3.1	68	3.1	0.353	73.1	LOS F	2.9	20.9	0.97	0.76	0.97	10.1
Approach		143	4.4	143	4.4	0.353	66.4	LOS E	2.9	21.2	0.93	0.75	0.93	17.5
SouthWest: Hume Highway														
1	L2	42	10.0	42	10.0	0.825	26.9	LOS B	25.0	184.0	0.74	0.69	0.74	35.3
2	T1	1633	5.5	1633	5.5	0.825	20.8	LOS B	25.5	186.6	0.74	0.69	0.74	46.1
3	R2	55	0.0	55	0.0	0.491	83.7	LOS F	2.5	17.3	1.00	0.75	1.00	15.1
Approach		1729	5.4	1729	5.4	0.825	23.0	LOS B	25.5	186.6	0.75	0.69	0.75	44.1
All Vehicles		4596	4.5	4596	4.5	0.825	27.1	LOS B	25.5	186.6	0.71	0.65	0.71	37.1

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

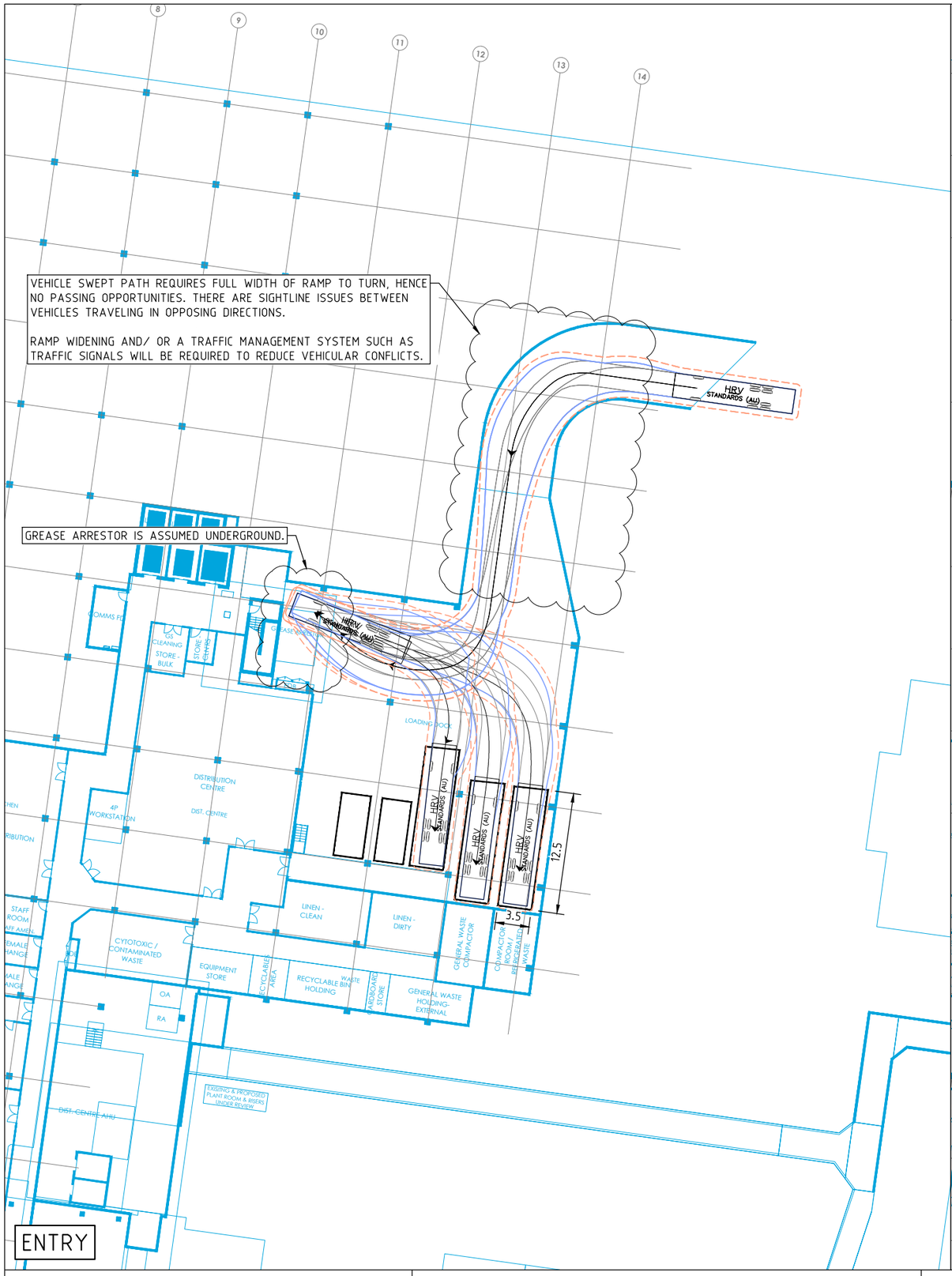
B.LOADING DOCK SWEPT PATHS

B

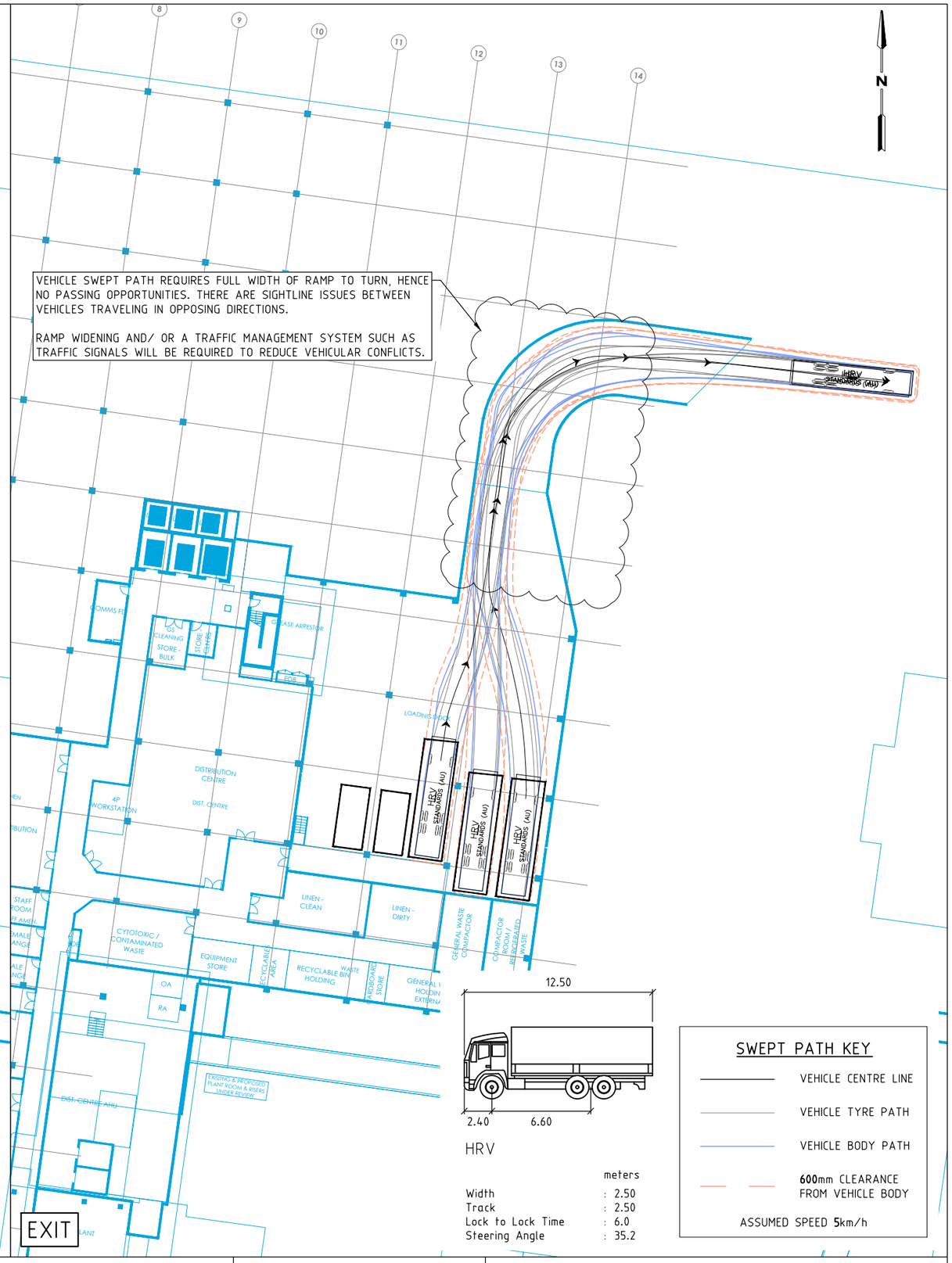
VEHICLE SWEPT PATH REQUIRES FULL WIDTH OF RAMP TO TURN, HENCE NO PASSING OPPORTUNITIES. THERE ARE SIGHTLINE ISSUES BETWEEN VEHICLES TRAVELING IN OPPOSING DIRECTIONS.

RAMP WIDENING AND/ OR A TRAFFIC MANAGEMENT SYSTEM SUCH AS TRAFFIC SIGNALS WILL BE REQUIRED TO REDUCE VEHICULAR CONFLICTS.

GREASE ARRESTOR IS ASSUMED UNDERGROUND.



