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26th October 2023

# **Small Hospitals Initiative - Moree Hospital Redevelopment**

**Savills**  
**Transport Impact Assessment**

**For: Savills**

# Document Control;

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**Author:** Jake Jansen  
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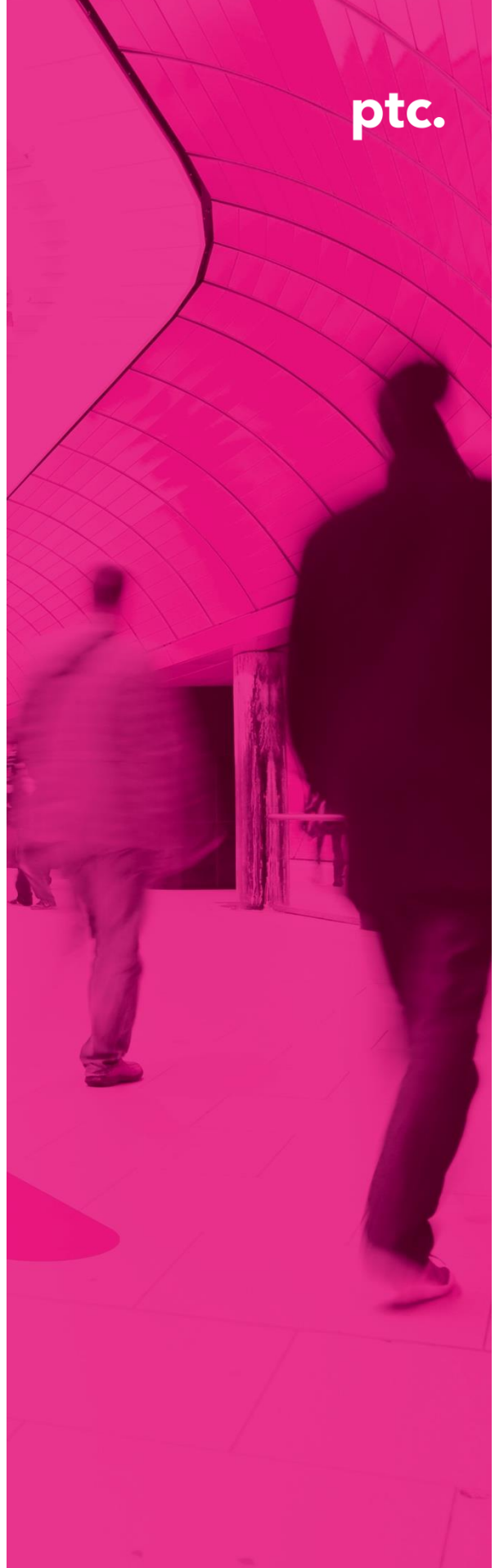
For the attention of:

**Peter Wade**  
**Project Manager**  
**Savills**

Contact:

**Jake Jansen**  
**+61 2 8920 0800**  
**+61 415 626 505**  
**jake.jansen@ptcconsultants.co**

**Originally Authored by Kalyani Patil**



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Suite 502, 1 James Place, North Sydney NSW 2060  
info@ptcconsultants.co | (+61) 2 8920 0800 | ptcconsultants.co  
ABN 85 114 561 223

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# 1. Executive Summary

**ptc.** has been engaged by Savills to prepare a Transport Impact Assessment to accompany a Review of Environmental Factors (REF) for the redevelopment of the Moree Hospital.

It is important to note that there is minimal, if any, additional facilities proposed in this development. This development focusses predominantly on the updating and refurbishment, and in some instances relocation, of existing site facilities to create a more functional and up to date hospital.

The site has limited access to public transport, and as a result many staff and patients use private vehicles to access the site. Surrounding pedestrian and dedicated cycling facilities are limited, however the nature of the local roads and lower traffic volumes does enable some short distance active travel.

Based on parking occupancy surveys of the existing site, as well as anticipated traffic generation of the proposed development, adequate parking capacity exists to accommodate the site needs. As such, the provision of at least the same number of spaces as existing is deemed to be adequate for the proposed development.

All access and egress points across the site, for the various anticipated vehicle types, are suitable based on swept path assessments. All on-site parking spaces are to be compliant with Class 3 parking dimensions from AS2890.1.

Based on the assumptions detailed above, the existing site provides adequate parking supply for the expected traffic generation. Furthermore, the surrounding road network operates with a good Level of Service, with ample spare capacity to handle any minor increases in traffic due to the proposed development.

The implementation of a Green Travel Plan is expected to promote the uptake of active travel (pedestrian and cyclist) to the site particularly for staff, and lessen any carparking or traffic impacts that may arise in the future. A GTP is an operation programme, that actively evolves and progresses into the future of the site, through planned implementation and ongoing evaluation.

## 2. Introduction

### 2.1. Project Summary

ptc. has been engaged by Savills to prepare a Transport Impact Assessment to accompany a Review of Environmental Factors (REF) for the redevelopment of the Moree Hospital.

The proposed development is set within the context of Moree Hospital Redevelopment (MHR). The new site will provide a built environment to support contemporary models of care that are integrated and person-centred. A focus on providing spaces that are culturally safe, welcoming and that meet health care needs across the life span is a priority to ensure access closer to people's home.

The location of the site within the local context is shown in Figure 1.



Figure 1: Subject Site (Source: Nearmap)

## **2.2. Reference Documents**

Relevant Policies and Guidelines:

- Guide to Traffic Generating Developments (Roads and Maritime Services, 2002).
- NSW Planning Guidelines for Walking and Cycling (Department of Infrastructure, Planning and Natural Resources (DIPNR), 2004).
- Guide to Traffic Management Part 12: Integrated Transport Assessments for Developments (Austroads, 2020).
- Australian Standards 2890 suite.

## 3. Background Information

### 3.1. Site Context

The site is located within a general residential zone (R1), situated to the south of the Mehi River, just to the west of the Gwydir highway. The local land use surrounding the subject site is shown in Figure 2. Key features surrounding the site include:

- The site is within a large general residential zoning area, with smaller pockets of public recreation areas. Large public recreation area along the river is present to the north and northeast of the site.
- To the east, along key streets, is commercial and local retail zoning (B2 and B6).
- To the west lies environmental zone (C4).

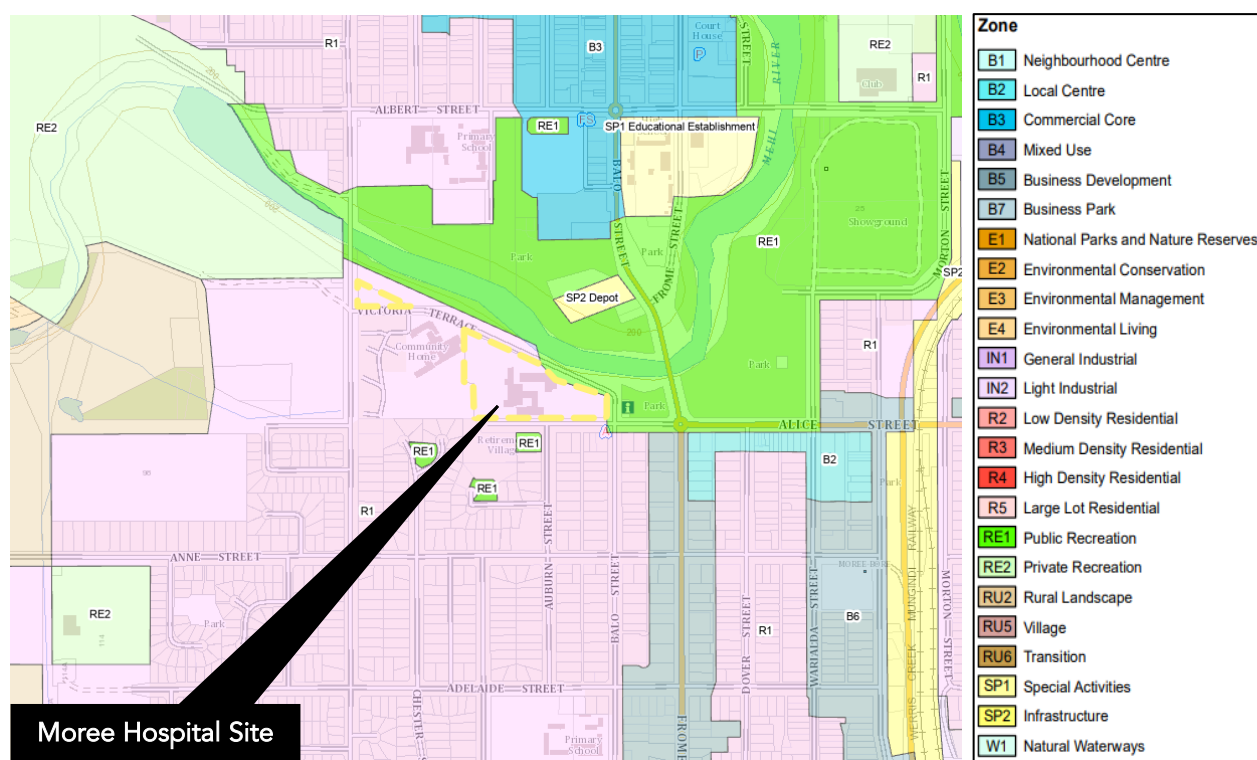


Figure 2: Local land use map (Source: NSW ePlanning Spatial Viewer)

### 3.2. Development Proposal

As mentioned previously, the district hospital will provide a built environment to support contemporary models of care that are integrated, and person centred. To accomplish this, the site will offer several important features including:

- Emergency care services including a 'safe space' to meet requirements of a designated mental health assessment facility;
- Overnight inpatient beds;
- An operating theatre;
- A birthing suite;
- Outpatient/ambulatory services;
- Clinical support services; and
- Onsite staff accommodation.

The new building works predominantly consists of the Acute Services Building (ASB). A two-storey building located on the southeastern area of the site. Access to the building is provided by a dedicated, undercover drop-off bay to accommodate two ambulances at the eastern end of the building, while building services and loading dock are situated at the western end of the building.

New loading dock location and service entry proposed from Alice Street.

New ambulance entrance from Alice Street.

Figure 3 shows the proposed general site plan.



Figure 3: Proposed Site Plan

## 4. Existing Transport Facilities

### 4.1. Road Hierarchy

The NSW administrative road hierarchy comprises the following road classifications, which align with the generic road hierarchy as follows:

State Roads: Freeways and Primary Arterials (RMS Managed)

Regional Roads: Secondary or sub arterials (Council Managed, partly funded by the State)

Local Roads: Collector and local access roads (Council Managed)

The subject site is located on Victoria Terrace (local road) in the town of Moree and is primarily serviced by State roads including Gwydir Highway (Alice Street) and Newell Highway, as well as regional roads including Edward Street. The site is also serviced by local roads managed by Moree Plains Shire Council.

Figure 4 shows the classification of the surrounding roads.

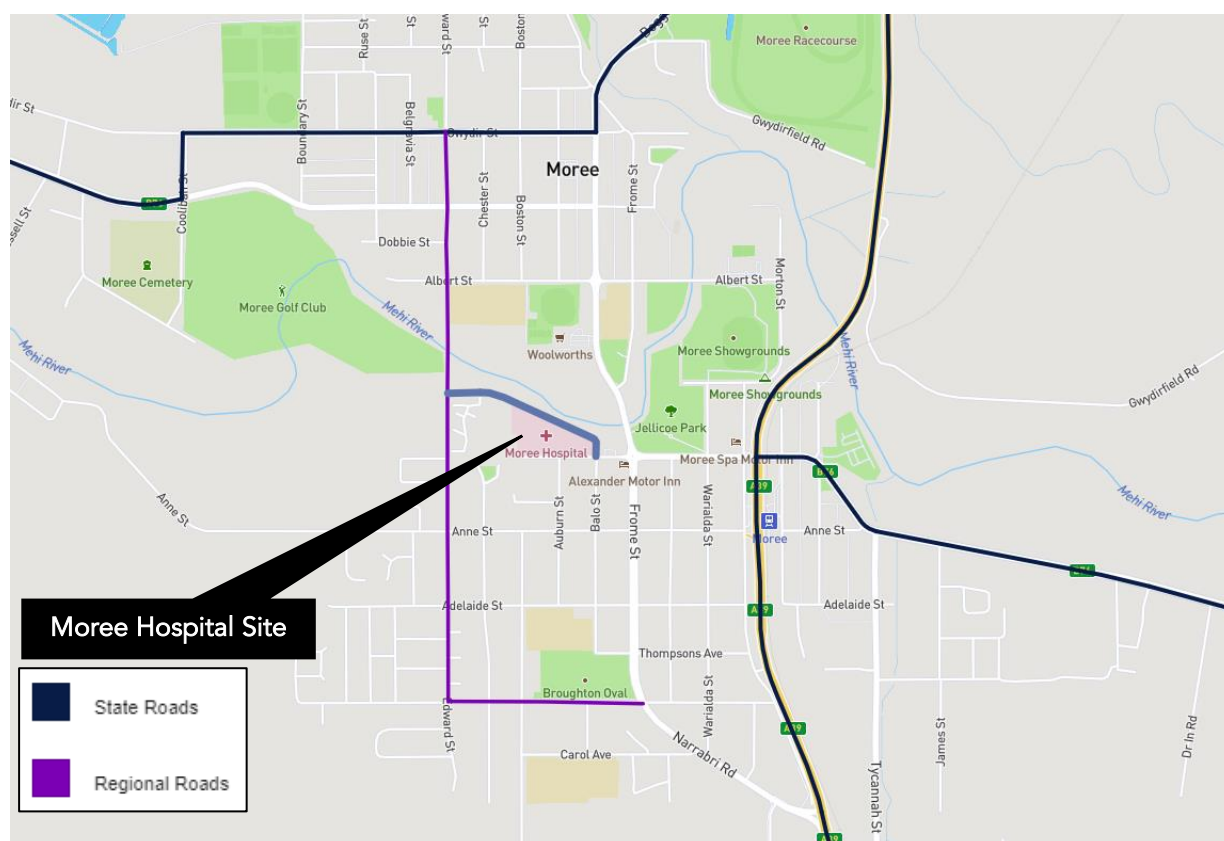


Figure 4: Road Hierarchy (Source: RMS State and Regional Roads)

Table 1: Existing road network – Alice Street

Alice Street	
Road Classification	Local Road
Alignment	East – West
Number of Lanes	1 lane each direction
Carriageway Type	Undivided
Carriageway Width	20m
Speed Limit	50 km/h
School Zone	No
Parking Controls	Unrestricted parking
Forms Site Frontage	Yes



Figure 5: Alice Street, Eastbound (Source: Google maps)

Table 2: Existing road network – Balo Street

Balo Street	
Road Classification	Local Road
Alignment	North – South
Number of Lanes	1 lane in each direction
Carriageway Type	Undivided
Carriageway Width	8m
Speed Limit	50 km/h
School Zone	No
Parking Controls	No parking
Forms Site Frontage	No



Figure 6: Balo Street, Northbound (Source: Google maps)

Table 3: Existing road network – Frome Street

Frome Street	
Road Classification	Local Road
Alignment	North – South
Number of Lanes	1 lane in each direction
Carriageway Type	Divided
Carriageway Width	20m
Speed Limit	50 km/h
School Zone	No
Parking Controls	Unrestricted parking
Forms Site Frontage	No



Figure 7: Frome Street, Southbound (Source: Google maps)

Table 4: Existing road network – Victoria Terrace

Victoria Terrace	
Road Classification	Local Road
Alignment	Northwest – Southeast
Number of Lanes	1 lane each direction
Carriageway Type	Undivided
Carriageway Width	6m
Speed Limit	50km/hr
School Zone	No
Parking Controls	Unrestricted
Forms Site Frontage	Yes



Figure 8: Victoria Terrace, Westbound (Source: Google maps)

## 4.2. Public Transport

The locality has been assessed in the context of available forms of public transport that may be utilised by prospective staff and visitors. When defining accessibility, the NSW Guidelines to Walking & Cycling (2004) suggests that 400m-800m is a comfortable walking distance. Furthermore, the Guidelines also suggest 1500m is suitable for cycling accessibility to public transport facilities and local amenities.

The 400m and 800m catchments are shown in Figure 9.

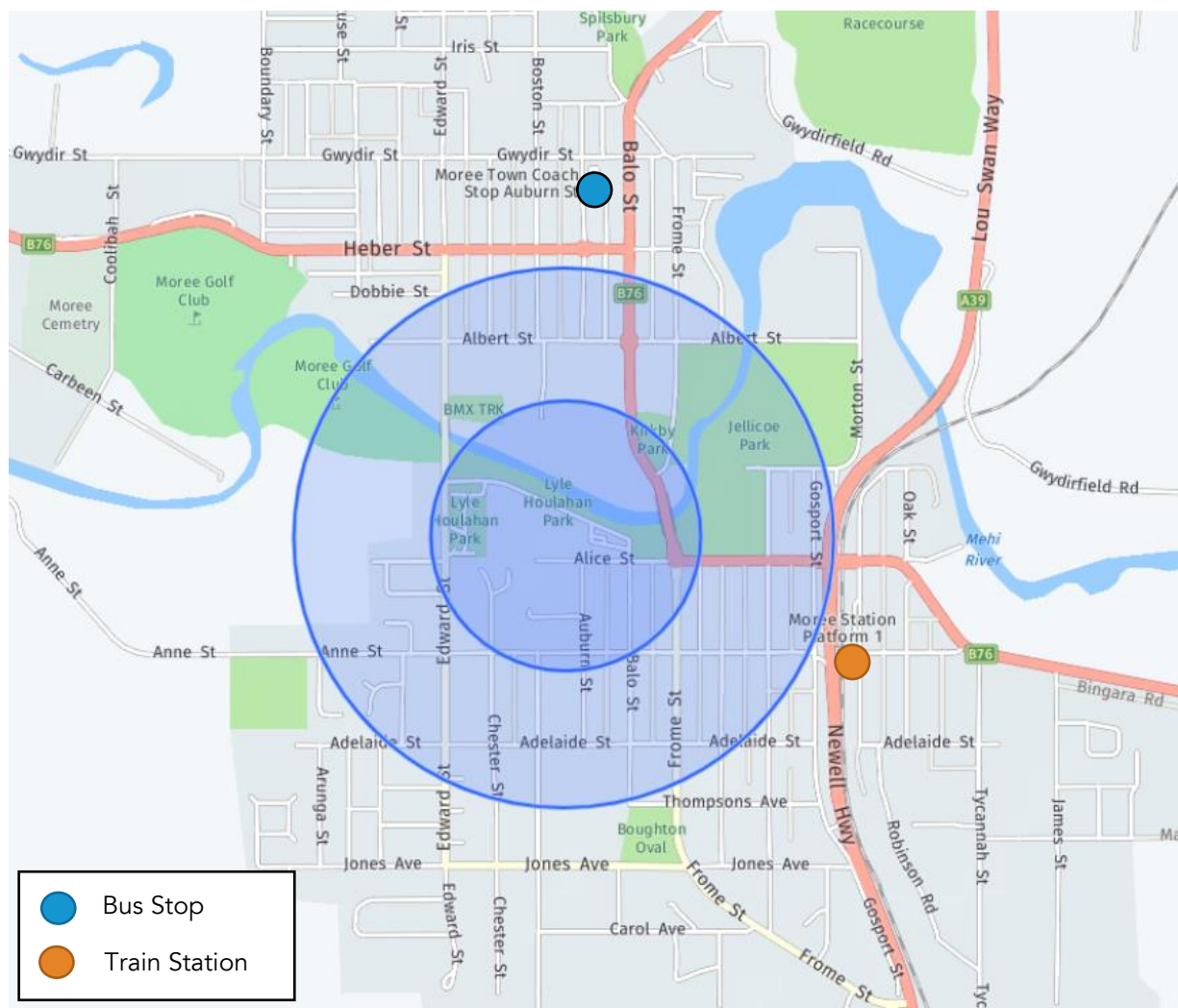


Figure 9: Public transport services and the 400m and 800m walking catchments

4.2.1. Bus Services

Moree does not have ongoing bus services. Rather, an on-demand bus service is available operated by Reynolds and Fogarty. This service operated on a pre-booked basis and can pick up commuters close to home and drop off near destination.

