

## APPENDIX 4

Traffic & Parking Assessment report prepared by  
The Transport Planning Partnership



# Australian Arms Hotel, Penrith Transport and Parking Assessment

Prepared for:  
Australian Arms Unit Trust

1 May 2018

The Transport Planning Partnership

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# Australian Arms Hotel, Penrith

## Transport and Parking Assessment

Client: Australian Arms Unit Trust

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## APPENDICES

- A. INTERSECTION MOVEMENTS COUNTS SURVEY (MARCH 2018)
- B. PARKING OCCUPANCY SURVEY (MARCH 2018)
- C. STRATEGIC TRAFFIC MODEL (TRAFFIC GROWTH PER YEAR 2016-2026)
- D. SWEEP PATH ASSESSMENT

# 1 Introduction

This traffic and parking assessment report has been prepared by The Transport Planning Partnership (TPPP) on behalf of Australian Arms Unit Trust to accompany a Planning Proposal to Penrith City Council for the redevelopment of the Australian Arms Hotel located at 351 and 359 High Street, and 18 Lawson Street, Penrith.

The proposal involves the expansion of the existing pub whilst retaining the heritage character of the building. The proposed redevelopment consists of the following key features:

- Retention and upgrade of the existing pub
- Provision of a new hotel accommodation
- Provision of a new conference and function facility
- Provision of a new basement car park with approximately 62 spaces
- Provision of a 10km/h shared zone in Lawson Lane.

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

- existing transport conditions surrounding the site
- car parking, pedestrian and bicycle requirements
- the traffic generating characteristics of the proposed redevelopment
- suitability of the proposed access arrangements for the site
- the transport impact of the development on the surrounding road network.

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

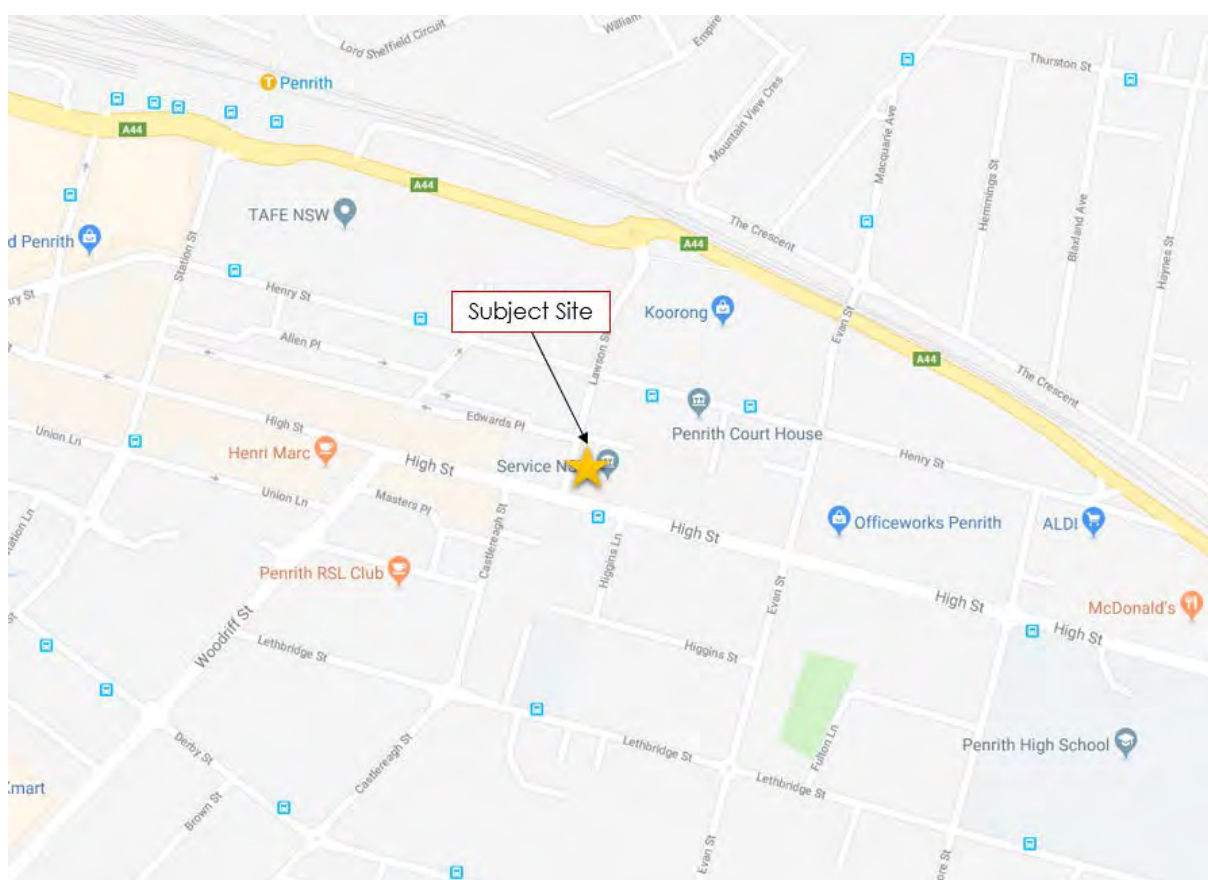
- Penrith City Council Development Control Plan (2014)
- Australian Arms Hotel Urban Design Report (The NRA Collaborative November 2017)
- Planning Proposal (Mersonn Pty Ltd September 2017)
- Roads and Maritime Services (Roads and Maritime) Technical Direction TTD 2016/001 (February 2016).

## 2 Existing Transport Conditions

### 2.1 Site Location

The subject site is located on lot parcels at 351 and 359 High Street and 18 Lawson Street, Penrith, as shown on Figure 2.1. The site is bound by High Street to the south and Lawson Street to the west, with Lawson Lane bisecting the site.

**Figure 2.1: Site Location and its Surrounding Environs**



Source: Google Maps Australia

The subject site also located within the Justice Precinct as one of the Opportunity Precincts for future developments in the Penrith city centre as part of the City Centre vision.

### 2.2 Existing Site

The existing pub is a local heritage building that provides approximately 230m<sup>2</sup> of bar and lounge area on the ground floor and 12 hotel rooms in the upper level. A covered beer garden with some 120m<sup>2</sup> of seating area is connected to the pub.

An at-grade car park is located to the rear of the pub off Lawson Lane and provides 25 spaces. Lawson Lane provides two 90° angled parking spaces on the south side of the road.

## 2.3 Road Network

**Lawson Street** is located along the western boundary of the subject site and is a local road under the jurisdiction of Penrith City Council. It runs from north to south connecting North Street, Henry Street and High Street. It has one traffic lane in each direction with restricted parking lanes on both sides of the road between High Street and Henry Street.

Lawson Street is a 40km/h high pedestrian activity area between south of Lawson Lane and High Street. A Loading zone (14m long) is currently available on the east side of Lawson Street just outside the subject site.

**High Street** is located along the southern boundary of the subject site and runs through the Penrith city centre as the continuation of the Great Western Highway (State Highway 5). High Street generally has one travel lane in each direction with restricted kerbside parking on both sides of the road but is a one-way road westbound between Station Street and Henry Street.

High Street is a 40km/h high pedestrian activity area and has a three tonnes load restriction through the Penrith city centre.

**Henry Street** is a two-way road that stretches between Great Western Highway and High Street in an east to west direction. The road has one traffic lane in each direction with a combination of unrestricted and restricted kerb side parking on both sides of the road.

**Lawson Lane** is a two-way laneway providing access to the rear car park of the Australian arms hotel and two other car parks of the neighbouring properties. All turning movements are permitted at its intersection with Lawson Street.

