Transport and Accessibility Impact Assessment

Lismore Base Hospital Stage 3C Northern Tower Extension

Prepared for Health Infrastructure / 15 May 2018

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Revision Register

Rev	Date	Prepared By	Approved By	Remarks
0	29/03/18	GC	PY	Draft for review
1	11/04/18	GC	PY	Final
2	20/04/18	GC	PY	Following crash history information from LCC
3	23/04/18	GC	PY	Following comments
4	15/05/18	GC	PY	Following DP&E comments

Executive Summary

This report provides an assessment of the proposed Stage 3C Northern Tower Extension (NTX) at Lismore Base Hospital ("Hospital"). The proposed works include the construction of four additional storeys above the approved four-storey north tower, the alteration of the existing north tower façade, and associated connectivity works.

This report aims to respond to the Secretary's Environmental Assessment Requirements by covering the existing conditions within the Hospital and how the proposed redevelopment impacts the site from a traffic, parking and access point of view. This report will make reference to prior development that has occurred at the Hospital, as well as refer to approved development to be constructed.

During the preparation of this report, consultation with Roads and Maritime Services (RMS), Lismore City Council (LCC) and Transport for New South Wales (TfNSW) has been undertaken and their feedback incorporated into this report.

The following key items are identified within this report:

- The development is largely a rationalisation of existing space at the Hospital and will result in a net increase of only 21 beds and 8 staff per day. As a result, there will be an increase in peak parking demand of 10 spaces.
- As part of prior development at the Hospital, a multi-storey car park was constructed during the Stage 3B works. This car park was designed to increase the Hospital's parking supply by 270 spaces. A demand analysis has indicated that this car park has the capacity to cater for the increase in parking demand as a result of Stage 3A (110 spaces), Stage 3B (150 spaces) and Stage 3C (10 spaces). Further, a parking occupancy survey has indicated that there is sufficient capacity for the existing car parking associated with the Hospital to cater for the additional parking demand experienced as a result of the Stage 3C works.
- Following the travel mode survey and expected increase in Hospital services, it is anticipated that a further 10 peak hour vehicle trips will be generated by the development. Traffic modelling conducted has indicated that there is sufficient capacity within the surrounding road network to cater for the development, with intersections near to the site operating at a high Level of Service "A" post development. The modelling methodology has been reviewed and agreed upon with LCC, RMS and TfNSW.
- Due to the minor increase in visitors and staff, there is a negligible increase in pedestrian, cyclist and public transport trips as a result of the development. It is anticipated that these can be accommodated within their networks.
- There will be no impact to the current operation of ambulance and service vehicles. The existing loading dock will remain as the main loading area of the Hospital post completion of the development and there is no anticipated increase in service vehicles as a result of the works.

1.0 Introduction

1.1 Background

In 2012, planning began for Stage 3 of the redevelopment of Lismore Base Hospital. As the design progressed, approval was granted for Stage 3A (SSD 5816) in March 2014, and Stage 3B and the multi-storey car park (SSD 6848) in May 2015. Stage 3A and the multi-storey car park were completed and became operational in 2016. Construction of Stage 3B is currently underway.

TTW has prepared traffic reporting to support the previous stages of the Hospital, including a Schematic Design Traffic and Parking Report relating to both Stages 3A and 3B. As part of this study, the provision of a multi-storey car park was supported based on future parking demand projections of the Hospital. This multi-storey car park was later constructed to respond to the additional parking demand generated by the Stage 3 works.

Through each stage of the Hospital's redevelopment, design reports have been submitted to the Department of Planning, reviewed and further information provided where necessary. This has included consultation and meetings with the authorities.

This study focuses on Stage 3C of the Hospital's redevelopment, with reference to these previous developments and their interaction with the proposed works. Where relevant, data collected as part of these previous studies has been utilised within this assessment.

1.2 Objectives

The key objective of this report is to identify the future impacts of the proposed Stage 3C NTX works within the local transport network. In order to determine this impact, a thorough understanding of both the existing conditions and anticipated operational requirements are necessary. An impact assessment must consider the impacts for all transport users, including public transport, private vehicles, cyclists and pedestrians.

1.3 Structure

This report is divided into the following sections:

Section 1.0 gives an overview of the report.

Section 2.0 provides a response to the SEARs and highlights where these have been addressed within the report.

Section 3.0 summarises the existing conditions around the site.

Section 4.0 covers the impact of the new development in relation to traffic, parking and access.

Section 5.0 summarises the main findings of the report and highlights any key issues.

1.4 References

This report has been prepared with reference to the following:

- Lismore City Council's Development Control Plan 2012 and Local Environmental Plan 2012
- Roads and Maritime Services' (RMS) Guide to Traffic Generating Developments
- Transport for New South Wales' Future Transport Strategy 2056
- Austroads Guide to Traffic Management Part 11: Parking and Part 12: Traffic Impacts of Development

- Pedestrian Crossing Review prepared by TTW dated 4th November 2016
- Lismore Base Hospital Schematic Design Traffic and Parking Report prepared by TTW dated 15th February 2013
- Lismore Base Hospital Stage 3A Redevelopment SSD Traffic and Parking Assessment prepared by TTW dated 25th July 2013
- Lismore Hospital Stage 3B Works and Multi-Storey Car Park Traffic and Parking Report prepared by TTW dated 9th January 2015
- Lismore Base Hospital Parking Strategy Effectiveness Audit prepared by Bitzios Consulting dated 23rd June 2017
- Lismore Car Park Management Strategy Draft Options Paper prepared by Parking and Traffic Consultants dated 28th August 2015
- Lismore Base Hospital Precinct Travel Plan prepared by Northern NSW Local Health District dated 2015
- Lismore Base Hospital Precinct Transport Access Guide prepared by Northern NSW Local Health District dated 23rd May 2016
- Lismore City Council's Lismore Growth Management Strategy 2015-2035
- Director-General's Assessment Report: Stage 3A, Lismore Base Hospital (SSD 5816) prepared by NSW Government Planning and Infrastructure dated March 2014
- State Significant Development Assessment Report: Stage 3B and New Multi-Level Car Park, Lismore Base Hospital Redevelopment (SSD 6848) prepared by NSW Planning and Environment dated May 2015

2.0 Response to Secretary's Environmental Assessment Requirements

Under application number SSD 8963 we have been provided with Secretary's Environmental Assessment Requirements (SEARs). These requirements were issued on the 30th January 2018. The key issues relevant to this Transport and Accessibility Impact Assessment include those shown in Table 2.1 and have been addressed in various sections of this report as referenced.

Table 2.1: Response to SEARs

Key Issues		Comments and References
1	**Statutory and Strategic Context**	
	Address the statutory provisions contained in all relevant environmental planning instruments, including: ▪ State Environmental Planning Policy (State & Regional Development) 2011; ▪ State Environmental Planning Policy (Infrastructure) 2007; ▪ State Environmental Planning Policy No. 33 – Hazardous and Offensive Development; ▪ State Environmental Planning Policy No. 55 – Remediation of Land; ▪ State Environmental Planning Policy No. 64 – Advertising and Signage; and ▪ Lismore Local Environmental Plan 2012.	This transport and accessibility impact assessment has been prepared in the context of the relevant planning policies as listed.
2	**Policies**	
	Address the relevant planning provisions, goals and strategic planning objectives in the following: ▪ NSW State Priorities; ▪ North Coast Regional Plan 2036; ▪ Draft Future Transport Strategy 2056 and supporting plans; ▪ Crime Prevention Through Environmental Design (CPTED) Principles; ▪ Planning Guidelines for Walking and Cycling; ▪ Healthy Urban Development Checklist, NSW Health; and ▪ Better Placed – An integrated design policy for the built environment of NSW 2017.	This transport and accessibility impact assessment has been prepared in the context of the relevant strategies and objectives as listed.
5	**Transport and Accessibility** Include a transport and accessibility impact assessment, which details, but not limited to the following:	
5.1	Accurate details of the current daily and peak hour vehicle, public transport, pedestrian and cycle movement and existing traffic and transport facilities provided on the road network located adjacent to the proposed development;	Vehicle movements have been addressed in Section 3.9. Pedestrian and cycle movements have been addressed in Section 3.6 and 3.7 respectively.

Key Issues		Comments and References
5.2	An assessment of the operation of existing and future transport networks including the bus network and their ability to accommodate the forecast number of trips to and from the development;	The vehicular network is discussed in Section 4.5. Pedestrian, cyclist and public transport networks are discussed in Sections 3.6, 3.7 and 3.8 respectively.
5.3	Details of estimated total daily and peak hour trips generated by the proposal, including vehicle, public transport, pedestrian and bicycle trips;	The total and daily peak hour vehicular trips have been discussed in Section 4.5. The increase in public transport, pedestrian and bicycle trips is expected to be negligible due to the minor increase in staff and visitors anticipated.
5.4	The adequacy of public transport, pedestrian and bicycle networks and infrastructure to meet the likely future demand of the proposed development;	The vehicular network is discussed in Section 4.5. Pedestrian, cyclist and public transport networks are discussed in Sections 3.6, 3.7 and 3.8 respectively.
5.5	The impact of the proposed development on existing and future public transport infrastructure within the vicinity of the site in consultation with Roads and Maritime Services and Transport for NSW and identify measures to integrate the development with the transport network;	The development will not impact the operation of public transport near to the Hospital. Bus zones located adjacent to the Hospital will be maintained. Refer to Section 3.8.
5.6	Details of travel demand management measures to encourage sustainable travel choices and details of programs for implementation;	The Hospital has a current Green Travel Plan that was prepared to support the Stage 3B works. As Stage 3C is an extension to the approved North Tower this Plan is considered appropriate to apply to Stage 3C. This has been discussed in Section 4.9.
5.7	The impact of trips generated by the development on nearby intersections, with consideration of the cumulative impacts from other approved developments in the vicinity, and the need/associated funding for upgrading or road improvement works, if required (note: traffic modelling is to be undertaken with scope to be agreed by TfNSW and RMS in advance);	Post development the surrounding road network to the Hospital is expected to operate at a high Level of Service. It is not anticipated that any road upgrades or improvement works are therefore necessary. Refer to Section 4.5 for further discussion.
5.8	The proposed active transport access arrangements and connections to public transport services;	Due to the nature of the development being an extension to an approved building, no change to the existing active transport access arrangements is proposed. The existing active transport and public transport facilities are discussed in Sections 3.6, 3.7 and 3.8. The future impact of the development on these facilities is discussed in Sections 4.6 and 4.7.
5.9	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;	Due to the nature of the development being an extension to an approved building, no change to the existing transport access arrangements is proposed. As there are limited trips expected to be generated by the extension, this is considered acceptable.

Key Issues		Comments and References
5.10	Measures to maintain road and personal safety in line with CPTED principles;	There is no change to pedestrian access proposed external to the Hospital as part of the development.
5.11	The proposed car and bicycle parking provision, including end-of-trip facilities, which must be taken into consideration of the availability of public transport and the requirements of Council's relevant parking codes and Australian Standards;	The increase in car parking demand is anticipated to be accommodated within the multi-storey car park constructed as part of Stage 3B. Refer to Section 4.4. No additional bicycle facilities are proposed as there is anticipated to be a negligible increase in cyclist trips (see Section 4.6.2).
5.12	Proposed bicycle parking facilities in secure, convenient, accessible areas close to main entries incorporating lighting and passive surveillance;	No additional bicycle facilities are proposed as there is anticipated to be a negligible increase in cyclist trips. Refer to Section 4.6.2.
5.13	Details of the proposed number of car parking spaces and compliance with appropriate parking codes and justification for the level of car parking provided on-site (including the provision of an updated parking study);	The increase in car parking demand is anticipated to be accommodated within the multi-storey car park constructed as part of Stage 3B. Refer to Section 4.4. An updated occupancy study was conducted of on and off street parking near to the site. This has been further detailed in Section 3.4.
5.14	Details of emergency vehicle access arrangements;	The development does not propose to alter the existing emergency vehicle access arrangements. See Section 4.2.
5.15	An assessment of road and pedestrian safety adjacent to the proposed development and the details of required road safety measures;	A review of available crash data near to the Hospital does not indicate any current road safety issues (refer to Section 3.2.1). An assessment has been conducted of the existing crossing on Uralba Street that determined it was sufficient to support the multi-storey car park and that no upgrade would be required. Refer to Section 4.6.1.
5.16	Service vehicle access, delivery and loading arrangements and estimated service vehicle movements (including vehicle type and the likely arrival and departure times);	The proposed development is not anticipated to result in an increase in loading requirements of the Hospital. There is also no proposal to alter the existing and proposed loading facilities. See Section 4.2.

Key Issues		Comments and References
5.17	In relation to construction traffic; ▪ Assessment of cumulative impacts associated with other construction activities; ▪ 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 access arrangements of construction vehicles, construction workers to and from the site, emergency vehicles and service vehicle; ▪ Details of temporary cycling and pedestrian access during construction; ▪ Details of proposed construction vehicle access arrangements at all stages of construction; and ▪ Traffic and transport impacts during construction, including cumulative impacts associated with other construction activities, and how these impacts will be mitigated for any associated traffic, pedestrian, cyclists, parking and public transport, including the preparation of a draft Construction Traffic Management Plan to demonstrate the proposed management of the impact (which must include vehicle routes, number of trucks, hours of operation, access arrangements and traffic control measures for all demolition/construction activities).	These points have been addressed in the Preliminary Construction Traffic Management Plan which has been submitted as a part of this Environmental Impact Statement.
5.18	Relevant policies and guidelines: ▪ *Guide to Traffic Generating Developments (Roads and Maritime Services)* ▪ *EIS Guidelines – Road and Related Facilities (DoPI)* ▪ *Cycling Aspects of Austroads Guides* ▪ *NSW Planning Guidelines for Walking and Cycling* ▪ *Austroads Guide to Traffic Management Part 12: Traffic Impacts of Development* ▪ *Standards Australia AS2890.3 (Bicycle Parking Facilities)*	These policies and guidelines have been reviewed during the preparation of this report.

3.0 Existing Conditions

3.1 Site Location

Lismore Base Hospital ("Hospital") is located at 60 Uralba Street within Lismore City Council's Local Government Area (LGA) in northern New South Wales. The proposed Stage 3C North Tower Extension (NTX) is located above the approved north tower (SSD 6848 Modification 3) which is located within the south-eastern corner of the Hospital.

The Hospital is bound by Uralba Street to the south; Hunter Street to the west; Weaver Street and Little Uralba Street to the east; and Orion Street to the north.

The site lies within the south-east portion of the Hospital, north of the already constructed south tower within the Hospital (constructed as part of Stages 3A and 3B). Refer to Figure 3.1 for the site's location within the Hospital.

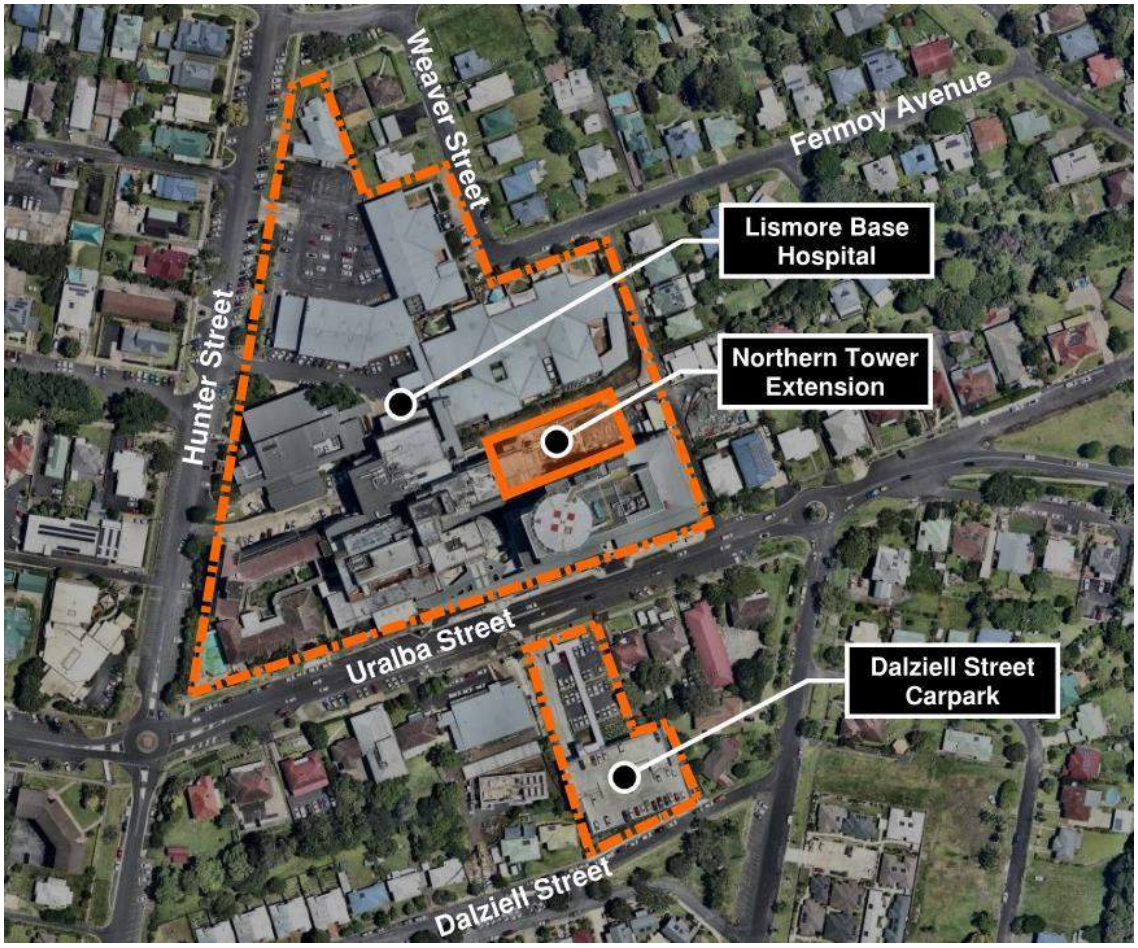

Figure 3.1: Site Location

3.2 Road Network

Uralba Street is a local road providing the main frontage to the Hospital. The road provides a connection through to the Lismore CBD to the west of the Hospital. The road is a two-way road with a single lane in each direction. Angled on street parking is generally provided on both kerbsides with parking restrictions.

Little Uralba Street is a laneway providing access to some residential properties and driveways associated with the Hospital. The road was previously one-way northbound until

construction began on the Hospital when the south end of the road was closed to allow for construction vehicle traffic.

Hunter Street is a local road that connects to Uralba Street via a roundabout and is oriented in a north-south direction. The road provides access to Bruxner Highway via a left in and left out only intersection. On street parking is generally provided on both kerbsides. Adjacent to the Hospital the road is signposted as a 40 kilometres per hour shared zone.

Rotary Drive is a local road that provides a continuation of Uralba Street to the east to connect to Bruxner Highway via a roundabout and slip lane. The road allows for two-way traffic with one lane in each direction and no kerbside parking.

Dawson Street is a state road under the jurisdiction of Roads and Maritime Services (RMS). The road provides a connection between Lismore and the Pacific Motorway. The road connects to Uralba Street via a roundabout. Near to the site the road has a speed limit of 60 kilometres per hour and contains one travelling lane in each direction and some kerbside parking.

Bruxner Highway is a state road under the jurisdiction of RMS and is the nearest major road to the site. Near to the site the road contains two eastbound travelling lanes and one westbound lane.

3.2.1 Historical Crash Data

Historical crash and casualty statistics from 2012 to 2016 are available from the Transport for NSW Centre for Road Safety. The multi-storey car park was completed in 2016; available crash data indicates that in 2016 there were two crash incidents adjacent to the Hospital. One of these was a non-casualty and the other a serious injury near the intersection of Uralba Street and Hunter Street.

Detailed crash data from 2012 to 2016 is shown in Figure 3.2.

From review of this crash data, it does not appear that there are significant safety concerns with regards to the operation of the existing road network surrounding the Hospital.

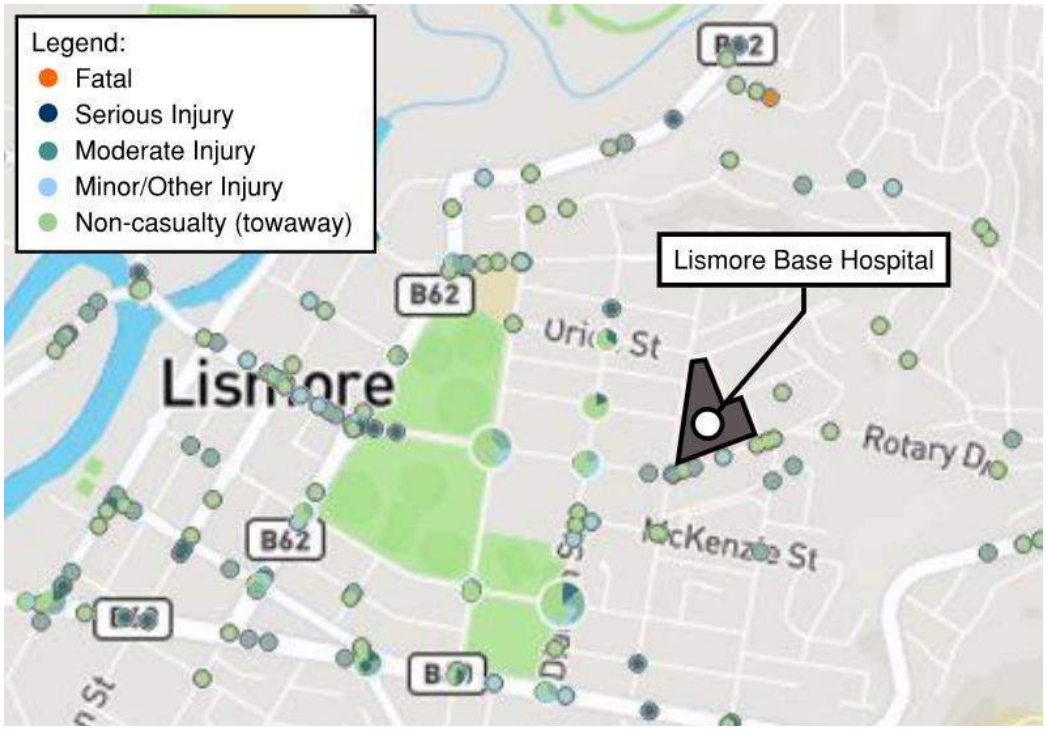

Figure 3.2: 2012-2016 Crash and Casualty History for Lismore
Source: NSW Centre for Road Safety

More recent crash data (from 1 July 2012 to 30 June 2017) was provided to TTW by Lismore City Council. An analysis of this crash data was conducted to determine any long term trends in accident history near to the Hospital. As shown in Figure 3.3, the incidence of crashes in surrounding streets to the Hospital does not appear to increase as a result of Hospital growth, with the greatest number of recorded crashes occurring in 2013. It is also noted that there were five recorded crashes that resulted in a serious injury; four of these occurred in 2013 and one in 2016. No fatalities were recorded.