Fares for this service are listed on TfNSW website and are as follows;

Single Trip	\$3.00 (standard)	\$1.50 (concession)
Daily	\$6.90 (standard)	\$3.40 (concession)

4.2.2. Rail Services

Moree station connects the town to the larger NSW regional train network. Nearby stations include Bellata and Narrabri. The New South Wales Train Link Map for the North Western Region is shown in Figure 10. Coaches are used to supplement the rail network in regional NSW.



Figure 10: NSW North Western Train Lines

## 4.3. Active Transport

### 4.3.1. Pedestrian Facilities

Walking is a viable transport option for distances under 800m and is often quicker for short trips door to door. Walking is also the most space efficient mode of transport for short trips and presents the highest benefits. Co-benefits where walking replaces a motorised trip include improved health for the individual, reduced congestion on the road network and reduced noise and emission pollution. Site observations show that the existing footpath networks and crossing points between the adjoining residential precincts and the hospital are generally adequate. A small proportion of hospital users are expected to walk,

however these would be limited to residents living in close proximity (generally to the south), given the lack of nearby public transport.

#### 4.3.2. Cyclist Facilities

Like walking, cycling is only likely to be an attractive mode share for staff members who live within relatively close distance to the site.

The site is surrounded by local roads, particularly in the residential areas to the south. Whilst there are no dedicated cycleways or shared paths, these roads are wide with sizeable shoulders. Additionally, the traffic volumes of these smaller local roads would likely be low, thus making on road cycling more attractive as a short distance mode of travel.

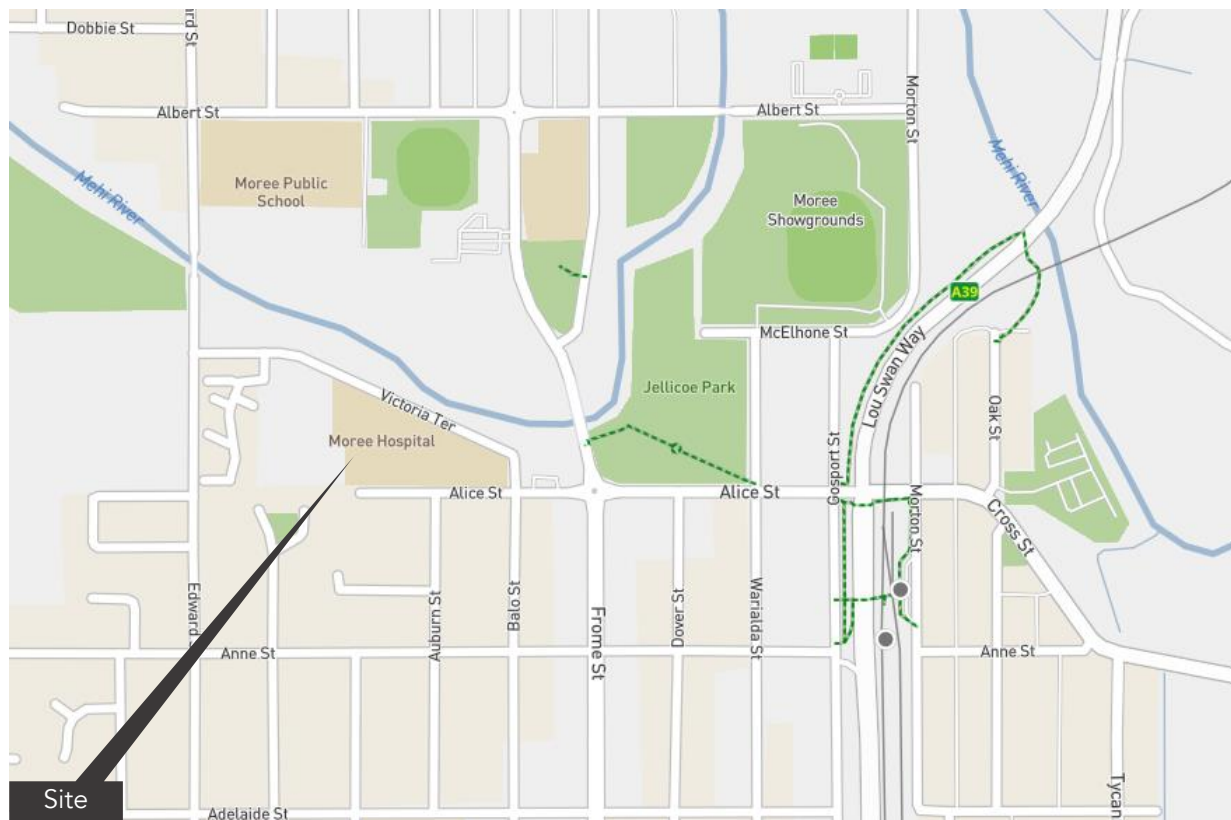


Figure 11: Cycling Paths (Source: Transport for New South Wales)

## 5. Parking Provision

### 5.1. Assessment of Existing Parking

An on-site assessment of the existing parking provision, including an occupancy and length of stay survey, was undertaken to determine any underlying issues with the carparking available and the general trends of the hospital users. Vehicle turnover in the main carpark was typically high as a result of quick patient visits. It was observed on-site that staff members utilise the main car parking area to park, and this is verified by the Length of Stay Survey.

Overall, the existing car parking provided on site is adequate for the various staff uses, as well as patient and visitor demand. Given that there is no new infrastructure or facilities being provided in the development, nor any notable increase in staffing numbers, it is expected that the existing on-site parking provision will be suitable.

Furthermore, Alice Street that is adjacent to the hospital building has no residential parking, and has additional parking capacity for the use of staff or longer stay visitors to the hospital. The RMS Guide to Traffic Generating Developments (2002) states (for private hospitals) that consideration should be given to reducing onsite parking if convenient and safe on street parking is available, provided that the use of such parking does not adversely affect the amenity of the surrounding area. As such, the use of the on-street parking, if recommended, is suitable.

The following sections are an assessment of the requirements and provisions for the development site.

### 5.2. Surveys

A site visit was carried out on Monday 25<sup>th</sup> July 2022 to assess the potential supply and demand for parking in the vicinity of the Hospital and the availability of alternative parking supply for hospital-related users (e.g., staff, patients and visitors). In addition, we undertook surveys at the Hospital to assist in building the demand model for parking at the campus.

The parking occupancy and length of stay surveys for on-campus car parks were conducted on Tuesday 26<sup>th</sup> July 2022 between 8am-6pm at hourly intervals. We also undertook an occupancy survey for on-street spaces within RPZ at 10am, 12pm and 2pm. The intercept survey was also undertaken on 26<sup>th</sup> July 2022. The staff survey was run over a period of 14 days from 25<sup>th</sup> July 2022 to 7<sup>th</sup> August 2022.

#### 5.2.1. Current Parking Capacity

For modelling purposes and as advised by HI, we have included the Accommodation Eastern Car Park and the Victoria Terrace Office Car Park as these facilities are also used by Hospital staff as advised by HI. Accommodation Western Car Park is not considered as Hospital-related parking as it is mainly used by people who live in the accommodation building.

The following map shows all the Hospital-related car parks:

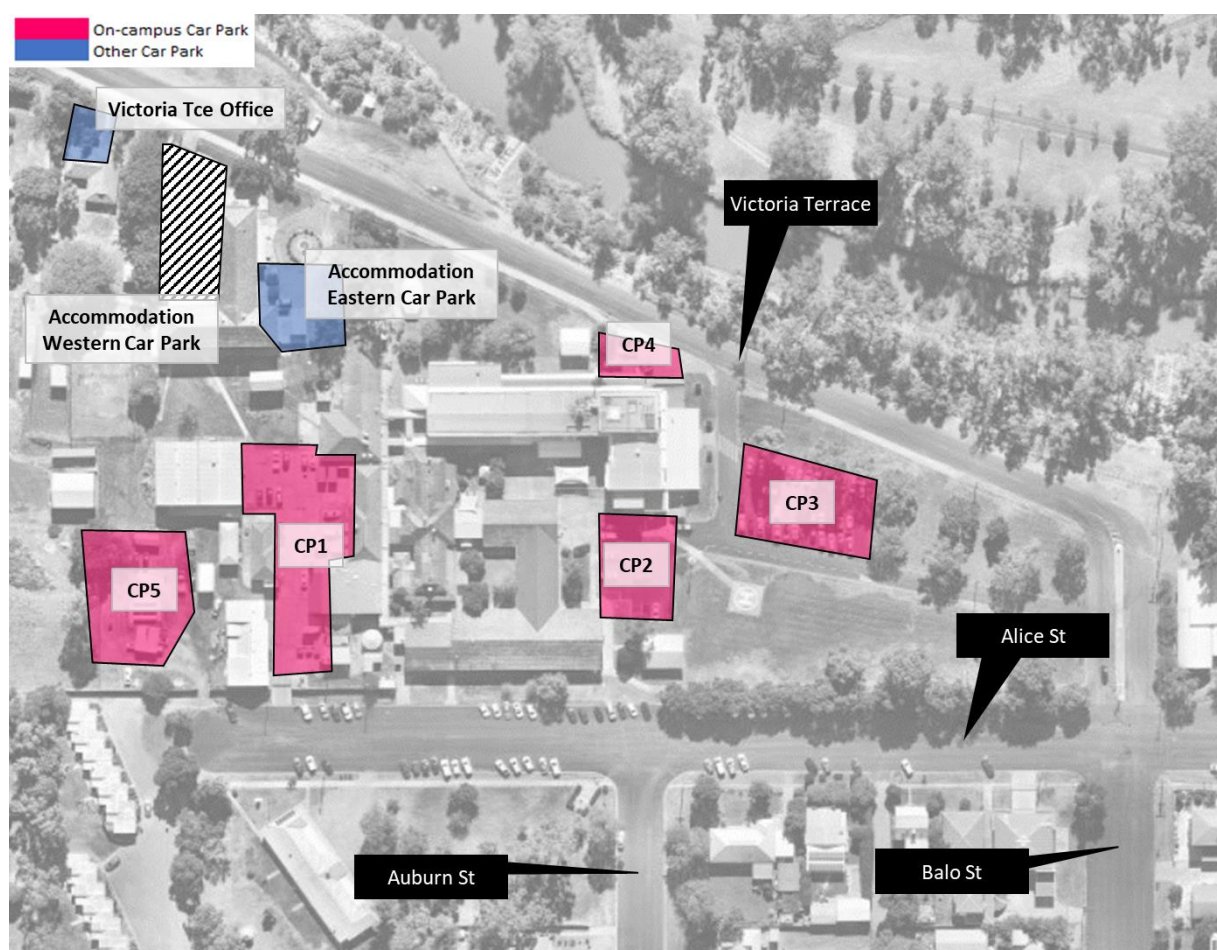


Figure 12 - Hospital Related Car Parks

Current parking supply in the hospital related car parks comprises a total of 89 formal spaces (83 spaces on campus; 4 spaces in Accommodation Eastern car park; 2 spaces in Victoria Terrace Office car park). A breakdown of the parking supply is as follows:

Table 5 - Breakdown of Parking Supply by Car Park

Car Park	Formal Spaces
Car Park 1	19
Car Park 2	12
Car Park 3	39
Car Park 4	2
Car Park 5	11
<b>Subtotal – On Campus Car Parks</b>	<b>83</b>
Accommodation Eastern	4
Victoria Tce Office	2
<b>Subtotal – Other Car Parks</b>	<b>6</b>
<b>Total Hospital Related Car Parks</b>	<b>89</b>

During our surveys, we observed that some vehicles were parked in informal parking areas (e.g. grass, unmarked spaces etc.). It is highly likely that these informal parking spaces were used by hospital staff. We assume that these hospital staff would park in formal spaces if sufficient formal parking is provided. Therefore, we excluded informal parking spaces from total parking supply, occupancy and length of stay calculations.

### 5.1.1 Parking Occupancy

The main objective of the occupancy surveys was to observe peak parking demand on weekday as a cross check of the estimated peak parking demand resulting from our demand model and ensure the reliability of the model for future forecasting.

The summary of the results is shown in Figure 13 and Figure 14, whereas the full results and the analysis are shown in Appendix 2. The peak occupancy of on-campus car parks and Alice Street (in front of the Hospital) is illustrated in the heatmap in Figure 15.

The key findings are as follows:

- Peak occupancy of on-campus car parks (51 spaces, 61.4% of total capacity) occurred between 10am-11am on Tuesday;
- Car Park 2 had the lowest peak occupancy (41.7%) during peak hours as all spaces in Car Park 2 are reserved for on call/authorised doctors;
- At peak hour, the occupancy of Car Park 3 (public car park) was 74.4%, which provided the most convenient parking for hospital-related parkers just outside the main entrance;
- The peak occupancy of on-street parking spaces was 83 spaces (22.6% of capacity) between 10am-11am; most on-street parkers were found in Alice Street in front of the Hospital;
- The Accommodation eastern car park was fully occupied at peak hour;
- The Victoria Tce office car park was not surveyed however it is assumed to be fully occupied during peak hours as advised by HI;
- During our surveys, we observed 6 vehicles parked in informal parking areas (e.g. grass) during peak hours;
- It is not possible to accurately identify how many observed on-street vehicles belong to Hospital-related users, as some may belong to residents or other local workers (e.g. high school staff) and/or visitors.

	Capacity	8:00-9:00		9:00-10:00		10:00-11:00		11:00-12:00		12:00-13:00		13:00-14:00		14:00-15:00		15:00-16:00		16:00-17:00		17:00-18:00	
On-Campus Car Park		Occ. #	Occ. %	Occ. #	Occ. %	Occ. #	Occ. %	Occ. #	Occ. %	Occ. #	Occ. %	Occ. #	Occ. %	Occ. #	Occ. %	Occ. #	Occ. %	Occ. #	Occ. %	Occ. #	Occ. %
Car Park 1	19	9	47.4%	9	47.4%	9	47.4%	9	47.4%	11	57.9%	11	57.9%	10	52.6%	10	52.6%	13	68.4%	13	68.4%
Car Park 2	12	6	50.0%	6	50.0%	5	41.7%	5	41.7%	4	33.3%	6	50.0%	6	50.0%	9	75.0%	8	66.7%	8	66.7%
Car Park 3	39	29	74.4%	25	64.1%	29	74.4%	25	64.1%	25	64.1%	22	56.4%	28	71.8%	21	53.8%	11	28.2%	12	30.8%
Car Park 4	2	1	50.0%	2	100.0%	1	50.0%	1	50.0%	1	50.0%	1	50.0%	1	50.0%	1	50.0%	1	50.0%	1	50.0%
Car Park 5	11	7	63.6%	6	54.5%	7	63.6%	6	54.5%	7	63.6%	7	63.6%	5	45.5%	5	45.5%	1	9.1%	2	18.2%
<b>Total - On Campus Car Park</b>	<b>83</b>	<b>52</b>	<b>62.7%</b>	<b>48</b>	<b>57.8%</b>	<b>51</b>	<b>61.4%</b>	<b>46</b>	<b>55.4%</b>	<b>48</b>	<b>57.8%</b>	<b>47</b>	<b>56.6%</b>	<b>50</b>	<b>60.2%</b>	<b>46</b>	<b>55.4%</b>	<b>34</b>	<b>41.0%</b>	<b>36</b>	<b>43.4%</b>
Accommodation	4					4	100.0%	4	100.0%	4	100.0%										
Victoria Tce Car Park	2					2	100.0%	2	100.0%	2	100.0%										
<b>Total - Other Car Park</b>	<b>6</b>					<b>6</b>	<b>100.0%</b>	<b>6</b>	<b>100.0%</b>	<b>6</b>	<b>100.0%</b>										
<b>Total - Hospital Related Car Park</b>	<b>89</b>					<b>57</b>	<b>64.0%</b>	<b>52</b>	<b>58.4%</b>	<b>54</b>	<b>60.7%</b>										

	Capacity	10:00-11:00		12:00-13:00		14:00-15:00	
On-Street Parking		Occ. #	Occ. %	Occ. #	Occ. %	Occ. #	Occ. %
Alice St	131	54	41.2%	48	36.6%	49	37.4%
Dover St	34	7	20.6%	7	20.6%	7	20.6%
Frome St	31	7	22.6%	12	38.7%	11	35.5%
Balo St	49	6	12.2%	4	8.2%	6	12.2%
Auburn St	42	1	2.4%	0	0.0%	0	0.0%
Allambie Pl	20	2	10.0%	3	15.0%	2	10.0%
Victoria Tce	60	6	10.0%	5	8.3%	5	8.3%
<b>Total Off Campus on-street Parking</b>	<b>367</b>	<b>83</b>	<b>22.6%</b>	<b>79</b>	<b>21.5%</b>	<b>80</b>	<b>21.8%</b>

Figure 13: Summary of Occupied Spaces and Occupancy%

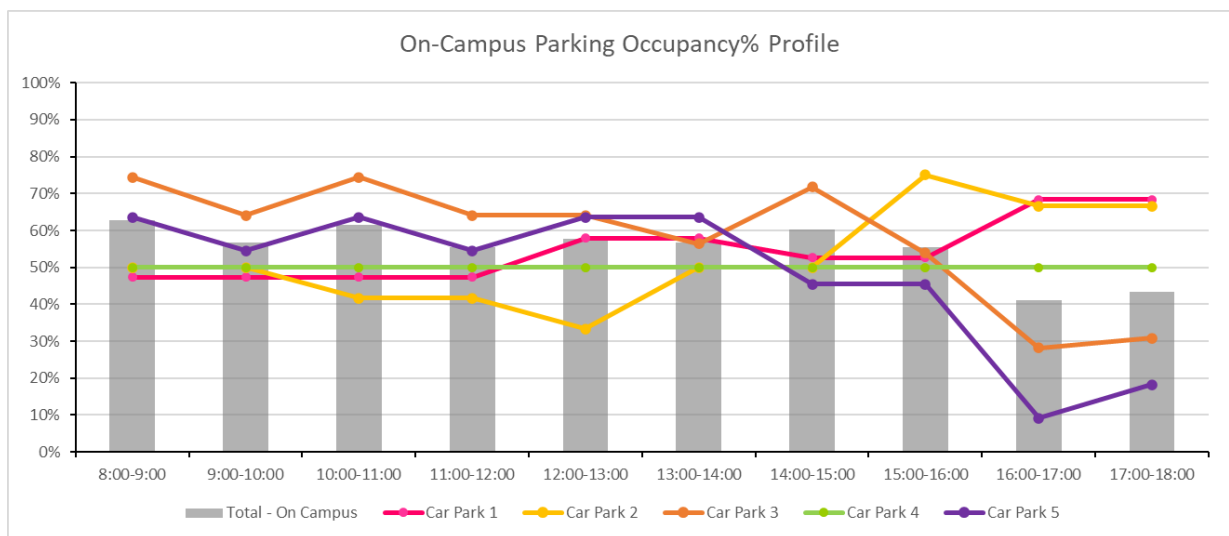


Figure 14: On-Campus Parking Occupancy% Profile

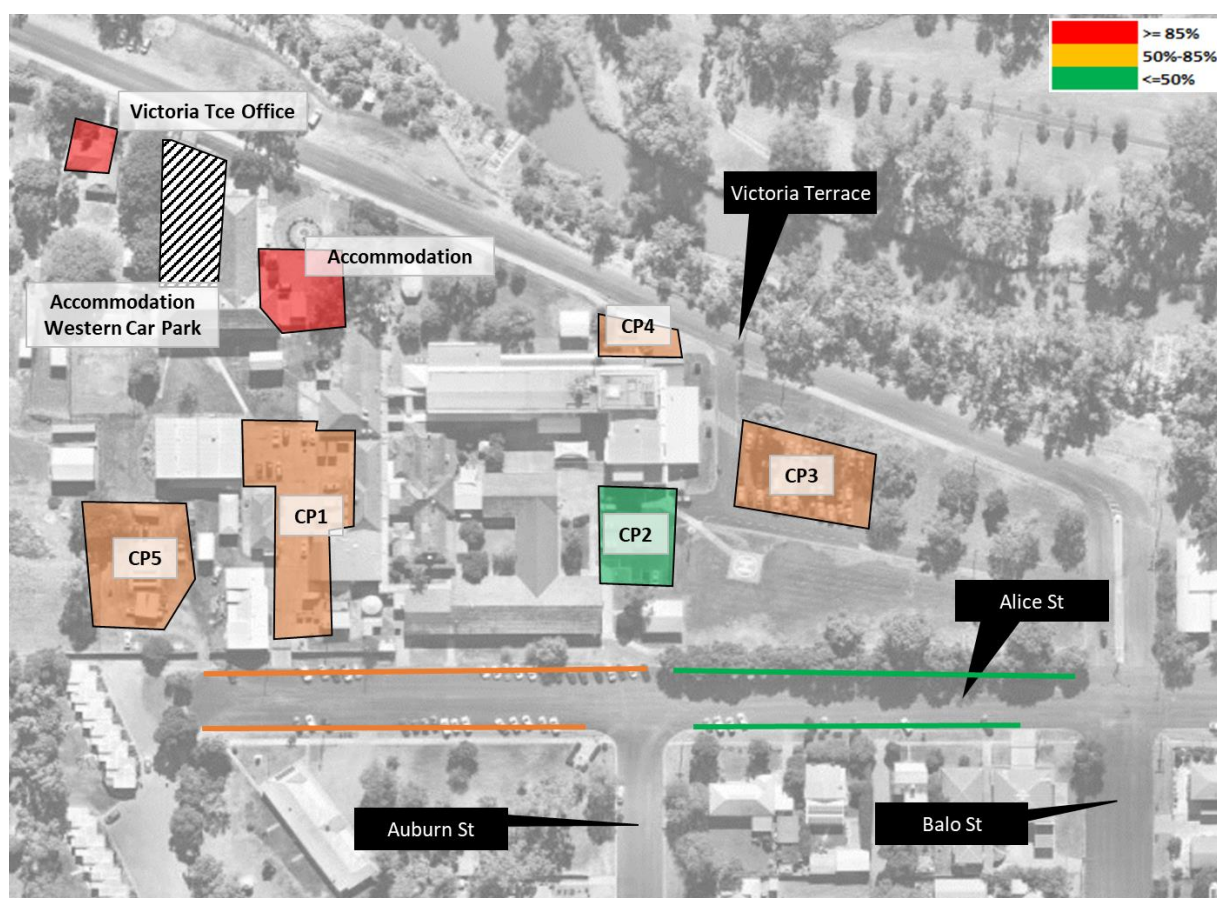


Figure 15: Peak Occupancy Heatmap

### 5.1.2 Length of Stay

The objective of this survey was to understand the average length of stay of outpatient and visitor vehicles and the average number of times the bays turn over each day.

