

# Traffic Impact Assessment;

Log Cabin Hotel

For FDC Construction and Fit Out

17th April 2020

parking;  
traffic;  
civil design;  
wayfinding;  
**ptc.**

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## Document Control

Log Cabin Hotel, Traffic Impact Assessment

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2	30.03.2020	Revised Draft	JM	SW	Peter Stait
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# 1. Introduction

## 1.1 Project Summary

ptc. has been engaged by FDC to prepare a Traffic Impact Assessment (TIA) to accompany a Development Application (DA) to be submitted to Penrith City Council, for the redevelopment of the Log Cabin Hotel located at Lot 21 and 22 on Memorial Ave, Penrith (see Figure 1).

The study has been carried out on the basis of relevant guidelines and standards including the Roads and Maritime Services (RMS) Guide to Traffic Generating Developments 2002; Standards Australia AS2890 series; and the Penrith City Development Control Plan.

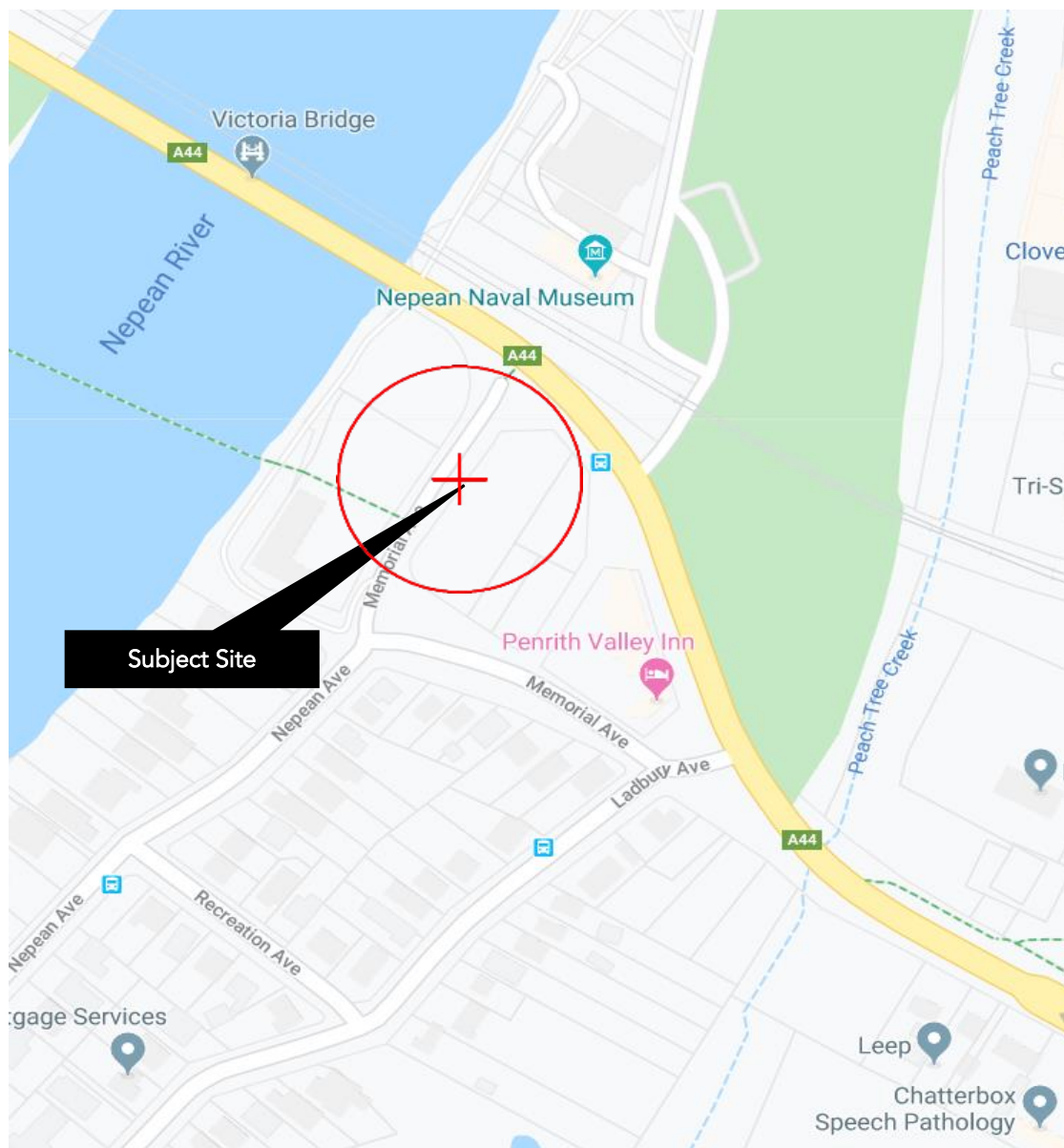


Figure 1 - Site Location (Source: Google)

## **1.2 Purpose of this Report**

This report presents the following considerations in relation to the Traffic and Parking assessment of the Proposal:

- Section 2: Background information on the proposal;
- Section 3: A description of the existing transport characteristics of the locality serving the development property;
- Section 4: Assessment of the proposed parking provision in the context of the relevant planning control requirements;
- Section 5: Determination of the traffic activity associated with the development proposal, and the adequacy of the surrounding road network;
- Section 6: Assessment of the proposed vehicular access, car park and servicing arrangements, in the context of the AS2890 series; and
- Section 7: Conclusion.

## 2. Background Information

### 2.1 Site Context

The subject site lies within a Tourist Zone (SP3) and is surrounded by the following key features:

- Public recreation areas (RE1) and private recreation areas (RE2);
- Low density residential areas (R2) to the south;
- Small sections of industrial zones (SP2) along roads.

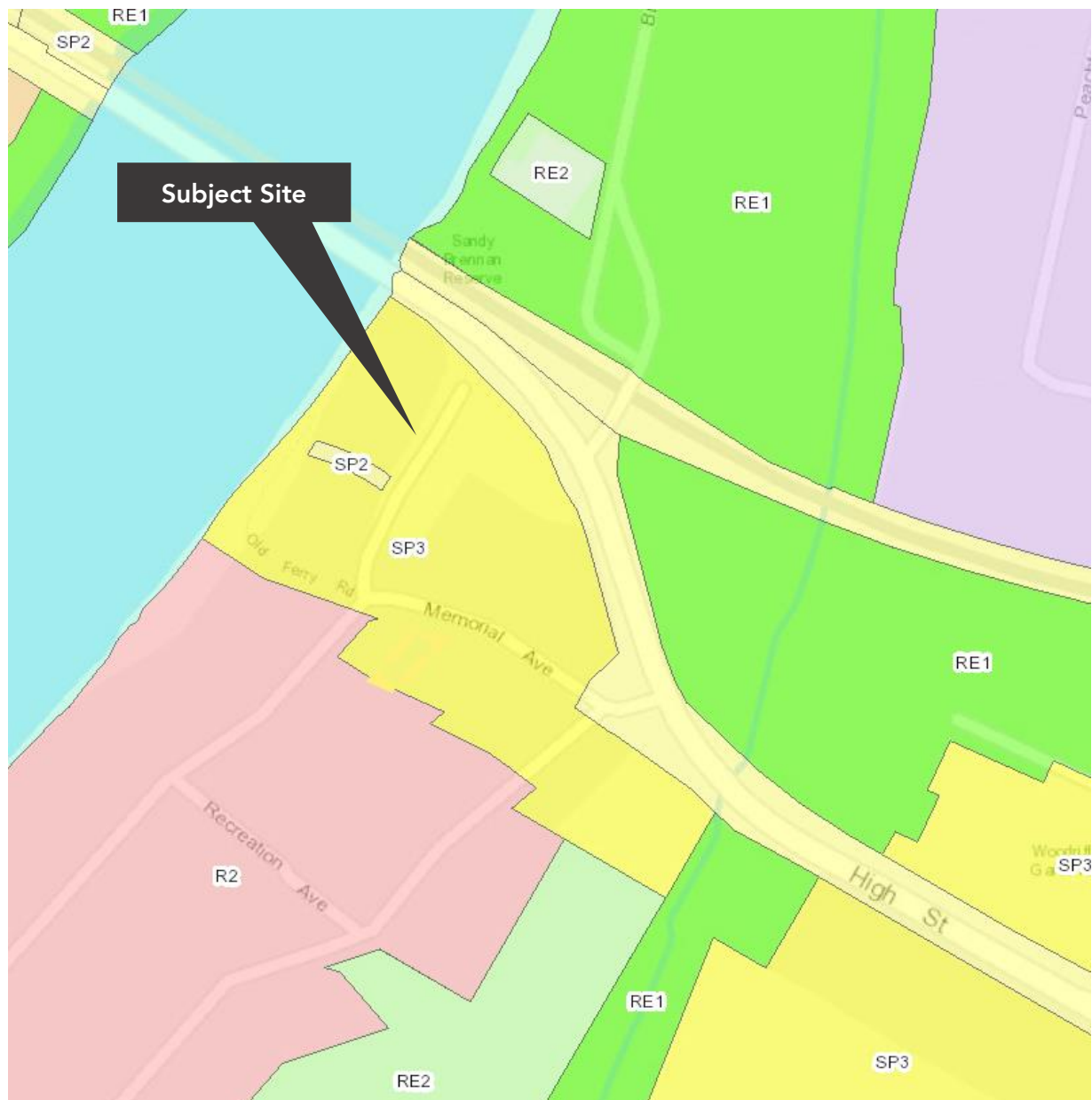


Figure 2 – Local Land Use Map (Source: NSW Planning Viewer)

## 2.2 Development Site

The proposal relates to the following sites:

- Lot No. 21, DP1236215
- Lot No. 22, DP1236215

The property has a combined site area of 9944 m<sup>2</sup> with 4979 m<sup>2</sup> in each lot and is currently vacant, however was previously occupied by the Log Cabin Hotel, which finished operating in March 2012.