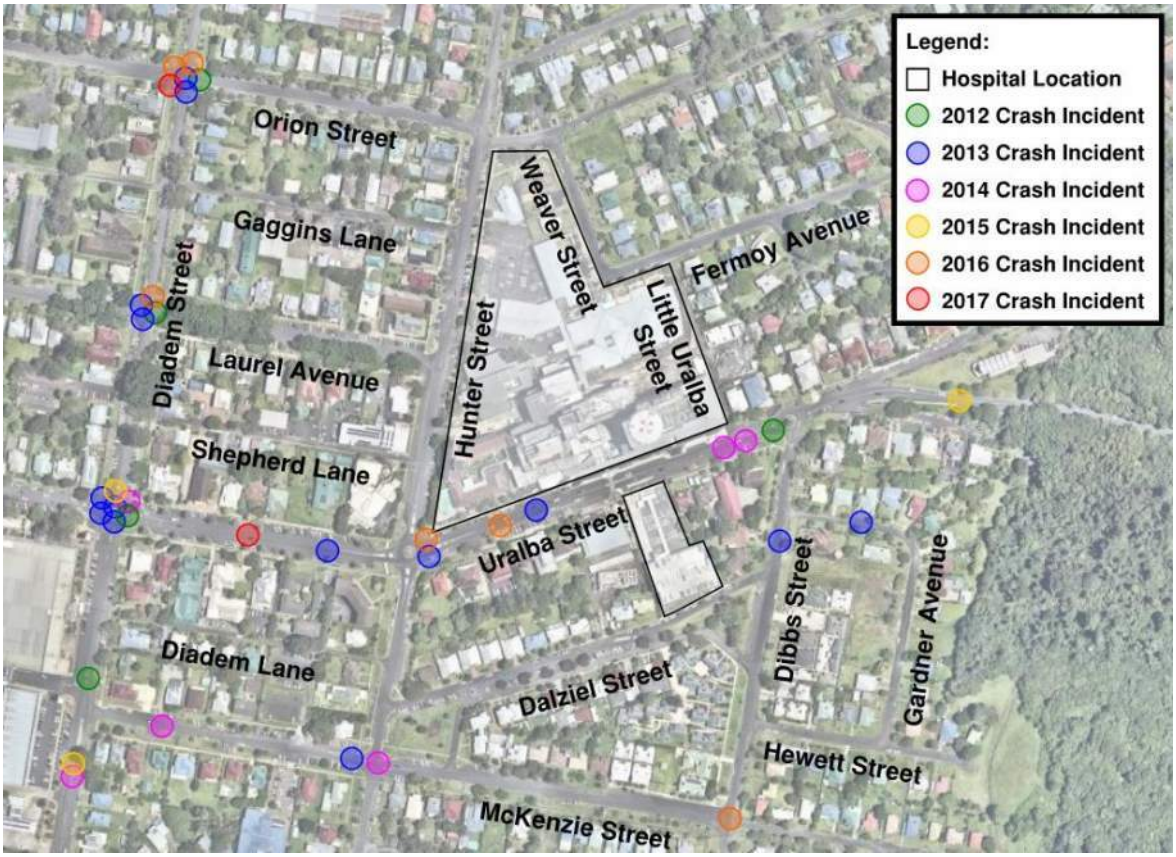

Figure 3.3: Crash Incidents per Year
Source: Lismore City Council

3.3 Site Access

The main access points to the Hospital are via Uralba and Hunter Streets, with additional access available from Weaver Street and Little Uralba Street.

3.3.1 Drop Off and Pick Up Facilities

The main drop off and pick up facility is via Uralba Street at the front entry of the Hospital. This was constructed as part of Stage 3A of the Hospital redevelopment.

3.3.2 Ambulance Access

The access for ambulance drop off is via a separated access driveway on Uralba Street (constructed as part of Stage 3A of the Hospital redevelopment).

3.3.3 Service and Loading Access

The Hospital contains a service yard accessed by Little Uralba Street that is currently under construction as part of the Stage 3B works. Access by gas vehicles is via Weaver Street at a gas layby area.

There are also additional loading areas within the Hospital accessed by Hunter Street.

3.4 Car Parking

A study of the existing parking inventory and occupancy was conducted on the 15th March 2018 to determine the operation of both on street and off street parking spaces near to the Hospital. The study area for this parking survey has been further detailed in Figure 3.4. The following section provides a summary of the results of this parking study. Further detailed hourly results have been attached in Appendix A.

This updated parking survey was conducted in response to consultation with Lismore City Council, and the survey chosen to follow the extent of the Parking Strategy Effectiveness Audit conducted for Council in 2017.

Figure 3.4: Parking Survey Extent

3.4.1 Off Street Parking Inventory

The Hospital has three main off street parking areas associated with it:

- A main car park accessed from Hunter Street within the Hospital and other smaller parking areas accessed by Hunter Street.
- A multi storey car park accessed by Uralba Street that was completed as part of the redevelopment of the Hospital.
- A car park accessed from Gaggins Lane.

Various parking restrictions apply to the Hospital car parks, with spaces allocated to fleet, staff,

maintenance or patients only. Table 3.1 provides a parking inventory of spaces within the Hospital, including the restrictions in place. There are approximately 477 off street spaces that are associated within the Hospital, with 270 spaces available for Hospital users within the recently constructed multi-storey car park and associated on grade area. Note that there are an additional 5 spaces to the 270 within the multi-storey car park dedicated to the university that are not available for Hospital users.

Table 3.1: Inventory of Lismore Base Hospital Parking
Source: Parking Survey (15th March 2018)

Location	Restriction	Number of Spaces
Parking within Hospital accessed by Hunter Street	Executive Hospital Staff	9
	2 Minute Parking	1
	Restricted Parking	2
	Fleet Vehicles	4
	Cancer Care and Health	6
	Patient Parking Only	9
	Disabled	6
	3 Hour Community Mental Health Parking	3
	Maintenance Parking	1
	Pathology Vehicle Only	1
	Hospital Staff Only Maintenance Parking	2
	Hospital Staff Only Disabled	1
	Hospital Staff Only	114
	Pain Clinic	1
	NSP Parking Only	1
	No Restrictions	1
Uralba Street Main Entrance	Patient Transport Only	4
	Drop Off Only	10
	Disabled	1
Uralba Street Car Park	Elderly Parking	8
	Disabled	4
	No Restriction	9
	Hospital Staff	147
	Public Parking	102
	University Parking	5
Gaggins Lane Car Park	Fleet Vehicles	30

3.4.2 On Street Parking Inventory

There were 991 parking spaces identified within the on street survey extent detailed in Figure 3.4. Following the completion and opening of the Hospital's multi-storey car park, parking restrictions were applied within surrounding on street parking locations to reflect the parking restrictions within the Hospital. The approximate location of these parking restrictions has been detailed in Figure 3.5.

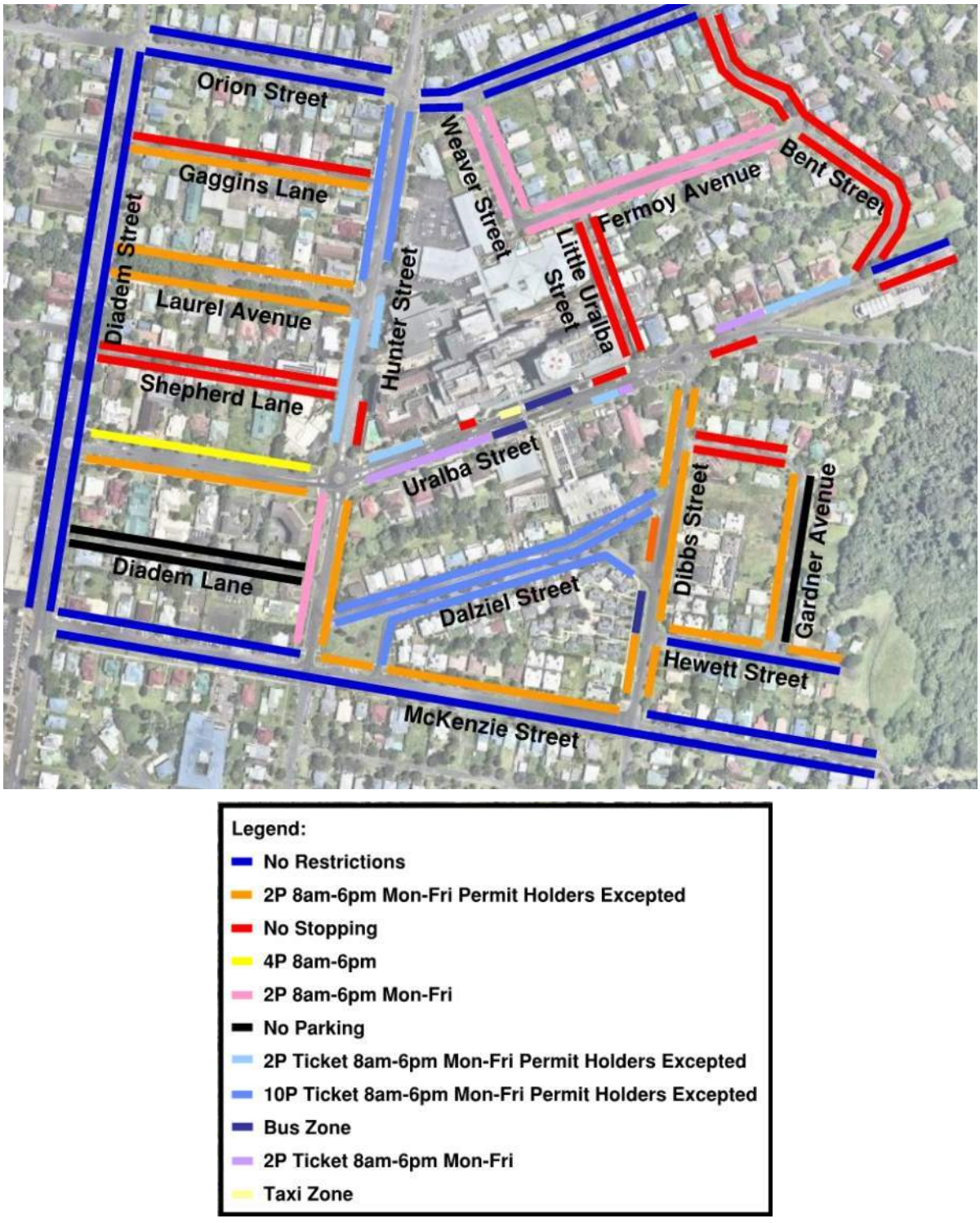

Figure 3.5: On Street Parking Restrictions
Source: Parking Survey (15th March 2018)

3.4.3 Parking Occupancy

Across the survey extent, the peak hour occurred at 2pm when 66% of the total spaces were occupied (59% of on street parking spaces and 82% of off street parking spaces were occupied during this hour). Occupancy per hour is further detailed in Table 3.2 and the parking occupancy rate across the surveyed area during the peak hour is detailed in Figure 3.6. A comprehensive breakdown of occupancy per hour in each location is included in Appendix A.

Table 3.2: Hourly Parking Occupancy
Source: Parking Survey (15th March 2018)

		8-9am	9-10am	10-11am	11am-12pm	12-1pm	1-2pm	2-3pm	3-4pm	4-5pm
On Street	Spaces Occupied	432	517	558	549	544	558	585	555	484
	Percent Occupied	44%	52%	56%	55%	55%	56%	59%	56%	49%
Off Street	Spaces Occupied	268	335	359	358	365	363	391	340	286
	Percent Occupied	56%	70%	75%	75%	77%	76%	82%	71%	60%
Total	Spaces Occupied	700	852	917	907	909	921	976	895	770
	Percent Occupied	48%	58%	62%	62%	62%	63%	66%	61%	52%

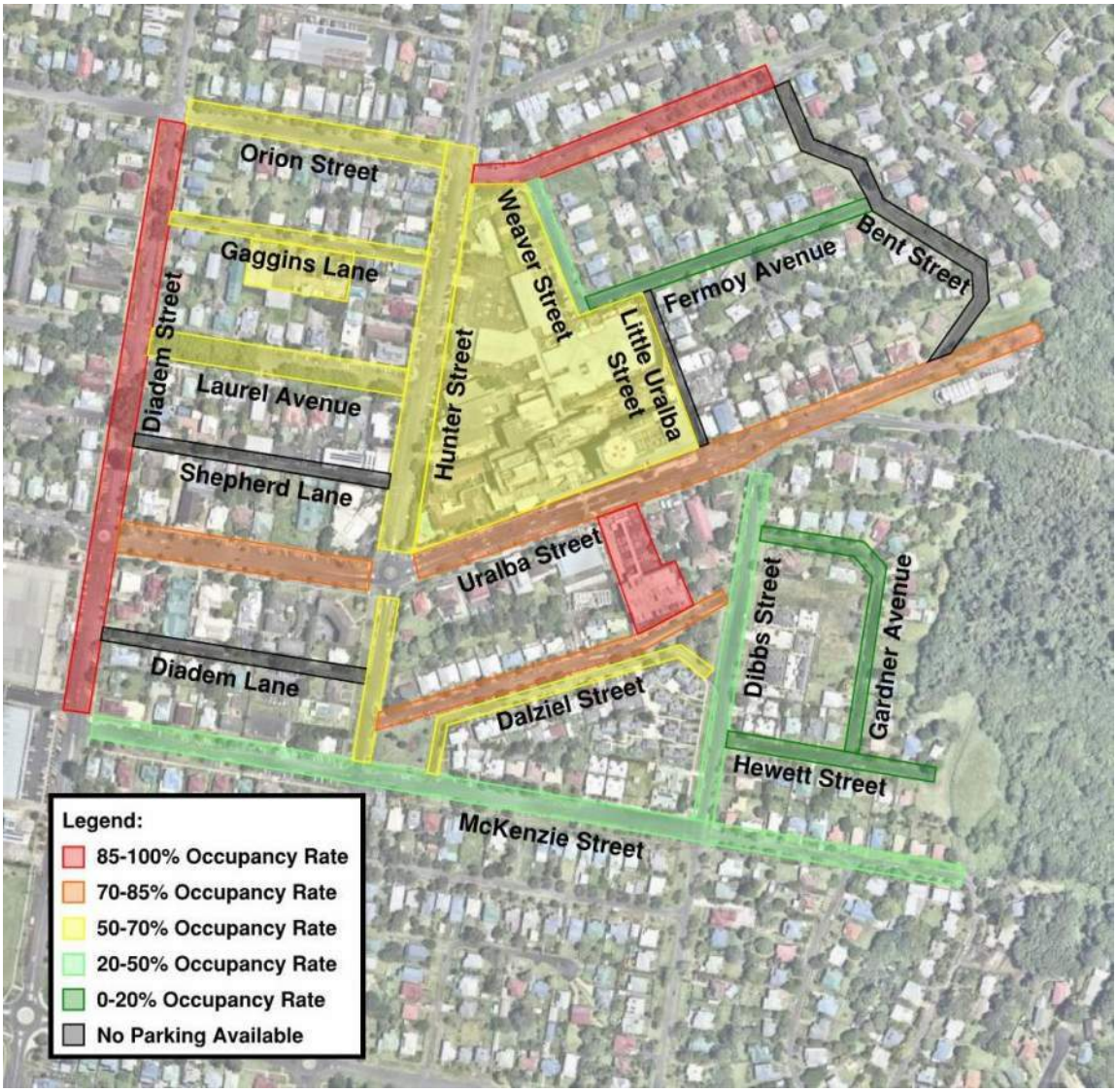

Figure 3.6: Parking Occupancy During Peak Hour
Source: Parking Survey (15th March 2018)

3.4.4 Car Parking Management Strategy

The Hospital has a current Car Parking Management Strategy that has been developed in conjunction with Lismore City Council. It is noted that LCC recently commissioned the Lismore Base Hospital Parking Strategy Effectiveness Audit in June 2017 which included occupancy and turnover surveys to determine the effectiveness of the current Strategy. This Audit identified that the primary objectives of the Lismore Base Hospital Car Parking Strategy were met based on the survey results. The objectives were identified as follows:

- Ensure parking is available and accessible for visitors to the Hospital;
- Encourage staff and visitors to use off street parking, including the multi-level car park; and
- Reduce the impact of long stay worker parking, and free up parking for residents and their visitors in front of their homes.

The results of the on street parking occupancy survey discussed in the Audit largely align with the results of the parking occupancy survey that was conducted in March 2018. The Audit did not include off street parking at the Hospital, however the results of the recent parking survey

indicate that there is spare parking capacity within the Hospital (off street parking currently operates at an occupancy rate of 82% during the peak hour).

It is recommended that further review of the effectiveness of the Car Parking Management Strategy be undertaken once the Stage 3B and Stage 3C developments have been constructed and are in operation.

3.5 Travel Mode Survey

As part of the schematic design phase of the redevelopment of the Hospital, a travel mode survey was conducted in 2013 to determine travel patterns to and from the Hospital. A total of 443 survey questionnaires were received by staff.

The results of the survey indicated that 92% of workers travel to Lismore Base Hospital as the driver of a car, 4% as a car passenger and 2% use a bicycle or walk to work. The average vehicle occupancy was 1.08 persons per car. These results generally align with other regional Hospital studies that have been previously conducted by TTW that indicate approximately 90% of staff travel as a private vehicle driver.

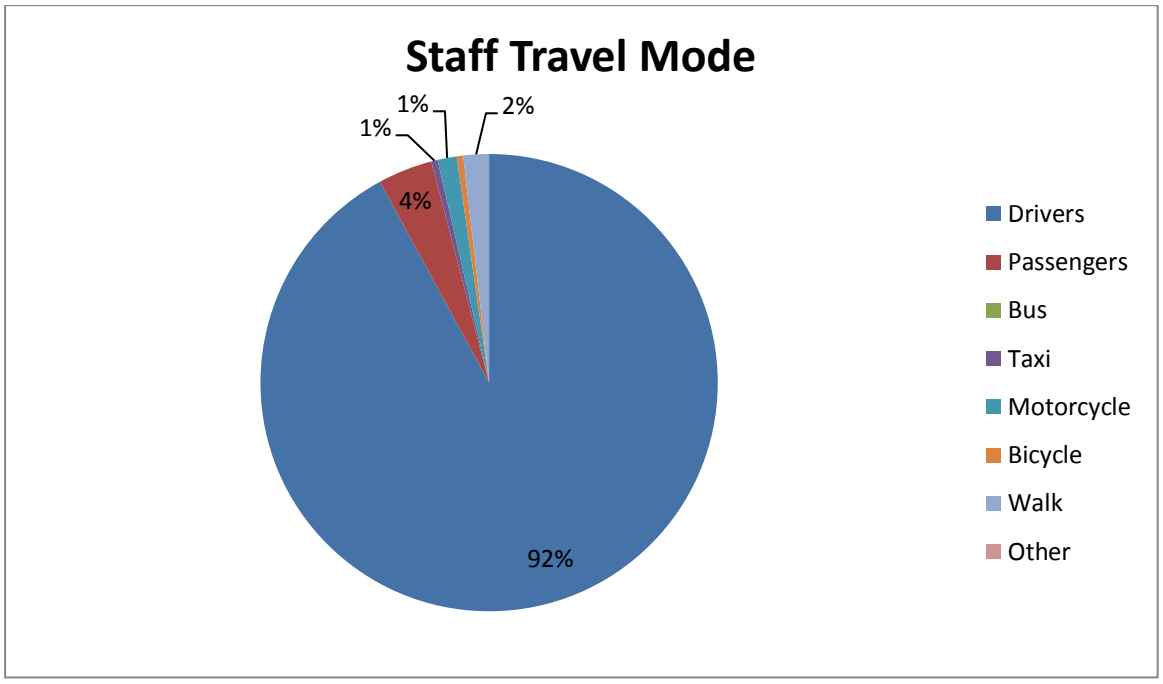

Figure 3.7: Travel Mode of Staff at the Hospital
Source: Lismore Base Hospital Schematic Design Traffic and Parking Report (TTW, 15 February 2013)

Staff members were asked to identify the start and finish times of their shifts to determine the shift patterns for arrival and departure. The peak staff movements were shown to occur in the morning from 7am to 9am and in the afternoon from 4pm to 6pm. Between 1pm to 3pm a shift changeover period occurs where workers start and finish around the same time.

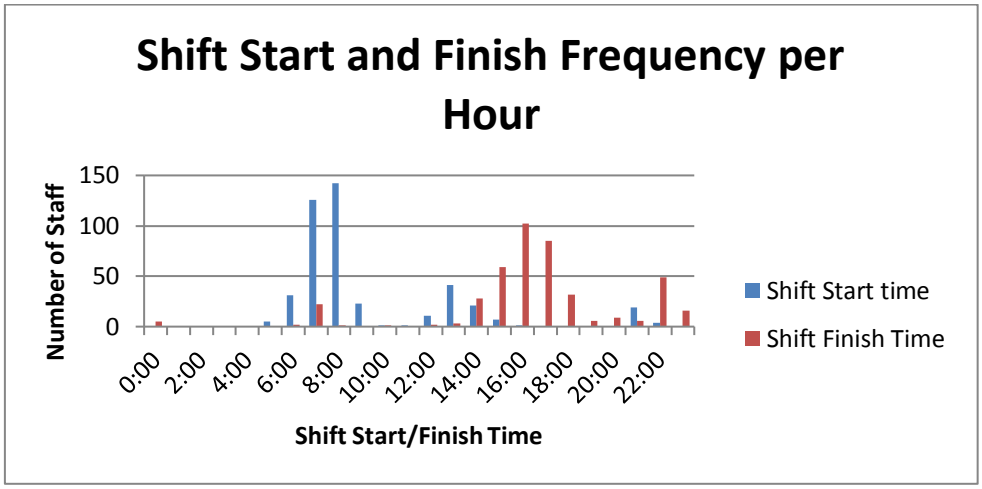

Figure 3.8: Hospital Staff Arrival and Departure Times
Source: Lismore Base Hospital Schematic Design Traffic and Parking Report (TTW, 15 February 2013)

3.5.1 Relevance of Survey

While the travel mode survey was conducted in 2013, it is still considered relevant as there have been limited changes to the travel conditions in Lismore since that time. No major transport infrastructure changes have been put in place such as increased cycleways or public transport services.

These travel mode results are also in line with the results of other recent regional Hospital studies conducted by TTW including Goulburn Base Hospital (92% staff driving rate) and Bulli Hospital (90% staff driving rate).

3.6 Pedestrian Movements

3.6.1 Pedestrian Facilities

Pedestrian footpaths are provided along Uralba Street, Hunter Street and Orion Street. No pedestrian footpaths are provided on Little Uralba Street, Fermoy Avenue and Weaver Street. Pedestrian access to Stage 3C is likely to occur via the main entry on Uralba Street.

A pedestrian zebra crossing is provided on Uralba Street, opposite the main entry to the Hospital. The main pedestrian desire line exists from the Hospital to the Uralba Street multi-storey car park which utilises this crossing.

A drop off facility adjacent to the main entrance of the Hospital allows for direct pedestrian connections to the Hospital for taxi and vehicle passengers. Bus zones located on Uralba Street are also located in close proximity to the main entry.