The results of our analysis are contained in Appendix 2.

A summary of the average length of stay and turnover for outpatient and visitor vehicles, based on the assumption that vehicles parked <5 hours in public spaces belong to patients & visitors, is as follows:

Table 6: Patient & Visitor Average Length of Stay and Turnover

Patient & Visitor Parking	ptc. Survey
Average Length of Stay	2.02 hours / car
Turnover	2.02 times / space

The modal average length of stay is 0-2 hours, as shown in the chart below:

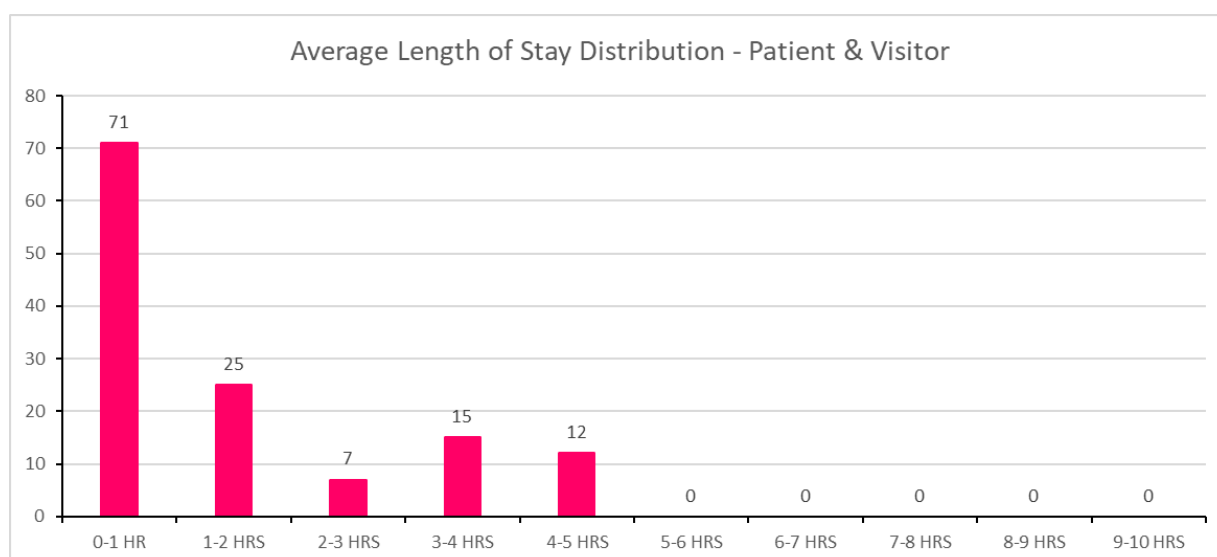


Figure 16: Patient/Visitor Length of Stay Distribution

Based on our experience from other hospital sites, although most patients / visitors would stay for up to 3 hours, there are a certain number staying considerably longer (up to 5 hours) which is usual for a site which services a large regional area.

The length of stay of an outpatient is impacted by how quickly the Hospital is able to service those patients.

### 5.1.3 Travel Mode Survey

We undertook online surveys of staff at the Hospital to understand:

- How they travel to the Hospital
- If they drive:
  - Where do they park
  - Why don't park on campus
  - How far do they walk from parking space to the Hospital
  - How many people are in the vehicle
  - Why they do not use public transport
  - Would they be interested in carpooling / car sharing
  - Would they be interested in cycling if appropriate end of trip facilities were provided

We also conducted intercept surveys of outpatients and visitors to understand:

- How they travel to the Hospital
- If they drive:
  - Where do they park
  - How many people are in the vehicle
  - Why they do not use public transport

- Their expected length of stay

The above data was used to construct our parking demand estimates.

During our surveys we obtained 67 responses from staff and 51 responses from outpatients and visitors.

A summary of key results for responses by staff is shown below:

Table 7: Staff Online Survey Key Results Comparison

Key Result	ptc. Survey
% Car	98.5%
Avg. Staff per car	1.02
% Drop off	3%
% Park on Campus	33% of which: 21% in Car Park 3 9% in Car Park 2
How far do you walk from parking space to the Hospital	Within 200m – 66% 200-400m – 34%
Why travel by car	* Driving is more convenient 52% * Multiple destinations 36% * Lack of alternatives 35% * Long travel distance 33%
Are you interested in carpooling / car sharing	Yes – 8%
Are you interested in cycling	Yes – 22%
How far do you travel to work	* 0-5 km - 51% * 5-20km – 27% * 20-50km – 8% * More than 50km - 15%

Some of ideas provided by staff include:

- *“A secure carpark for staff only to access. Well-lit and fenced off in a secure space. Parking to be separate from the public. We have had car windows smashed by the public when parking on Alice Street previously.”*
- *“There needs to be better lighting on the street/in the car park - feels unsafe to walk to the car in the dark. I hope that having sufficient car parks is a high priority with the redevelopment as there is no public transport and walking or cycling is not an option due to the significant weather extremes we experience (eg. 40 degrees plus temperature at 5pm in summer, 0 degree temperature at 8.30am in winter).”*
- *“All staff with no medical issues should park on Alice Street to leave space for visitor and patients visiting various departments”*

The following table shows the key results from outpatient & visitor intercept surveys:

Table 8: Outpatient/Visitor Intercept Survey Key Results Comparison

Key Result	ptc. Survey
% Car	90.2%
% Drop off	15.2%
% Park on campus	85% - all in Car Park 3
% Park on street	0%
Why travel by car	<ul style="list-style-type: none"> <li>* Driving is more convenient 98%</li> <li>* Lack of convenient alternatives 15%</li> <li>* Take longer by other mode 7%</li> </ul>
Avg. expected length of stay (Hr)	1.13 Hours
How far do you travel to the Hospital	<ul style="list-style-type: none"> <li>* 0-5 km - 57%</li> <li>* 5-20km – 18%</li> <li>* 20-50km – 18%</li> <li>* More than 50km - 8%</li> </ul>

### 5.3. Parking Demand

ptc.'s approach to estimating parking demand is outlined in Figure 17. We acknowledge that no two sites are identical; therefore, our general methodology is tailored to the requirements of each specific site.

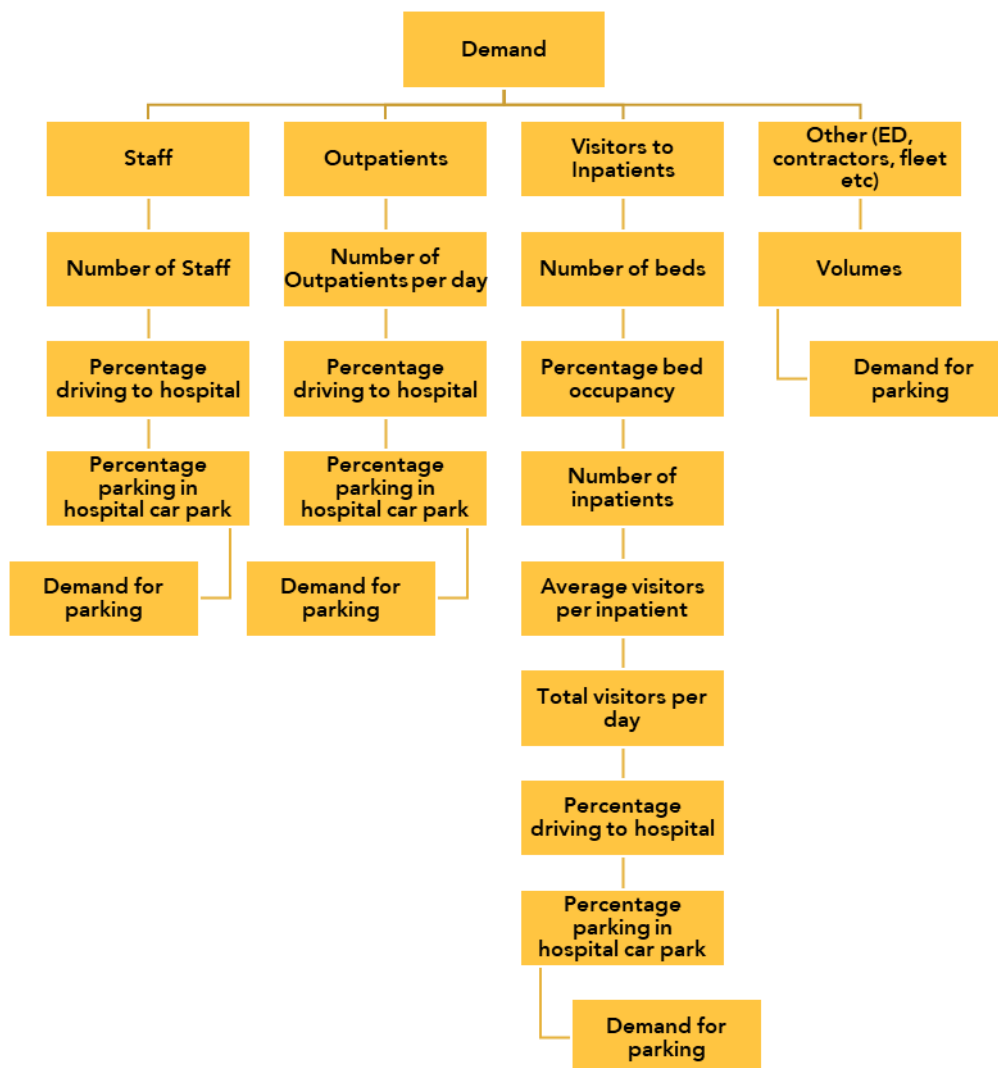


Figure 17: Parking Demand Estimate Methodology Overview

The raw demand data is converted into detailed demand estimates, subdivided by the appropriate user and time categories, expected turnover per space, etc. The results are then incorporated into individual spreadsheets representing the current and future situations.

#### 5.3.1. Key Assumptions and Inputs

General assumptions applied in the preparation of the current base case demand estimates are summarised in Table 9 below:

Table 9 - Key Assumptions and Inputs - Current Base Case Estimates

Key Assumption / Input	Data Source
Staff FTE	Hospital data
Outpatient Occasions of Service per annum	Hospital data
Emergency daily presentations	Hospital data
No. of overnight beds	Hospital data
Bed occupancy	Hospital data
% driving and requiring parking	Online staff and intercept surveys
People per car	ptc. Surveys
Staff/VMO/Fleet turnover	ptc. assumption
Outpatient/visitor turnover	ptc. Length of Stay survey
Afternoon shift staff changeover	Hospital data

Where hard data has not been provided to us, or is not available, we have adopted assumptions based on our experience of other comparable hospitals and from observations during our site visit.

Appendix 3 summarises the current base case demand drivers and assumptions.

Below is a summary of our analysis, assumptions, and conclusions regarding current base case demand for parking from the Hospital-related users. The data has been used to build our demand models Appendix 3.

### 5.3.2. Calculation Methodology

We set out below the rationale for interpreting our demand estimates:

- a) Total cars per day = people x % driving and requiring a car space / people per car
- b) *Peak parking spaces required = (a) / parking space turnover*

We adopted "Outpatients" as a worked example:

29 Outpatients per weekday x 76% driving and requiring a car space / 1 person per car = approx. 2 cars / space turnover of 2.02 = approx. 11 parking spaces required at peak.

### 5.3.3. Summary of Weekday Peak Base Case Parking Demand

A summary of the estimated current peak weekday parking demand is shown in Table 10 below. More details are included in Appendix 3.

Table 10 – Summary of Base Case Weekday Peak Parking Demand – Current Base Case

<b>Weekday Peak Parking Demand – Base Case Estimate</b>	<b>Current</b>
Staff (incl VMO)	73
<b>Public:</b>	
Outpatients	35
Visitors	5
ED Presentations	9
<b>Total Public</b>	<b>49</b>
<b>Fleet Vehicles</b>	<b>10</b>
<b>Other:</b>	
Education & Training	1
Volunteers	2
Retail Staff	0
<b>Total Other</b>	<b>3</b>
<b>Consulting Suites</b>	
Staff	2
Public	4
<b>Total Consulting Suites</b>	<b>6</b>
<b>Total</b>	<b>141</b>

### 5.3.4. Parking Surplus / Shortfall

Our analysis of parking surplus / (Shortfall) at Moree Hospital is shown as follows:

Table 11 – Summary of Weekday Peak Parking Demand – Current

<b>Weekday Peak</b>	<b>Current</b>
<b>Total Demand</b>	<b>141</b>
Total Hospital Related Car Parks Parking Supply (Formal Spaces)	89
<i>*83 formal spaces on-campus car parks + 4 formal spaces in the Accommodation eastern car park + 2 formal spaces in the Victoria Tce Office car park</i>	

Weekday Peak	Current
Total Unconstrained Shortfall	(52)
Off Campus On Street Parking Supply within ZOI (assume 70% available Hospital users)	257
Total Surplus	205

### Conclusions:

- The current estimated unconstrained shortfall of **52** spaces is able to be met by on street parking supply within the ZOI (400m radius): assuming 70% of the total supply (367 spaces) is used by Hospital staff and visitors, there would be actually a surplus of 205 spaces.

### Assumptions:

- No changes to the parking behaviour of staff, outpatients and visitors (e.g. same %'s continue to drive, use same parking locations, etc.)
- No changes to the % staff, outpatients and visitors who are dropped off and do not park
- No significant price change in the hospital car parks
- No changes by Council to on-street and off-street parking regimes that would result in fewer spaces available to hospital-related users, such as introducing "No Parking" areas, changing unrestricted spaces to time restricted parking, etc.
- No significant increase in demand for parking from external sources (e.g. new development, schools, community facilities, etc.)
- 100% occupancy of hospital related car parks; assuming all spaces could be fully utilised by adoption of the necessary parking management principles

We have not quantified weekend parking demand as it will always be lower than the weekday peak due to:

- Lower volumes of staff, particularly administration and support services staff
- Limited or no outpatient activity

## 5.4. Verification Check

As a high-level reality check we tested the veracity of the current parking demand model by comparing the estimated peak parking demand with the observed peak demand from our surveys as follows:

Table 12 - Verification Check

Verification check	Spaces
Estimated Peak Demand	141
Observed Peak Occupancy – On Campus	51
Observed informal parking	6
Observed Peak Occupancy – Accommodation	4
Observed Peak Occupancy – Victoria Tce Office	2
Observed Peak Occupancy within ZOI on street used by Hospital users (assume 70%)	58
Total Observed Peak Occupancy	121
Difference	20

The difference (20 vehicles) between the estimated peak occupancy (per the current model) and the observed peak occupancy within the ZOI is likely because some staff/visitors did not attend on campus during our survey as normal (which was also supported by our conversations with hospital staff during our survey, they suggested that the day we surveyed was quieter than normal days and the car parks were less occupied). Therefore, the above 20 vehicles variance is considered as an acceptable variance for modelling purposes.

## 6. Planning Policy

Moree Plains Shire Council (MPSC) DCP provides parking rates Hospitals as detailed below. It is anticipated however, that provision of the same, or a greater number of parking spaces, is deemed to be acceptable given no new infrastructure or staffing increases are proposed in this development.

### 6.1. Parking Requirements for Development Site

The DCP rate for hospitals is as follows;

- 1 space per 3 beds, plus
- 1 space for each resident or staff doctor, plus
- 1 space for each three employees

Based on architectural plans, the required parking provision and the provided parking is calculated and shown in Table 13.

Table 13: Parking Requirements and Summary of Provided

	Rate	Required as per DCP Rates	Existing Site Parking	Proposed Site Parking
Beds (public)	1 space per 3 beds	14 <sup>1</sup>	39	51
Residents (staff and fleet)	1 space for each resident or staff doctor	-	44	32
Employees (staff and fleet)	1 space for each three employees	36 <sup>2</sup>		
TOTAL PARKING		50	83 (on site)	83 (on site)
Ambulance drop off (porte-cochere)			1	2
Drop-off / Pick-up bay			2	2

The proposed car park along the north-eastern corner of the site is a replacement of existing car parks CP1 and CP3, which have a combined total parking of 51 car spaces. The proposed car park will match this existing car parking quantum. Given that the proposal is a refurbishment, and is not expected to provide significant additional facilities or staff increases, the proposed parking quantum is deemed suitable.

Figure 18 details the public car parking area of the proposed site.

<sup>1</sup> The data is according to the existing site and no proposed increase in the development site (40 beds).

<sup>2</sup> The data includes clinical staff (FTE) including resident doctors (excluding VMO's) and is according to the existing site and no proposed increase in the development site. No distinction is made between staff and doctors in the provided data from Moree Hospital, as such parking rate of employees is adopted.

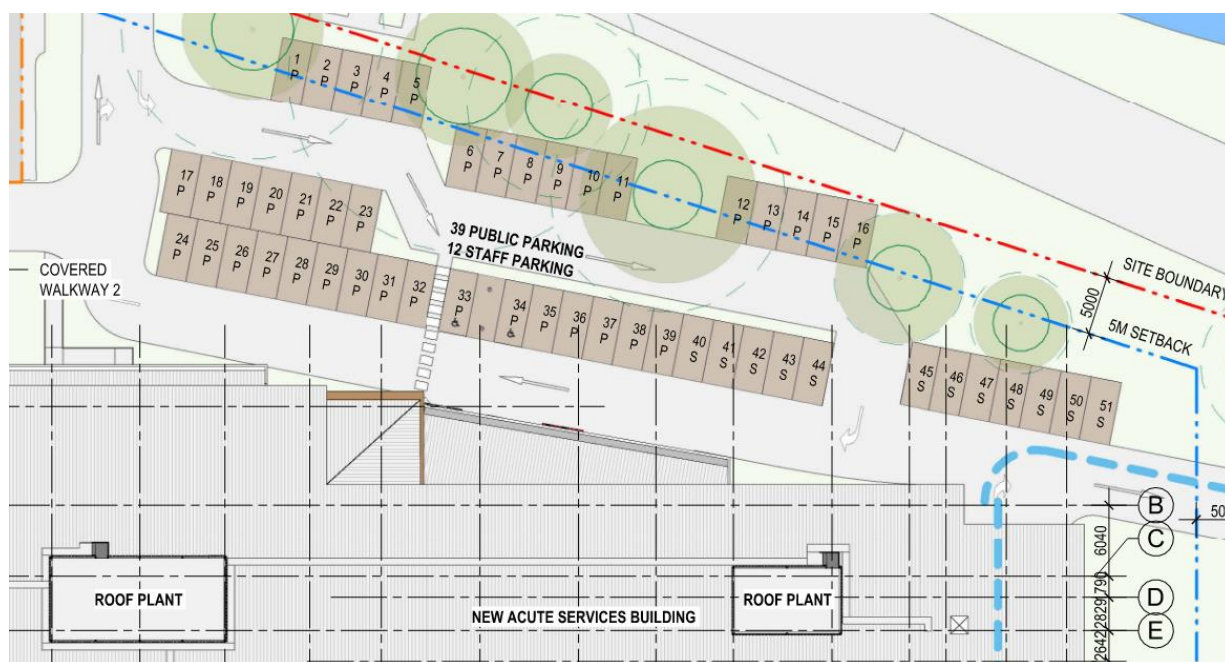


Figure 18: Proposed Car Parking

## 5.2 Accessible Parking

With reference to *BCA Table D3.5 Car parking numbers for people with a disability*, for a Class 9a building—a health-care building, including those parts of the building set aside as a laboratory (a) Hospital (non-outpatient area) the requirement is 1 space for every 100 carparking spaces or part thereof and Hospital (outpatient area) the requirement is 1 space for every 50 carparking spaces or part thereof.