Figure 3 – Aerial View of Subject Site & Surrounds (Source: Google Maps)



## 2.3 Development Proposal

The development proposal involves the construction of a new Log Cabin on Memorial Avenue, where the Inn will be constructed on Lot 21 and the carpark will be built on Lot 22 to accommodate the pub and restaurant facilities. The combined lots have a total area 4979 m<sup>2</sup> each with the total build area for the inn being 1573 m<sup>2</sup>.

The development also includes the provision of 214 at grade car park and a loading bay accommodating Medium Rigid Vehicles.

The proposed layout of the development is shown in Figure 4.



Figure 4 –Proposed layout

### 3. Existing Transport Facilities

#### 3.1 Road Hierarchy

The subject site located on Memorial Avenue in Penrith is primarily serviced by the state roads, High Street and Great Western Highway. Castlereagh Road, Mulgoa Road and Jane Street are three other state roads which provide access from the North, South and East. There are also a range of local roads managed by the Penrith City Council which feed to the site. Figure 5 below highlights the 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, Part funded by the State)
- Local Roads - Collector and local access roads (Council Managed)

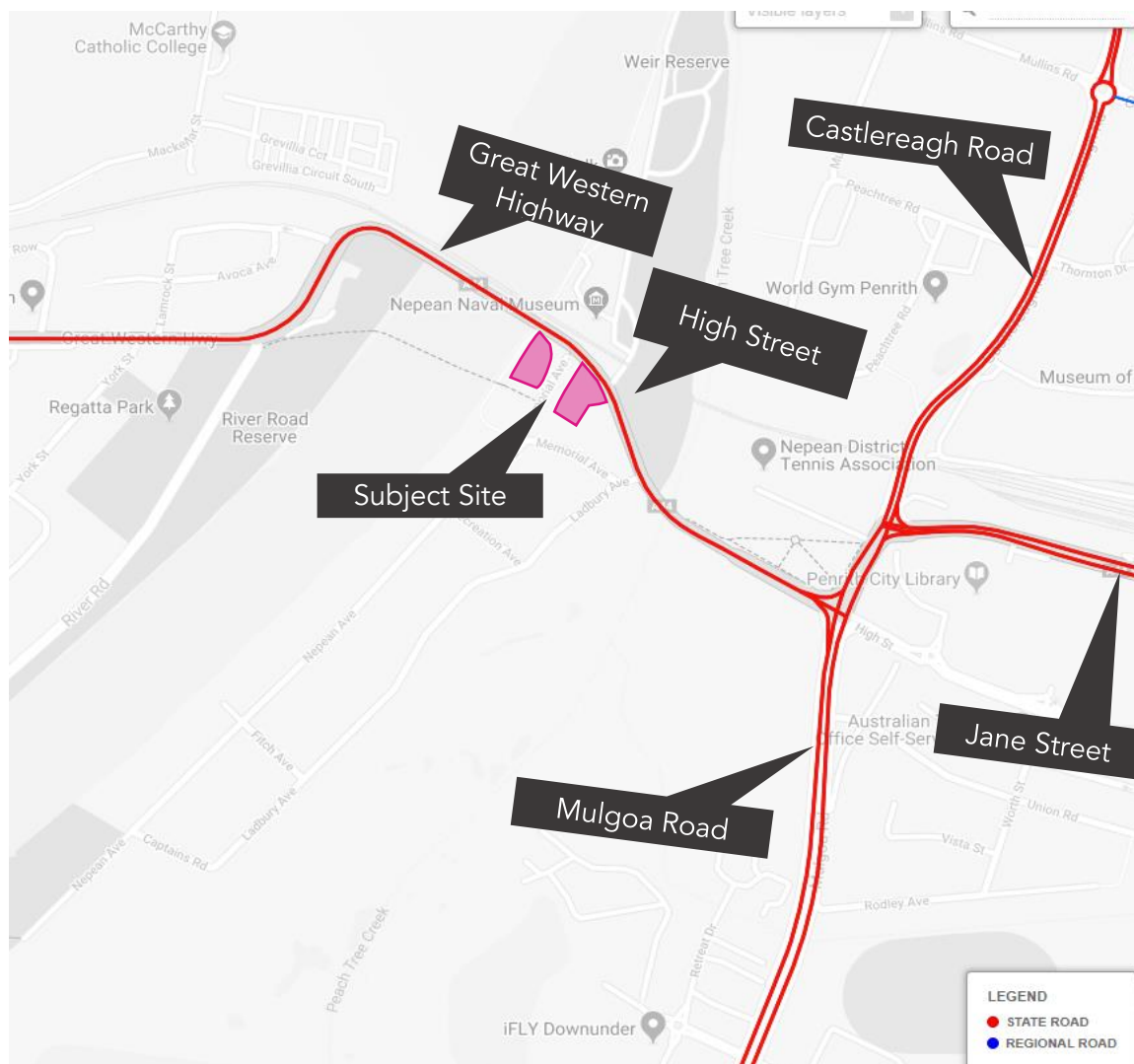


Figure 5 – Road Hierarchy (Source: RMS State and Regional Roads)

Table 1 - Existing Road Network - Great Western Highway/High Street

<b>Great Western Highway/ High Street</b>	
Road Classification	State Road
Alignment	East - West
Number of Lanes	1 lane in each direction
Carriageway Type	Undivided
Carriageway Width	Approximately 8m
Speed Limit	60 km/h
School Zone	No
Parking Controls	No Parking
Forms Site Frontage	No



Figure 6 – Great Western Highway/High Street, Westbound (Source: Google Maps)

Table 2 - Existing Road Network Castlereagh Road

<b>Castlereagh Road</b>	
Road Classification	State Road
Alignment	North- South
Number of Lanes	2 lanes in each direction
Carriageway Type	Divided
Carriageway Width	Approximately 14m
Speed Limit	60 km/h
School Zone	No
Parking Controls	No Parking
Forms Site Frontage	No



Figure 7 – Castlereagh Street, Southbound (Source: Google Maps)

Table 3 - Existing Road Network - Mulgoa Road

<b>Mulgoa Road</b>	
Road Classification	State Road
Alignment	North- South
Number of Lanes	2 lanes in each direction
Carriageway Type	Divided
Carriageway Width	Approximately 14m
Speed Limit	60 km/h
School Zone	No
Parking Controls	No Parking
Forms Site Frontage	No



Figure 8 – Mugoa Road, Northbound (Source: Google Maps)

Table 4 - Existing Road Network - Ladbury Avenue

<b>Ladbury Avenue</b>	
Road Classification	Local Road
Alignment	North- South
Number of Lanes	1 lane in each direction
Carriageway Type	Undivided
Carriageway Width	Approximately 9m
Speed Limit	50 km/h
School Zone	No
Parking Controls	Unrestricted parking both sides
Forms Site Frontage	No



Figure 9 - Ladbury Avenue, Northbound (Source: Google Maps)

Table 5 - Existing Road Network - Nepean Avenue

<b>Nepean Avenue</b>	
Road Classification	Local Road
Alignment	North- South
Number of Lanes	1 lane in each direction
Carriageway Type	Undivided
Carriageway Width	Approximately 9m
Speed Limit	50 km/h
School Zone	No
Parking Controls	Unrestricted parking both sides
Forms Site Frontage	Yes



Figure 10 - Nepean Avenue, Northbound (Source: Google Maps)

Table 6 – Existing Road Network - Memorial Avenue

<b>Memorial Avenue</b>	
Road Classification	Local Road
Alignment	North- South
Number of Lanes	1 lane in each direction
Carriageway Type	Undivided
Carriageway Width	Approximately 9m
Speed Limit	50 km/h
School Zone	No
Parking Controls	Unrestricted parking both sides
Forms Site Frontage	Yes



Figure 11 - Memorial Avenue, Northbound (Source: Google Maps)