3.6.2 Pedestrian Volumes

Pedestrian counts were conducted at the intersections of Uralba Street/Hunter Street and Uralba Street/Dibbs Street in March 2018, and pedestrian counts of the Uralba Street pedestrian crossing in October 2016.

A summary of these pedestrian volumes is detailed in Table 3.3. Further details of these pedestrian volumes can be found in the Pedestrian Crossing Review affixed in Appendix C.

Table 3.3: Summary of Pedestrian Volumes

Location	Peak Hour Bidirectional Pedestrian Volumes
Hunter Street (near Uralba Street)	30 – 40
Uralba Street (near Hunter Street)	10 – 20
Uralba Street (near Dibbs Street)	0 – 10
Dibbs Street (near Uralba Street)	10 – 20
Uralba Street Pedestrian Crossing	140 – 150

3.7 Cyclist Movements

3.7.1 Cyclist Facilities

Lismore City Council's Sport and Recreation Plan 2011-2021 details priority walking and cycling paths to be constructed. While the identified routes are not near to the Hospital, the Plan does discuss that further cycle and walking paths should be constructed.

A review of Lismore City Council's Bicycle Plan 2007-2011 was conducted in 2011, which resulted in the development of Lismore City Council's Cycleway Plan 2011. This Cycleway Plan identifies the Hospital as being a cycle attractor within Lismore. No further bicycle infrastructure was proposed adjacent to the Hospital as part of this Plan, however further connections (on road cycle lanes and shared pathways) to the existing shared pathway on Uralba Street were proposed.

According to this Plan, Uralba Street at the Hospital frontage and Laurel Avenue are existing shared cycle paths (refer to Figure 3.9).

Figure 3.9: Existing Cycle Pathways
Source: Lismore City Council's Cycleway Plan 2011

3.7.2 Cyclist Volumes

Cyclist traffic counts were conducted at the intersections of Uralba Street/Hunter Street and Uralba Street/Dibbs Street in March 2018. This traffic count data indicated a low incidence of cyclist travel, with peak hour cyclist counts totalling 2 per hour. Cyclist activity tended to peak during the midday, with most movements occurring around 2pm to 3pm.

3.8 Public Transport

3.8.1 Bus Services

Public bus services in Lismore are operated by Northern Rivers Buslines. A number of services are operated via Uralba Street and Dibbs Street, with buses also operating on Hunter Street. Refer to Table 3.4 and Figure 3.10 for a description of the local bus routes near to the Hospital.

These bus services are operated on a "Hail and Ride" system, which has no formalised bus stops and instead allows for pick up and drop off at any safe location along the bus route.

The Transport for NSW Future Transport Strategy 2056 identifies that in the future, public transport will move more towards innovative, on-demand services, and that regional areas will be connected to other regional centres.

Table 3.4: Bus Routes Near to the Site
Source: Northern Rivers Buslines

Route Number	Locations Serviced	Approximate Frequency
682	Lismore Square, Lismore Base Hospital, Southern Cross University, East Lismore, Goonellabah Shops, Chilcotts Grass	Once per hour
683	Lismore Square, Southern Cross University, East Lismore	Once per hour
684	Lismore Square, Lismore Base Hospital, Southern Cross University, East Lismore, Lismore CBD, South Lismore	Every hour and a half to two hours
685	Lismore Square, Lismore Base Hospital, Southern Cross University, Lismore Heights, Goonellabah Heights, James Road	Every hour to two hours
661	Goonellabah, Regatta Estate, Wollongbar, Alstonville, West Ballina	Every thirty minutes to an hour

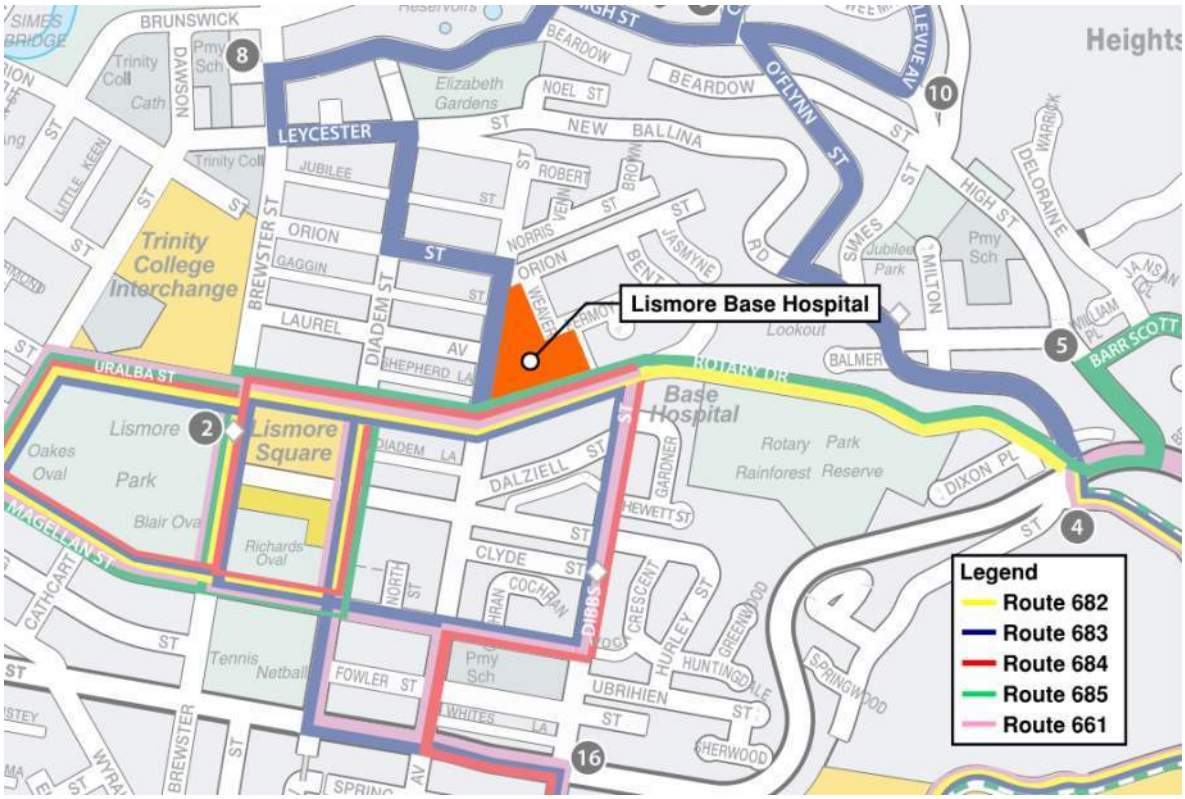

Figure 3.10: Bus Route Map
Source: Northern Rivers Buslines

3.9 Traffic Conditions

Intersection movement counts were conducted on Thursday the 15th March 2018 to record traffic volumes at the intersections of Uralba Street and Dibbs Street, and Uralba Street and Hunter Street. These intersection counts were conducted during the morning, midday and evening peak to capture variations as a result of shift work at the Hospital (see Section 3.4.4). Traffic counts were conducted during the school term and away from public holidays to represent normal operation.

3.9.1 Traffic Volumes

Based on the intersection traffic count data, it is estimated that the Annual Average Daily Traffic (AADT) volumes on the adjacent road network are as detailed in Table 3.5. These traffic volumes have been estimated based on the peak hour accounting for 15% of the AADT given the regional nature of the area.

Table 3.5: Estimated AADT

Location	Estimated AADT (Vehicles)
Uralba Street	8,100
Hunter Street	1,000
Dibbs Street	800

3.9.2 Intersection Modelling

SIDRA is an RMS approved software package that models an intersection to determine how well it is performing under its demand. Its results take into account traffic volumes, pedestrian volumes, lane geometry, sign control and the nature of the intersection.

SIDRA modelling was undertaken to determine the existing performance of the road network at the intersections of Uralba Street/Dibbs Street and Uralba Street/Hunter Street. The scope of the intersection modelling has been discussed and agreed on with TfNSW, RMS and LCC.

Both intersections operated at a high Level of Service “A”. Note that for roundabouts the Level of Service reported is for the worst movement of the intersection in accordance with RMS modelling guidelines.

The SIDRA layout and detailed results have been affixed in Appendix B of this report.

Table 3.6: Pre Development Intersection Operation

Intersection	AM Weekday Peak			PM Weekday Peak		
	Peak Hour	LoS[1]	Ave Delay (sec)	Peak Hour	LoS[1]	Ave Delay (sec)
Uralba Street and Hunter Street	8:00am-9:00am	A	11.4	5:00pm-6:00pm	A	12.2
Uralba Street and Dibbs Street	8:00am-9:00am	A	13.1	5:00pm-6:00pm	A	10.3

[1]The reported Level of Service and average delay are based on the worst movement of the intersection in accordance with RMS Modelling Guidelines.

4.0 Proposed Development

4.1 Scope of the Proposed Development

The proposed development involves the construction of four additional storeys above the approved four-storey north tower, the alteration of the existing north tower façade, and associated connectivity works. This extension will provide:

- A new ICU providing approximately 16 rooms;
- New in-patient accommodation providing approximately 60 beds (net gain of 21 beds in the project);
- Additional treatment rooms, staff workstations, staff rooms, offices and meeting rooms;
- New storage facilities;
- An additional lift well, as well as two additional patient lifts for the north tower;
- Façade changes; and
- New connections between the north and south towers and a stairway connecting the north tower roof to Level 12 of the south tower.

4.2 Site Access

As the proposed development is an extension on the previously approved north tower, there will be no impact to the Hospital external site access points. Improvements to site access were made as part of Stage 3A of the redevelopment. Additional pedestrian access points will be provided to connect the north and south towers at the proposed additional four-storeys.

4.3 Hospital Services Impact

4.3.1 In-Patient Services

The Stage 3 works are proposed to respond to clinical requirements identified in the 2012 Clinical Services Plan and increased infrastructure requirements identified in the 2014 Service Statement. As a result, the development is largely a consolidation of existing services and will only result in a minor increase of 21 beds from the approved Stage 3B works.

Table 4.1: Lismore Base Hospital Bed Summary
Source: Lismore Base Hospital Stage 3C Final Business Case (CBRE 2017)

Type of Inpatient Bed	Post Stage 3B	Post Stage 3C	Increase in Beds
Medical / Surgical	130	148	+18
ICU / HDU	13	16	+3
		Total	**+21**

4.3.2 Out-Patient Services

As the proposed development will not increase outpatient services, there will be no increase from the previously reported out-patients per day. We have been advised by Health Infrastructure that there will remain an expected 977 out-patients per day as detailed in the Stage 3B documentation (SSD 6848).

4.3.3 Staff

We have been advised by Health Infrastructure that there will be a proposed increase in staff of 8 per day from Stage 3B to support the additional in-patient beds.

4.3.4 Servicing and Loading

We have been advised by Lismore Base Hospital that there will be no increase in service vehicle movements as a result of the Stage 3C works.

4.4 Car Parking

4.4.1 Parking Requirements

Lismore City Council's Development Control Plan 2012 Chapter 7 stipulates that Hospital requirements "*will be assessed in accordance with RTA Guidelines*". The RMS Guide to Traffic Generating Developments does not suggest a parking requirement for public hospitals.

4.4.2 Parking Demand

An evaluation of the expected increase in parking demand of the Hospital has been conducted by adopting the previous methodology detailed within the Stage 3A and Stage 3B documentation.

The previous parking demand study employed a direct demand approach to assess parking demands for the Hospital prior to Stage 3A, post Stage 3A and post Stage 3B. The carparking demand was separated into staff, visitors and outpatients, and based on their rate of private vehicle usage and duration of stay.

As detailed in Section 4.3, as a result of Stage 3C there will be an increase in 21 beds and 8 staff per day from the previously approved Stage 3B development. Therefore, there will be an additional increase in parking demand of 10 spaces as follows:

- **Staff**: 6 additional spaces (based on 90% of 8 additional staff being car drivers and some 85% of the workforce being on site during the peak hour considering shift work)
- **Visitors**: 4 additional spaces (based on 2 visits per 21 additional beds per day, with an average stay of 1 hour during a 10 hour day)

The expected increase in parking demand related to the previous redevelopment stages of the Hospital is further detailed in Table 4.2. Refer to documentation related to Stages 3A (SSD 5816) and 3B (SSD 14_6848) for the previously reported increase in staff, outpatients and visitors.

Table 4.2: Summary of Peak Parking Demand for the Stages of Redevelopment

Stage	Number of Staff	Number of Spaces	Number of Outpatients	Number of Spaces	Number of Visitors	Number of Spaces	Total Spaces	Increase
Prior to Stage 3	850/day	650	550/day	120	50	50	820	-
Stage 3A	956/day	730	650/day	140	60	60	930	**+110**
Stage 3B	1089/day	833	977/day	177	70	70	1080	**+150**
Stage 3C	1097/day	839	977/day	177	74	74	1090	**+10**

4.4.3 Proposed Parking

As the Stage 3C works are an extension to the already approved Stage 3B North Tower, there is no additional parking proposed. The increase in parking demand expected will therefore be incorporated into the recently constructed multi-storey car park that was built to alleviate parking issues within the Hospital and account for the increase in parking demand as a result of the whole Stage 3 redevelopment.

As detailed in Table 4.2, the additional parking demand as a result of the Stage 3 redevelopment is equal to 270 spaces. The multi-storey car park completed during the Stage 3B works resulted in an increase of 270 off street parking spaces for the Hospital. Therefore, this multi-storey car park has been built to provide sufficient capacity for the increase in parking demand as a result of Stage 3A, Stage 3B and Stage 3C of the Hospital's redevelopment.

As part of the development consent conditions for Stage 3A and Stage 3B, the Hospital has been conditioned to provide a minimum of 110 and 150 additional off street car parking spaces respectively for use by staff, patients and visitors (SSD 5816 Condition D1 and SSD 6848 Condition D3). The construction of the multi-storey car park resulted in an increase of 270 off street spaces for use by the Hospital, which resulted in an additional 10 spaces being provided to what was required. These additional 10 spaces account for the Stage 3C parking demand increase.

Subsequent to a direct demand approach, the parking survey has shown that there is adequate off street parking available during the peak hour to accommodate an increase in 10 spaces. During the peak hour, there were three staff spaces available in the multi-storey car park and eight public spaces. This would account for all additional visitor spaces and part of the staff spaces.

Additional spaces were available for staff within other off street parking areas within the Hospital as evidenced by the off street parking peak occupancy being equal to 82%. A number of these unoccupied spaces were within the Mental Health Car Park. We have been advised by Lismore Base Hospital that this car park is controlled to allow for use by after hours staffing and visiting medical officer parking; it is also available for use by staff with swipe cards.

The Department of Planning and Environment's Assessment Report in relation to Stage 3B identified a demand for Stage 3B of 163 spaces (an additional 13 spaces to the analysis). The additional 13 spaces accounted for a loss of 8 on street spaces and 5 university spaces that were impacted by the construction of the multi-storey car park. The additional 13 space demand is not considered to apply due to the following:

- As identified in the parking survey, there are 5 parking spaces that are dedicated to the university in addition to the 270 spaces within the multi-storey car park (refer to Section

3.4.1 and Appendix A). Therefore, these spaces have been already accounted for in the current parking supply.

- There is sufficient parking available during the peak hour to account for the loss of the 8 on street spaces. The parking survey was conducted in March 2018 and as a result the impact of the loss of these spaces has been included within the survey results. Given the occupancy of Uralba Street during the peak hour was 76% (and within the total survey extent it was 66%), there is sufficient parking available during the peak hour to account for these spaces.

It is also noted that as part of the consent conditions for Stage 3B, 150 spaces were required to be provided as part of the works to supply for the demands of the development.

4.5 Road Network Impacts

4.5.1 Traffic Growth

Traffic count data was collected in March 2018. To account for future growth, this traffic count data has been projected to 2020 when the project is expected to be completed. Population growth has been assumed to be 0.7% per annum as detailed within Table 4.3.

Table 4.3: Population Projections Lismore 2011-2031
Source: NSW State and Local Government Area Population, Household and Dwelling Projections (NSW Planning and Environment, 2014)

Year	Population	Growth Per Annum (%)	Extra Persons Per Annum
2011	44,350	-	202
2016	46,000	0.7	330
2021	47,550	0.7	310
2026	49,000	0.6	290
2031	50,200	0.5	240

4.5.2 Traffic Generation

The number of additional peak vehicles has been determined based on the additional peak parking demand discussed in Section 4.4.2. It is assumed that every additional vehicle requiring parking will travel to the multi-storey car park.

This additional traffic generation has been estimated relying on the following:

- The number of beds sourced from Health Infrastructure.
- The number of visitors travelling to the Hospital has been based on two visitors per additional bed, with an average length of stay of one hour within a ten hour day.
- The staff increase has been based on the number of additional staff provided by Health Infrastructure, with 90% of staff being car drivers and 85% of the workforce being on site during the peak hour.

Therefore, the increase in peak trips post development is expected to be 10 vehicles. The daily increase in trips will be equal to 84 visitor trips and 14 staff trips (inclusive of trips to and from the Hospital).

4.5.3 Trip Distribution

It is assumed that additional traffic generated by Stage 3C will park within the multi-storey car park available from Uralba Street. In line with previous studies conducted by TTW of the Hospital, it is assumed that travel to this car park will occur via Uralba Street with a 50% east and 50% west distribution split.

It is assumed that during the AM peak additional vehicles will be travelling towards the car park and in the PM peak vehicles will be travelling away from the car park.

With consideration to the car park being restricted to left in and left out only via Uralba Street and Dalziel Street restricted to exit only, the following routes have been determined:

- AM Peak
  - Vehicles travelling from the east will travel straight through Uralba Street at the Uralba Street and Dibbs Street intersection. Vehicles will then turn left into the car park.
  - Vehicles travelling from the west will travel straight through Uralba Street at the Uralba Street and Hunter Street intersection. They will then conduct a u-turn at the Uralba Street and Dibbs Street intersection to enter the car park via a left turn.
- PM Peak
  - Vehicles travelling to the east will exit the car park via Dalziel Street and turn left onto Dibbs Street. These vehicles will then turn right at the intersection of Uralba Street and Dibbs Street.
  - Vehicles travelling to the west will exit the carpark onto Uralba Street and travel straight through the intersection of Uralba Street and Hunter Street.

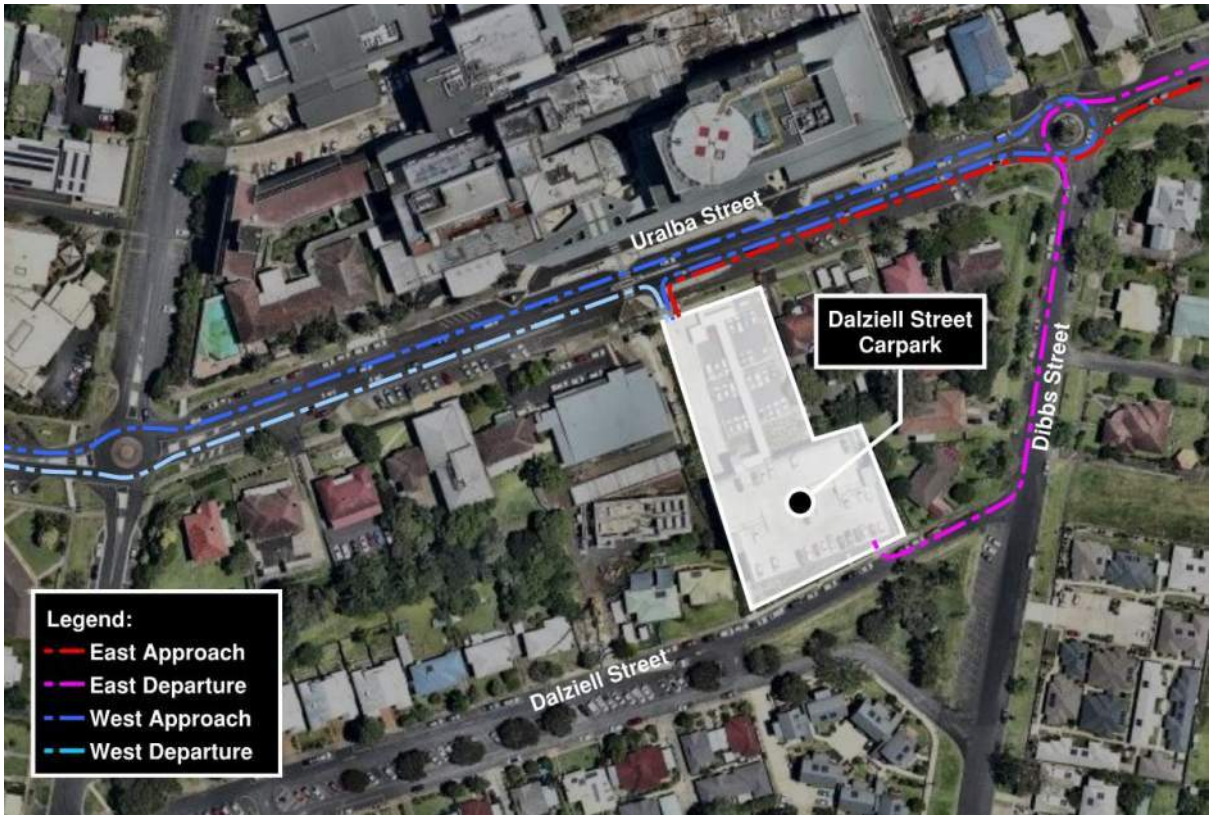

Figure 4.1: Approach and Departure Routes

4.5.4 Future Traffic Conditions

Subsequent to the trip distribution and projections previously discussed, the additional trips were added to the projected traffic counts for the year 2020. The intersections performed at a high Level of Service "A" as identified in Table 4.4.

Detailed SIDRA modelling outputs and the intersection layout have been affixed to this report in Appendix B.

Table 4.4: Post Development Intersection Operation

Intersection	AM Weekday Peak			PM Weekday Peak		
	Peak Hour	LoS[1]	Ave Delay (sec)	Peak Hour	LoS[1]	Ave Delay (sec)
Uralba Street and Hunter Street	8:00-9:00am	A	11.5	5:00-6:00pm	A	12.3
Uralba Street and Dibbs Street	8:00-9:00am	A	13.3	5:00-6:00pm	A	10.3

[1]Note that the reported Level of Service and average delay are based on the worst movement of the intersection in accordance with RMS Modelling Guidelines.

4.6 Active Transport

4.6.1 Pedestrian Facilities

As the works are related to an extension of the approved north tower, no additional external pedestrian infrastructure is proposed as part of the works. Internal pedestrian connections to the previously approved north tower and constructed south tower are included as part of the works.

All existing pedestrian infrastructure is to be retained and is considered to be sufficient for the future operation. Pedestrian facility upgrades were included within the previous redevelopment work at the Hospital as part of the reconfiguration of the main entry.

Due to the minor increase in staff and visitors, and given the low incidence of active transport (see Section 3.4.4), it can be concluded that there would be a negligible increase in additional pedestrian trips.