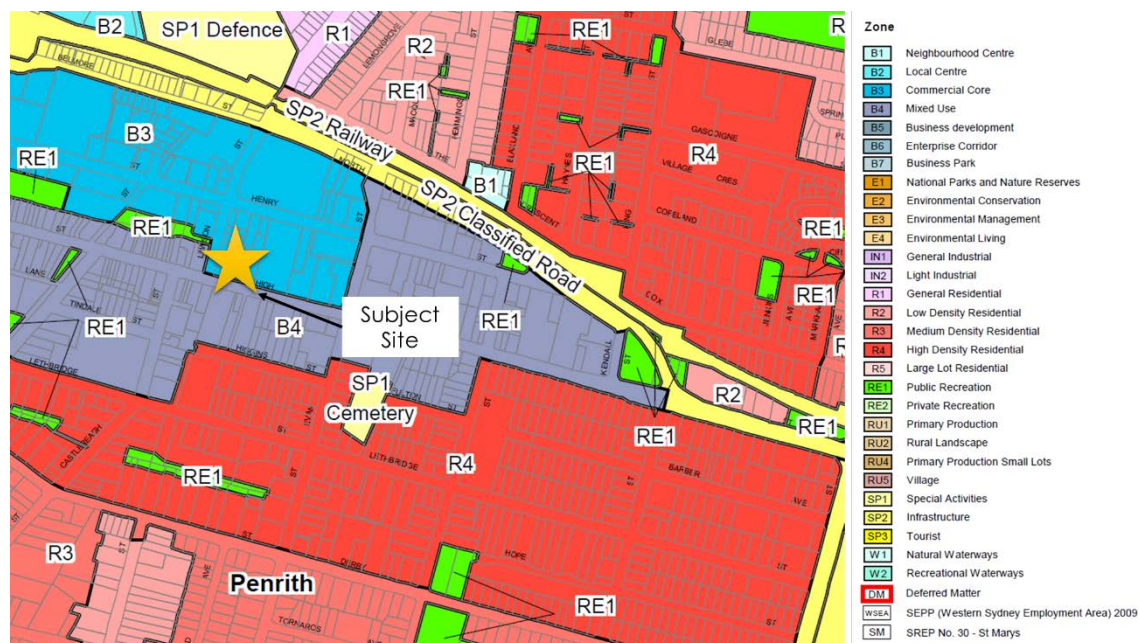
## 2.4 Current Land Use

The subject site is situated at 351 and 359 High Street and 18 Lawson Street within a B3 Commercial Core zone. A B3 Commercial Core zone is defined as an area that provides a wide range of retail, business, office, entertainment, community and other suitable land uses that serve the needs of the local and wider community.

The permitted use of the B3 Commercial Core zone includes hotel or motel accommodation, function centres, entertainment facilities and car parks.

The surrounding land uses as shown in Figure 2.2 include a retail strip along High Street which is located within the B3 Commercial Core zone and a B4 Mixed Use zone. A RE1 Public Recreation zone is located to the west of the subject site in Edwards Place as a short-term car park.

Figure 2.2: Existing Land Use



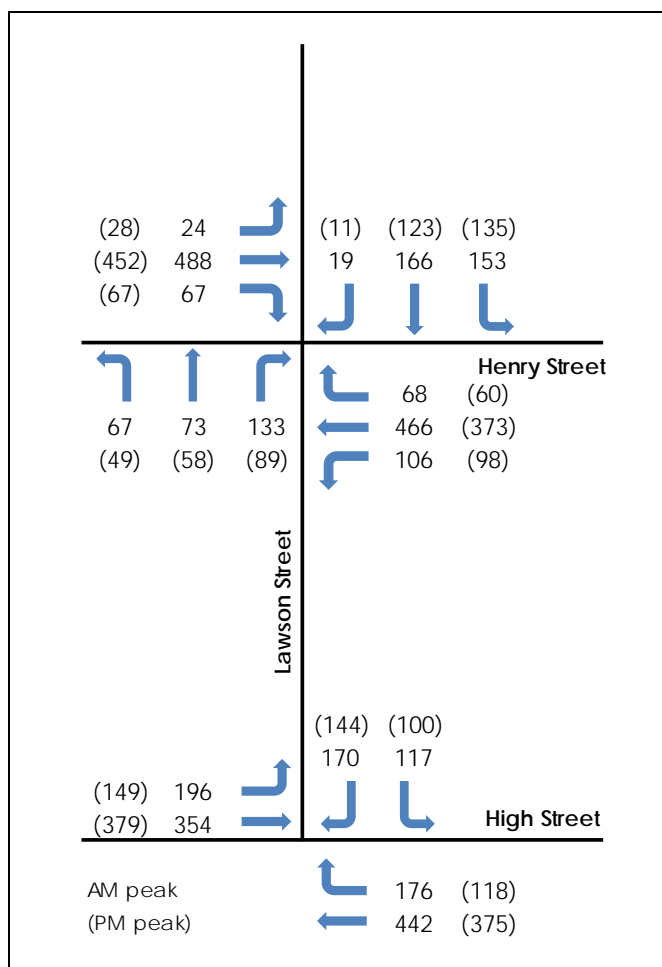
Source: Penrith City Council

## 2.5 Existing Background Traffic

TTPP commissioned a turning movement survey to record traffic volumes at the intersection of Henry Street with Lawson Street and the intersection of High Street with Lawson Street during the PM peak period on Thursday 15 March 2018 and during the AM peak period on Thursday 22 March 2018.

Figure 2.3 shows the existing peak hour traffic (mph) at these intersections. Survey data is shown in Appendix A.

Figure 2.3: Existing Traffic Volumes (2018)



Note: AM peak hour (7.45am-8.45am) and PM peak hour (4.30pm-5.30pm)

## 2.6 Existing Parking Facilities

In response to the Penrith DCP requirement, the on-site car park is not required to fully accommodate the likely parking demand associated the development. The DCP allows a maximum of 60% of the total number of commercial parking spaces required by the development to be provided on-site. Refer to Section 4.1 for further details.

On this basis, the proposed redevelopment would not fully accommodate the parking demand within the proposed basement car park and would most likely generate some demands on the surrounding streets and off-street public car parks.

A parking demand survey was undertaken in the vicinity of the site in order to appreciate the impacts of the parking demand associated with the operation of the proposed development. The parking demand survey was carried out during the following periods:

- Between 7am and 5pm on Thursday 15 March 2018 and between 5pm and 9pm on Thursday 22 March 2018

- Between 7am and 5pm on Saturday 17 March 2018 and between 5pm and 9pm on Saturday 24 March 2018.

Survey data is shown in Appendix B.

The survey locations recorded 911 spaces on both sides of the following streets and off-street public car parks, including the disabled parking, loading zone and reserved/authorised parking (refer to Figure 2.4):

- High Street (119 spaces)
- Lawson Street (9 spaces)
- Castlereagh Street (45 spaces)
- Henry Street (93 spaces)
- Edwards Place off-street public car park (84 spaces)
- Allen Place off-street public car park (210 spaces)
- Soper Place off-street public car park (351 spaces).

**Figure 2.4: Extent of the Parking Demand Survey**



Basemap source: Google Maps Australia

The objective of the parking demand survey was to determine the occupancy of each parking space.

## 2.6.1 Parking Supply

Table 2.1 provides a summary of the parking supply at the surveyed roads and off-street public car parks, excluding a total of 16 spaces that are designated for disabled parking, loading zone and reserved/authorised parking. Thus, the total parking supply is 895 spaces within the survey area.