ENTRY



EXIT

HRV

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 35.2

SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 600mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h

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Melbourne	03 9851 9600
Sydney	02 8448 1800
Brisbane	07 3113 5000
Adelaide	08 8334 3600
Perth	08 6169 1000

PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY
SUBJECT TO CHANGE WITHOUT NOTIFICATION

WARNING
BEWARE OF UNDERGROUND SERVICES
THE LOCATIONS OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

DESIGNED R.ZHANG	DESIGN CHECK B.MAYNARD
APPROVED BY B.MAYNARD	DATE ISSUED 22.11.'19

SCALE A3 0 2.5 5 10 1:500

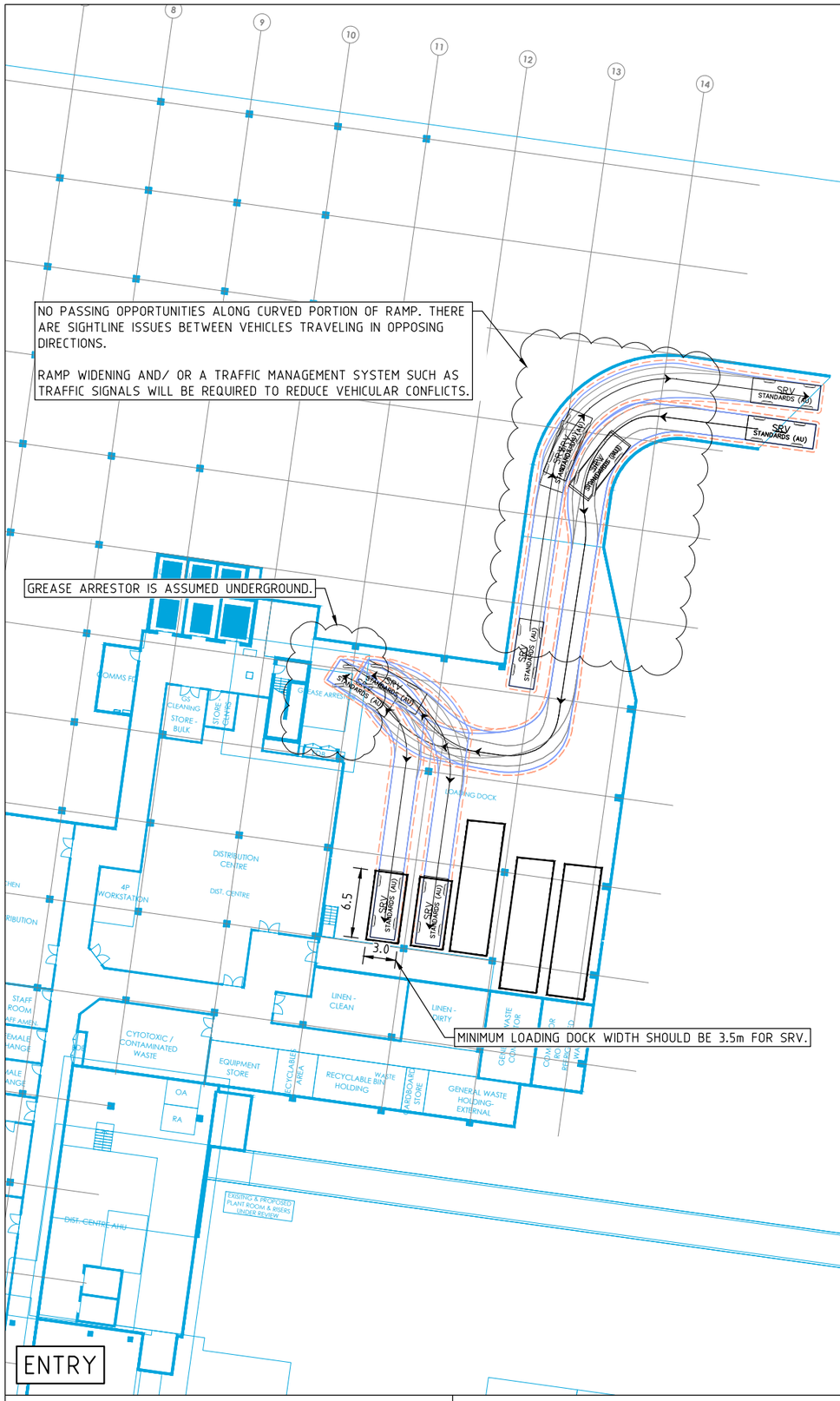
CAD FILE NO. N170560-11-P1.DWG

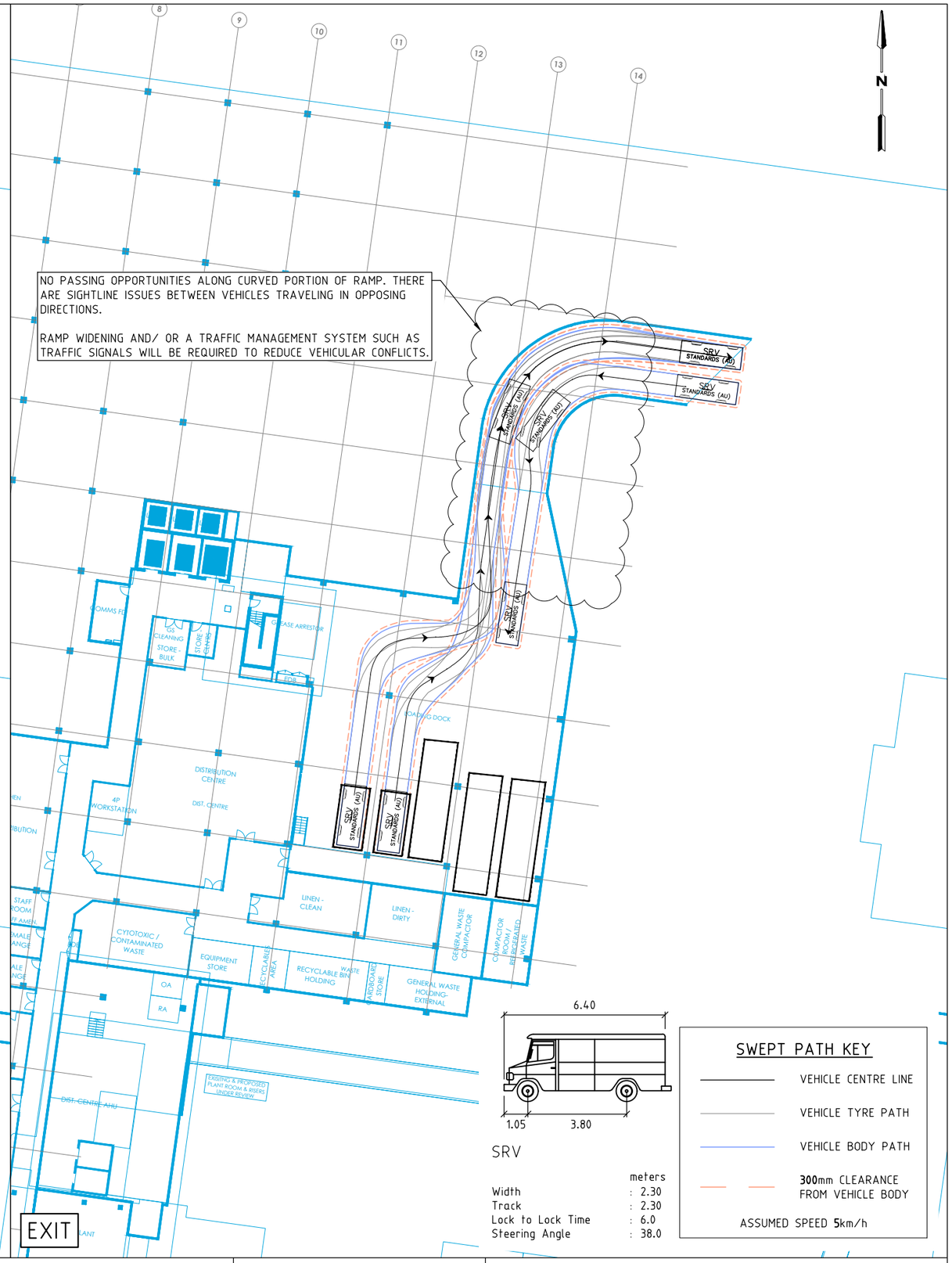
LIVERPOOL HEALTH AND ACADEMIC PRECINCT
LOADING DOCK

SWEPT PATH ASSESSMENT

DRAWING NO. N170560-11-01 SHEET 01 OF 02 ISSUE P1

\\GTA.COM.AU\PROJECTFILES\PROJECTFILES5YD\NT7000-17099\NT9560 LIVERPOOL HEALTH AND ACADEMIC PRECINCT\CAD\N170560-11-P1.DWG PLOTTED BY RAYMOND ZHANG ON 22/11/2019 AT 14:08





SRV

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

SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h

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DESIGNED	R.ZHANG
DESIGN CHECK	B.MAYNARD
APPROVED BY	B.MAYNARD
DATE ISSUED	22.11.'19
CAD FILE NO.	N170560-11-P1.DWG

SCALE A3 0 2.5 5 10 1:500

LIVERPOOL HEALTH AND ACADEMIC PRECINCT
LOADING DOCK

SWEPT PATH ASSESSMENT

DRAWING NO. N170560-11-02 SHEET 02 OF 02 ISSUE P1

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