A Pedestrian Crossing Review was conducted by TTW in November 2016 (affixed to this report in Appendix C). This review was conducted to determine the adequacy of the existing pedestrian crossing along Uralba Street post completion of the multi-storey car park. This study was completed in response to a Development Condition related to Stage 3B of the Hospital. The review concluded that the existing crossing facility was of an appropriate nature to cater for pedestrian and vehicle volumes post completion of the multi-storey car park (determined via a traffic count conducted in 2016). The study results indicated that peak pedestrian and vehicle volumes would need to increase by 15 to 65 percent and 15 to 40 percent respectively to warrant the installation of a signalised mid-block crossing in accordance with RMS warrants. Based on this study, the increase in pedestrian and vehicle volumes as a result of Stage 3C are therefore not expected to result in a requirement for the existing crossing to be upgraded to a signalised mid-block crossing.

4.6.2 Cyclist Facilities

Lismore City Council's Development Control Plan does not stipulate a requirement for bicycle parking associated with Hospital developments. Based on the travel mode survey indicating

limited cyclist use and the minor increase in staff and visitors, there will be negligible increase in cyclist trips as a result of the Stage 3C works. As a result, no additional cyclist parking has been proposed as part of the development.

Increased bicycle parking and end of trip facilities were included within the previous redevelopment stages of the Hospital to encourage cycling as a travel mode. Given this development is a four-storey extension providing floors five to eight, there would not be an appropriate location within the development for further bicycle facilities.

4.7 Public Transport

The proposed development will not have an impact on the existing public transport infrastructure discussed in Section 3.8. The travel mode survey discussed in Section 3.4.4 indicated that public transport experiences limited use by travellers to the Hospital; therefore it is not expected that there will be a significant impact to public transport services as a result of the Stage 3C works.

4.8 Construction Traffic

A Preliminary Construction Traffic Management Plan (CTMP) has been prepared for the site and submitted as part of this Environmental Impact Statement. A detailed CTMP will be developed once the design has been finalised and details on construction staging are known. This Preliminary CTMP is intended to provide a framework within which a finalised CTMP can be developed and to demonstrate the potential operation of the construction site.

4.9 Sustainable Transport

A Green Travel Plan (GTP) and Transport Access Guide (TAG) for the Hospital were prepared by the Northern NSW Local Health District (NNSWLHD) in July 2015 as part of the Stage 3B works. As Stage 3C is considered to be an extension of the yet to be completed Stage 3B north tower, this GTP and TAG are considered to remain relevant to the proposed works.

A number of actions were proposed within this GTP under seven main headings: public transport, cycling and walking, carpooling, car parking, policy, communications, and governance and monitoring. An excerpt of this GTP describing these proposed actions has been included in Appendix D.

As there have been limited changes to the active and public transport network near to the Hospital since the preparation of the TAG, it remains relevant to the Hospital. Refer to Appendix E for the current TAG for the Hospital.

It is noted that as part of the Development Consent Conditions for Stage 3B (SSD 6848), a revised Sustainable Travel Plan and Travel Access Guide must be prepared following 12 months after the completion of the works. As Stage 3B is yet to be completed, it is recommended that these documents be updated once both Stage 3B and Stage 3C are in operation.

The GTP and TAG should be updated on a regular basis, and the actions proposed reviewed and modified if necessary. This will allow for the initiatives to remain relevant to the Hospital and any additional areas for improvement to be identified.

5.0 Conclusion

This report has outlined the traffic and transport impacts of the Stage 3C redevelopment of Lismore Base Hospital which involves a four-storey extension to the previously approved Stage 3B north tower. The development will result in an increase of 21 in-patient beds and 8 daily staff.

As part of the redevelopment of the Hospital, a multi-storey car park was constructed during the development of Stage 3B to significantly increase the number of off street parking spaces available. The construction of this car park resulted in an increase in parking provision for Hospital users of 270 off street parking spaces and was intended to meet the increase in demand expected as a result of the Stage 3 redevelopment. An additional 10 spaces were constructed to the number required by the consent conditions and the car parking demand for Stages 3A and 3B that can account for the increase in demand due to the Stage 3C works. Analysis has indicated that the multi-storey car park will meet the demand as a result of the Stage 3A (110 spaces), Stage 3B (150 spaces) and Stage 3C (10 spaces) works. Further, a parking occupancy survey has indicated that there is sufficient capacity within the existing car parking to accommodate the anticipated increase.

As part of Stage 3B, a Car Parking Management Strategy was developed by the Hospital in in conjunction with Lismore City Council which considered the overall parking supply and demand. The parking occupancy rates determined as part of this report demonstrate there is sufficient residual capacity to accommodate the Stage 3C redevelopment.

After assessment of the expected vehicle trips generated by the development, SIDRA modelling has indicated that these additional trips can be accommodated within the surrounding road network. Intersections near to the site will continue to operate at a high Level of Service “A” during the morning and afternoon peak hours.

As there will be only an increase of 21 in-patient beds and 8 daily staff, there is considered to be a negligible increase in pedestrian, cyclist and public transport trips. Improvements to pedestrian and cyclist facilities were also included as part of previous stages of redevelopment. Given the minor increase in trips, there are no proposals to alter these networks.

Loading and emergency vehicle access will not be impacted by the works, as previous stages of the development have made improvements to these areas and there is not expected to be a significant increase in use of these facilities from Stage 3C.

A number of sustainable travel initiatives have been proposed in the Green Travel Plan prepared by the NNSWLHD as part of the Stage 3B works. These have been summarised as part of this report. As Stage 3C is largely an extension of the yet to be completed Stage 3B north tower, this GTP is considered to remain relevant.

A Preliminary Construction Traffic Management Plan has been prepared for the works. A comprehensive Construction Traffic Management Plan will need to be prepared once the design has been finalised.

Prepared by
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PAUL YANNOULATOS
Technical Director

Appendix A

Parking Survey Results

Prepared by Matrix Traffic and Transport Data and conducted on the 15th March 2018

Client	TTW
Date	Thur, 15th Mar 2018 (8:00-17:00)
Description	Lismore Parking Survey

[Location]

1. Diadem St
2. Mckenzie St
3. Orion St
4. Gaggin Ln
5. Laurel Ave
6. Shepherd Ln
7. Uralba St
8. Diadem Ln
9. Hunter St
10. Orion St
11. Bent St
12. Weaver St
13. Fermoy Ave
14. Little Uralba St
15. Dibbs St
16. Dalziell St (North)
17. Dalziell St (South)
18. Hewett St
19. Gardner Ave
20. Hospital Main Car Park A
21. Hospital Car Park B
22. Car Park C (South of Gaggin Ln)

I

Client	TTW
Location	1. Diadem St
Date	Thur, 15th Mar 2018 (8:00-17:00)
Description	Lismore Parking Survey

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Diadem St - East Side												
Orions St												
	No Restriction		5	3	4	4	4	4	4	4	4	4
Gaggin LN												
	No Restriction		7	5	7	7	7	7	7	6	6	6
Laurel Ave												
	No Restriction	45' Angle Parking	10	6	10	9	10	9	9	9	8	9
Shepherd Ln												
	No Restriction	45' Angle Parking	10	9	10	10	10	10	9	10	10	8
Uralba St												
	Parallel Parking		2	2	2	2	2	2	2	2	1	2
	No Restriction	45' Angle Parking	4	4	4	4	4	4	4	4	4	2
Diadem Ln												
	No Restriction	45' Angle Parking	13	9	10	10	10	10	9	9	10	8
McKenzie St												
Total			**51**	**38**	**47**	**46**	**47**	**46**	**44**	**44**	**43**	**39**
% Capacity				**75%**	**92%**	**90%**	**92%**	**90%**	**86%**	**86%**	**84%**	**76%**

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Diadem St - West Side												
McKenzie St												
	No Restriction	45' Angle Parking	18	18	18	18	18	18	18	17	16	14
Uralba St												
	Parallel Parking		1	1	1	1	1	1	1	1	1	1
	No Restriction	45' Angle Parking	19	12	19	19	18	18	17	17	15	12
Laurel Ave												
	No Restriction		17	9	8	12	12	12	12	12	11	6
Orions St												
Total			**55**	**40**	**46**	**50**	**49**	**49**	**48**	**47**	**43**	**33**
% Capacity				**73%**	**84%**	**91%**	**89%**	**89%**	**87%**	**85%**	**78%**	**60%**

Client	TTW
Location	2. Mckenzie St
Date	Thur, 15th Mar 2018 (8:00-17:00)
Description	Lismore Parking Survey

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
McKenzie St - North Side												
Diadem St												
	P Parallel		4	0	4	4	4	3	4	4	4	4
	No Restriction	45' Angle Parking	3	0	3	3	3	2	2	3	2	9
	No Restriction	45' Angle Parking (On the Glass)	33	22	28	29	29	30	30	30	27	20
Hunter St												
	2P	45' Angle Parking, 8am-6pm Mon-Fri, Permit Holder Excepted	9	0	0	0	0	0	0	0	0	0
Dalziell St												
	2P Designated	45' Angle Parking, 8am-6pm Mon-Fri, Permit Holder Excepted	8	0	0	0	1	0	0	1	0	0
	2P	45' Angle Parking, 8am-6pm Mon-Fri, Permit Holder Excepted	38	4	3	3	3	3	1	3	3	4
Dibbs St												
	No Restriction		22	0	0	0	0	0	2	1	1	1
Hurley St												
Total			**117**	**26**	**38**	**39**	**40**	**38**	**39**	**42**	**37**	**38**
% Capacity				**22%**	**32%**	**33%**	**34%**	**32%**	**33%**	**36%**	**32%**	**32%**

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
McKenzie St - South Side												
Diadem St												
	No Restriction		35	18	19	22	19	20	16	19	14	10
Hunter St												
	No Restriction		40	10	14	16	15	16	16	16	15	14
Dibbs St												
	No Restriction		18	0	2	1	1	1	0	0	2	2
Hurley St												
Total			**93**	**28**	**35**	**39**	**35**	**37**	**32**	**35**	**31**	**26**
% Capacity				**30%**	**38%**	**42%**	**38%**	**40%**	**34%**	**38%**	**33%**	**28%**

Client	TTW
Location	3. Orion St
Date	Thur, 15th Mar 2018 (8:00-17:00)
Description	Lismore Parking Survey

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Orions St - North Side												
Diadem St												
	No Restriction (parallel)		23	13	18	17	16	17	15	15	14	14
Hunter St												
Total			**23**	**13**	**18**	**17**	**16**	**17**	**15**	**15**	**14**	**14**
% Capacity				**57%**	**78%**	**74%**	**70%**	**74%**	**65%**	**65%**	**61%**	**61%**

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Orions St - South Side												
Diadem St												
	No Restriction (parallel)		25	11	17	18	18	18	20	18	17	16
Hunter St												
Total			**25**	**11**	**17**	**18**	**18**	**18**	**20**	**18**	**17**	**16**
% Capacity				**44%**	**68%**	**72%**	**72%**	**72%**	**80%**	**72%**	**68%**	**64%**

Client	TTW
Location	4. Gaggin Ln
Date	Thur, 15th Mar 2018 (8:00-17:00)
Description	Lismore Parking Survey

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Gaggin Ln - North Side												
Diadem St												
	No Stopping		0	0	0	2	3	3	3	3	2	0
Hunter St												
Total			**0**	**0**	**0**	**2**	**3**	**3**	**3**	**3**	**2**	**0**
% Capacity				**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Gaggin Ln - South Side												
Diadem St												
	2P Parallel	8am-6pm Mon-Fri, Permit Holder Excepted	9	7	8	8	9	7	6	6	6	4
Hunter St												
Total			**9**	**7**	**8**	**8**	**9**	**7**	**6**	**6**	**6**	**4**
% Capacity				**78%**	**89%**	**89%**	**100%**	**78%**	**67%**	**67%**	**67%**	**44%**

Client	TTW
Location	5. Laurel Ave
Date	Thur, 15th Mar 2018 (8:00-17:00)
Description	Lismore Parking Survey

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Laurel Ave - North Side												
Diadem St												
	2P	90' Angle Parking, 8am-6pm Mon-Fri, Permit Holder Excepted	43	17	24	25	24	18	21	26	24	23
Hunter St												
Total			**43**	**17**	**24**	**25**	**24**	**18**	**21**	**26**	**24**	**23**
% Capacity				**40%**	**56%**	**58%**	**56%**	**42%**	**49%**	**60%**	**56%**	**53%**

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Laurel Ave - South Side												
Diadem St												
	2P	90' Angle Parking, 8am-6pm Mon-Fri, Permit Holder Excepted	28	13	16	20	17	18	19	18	19	13
Hunter St												
Total			**28**	**13**	**16**	**20**	**17**	**18**	**19**	**18**	**19**	**13**
% Capacity				**46%**	**57%**	**71%**	**61%**	**64%**	**68%**	**64%**	**68%**	**46%**

Client	TTW
Location	6. Shepherd Ln
Date	Thur, 15th Mar 2018 (8:00-17:00)
Description	Lismore Parking Survey

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Shepherd Ln - North side												
Diadem St												
	No Stopping		0	0	0	0	0	0	0	0	0	0
Hunter St												
Total			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
% Capacity				**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Shepherd Ln - South side												
Diadem St												
	No Stopping		0	0	0	0	0	0	0	0	0	0
Hunter St												
Total			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
% Capacity				**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Client	TTW
Location	7. Uralba St
Date	Thur, 15th Mar 2018 (8:00-17:00)
Description	Lismore Parking Survey

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Uralba St - North Side												
Diadem St												
	4P	45' Angle Parking, 8am-6pm	32	24	30	33	31	29	31	30	31	28
Hunter St												
	2P Ticket Parallel	8am-6pm Mon-Fri	8	8	6	6	6	7	7	6	6	6
	Disabled		2	2	2	2	2	2	2	2	0	1
	Bus Zone		1	0	0	0	0	0	0	0	0	0
	No Parking		1	0	0	0	0	0	0	0	0	0
	Taxi Zone		3	0	0	1	0	0	0	0	0	0
	No Stopping	Police Vehicle & Ambulance Excepted	4	0	0	0	0	0	0	0	0	0
	No Stopping	Police Vehicle & Ambulance Excepted	2	0	0	0	0	0	0	0	0	0
	Disabled		1	0	0	1	1	1	1	1	1	0
Dibbs St												
	2P Ticket	45' Angle Parking, 8am-6pm Mon-Fri	5	5	5	5	4	4	4	5	5	5
	2P Ticket Parallel	8am-6pm Mon-Fri, Permit Holder Excepted	6	2	2	3	2	2	3	5	4	4
	Disabled		1	0	0	0	0	0	0	0	0	0
	2P Ticket Parallel	8am-6pm Mon-Fri, Permit Holder Excepted	3	1	1	1	1	2	1	1	3	13
Bent St												
	No Restriction		6	6	6	6	6	6	6	6	5	3
The End												
Total			**75**	**48**	**52**	**58**	**53**	**53**	**55**	**56**	**55**	**60**
% Capacity				**64%**	**69%**	**77%**	**71%**	**71%**	**73%**	**75%**	**73%**	**80%**

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Uralba St - South Side												
The End												
	No Stopping		0	0	0	0	0	0	0	0	0	0
Dibbs St												
	Disabled		1	1	1	1	1	1	1	1	1	1
	2P Ticket	45' Angle Parking, 8am-6pm Mon-Fri	1	0	0	1	1	1	1	1	1	1
	No Stopping		0	0	0	0	0	0	0	0	0	0
	2P Ticket	45' Angle Parking, 8am-6pm Mon-Fri, Permit Holder Excepted	4	2	0	3	4	4	4	4	4	4
	No Stopping		0	0	0	0	0	0	0	0	0	0
	Bus Zone		1	0	0	1	0	0	0	0	1	0
	2P Ticket	8am-6pm Mon-Fri	17	7	11	9	14	14	15	16	13	15
	2P Ticket Parallel	8am-6pm Mon-Fri	4	0	3	3	3	4	4	4	4	3
Hunter St												
	Disabled		1	0	0	0	0	0	0	0	1	0
	2P	45' Angle Parking, 8am-6pm	26	5	11	16	15	12	12	17	16	14
Diadem St												
Total			**55**	**15**	**26**	**34**	**38**	**36**	**37**	**43**	**41**	**38**
% Capacity				**27%**	**47%**	**62%**	**69%**	**65%**	**67%**	**78%**	**75%**	**69%**

Client	TTW
Location	8. Diadem Ln
Date	Thur, 15th Mar 2018 (8:00-17:00)
Description	Lismore Parking Survey

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Diadem Ln - North Side												
Diadem St												
	No Parking		0	0	0	0	0	0	0	0	0	0
Hunter St												
Total			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
% Capacity				**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Diadem Ln - South Side												
Diadem St												
	No Parking		0	1	0	0	1	1	1	1	1	1
Hunter St												
Total			**0**	**1**	**0**	**0**	**1**	**1**	**1**	**1**	**1**	**1**
% Capacity				**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Client	TTW
Location	9. Hunter St
Date	Thur, 15th Mar 2018 (8:00-17:00)
Description	Lismore Parking Survey

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Hunter St - West Side												
McKenzie St												
	2P Parallel	8am-6pm Mon-Fri	2	0	2	0	0	0	0	0	0	0
Dalziell St												
	2P Parallel	60' Angle Parking, 8am-6pm Mon-Fri, Permit Holder Excepted	16	2	3	6	5	5	7	10	12	10
	2P Parallel		2	1	0	2	2	2	2	2	2	2
Uralba St												
	2P Ticket	90' Angle Parking, 8am-6pm Mon-Fri, Permit Holder Excepted	41	1	7	11	10	13	9	14	16	19
	10P Ticket	60' Angle Parking, 8am-6pm Mon-Fri, Permit Holder Excepted	37	36	37	37	37	36	37	37	35	12
Orions St												
Total			**98**	**40**	**49**	**56**	**54**	**56**	**55**	**63**	**65**	**43**
% Capacity				**41%**	**50%**	**57%**	**55%**	**57%**	**56%**	**64%**	**66%**	**44%**

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Hunter St - East Side												
McKenzie St												
	2P Parallel	8am-6pm Mon-Fri, Permit Holder Excepted	4	1	0	1	1	1	1	1	1	0
Diadem Ln												
	2P Parallel	8am-6pm Mon-Fri, Permit Holder Excepted	7	3	5	7	5	6	6	6	4	5
Uralba St												
	No Stopping	Emergency Vehicles Only	1	0	0	0	0	0	0	0	0	0
Shepherd Ln												
	2P Ticket	90' Angle Parking, 8am-6pm Mon-Fri, Permit Holder Excepted	11	2	2	1	0	2	2	0	5	4
Laurel Ave												
	10P Ticket	60' Angle Parking, 8am-6pm Mon-Fri, Permit Holder Excepted	10	10	10	10	12	12	12	12	10	6
Gaggin Ln												
	10P Ticket	60' Angle Parking, 8am-6pm Mon-Fri, Permit Holder Excepted	8	8	8	8	7	7	10	9	8	8
Orions St												
Total			**41**	**24**	**25**	**27**	**25**	**28**	**31**	**28**	**28**	**23**
% Capacity				**59%**	**61%**	**66%**	**61%**	**68%**	**76%**	**68%**	**68%**	**56%**

Client	TTW
Location	10. Orion St
Date	Thur, 15th Mar 2018 (8:00-17:00)
Description	Lismore Parking Survey

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Orions St												
Hunter St												
	No Restriction	On the Grass	9	10	10	10	10	10	10	10	9	2
Bent St												
Total			**9**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**9**	**2**
% Capacity				**111%**	**111%**	**111%**	**111%**	**111%**	**111%**	**111%**	**100%**	**22%**

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Orions St												
Bent St												
	No Restriction	On the Grass	9	11	11	11	11	10	11	11	9	3
Hunter St												
Total			**9**	**11**	**11**	**11**	**11**	**10**	**11**	**11**	**9**	**3**
% Capacity				**122%**	**122%**	**122%**	**122%**	**111%**	**122%**	**122%**	**100%**	**33%**

Note: People parked throughout the day at the west corners of Orions St

Client	TTW
Location	11. Bent St
Date	Thur, 15th Mar 2018 (8:00-17:00)
Description	Lismore Parking Survey

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Bent St (Both the Side)												
Orions St												
	No Stopping		0	0	0	0	0	0	0	0	0	0
Uralba St												
Total			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
% Capacity				**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Client	TTW
Location	12. Weaver St
Date	Thur, 15th Mar 2018 (8:00-17:00)
Description	Lismore Parking Survey

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Weaver St - East Side												
Orions St												
	2P Parallel	8am-6pm Mon-Fri	11	1	1	2	3	3	3	3	2	2
Fermoy Ave												
Total			**11**	**1**	**1**	**2**	**3**	**3**	**3**	**3**	**2**	**2**
% Capacity				**9%**	**9%**	**18%**	**27%**	**27%**	**27%**	**27%**	**18%**	**18%**

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Weaver St - West Side												
Orions St												
	2P Parallel	8am-6pm Mon-Fri	5	2	2	3	2	2	4	4	3	3
Fermoy Ave												
Total			**5**	**2**	**2**	**3**	**2**	**2**	**4**	**4**	**3**	**3**
% Capacity				**40%**	**40%**	**60%**	**40%**	**40%**	**80%**	**80%**	**60%**	**60%**

Client	TTW
Location	13. Fermoy Ave
Date	Thur, 15th Mar 2018 (8:00-17:00)
Description	Lismore Parking Survey

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Fermoy Ave - North Side												
Weaver St												
	2P Parallel	8am-6pm Mon-Fri	24	4	3	2	3	3	3	3	3	6
Bent St												
Total			**24**	**4**	**3**	**2**	**3**	**3**	**3**	**3**	**3**	**6**
% Capacity				**17%**	**13%**	**8%**	**13%**	**13%**	**13%**	**13%**	**13%**	**25%**

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Fermoy Ave - South Side												
Weaver St												
	2P Parallel	8am-6pm Mon-Fri	5	2	2	3	3	3	3	4	3	3
Little Uralba St												
	2P Parallel	8am-6pm Mon-Fri	6	0	0	1	0	0	0	0	0	0
Irvine Pl												
	2P Parallel	8am-6pm Mon-Fri	6	0	0	0	0	0	0	0	0	1
Bent St												
Total			**17**	**2**	**2**	**4**	**3**	**3**	**3**	**4**	**3**	**4**
% Capacity				**12%**	**12%**	**24%**	**18%**	**18%**	**18%**	**24%**	**18%**	**24%**

Client	TTW
Location	14. Little Uralba St
Date	Thur, 15th Mar 2018 (8:00-17:00)
Description	Lismore Parking Survey

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Little Uralba St - East side												
Fermoy Ave												
	No Stopping		0	0	0	0	0	0	0	0	0	0
Uralba St												
Total			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
% Capacity				**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Little Uralba St - West side												
Fermoy Ave												
	No Stopping		0	0	0	0	0	0	0	0	0	0
Uralba St												
Total			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
% Capacity				**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Client	TTW
Location	15. Dibbs St
Date	Thur, 15th Mar 2018 (8:00-17:00)
Description	Lismore Parking Survey