### 3.2 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. The 400m and 800m catchments are shown in Figure 12.

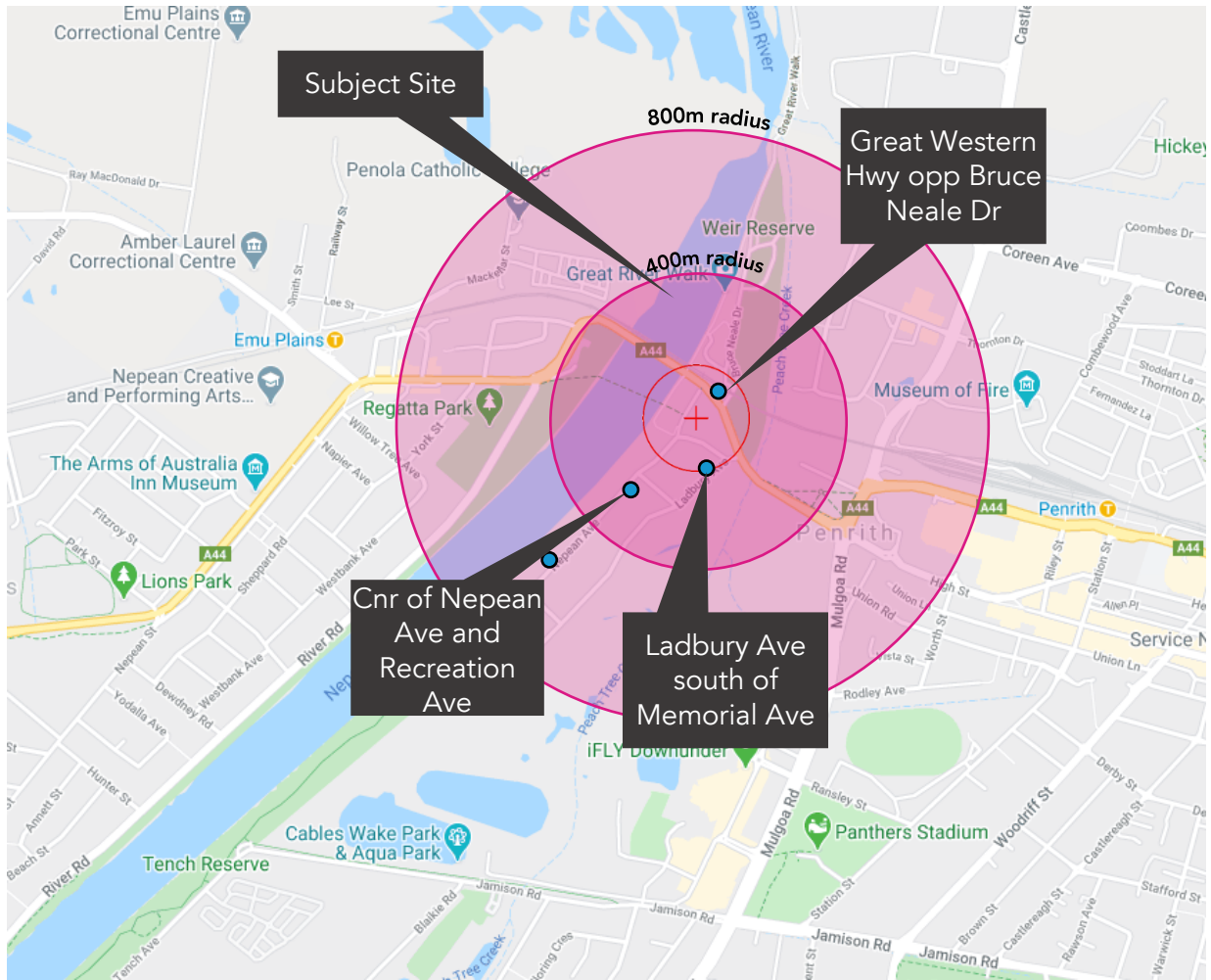


Figure 12 - 400m and 800m Catchments

### 3.2.1 Bus Services

There are four bus stops which are located within the 800m catchment of the subject site, with 3 of those within 400m. A summary of the bus routes is presented in Table 7 and displays the routes which service the subject site.

Table 7 - Bus route summary

Bus Route	Coverage (to and from)	Service Frequency
688	Penrith to Emu Heights (Loop Service)	Weekdays: Services approximately every hour from 9:07am to 8:54pm. Saturdays: Services every hour from 8:23am to 7:23pm Sunday: Services every 2 hours from 8:53am to 6:53pm
689	Penrith to Leonay (Loop Service)	Weekdays: Services every 30 minutes between 4:17pm to 6:22pm
690P	Penrith to Springwood	Weekdays: 3 services a day between 12:20pm and 4:32pm
691	Penrith to Mount Riverview	Weekdays: 4 services a day 7:37am to 5:31pm Saturday: 3 services between 8:55am to 12:53pm Sunday: 3 services between 9:48am to 1:50pm
4059	McCarthy College to Penrith Station	Single afternoon service on weekdays
4507	McCarthy College to Penrith Station	Single afternoon service on weekdays
4567	McCarthy Catholic College to Penrith Station	Single afternoon service on weekdays
4604	McCarthy Catholic College to Regentville PS	Single afternoon service on weekdays
4640	McCarthy Catholic College to Parker St after Oxford St	Single afternoon service on weekdays
8102	Emu Heights to Penrith Schools	Single afternoon service on weekdays
8113	Emu Heights to St Dominic's School	Single morning service on weekdays
8118	Emu Heights to St Pauls Grammar	Single morning service on weekdays
8122	Richmond Station to Wycliffe Christian School	Single morning service on weekdays
8123	Hawkesbury Rd to Nepean Christian School	Single morning service on weekdays
8512	Nepean District CS to Emu Plains Rd	Single afternoon service on weekdays
8514	Emu Plains to Penrith Interchange	Single afternoon service on weekdays
8517	St Thomas Aquinas PS to Penrith Plaza	Single afternoon service on weekdays
8520	St Dominic's College to Emu Heights	Single afternoon service on weekdays
8521	Caroline Chisholm Girls HS to Emu Heights	Single afternoon service on weekdays
8527	St Pauls Grammar to Emu Heights	Single afternoon service on weekdays
8534	Wycliffe to Richmond Station via Nepean HS	Single afternoon service on weekdays

### 3.2.2 Train Services

There are two train stations in the vicinity of the subject site, Emu Plains and Penrith Station. Both stations serve the T1 Western Line. The services run approximately every 15 minutes during peak hour and every 30 minutes during the off-peak. Both stations are outside of the 800m catchment with Emu Plains being the closest at 1.2km away. Figure 13 shows respectively where Emu Plains and Penrith Station are with respect to the Sydney Trains Network.



Figure 13 – Sydney Trains Network



### 3.2.3 Active Transport

As described in the abovementioned section and in Figure 12, the walking catchments of 400m and 800m (5 minutes and 10 minutes respectively) encapsulate the residential area South of the site and the surrounding bus stops. The closest train station is Emu Plains situated 1.2 km away from the development, which is still a reasonable walking distance.

The subject site is well serviced with many off-road cycleways which promote the safety and attractiveness of cycling. Figure 14 highlights the various cycleways which connects the development to the North, South East and West. Hence, Cycling is seen as a viable form of transport to the subject location.

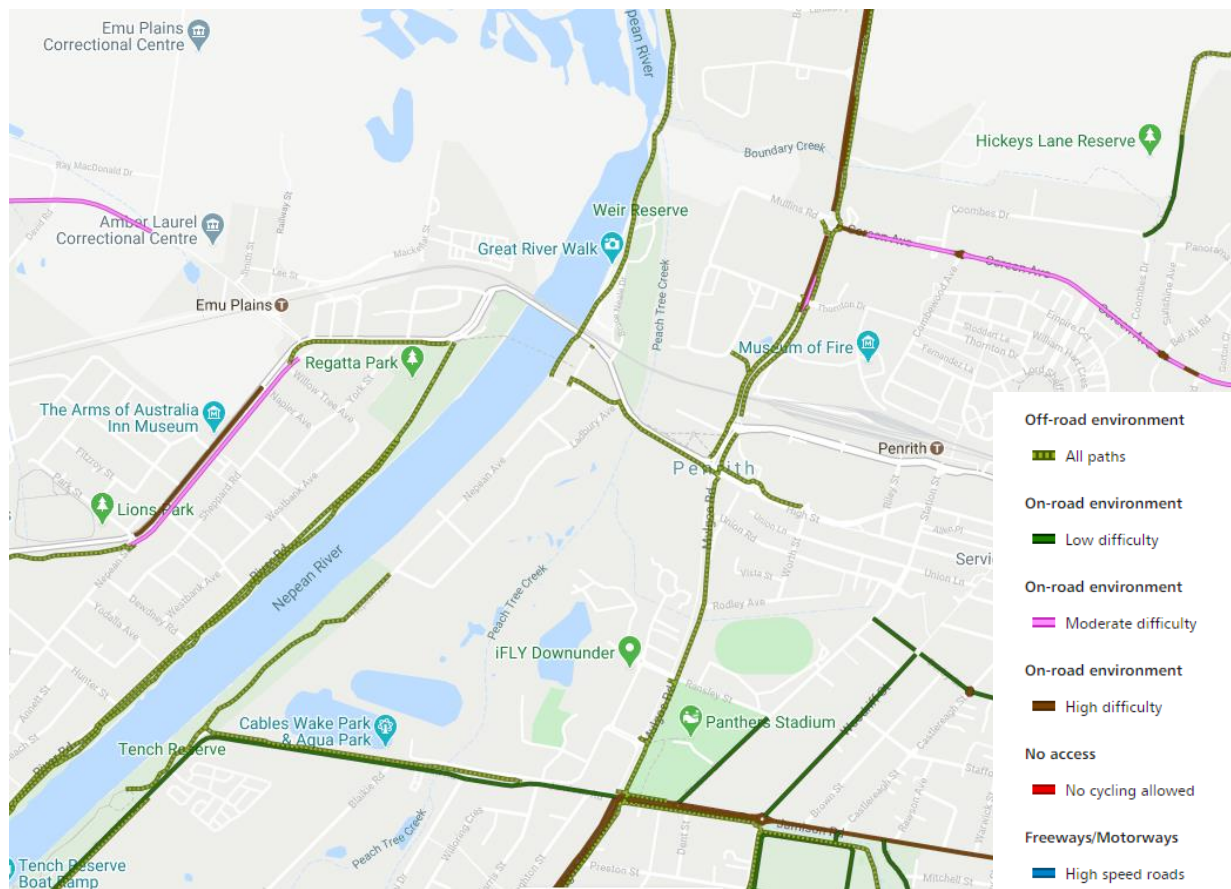


Figure 14 - Cycling Paths (Source: RMS Cycle Finder)

## 4. Parking Assessment

### 4.1 Planning Policy

The proposed development is subject to the parking provision rates stipulated in the following planning document:

- Building Code of Australia 2006 (BCA)
- Penrith Development Control Plan 2014 (DCP)
- RMS Guide to Traffic Generating Developments 2002 (RMS Guide)
- Planning Guidelines for Walking and Cycling 2004

### 4.2 Proposed Parking Provision

The Penrith Log Cabin Site is categorised as a pub/registered club development within the DCP. Penrith City Council's DCP states that for every 4m<sup>2</sup> of bar floor space and 6m<sup>2</sup> of lounge and dining area, 1 car space is required. Staff parking rates are to be included within this rate.