**Table 2.1: Parking Supply in the vicinity of the Site**

Parking Location	Sub-Area	Untimed	Timed-15 minutes	Timed-Half Hour	Timed-1 Hour	Timed-2 Hours	Timed-3 Hours	Total
High Street	Station Street opposite of Woodriff Street	0	0	29	0	0	0	29
	Opposite of Woodriff Street to Lawson Street	0	5	10	0	0	0	15
	Lawson Street to Evans Street	7	0	12	0	0	0	19
	Evans Street to Higgins Lane	0	4	0	11	0	0	15
	Higgins Lane to Castlereagh Street	0	0	5	0	0	0	5
	Castlereagh Street to Woodriff Street	0	0	12	0	0	0	12
	Woodriff Street to Station Street	0	0	24	0	0	0	24
Lawson Street	Henry Street to Lawson Lane	0	0	0	2	0	0	2
	High Street to Edwards Place	0	0	0	4	0	0	4
	Edwards Place to Henry Street	0	0	0	3	0	0	3
Castlereagh Street	Lethbridge Street Round About to Tindale Street	0	0	13	0	0	0	13
	Tindale Street to Masters Place Car Park	0	0	2	0	0	0	2
	Masters Place Car Park to High Street	0	0	6	0	0	0	6
	High Street to John Cram Place	0	0	3	0	0	0	3
	John Cram Place to Lethbridge Street roundabout	0	0	5	16	0	0	21
Henry Street	Station Street to Woodriff Street	0	0	0	19	0	0	19

Parking Location	Sub-Area	Untimed	Timed-15 minutes	Timed-Half Hour	Timed-1 Hour	Timed-2 Hours	Timed-3 Hours	Total
	Woodriff Street to Lawson Street	0	0	0	13	0	0	13
	Lawson Street to Evans Street	0	0	0	12	0	0	12
	Evans Street to Lawson Street	11	0	0		0	0	11
	Lawson Street to Woodriff Street	0	0	0	11	0	0	11
	Woodriff Street to Gaymark Lane	2	0	0	21	0	0	23
	Gaymark Lane to Station Street	0	0	0	4	0	0	4
Edwards Place off-street public car park	-	0	0	0	0	82	0	82
Allen Place off-street public car park	-	0	0	0	41	160	0	201
Soper Place off-street public car park	-	259	0	0	0	0	87	346
<b>Total</b>		<b>279</b>	<b>9</b>	<b>121</b>	<b>157</b>	<b>242</b>	<b>87</b>	<b>895</b>

Notes:

(1) Disabled parking, loading zone and reserved/authorised parking have been excluded in the above numbers.

(2) No parking zones are in operation:

-Henry Street between Lawson Street and Evans Street (23 spaces) 3:30pm-6:30pm Monday to Friday.

-Henry Street between Woodriff Street and Gaymark Lane (2 spaces) 8:30am-6pm Monday-Friday, 8:30am-12:30pm Saturday.

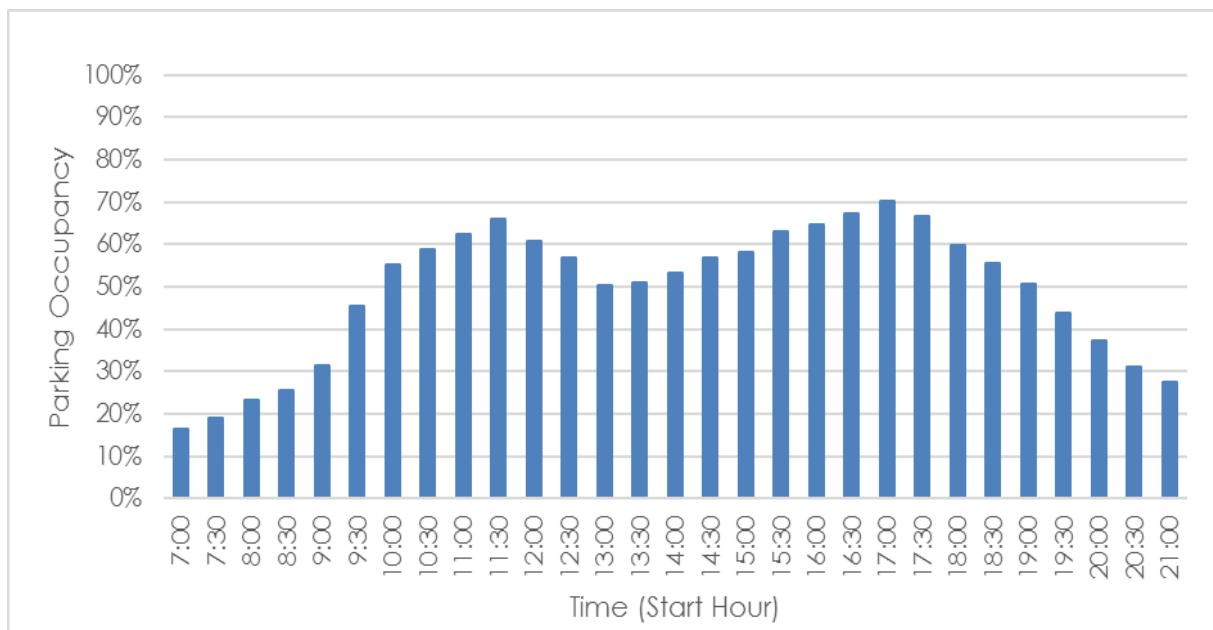
-High Street between Lawson Street and Evans Street (7 spaces) 7am-6pm Monday to Friday.

## 2.6.2 Parking Demand

### 2.6.2.1 Weekday (Thursday)

The parking demands recorded for the overall survey area on Thursday are depicted graphically on Figure 2.5.

**Figure 2.5: Overall Survey Area – Parking Occupancy (Thursday)**



The results indicate that overall the highest parking occupancy occurred at 5pm before the parking demands reduced significantly for the rest of the day. During this peak period, the parking supply was 863 spaces due to parking restrictions with some 248 spare spaces available in the survey area.

The parking demands throughout Friday for the individual parking locations are shown graphically on Figure 2.6 through to Figure 2.12.