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Dibbs St - East Side												
Uralba St												
	2P Parallel	8am-6pm Mon-Fri, Permit Holder Excepted	3	3	3	3	3	3	3	3	3	3
Gardner Ave												
	2P Parallel	8am-6pm Mon-Fri, Permit Holder Excepted	17	3	3	5	5	7	7	7	11	10
Hewett St												
	2P Parallel	8am-6pm Mon-Fri, Permit Holder Excepted	5	1	0	0	0	0	1	0	0	0
McKenzie St												
Total			**25**	**7**	**6**	**8**	**8**	**10**	**11**	**10**	**14**	**13**
% Capacity				**28%**	**24%**	**32%**	**32%**	**40%**	**44%**	**40%**	**56%**	**52%**

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Dibbs St - West Side												
Uralba St												
	2P Parallel	8am-6pm Mon-Fri, Permit Holder Excepted	12	8	10	8	11	8	10	12	11	11
Dalziell St (North)												
	2P	8am-6pm Mon-Fri, Permit Holder Excepted	17	1	2	2	3	2	3	5	5	5
Dalziell St (South)												
	2P Parallel	8am-6pm Mon-Fri, Permit Holder Excepted	7	2	3	0	2	2	2	3	3	3
	Bus Zone	8am-6pm Mon-Fri	2	0	0	0	0	0	0	0	0	0
McKenzie St												
Total			**38**	**11**	**15**	**10**	**16**	**12**	**15**	**20**	**19**	**19**
% Capacity				**29%**	**39%**	**26%**	**42%**	**32%**	**39%**	**53%**	**50%**	**50%**

Client	TTW
Location	16. Dalziell St (North)
Date	Thur, 15th Mar 2018 (8:00-17:00)
Description	Lismore Parking Survey

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Dalziell St (North) - North Side												
Hunter St												
	No Stopping											
	10P Ticket	8am-6pm Mon-Fri, Permit Holder Excepted	31	22	23	22	22	24	24	25	22	19
Dibbs St												
Total			**31**	**22**	**23**	**22**	**22**	**24**	**24**	**25**	**22**	**19**
% Capacity				**71%**	**74%**	**71%**	**71%**	**77%**	**77%**	**81%**	**71%**	**61%**

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Dalziell St (North) - South Side												
Hunter St												
	10P Ticket	8am-6pm Mon-Fri, Permit Holder Excepted	48	28	29	32	29	28	34	35	32	30
Dibbs St												
Total			**48**	**28**	**29**	**32**	**29**	**28**	**34**	**35**	**32**	**30**
% Capacity				**58%**	**60%**	**67%**	**60%**	**58%**	**71%**	**73%**	**67%**	**63%**

Client	TTW
Location	17. Dalziell St (South)
Date	Thur, 15th Mar 2018 (8:00-17:00)
Description	Lismore Parking Survey

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Dalziell St (South) - North Side												
Dibbs St												
	No Stopping		0	0	0	0	0	0	0	0	0	0
McKenzie St												
Total			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
% Capacity				**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Dalziell St (South) - South Side												
Dibbs St												
	10P Ticket	8am-6pm Mon-Fri, Permit Holder Excepted	15	8	8	8	6	8	8	9	6	7
McKenzie St												
Total			**15**	**8**	**8**	**8**	**6**	**8**	**8**	**9**	**6**	**7**
% Capacity				**53%**	**53%**	**53%**	**40%**	**53%**	**53%**	**60%**	**40%**	**47%**

Client	TTW
Location	18. Hewett St
Date	Thur, 15th Mar 2018 (8:00-17:00)
Description	Lismore Parking Survey

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Hewett St - North Side												
Dibbs St												
	2P Parallel	8am-6pm Mon-Fri, Permit Holder Excepted	12	1	1	2	1	1	1	1	1	1
Gardner Ave												
	2P Parallel	8am-6pm Mon-Fri, Permit Holder Excepted	8	1	1	0	1	0	0	0	1	0
No Through Rd												
Total			**20**	**2**	**2**	**2**	**2**	**1**	**1**	**1**	**2**	**1**
% Capacity				**10%**	**10%**	**10%**	**10%**	**5%**	**5%**	**5%**	**10%**	**5%**

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Hewett St - South Side												
Dibbs St												
	No Restriction		13	3	3	4	4	4	4	4	4	3
No Through Rd												
Total			**13**	**3**	**3**	**4**	**4**	**4**	**4**	**4**	**4**	**3**
% Capacity				**23%**	**23%**	**31%**	**31%**	**31%**	**31%**	**31%**	**31%**	**23%**

0

Client	TTW
Location	19. Gardner Ave
Date	Thur, 15th Mar 2018 (8:00-17:00)
Description	Lismore Parking Survey

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Gardner Ave - East & North Side												
Hewett St												
	No Parking		0	0	0	0	0	0	0	0	0	0
(Corner)												
	No Stopping		0	0	0	0	0	0	0	0	0	0
Dibbs St												
Total			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
% Capacity				**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Gardner Ave - West & South Side												
Hewett St												
	2P Parallel	8am-6pm Mon-Fri, Permit Holder Excepted	13	0	1	1	1	1	1	1	1	1
(Corner)												
	No Stopping		0	0	0	0	0	0	0	0	0	0
Dibbs St												
Total			**13**	**0**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
% Capacity				**0%**	**8%**	**8%**	**8%**	**8%**	**8%**	**8%**	**8%**	**8%**

Client	TTW
Location	20. Hospital Main Car Park A
Date	Thur, 15th Mar 2018 (8:00-17:00)
Description	Lismore Parking Survey

MATRIX Traffic and Transport Data

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Hospital Entrance on Uralba St - North Side												
Uralba St												
	Patient Transport Only		4	1	1	1	0	0	0	0	1	1
	Drop off Only		10	1	4	4	7	7	6	7	6	5
	Disabled		1	0	0	0	0	0	1	1	1	1
Total			**15**	**2**	**5**	**5**	**7**	**7**	**7**	**8**	**8**	**7**
% Capacity				**1%**	**2%**	**2%**	**3%**	**3%**	**3%**	**3%**	**3%**	**3%**
Restricted Parking on Hunter St - East Side												
Loading Dock												
	Executives Staff Parking Signs		9	4	4	5	5	5	5	6	7	7
	Truck Turning Bay		4	3	0	1	1	3	3	4	4	3
	2 Mins Parking		1	1	1	1	1	1	1	1	1	1
	Restricted Parking		2	2	2	2	2	2	2	1	2	2
Total			**16**	**10**	**7**	**9**	**9**	**11**	**11**	**12**	**14**	**13**
% Capacity				**63%**	**44%**	**56%**	**56%**	**69%**	**69%**	**75%**	**88%**	**81%**
Hunter St - East Side												
Ground Level												
	Fleet Cars Only		4	4	2	1	1	1	1	1	1	2
Total			**4**	**4**	**2**	**1**	**1**	**1**	**1**	**1**	**1**	**2**
% Capacity				**100%**	**50%**	**25%**	**25%**	**25%**	**25%**	**25%**	**25%**	**50%**
Mental Health Service Parking												
Ground Level												
	Cancer Care and Health		6	3	5	6	7	6	6	6	3	2
	Patient Parking Only		9	4	6	9	9	9	8	8	7	6
	Disabled		6	2	4	7	7	7	6	6	5	4
	Community Mental Health Parking	3hours	3	2	3	3	3	3	3	3	3	3
	Maintenance Parking Only		1	0	0	0	0	0	0	0	1	1
Total			**25**	**11**	**18**	**25**	**26**	**25**	**23**	**23**	**19**	**16**
% Capacity				**44%**	**72%**	**100%**	**104%**	**100%**	**92%**	**92%**	**76%**	**64%**
Pathology North, Staff Only - 60 Hunter St												
Ground Level												
	Pathology Vehicle Only		1	0	0	0	0	0	0	0	0	0
	Maintenance Vehicle Only		2	1	1	0	0	0	1	2	2	2
	Disabled		1	0	0	0	0	0	0	0	0	0
	Keep Clear		1	1	1	1	1	1	0	1	1	1
	Outside		73	28	31	33	32	30	26	39	37	31
	Inside		41	41	41	40	40	41	42	39	35	28
Total			**119**	**71**	**74**	**74**	**73**	**72**	**69**	**81**	**75**	**62**
% Capacity				**60%**	**62%**	**62%**	**61%**	**61%**	**58%**	**68%**	**63%**	**52%**
Pain Clinic - 50 Hunter St												
Ground Level												
	Pain Clinic		1	0	0	0	0	0	0	0	0	0
	NSP Parking Only		1	0	1	1	0	0	0	0	0	0
	No Restrictions		1	1	1	1	1	1	1	0	0	0
Total			**3**	**1**	**2**	**2**	**1**	**1**	**1**	**0**	**0**	**0**
% Capacity				**33%**	**67%**	**67%**	**33%**	**33%**	**33%**	**0%**	**0%**	**0%**

Client	TTW
Location	21. Hospital Car Park B
Date	Thur, 15th Mar 2018 (8:00-17:00)
Description	Lismore Parking Survey

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Hospital Car Park (Care Car Park) - South of Uralba St												
Ground Level												
	Elderly Parking		8	6	8	8	8	8	8	7	6	5
	Disabled		4	1	4	3	2	3	3	2	3	2
	University of Sydney Parking		5	4	4	4	4	3	3	3	4	4
	No Restriction		9	9	9	9	9	9	9	9	7	7
1A												
	Staff Parking		25	18	22	23	23	24	24	25	18	14
1B												
	Staff Parking		23	5	11	11	11	12	13	21	20	16
2A												
	Staff Parking		25	19	25	25	24	23	24	25	15	11
2B												
	Staff Parking		26	12	22	25	25	25	25	26	24	19
3A												
	Staff Parking		22	20	22	22	22	22	21	22	19	16
3B												
	Staff Parking		26	20	26	26	25	26	26	25	24	18
4A												
	Public Parking		25	23	25	25	25	25	25	25	22	17
4B												
	Public Parking		26	18	24	25	26	26	26	26	24	16
5A												
	Public Parking		25	0	2	9	11	15	17	20	12	11
5B												
	Public Parking		26	2	8	17	17	18	18	23	18	15
Total			**275**	**157**	**212**	**232**	**232**	**239**	**242**	**259**	**216**	**171**
% Capacity				**57%**	**77%**	**84%**	**84%**	**87%**	**88%**	**94%**	**79%**	**62%**

147
102

Client	TTW
Location	22. Car Park C (South of Gaggin Ln)
Date	Thur, 15th Mar 2018 (8:00-17:00)
Description	Lismore Parking Survey

Side of the Street	Parking Restriction	Time Restrictions	Availble Spaces	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Car Park - South of Gaffin Ln												
	No Restrictions		30	20	20	17	15	16	15	15	16	23
Total			**30**	**20**	**20**	**17**	**15**	**16**	**15**	**15**	**16**	**23**
% Capacity				**67%**	**67%**	**57%**	**50%**	**53%**	**50%**	**50%**	**53%**	**77%**

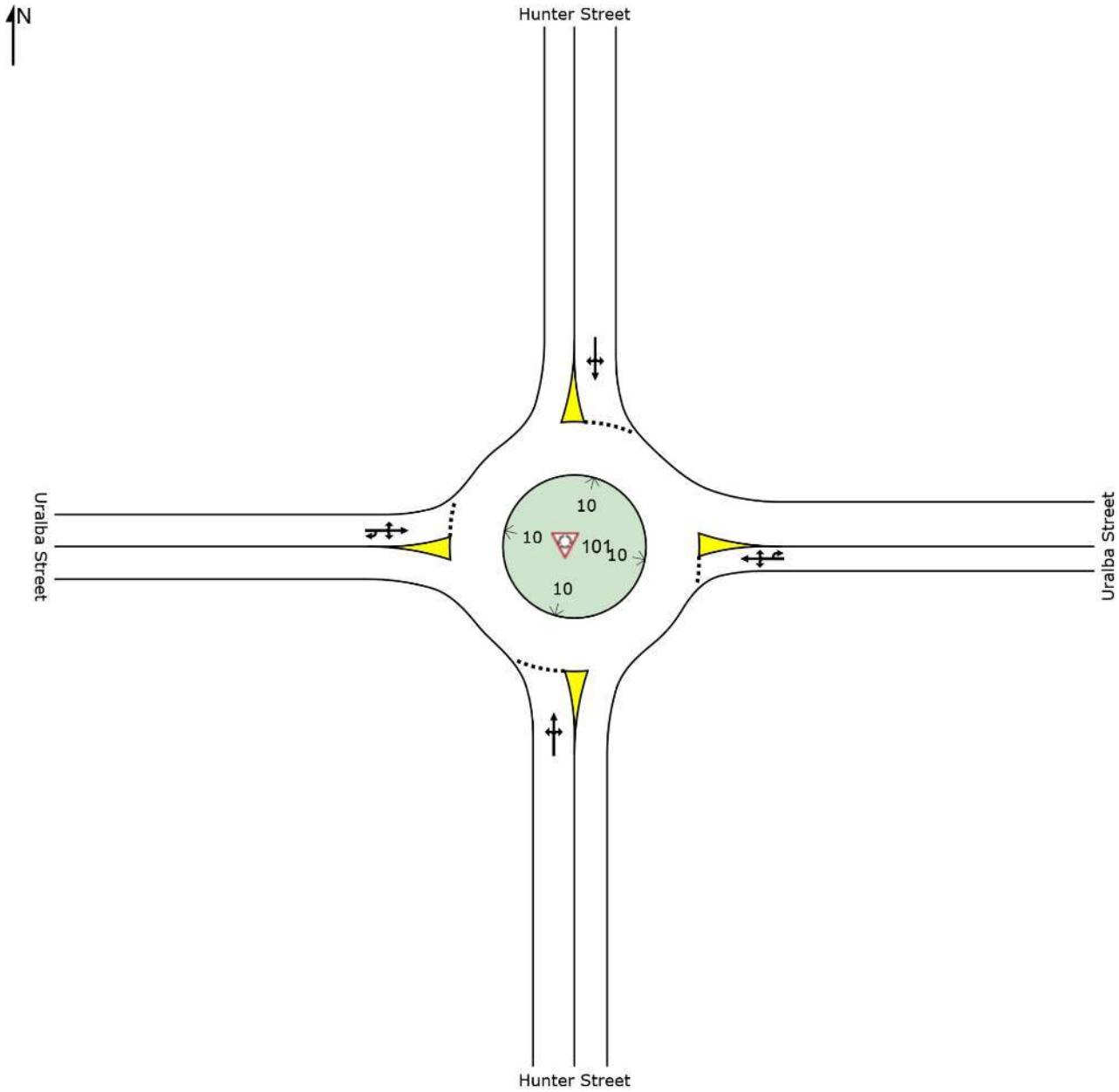
Appendix B

SIDRA Modelling Layout and Results

SITE LAYOUT

Site: 101 [Pre Uralba St & Hunter St AM Peak]

New Site
Roundabout



MOVEMENT SUMMARY

Site: 101 [Pre Uralba St & Hunter St AM Peak]

New Site
Roundabout

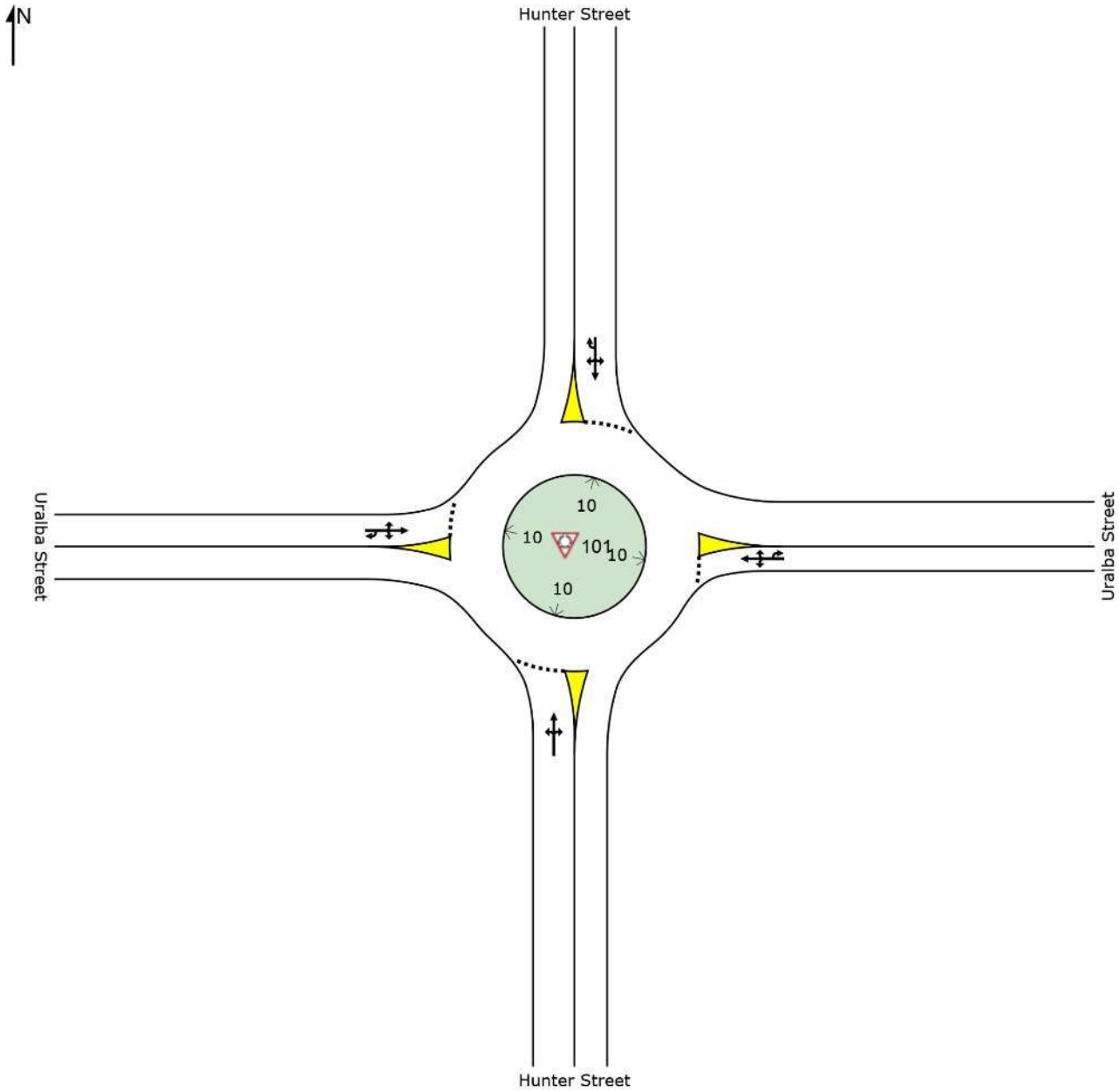
Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hunter Street											
1	L2	19	0.0	0.067	8.1	LOS A	0.3	2.4	0.65	0.73	50.9
2	T1	16	0.0	0.067	8.0	LOS A	0.3	2.4	0.65	0.73	51.8
3	R2	16	6.7	0.067	11.4	LOS A	0.3	2.4	0.65	0.73	51.2
Approach		51	2.1	0.067	9.1	LOS A	0.3	2.4	0.65	0.73	51.3
East: Uralba Street											
4	L2	26	4.0	0.616	5.8	LOS A	5.9	42.7	0.50	0.54	51.9
5	T1	666	3.3	0.616	5.8	LOS A	5.9	42.7	0.50	0.54	52.9
6	R2	92	2.3	0.616	9.1	LOS A	5.9	42.7	0.50	0.54	52.5
6u	U	5	0.0	0.616	10.7	LOS A	5.9	42.7	0.50	0.54	53.2
Approach		789	3.2	0.616	6.2	LOS A	5.9	42.7	0.50	0.54	52.8
North: Hunter Street											
7	L2	33	3.2	0.093	6.0	LOS A	0.3	2.4	0.38	0.65	51.8
8	T1	24	0.0	0.093	5.8	LOS A	0.3	2.4	0.38	0.65	52.9
9	R2	42	5.0	0.093	9.2	LOS A	0.3	2.4	0.38	0.65	52.4
Approach		99	3.2	0.093	7.3	LOS A	0.3	2.4	0.38	0.65	52.3
West: Uralba Street											
10	L2	58	5.5	0.372	5.5	LOS A	2.0	14.7	0.32	0.54	52.5
11	T1	360	2.9	0.372	5.3	LOS A	2.0	14.7	0.32	0.54	53.6
12	R2	36	0.0	0.372	8.5	LOS A	2.0	14.7	0.32	0.54	53.3
12u	U	8	0.0	0.372	10.2	LOS A	2.0	14.7	0.32	0.54	53.9
Approach		462	3.0	0.372	5.7	LOS A	2.0	14.7	0.32	0.54	53.4
All Vehicles		1401	3.1	0.616	6.2	LOS A	5.9	42.7	0.43	0.55	52.9

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.
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 LAYOUT

Site: 101 [Pre Uralba St & Hunter St PM Peak]

New Site
Roundabout



MOVEMENT SUMMARY

Site: 101 [Pre Uralba St & Hunter St PM Peak]