The following rooms were used to calculate the gross floor area needed to determine the proposed parking provision:

- Bar (1<sup>st</sup> Floor)
- Restaurant (1<sup>st</sup> Floor)
- Restaurant Bar (2<sup>nd</sup> Floor)
- Private Dining (2<sup>nd</sup> Floor)
- Function Rooms (2<sup>nd</sup> Floor)

Table 8 classifies the above-mentioned floor spaces and given a rate accordingly.

Table 8 – Car parking provision

Component	GFA (m <sup>2</sup> )	Parking Rate	Parking Provision Requirement (min)	Proposed Parking Provision
Bar	275	1 space / 4m <sup>2</sup>	69(68.75)	
Restaurant	342	1 space / 6m <sup>2</sup>	51 (50.67)	
Restaurant Bar	193	1 space / 6m <sup>2</sup>	33 (32.2)	

Private Dining	37	1 space / 6m <sup>2</sup>	7(6.2)	
Function	319	1 space / 6m <sup>2</sup>	53 (53.0)	
<b>Total</b>			<b>211</b>	<b>214</b>

It is noted that the Penrith City Centre DCP controls require that a maximum of 60% of the total commercial parking spaces required by the development be provided on the site and that the balance of the total required are not to be provided and are subject to a car parking contribution under the Penrith City Centre Civic Improvement Plan. However, given the nature of the development and its location on the far western edge of Penrith CBD, the development proposes to provide the maximum spaces available on the site.

It should also be noted that the additional spaces, provide a provision for the potential future development of Lot 20 (the adjacent lot).

#### 4.2.1 Accessible Car Parking Provision

According to the BCA, a dining room or bar area that is not an assembly building requires a rate of 1 space per 100 carparking spaces or part thereof. It is also noted that the accessible parking requirements are inclusive in the car parking requirements. The requirements are summarised in Table 9.

Table 9 - Accessible car parking provision

Component	Proposed Car Parking Provision	Parking Rate	Parking Provision Requirement (min)	Proposed Parking Provision
Pub/registered club	214	1 space / 100 car parking spaces or part thereof	(3)2.14	4

#### 4.2.2 Bicycle Parking Provision

The bicycle parking requirement has been calculated in accordance with the Planning Guidelines for Walking and Cycling. The proposed parking provision is summarised in Table 10 below.

Table 10 - Bicycle parking provision

Component	Staff/Seating	Parking Rate	Parking Provision Requirement (min)	Proposed Parking Provision
Pub/registered club	13 (ave)	3-5% of staff journey to work trips	1	2
Pub/registered club	300 (ave)	3-5% of seating capacity	12	12
<b>Total</b>			<b>13</b>	<b>14</b>

#### **4.2.3 Service Vehicle Provision**

The Penrith City Council DCP does not specify any provision for service vehicle parking rates for pubs/ registered clubs. However, Section 10.5 .1 specifies there must be a loading bay which can accept a Medium Rigid Vehicle as the site area is 1573m<sup>2</sup>.

## 5. Traffic Impact Assessment

The potential traffic generation of the proposed development has been estimated with reference to the following:

- RMS Guide to Traffic Generating Developments 2002 (RMS Guide)
- Intersection survey data collected on Friday, 7<sup>th</sup> February 2020.

### 5.1 Existing Traffic Generation

The site is currently vacant and hence does not generate any traffic currently.

### 5.2 Existing Traffic Volumes and Distribution

The current traffic volumes in the vicinity of the subject site were determined through intersection surveys. The surveys were conducted on the 7<sup>th</sup> February 2020, between 4:00pm and 6:00pm at the following intersections:

- High St/ Ladbury Ave;
- Memorial Ave / Ladbury Ave; and
- Memorial Ave / Nepean Ave.

The location of the intersections surveyed are shown in Figure 15.

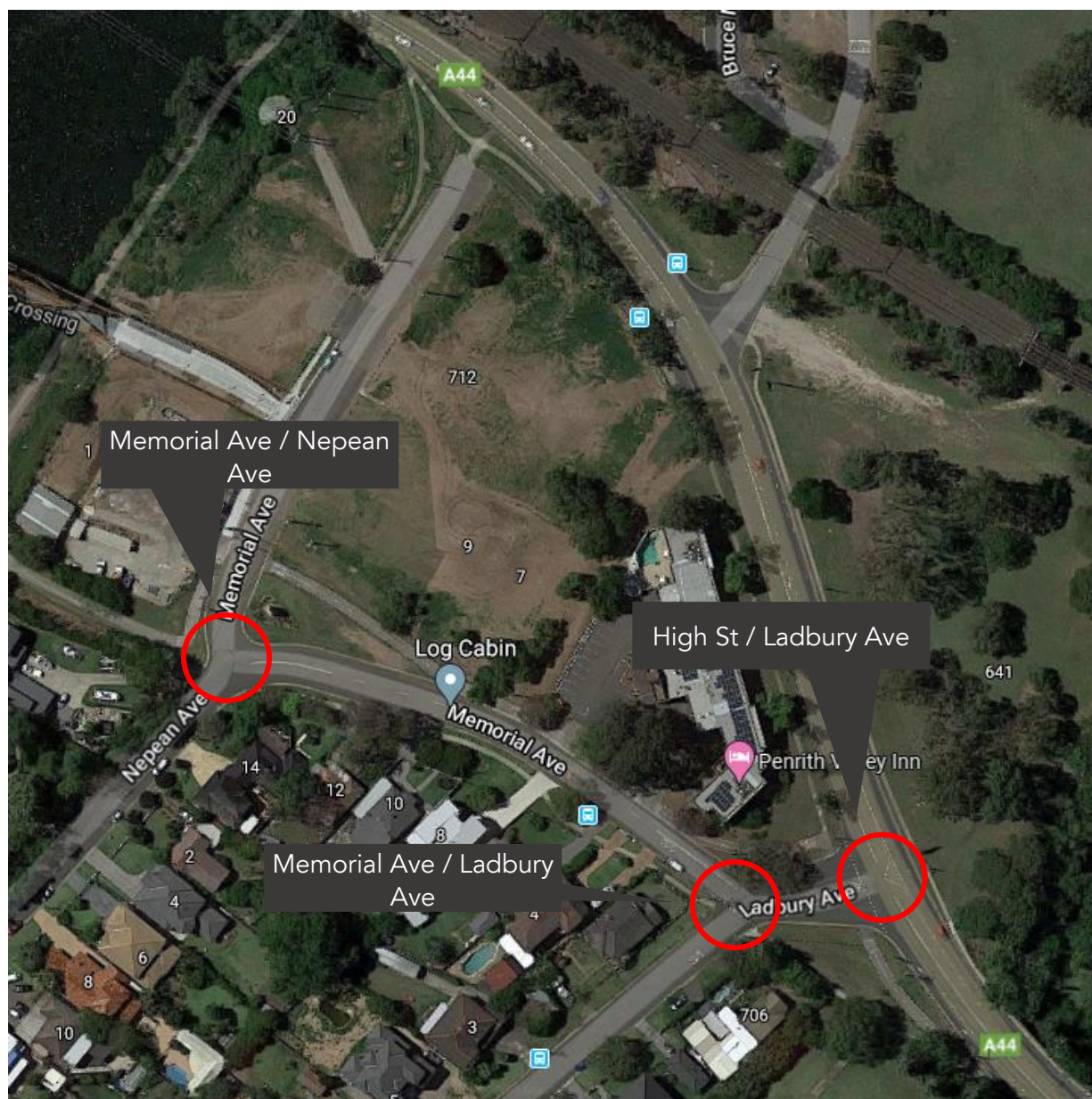


Figure 15 - Intersection survey locations

### 5.2.1 Existing Peak Hour Traffic Volumes

The peak hour for the overall traffic network was calculated by summing all traffic counts at each intersection for each hour at 15-minute intervals. Due to the nature of the development, only the afternoon peak was surveyed as the trip generation for the development will not be significant during the AM peak with most employees and visitors arriving in the late morning. The PM peak hour was determined as follows:

- Afternoon Peak Period: 5:00pm – 6:00pm

The existing traffic volumes collected during this peak are shown in Figure 16

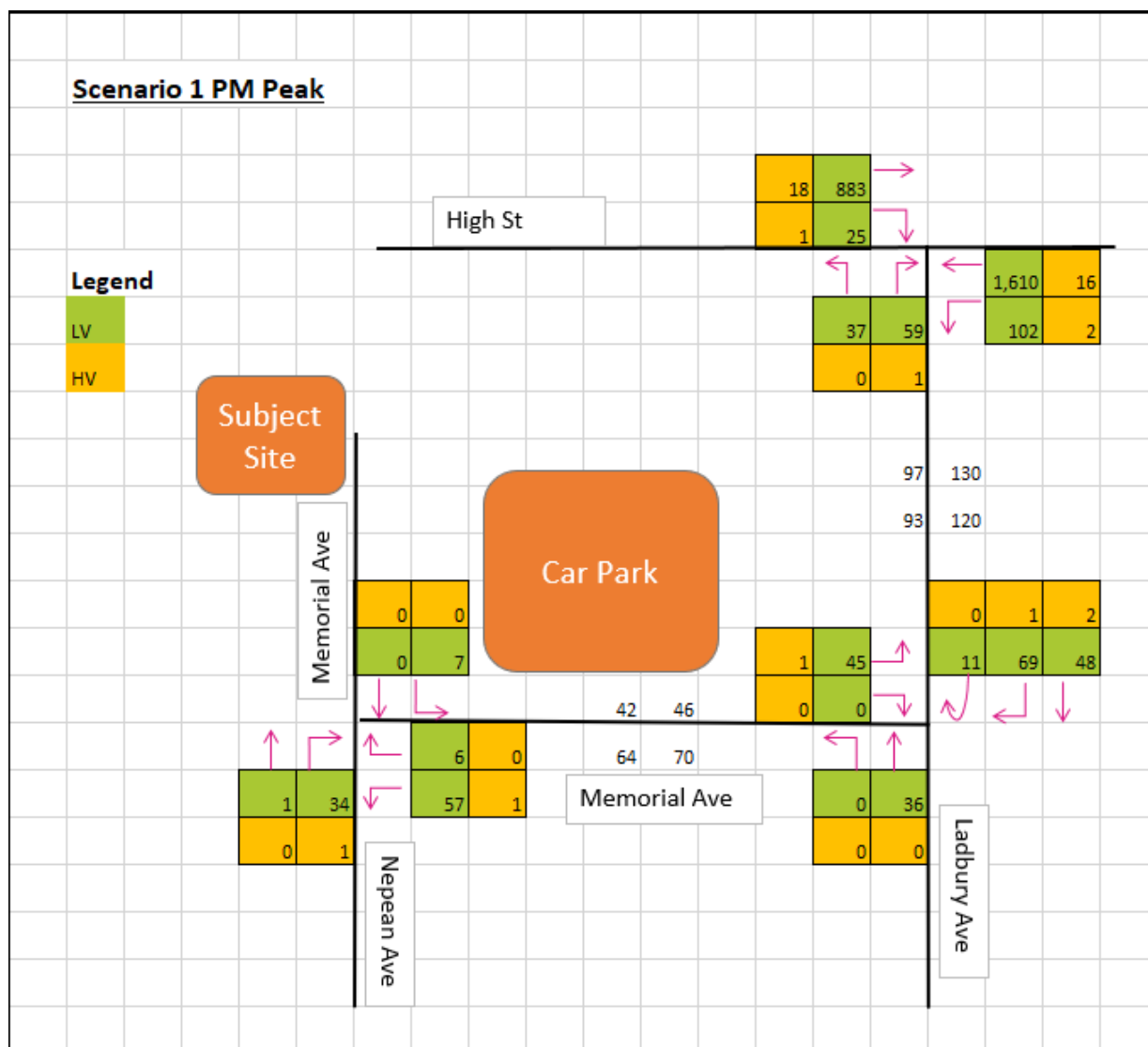


Figure 16 - Existing PM peak traffic volumes

### 5.3 Development Traffic Generation

The proposal involves the construction of a log cabin hotel which falls under the category of a pub/registered club. The inn is a commercial development which will provide bar and dining services. The traffic volume rates from the RMS Guide to Traffic Generating Developments (2002) were adopted to estimate the potential traffic generated by the proposed development. The rates are as follows:

- Clubs Evening peak period traffic generation of 10 veh/hr/100m<sup>2</sup>

As previously mentioned, due to the nature of the facility, there will only be trips generated during the evening peak. Table 11 summarises the traffic volume generated by the new development.

Table 11 - Traffic generated

Time	Period	Vehicle Trip Rate	GFA (m <sup>2</sup> )	Trips
PM Peak	Peak Hour	10 veh/hr/100m <sup>2</sup>	1381	139

## 5.4 Development Traffic Distribution

The following assumptions were made to determine the assignment of the additional trips generated by the proposed development.

- Due to the development being a commercial facility, all trips will be both inbound and outbound throughout the afternoon peak. During the peak hour calculated (5:00pm – 6:00pm) it can be assumed there will be a traffic distribution of 70% inbound 30% outbound trips. This is representative of those attending the Log Cabin Hotel after finishing work.
- All inbound and outbound trips will come through the High St / Ladbury Ave intersection as there are no other main connecting roads.
- The directional split expected when leaving Ladbury Avenue onto High Street can be approximated to 65% East and 35% West. This directional split is reflected on the existing traffic movement along High Street.
- It can also be assumed that all residents who are travelling from the South through Nepean Ave and Ladbury Ave will most likely walk or cycle as they are situated within the comfortable 800m active transport catchment.

The inbound and outbound traffic volume split during the PM peak hour is represented in Figure 17 and Figure 18 respectively.