Figure 2.6: High Street – Parking Supply vs Demand (Thursday)<sup>1</sup>

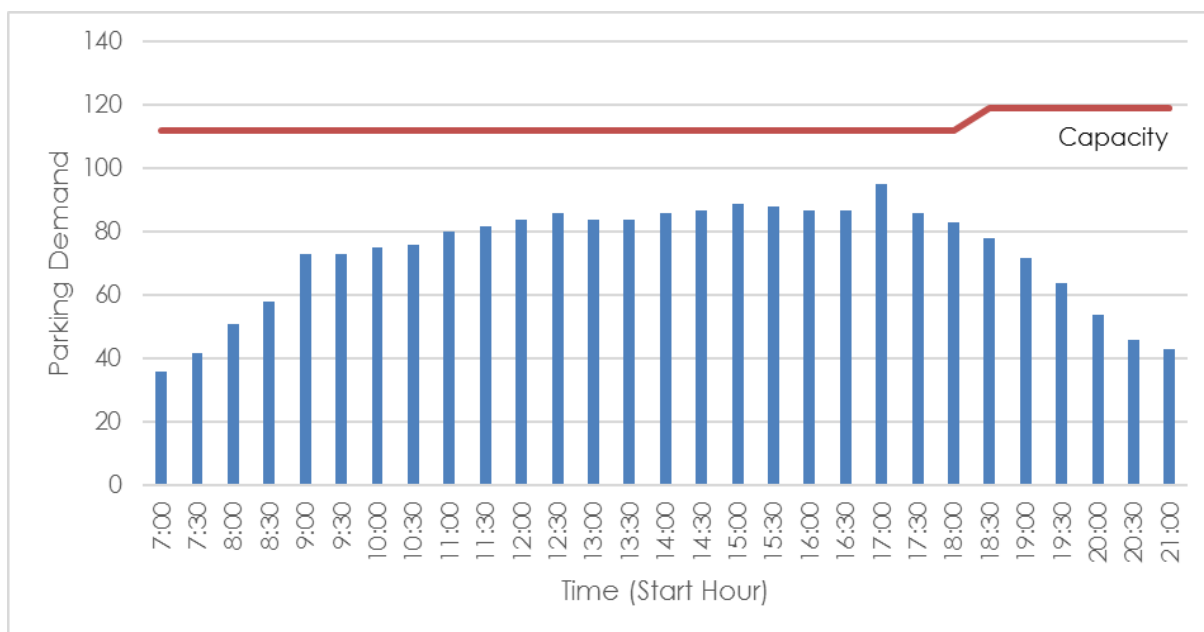
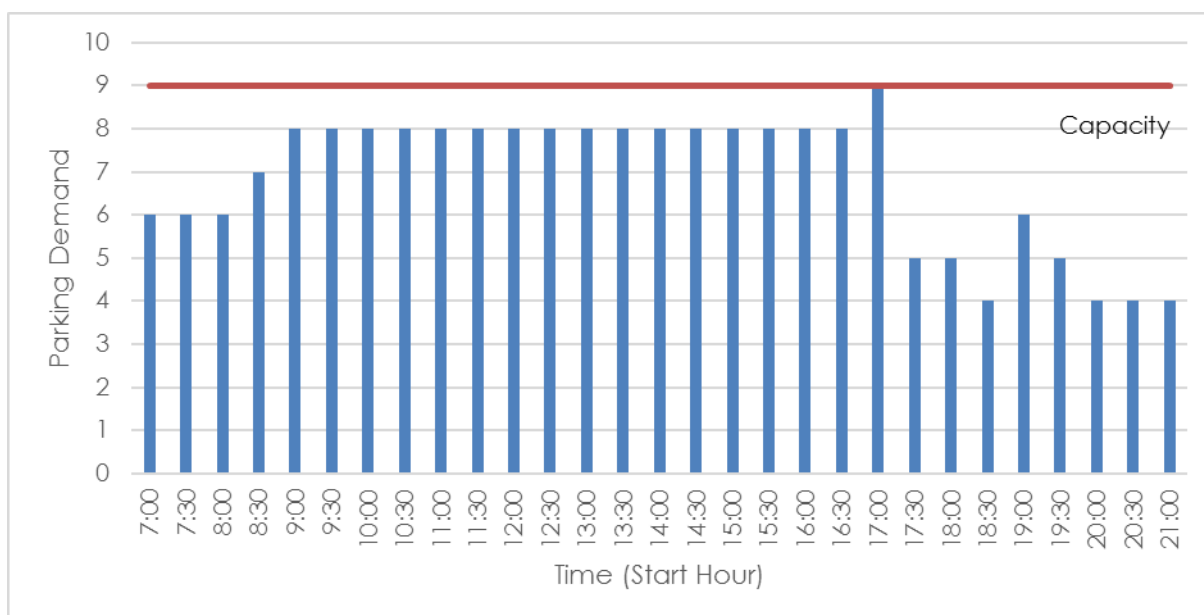
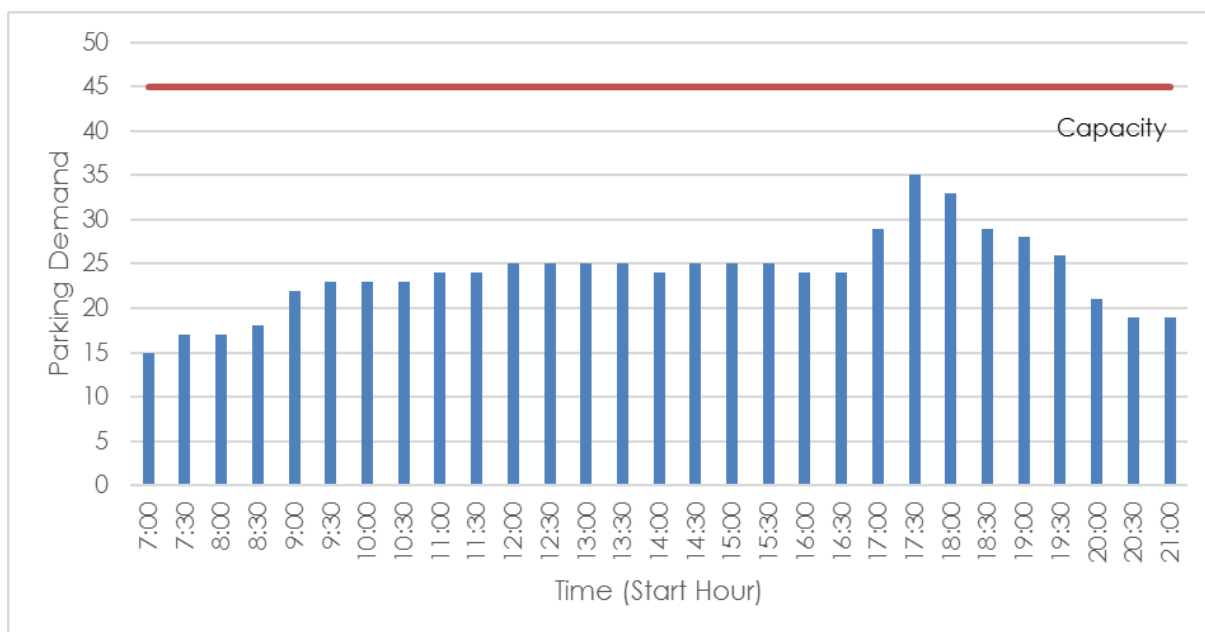


Figure 2.7: Lawson Street – Parking Supply vs Demand (Thursday)

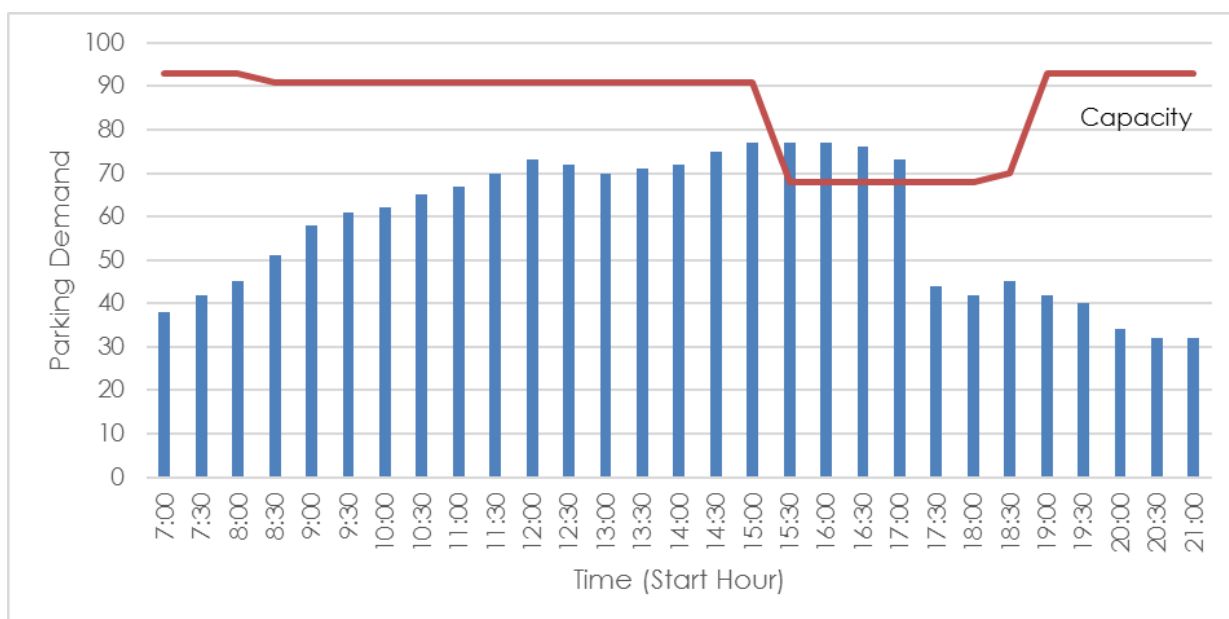


<sup>1</sup> Parking supply reduces between 7am-6pm Monday to Friday when no parking zone is operational between Lawson Street and Evans Street.