New Site
Roundabout

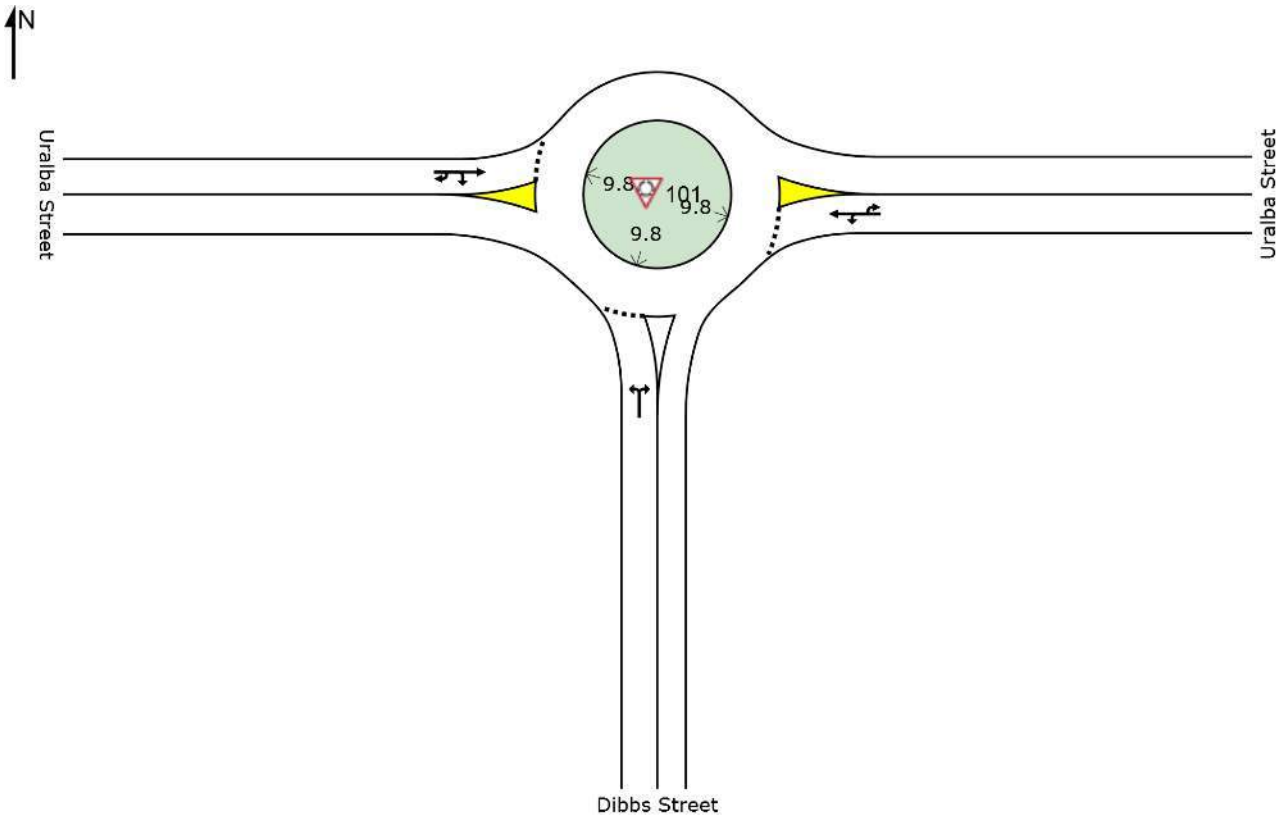
Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hunter Street											
1	L2	20	0.0	0.042	6.4	LOS A	0.2	1.2	0.45	0.65	51.9
2	T1	9	0.0	0.042	6.3	LOS A	0.2	1.2	0.45	0.65	53.0
3	R2	13	0.0	0.042	9.6	LOS A	0.2	1.2	0.45	0.65	52.6
Approach		42	0.0	0.042	7.3	LOS A	0.2	1.2	0.45	0.65	52.4
East: Uralba Street											
4	L2	22	0.0	0.416	5.3	LOS A	3.1	21.8	0.35	0.51	52.6
5	T1	473	0.7	0.416	5.4	LOS A	3.1	21.8	0.35	0.51	53.6
6	R2	37	0.0	0.416	8.6	LOS A	3.1	21.8	0.35	0.51	53.2
6u	U	12	0.0	0.416	10.2	LOS A	3.1	21.8	0.35	0.51	53.8
Approach		543	0.6	0.416	5.7	LOS A	3.1	21.8	0.35	0.51	53.5
North: Hunter Street											
7	L2	65	1.6	0.131	7.5	LOS A	0.6	4.2	0.56	0.74	51.2
8	T1	16	0.0	0.131	7.3	LOS A	0.6	4.2	0.56	0.74	52.2
9	R2	35	0.0	0.131	10.6	LOS A	0.6	4.2	0.56	0.74	51.9
9u	U	1	0.0	0.131	12.2	LOS A	0.6	4.2	0.56	0.74	52.4
Approach		117	0.9	0.131	8.4	LOS A	0.6	4.2	0.56	0.74	51.5
West: Uralba Street											
10	L2	33	0.0	0.517	5.1	LOS A	3.4	24.0	0.26	0.49	53.0
11	T1	653	1.0	0.517	5.1	LOS A	3.4	24.0	0.26	0.49	54.0
12	R2	28	0.0	0.517	8.3	LOS A	3.4	24.0	0.26	0.49	53.6
12u	U	12	0.0	0.517	10.0	LOS A	3.4	24.0	0.26	0.49	54.2
Approach		725	0.9	0.517	5.3	LOS A	3.4	24.0	0.26	0.49	53.9
All Vehicles		1427	0.7	0.517	5.8	LOS A	3.4	24.0	0.32	0.52	53.5

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.
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 LAYOUT

Site: 101 [Pre Uralba St & Dibbs St AM Peak]

New Site
Roundabout



MOVEMENT SUMMARY

Site: 101 [Pre Uralba St & Dibbs St AM Peak]

New Site
Roundabout

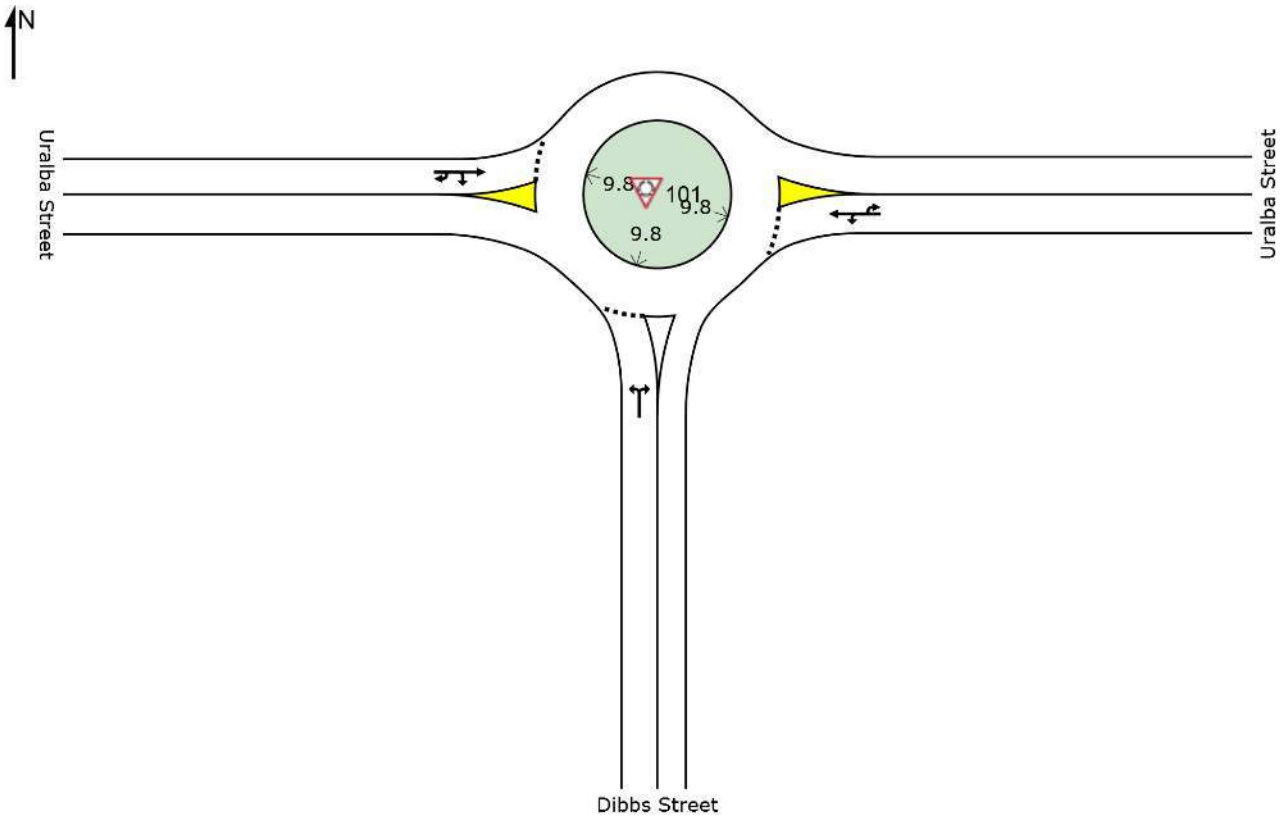
Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Dibbs Street											
1	L2	23	4.5	0.078	9.8	LOS A	0.4	3.0	0.69	0.78	49.1
3	R2	27	7.7	0.078	13.1	LOS A	0.4	3.0	0.69	0.78	49.4
Approach		51	6.3	0.078	11.6	LOS A	0.4	3.0	0.69	0.78	49.2
East: Uralba Street											
4	L2	74	0.0	0.586	5.2	LOS A	4.1	28.9	0.27	0.49	53.0
5	T1	780	0.3	0.586	5.1	LOS A	4.1	28.9	0.27	0.49	54.0
6u	U	7	0.0	0.586	9.9	LOS A	4.1	28.9	0.27	0.49	54.2
Approach		861	0.2	0.586	5.1	LOS A	4.1	28.9	0.27	0.49	53.9
West: Uralba Street											
11	T1	332	2.5	0.280	4.8	LOS A	1.7	12.0	0.16	0.51	53.8
12	R2	12	9.1	0.280	8.1	LOS A	1.7	12.0	0.16	0.51	53.1
12u	U	60	3.5	0.280	9.7	LOS A	1.7	12.0	0.16	0.51	53.9
Approach		403	2.9	0.280	5.7	LOS A	1.7	12.0	0.16	0.51	53.8
All Vehicles		1315	1.3	0.586	5.5	LOS A	4.1	28.9	0.26	0.51	53.7

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 LAYOUT

Site: 101 [Pre Uralba St & Dibbs St PM Peak]

New Site
Roundabout



Organisation: TAYLOR THOMSON WHITTING (TTW) PTY LTD | Created: Wednesday, 28 March 2018 3:59:43 PM
Project: P:\2012\1212\121204\Reports\TTW\Stage 3C\Traffic\SIDRA\Lismore Base Hospital Stage 3C NTX.sip7

MOVEMENT SUMMARY

Site: 101 [Pre Uralba St & Dibbs St PM Peak]

New Site
Roundabout

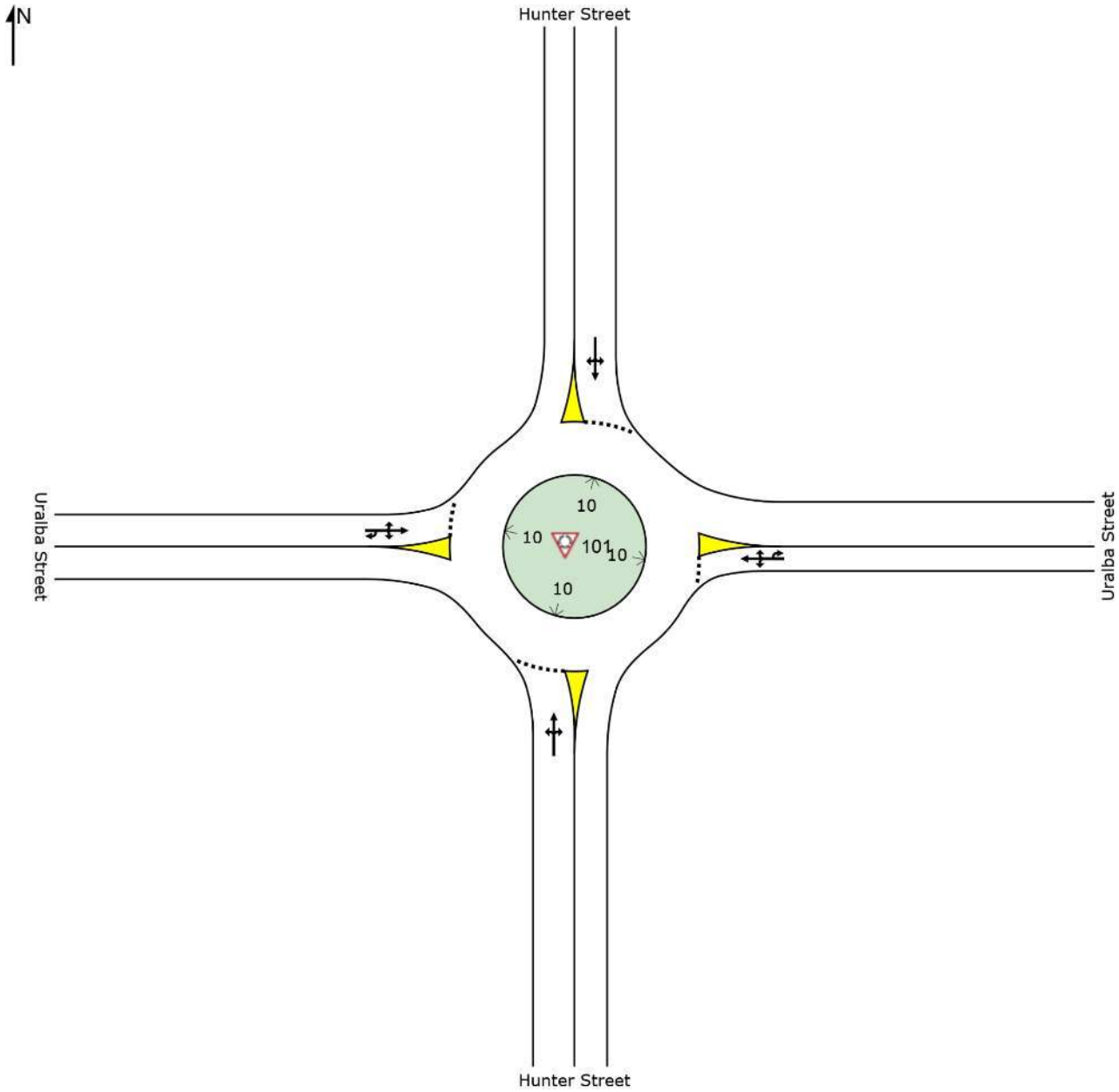
Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Dibbs Street											
1	L2	29	3.6	0.090	7.2	LOS A	0.4	2.9	0.52	0.71	50.7
3	R2	51	0.0	0.090	10.3	LOS A	0.4	2.9	0.52	0.71	51.3
Approach		80	1.3	0.090	9.1	LOS A	0.4	2.9	0.52	0.71	51.1
East: Uralba Street											
4	L2	32	0.0	0.355	5.0	LOS A	1.9	13.2	0.16	0.48	53.4
5	T1	487	0.4	0.355	4.8	LOS A	1.9	13.2	0.16	0.48	54.4
6u	U	13	0.0	0.355	9.6	LOS A	1.9	13.2	0.16	0.48	54.6
Approach		532	0.4	0.355	5.0	LOS A	1.9	13.2	0.16	0.48	54.3
West: Uralba Street											
11	T1	731	0.7	0.541	5.1	LOS A	4.4	30.7	0.29	0.49	53.8
12	R2	16	13.3	0.541	8.5	LOS A	4.4	30.7	0.29	0.49	52.8
12u	U	26	0.0	0.541	9.9	LOS A	4.4	30.7	0.29	0.49	54.0
Approach		773	1.0	0.541	5.3	LOS A	4.4	30.7	0.29	0.49	53.7
All Vehicles		1384	0.8	0.541	5.4	LOS A	4.4	30.7	0.25	0.50	53.8

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

SITE LAYOUT

Site: 101 [Post Uralba St & Hunter St AM Peak]

New Site
Roundabout



MOVEMENT SUMMARY

Site: 101 [Post Uralba St & Hunter St AM Peak]

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Hunter Street											
1	L2	19	0.0	0.068	8.2	LOS A	0.4	2.5	0.66	0.74	50.8
2	T1	16	0.0	0.068	8.1	LOS A	0.4	2.5	0.66	0.74	51.8
3	R2	16	6.7	0.068	11.5	LOS A	0.4	2.5	0.66	0.74	51.2
Approach		51	2.1	0.068	9.2	LOS A	0.4	2.5	0.66	0.74	51.2
East: Uralba Street											
4	L2	26	4.0	0.624	5.8	LOS A	6.1	43.9	0.51	0.54	51.9
5	T1	676	3.3	0.624	5.9	LOS A	6.1	43.9	0.51	0.54	52.9
6	R2	93	2.3	0.624	9.1	LOS A	6.1	43.9	0.51	0.54	52.5
6u	U	5	0.0	0.624	10.7	LOS A	6.1	43.9	0.51	0.54	53.2
Approach		800	3.2	0.624	6.3	LOS A	6.1	43.9	0.51	0.54	52.8
North: Hunter Street											
7	L2	33	3.2	0.095	6.0	LOS A	0.3	2.5	0.38	0.66	51.8
8	T1	24	0.0	0.095	5.9	LOS A	0.3	2.5	0.38	0.66	52.9
9	R2	43	4.9	0.095	9.2	LOS A	0.3	2.5	0.38	0.66	52.4
Approach		100	3.2	0.095	7.4	LOS A	0.3	2.5	0.38	0.66	52.3
West: Uralba Street											
10	L2	59	5.4	0.381	5.5	LOS A	2.1	15.3	0.32	0.54	52.4
11	T1	371	2.8	0.381	5.3	LOS A	2.1	15.3	0.32	0.54	53.6
12	R2	36	0.0	0.381	8.5	LOS A	2.1	15.3	0.32	0.54	53.3
12u	U	8	0.0	0.381	10.2	LOS A	2.1	15.3	0.32	0.54	53.9
Approach		474	2.9	0.381	5.7	LOS A	2.1	15.3	0.32	0.54	53.4
All Vehicles		1424	3.0	0.624	6.3	LOS A	6.1	43.9	0.44	0.56	52.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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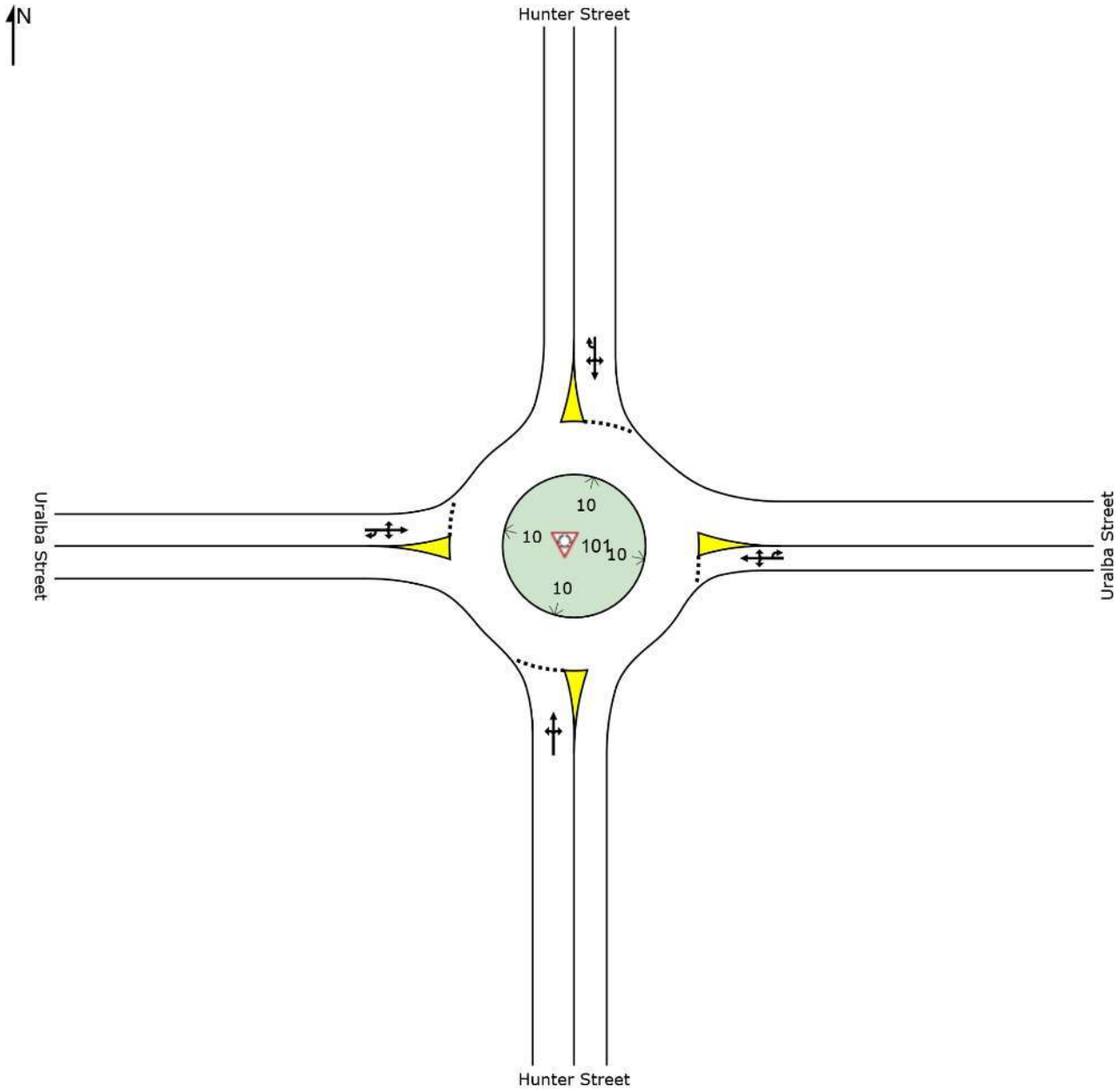
SITE LAYOUT

Site: 101 [Post Uralba St & Hunter St PM Peak]

New Site
Roundabout



MOVEMENT SUMMARY

Site: 101 [Post Uralba St & Hunter St PM Peak]

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Hunter Street											
1	L2	20	0.0	0.043	6.4	LOS A	0.2	1.2	0.45	0.65	51.9
2	T1	9	0.0	0.043	6.3	LOS A	0.2	1.2	0.45	0.65	52.9
3	R2	13	0.0	0.043	9.6	LOS A	0.2	1.2	0.45	0.65	52.6
Approach		42	0.0	0.043	7.4	LOS A	0.2	1.2	0.45	0.65	52.3
East: Uralba Street											
4	L2	22	0.0	0.424	5.3	LOS A	3.2	22.5	0.35	0.51	52.6
5	T1	484	0.7	0.424	5.4	LOS A	3.2	22.5	0.35	0.51	53.6
6	R2	37	0.0	0.424	8.6	LOS A	3.2	22.5	0.35	0.51	53.2
6u	U	12	0.0	0.424	10.3	LOS A	3.2	22.5	0.35	0.51	53.8
Approach		555	0.6	0.424	5.7	LOS A	3.2	22.5	0.35	0.51	53.5
North: Hunter Street											
7	L2	66	1.6	0.134	7.6	LOS A	0.6	4.3	0.56	0.74	51.1
8	T1	16	0.0	0.134	7.4	LOS A	0.6	4.3	0.56	0.74	52.2
9	R2	35	0.0	0.134	10.7	LOS A	0.6	4.3	0.56	0.74	51.9
9u	U	1	0.0	0.134	12.3	LOS A	0.6	4.3	0.56	0.74	52.4
Approach		118	0.9	0.134	8.5	LOS A	0.6	4.3	0.56	0.74	51.5
West: Uralba Street											
10	L2	33	0.0	0.523	5.2	LOS A	3.5	24.6	0.26	0.49	52.9
11	T1	662	1.0	0.523	5.1	LOS A	3.5	24.6	0.26	0.49	54.0
12	R2	28	0.0	0.523	8.3	LOS A	3.5	24.6	0.26	0.49	53.6
12u	U	12	0.0	0.523	10.0	LOS A	3.5	24.6	0.26	0.49	54.2
Approach		735	0.9	0.523	5.3	LOS A	3.5	24.6	0.26	0.49	53.9
All Vehicles		1449	0.7	0.523	5.8	LOS A	3.5	24.6	0.33	0.52	53.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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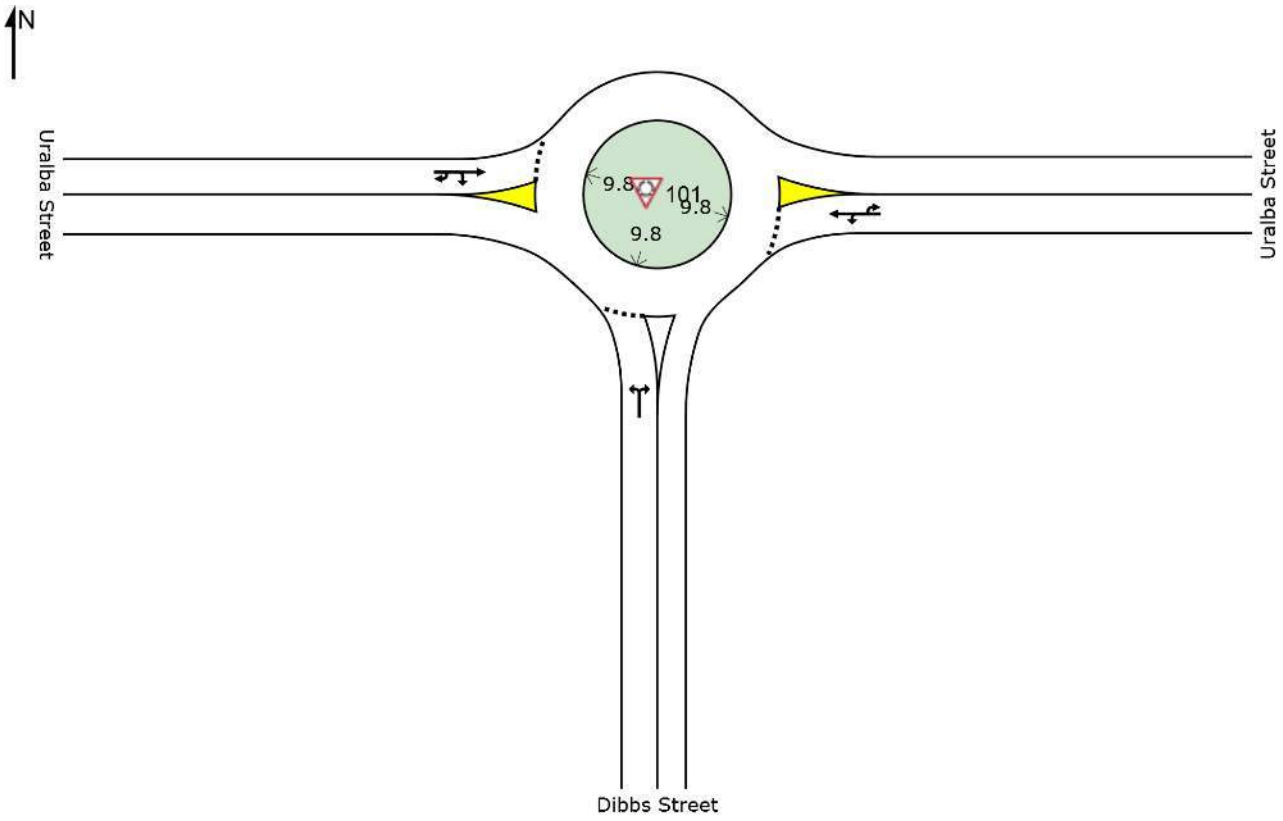
SITE LAYOUT