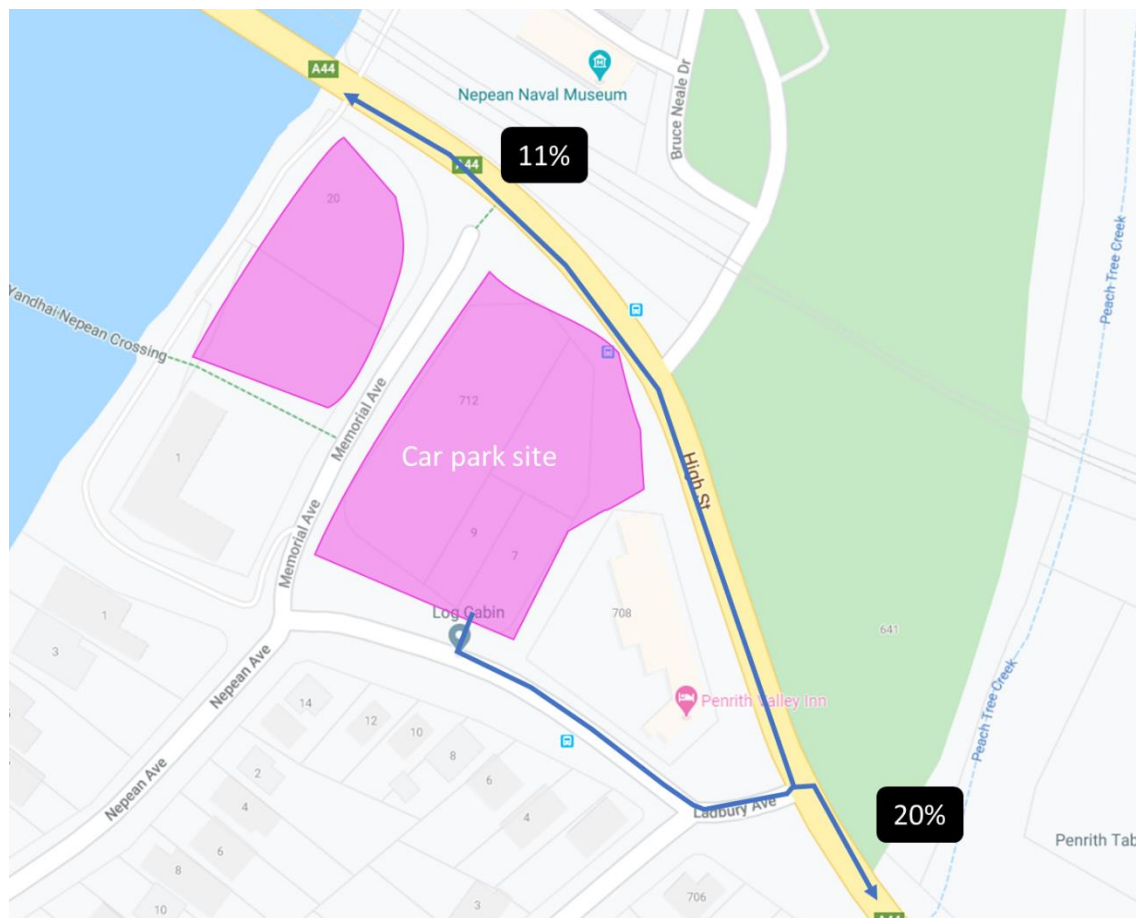


Figure 17 - Inbound trips for PM peak



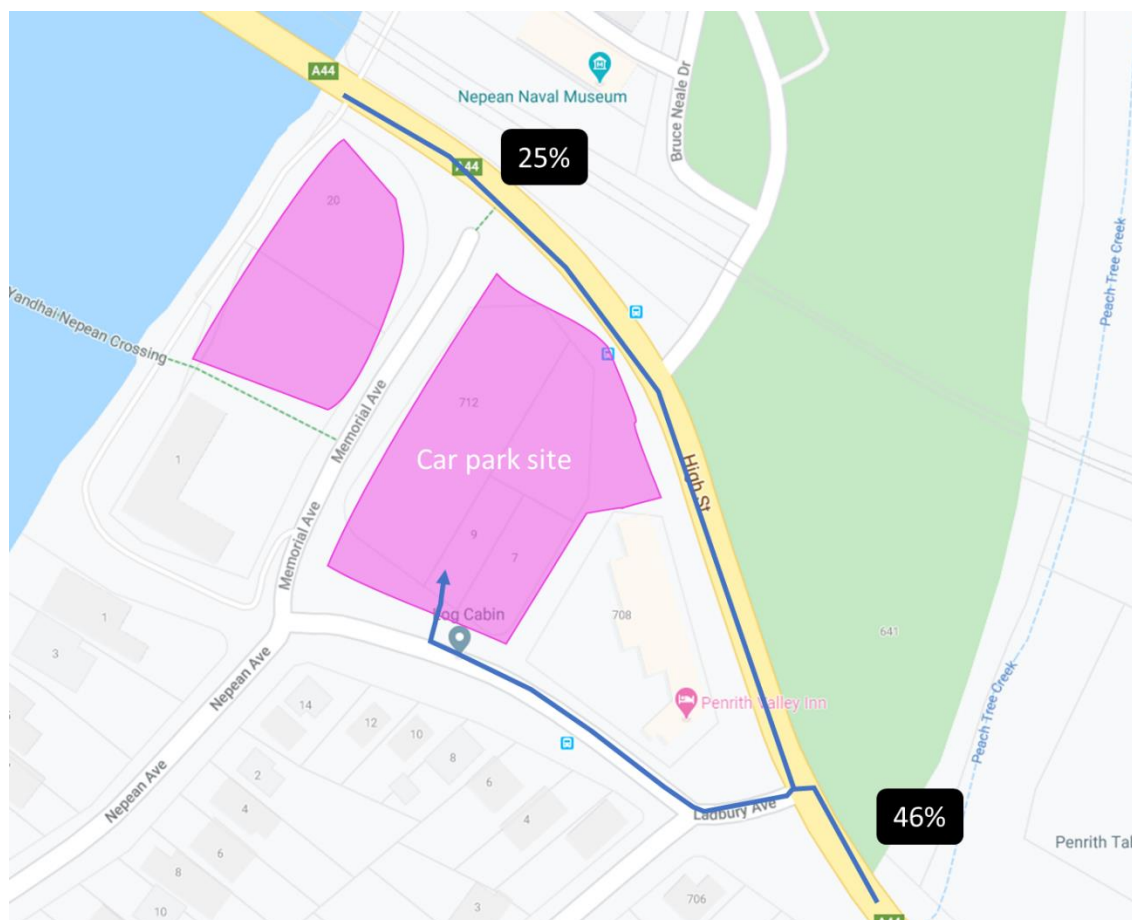


Figure 18 - Outbound trips for PM peak

## 5.5 SIDRA Analysis

A volume analysis was performed using the SIDRA Intersection 8 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 12.

Table 12 - 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 summary of the existing and post development traffic conditions for the intersections are summarised in Table 13.

It should be noted that some changes were made within the modelling software to ensure the outputted theoretical values matched the actual performance of the road.

The maximum extra bunching for the High Street and Ladbury Avenue intersection is 15% according to the Roads and Maritime Traffic Modelling Guidelines, 2013. However, this value does not provide a realistic bunching value due to the high number of vehicles travelling westbound on High Street. Reassessment of the video footage shows up to 40 second gaps between vehicle bunching, hence 25% extra bunching was used for the model.

The gap acceptance parameters were also adjusted for the right turn lane from Ladbury Avenue. SIDRA provides a default critical gap acceptance of 7 seconds and 5 seconds for the follow-up headway at a right turn from a minor road crossing 2-lanes. According to the Traffic Modelling Guidelines the minimum gap acceptance for a right turn from a minor road is 5 seconds for the critical gap and 3 seconds for the follow-up headway. Hence the minimum values from the guideline were used.

The full movement summary outputs from SIDRA are provided in Attachment 1.

Table 13 - Summary of Existing and Post Development Traffic Conditions

Intersection	Time	Period	Level of Service	Degree of Saturation (v/c)	Average Delay (s)	95% Queue Length (m)
High St / Ladbury Ave	PM Peak	Existing	F	0.883	143.7	30.1
		Development	F	1.414	485.9	62.1
Memorial Ave / Ladbury Ave	PM Peak	Existing	A	0.070	4.8	2.2
		Development	A	0.125	5.1	4.5
Memorial Ave / Nepean Ave	PM Peak	Existing	A	0.037	4.7	0.7
		Development	A	0.036	4.7	0.7

As summarised in Table 13, the existing High Street / Ladbury Avenue intersection is failing at a LoS F while the rest of the network is performing significantly well. The additional trip generation of the development will continue to cause failing performance at the High Street / Ladbury Avenue intersection. The proposal will have minimal effect on the rest of the network.

Based on past occupancy of the site being the same type of development where the intersection performed reasonably, it can be concluded that the post re-development intersection should continue to perform at a similar operation.

It should also be noted that the traffic generation rate taken from the RMS Guide to Traffic Generating Developments is based on a survey data from 1978 and behavioural changes since this date, such as the introduction of random breath testing, are likely to have reduced this generation rate.

Therefore, it is reasonable to assume that the intersection of High Street / Ladbury Avenue, should perform no worse than in the existing situation or similar to the performance of the intersection under the site's previous occupation.

---

## 6. Access and Car Park Assessment

The following section presents an assessment of the proposed development with reference to the requirements of AS2890.1:2004 (Off-street car parking), AS2890.2:2018 (Off-street commercial vehicle facilities), AS2890.3:2015 (Bicycle Parking) and AS2890.6:2009 (Off-street parking for people with disabilities). This section is to be read in conjunction with the architectural plans provided by Team 2 Architects (see Attachment 2) and the car park assessment undertaken by ptc. (see Attachment 3)

### 6.1 Vehicular Access and Circulation

The site carpark is located on a separate site directly across Memorial Avenue. Vehicle access to the carpark is provided on the East-West section of Memorial Avenue as a 10-metre-wide two-way driveway.

The proposed driveway utilises the existing layback located on Memorial Avenue with some minor modifications to realign to the proposed car park.

The access category for the development is category 3, as taken from Table 3.1 in AS2890.1:2004 for a carpark with 101-300 spaces.

As a Category 3 car park the minimum access driveway width is 6.0m for entry and 4.0-6.0 for exit. Therefore, the access driveway is compliant with the AS2890.

A swept path analysis has been undertaken which indicates that accessing the proposed driveway is fit for purpose.

### 6.2 Sight Distance

Section 3.2 of AS2890.1:2004 provides the requirements for sight distance prescribed on the basis of the posted speed limit or 85<sup>th</sup> percentile vehicle speeds along the frontage road.

Memorial Avenue has a posted speed limit of 50km/h, which requires a desired visibility distance of 69 meters and a minimum distance of 45. The proposed driveway is located on a straight section of the road where sufficient sight distance is provided.

The proposed car park allows for all vehicles to enter and exit in a forward direction, therefore minimising potential conflict points and maintaining the overall safety of the road network.

### 6.3 Service vehicles

A loading bay proposed for the facility is located adjacent to the site frontage on Memorial Avenue. It will be used to accommodate a Medium Rigid Vehicle (MRV) vehicle as well as a layby for up to 3 taxi/Ubbers when not used for deliveries.

A swept path for an 8.8-meter-long MRV is shown in Attachment 3 which demonstrates that the area provided is sufficient for the vehicle to perform a three-point turn manoeuvre at the end of Memorial Avenue.

---

## 6.4 Carpark Arrangement

### 6.4.1 Typical requirements

The car park access and parking arrangements have been assessed against the requirements of AS2890.1:2004, with reference to Class 2 (Medium-term parking) facilities. The development is to provide the following dimension (90° angle parking):

- Car Spaces: 2.5m x 5.4m;
- Aisle Width: 5.8m (minimum).

The proposed car park will provide parking spaces which meet the requirements within the AS2890.1.

### 6.4.2 Accessible Parking

All accessible parking spaces have been individually assessed against the requirements of AS2890.6. Accessible parking spaces are to be designed based on the following dimensions:

- Accessible Space: 2.4m x 5.4m
- Adjacent Shared Bay: 2.4m x 5.4m (with a bollard)

All shared bays and accessible spaces shall be installed in accordance with AS2890.6, including the installation of bollards and relevant pavement marking. The carpark will be open hence having the minimum height clearance of 2.5m is to be maintained above all accessible and shared bays.

### 6.4.3 Bicycle Parking

Approved bicycle parking devices (BPD's) shall be installed as per the following requirements of AS2890.3:2015:

- Horizontal Parking: 1800mm x 500mm
- Access Aisle: 1500mm

The proposed development shall provide 14 bicycle spaces which adheres to the above requirements and the exact location of the BPD's will be determined during the CC stage of the project.

---

## 7. Conclusion

ptc. has been engaged by FDC to prepare a Traffic Impact Assessment (TIA) to accompany a Development Application (DA) to be submitted to Penrith City Council, for the redevelopment of the Log Cabin Hotel located at Lot 21 and 22 on Memorial Ave, Penrith.

The sites locality provides great accessibility through a range of transport modes. It is directly serviced by the state roads, High Street and the Great Western Highway providing access for private vehicles and the bus network. There are three main bus stops which service the site along with two train stations both within 1.6km walking or cycling distance. The 800m walking catchment encapsulates a large residential area south of the development while there are many off-road cycle paths available for people travelling from all directions.

The development proposes 214 parking spaces for on-site to allow visitors and staff to easily access the facility. A detailed parking analysis was undertaken to assess the validity of the carpark according to the Penrith Council DCP and AS2890 series. According to the DCP carpark requirements, 211 parking spots will be required due to rates based on bar or dining floor space. Therefore, the proposed development meets the requirements. The AS2890 series and a swept path analysis were used to assess site access, parking and service areas. The analysis resulted in all the requirement being compliant. Access to the car park utilises the existing driveway layback on Memorial Avenue.

Regarding traffic generation, the existing High Street / Ladbury Avenue intersection is failing at a LoS F while the rest of the network is performing significantly well. The additional trip generation of the development will continue to cause failing performance at the High Street / Ladbury Avenue intersection. The proposal will have minimal effect on the rest of the network.