**Figure 2.8: Castlereagh Street – Parking Supply vs Demand (Thursday)**

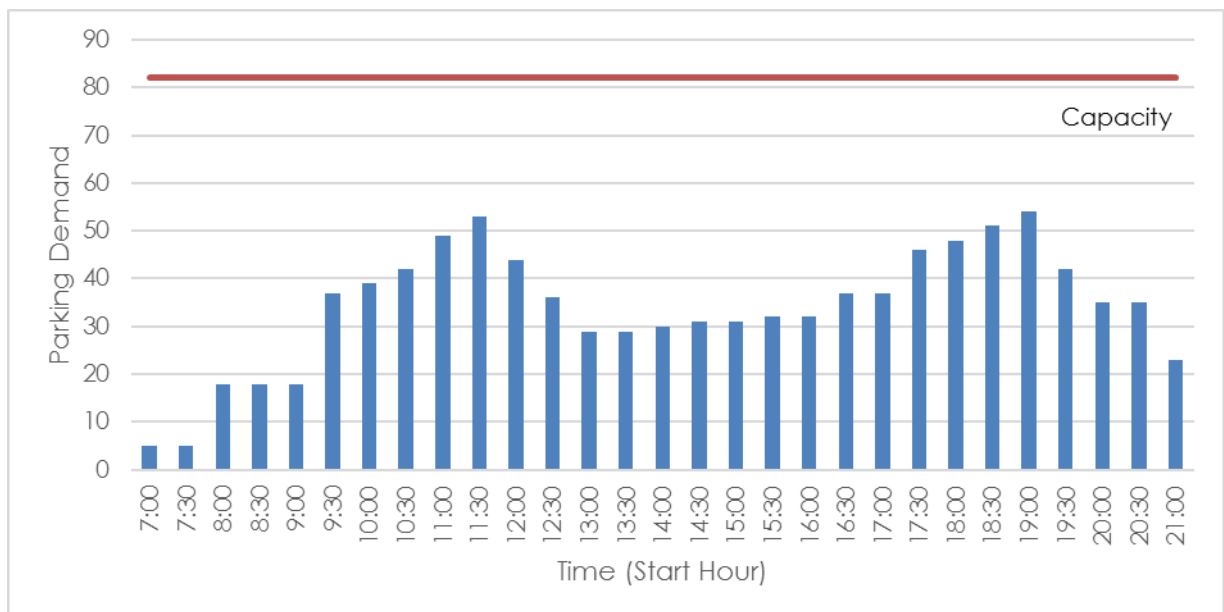


**Figure 2.9: Henry Street – Parking Supply vs Demand (Thursday)<sup>2</sup>**

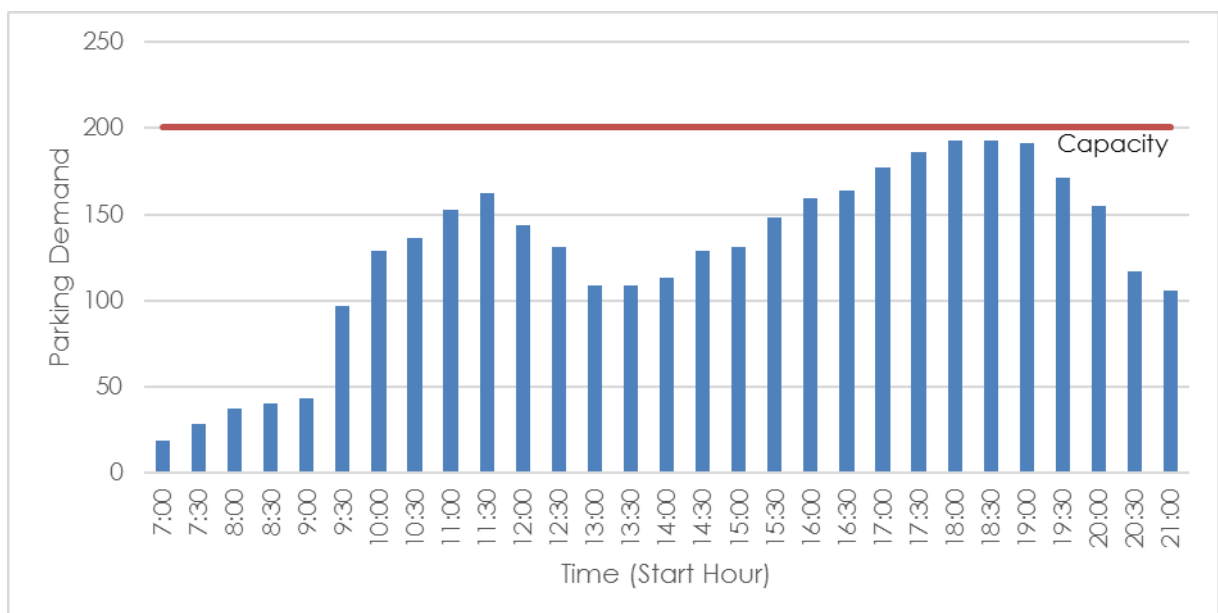


<sup>2</sup> Parking supply reduces between 8:30am and 6pm Monday to Friday when the No Parking zone is operational in Henry Street between Woodruff Street and Gaymark Lane.  
Parking supply reduces between 3:30pm and 6:30pm Monday to Friday in Henry Street eastbound kerbside lane between Lawson Street and Evans Street when the No Parking zone is operational, however, there were parked vehicles in the No Parking zone during this time period.

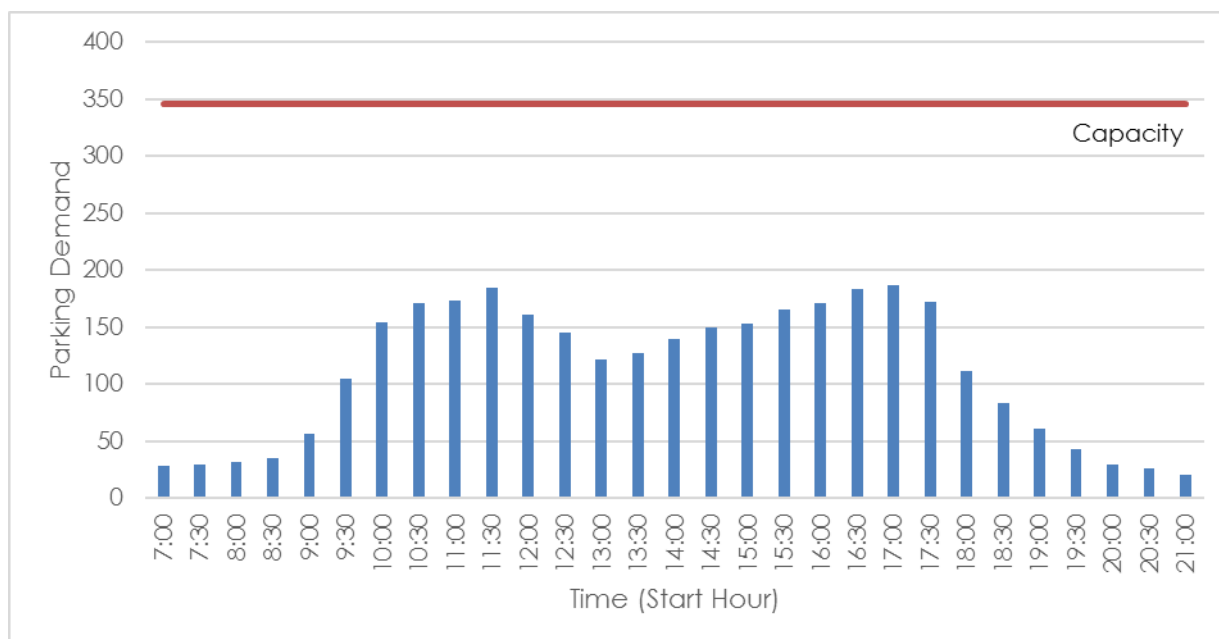
**Figure 2.10: Edwards Place Off-Street Car Park – Parking Supply vs Demand (Thursday)**