Site: 101 [Post Uralba St & Dibbs St AM Peak]

New Site
Roundabout



MOVEMENT SUMMARY

Site: 101 [Post Uralba St & Dibbs St AM Peak]

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Dibbs Street											
1	L2	23	4.5	0.081	10.0	LOS A	0.4	3.2	0.71	0.79	48.9
3	R2	27	7.7	0.081	13.3	LOS A	0.4	3.2	0.71	0.79	49.2
Approach		51	6.3	0.081	11.8	LOS A	0.4	3.2	0.71	0.79	49.1
East: Uralba Street											
4	L2	75	0.0	0.602	5.3	LOS A	4.3	30.5	0.30	0.49	53.0
5	T1	796	0.3	0.602	5.1	LOS A	4.3	30.5	0.30	0.49	53.9
6u	U	7	0.0	0.602	9.9	LOS A	4.3	30.5	0.30	0.49	54.1
Approach		878	0.2	0.602	5.2	LOS A	4.3	30.5	0.30	0.49	53.8
West: Uralba Street											
11	T1	336	2.5	0.287	4.8	LOS A	1.7	12.4	0.16	0.52	53.8
12	R2	12	9.1	0.287	8.1	LOS A	1.7	12.4	0.16	0.52	53.1
12u	U	66	3.2	0.287	9.7	LOS A	1.7	12.4	0.16	0.52	53.9
Approach		414	2.8	0.287	5.7	LOS A	1.7	12.4	0.16	0.52	53.8
All Vehicles		1342	1.3	0.602	5.6	LOS A	4.3	30.5	0.27	0.51	53.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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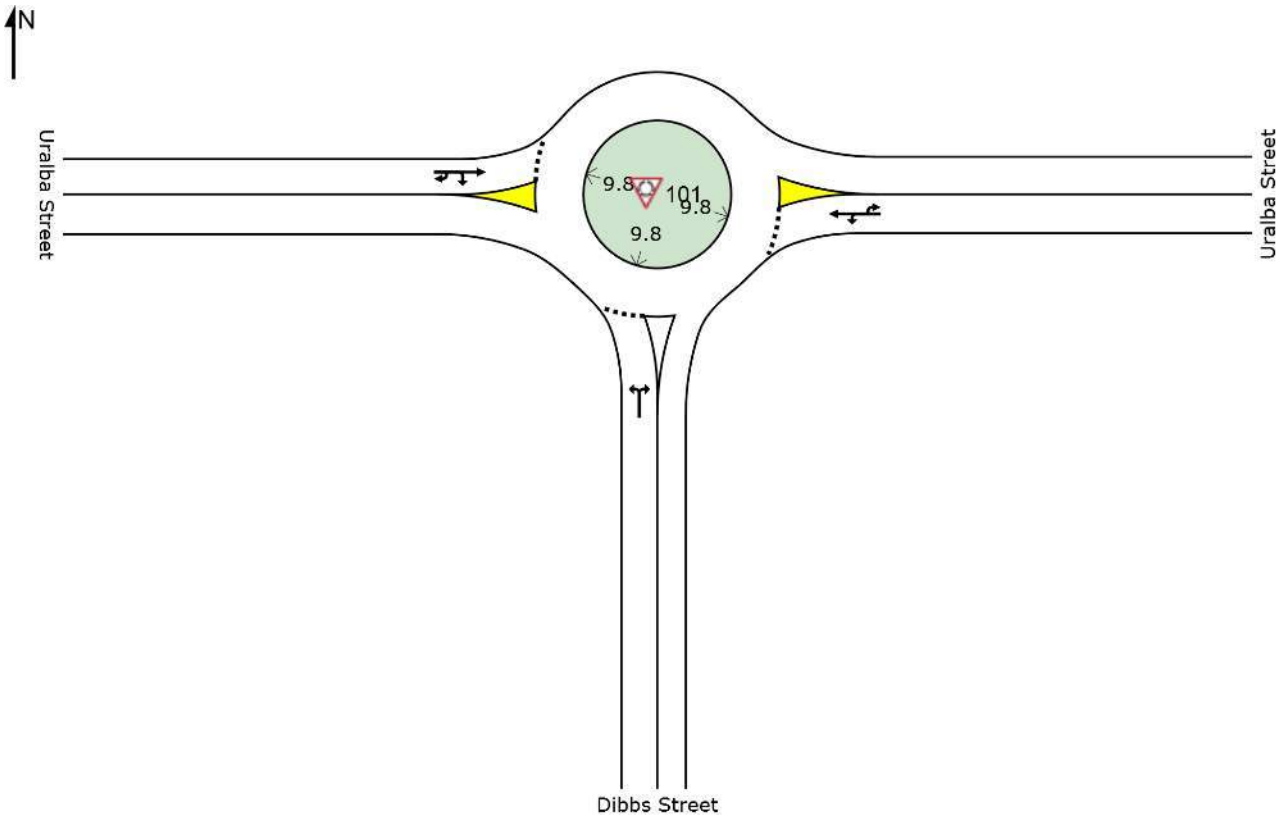
New Site
Roundabout



MOVEMENT SUMMARY

Site: 101 [Post Uralba St & Dibbs St PM Peak]

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Dibbs Street											
1	L2	29	3.6	0.098	7.3	LOS A	0.5	3.2	0.52	0.72	50.6
3	R2	57	0.0	0.098	10.3	LOS A	0.5	3.2	0.52	0.72	51.2
Approach		86	1.2	0.098	9.3	LOS A	0.5	3.2	0.52	0.72	51.0
East: Uralba Street											
4	L2	32	0.0	0.360	5.0	LOS A	1.9	13.6	0.16	0.48	53.4
5	T1	495	0.4	0.360	4.8	LOS A	1.9	13.6	0.16	0.48	54.4
6u	U	13	0.0	0.360	9.6	LOS A	1.9	13.6	0.16	0.48	54.6
Approach		539	0.4	0.360	5.0	LOS A	1.9	13.6	0.16	0.48	54.3
West: Uralba Street											
11	T1	741	0.7	0.554	5.1	LOS A	4.6	32.1	0.32	0.49	53.7
12	R2	16	13.3	0.554	8.5	LOS A	4.6	32.1	0.32	0.49	52.7
12u	U	26	0.0	0.554	9.9	LOS A	4.6	32.1	0.32	0.49	53.9
Approach		783	0.9	0.554	5.3	LOS A	4.6	32.1	0.32	0.49	53.7
All Vehicles		1408	0.7	0.554	5.4	LOS A	4.6	32.1	0.27	0.50	53.7

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

Appendix C

Pedestrian Crossing Review

Prepared by TTW dated 4th November 2016.

Pedestrian Crossing Review

Lismore Base Hospital

Prepared for Lismore Base Hospital c/o Aurora Projects / 4th November, 2016

121204 UTD

Taylor Thomson Whitting (NSW) Pty Ltd, Consulting Engineers | ABN 81 113 578 377
48 Chandos Street, St Leonards NSW 2065 | +612 9439 7288 | ttw.com.au

Structural
Civil
Traffic
Facade
Consulting
Engineers

Contents

Revision Register

Rev	Date	Prepared By	Approved By	Remarks
1	04/11/16	MB	SJ	For issue

1 Introduction

This report has been prepared on behalf of Lismore Base Hospital to present the findings of a traffic and pedestrian assessment at the recently upgraded hospital site. This study was conducted in response to a Development Consent Condition regarding vehicle and pedestrian safety, defined as follows:

> *Condition E2: "The applicant shall monitor vehicular and pedestrian flow at the Uralba Street pedestrian crossing within six months of commencement of operations of each stage of the car park to ensure pedestrian and vehicle safety is maintained. If it is determined that the pedestrian and vehicular activity meets the warrants for the provision of a signalised mid-block marked foot crossing in accordance with the RMS Traffic signal design guidelines, the applicant shall investigate the need for the construction of the signalised crossing. Alternatively, the applicant shall demonstrate that alternative pedestrian or vehicle flow control measures (such as restricting egress to Uralba Street from the car park or a pedestrian overpass) have been effective in reducing pedestrian and vehicle activity below RMS warrants for a signalised foot crossing. All investigations or vehicle and pedestrian flow control measures shall be undertaken in consultations with Council and by a suitably qualified and experienced person. Any measures requiring the installation, or altering of any existing, traffic control devices or traffic control facilities must be approved by Council."*

TTW has previously provided a statement as part of the original Development Application regarding this pedestrian crossing (see Appendix A). The statement outlined that the estimated worst-case pedestrian and vehicle movements along Uralba Street would not meet the requirements of an RMS warrant to install a signalised mid-block foot crossing. As such, this post-construction report now aims to reassess those forecasts and investigate the need for a signalised crossing.

The study has assessed current vehicular and pedestrian flow across the existing marked crossing, and references various documents of interest, including but not limited to:

- Roads and Maritime Services' Traffic signal design: Section 2 – Warrants
- Roads and Maritime Services' Traffic signal design: Section 14 – Signalised mid-block marked footcrossings
- Australian Standards AS1742.10, Manual of uniform traffic control devices, Part 10: Pedestrian control and protection

The remainder of this report is set out as follows:

- Section 2 describes the existing site conditions;
- Section 3 summarises the possible traffic management solutions; and
- Section 4 presents the conclusions of this report.

2 Existing Conditions

2.1 The Site

The road network and area immediately surrounding the site of the recent development is presented in Figure 2.1. The pedestrian crossing links the main hospital building to the new car park and an adjacent mental health care facility.

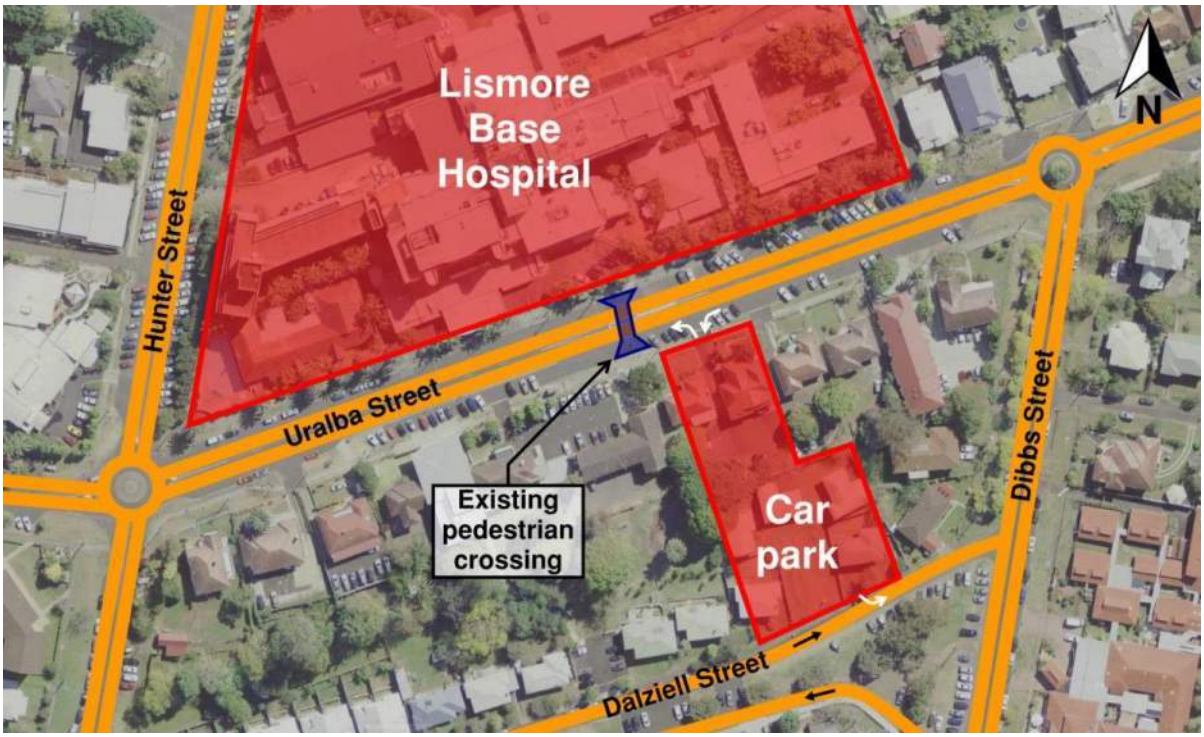

Figure 2.1: Site map

Background image: NSW SIX Maps

2.2 Pedestrian Demographics

The car park is typically used by staff and other general visitors to the hospital (such as family and carers). There is only limited accessible parking provided within the car park, with a current provision of 4 accessible spaces. A drop-off bay at the Main Entry can be used by elderly or disabled patrons, with vehicle drivers then parking vehicles in the car park.

These assumptions are confirmed in observations made during the pedestrian surveys, which showed a relatively limited number of less mobile users. It is assumed that these patrons do use the drop-off facilities as provided by the hospital.

2.3 Traffic and Pedestrian Volumes

To comply with Development Condition E2 (see Section 1), a traffic count survey of vehicles and pedestrians at the existing crossing was undertaken in October 2016. A total of six three-hour periods were surveyed:

- Thursday 20th October
  - 7:00am – 10:00am
  - 3:30pm – 6:30pm
- Saturday 22nd October
  - 10:00am – 1:00pm
  - 3:30pm – 6:30pm
- Monday 24th October
  - 10:00am – 1:00pm
  - 3:30pm – 6:30pm

The peak volumes recorded during these surveys are shown in Table 2.1.

Table 2.1: Peak 60-minute traffic volumes

Survey period		Eastbound vehicles	Westbound vehicles	Total vehicles (E.B + W.B)	Pedestrians
Thursday 20/10/16	AM	**386**	**864**	**1220** (356+864)	**134**
		8:30am – 9:30am	8:00am – 9:00am	8:00am – 9:00am	7:45am – 8:45am
	PM	**710**	**575**	**1217** (642+575)	**153**
		4:30pm – 5:30pm	3:45pm – 4:45pm	3:45pm – 4:45pm	4:00pm – 5:00pm
Saturday 22/10/16	AM	**491**	**579**	**951** (491+460)	**109**
		11:45am – 12:45pm	10:00am – 11:00am	11:45am – 12:45pm	11:15am – 12:15pm
	PM	**358**	**285**	**653** (358+275)	**60**
		3:30pm – 4:30pm	4:00pm – 5:00pm	3:30pm – 4:30pm	4:00pm – 5:00pm
Monday 24/10/16	AM	**320**	**764**	**1058** (302+756)	**138**
		11:45am – 12:45pm	10:45am – 11:45am	11:00am – 12:00pm	10:15am – 11:00am
	PM	**683**	**461**	**1133** (683+450)	**145**
		4:45pm – 5:45pm	3:30pm – 4:30pm	4:30pm – 5:30pm	3:45pm – 4:45pm

Note: 'Total vehicles' column is not necessarily the sum of the eastbound and westbound vehicle flows. The peak of combined flows can occur at a different time to the individual peaks.

3 Traffic Management Solutions

3.1 Retain Existing Scenario

The site currently provides a marked pedestrian crossing (zebra crossing) connecting the car park to the hospital building.

Section 6, Part 10 of Australian Standards AS1742.10: Manual of Uniform Traffic Control Devices describes pedestrian (zebra) crossings. Requirements for the installation of pedestrian crossings are as follows:

(i) No more than one lane of moving traffic in any one direction shall be encountered by a pedestrian using a crossing.

(ii) There shall be adequate sight distance between approaching vehicles and pedestrians about to use the crossing for the former to be able to stop in time to give way to the latter. This shall be achieved primarily by means of parking restrictions near the crossing. Kerb extensions may also be required to achieve this sight distance where kerbside parking is frequent.

(iii) The speed limit on approach to the crossing shall be 50 km/h or lower and the 85th percentile speed shall not exceed 60 km/h.

(iv) Crossings shall not be used on arterial roads.

If any of these requirements are not met, pedestrian actuated traffic signals (mid-block or a pedestrian refuge without zebra markings may be more appropriate.

As all of the above requirements are met, a pedestrian zebra crossing is likely appropriate, and local road authority warrants should be considered.

Part 10 of the RMS Supplement to Australian Standard 1742 considers the justification of marked pedestrian (zebra) crossings. A normal warrant is outlined as follows:

In each of three separate one hour periods in a typical day

(a) the pedestrian flow per hour (P) crossing the road is greater than or equal to 30

AND

(b) the vehicular flow per hour (V) through the site is greater than or equal to 500

AND

(c) the product PV is greater than or equal to 60,000

The measured one-hour traffic volumes peak at 153 pedestrians and 1,220 vehicles. Complete daily results as detailed in Appendix B demonstrate that the site exceeded 30 pedestrian movements and 500 vehicle movements in all hours surveyed. The site therefore meets the requirements of a normal warrant for a pedestrian (zebra) crossing.

The existing crossing in place is deemed to be adequate in accordance the requirements of current Australian Standards and RMS complementary material.

3.2 Upgrade to Signalised Mid-block Foot Crossing

Section 8, Part 10 of Australian Standards AS1742.10: Manual of Uniform Traffic Control Devices describes pedestrian control and protection. A signalised pedestrian crossing should be considered where there is a demand for pedestrians to cross the road other than at a signalized intersection and any of the following apply:

(a) One or more of the limits applicable to a pedestrian crossing (zebra) or children's crossing specified in Clauses 6.3 and 7.3 are exceeded.

(b) The crossing is within a coordinated traffic signal system or close to a railway crossing with active control (flashing lights/boom barriers).

(c) The crossing caters for significant numbers of people with disabilities.

As neither of the clauses are exceeded (relating primarily to road width and vehicle speeds) and the other clauses do not apply, local road authority warrants must be satisfied in order to consider installation of a signalised pedestrian crossing.

Section 2.5 of the RMS Warrants for Traffic Signal Design considers the justification of signalised pedestrian crossings. These may be considered if one of the following warrants is met:

(a) For each of four one-hour periods of an average day:

(i) the pedestrian flow crossing the road exceeds 250 persons/hour; and

(ii) the vehicular flow exceeds 600 vehicles/hour in each direction or, where there is a central median of at least 1.2 m wide, 1000 vehicles/hour in each direction.

OR

(b) For each of eight one-hour periods of an average day:

(i) the pedestrian flow exceeds 175 persons/hour; and

(ii) the vehicular flow exceeds 600 vehicles/hour in each direction or, where there is a central median of at least 1.2 m wide, 1000 vehicles/hour in each direction; and

(iii) there is no other pedestrian crossing or signalised marked foot crossing within a reasonable distance.

Given that the measured one-hour traffic flow peaks at 153 pedestrians, neither of the above warrant requirements are not achieved for pedestrian flow. Vehicle flow in any direction did not reach 1000 vehicles per hour in any surveyed period, a minimum requirement for roads with a central median. Even when excluding this median, complete daily results as detailed in Appendix B also demonstrate that the minimum flows are not met for the required number of periods during a day.

The RMS also defines reduced warrants if a site is used predominantly by children, the elderly or people with disabilities. As demonstrated in Section 2.2, these special warrants do not apply to this site. Further warrants relating to seasonal variations, pedestrian casualties, and site coordination also do not apply for this site.

3.3 Changes to Car Park Operation

Development Consent Condition E2 (see Section 1) requires demonstration of measures to reduce pedestrian and vehicle activity below RMS warrants for a signalised foot crossing.

As the current post-development traffic conditions do not meet the requirements for a signalised crossing (see Section 3.2), no pedestrian or vehicle flow control measures are required.

4 Conclusions

During site surveys, the existing pedestrian zebra crossing carried up to 153 pedestrians, 710 eastbound vehicles, and 864 westbound vehicles in peak 60-minute periods. These volumes meet the requirements of an RMS warrant for pedestrian crossings, and as such the existing scenario is deemed appropriate.

The volumes do not meet the requirements of an RMS warrant for a signalised mid-block marked foot crossing, which is therefore not an appropriate traffic control device. The existing car park operation and vehicle flow measures are sufficient for safe movement and access.

To meet the minimum requirements for a signalised crossing, peak pedestrian volumes would have to increase by 15 to 65 per cent and peak vehicle volumes by 15 to 40 per cent. Furthermore, these traffic flows would have to remain consistent across at least four (and up to eight) separate one-hour periods throughout the day. As such, it is not expected that a signalised foot crossing shall be in appropriate device for the foreseeable future.

The existing pedestrian zebra crossing is appropriate for the current (and expected future) vehicle and pedestrian flow along Uralba Street.