Based on past occupancy of the site being the same type of development where the intersection performed reasonably, it can be concluded that the intersection will continue to perform without failing.

It should also be noted that the traffic generation rate taken from the RMS Guide to Traffic Generating Developments is based on a survey data from 1978 and behavioural changes since this date, such as the introduction of random breath testing, are likely to have reduced this generation rate.

Therefore, it is reasonable to assume that the intersection of High Street / Ladbury Avenue, should perform no worse than in the existing situation or similar to the performance of the intersection under the sites previous occupation.

Ultimately, the proposed development is unlikely to result in any impacts to existing local parking and traffic conditions, and that the car park design satisfies the relevant Australian Standards

## Attachment 1 SIDRA Analysis

# MOVEMENT SUMMARY

Site: 101 [1 High St / Ladbury Ave (PM\_BASE)]

Network: N101 [Existing PM]

Survey Date: 07/02/2020  
 PM Peak: 5:00-6:00  
 Site Category: (None)  
 Giveaway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles	Distance				km/h
South: Ladbury Ave (S)														
1	L2	39	0.0	39	0.0	0.680	134.1	LOS F	2.5	17.7	0.99	1.10	1.40	11.5
3	R2	63	1.7	63	1.7	0.854	143.7	LOS F	4.2	30.1	0.99	1.27	2.00	7.3
Approach		102	1.0	102	1.0	0.854	140.0	LOS F	4.2	30.1	0.99	1.21	1.77	8.9
East: High Street (E)														
4	L2	109	1.9	109	1.9	0.060	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	46.4
5	T1	1712	1.0	1712	1.0	0.883	0.4	LOS A	0.0	0.0	0.00	0.00	0.00	58.8
Approach		1821	1.0	1821	1.0	0.883	0.7	NA	0.0	0.0	0.00	0.03	0.00	58.4
West: High Street (W)														
11	T1	948	2.0	948	2.0	0.495	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
12	R2	27	3.8	27	3.8	0.442	89.5	LOS F	1.4	10.2	0.98	1.03	1.14	15.4
Approach		976	2.0	976	2.0	0.495	2.6	NA	1.4	10.2	0.03	0.03	0.03	56.9
All Vehicles		2899	1.4	2899	1.4	0.883	6.2	NA	4.2	30.1	0.04	0.07	0.07	52.5

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.  
 SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.  
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 101 [4 High St / Ladbury Ave (PM\_BASE +DEVELOPMENT)]

Network: N101  
[Development + Base PM]

Survey Date: 07/02/2020  
PM Peak: 5:00-6:00  
Site Category: (None)  
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed	
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles	Distance m			km/h	
South: Ladbury Ave (S)														
1	L2	54	0.0	54	0.0	0.937	214.9	LOS F	5.0	34.8	1.00	1.32	2.21	7.8
3	R2	93	3.4	93	3.4	1.414	485.9	LOS F	8.6	62.1	1.00	2.39	6.11	2.3
Approach		146	2.2	146	2.2	1.414	386.5	LOS F	8.6	62.1	1.00	2.00	4.68	3.5
East: High Street (E)														
4	L2	176	2.4	176	2.4	0.096	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	46.4
5	T1	1712	1.0	1712	1.0	0.883	0.4	LOS A	0.0	0.0	0.00	0.00	0.00	58.8
Approach		1887	1.1	1887	1.1	0.883	0.9	NA	0.0	0.0	0.00	0.05	0.00	58.2
West: High Street (W)														
11	T1	948	2.0	948	2.0	0.497	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
12	R2	62	1.7	62	1.7	1.053	258.2	LOS F	7.3	52.1	1.00	1.46	3.00	6.3
Approach		1011	2.0	1011	2.0	1.053	15.9	NA	7.3	52.1	0.06	0.09	0.18	44.8
All Vehicles		3044	1.5	3044	1.5	1.414	24.4	NA	8.6	62.1	0.07	0.16	0.29	38.5

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.  
 SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.  
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

Site: 102 [2 Memorial Ave / Ladbury Ave (PM\_BASE)]

Network: N101 [Existing PM]

Survey Date: 07/02/2020  
 PM Peak: 5:00-6:00  
 Site Category: (None)  
 Giveaway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %				Vehicles	Distance				
South: Ladbury Avenue (S)														
1	L2	1	0.0	1	0.0	0.033	4.8	LOS A	0.1	0.8	0.23	0.47	0.23	45.0
2	T1	38	0.0	38	0.0	0.033	3.7	LOS A	0.1	0.8	0.23	0.47	0.23	45.0
Approach		39	0.0	39	0.0	0.033	3.8	LOS A	0.1	0.8	0.23	0.47	0.23	45.0
North: Ladbury Ave (N)														
8	T1	53	4.0	53	4.0	0.070	0.0	LOS A	0.3	2.2	0.01	0.30	0.01	48.0
9	R2	74	1.4	74	1.4	0.070	2.7	LOS A	0.3	2.2	0.01	0.30	0.01	31.0
Approach		126	2.5	126	2.5	0.070	1.6	NA	0.3	2.2	0.01	0.30	0.01	45.8
West: Memorial Avenue (W)														
10	L2	48	2.2	48	2.2	0.027	4.6	LOS A	0.0	0.0	0.01	0.52	0.01	35.8
12	R2	1	0.0	1	0.0	0.027	4.7	LOS A	0.0	0.0	0.01	0.52	0.01	44.4
Approach		49	2.1	49	2.1	0.027	4.6	NA	0.0	0.0	0.01	0.52	0.01	36.4
All Vehicles		215	2.0	215	2.0	0.070	2.7	NA	0.3	2.2	0.05	0.38	0.05	43.9

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.  
 SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.  
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 102 [5 Memorial Ave / Ladbury Ave (PM\_BASE +DEVELOPMENT)]

Network: N101  
[Development + Base PM]

Survey Date: 07/02/2020  
PM Peak: 5:00-6:00  
Site Category: (None)  
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %				Vehicles	Distance m				
South: Ladbury Avenue (S)														
1	L2	1	0.0	1	0.0	0.046	5.1	LOS A	0.1	1.0	0.35	0.53	0.35	44.5
2	T1	38	0.0	38	0.0	0.046	4.4	LOS A	0.1	1.0	0.35	0.53	0.35	44.5
Approach		39	0.0	39	0.0	0.046	4.4	LOS A	0.1	1.0	0.35	0.53	0.35	44.5
North: Ladbury Ave (N)														
8	T1	53	4.0	52	4.0	0.125	0.0	LOS A	0.6	4.5	0.01	0.39	0.01	47.4
9	R2	175	1.8	172	1.8	0.125	2.7	LOS A	0.6	4.5	0.01	0.39	0.01	28.0
Approach		227	2.3	224 <sup>N1</sup>	2.3	0.125	2.1	NA	0.6	4.5	0.01	0.39	0.01	41.9
West: Memorial Avenue (W)														
10	L2	94	3.4	94	3.4	0.062	4.6	LOS A	0.0	0.0	0.00	0.53	0.00	35.8
12	R2	1	0.0	1	0.0	0.062	4.7	LOS A	0.0	0.0	0.00	0.53	0.00	44.4
Approach		95	3.3	95	3.3	0.062	4.6	NA	0.0	0.0	0.00	0.53	0.00	36.1
All Vehicles		361	2.3	358 <sup>N1</sup>	2.4	0.125	3.0	NA	0.6	4.5	0.05	0.44	0.05	41.1

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.  
 SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.  
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

<sup>N1</sup> Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

# MOVEMENT SUMMARY

Site: 103 [3 Memorial Ave / Nepean Ave (PM\_BASE)]

Network: N101 [Existing PM]

Survey Date: 07/02/2020  
 PM Peak: 5:00-6:00  
 Site Category: (None)  
 Giveaway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: Nepean Ave (S)														
2	T1	1	0.0	1	0.0	0.021	0.0	LOS A	0.1	0.7	0.04	0.53	0.04	45.6
3	R2	37	2.9	37	2.9	0.021	4.6	LOS A	0.1	0.7	0.04	0.53	0.04	44.5
Approach		38	2.8	38	2.8	0.021	4.5	NA	0.1	0.7	0.04	0.53	0.04	44.5
East: Memorial Avenue (E)														
4	L2	61	1.7	61	1.7	0.037	4.6	LOS A	0.0	0.3	0.00	0.53	0.00	45.0
6	R2	6	0.0	6	0.0	0.037	4.6	LOS A	0.0	0.3	0.00	0.53	0.00	39.1
Approach		67	1.6	67	1.6	0.037	4.6	NA	0.0	0.3	0.00	0.53	0.00	44.7
North: Memorial Avenue (N)														
7	L2	7	0.0	7	0.0	0.006	4.7	LOS A	0.0	0.1	0.10	0.49	0.10	35.0
8	T1	1	0.0	1	0.0	0.006	3.5	LOS A	0.0	0.1	0.10	0.49	0.10	44.8
Approach		8	0.0	8	0.0	0.006	4.5	LOS A	0.0	0.1	0.10	0.49	0.10	38.1
All Vehicles		114	1.9	114	1.9	0.037	4.5	NA	0.1	0.7	0.02	0.53	0.02	44.4

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.  
 SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.  
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 103 [6 Memorial Ave / Nepean Ave (PM\_BASE +DEVELOPMENT)]

Network: N101  
[Development + Base PM]