**Figure 2.11: Allen Place Off-Street Car Park – Parking Supply vs Demand (Thursday)**



**Figure 2.12: Soper Place Off-Street Car Park – Parking Supply vs Demand (Thursday)**



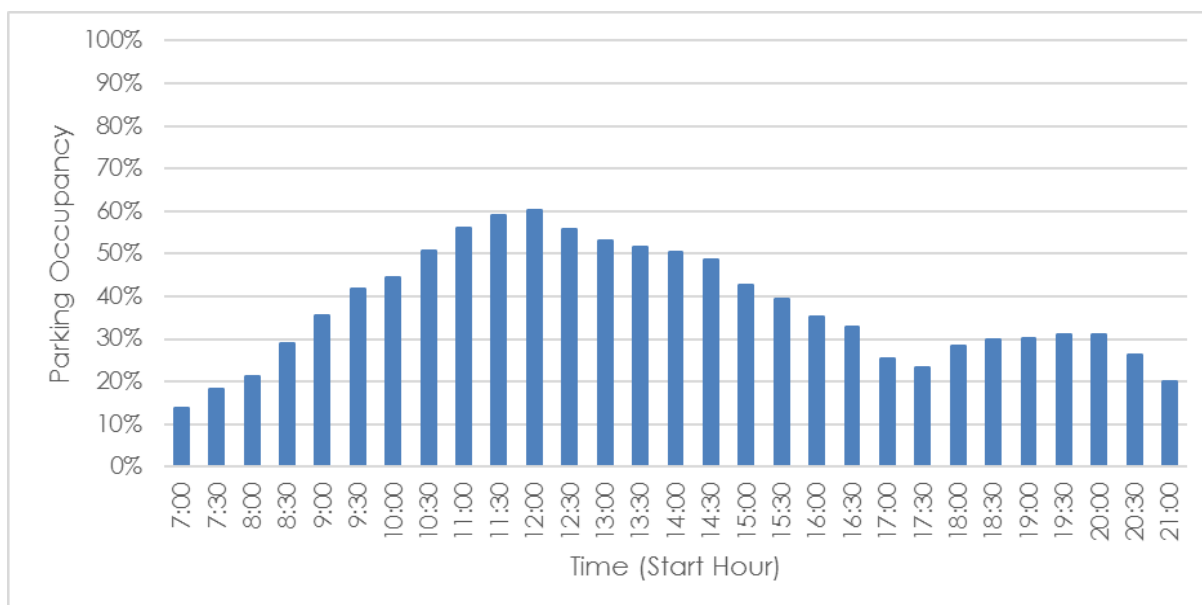
Allen Place off-street public car park experienced the highest parking demands out of the three off-street car park areas in the near vicinity of the site. While the peak parking demands were high with a peak occupancy nearing capacity at the Allen Place off-street car park, there were ample vacant parking spaces in the Edwards Place off-street car park which is located much closer to the subject site. There were even more vacant spaces in the Soper Place off-street public car park where untimed parking spaces are provided.

Parking in Henry Street was above capacity at 3:30pm due to illegal parking in the No Parking zone when it was operational between 3:30pm and 6:30pm. The highest legal parking demand on Henry Street was 85% that occurred at 3pm. Lawson Street showed the highest parking demand as the parking was at full capacity at 5pm. On average, the occupancy rate in kerbside parking varied between 17% and 71% throughout the survey period on Friday.

#### 2.6.2.2 Weekend (Saturday)

The parking demands recorded for the overall survey area on Saturday are depicted graphically in Figure 2.13.

**Figure 2.13: Overall Survey Area – Parking Occupancy (Saturday)**



The results indicate that the overall highest parking occupancy occurred at 12pm (60%) on Saturday before the parking demands reduced for the rest of the day. During this peak period, some 356 to 398 spare spaces were available in the survey area.

The parking demands through Saturday for the individual parking locations are shown graphically on Figure 2.14 to Figure 2.20.

**Figure 2.14: High Street – Parking Supply vs Demand (Saturday)**

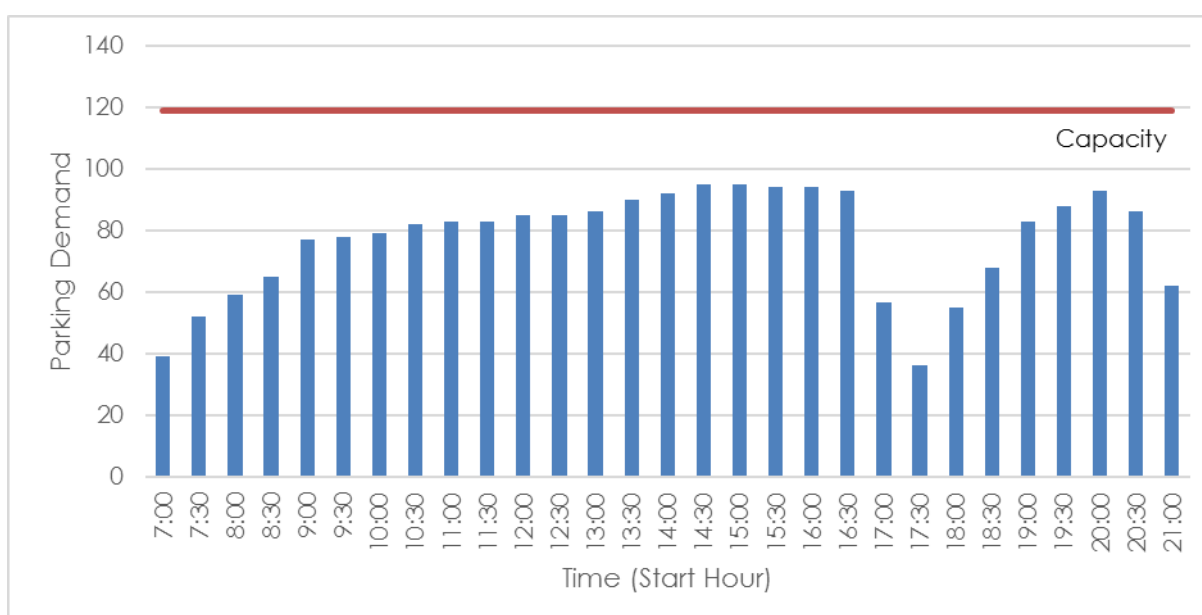


Figure 2.15: Lawson Street – Parking Supply vs Demand (Saturday)