Prepared by
TAYLOR THOMSON WHITTING (NSW) PTY LTD

MICHAEL BABBAGE
Traffic Engineer

Authorised By
TAYLOR THOMSON WHITTING (NSW) PTY LTD

SONJA JOVANOVSKA
Transport & Traffic Manager

P:\2012\1212\121204\Reports\TTW\Pedestrian Crossing Review\161104 Pedestrian Crossing Review REV 1 mb.docx

Appendix A

Pedestrian Crossing Statement

Taylor Thomson Whitting (NSW) Pty Ltd Consulting Engineers ACN 113 578 377
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T 61 2 9439 7288 F 61 2 9439 3146 ttwsyd@ttw.com.au www.ttw.com.au

18 March 2015 121204

Health Infrastructure
Level 6
77 Pacific Highway
North Sydney NSW 2060

Attention: Geoff Ong

LISMORE HOSPITAL

Multi-storey Car park and Pedestrian Access Review

Dear Geoff

(1) Introduction

This statement is in response to the Road and Maritime Services (RMS) request for the review the possible inclusion of a signalised mid-block pedestrian crossing across Uralba Street, Lismore following the construction of the multi-storey car park.

(2) Site

The proposed car park works is to be located on the southern side of Uralba Street, opposite the existing Lismore Hospital and west of Dibbs Street. The car park is to be constructed in two stages. Stage 1 is to consist of 270 spaces, while at the completion of Stage 2 a total of 562 spaces are proposed to be provided. The car park will reduce the on street car parking demand on the surrounding local street parking network including Dibbs, Dalziell and Hunter Streets located south of the Hospital.

Currently, Uralba Street consists of angled and parallel parking with a pedestrian refuge and crossing providing a pedestrian facility across Uralba Street.

The estimated post car park development peak in the afternoon in Uralba Street is 932 vehicles per hour (vph) eastbound and 676 vph westbound.

(3) Pedestrian Facility Options

The following options have been considered for the provision of a pedestrian crossing facility across Uralba Street:

- Installation of signalised mid-block marked foot crossing
- Maintain the existing pedestrian “Zebra” crossing with pedestrian refuge

Consideration has been given to the potential pedestrian movements from the proposed car park. At the completion of Stage 2 of the car park there is a total of 562 spaces. To estimate a potential "worse case" scenario, an assumed vehicle turnover of 80% of the car park (450 vehicles) would occur within a peak hour with an average vehicle occupancy of 1.2 people. Therefore a maximum anticipated pedestrian movement will be in the order of some 540 people during peak hour. It is however anticipated that lower volumes of both pedestrian and traffic movements would occur generally throughout the day.

It is also noted that much of the parking that is provided for this car park is to remove the on street parking demand in the local streets south of the Hospital. Therefore, it is anticipated that a pedestrian movement crossing Uralba Street would remain fairly consistent with the existing environment.

Nevertheless, consideration was also given to the RMS warrants on the installation of signalised mid-block foot crossing as an option to upgrade the existing pedestrian "Zebra" crossing that includes a pedestrian refuge.

RMS Traffic Signal Design Section 2 "Warrants" outlines the following typical guide for warrants for signalised mid-block marked foot crossings:

(a) For each of four one hour periods of an average day

i) The pedestrian flow crossing the road exceeds 250 persons/hour; and
ii) The vehicle flow exceeds 600 vehicles/hour in each direction, or where there is a central medium of at least 1.2m wide, 1000 vehicles/hour in each direction.

Given the estimated "worse case" peak hour pedestrian flow is in the order of 540 and the estimated peak hourly flows of 932 eastbound and 676 westbound, it is not anticipated that the above warrants would be achieved on four separate occasions throughout an average day. In addition, when considering there is an existing central medium item *ii)* is not achieved.

(b) For each of eight one hour periods of an average day

i) The pedestrian flow crossing the road exceeds 175 persons/hour; and
ii) The vehicle flow exceeds 600 vehicles/hour in each direction, or where there is a central medium of at least 1.2m wide, 1000 vehicles/hour in each direction
iii) There is no other pedestrian crossing or signalised marked foot crossing within a reasonable distance.

Given the estimated "worse case" peak hour pedestrian flow is in the order of 540 and the estimated peak hourly flows of 932 eastbound and 676 westbound, it is not anticipated that the above warrants would be achieved on eight separate occasions throughout an average day. In addition, when considering there is an existing central medium item *ii)* is not achieved.

Further, there is an existing pedestrian crossing within a reasonable distance and as such the above warrant is not achieved.

The guidelines then state the warrants may be reduced if the site is used predominately by children, the elderly or people with disabilities.

As advised, it is not anticipated that the 50% parameter for elderly/people with disabilities usage will be met as:

i) The car park will be used by staff and other general users (ie visitors/carers)
ii) There is only limited disabled parking provided within the car park
iii) elderly/disabled users can be dropped off directly at the Main Entry with the carer then using the car park.

The Traffic Signal Design document lists a number of other warrants such when there are predominately children crossing and certain other special situations. At this site, these warrants are not applicable.

(4) Conclusion

Consideration has been given to:

- estimated “worse case” pedestrian and vehicle movements along Uralba Street
- RMS warrants for signalised mid-block foot crossing
- the anticipation that much of the parking that is provided for this car park is to remove the on street parking demand therefore pedestrian movements crossing Uralba Street would remain fairly consistent with the existing environment.

It is therefore considered that the existing pedestrian “Zebra” crossing with pedestrian refuge is an appropriate pedestrian crossing facility to service pedestrians crossing Uralba Street between the Hospital and the proposed car park facility.

Yours faithfully
TAYLOR THOMSON WHITTING (NSW) PTY LTD

PAUL YANNOULATOS
Technical Director

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Appendix B

Pedestrian and Traffic Counts

MORNING COUNTS

	Eastbound			Westbound			East + West			Pedestrians		
Hour	**Thu**	**Sat**	**Mon**	**Thu**	**Sat**	**Mon**	**Thu**	**Sat**	**Mon**	**Thu**	**Sat**	**Mon**
AM1	38	80	39	104	136	91	142	216	130	28	10	22
AM2	50	81	55	125	146	114	175	227	169	25	14	28
AM3	59	81	47	104	131	109	163	212	156	25	22	26
AM4	64	94	70	191	166	173	255	260	243	37	15	41
AM5	70	87	61	210	120	182	280	207	243	32	13	43
AM6	72	109	71	222	130	208	294	239	279	39	30	25
AM7	120	112	77	230	109	201	350	221	278	26	25	26
AM8	94	137	93	202	109	165	296	246	258	22	30	22
AM9	83	115	69	147	121	129	230	236	198	21	24	19
AM10	89	120	72	171	120	158	260	240	230	22	20	23
AM11	81	119	86	146	110	132	227	229	218	11	14	67
AM12	96	114	90	158	96	135	254	210	225	16	28	15

AM1 = 7:00am-7:15am or 10:00am-10:15am
AM2 = 7:15am-7:30am or 10:15am-10:30am
AM3 = 7:30am-7:45am or 10:30am-10:45am
AM4 = 7:45am-8:00am or 10:45am-11:00am
AM5 = 8:00am-8:15am or 11:00am-11:15am
AM6 = 8:15am-8:30am or 11:15am-11:30am
AM7 = 8:30am-8:45am or 11:30am-11:45am
AM8 = 8:45am-9:00am or 11:45am-12:00pm
AM9 = 9:00am-9:15am or 12:00pm-12:15pm
AM10 = 9:15am-9:30am or 12:15pm-12:30pm
AM11 = 9:30am-9:45am or 12:30pm-12:45pm
AM12 = 9:45am-10:00am or 12:45pm-1:00pm

AFTERNOON COUNTS

	Eastbound			Westbound			East + West			Pedestrians		
Hour	**Thu**	**Sat**	**Mon**	**Thu**	**Sat**	**Mon**	**Thu**	**Sat**	**Mon**	**Thu**	**Sat**	**Mon**
PM1	193	85	185	123	75	133	316	160	318	44	20	27
PM2	140	92	139	169	60	100	309	152	239	35	4	30
PM3	176	92	174	136	69	115	312	161	289	34	15	38
PM4	151	89	145	113	71	113	264	160	258	31	16	32
PM5	175	82	171	157	74	123	332	156	294	49	16	45
PM6	142	77	155	122	71	97	264	148	252	39	13	29
PM7	193	80	190	126	67	110	319	147	300	26	5	36
PM8	200	59	167	98	65	120	298	124	287	30	7	30
PM9	135	54	151	97	70	80	232	124	231	19	15	30
PM10	133	54	134	113	72	76	246	126	210	27	3	21
PM11	100	68	91	92	61	55	192	129	146	21	15	26
PM12	99	50	77	105	58	53	204	108	130	22	10	13

PM1 = 3:30pm-3:45pm

PM2 = 3:45pm-4:00pm

PM3 = 4:00pm-4:15pm

PM4 = 4:15pm-4:30pm

PM5 = 4:30pm-4:45pm

PM6 = 4:45pm-5:00pm

PM7 = 5:00pm-5:15pm

PM8 = 5:15pm-5:30pm

PM9 = 5:30pm-5:45pm

PM10 = 5:45pm-6:00pm

PM11 = 6:00pm-6:15pm

PM12 = 6:15pm-6:30pm

HOURLY TOTALS

	Eastbound			Westbound			East + West			Pedestrians		
Hour	**Thu**	**Sat**	**Mon**	**Thu**	**Sat**	**Mon**	**Thu**	**Sat**	**Mon**	**Thu**	**Sat**	**Mon**
HR1	211	336	211	524	579	487	735	915	698	115	61	117
HR2	356	445	302	864	468	756	1220	913	1058	119	98	116
HR3	349	468	317	622	447	554	971	915	871	70	86	124
HR4	660	358	643	541	275	461	1201	633	1104	144	55	127
HR5	710	298	683	503	277	450	1213	575	1133	144	41	140
HR6	467	226	453	407	261	264	874	487	717	89	43	90

HR1 = 7:00am-8:00am or 10:00am-11:00am

HR2 = 8:00am-9:00am or 11:00am-12:00pm

HR3 = 9:00am-10:00am or 12:00pm-1:00pm

HR4 = 3:30pm-4:30pm

HR5 = 4:30pm-5:30pm

HR6 = 5:30pm-6:30pm

Appendix D

Lismore Base Hospital Green Travel Plan Extract

Prepared by Northern NSW Local Health District dated July 2015.

5. Travel Plan Actions

	Action	Time	Responsibility
1. PUBLIC TRANSPORT			
1.1	Confirm areas of restricted parking and costs of paid parking	September 2015	Lismore City Council Project Officer, Capital Works
1.2	Survey staff about potential future use of public transport, walking and cycling given their introduction of paid and restricted parking around the Hospital campus	October 2015	Health Promotion
1.3	Negotiate with NR Bus lines and Waller's Buses to provide a commuter service to the front entrance of the hospital to service office workers (8.30am– 5pm) based on results of survey once car-parking restrictions and paid parking have commenced	December 2015	Health Promotion
1.4	Negotiate with Transport for NSW to provide a period of free or very low cost travel to encourage new commuters to use the service	December 2015	Health Promotion
1.5	Promote new bus services for staff, patients and visitors	February 2016	Health Promotion
1.6	Monitor use of the new bus routes	February- April 2016	Bus services, Transport for NSW
1.7	Assess impact of pilot public transport campaign and make recommendations for future use or increased services	April 2016	Health Promotion
1.8	Ensure bus routes and numbers are included in the Transport Access Guide (see section 4)	December 2015	Health Promotion
1.9	Update Transport Access Guide as needed but review at least annually to ensure bus route information is accurate	April 2015 and then annually	Health Promotion
2.0	Provide a dedicated taxi car park on Uralba street	February 2015	Lismore City Council
2. CYCLING AND WALKING			
2.1	Install 3 bicycle stands undercover at the new Hospital entrance	January 2016	Capital Works
2.3	Provide new bike route infrastructure from CBD to Hospital and increase signage on existing routes.	When funding available	Lismore City Council
2.4	Test new and existing bike routes from CBD, North and South Lismore and Goonellabah to assess safest and easiest routes	June 2015 and when new bike route is built	Health Promotion
2.4	Ensure any new bike routes, bike racks, lockers and shower information is included in the Transport Access Guide update, and promote via channels listed in Communication.	December 2015	Health Promotion
2.4	Develop and implement a campaign to promote active travel to work (walk, cycle and public transport) for staff using health, cost savings and for environmental benefits as key drivers.	To coincide with car park opening	Health Promotion
2.5	Offer free safe cycling programs for staff and create buddy systems for new cyclists to support them getting to work safely	March 2016	Health Promotion
2.6	Annually run campaigns to promote walk to work day and cycle to work days	Annually	Health Promotion
2.7	Consider a separate cycle path on the south side of Uralba Street across from the hospital	September, 2015	Lismore City Council
2.8	Provide regular cyclists (who request them) with swipe cards to enable easy access to the bike rack in the Mental Health underground car park and lockers for cyclists.	February 2015	Capital Works

	Action	Time	Responsibility
3. CARPOOLING			
3.1	Promote carpooling amongst staff using cost savings as a key driver for behavior change	February 2016	Health Promotion
3.2	Host carpooling event to gauge likely numbers of carpoolers and form matches	February 2016	Health Promotion
3.2	Reinstate dedicated car pool car park at the rear of the Hospital as a free park for people with 3 or more passengers	February 2016	Capital Works
4. CAR PARKING			
4.1	Consider consistent on street parking rules in the Hospital Precinct (e.g. all rear to curb) and line painting to maximise car parks and on street parking restrictions in Hospital Precinct.	November 2015	Lismore City Council
4.2	On site car parking fees for staff should be consistent for all buildings in the Hospital Precinct	September 2015	
4.3	Ensure Car-Park Management Plan includes recommendations from this Travel Plan including: • Restoring free dedicated car parking for car poolers • Retaining dedicated car parking for oncology and renal patients undergoing treatment • Creating adequate short and long term parking for official patient transport vehicles (see details p. 12) • Creating adequate short term parking for wheelchair taxis at the front entrance • Ensuring the new multi-story car park has adequate lighting and pedestrian access to the hospital • Ensuring the new entrance to the car park and pedestrian crossing does not create unsafe conditions for cyclists. • Consider cycle racks in the car-park if these cannot be accommodated at the main entrance.	September 2015	Capital Works
4.4	Structure car parking fees so it is ‘pay as you go’ rather than ‘pay up front’	September 2015	Capital Works
5. POLICY			
5.1	NNSW LHD consider working from home and/or “hot-desking” as part time alternatives for appropriate staff to reduce travel/ enable active travel rather than commuting by car in any new Flexible Work Policy	November 2015	Workforce

6. COMMUNICATIONS			
	Action	Time	Responsibility
6.1	Create a Lismore Base Hospital Transport Access Guide Print and place copies of the updated Transport Access Guide at all main hospital entrances. Host an online version of the Transport Access Guide on the hospital intranet and promote to existing staff.	February 2016	Health Promotion
6.2	Provide information on non-car options for commuting on the NNSW LHD Health Promotion website.	February 2016	Health Promotion
6.3	Ensure travel plan information, including the Transport Access Guide and travel plan website page, is integrated into Lismore Base Hospital site orientation for new staff.	February 2016	Health Promotion
6.4	Develop calendar of regular communication (e.g. every 6 weeks for 4 months) about the travel plan for staff via District and Hospital newsletters, websites and Facebook pages.	February 2016	Health Promotion
6.5	Host a Staff Travel Expo in December 2013 offering Personal Journey Planning to encourage staff to adopt actions outlined in the travel plan.	February 2016	Health Promotion, NRSDC Travel Coordinator
6.6	Incorporate travel data in the information provided on the monitor at the main entrance	February 2016	Health Promotion
7. GOVERNANCE AND MONITORING			
7.1	Conduct quarterly review to track progress of implementation of travel plan actions.	From February 2016	Health Promotion
7.2	Conduct staff travel survey to track progress of travel plan achievements.	April 2016 March 2017	Health Promotion
7.3	Monitor: • Number of Transport Access Guides downloaded/hard copies used. • Patronage on any new commuter public transport services • Feedback from public transport providers • Private car-park usage • Carpooling use (number of new users)	April 2016 March 2017	Health Promotion

Appendix E

Lismore Base Hospital Transport Access Guide

Prepared by Northern NSW Local Health District dated 23rd May 2016.

How to get to...

Lismore Base Hospital Precinct

By foot

The Lismore Base Hospital (LBH) main entrance is on Uralba street, near the pedestrian crossing. It's a slightly uphill 20 minute (1.4 km) walk from the **free** Dawson St or John Crowther Lane carparks near the Lismore CBD. That's about 1800 steps or nearly 20% of your recommended daily total. Park and walk to/from work each day and you'll feel healthier and save money!

By bicycle

Cycling from North, East and South Lismore is achievable in around 10-15 minutes. Cycling from Lismore Heights and Goonellebah requires a moderate level of fitness and confidence to navigate Rotary Drive and steeper terrain. Designated bicycle parking will be included in the new hospital redevelopment near the Central Sterile Supply Department, although there are plenty of poles around LBH to lock bikes to. Shower facilities are available in many work units, including Level 3A and at the swimming pool (closed over winter).

By bus

Several bus routes service LBH to Lismore and surrounding areas. Northern Rivers Buslines routes 662, 661, 682, 683, 685 service Lismore. Timetable, route and fare information can be obtained by contacting Northern Rivers Buslines on 6626 1499 **http://www.buslinesgroup.com.au/northern-rivers**. Use NSW Transport's Trip Planner to plan your journey **http://tp.transportnsw.info**. A commuter bus service from Lennox Head, Ballina and Casino to suit LBH staff hours is also being investigated. Check the NNSW LHD Health Promotion website for updates: **http://nnswlhd.health.nsw.gov.au/health-promotion/**

By carpool

Sharing the drive into LBH is a fun way to save money, meet new people and reduce your carbon footprint. You can register with free services such as Northern Rivers carpool **www.nrcarpool.org** or download the ride sharing Miler app on your smartphone. Also consider making carpooling arrangements with work colleagues or fellow commuters.

By car

If you plan on driving to the hospital, be mindful that there are a limited number of free and untimed car spaces available both at the hospital and in the surrounding hospital precinct. Fees apply to parking in the hospital carpark and in surrounding streets. These areas are shown on the map. Fees range from $3/hour to $12/week, depending on whether you are a staff member, visitor or full/part time.

Two hour street parking spots are available around the hospital precinct, but give yourself plenty of time to find a parking space.

Accessibility car parking

Accessibility car parking is available at the hospital front entrance on Uralba street, and in the Uralba St carpark.

By taxi

A taxi rank is located at the main entrance on Uralba St, or can be booked by calling Lismore Taxis on **131 008**.

Patient transport

For patients who are transport disadvantaged, or are affected by frailty or have accessibility issues, contact the numbers below to check your eligibility.

The Health Transport Unit **1300 552 961**

HART Services **02 6628 6000**

For emergency medical transport, phone NSW Ambulance on **000**

Lismore Base Hospital Precinct

Transport Access Guide

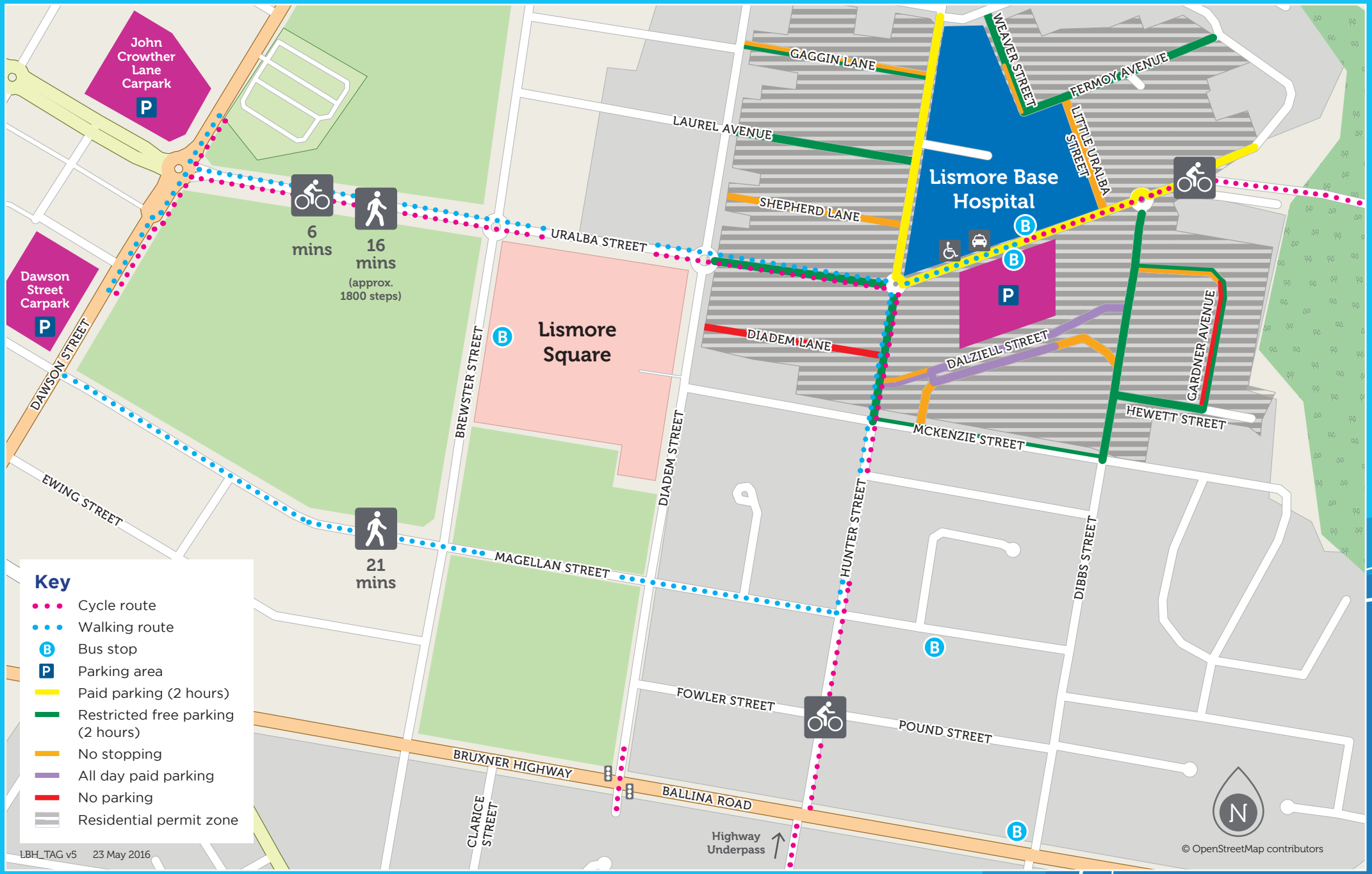
The Lismore Base Hospital is a 5 minute drive from the Lismore CBD.

Getting around by walking or cycling is a great way to keep fit and healthy.

Carpooling or using public transport saves you time and money.

NSW GOVERNMENT Health
Northern NSW
Local Health District

How to get to...
Lismore Base Hospital Precinct



LBH_TAG v5 23 May 2016