Table 14: Accessible Parking Provision

	Standard Spaces	Accessible Rate	Required Accessible Spaces	Provided Accessible Spaces
Parking	96	1 per 50 spaces	2	2

The provision of accessible spaces according to the site review assessment plan will satisfy the BCA requirement for accessible parking and will provide direct close access to the Emergency department and outpatient facilities.

## 5.3 Drop-off Bays

Provision of a drop-off bay suitable to accommodate 2 vehicles is proposed at the main entryway. The provision of the drop off will provide improved patient and visitor accessibility for the proposal.

## 6 Access Assessment

### 6.1 Loading Dock

Access to the loading dock is proposed via Alice Street. This provides direct access to the Back of House facilities at the hospital.

The largest vehicle able to access the dock and loading area is a 12.5m Heavy Rigid vehicle (HRV).

A forward-in and forward-out access arrangement is accommodated.

Swept path assessment for the loading dock is provided in Appendix 1.

### 6.2 Service Vehicles

Waste collection is proposed via the Alice Street loading dock entryway.

Swept path assessment for service vehicle access is provided in Appendix 1.

The largest service vehicle suitable for accessing the site is a 12.5m Heavy Rigid Vehicle (HRV), which aligns with the current largest service/delivery vehicles at the site.

### 6.3 Car Park Access and Circulation

All car park areas have been assessed for access and circulation with AutoCAD Swept Paths. The details of these assessments are shown in Appendix 1.

Based on AS 2890.1, and the classification of the site as a hospital, Class 3 Parking is required.

AS2890.1 specifies that parking spaces must be 2.6m width by 5.4 length, with an aisle width of 5.8m.

Staff only parking spaces (provided they are secure and cannot be accessed by anyone other than staff), are to be a minimum of 2.4m width by 5.4m length, with an aisle width of 5.8m. All new parking spaces proposed are 2.6m in width.

Accessible parking spaces are required to be 2.4m width by 5.4m length, with a shared bay of the same dimensions alongside.

All parking areas and circulation aisles have been assessed and details of this are in Appendix 1.

#### 6.3.1 Main Carpark (Victoria Terrace)

The two existing entry/exit driveways off Victoria Terrace are proposed to be retained for the main carparking area. Adequate signage and linemarking is to be implemented to ensure adherence to the circulation directions proposed.

The northern driveway from Victoria Terrace is to be entry and exit, whilst the eastern driveway is to be egress for ambulances only.

#### 6.3.2 Ambulance

Access to the ambulance bay, emergency vehicle parking is provided from Alice Street through a one-way entry driveway.

The ambulance unloading area is covered with a minimum 3.8m headroom and 5.5m width per ambulance, in accordance with the NSW ambulance design guidance.

There is sufficient space in this area for parking of two ambulances. Refer to architectural plans for detail of the ambulance parking area.

### **6.3.3 Fleet and Staff Parking**

Fleet and staff car parking areas are to remain unchanged as per the scope of the development.

## 7. Traffic Impact Assessment

### 7.1. Existing Traffic Conditions

#### 7.1.1. Traffic Surveys

Intersection traffic surveys were undertaken on 27<sup>th</sup> July 2022. This date was selected as suitable given that it avoids any impact on the data validity caused by school holidays or the first week back at school.

The following intersections were surveyed:

- |                                     |                    |
|-------------------------------------|--------------------|
| 1. Victoria Terrace / Edward Street | 3-leg intersection |
| 2. Victoria Terrace / Alice Street  | 4-leg intersection |
| 3. Alice Street / Auburn Street     | 3-leg intersection |



Figure 19: Intersection Survey Locations

#### 7.1.2. SIDRA Analysis

A volume analysis was performed using the SIDRA Intersection 9 software, a micro-analytical tool for individual intersection and whole-network modelling. The models are based on the collected traffic survey data. SIDRA provides a number of performance indicators outlined below:

- Degree of Saturation – The total usage of the intersection expressed as a factor of 1 with 1 representing 100% use/saturation. (e.g., 0.8=80% saturation).

- **Average Delay** – The average delay encountered by all vehicles passing through the intersection. It is often important to review the average delay of each approach as a side road could have a long delay time, while the large free flowing major traffic will provide an overall low average delay.
- **95% Queue Lengths (Q95)** – is defined to be the queue length in metres that has only a 5-percent probability of being exceeded during the analysis time period. It transforms the average delay into measurable distance units.
- **Level of Service (LoS)** – This is a categorization of average delay, intended for simple reference. It is a good indicator of overall performance for individual intersections. The RMS adopts the following bands:

The LoS criteria is shown in Table 15.

Table 15: Intersection performance – Levels of Service

Level of Service	Average Delay (secs/vehicle)	Traffic Signals, Roundabout	Give Way & Stop Signs
A	<14	Good operation	
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity. At signals, incidents would cause excessive delays. Roundabouts require other control mode	At capacity, requires other control mode
F	>70	Extra capacity required	Extreme delay, major treatment required

The SIDRA results from that report are provided in Table 16.

Table 16: Summary of Existing and Future Traffic Conditions

Intersection	Time	Period	Level of Service	Degree of Saturation (v/c)	Average Delay (s)	95% Queue Length (m)
Victoria Terrace / Edward Street	AM Peak	Existing	LOS A	0.148	7.2	0.6
	PM Peak	Existing	LOS A	0.152	7.3	0.7
Victoria Terrace / Alice Street	AM Peak	Existing	LOS A	0.067	6.4	0.8
	PM Peak	Existing	LOS A	0.073	6.8	0.8
Alice Street / Auburn Street	AM Peak	Existing	LOS A	0.02	5.7	0.2
	PM Peak	Existing	LOS A	0.02	5.7	0.2

### 7.1.3. SIDRA Analysis Summary

The existing scenario modelled, with the results shown above in, demonstrates that the network operates with spare capacity capable of supporting the future hospital site. This is especially true given that the proposed development includes no significant new infrastructure or hospital facilities, nor any increase in staffing numbers. The proposed development is a refurbishment of the existing site facilities.

Therefore, with traffic generation similar to the existing model, it is anticipated that the road network and traffic will experience no significant negative impact from the proposed development.

## 7.2. Proposed Traffic Generation

Given that the proposed site has no major new services, new departments, or any notable increase in staffing numbers, it is assumed that there will be little-to-no net increase in parking demand for the future site. In combination with this, the proposed Green Travel Plan is to be implemented to encourage the uptake of active travel for those who live nearby to the hospital, or the use of the two town bus routes where suitable. It is expected that only a small number of staff will find these modes of travel suitable and thus any minor increase in staff due to the development is expected to be offset.

Given that there is expected to be little or no increase in staff and therefore minimal increased parking demand and traffic generation, a future SIDRA model for the development site is not warranted. Rather, an assessment of the existing site traffic and car parking habits and occupancy provides insight into the suitability of the existing car parking numbers.

Both the existing scenario model and our on-site Length of Stay carpark occupancy studies demonstrate that the existing provision of parking is suitable. Given the minimal increase to staff numbers and no new hospital infrastructure, it is expected that the existing parking numbers are suitable to be retained for the proposed development.

Based on the assumptions detailed above, the existing site provides adequate parking supply for the expected traffic generation. Furthermore, the adjacent street, Alice Street, operates with a good Level of Service, with ample spare capacity to handle any minor increases in traffic due to the proposed development. Thus, the proposed site is to provide parking quantum that matches the existing site.

## 8. Green Travel Plan

It is expected that the details in this section will be developed further as the project progresses, with a view to implementation of a formalised monitoring and evaluation process to achieve the maximum benefits of a Green Travel Plan (GTP).

### 8.1. What is a green travel plan?

A GTP is a document that outlines how a development intends to make travel to and from the site safer and more sustainable for residents and their visitors. The GTP addresses local traffic issues around the site and encourages active, safe and sustainable travel methods, such as walking, cycling, scooting, public transport or car sharing. A GTP correlates with the development's overall aspirations and is a document that is monitored and reviewed regularly.

A GTP is not just the installation of bike racks or provision of end-of-trip facilities. A good GTP aims to promote and maximise the use of more sustainable modes of travel via a range of actions, promotional campaigns and incentives. The plan includes site management tools that encourage residents, staff and visitors to make more sustainable transport choices. A GTP requires ongoing implementation, monitoring and review. As such, nominating an individual or a team to oversee the implementation of a travel plan is a crucial component of success.

An effective GTP can offer many benefits such as reduced parking costs, less congestions on the public road networks, health and environmental benefits which generally results a healthier and happier campus with fewer sick days for staff.

### 8.2. Why a green travel plan is required

Development of a Green Travel Plan is widely accepted as one of the best ways to increase active travel around the site. A successful GTP offers many benefits for the community, including:

- Building confidence and improving social interaction by walking and/or cycling
- Assists in implementation of health, fitness and wellbeing programs
- Improving social interaction with others to be more interested and involved in the with the precinct as they walk or cycle
- Improving safety by reducing traffic and local road congestion
- Improving the environment by reducing air pollution from private vehicles;
- Creating opportunities for healthier lifestyles and more vibrant, cohesive and accessible communities; and
- Providing individuals with leadership opportunities.

It is likely that staff and visitors with a good understanding of an active and sustainable mode of transport will follow a healthy and active lifestyle, care about the environment and prioritise location and lifestyle over car ownership.

### 8.3. The purpose of a GTP

The purpose of the GTP is to provide a package of measures with the aim at promoting and reducing the reliance of private car usage and encourage and support the uptake of daily business in a more sustainable way. This may be achieved through the review of existing policies and identifying programmes to encourage residents, visitors, and employees to adopt more active and sustainable forms of transport. This document identifies the following:

- Review of existing public transport infrastructure and future transport options;
- Assessment of existing travel patterns within the area;
- A modal share target for the development;
- A framework to identify and respond to travel demand from the development and surrounding area;
- Strategies to implement prior and during occupancy; and
- The monitoring strategy to track performance of the Green Travel Plan.

### 8.4. Opportunities and Targets

#### 8.4.1. Walking

Walking is only likely to be an attractive option for people who live relatively close to the campus.

It is a viable transport option for distances under one kilometre (approximately 10-15min) and is often quicker for short trips door to door. Walking is also the most space efficient mode of transport for short trips and presents the highest benefits.

Walkers might include staff, outpatients, and visitors; however, staff on early morning or late evening/night shifts would be unlikely to walk for safety reasons. For these reasons, we expect that walking would only be an attractive mode share for people living locally. This appears to be supported by our surveys which show 100% of staff walking to work and 98.5% of visitors drive and park at the hospital.

Co-benefits where walking replaces a motorised trip include improved health for the individual, reduced congestion on the road network and reduced noise and emission pollution. Site observations show that the existing footpath networks and crossing points between the adjoining residential precincts and the hospital are generally adequate.

The pedestrian connections from the car parks to the Site is generally acceptable. Within the hospital precinct, paths are mostly quite generous. Away from the hospital, at many locations, footpaths are not provided or are provided only one side of the street. In many instances, the road network has been designed to prioritise vehicle movements, including intersections with roundabouts where pedestrians need to negotiate many directions of traffic whilst crossing the road. These often provide positive efficiency outcomes for vehicle movements. However, pedestrians have no priority and are at greater risk crossing when compared with other intersection layouts. It is recommended that inadequate provision of footpaths be rectified.

### 8.4.2. Bicycle Network

Similar to walking, cycling is only likely to be an attractive mode share for staff members who live within relatively close distance to the campus.

Our site observations indicate that minimal cycling is currently occurring to the hospital and no bicycle racks were noted outside the hospital for visitor or staff use.

The existing bicycle network in the locality is highly fragmented (Figure 11). Generous road width and shoulder in the area provide an opportunity to those who are willing to ride on the road. However, less confident riders may not find the road network conducive for regular riding. Shoulder lanes between the moving traffic and the door opening zone presents safety implications to cyclists and on many occasions shoulder lanes generally end just before the intersections and reappear on the opposite side.

Due to its location, land use, geometry, and road network, it is reasonable to consider that the cycling mode to the hospital by the daytime staff will be a low percentile. However, similar to walk trips, staff living within 2.5km radius (considered as a short trip) should be encouraged to ride (Figure 11). Discussions should also be held with the Council for safe and direct cycling path to the hospital from the nearby residential precincts.

Existing bike racks should be upgraded, and cycling should be promoted to the staff members. Additional bicycle racks, lockers and end of trip facilities should also be provided within the hospital.

### 8.4.3. Future Transport Targets

To encourage and promote more active travel opportunities, the hospital should consider adopting targets as set by similar hospitals. In addition, it is recommended that the hospital consider carrying out benchmarking by conducting intercept surveys to gain an accurate base from which this data can be improved upon year by year. Should the survey indicate staff living within the 800m-1km catchment area (approximately 10-20min walk), a walking trip should be promoted to these staff members.

These targets would apply to all staff travelling to and from work on a daily basis.

### 8.4.4. Bus Cards and Discounts

To improve the relative attractiveness of public transport, other transport modes such as driving should be benchmarked against and generally exceed the cost of public transport. Staff bus cards could be considered as an option for staff members to encourage the use of the private bus network around town. This could be offered at a discounted rate to encourage the uptake of this travel mode.

## 8.5. Strategies

There are a number of strategies which can be employed to encourage non-car modes of transport to and from the Hospital. The following table outlines potential strategies that can be adopted in achieving future transport targets.

Table 17: Potential strategies for adoption to achieve future transport targets

Target	Strategy
<b>Public Transport</b>	
Increase journeys to work by on demand Public Transport	Create a map identifying the location of bus stops and routes and make this available to all staff and visitors.

Target	Strategy
	Improve the promotion of On Demand Public Transport on the Hospital website.
<b>Cycling</b>	
Increase journeys to site by cycling	Create maps and bike routes, which link to surrounding key amenities and available facilities. Provide facilities on-site for staff and visitors to repair bikes. Ensure visitor bicycle racks are positioned in an accessible and sheltered location that provides good passive surveillance and is easily recognisable to visitors. Provide secure, internal End of Trip facility with bike storage racks and shower and change amenities.
<b>Walking</b>	
Encourage residents to walk to work as part of their journey	Work in partnership with Council to determine whether there are opportunities to improve the pedestrian connectivity to the Hospital. For example, ensure that pedestrians are considered within the proposed RMS road upgrades.
<b>Car Pooling/Car Share</b>	
Improve accessibility to car share	Provide a forum or platform for staff to plan carpooling tips with colleagues to reduce the total vehicles travelling to site.

## 8.1 Workplace Transport Plans

The core principle in reducing the demand for car parking spaces (specifically for Hospital Staff) is to introduce and promote “Healthy Transport Plans”.

The cycle and pedestrian network near the Hospital Precinct combined with a proportion of staff living within relatively close proximity to the Precinct clearly highlights the possibility of introducing a robust and sustainable travel plan. Travel plans should aim to:

- Encourage staff, patients and visitors to use more sustainable travel options to get to the Hospital
- Encourage staff to adopt healthy transport choices such as walking and cycling where this is a realistic option
- Pursue opportunities for sharing vehicles or transport not only for staff but to explore innovative solutions to minimise journeys
- Consider journey management and distance covered
- Ensure that the Hospital’s actions in respect to transport do not have an adverse impact upon the environment and consequently the health of the population which we serve. There is a requirement to balance the needs of patients, visitors and staff against ensuring protection of the environment for which we all have a responsibility; and,

Furthermore, there are other methods of shifting the number of staff accessing work by incentivising and increasing the use of carpooling, cycling, park and ride. However, these forms of transport need to be supported by an incentivised system to make these forms of access more desirable than driving.

### **8.1.1 Dedicated Carpooling Space**

The hospital should allocate some dedicated carpooling spaces to promote carpooling by the staff members living in the same areas. There are many ways to manage carpooling spaces which can be explored in due course. As a start, two (2) to three (3) parking spaces are recommended for carpooling with an effective marketing strategy to promote these spaces to the staff members.

### **8.1.2 Public Transport**

To improve the relative attractiveness of public transport, other transport modes such as driving should be benchmarked against and generally exceed the cost of public transport. Exploration of working with Council to provide clear signage of bus routes between the town centre and hospital, to promote the use of public transport can be undertaken.

### **8.1.3 Car Share**

Car share services will remove a common requirement to drive to the hospital for personal or business purposes. Subsidising car share membership will attract more car share users. Inter hospital trips can be made by car share vehicles, thus reducing the overall hospital fleet numbers. Discussion should be held with the car share operators to ascertain the demand for car share vehicles within the hospital campus.

### **8.1.4 Shuttle Bus Service**

Based on the staff survey, if there is reasonable number of staff is found to be living within the 5-10km radius of the hospital, a shuttle bus can be considered in the future based on the demand. Discussion should be held with Transport for NSW/ Council for effective operation of the shuttle bus service.

### **8.1.5 Transport access guide**

To encourage staff and visitors to adopt alternative sustainable transport options, a Transport Access Guide should be developed to summarise available transport options identified. A Transport Access Guide is a concise presentation of how to reach the site using low-energy, sustainable and active forms of transport.

The aim of a Transport Access Guide is to make sure people know how to get to the subject development by walking, cycling or public transport (as well as by car).

A Transport Access Guide can take many forms such as a map printed on the back of business cards or invitations to more comprehensive information provided to new residents or staff as part of their induction kit. Guides may be incorporated into stationery, brochures and sales literature and provided electronically on the web site and in emails. An electronic version can be kept on a computer and produced as needed. Reception and enquiry staff should be familiar with the content so they can advise callers about easy transport alternatives to car travel.

Transport and Access Guides should be included in Green Travel Plans and should comply with RMS guidelines.

## 8.2 Steps to develop the green travel plan

To develop a GTP, there are five (5) key steps to follow to commence its operation:

### 8.2.1 Step 1 – Set up an Advisory Committee

- Appoint an individual to coordinate specific actions and to track the progress of this work
- Develop a working group that involves representatives from the campus community
- Identify ways how the whole community will be involved and informed of the work (e.g., regular articles in the precinct website / social media).

### 8.2.2 Step 2 – Data Collection & Review Existing Situation

As part of the development, it is expected that there will be a more patients, visitors and employees travelling to and from the campus on a daily basis. To identify how staff and visitors living in the Campbelltown area travel elsewhere for work or shopping etc. and/or for people coming to the hospital, an initial survey should be conducted to identify the travel behaviour of staff and visitors. This may be conducted as an online survey or an intercept survey of those accessing the hospital. This would assist with developing and monitoring travel planning schemes and how access can be improved to the hospital. As a minimum the following questions should be considered:

- Are you staff/visitor to the site? Yes/No
- Did you park on site today? If so, where?

#### Staff Only Questions

- If you are a staff member, do you have an allocated parking space within the Site?
- How do you currently travel to work and the distance of their travel?
- Based on the public transport and other sustainable travel options available, which would be their preferred mode of travel?
  - Walk/run
  - Bicycle
  - Bus
  - Train
  - Combination of bus and train
  - Drive car
  - Passenger in car
  - other \_\_\_\_
- Is your residence in an area not serviced by any of the identified transport options?
- Do you need to drive to work for another reason? Why and how often this would occur (i.e. shift work)

### **Visitors Only Questions**

- If you are a visitor, where did you travel from today?
- What mode of transport did you use?
- Why did you use this particular method of travel mode?