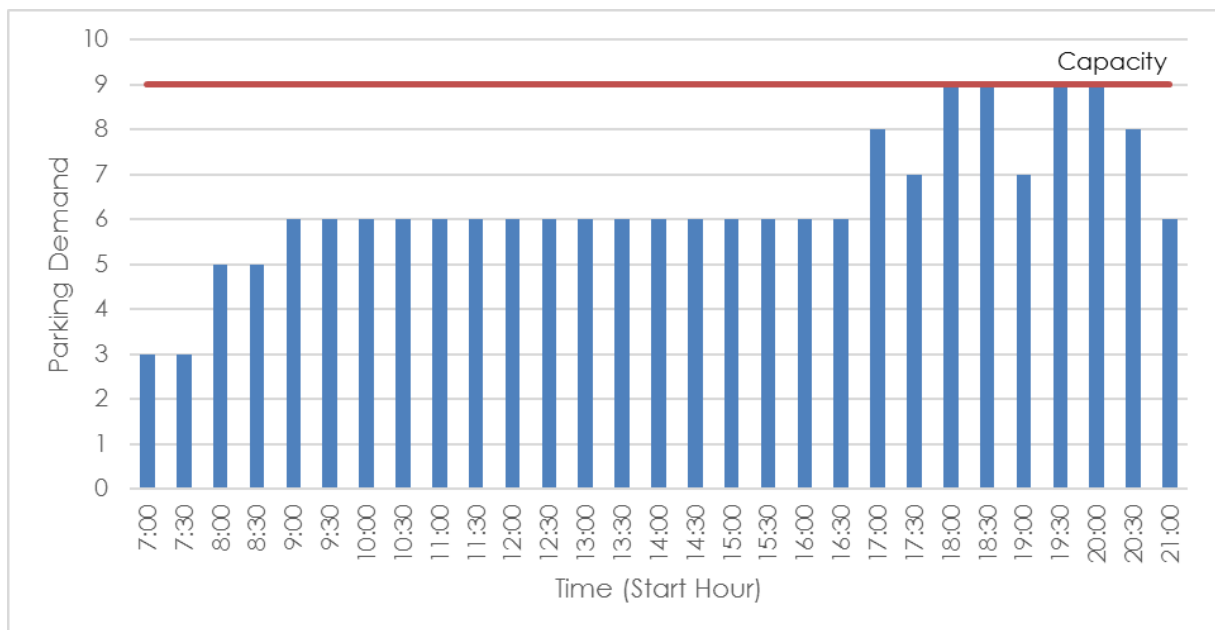


Figure 2.16: Castlereagh Street – Parking Supply vs Demand (Saturday)