Survey Date: 07/02/2020  
PM Peak: 5:00-6:00  
Site Category: (None)  
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles	Distance				km/h
South: Nepean Ave (S)														
2	T1	1	0.0	1	0.0	0.021	0.0	LOS A	0.1	0.7	0.04	0.53	0.04	45.6
3	R2	37	2.9	37	2.9	0.021	4.6	LOS A	0.1	0.7	0.04	0.53	0.04	44.5
Approach		38	2.8	38	2.8	0.021	4.5	NA	0.1	0.7	0.04	0.53	0.04	44.5
East: Memorial Avenue (E)														
4	L2	61	1.7	60	1.7	0.036	4.6	LOS A	0.0	0.2	0.00	0.53	0.00	45.0
6	R2	6	0.0	6	0.0	0.036	4.6	LOS A	0.0	0.2	0.00	0.53	0.00	39.1
Approach		67	1.6	67	1.6	0.036	4.6	NA	0.0	0.2	0.00	0.53	0.00	44.7
North: Memorial Avenue (N)														
7	L2	7	0.0	7	0.0	0.006	4.7	LOS A	0.0	0.1	0.10	0.49	0.10	35.0
8	T1	1	0.0	1	0.0	0.006	3.5	LOS A	0.0	0.1	0.10	0.49	0.10	44.8
Approach		8	0.0	8	0.0	0.006	4.5	LOS A	0.0	0.1	0.10	0.49	0.10	38.1
All Vehicles		114	1.9	113 <sup>N1</sup>	1.9	0.036	4.5	NA	0.1	0.7	0.02	0.53	0.02	44.4

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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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

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## Attachment 2 Architectural Plans



**SCHEDULE OF AREAS**

LOT 21 (PROPOSED NEW STRUCTURE)  
 GROUND FLOOR = 1696m<sup>2</sup>  
 FIRST FLOOR = 1612m<sup>2</sup>  
 TOTAL AREAS = **3308m<sup>2</sup>**

LOT 22 (PROPOSED NEW CARPARK)  
 TOTAL AREA = **5696m<sup>2</sup>**

**NUMBER OF CARPARKING**  
 VISITOR PARKING = 210  
 ACC PARKING = 4

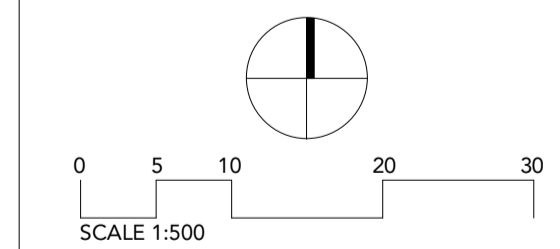
DRAWING STATUS:		
DEVELOPMENT APPLICATION		
Rev	Revision Description	Date
1	For Information	200130
2	For Information	200210
3	For Information	200212
4	For Information	200217
5	For Information	200219
6	For Information	200312
7	For Coordination	200316
8	For Coordination	200318
9	Preliminary Issue for DA	200402
10	Issue for DA	200409

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- DRAWING LEGEND:**
1. Architectural drawings shall be read in conjunction with other consultant drawings and specifications. Any discrepancies shall be referred to team 2 architects before proceeding with work.
  2. All dimensions and levels are in millimeters unless noted otherwise. No dimension shall be obtained by scaling the drawing.
  3. All dimensions to be checked on site with any discrepancies referred to team 2 architects before proceeding with work.
  4. All work to be carried out in accordance with the requirements of the principal certifying authority, current ncc & australian standards.



FDC  
 22 - 24 Junction Street, Forest Lodge, NSW 2037



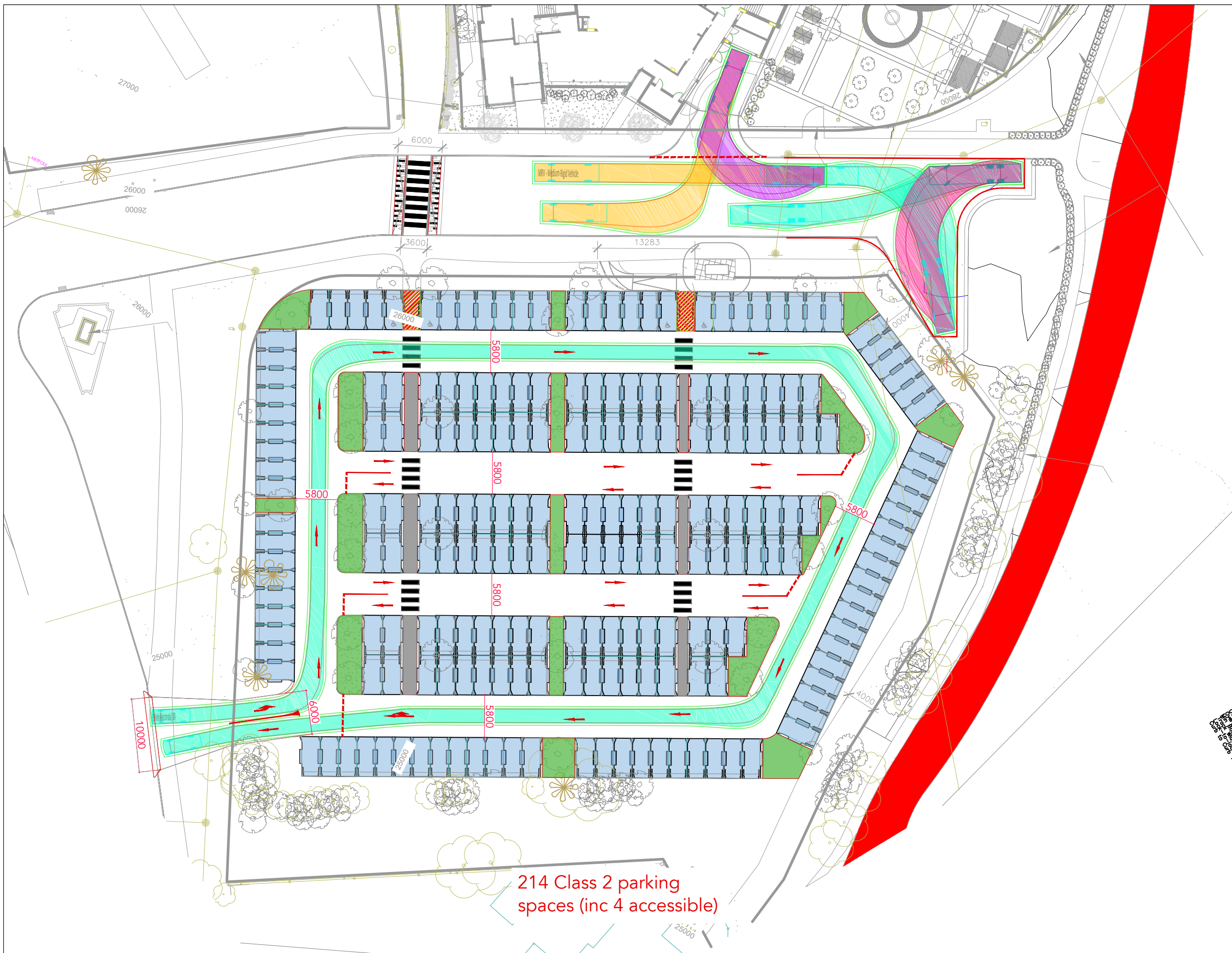
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Penrith Log Cabin Pub  
 LOTS 20, 21 & 22 IN DP 1236215  
 MEMORIAL AVENUE, PENRITH

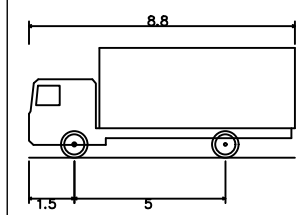
Site Plan			
Project #	Scale	Doc	Clid
905	1 : 500	0A1	JP ZA
Drawing #		Rev	
DA010		10	

## Attachment 3 Parking Assessment

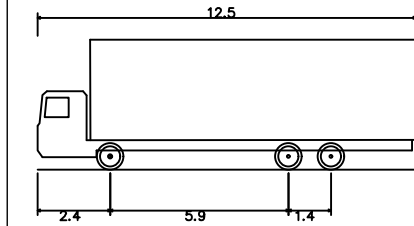




214 Class 2 parking spaces (inc 4 accessible)

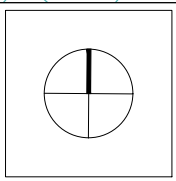


MRV - Medium Rigid Vehicle  
 Overall Length 8.800m  
 Overall Width 2.500m  
 Overall Body Height 3.633m  
 Min Body Ground Clearance 0.428m  
 Track Width 2.500m  
 Lock-to-lock time 4.00s  
 Curb to Curb Turning Radius 10.000m



HRV - Heavy Rigid Vehicle  
 Overall Length 12.500m  
 Overall Width 2.500m  
 Overall Body Height 4.300m  
 Min Body Ground Clearance 0.417m  
 Track Width 2.500m  
 Lock-to-lock time 6.00s  
 Curb to Curb Turning Radius 12.500m

rev	date	comment / description	drawn	reviewed
8	17/04/20	DA Assessment	SW	AM
7	30/03/20	Updated Base	SW	AM
6	17/03/20	Revised set back	SW	AM
5	02/03/20	Revised access location	SW	AM
4	17/02/20	Updated Concept Layout - extended layby	SW	AM
3	11/02/20	Updated Concept Layout	SW	AM
2	07/02/20	Concept Layout	SW	AM



project  
 Log Cabin Inn, Penrith

drawing title  
 Car Park Assessment

client	FDC Construction & Fitout
drawing #	ptc-002
project #	2774
scale	1 : 500