### **All Users**

- Have you heard of car share? If this was readily available to you, would you use if you did not have a car parking is unavailable?
- If not, what are the barriers to you using car share to travel to and from site?
- What would make you consider using car share to access the site?
- Any suggestion/recommendations to encourage sustainable mode of transport etc.;

### **8.2.3 Step 3 – Prepare the travel plan**

Based on the data, an overall vision for the modal travel should be considered with clear objectives. The GTP should be prepared based on those objectives, notably:

- Build a precinct culture that supports active travel by motivating and encouraging the community to get involved
- Set specific SMART (Specific, Measurable, Achievable, Relevant, Timed) targets
- Develop an action plan that lists activities and strategies that eliminates the community's barriers to active travel to meet the objectives
- Estimate the budget required to meet the objectives, identify funding source and develop implementation strategies
- Review and consult with the community

### **8.2.4 Step 4 - Deliver & Implement**

Once developed, launch the GTP and carry out regular monitoring (every 12 months is recommended) as part of the implementation strategy. Travel mode data should be collected and reviewed each quarter.

### **8.2.5 Step 5 - Recognise Process**

The successes of the GTP should be celebrated regularly, for example at key community events. The plan should regularly be reviewed and include new ideas, targets and benchmarks.kn

## **8.3 Monitoring and Evaluation**

A Travel Plan Co-ordinator and Travel Plan Group should be established to monitor and review the sustainability targets.

As a minimum, the Plan should be reviewed on a quarterly basis incorporating consultation with staff and visitors at the completion of a regular travel survey.

The yearly review should result in an update to the Travel Plan which may include, where necessary:

- Modifications to the previously agreed targets as a result of data collected and analysed.

- Implementation of additional remedial actions if the Travel Plan is not meeting its objectives within the timescales specified which remedial actions may include but not be limited to, undertaking new or additional monitoring activities to those specified in the Travel Plan.

## 9. Conclusion

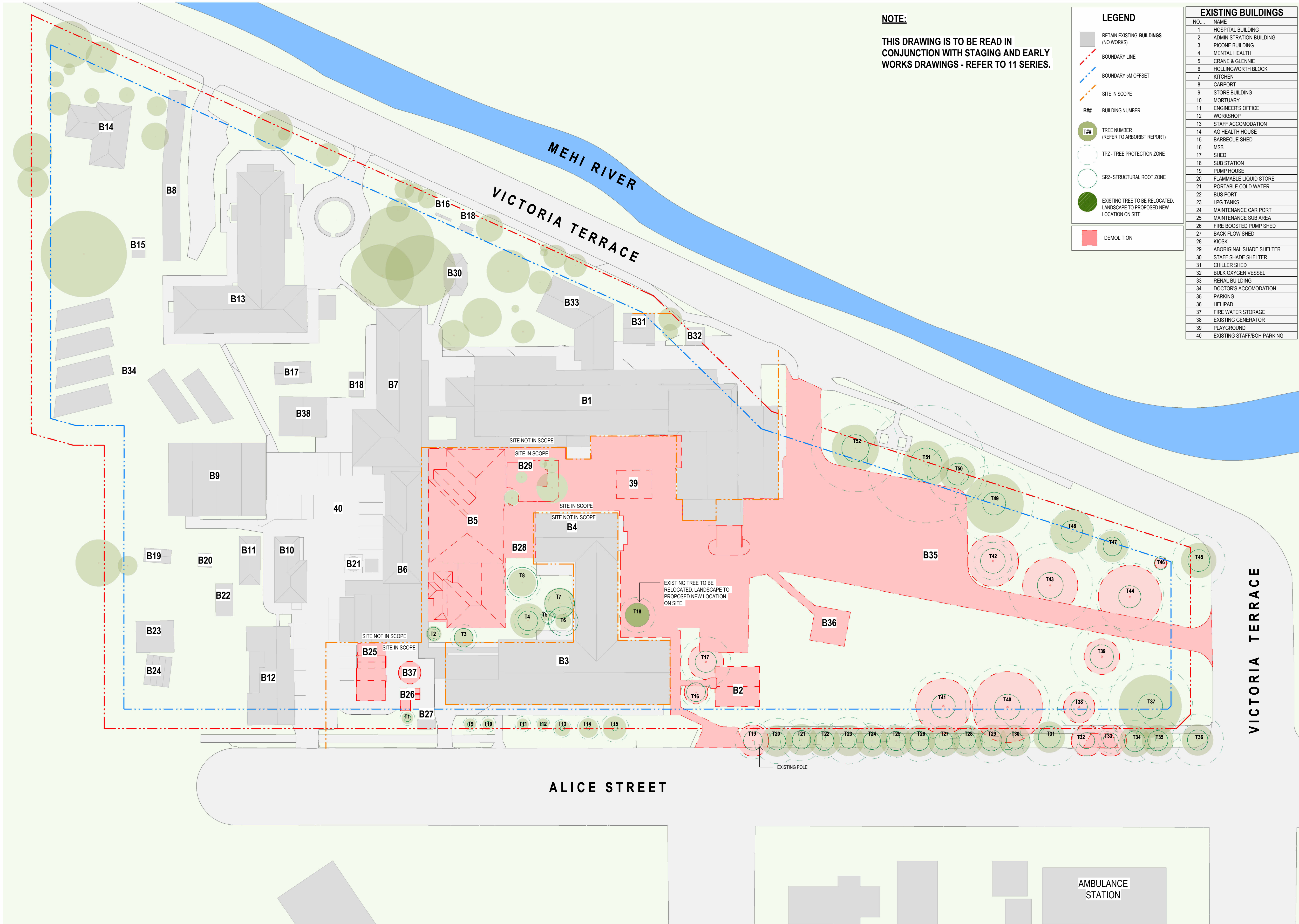
**ptc.** has been engaged on behalf of Health Infrastructure (HI) to prepare a Traffic Impact Assessment to accompany an REF for the Smalls Hospital Initiative in relation to Moree Hospital.

The parking demand for staff and visitors has been assessed using Length of Stay, Intercept, and Staff Surveys. Given that the proposed development of Moree Hospital is not expected to provide significant new additional facilities, or any significant increase in staff numbers, **ptc.** deem the provision of at least the existing parking quantum to be sufficient to account for the potential future hospital parking needs. The proposal seeks to match the existing quantum of site car parking, which is deemed acceptable in regard to traffic generation of the site.

Traffic surveys and modelling have been undertaken for the existing site to confirm the network has no existing congestion issues. The development site traffic is expected to behave in a similar fashion with similar volumes based on the assumption that no major new infrastructure or staffing increases are proposed. Therefore no significant negative impacts are expected to occur to the surrounding road network.

All car parking and service vehicle areas of the site have been assessed for their respective use cases and found to be compliant with relevant standards including AS2890.1 (2004) Off-Street Car Parking, AS2890.2 (2018) Off Street Commercial Vehicle Facilities, AS2890.6 (2009) Off-Street Parking for People with Disabilities.

# Appendix 1. Swept Path Analysis



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**KEY PLAN**

**REV** **DESCRIPTION** **DRN** **DATE**

A	ISSUED FOR TENDER	NM	13/10/2023
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**GENERAL NOTES**

**DIMENSIONS**

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**FIXTURES, FITTINGS & EQUIPMENT SPECIFICATIONS**

SUBSTITUTE FIRE EQUIPMENT SPECIFICATIONS

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**PROJECT TEAM**

QUANTITY SURVEYOR **mbm**  
LEVEL 5, 1 CHURCH SQUARE, SYDNEY NSW, 2000, AUSTRALIA  
PH: (02) 8579 5000

LANDSCAPE ARCHITECTS **TaylorBrammer**  
218 CHURCH ST, SYDNEY NSW, 2001, AUSTRALIA  
PH: (02) 9321 8855 | Sydney@taylorbrammer.com.au

SERVICES ENGINEER **JHA**  
LEVEL 20, 2 MARKET ST, SYDNEY NSW, 2000, AUSTRALIA  
PH: (02) 9437 0000 | jha@jhaengineering.com.au

STRUCTURAL & CIVIL ENGINEER **NORTHROP**  
LEVEL 1, 215 PACIFIC HIGHWAY, CHARLESTOWN NSW, 2206, AUSTRALIA  
PH: (02) 4943 1777 | nro@northrop.com.au | ABRN: 61 694 433 100

ARCHITECT **STH**  
LEVEL 4, 88 YORK STREET, SYDNEY NSW, 2000, AUSTRALIA  
PH: (02) 8209 4000 | info@sth.com.au | ABRN: 21 134 470 900

CONTRACTOR **BESIX Watpac**  
LEVEL 24, 44 MARKET STREET, SYDNEY NSW, 2000, PH: (02) 8741 7400

PROJECT MANAGER **savills**  
LEVEL 21, 1 FARRER PLACE, SYDNEY NSW, 2000, PH: (02) 915 8888

PRINCIPAL **NSW GOVERNMENT** **Health Infrastructure**

**ISSUED FOR INFORMATION**

PROJECT **MOREE HOSPITAL REDEVELOPMENT**

35 Alice St, Moree NSW 2400

DRAWING TITLE **MANDATORY OPTION - DEMO PLAN**

SCALE **1 : 500 @ A1** DRAWN BY **Author** CHECKED **Checker**

DOCUMENT NUMBER **MHR-STH-AR-DR-SW-13XX01** REVISION **A**

INTERNAL REFERENCE ONLY: STH PROJECT NO: 10649 | STH SHT NO: 13XX01

**WORK IN PROGRESS**

N 6736642333  
E 775282644

N 6736535580  
E 775260216

N 6736532354  
E 775270861

N 6736532172  
E 775278843

N 6736459921  
E 775277200

N 6736567060  
E 775419536

N 6736536917  
E 775448289  
PUBLIC  
ENTRY/EXIT  
RL 208.720 (EX)

N 6736499821  
E 775554932

N 6736457302  
E 775553965

N 6736453725  
E 775550227

ALICE STREET

MEHI RIVER

VICTORIA TERRACE

VICTORIA TERRACE

#### LEGEND

- RETAIN EXISTING BUILDINGS (NO WORKS)
- BOUNDARY LINE
- BOUNDARY 5M OFFSET
- SITE IN SCOPE
- B## BUILDING NUMBER
- T## TREE NUMBER (REFER TO ARBORIST REPORT)
- TPZ - TREE PROTECTION ZONE
- SRZ - STRUCTURAL ROOT ZONE
- EXISTING TREE TO BE RELOCATED. LANDSCAPE TO PROPOSED NEW LOCATION ON SITE.

#### EXISTING BUILDINGS

NO.	NAME
1	HOSPITAL BUILDING
2	ADMINISTRATION BUILDING
3	PICONE BUILDING
4	MENTAL HEALTH
5	CRANE & GLENNE
6	HOLLINGWORTH BLOCK
7	KITCHEN
8	CARPORT
9	STORE BUILDING
10	MORTUARY
11	ENGINEER'S OFFICE
12	WORKSHOP
13	STAFF ACCOMMODATION
14	AG HEALTH HOUSE
15	BARBECUE SHED
16	MSB
17	SHED
18	SUB STATION
19	PUMP HOUSE
20	FLAMMABLE LIQUID STORE
21	PORTABLE COLD WATER
22	BUS PORT
23	LPG TANKS
24	MAINTENANCE CAR PORT
25	MAINTENANCE SUB AREA
26	FIRE BOOSTED PUMP SHED
27	BACK FLOW SHED
28	KIOSK
29	ABORIGINAL SHADE SHELTER
30	STAFF SHADE SHELTER
31	CHILLER SHED
32	BULK OXYGEN VESSEL
33	RENAL BUILDING
34	DOCTORS ACCOMMODATION
35	PARKING
36	HELIPAD
37	FIRE WATER STORAGE
38	EXISTING GENERATOR
39	PLAYGROUND
40	EXISTING STAFF/BOH PARKING

#### NEW BUILDING

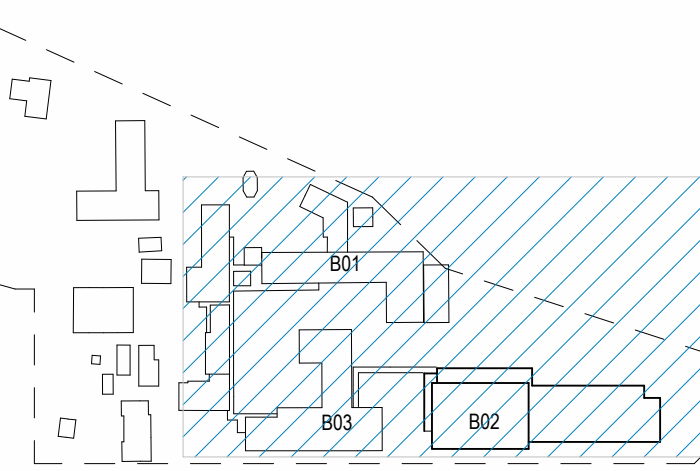
NO.	NAME
2	ACUTE SERVICES BUILDING

#### NEW EXTERNAL SERVICES

N.	NAME
LD1	FIRE PUMP ROOM
LD2	HYD PUMP ROOM
LD3	MECH ANCILLARY PLANT
A	GENERATOR
B	COLD WATER TANK
C	FIRE WATER TANK
D	COMBINED BOOSTER
E	TEMPORARY GENERATOR STAND
F	SUBSTATION
G	CHILLER

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#### KEY PLAN



REV DESCRIPTION DRN DATE

A ISSUED FOR TENDER NM 13/12/2023

#### GENERAL NOTES

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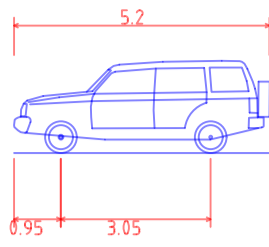
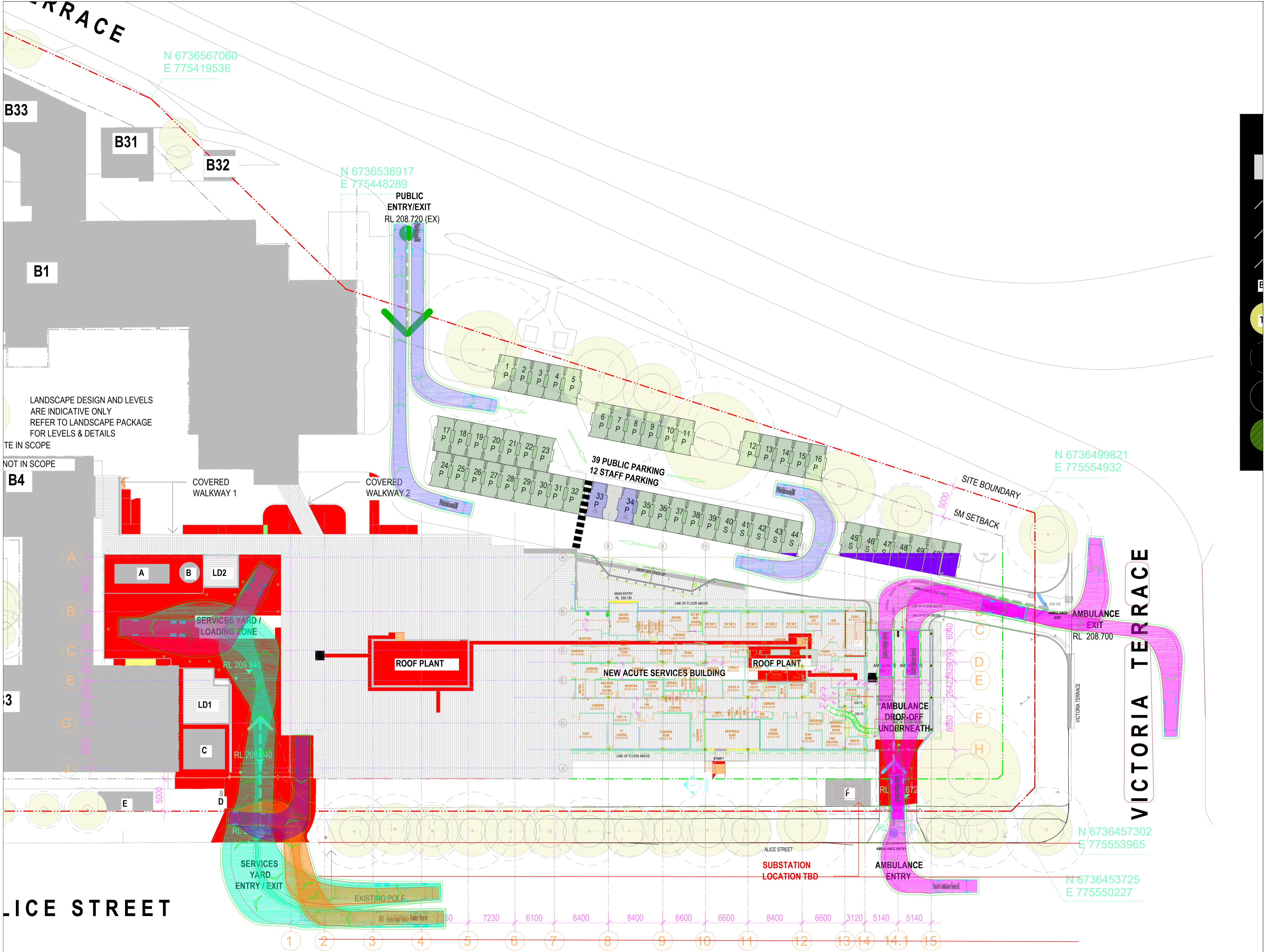
#### PROJECT TEAM

QUANTITY SURVEYOR	<b>mbm</b> LEVEL 5, 1 CHURCH SQUARE, SYDNEY NSW, 2000, AUSTRALIA PH: (02) 9237 1000   E: info@mbm.com.au
LANDSCAPE ARCHITECTS	<b>TaylorBrammer</b> 218 CHURCH ST, SYDNEY NSW, 2001, AUSTRALIA PH: (02) 9237 8855   E: Sydney@taylorbrammer.com.au
SERVICES ENGINEER	<b>JHA</b> LEVEL 20, 2 MARKET ST, SYDNEY NSW, 2000, AUSTRALIA PH: (02) 9437 1000   E: info@jha.com.au
STRUCTURAL & CIVIL ENGINEER	<b>NORTHROP</b> LEVEL 1, 215 PACIFIC HIGHWAY, CHARLESTOWN NSW, 2060, AUSTRALIA PH: (02) 4943 1777   E: nroscott@northrop.com.au   ABRN: 81 094 433 100
ARCHITECT	<b>STH</b> LEVEL 4, 88 YORK STREET, SYDNEY NSW, 2000, AUSTRALIA PH: (02) 9239 4000   E: info@sth.com.au   ABRN: 21 334 470 900
CONTRACTOR	<b>BESIX Watpac</b> LEVEL 24, 44 MARKET STREET, SYDNEY NSW, 2000, PH: (02) 8741 7400
PROJECT MANAGER	<b>savills</b> LEVEL 25, 1 FARRER PLACE, SYDNEY NSW, 2000, PH: (02) 912 8888
PRINCIPAL	<b>NSW GOVERNMENT Health Infrastructure</b>

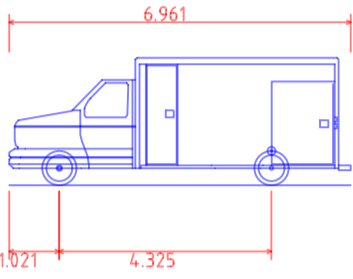
#### ISSUED FOR INFORMATION

PROJECT	<b>MOREE HOSPITAL REDEVELOPMENT</b>
	35 Alice St, Moree NSW 2400
DRAWING TITLE	<b>MANDATORY OPTION - PROPOSED SITE PLAN</b>
SCALE	1:500 @ A1
DOCUMENT NUMBER	<b>MHR-STH-AR-DR-SW-13XX02</b>
INTERNAL REFERENCE ONLY: STH PROJECT NO: 10649   STH SHT NO: 13XX02	

WORK IN PROGRESS



B99 Vehicle (Realistic min radius) (2004)  
Overall Length 5.200m  
Overall Width 1.940m  
Overall Body Height 1.878m  
Min Body Ground Clearance 0.272m  
Track Width 1.840m  
Lock-to-lock time 4.00s  
Curb to Curb Turning Radius 6.250m



Bariatric Ambulance (General)  
Overall Length 6.961m  
Overall Width 1.993m  
Overall Body Height 2.600m  
Min Body Ground Clearance 0.307m  
Track Width 1.993m  
Lock-to-lock time 4.00s  
Wall to Wall Turning Radius 7.650m

## **Appendix 2.    Parking Survey Results**

Moree Hospital Length of Stay Survey

Location: Hospital Car Park  
Date: 26th July 2022, Tuesday  
Time Surveyed: 8AM-6PM

SUMMARY			
ALL SPACES SURVEYED			
TOTAL CARS:	222	AVERAGE LENGTH OF STAY:	3.96 HRS/CAR
TOTAL SPACES:	176	AVERAGE OCCUPANCY (%):	50.0%
TOTAL CAR T/O:	1.64 CARS/BAY	PEAK OCCUPANCY (%):	59.1%
PATIENT & VISITOR CAR T/O:	2.02 CARS/BAY		
* Available spaces on 27/07/2022, Excl. Loading Zones, drop off zones, Ambulance etc.			

CAR SPACE ALOS SUMMARY	0-1 HR	1-2 HRS	2-3 HRS	3-4 HRS	4-5 HRS	5-6 HRS	6-7 HRS	7-8 HRS	8-9 HRS	9-10 HRS	Weighted Average	Turnover*
Car Park 1	1	6	1	0	2	3	2	2	0	3	5.20	1.43
Car Park 2	1	1	4	3	0	1	0	0	0	3	4.85	1.44
Car Park 3	47	14	4	8	4	1	7	3	1	0	2.55	2.34
Car Park 4	0	0	0	0	0	0	0	0	0	1	10.00	1.00
Car Park 5	3	1	1	0	0	1	1	4	0	0	4.82	1.22
Alice St	24	11	3	7	8	2	2	11	14	6	4.81	1.38
Total	76	33	13	18	14	8	12	20	15	13	3.96	1.64

\* Available spaces on 27/07/2022, Excl. Loading Zones, drop off zones, Ambulance etc.

ALOS SUMMARY BY BAY TYPES	0-1 HR	1-2 HRS	2-3 HRS	3-4 HRS	4-5 HRS	5-6 HRS	6-7 HRS	7-8 HRS	8-9 HRS	9-10 HRS	Weighted Average
UNRESTRICTED	61	24	7	15	12	3	9	14	15	6	3.84
DISABLED	10	1	0	0	0	0	0	0	0	0	1.09
STAFF	4	7	2	0	2	4	3	6	0	4	5.22
ON CALL	1	1	3	3	0	1	0	0	0	3	5.00
AUTHORISED ONLY	0	0	1	0	0	0	0	0	0	0	3.00
Total	76	33	13	18	14	8	12	20	15	13	3.96

\* Available spaces on 27/07/2022, Excl. Loading Zones, drop off zones, Ambulance etc.

PUBLIC SPACE ALOS SUMMARY	0-1 HR	1-2 HRS	2-3 HRS	3-4 HRS	4-5 HRS	5-6 HRS	6-7 HRS	7-8 HRS	8-9 HRS	9-10 HRS	Weighted Average
Car Park 1	0	0	0	0	0	0	0	0	0	0	N/A
Car Park 2	0	0	0	0	0	0	0	0	0	0	N/A
Car Park 3	47	14	4	8	4	1	7	3	1	0	2.55
Car Park 4	0	0	0	0	0	0	0	0	0	0	N/A
Car Park 5	0	0	0	0	0	0	0	0	0	0	N/A
Alice St	24	11	3	7	8	2	2	11	14	6	4.81
Total	71	25	7	15	12	3	9	14	15	6	3.67

\* Available spaces on 27/07/2022, Excl. Loading Zones, drop off zones, Ambulance etc.

PATIENT & VISITOR ALOS SUMMARY	0-1 HR	1-2 HRS	2-3 HRS	3-4 HRS	4-5 HRS	5-6 HRS	6-7 HRS	7-8 HRS	8-9 HRS	9-10 HRS	Weighted Average	Turnover*
Car Park 1	0	0	0	0	0	0	0	0	0	0	N/A	N/A
Car Park 2	0	0	0	0	0	0	0	0	0	0	N/A	N/A
Car Park 3	47	14	4	8	4	0	0	0	0	0	1.81	2.66
Car Park 4	0	0	0	0	0	0	0	0	0	0	N/A	N/A
Car Park 5	0	0	0	0	0	0	0	0	0	0	N/A	N/A
Alice St	24	11	3	7	8	0	0	0	0	0	2.32	1.49
Total	71	25	7	15	12	0	0	0	0	0	2.02	2.02

\* Available spaces on 27/07/2022, Excl. Loading Zones, drop off zones, Ambulance etc.

\*\* ASSUMED CARS WERE DRIVEN BY PATIENTS/VISITORS IF THEY STAYED NO MORE THAN 5 HOURS IN PUBLIC SPACES

\*\*\* Patient & Visitor turnover = No. of Patient/visitor cars / Public spaces used by Patient/visitor

STAFF ALOS SUMMARY	0-1 HR	1-2 HRS	2-3 HRS	3-4 HRS	4-5 HRS	5-6 HRS	6-7 HRS	7-8 HRS	8-9 HRS	9-10 HRS	Weighted Average
Car Park 1	1	6	1	0	2	3	2	2	0	3	5.20
Car Park 2	1	1	4	3	0	1	0	0	0	3	4.85
Car Park 3	0	0	0	0	0	1	7	3	1	0	7.33
Car Park 4	0	0	0	0	0	0	0	0	0	1	10.00
Car Park 5	3	1	1	0	0	1	1	4	0	0	4.82
Alice St	0	0	0	0	0	2	2	11	14	6	8.57
Total	5	8	6	3	2	8	12	20	15	13	6.72

\* Available spaces on 27/07/2022, Excl. Loading Zones, drop off zones, Ambulance etc.

\*\* ASSUMED CARS WERE DRIVEN BY STAFF IF THEY STAYED MORE THAN 5 HOURS IN PUBLIC SPACES + ALL CARS PARKED IN STAFF SPACES

Spaces used by Staff & Public	Capacity	Staff Use	Public Use	Empty
Car Park 1	19	14	0	5
Car Park 2	12	9	0	3
Car Park 3	39	9	29	1
Car Park 4	2	1	0	1
Car Park 5	11	9	0	2
Alice St	93	29	36	29

PARKING CAPACITY SUMMARY	NO. OF SPACES (Excl. Motorbike)	PUBLIC	STAFF&SPECIAL	PATIENT & VISITOR		STAFF & SPECIAL			
				UNRESTRICTED	DISABLED	STAFF	DISABLED	ON CALL	AUTHORISED ONLY
Car Park 1	19	0	19	0	0	19	0	0	0
Car Park 2	12	0	12	0	0	0	1	10	1
Car Park 3	39	39	0	37	2	0	0	0	0
Car Park 4	2	0	2	0	0	2	0	0	0
Car Park 5	11	0	11	0	0	11	0	0	0
On Campus Spaces	83	39	44	37	2	32	1	10	1
Alice St	93	93	0	91	2	0	0	0	0
Total Spaces Surveyed	176	132	44	128	4	32	1	10	1

\* Available formal spaces on 27/07/2022, Excl. Loading Zones, drop off zones, Ambulance etc.

OCCUPIED SPACES SUMMARY	Capacity	8:00-9:00	9:00-10:00	10:00-11:00	11:00-12:00	12:00-13:00	13:00-14:00	14:00-15:00	15:00-16:00	16:00-17:00	17:00-18:00
Car Park 1	19	9	9	9	9	11	11	10	10	13	13
Car Park 2	12	6	6	6	5	5	4	6	6	9	8
Car Park 3	39	29	25	29	25	25	22	28	21	11	12
Car Park 4	2	1	1	1	1	1	1	1	1	1	1
Car Park 5	11	7	6	7	6	7	7	5	5	1	2
On Campus Spaces	83	52	47	51	46	48	47	50	46	34	36
Alice St	93	32	45	53	56	48	48	48	42	30	21
Total	176	84	92	104	102	96	95	98	88	64	57

\* Available spaces on 27/07/2022, Excl. Loading Zones, drop off zones, Ambulance etc.

OCCUPIED BAYS SUMMARY - BAY TYPES	Capacity	8:00-9:00	9:00-10:00	10:00-11:00	11:00-12:00	12:00-13:00	13:00-14:00	14:00-15:00	15:00-16:00	16:00-17:00	17:00-18:00
UNRESTRICTED	128	59	69	78	80	73	70	74	62	40	33
DISABLED	5	2	1	4	1	0	0	2	1	1	0
STAFF	32	17	16	17	16	19	19	16	16	15	16
ON CALL	10	6	6	5	5	4	6	6	8	7	7
AUTHORISED ONLY	1	0	0	0	0	0	0	0	1	1	1
Total	176	84	92	104	102	96	95	98	88	64	57

\* Available spaces on 27/07/2022, Excl. Loading Zones, drop off zones, Ambulance etc.

OCCUPANCY SUMMARY	Capacity	8:00-9:00	9:00-10:00	10:00-11:00	11:00-12:00	12:00-13:00	13:00-14:00	14:00-15:00	15:00-16:00	16:00-17:00	17:00-18:00	AVERAGE OCCUPANCY	PEAK OCCUPANCY
Car Park 1	19	47.4%	47.4%	47.4%	47.4%	57.9%	57.9%	52.6%	52.6%	68.4%	68.4%	54.7%	68.4%
Car Park 2	12	50.0%	50.0%	41.7%	41.7%	33.3%	50.0%	50.0%	75.0%	66.7%	66.7%	52.5%	75.0%
Car Park 3	39	74.4%	64.1%	74.4%	64.1%	64.1%	56.4%	71.8%	53.8%	28.2%	30.8%	58.2%	74.4%
Car Park 4	2	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Car Park 5	11	63.6%	54.5%	63.6%	54.5%	63.6%	63.6%	45.5%	45.5%	9.1%	18.2%	48.2%	63.6%
On Campus Spaces	83	62.7%	56.6%	61.4%	55.4%	57.8%	56.6%	60.2%	55.4%	41.0%	43.4%	55.1%	62.7%
Alice St	93	34.4%	48.4%	57.0%	60.2%	51.6%	51.6%	51.6%	45.2%	32.3%	22.6%	45.5%	60.2%
Total	176	47.7%	52.3%	59.1%	58.0%	54.5%	54.0%	55.7%	50.0%	36.4%	32.4%	50.0%	59.1%

\* Available spaces on 27/07/2022, Excl. Loading Zones, drop off zones, Ambulance etc.

OCCUPANCY SUMMARY BY SPACE TYPE	Capacity	8:00-9:00	9:00-10:00	10:00-11:00	11:00-12:00	12:00-13:00	13:00-14:00	14:00-15:00	15:00-16:00	16:00-17:00	17:00-18:00	AVERAGE OCCUPANCY	PEAK OCCUPANCY
UNRESTRICTED	128	46.1%	53.9%	60.9%	62.5%	57.0%	54.7%	57.8%	48.4%	31.3%	25.8%	49.8%	62.5%
DISABLED	5	40.0%	20.0%	80.0%	20.0%	0.0%	0.0%	40.0%	20.0%	20.0%	0.0%	24.0%	80.0%
STAFF	32	53.1%	50.0%	53.1%	50.0%	59.4%	59.4%	50.0%	50.0%	46.9%	50.0%	52.2%	59.4%
ON CALL	10	60.0%	60.0%	50.0%	50.0%	40.0%	60.0%	60.0%	80.0%	70.0%	70.0%	60.0%	80.0%
AUTHORISED ONLY	1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%	30.0%	100.0%
Total	176	47.7%	52.3%	59.1%	58.0%	54.5%	54.0%	55.7%	50.0%	36.4%	32.4%	50.0%	59.1%

\* Available spaces on 27/07/2022, Excl. Loading Zones, drop off zones, Ambulance etc.

MOREE HOSPITAL  
SUMMARY OF OCCUPANCY LENGTH OF STAY SURVEY RESULTS

Moree Hospital Off Campus Occupancy Survey

Location: Hospital Car Park  
Date: 26th July 2022, Tuesday  
Time Surveyed: 10AM, 12PM & 2PM

				Occupied Bays			Occupancy %			
Street	From	Bay Type	Capacity	10:00	12:00	14:00	10:00	12:00	14:00	
Alice St	From Dover St to Hospital	Unrestricted	131	54	48	49	41.2%	36.6%	37.4%	
Dover St	From Alice St to Anne St	Unrestricted	34	7	7	7	20.6%	20.6%	20.6%	
Frome St	From Alice St to Anne St	Unrestricted	31	7	12	11	22.6%	38.7%	35.5%	
Balo St	From Alice St to Anne St	Unrestricted	49	6	4	6	12.2%	8.2%	12.2%	
Auburn St	From Alice St to Anne St	Unrestricted	42	1	0	0	2.4%	0.0%	0.0%	
Allambie Pl	From Auburn St to End	Unrestricted	20	2	3	2	10.0%	15.0%	10.0%	
Victoria Tce	From Edward St to Hospital	On Dirt	60	6	5	5	10.0%	8.3%	8.3%	
				367	83	79	80	22.6%	21.5%	21.8%

Off-Campus Car Park	Bay Type	Capacity	Occupied Bays			Occupancy %		
			10:00	12:00	14:00	10:00	12:00	14:00
Accomodation Car Park	Authorised Only	4	4	4	4	100.0%	100.0%	100.0%
Victoria Tce Office	Staff Only	2	2	2	2	100.0%	100.0%	100.0%

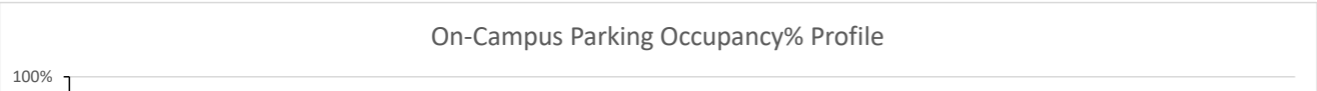
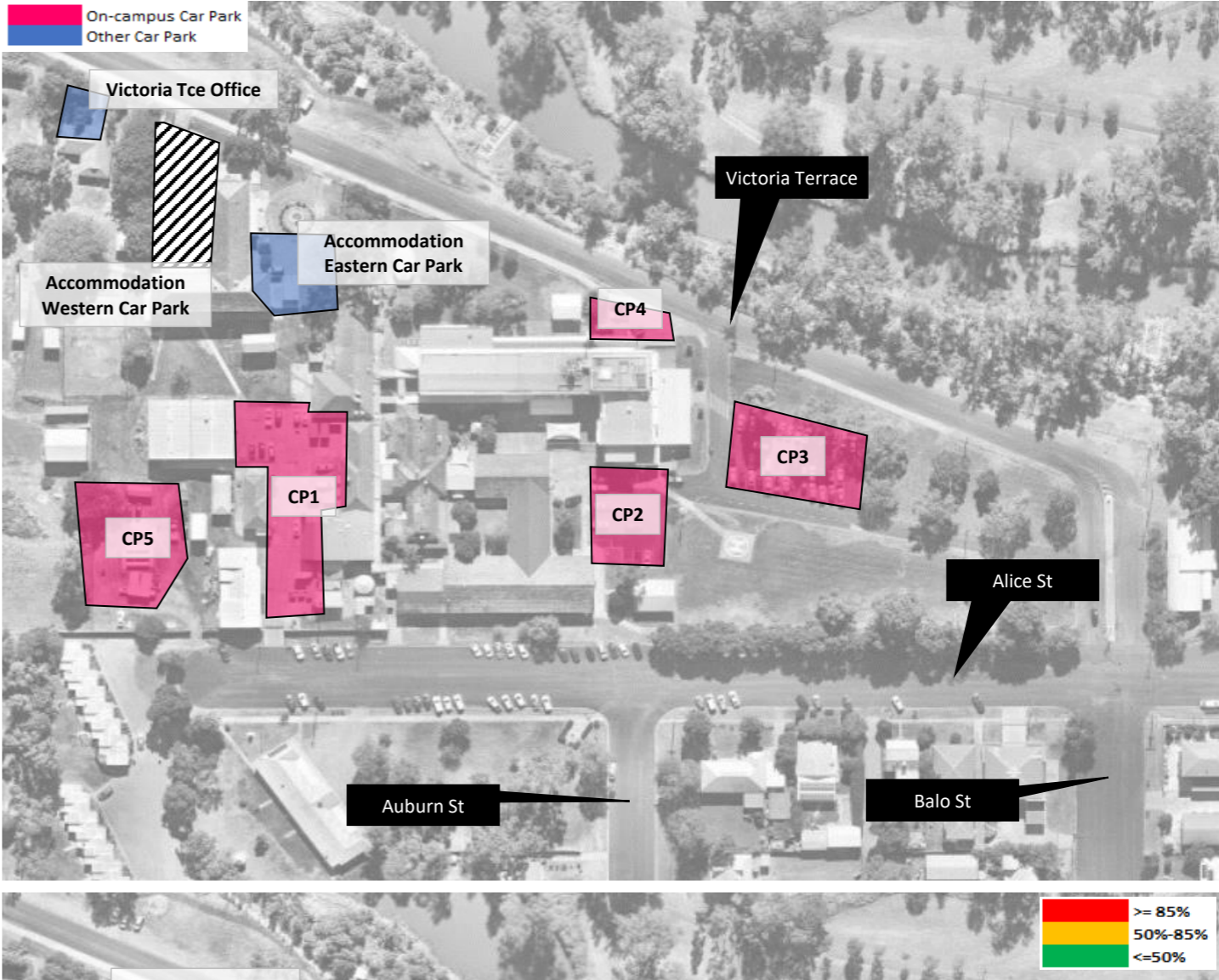
\* Accomodation Car Park - 4 formal spaces + 1 informal space  
\* Victoria Tce office - occupancy survey was not undertaken at this car park but assume it's fully occupied per Hospital's recommendation

Calculation					Occupied Bays			Occupancy %		
Street	Side	Section	Bay Type	Capacity	10:00	12:00	14:00	10:00	12:00	14:00
Alice St	Nth	From End to Auburn St	45 Degree	28	22	18	18	78.6%	64.3%	64.3%
Alice St	Sth	From End to Auburn St	45 Degree	23	19	18	17	82.6%	78.3%	73.9%
Alice St	Nth	From Auburn St to Victoria Tce	45 Degree	28	11	11	11	39.3%	39.3%	39.3%
Alice St	Sth	From Auburn St to Balo St	45 Degree	14	1	1	2	7.1%	7.1%	14.3%
Alice St	Nth	From Victoria Tce to Frome St	Unrestricted	2	0	0	0	0.0%	0.0%	0.0%
Alice St	Sth	From Balo St to Frome St	45 Degree	20	0	0	0	0.0%	0.0%	0.0%
Alice St	Nth	From Frome St to Dover St	Unrestricted	11	1	0	1	9.1%	0.0%	9.1%
Alice St	Sth	From Frome St to Dover St	Unrestricted	5	0	0	0	0.0%	0.0%	0.0%
Dover St	East	From Alice St to Anne St	Unrestricted	17	4	3	5	23.5%	17.6%	29.4%
Dover St	West	From Alice St to Anne St	Unrestricted	17	3	4	2	17.6%	23.5%	11.8%
Frome St	West	From Anne St to Alice St	Unrestricted	14	3	4	4	21.4%	28.6%	28.6%
Frome St	East	From Anne St to Alice St	Unrestricted	17	4	8	7	23.5%	47.1%	41.2%
Balo St	East	From Alice St to Anne St	Unrestricted	26	0	0	1	0.0%	0.0%	3.8%
Balo St	West	From Alice St to Anne St	Unrestricted	23	6	4	5	26.1%	17.4%	21.7%
Auburn St	West	From Anne St to Allambie Pl	Unrestricted	7	0	0	0	0.0%	0.0%	0.0%
Allambie Pl	Sth	From Auburn St to End	Unrestricted	10	1	1	0	10.0%	10.0%	0.0%
Allambie Pl	Nth	From Auburn St to End	Unrestricted	10	1	2	2	10.0%	20.0%	20.0%
Auburn St	West	From Allambie Pl to Alice St	Unrestricted	13	1	0	0	7.7%	0.0%	0.0%
Auburn St	East	From Anne St to Alice St	Unrestricted	22	0	0	0	0.0%	0.0%	0.0%
Victoria Tce	Nth		On Dirt	60	6	5	5	10.0%	8.3%	8.3%
				367	83	79	80	22.6%	21.5%	21.8%

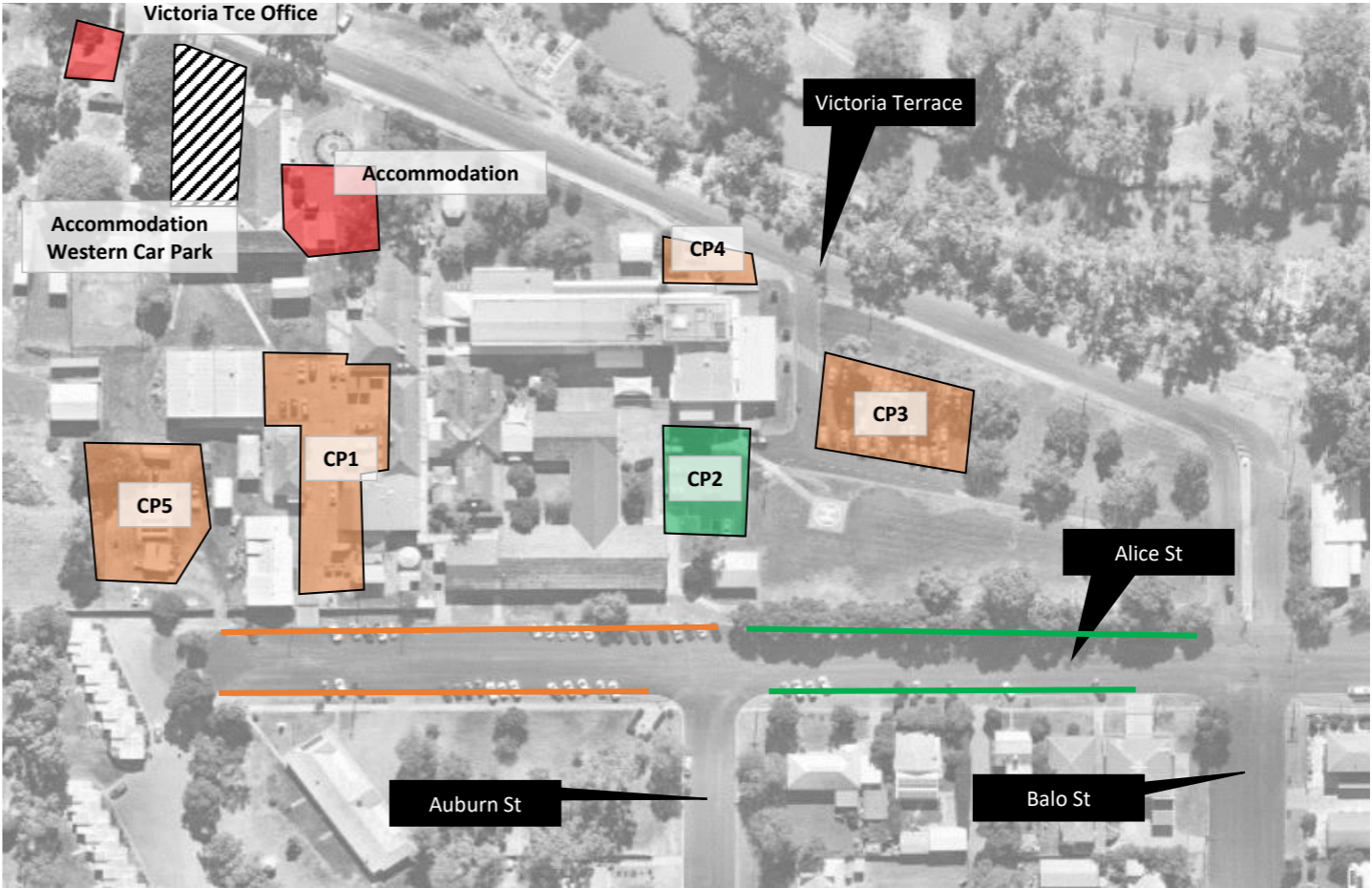
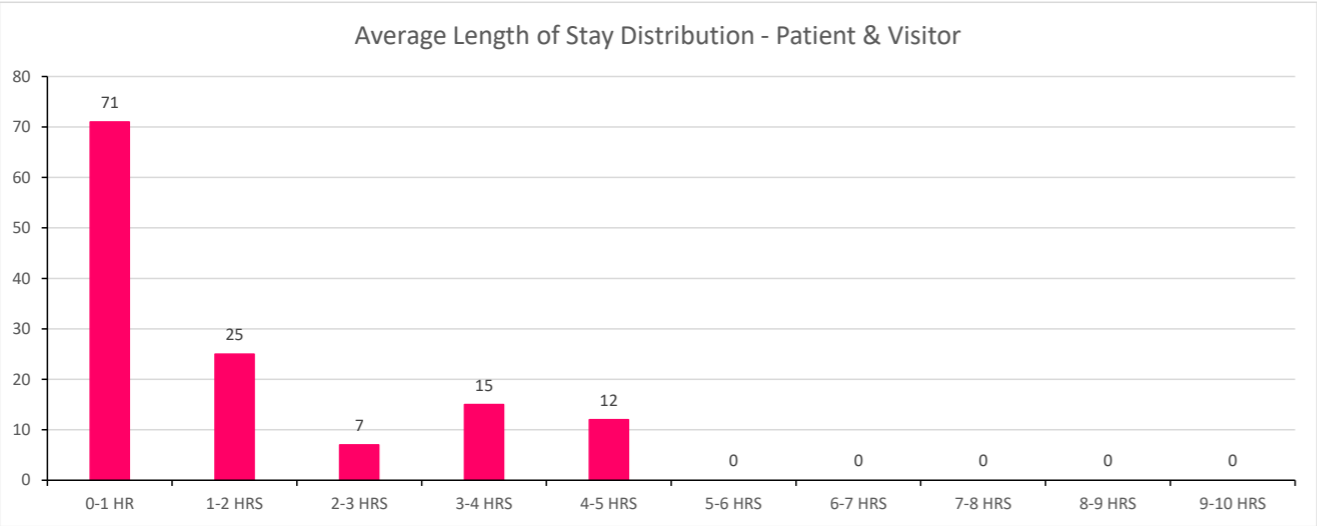
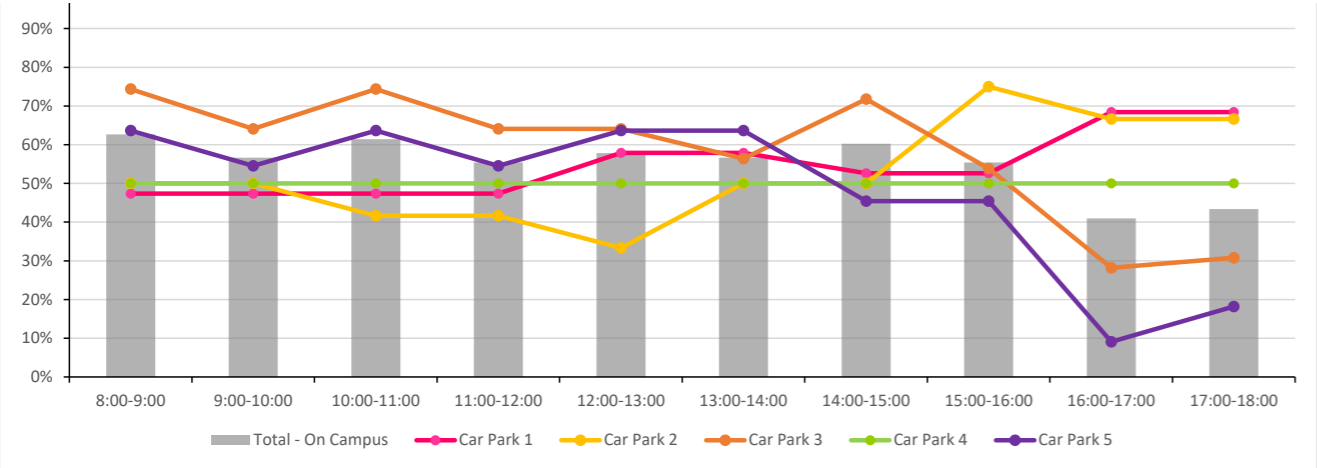
MOREE HOSPITAL  
SUMMARY OF OCCUPANCY LENGTH OF STAY SURVEY RESULTS

	Capacity	8:00-9:00		9:00-10:00		10:00-11:00		11:00-12:00		12:00-13:00		13:00-14:00		14:00-15:00		15:00-16:00		16:00-17:00		17:00-18:00	
On-Campus Car Park		Occ. #	Occ. %	Occ. #	Occ. %	Occ. #	Occ. %	Occ. #	Occ. %	Occ. #	Occ. %	Occ. #	Occ. %	Occ. #	Occ. %	Occ. #	Occ. %	Occ. #	Occ. %	Occ. #	Occ. %
Car Park 1	19	9	47.4%	9	47.4%	9	47.4%	9	47.4%	11	57.9%	11	57.9%	10	52.6%	10	52.6%	13	68.4%	13	68.4%
Car Park 2	12	6	50.0%	6	50.0%	5	41.7%	5	41.7%	4	33.3%	6	50.0%	6	50.0%	9	75.0%	8	66.7%	8	66.7%
Car Park 3	39	29	74.4%	25	64.1%	29	74.4%	25	64.1%	25	64.1%	22	56.4%	28	71.8%	21	53.8%	11	28.2%	12	30.8%
Car Park 4	2	1	50.0%	2	100.0%	1	50.0%	1	50.0%	1	50.0%	1	50.0%	1	50.0%	1	50.0%	1	50.0%	1	50.0%
Car Park 5	11	7	63.6%	6	54.5%	7	63.6%	6	54.5%	7	63.6%	7	63.6%	5	45.5%	5	45.5%	1	9.1%	2	18.2%
Total - On Campus Car Park	83	52	62.7%	48	57.8%	51	61.4%	46	55.4%	48	57.8%	47	56.6%	50	60.2%	46	55.4%	34	41.0%	36	43.4%
Accommodation	4					4	100.0%	4	100.0%	4	100.0%										
Victoria Tce Car Park	2					2	100.0%	2	100.0%	2	100.0%										
Total - Other Car Park	6					6	100.0%	6	100.0%	6	100.0%										
Total - Hospital Related Car Park	89					57	64.0%	52	58.4%	54	60.7%										

	Capacity	10:00-11:00		12:00-13:00		14:00-15:00	
On-Street Parking		Occ. #	Occ. %	Occ. #	Occ. %	Occ. #	Occ. %
Alice St	131	54	41.2%	48	36.6%	49	37.4%
Dover St	34	7	20.6%	7	20.6%	7	20.6%
Frome St	31	7	22.6%	12	38.7%	11	35.5%
Balo St	49	6	12.2%	4	8.2%	6	12.2%
Auburn St	42	1	2.4%	0	0.0%	0	0.0%
Allambie Pl	20	2	10.0%	3	15.0%	2	10.0%
Victoria Tce	60	6	10.0%	5	8.3%	5	8.3%
Total Off Campus on-street Parking	367	83	22.6%	79	21.5%	80	21.8%



MOREE HOSPITAL  
SUMMARY OF OCCUPANCY LENGTH OF STAY SURVEY RESULTS



## **Appendix 3.     Parking Demand**

<div> <div>MOREE HOSPITAL</div> <div>PARKING DEMAND DRIVERS AND ASSUMPTIONS</div> </div>													
				CURRENT ASSUMPTIONS									
MOREE HOSPITAL		Notes	Current (2022)	Notes		% drivers requiring a car space	Notes	People/ car	Notes	% park in hospital	Notes	T/over	Notes
STAFF (CLINICAL)	Weekdays												
	Day Shift		54	1		96%	7	1.02	7	92%	7	1	6
	Afternoon		12	1		100%	9	1.00	7	100%	9	1	6
	Night		8	1		100%	9	1.00	7	100%	9	1	6
STAFF (ADMINISTRATION)	Weekday		12	1		96%	7	1.02	7	92%	7	1	6
AFTERNOON STAFF CHANGEOVER			80%	1									
VMO's	Weekday		2	1		100%	10	1.00	10	100%	10	3	6
RETAIL STAFF (catering etc)	Weekdays		0	1		96%	7	1.02	7	92%	7	1	6
OUTPATIENTS - WEEKDAYS	Occasions of Service per annum		25,000	1,2									
	Adjustment (for two or more OOS per patient)		1.1	3									
	Days per annum		251	4									
	Outpatients per day		91			76%	8	1.00	11	100%	6	2.02	7
VISITORS - WEEKDAYS	Total overnight beds		40	1									
	Bed occupancy		25%	1									
	Average number of inpatients		10										
	Visitors per patient average		2	6									
	Total visitors per day		20			76%	8	1.31	8	100%	6	2.02	7
VISITORS DURING PEAK HOURS			80%	1									
EMERGENCY DEPT	Daily presentations		31	1		76%	8	1.00	11	100%	12	2.02	7
EDUCATION & TRAINING	People on site on weekday		1	1		96%	7	1.02	7	92%	7	1	6
FLEET VEHICLES	Weekdays		30	1		100%	13	1	13	100%	13	3	6
VOLUNTEERS	Weekdays		2	5		96%	7	1.02	7	92%	7	1	6
CONSULTING SUITES													
STAFF	Weekdays		2	1		96%	7	1.02	7	92%	7	1	6
OUTPATIENTS	Outpatients per Staff per day		4	6									
	Total outpatients per day		8			76%	8	1.00	11	100%	6	2.02	7

NOTES	
1	Per Hospital data
2	Per the Hospital, excl. Aboriginal wellness, Wound control, Womens Health, Podiatry, Paediatric, Mental Health, Psychiatry, Drug n Alcohol, CAMS, Foot Clinic, Audiometry, Dietician.
3	Per the Hospital; incl. all community health outpatient events
4	Assume 260 weekdays, less 9 public holidays
5	Exclude volunteers; per Hopsital data, Ladies Auxilury volunteers come to the Hopsital monthly
6	ptc. Assumption
7	Per surveys at the Hospital
8	Per intercept surveys at the Hospital
9	Assume afternoon and night shift staff 100% drive to work and 1 staff per car for safety reasons
10	Normal that VMO's drive and park in the car park, as they have allocated spaces. Usually travel alone also
11	Outpatients people per car more than 1, but only 1 likely to be the outpatient
12	In emergency situation, drivers more concerned about patient and will use most convenient/quickest mode share (car) and will park in hospital car park
13	Fleet vehicles likely to come and go however assume a space turnover of 1 and 100% park on site.

MOREE HOSPITAL  
CURRENT BASE CASE ESTIMATE OF PARKING DEMAND

Notes	Base Estimate (Current)	People	% Cars requiring a car space	People per car (a)	Total cars per day	Turnover	Peak spaces required
	WEEKDAYS						
B	STAFF						
	CLINICAL & ADMINISTRATION STAFF						
	Day Shift & Administration	66	96%	1.02	62	1.00	62
	Afternoon shift	12					
	Afternoon shift arriving before day shift leave (i.e. shift changeover allowance 80%)	10	100%	1.00	10	1.00	10
C	Night Shift	8	100%	1.00	8	1.00	
	VMO's	2	100%	1.00	2	3.00	1
							73
D	PUBLIC						
	OUTPATIENTS	91	76%	1.00	69	2.02	35
	VISITORS	20					
	Visitors during peak hours 8am - 6pm (80%)	16	76%	1.31	9	2.02	5
B	EMERGENCY DEPARTMENT PRESENTATIONS	31					
	Emergency Dept presentations during peak hours 8am - 6pm (73.65%)	23	76%	1.00	17	2.02	9
							49
	LHD CONTROLLED - FLEET VEHICLES	30	100%	1.00	30	3.00	10
	OTHER						
	EDUCATION & TRAINING	1	96%	1.02	1	1.00	1
	VOLUNTEERS	2	96%	1.02	2	1.00	2
	RETAIL STAFF	0	96%	1.02	0	1.00	0
							3
	CONSULTING SUITES						
	STAFF	2	96%	1.02	2	1.00	2
	OUTPATIENTS	8	76%	1.00	6	2.02	4
							6
A	TOTAL WEEKDAYS						141
	CURRENT PARKING SUPPLY - HOSPITAL RELATED CAR PARKS						89
	CURRENT PARKING UNCONSTRIANED SHORTFALL						-52
	CURRENT OFF CAMPUS ON STREET PARKING SUPPLY WITHIN ZOI (400m) 70% AVAILABLE TO HOSPITAL USERS						257
	CURRENT PARKING OVERALL SURPLUS						205

Notes

A	Per ptc. Survey, 83 on campus formal spaces + 4 formal spaces in the Accommodation Car Park + 2 formal spaces in the Victoria Tce Office	89
B	Per Hospital data	
C	Night shift staff - assume 0% arrive during peak hours	
D	No data provided by the Hospital: assume 80% per Glen Innes Hospital's data	
E	During our surveys, we observed 6 vehicles parked in informal spaces at peak hour	

Verification check against observed peak occupancy:	
Estimated peak demand	141
Observed peak occupancy - on campus (Wed 10:00-11:00)	51
Observed informal parking on campus (Wed 10:00-11:00)	6
Observed peak occupancy - Accommodation (Wed 10:00-11:00)	4
Assumed peak occupancy - Victoria Tce Office	2
Observed peak occupancy RPZ on street (Wed 10:00) (assume 70% used by Moree Hospital users)	58
	121
Difference	20

## **Appendix 4. Traffic Survey Data**

100

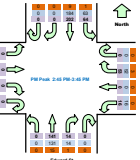
## Intersection of Victoria Terrace and Edward St, Moree

Survey Period	AM	7:00 AM-10:00 AM
	PM	2:30 PM-5:30 PM
Traffic Peak	AM	7:45 AM-8:45 AM
	PM	2:45 PM-3:45 PM

[illegible]

Note: Site sketch is for illustrative traffic flows. Direction is indicative only, drawings is not to scale and not an exact streets configuration.

Graphic	Edward III	Edward III
Total		

[illegible]

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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[illegible]

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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## Intersection of Alice St and Victoria Terrace, Moree

Date:	Wed 27/07/22
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North:	Victoria Terrace
East:	Alice St
South:	Bald St
West:	Alice St

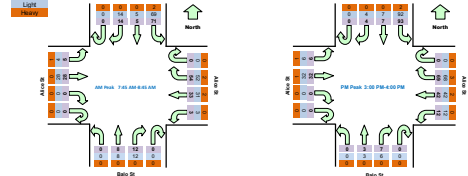
East:	Alice St	Period	PM: 2:30 PM-6:30 PM
South:	Bald St	Traffic	AM: 7:45 AM-8:45 AM

Region	Year	Population	Area	Population Density
North America	1990	230,000,000	24,000,000 km <sup>2</sup>	9.6
South America	1990	230,000,000	17,000,000 km <sup>2</sup>	13.5
Europe	1990	510,000,000	10,000,000 km <sup>2</sup>	51.0
Asia	1990	3,200,000,000	44,000,000 km <sup>2</sup>	72.7
Africa	1990	530,000,000	30,000,000 km <sup>2</sup>	17.7
Oceania	1990	35,000,000	14,000,000 km <sup>2</sup>	2.5

Period Start

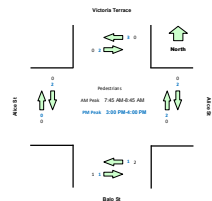
Peak Time		North Approach Victoria Terrace				East Approach Alice St				South Approach Ballo St				West Approach Alice St				Peak total
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	
7:45	8:45	0	14	5	71	0	54	33	3	0	12	8	0	0	0	28	5	233
15:00	16:00	0	4	7	93	0	69	42	12	0	3	0	0	0	0	32	6	275

	0	0	0	2		0	0	0	
Light	0	0	0	2		0	0	0	
Heavy	0	14	0	00		0	4	7	



Time
Period Start Period End

Peak Time		North Approach Victoria Terrace		East Approach Alice St		South Approach Ballo St		West Approach Alice St		Peak hour total
Period Start/Period End		Westbound	Eastbound	Southbound	Northbound	Westbound	Eastbound	Southbound	Northbound	
7:45 - 8:45		0	0	0	0	2	1	0	0	3
15:00 - 16:00		3	2	2	2	1	1	2	0	13



Time
Period Start

[illegible]

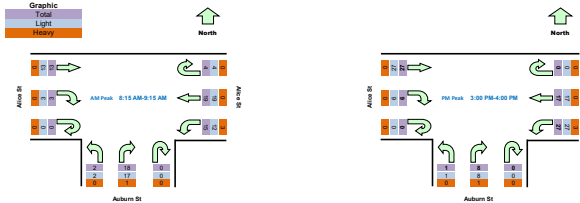
Intersection of Alice St and Auburn St, Moree

GPS	-39.471289, 149.840220	Survey	AM: 7:30 AM-10:00 AM
Date:	1 Wed 2/2/22	Period	PM: 2:30 PM-4:30 PM
Weather:	Fine	Traffic	AM: 8:15 AM-9:15 AM
Suburban:	Moree	Peak	PM: 3:00 PM-4:00 PM
Customer:	N/A		

Time		East Approach Alice St			South Approach Auburn St			West Approach Alice St			Hourly Total	
Period Start	Period End	U	WB	L	U	R	L	U	R	EB	Hour	Peak
7:00	7:15	1	3	2	0	0	1	0	0	0	34	
7:15	7:30	0	0	1	0	1	0	0	0	0	37	
7:30	7:45	0	1	1	0	0	3	0	0	0	55	
7:45	8:00	0	9	4	0	4	2	0	0	1	70	766
8:00	8:15	1	2	2	0	3	0	0	0	2	60	
8:15	8:30	1	8	1	0	5	1	0	1	3	74	Peak
8:30	8:45	1	4	3	0	8	1	0	0	3	70	
8:45	9:00	1	1	4	0	2	0	0	0	2	64	
9:00	9:15	1	6	7	0	3	0	0	2	5	68	
9:15	9:30	0	5	3	0	3	2	0	0	3	50	
9:30	9:45	0	3	0	0	3	3	0	2	3	20	
9:45	10:00	2	3	3	0	3	1	0	0	2	20	
14:30	14:45	1	4	5	0	1	0	0	1	3	67	
14:45	15:00	0	5	2	0	2	0	0	1	3	79	835
15:00	15:15	0	5	3	0	2	0	0	1	7	86	Peak
15:15	15:30	0	2	8	0	2	0	0	2	7	86	Peak
15:30	15:45	0	4	11	0	0	0	0	2	10	76	
15:45	16:00	0	6	5	0	4	1	0	1	3	75	
16:00	16:15	1	5	3	0	2	1	0	0	6	68	
16:15	16:30	0	1	3	0	1	1	0	0	5	65	
16:30	16:45	0	2	6	1	3	0	0	5	9	62	
16:45	17:00	0	0	5	0	1	0	0	3	4	42	
17:00	17:15	0	0	8	0	3	1	0	0	3	35	
17:15	17:30	0	0	3	0	4	0	0	0	1	26	
17:30	17:45	0	1	2	1	1	0	0	0	1	30	
17:45	18:00	0	1	1	0	0	0	0	2	2	20	
18:00	18:15	0	0	4	0	1	0	0	0	1	20	
18:15	18:30	0	0	5	0	7	0	0	0	0	20	

Peak Time		East Approach Alice St			South Approach Auburn St			West Approach Alice St			Peak total	
Period Start	Period End	U	WB	L	U	R	L	U	R	EB	Hour	Peak
8:15	9:15	4	19	15	0	18	2	0	3	13	74	
15:00	16:00	0	17	27	0	8	1	0	6	27	86	

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

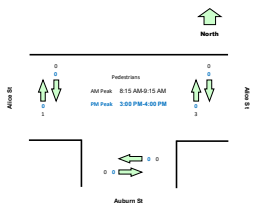


Time		East Approach Alice St		South Approach Auburn St		West Approach Alice St		Hourly Total	
Period Start	Period End	Southbound	Northbound	Westbound	Eastbound	Southbound	Northbound	Hour	Peak
7:00	7:15	0	0	0	0	0	0	2	
7:15	7:30	0	0	0	0	0	0	4	
7:30	7:45	0	0	0	1	0	0	7	
7:45	8:00	0	0	1	0	0	0	6	
8:00	8:15	0	0	1	1	0	0	5	
8:15	8:30	0	3	0	0	0	0	4	
8:30	8:45	0	0	0	3	0	0	1	
8:45	9:00	0	0	0	0	0	0	1	
9:00	9:15	0	0	0	0	0	1	1	
9:15	9:30	0	0	0	0	0	0	0	
9:30	9:45	0	0	0	0	0	0	0	
9:45	10:00	0	0	0	0	0	0	0	
14:30	14:45	0	3	0	0	0	0	3	
14:45	15:00	0	0	0	0	0	0	0	
15:00	15:15	0	0	0	0	0	0	0	
15:15	15:30	0	0	0	0	0	0	0	
15:30	15:45	0	0	0	0	0	0	0	
15:45	16:00	0	0	0	0	0	0	2	
16:00	16:15	0	0	0	0	0	0	3	
16:15	16:30	0	0	0	0	0	0	3	
16:30	16:45	0	2	0	0	0	0	3	
16:45	17:00	0	0	0	0	1	0	2	
17:00	17:15	0	0	0	0	0	0	1	
17:15	17:30	0	0	0	0	0	0	2	
17:30	17:45	0	0	0	1	0	0	2	
17:45	18:00	0	0	0	0	0	0	0	
18:00	18:15	0	0	0	0	1	0	0	
18:15	18:30	0	0	0	0	0	0	0	

Peak Time		East Approach Alice St		South Approach Auburn St		West Approach Alice St		Peak total	
Period Start	Period End	Southbound	Northbound	Westbound	Eastbound	Southbound	Northbound	Hour	Peak
8:15	9:15	0	3	0	0	0	1	4	
15:00	16:00	0	0	0	0	0	0	0	

Time		East Approach Alice St		South Approach Auburn St		West Approach Alice St		Hourly Total	
Period Start	Period End	Southbound	Northbound	Westbound	Eastbound	Southbound	Northbound	Hour	Peak
7:00	7:15	0	0	0	0	0	0	0	
7:15	7:30	0	0	0	0	0	0	0	
7:30	7:45	0	0	0	0	0	0	0	
7:45	8:00	0	0	0	0	0	0	0	
8:00	8:15	0	0	0	0	0	0	2	
8:15	8:30	0	0	0	0	0	0	3	
8:30	8:45	0	0	0	0	0	0	3	
8:45	9:00	2	0	0	0	0	0	3	
9:00	9:15	0	1	0	0	0	0	2	
9:15	9:30	0	0	0	0	0	0	0	
9:30	9:45	0	0	0	0	0	0	0	
9:45	10:00	1	0	0	0	0	0	0	
14:30	14:45	0	0	0	0	0	0	0	
14:45	15:00	0	0	0	0	0	0	2	
15:00	15:15	1	1	0	0	0	0	2	
15:15	15:30	0	0	0	0	0	0	0	
15:30	15:45	0	0	0	0	0	0	0	
15:45	16:00	0	0	0	0	0	0	1	
16:00	16:15	0	0	0	0	0	0	1	
16:15	16:30	0	0	0	0	0	0	1	
16:30	16:45	0	1	0	0	0	0	1	
16:45	17:00	0	0	0	0	0	0	1	
17:00	17:15	0	0	0	0	0	0	1	
17:15	17:30	0	0	0	0	0	0	2	
17:30	17:45	0	1	0	0	0	0	2	
17:45	18:00	0	0	0	0	0	0	0	
18:00	18:15	0	0	0	0	0	0	1	
18:15	18:30	0	0	0	0	0	0	0	

Peak Time		East Approach Alice St		South Approach Auburn St		West Approach Alice St		Peak total	
Period Start	Period End	Southbound	Northbound	Westbound	Eastbound	Southbound	Northbound	Hour	Peak
8:15	9:15	2	1	0	0	0	0	3	
15:00	16:00	1	1	0	0	0	0	2	



## **Appendix 5. SIDRA Output**

# MOVEMENT SUMMARY

Site: 101 [1A.1 Victoria Terrace/ Edward St (Site Folder: 1A Existing AM Peak)]

Network: N101 [1A Existing AM Peak  
(Network Folder: General)]

Existing AM Peak  
07:45-08:45  
27/07/22  
Site Category: Existing Design  
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV ] %	[ Total veh/h	HV ] %				[ Veh. veh	Dist ] m				
South: Edward St (S)														
2	T1	152	8.3	152	8.3	0.086	0.1	LOS A	0.0	0.2	0.04	0.02	0.04	59.4
3	R2	6	0.0	6	0.0	0.086	6.4	LOS A	0.0	0.2	0.04	0.02	0.04	58.4
Approach		158	8.0	158	8.0	0.086	0.3	NA	0.0	0.2	0.04	0.02	0.04	59.4
East: Victoria Terrace (E)														
4	L2	11	0.0	11	0.0	0.057	6.1	LOS A	0.1	0.6	0.35	0.64	0.35	50.4
6	R2	43	4.9	43	4.9	0.057	7.2	LOS A	0.1	0.6	0.35	0.64	0.35	51.2
Approach		54	3.9	54	3.9	0.057	7.0	LOS A	0.1	0.6	0.35	0.64	0.35	51.0
North: Edward St (N)														
7	L2	97	1.1	97	1.1	0.148	5.6	LOS A	0.0	0.0	0.00	0.21	0.00	55.6
8	T1	179	5.9	179	5.9	0.148	0.0	LOS A	0.0	0.0	0.00	0.21	0.00	57.1
Approach		276	4.2	276	4.2	0.148	2.0	NA	0.0	0.0	0.00	0.21	0.00	56.7
All Vehicles		487	5.4	487	5.4	0.148	2.0	NA	0.1	0.6	0.05	0.20	0.05	56.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: S:\ptc. - Projects\2022 PROJECTS\0384\_SVLS\_SmlHsplMoree\03 WIP\07 SIDRA\0384 ptc Moree SIDRA.sip9

# MOVEMENT SUMMARY

Site: 201 [1A.2 Victoria Terrace/Alice St (Site Folder: 1A Existing AM Peak)]

Network: N101 [1A Existing AM Peak  
(Network Folder: General)]

Existing AM Peak  
07:45-08:45  
27/07/22  
Site Category: Existing Design  
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV ] %	[ Total veh/h	HV ] %				[ Veh. veh	Dist ] m				
South: Balo St (S)														
1	L2	1	0.0	1	0.0	0.022	5.6	LOS A	0.0	0.2	0.22	0.56	0.22	44.6
2	T1	8	0.0	8	0.0	0.022	4.6	LOS A	0.0	0.2	0.22	0.56	0.22	44.6
3	R2	13	0.0	13	0.0	0.022	6.4	LOS A	0.0	0.2	0.22	0.56	0.22	44.6
Approach		22	0.0	22	0.0	0.022	5.7	LOS A	0.0	0.2	0.22	0.56	0.22	44.6
East: Alice St (E)														
4	L2	3	0.0	3	0.0	0.054	5.6	LOS A	0.1	0.7	0.11	0.36	0.11	48.5
5	T1	35	6.1	35	6.1	0.054	0.1	LOS A	0.1	0.7	0.11	0.36	0.11	39.5
6	R2	57	3.7	57	3.7	0.054	5.6	LOS A	0.1	0.7	0.11	0.36	0.11	39.5
Approach		95	4.4	95	4.4	0.054	3.6	NA	0.1	0.7	0.11	0.36	0.11	40.3
North: Victoria Terrace (N)														
7	L2	75	2.8	75	2.8	0.067	5.7	LOS A	0.1	0.8	0.09	0.55	0.09	49.9
8	T1	5	0.0	5	0.0	0.067	4.6	LOS A	0.1	0.8	0.09	0.55	0.09	51.9
9	R2	15	0.0	15	0.0	0.067	6.1	LOS A	0.1	0.8	0.09	0.55	0.09	50.5
Approach		95	2.2	95	2.2	0.067	5.7	LOS A	0.1	0.8	0.09	0.55	0.09	50.1
West: Alice St (W)														
10	L2	5	20.0	5	20.0	0.019	5.8	LOS A	0.0	0.0	0.01	0.10	0.01	54.7
11	T1	29	0.0	29	0.0	0.019	0.0	LOS A	0.0	0.0	0.01	0.10	0.01	56.9
12	R2	1	0.0	1	0.0	0.019	5.5	LOS A	0.0	0.0	0.01	0.10	0.01	53.1
Approach		36	2.9	36	2.9	0.019	1.0	NA	0.0	0.0	0.01	0.10	0.01	56.5
All Vehicles		247	3.0	247	3.0	0.067	4.2	NA	0.1	0.8	0.10	0.42	0.10	48.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 301 [1A.3 Alice & Auburn (Site Folder: 1A Existing AM Peak)]

Network: N101 [1A Existing AM Peak (Network Folder: General)]

Existing AM Peak  
07:45-08:45  
27/07/22  
Site Category: Existing Design  
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV ] %	[ Total veh/h	HV ] %				[ Veh. veh	Dist ] m				
South: Auburn St (S)														
1	L2	4	0.0	4	0.0	0.020	5.6	LOS A	0.0	0.2	0.09	0.57	0.09	42.3
3	R2	21	0.0	21	0.0	0.020	5.6	LOS A	0.0	0.2	0.09	0.57	0.09	38.6
Approach		25	0.0	25	0.0	0.020	5.6	LOS A	0.0	0.2	0.09	0.57	0.09	39.5
East: Alice St (E)														
4	L2	11	10.0	11	10.0	0.019	5.7	LOS A	0.0	0.0	0.00	0.18	0.00	49.0
5	T1	24	4.3	24	4.3	0.019	0.0	LOS A	0.0	0.0	0.00	0.18	0.00	54.7
Approach		35	6.1	35	6.1	0.019	1.7	NA	0.0	0.0	0.00	0.18	0.00	52.7
West: Alice St (W)														
11	T1	9	11.1	9	11.1	0.006	0.0	LOS A	0.0	0.0	0.02	0.06	0.02	55.2
12	R2	1	0.0	1	0.0	0.006	5.5	LOS A	0.0	0.0	0.02	0.06	0.02	51.2
Approach		11	10.0	11	10.0	0.006	0.6	NA	0.0	0.0	0.02	0.06	0.02	54.3
All Vehicles		71	4.5	71	4.5	0.020	2.9	NA	0.0	0.2	0.04	0.30	0.04	48.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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## MOVEMENT SUMMARY

Site: 101 [1B.1 Victoria Terrace/ Edward St (Site Folder: 1B Existing PM Peak)]

Network: N101 [1B Existing PM Peak  
(Network Folder: General)]

Existing AM Peak

07:45-08:45

27/07/22

Site Category: Existing Design

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV ] %	[ Total veh/h	HV ] %				[ Veh. veh	Dist ] m				
South: Edward St (S)														
2	T1	148	7.1	148	7.1	0.090	0.1	LOS A	0.0	0.3	0.08	0.06	0.08	58.7
3	R2	15	0.0	15	0.0	0.090	6.5	LOS A	0.0	0.3	0.08	0.06	0.08	56.6
Approach		163	6.5	163	6.5	0.090	0.7	NA	0.0	0.3	0.08	0.06	0.08	58.6
East: Victoria Terrace (E)														
4	L2	17	0.0	17	0.0	0.077	6.3	LOS A	0.1	0.7	0.37	0.65	0.37	50.3
6	R2	56	1.9	56	1.9	0.077	7.3	LOS A	0.1	0.7	0.37	0.65	0.37	51.2
Approach		73	1.4	73	1.4	0.077	7.0	LOS A	0.1	0.7	0.37	0.65	0.37	51.0
North: Edward St (N)														
7	L2	67	1.6	67	1.6	0.152	5.6	LOS A	0.0	0.0	0.00	0.14	0.00	56.8
8	T1	213	8.9	213	8.9	0.152	0.0	LOS A	0.0	0.0	0.00	0.14	0.00	57.9
Approach		280	7.1	280	7.1	0.152	1.4	NA	0.0	0.0	0.00	0.14	0.00	57.7
All Vehicles		516	6.1	516	6.1	0.152	2.0	NA	0.1	0.7	0.08	0.19	0.08	56.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 201 [1B.2 Victoria Terrace/Alice St (Site Folder: 1B Existing PM Peak)]

Network: N101 [1B Exsiting PM Peak (Network Folder: General)]

Existing AM Peak

07:45-08:45

27/07/22

Site Category: Existing Design

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV ] %	[ Total veh/h	HV ] %				[ Veh. veh	Dist ] m				
South: Balo St (S)														
1	L2	1	0.0	1	0.0	0.024	5.6	LOS A	0.0	0.2	0.24	0.57	0.24	44.3
2	T1	8	0.0	8	0.0	0.024	4.7	LOS A	0.0	0.2	0.24	0.57	0.24	44.3
3	R2	14	7.7	14	7.7	0.024	6.8	LOS A	0.0	0.2	0.24	0.57	0.24	43.8
Approach		23	4.5	23	4.5	0.024	6.0	LOS A	0.0	0.2	0.24	0.57	0.24	44.0
East: Alice St (E)														
4	L2	12	0.0	12	0.0	0.064	5.6	LOS A	0.1	0.8	0.11	0.39	0.11	48.0
5	T1	36	0.0	36	0.0	0.064	0.1	LOS A	0.1	0.8	0.11	0.39	0.11	38.7
6	R2	67	1.6	67	1.6	0.064	5.6	LOS A	0.1	0.8	0.11	0.39	0.11	38.7
Approach		115	0.9	115	0.9	0.064	3.9	NA	0.1	0.8	0.11	0.39	0.11	40.7
North: Victoria Terrace (N)														
7	L2	95	1.1	95	1.1	0.073	5.6	LOS A	0.1	0.8	0.09	0.55	0.09	50.0
8	T1	9	0.0	9	0.0	0.073	4.7	LOS A	0.1	0.8	0.09	0.55	0.09	52.0
9	R2	5	0.0	5	0.0	0.073	6.2	LOS A	0.1	0.8	0.09	0.55	0.09	50.6
Approach		109	1.0	109	1.0	0.073	5.6	LOS A	0.1	0.8	0.09	0.55	0.09	50.3
West: Alice St (W)														
10	L2	7	0.0	7	0.0	0.020	5.6	LOS A	0.0	0.0	0.01	0.13	0.01	52.6
11	T1	29	0.0	29	0.0	0.020	0.0	LOS A	0.0	0.0	0.01	0.13	0.01	55.6
12	R2	1	0.0	1	0.0	0.020	5.6	LOS A	0.0	0.0	0.01	0.13	0.01	52.4
Approach		38	0.0	38	0.0	0.020	1.2	NA	0.0	0.0	0.01	0.13	0.01	55.0
All Vehicles		285	1.1	285	1.1	0.073	4.3	NA	0.1	0.8	0.10	0.43	0.10	48.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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## MOVEMENT SUMMARY

Site: 301 [1B.3 Alice & Auburn (Site Folder: 1B Existing PM Peak)]

Network: N101 [1B Existing PM Peak  
(Network Folder: General)]

Existing AM Peak

07:45-08:45

27/07/22

Site Category: Existing Design

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV ] %	[ Total veh/h	HV ] %				[ Veh. veh	Dist ] m				
South: Auburn St (S)														
1	L2	4	0.0	4	0.0	0.020	5.6	LOS A	0.0	0.2	0.09	0.57	0.09	42.3
3	R2	21	0.0	21	0.0	0.020	5.6	LOS A	0.0	0.2	0.09	0.57	0.09	38.6
Approach		25	0.0	25	0.0	0.020	5.6	LOS A	0.0	0.2	0.09	0.57	0.09	39.5
East: Alice St (E)														
4	L2	11	10.0	11	10.0	0.019	5.7	LOS A	0.0	0.0	0.00	0.18	0.00	49.0
5	T1	24	4.3	24	4.3	0.019	0.0	LOS A	0.0	0.0	0.00	0.18	0.00	54.7
Approach		35	6.1	35	6.1	0.019	1.7	NA	0.0	0.0	0.00	0.18	0.00	52.7
West: Alice St (W)														
11	T1	9	11.1	9	11.1	0.006	0.0	LOS A	0.0	0.0	0.02	0.06	0.02	55.2
12	R2	1	0.0	1	0.0	0.006	5.5	LOS A	0.0	0.0	0.02	0.06	0.02	51.2
Approach		11	10.0	11	10.0	0.006	0.6	NA	0.0	0.0	0.02	0.06	0.02	54.3
All Vehicles		71	4.5	71	4.5	0.020	2.9	NA	0.0	0.2	0.04	0.30	0.04	48.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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