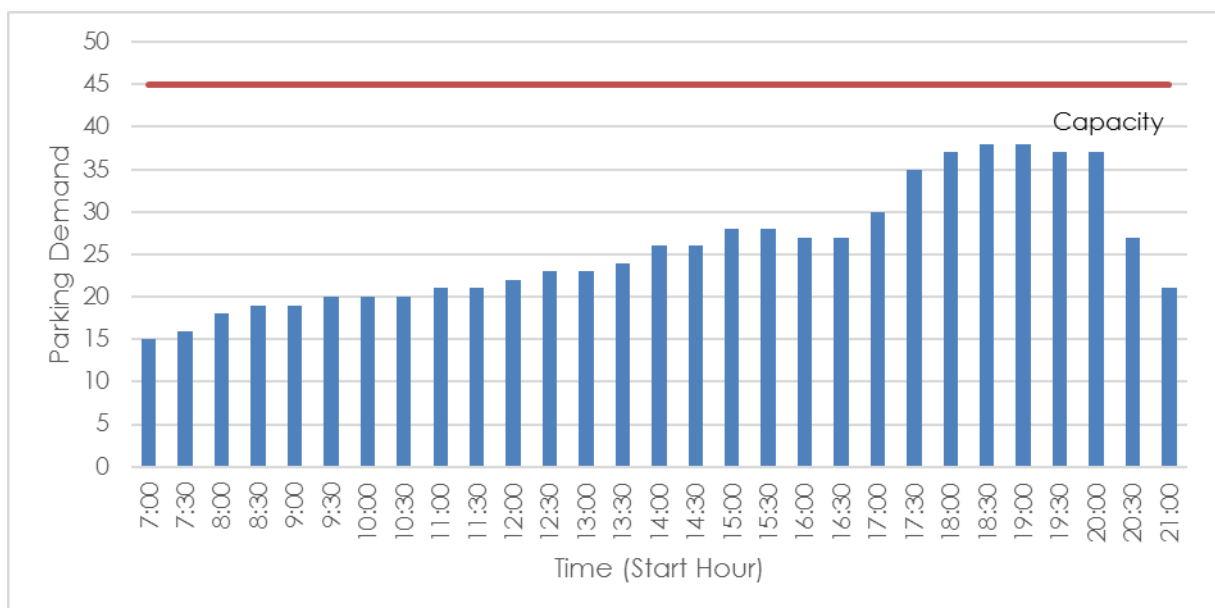


Figure 2.17: Henry Street – Parking Supply vs Demand (Saturday)<sup>3</sup>

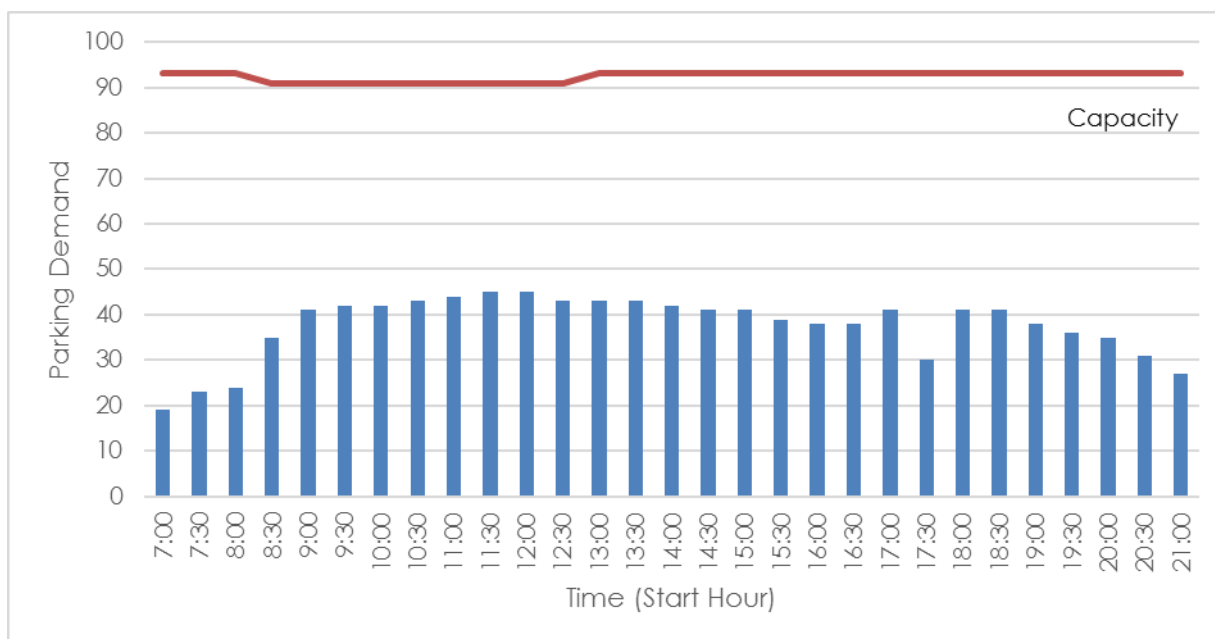
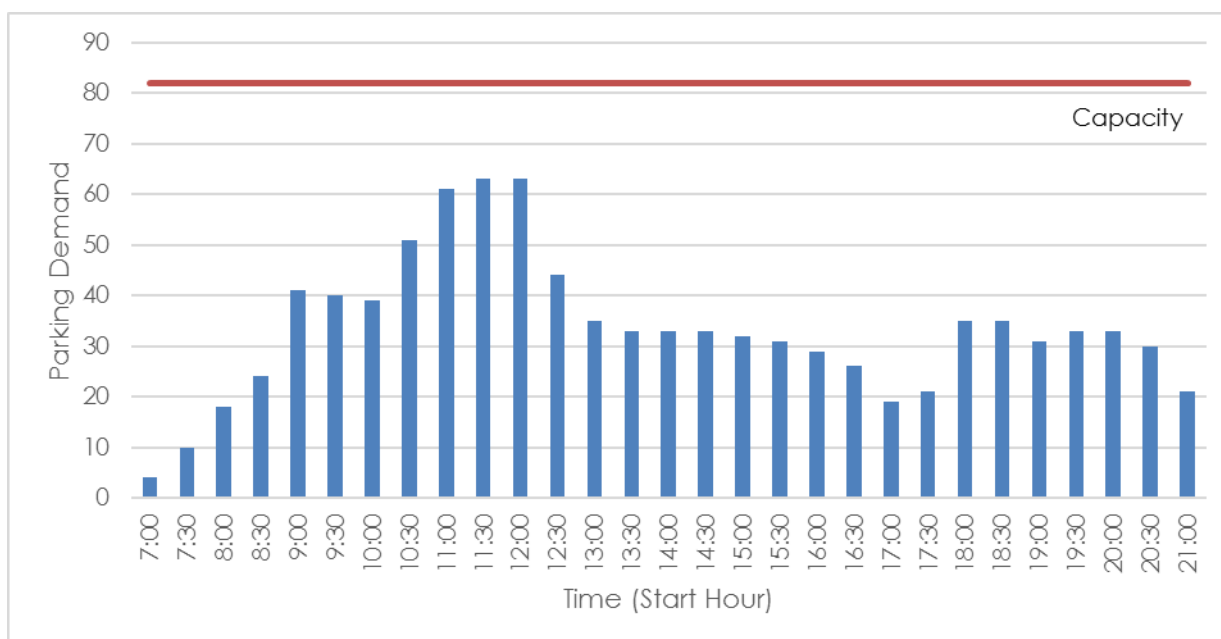
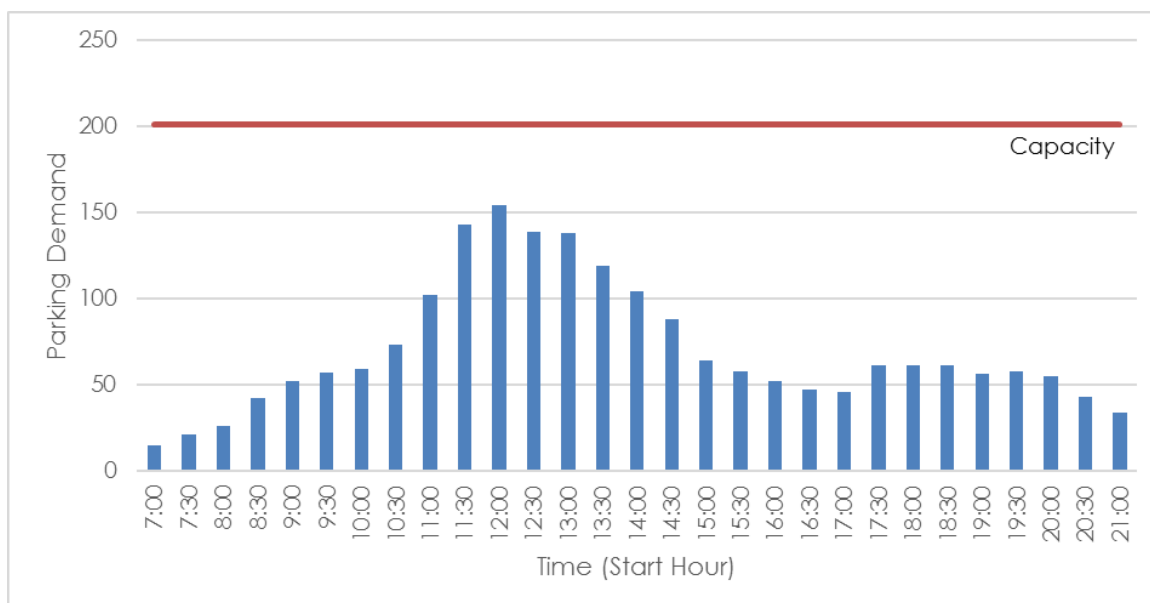


Figure 2.18: Edwards Place Off-Street Car Park – Parking Supply vs Demand (Saturday)

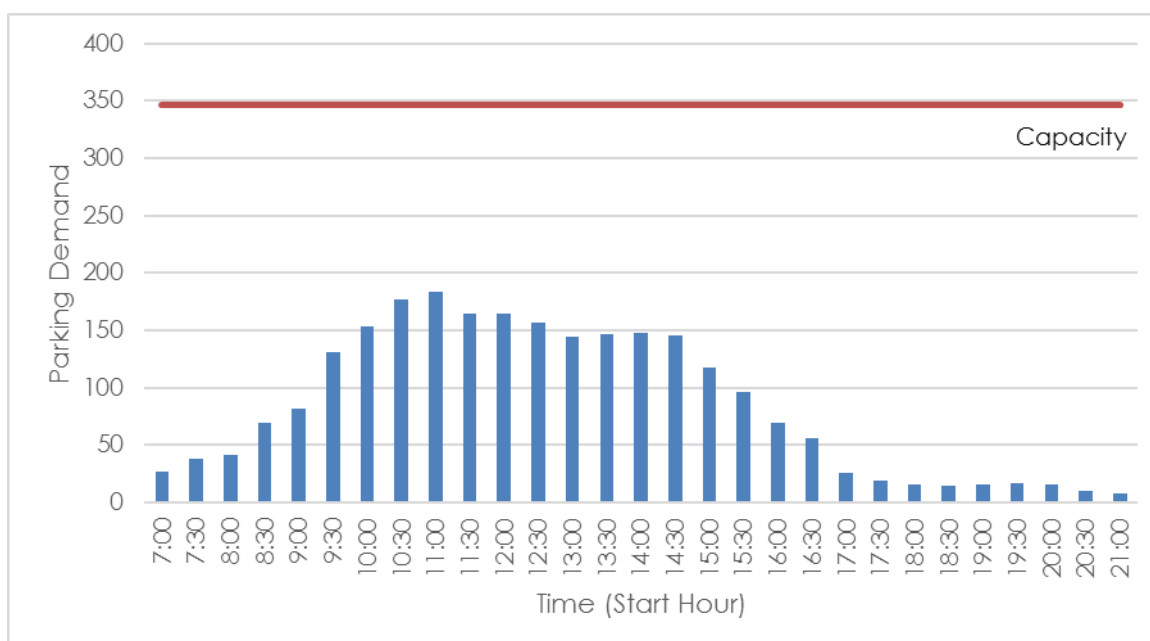


<sup>3</sup> Parking supply reduces between 8:30am and 12:30pm Saturday when the No Parking zone is in operation between Woodruff Street and Gaymark Lane.

**Figure 2.19: Allen Place Off-Street Car Park – Parking Supply vs Demand (Saturday)**



**Figure 2.20: Soper Place Off-Street Car Parking – Parking Supply vs Demand (Saturday)**



The Edward Place off-street public car park experienced the highest parking demands in the survey area. The peak parking demands for all three off-street public car parks were moderate and generally occurred between 11am and 12pm on Saturday with a sufficient number of spare spaces available within the car parks.

Parking on-street showed the parking demands varied between 20% and 100% on Henry Street and Lawson Street respectively on Saturday. On average, the occupancy rate in kerbside parking varied between 30% and 75% on Saturday.

## 2.7 Public Transport Facilities

The subject site is well served by public transport facilities, being located in proximity to multiple bus stops and Penrith railway station.

A summary of the existing public transport services and their respective frequencies during peak periods are provided below.

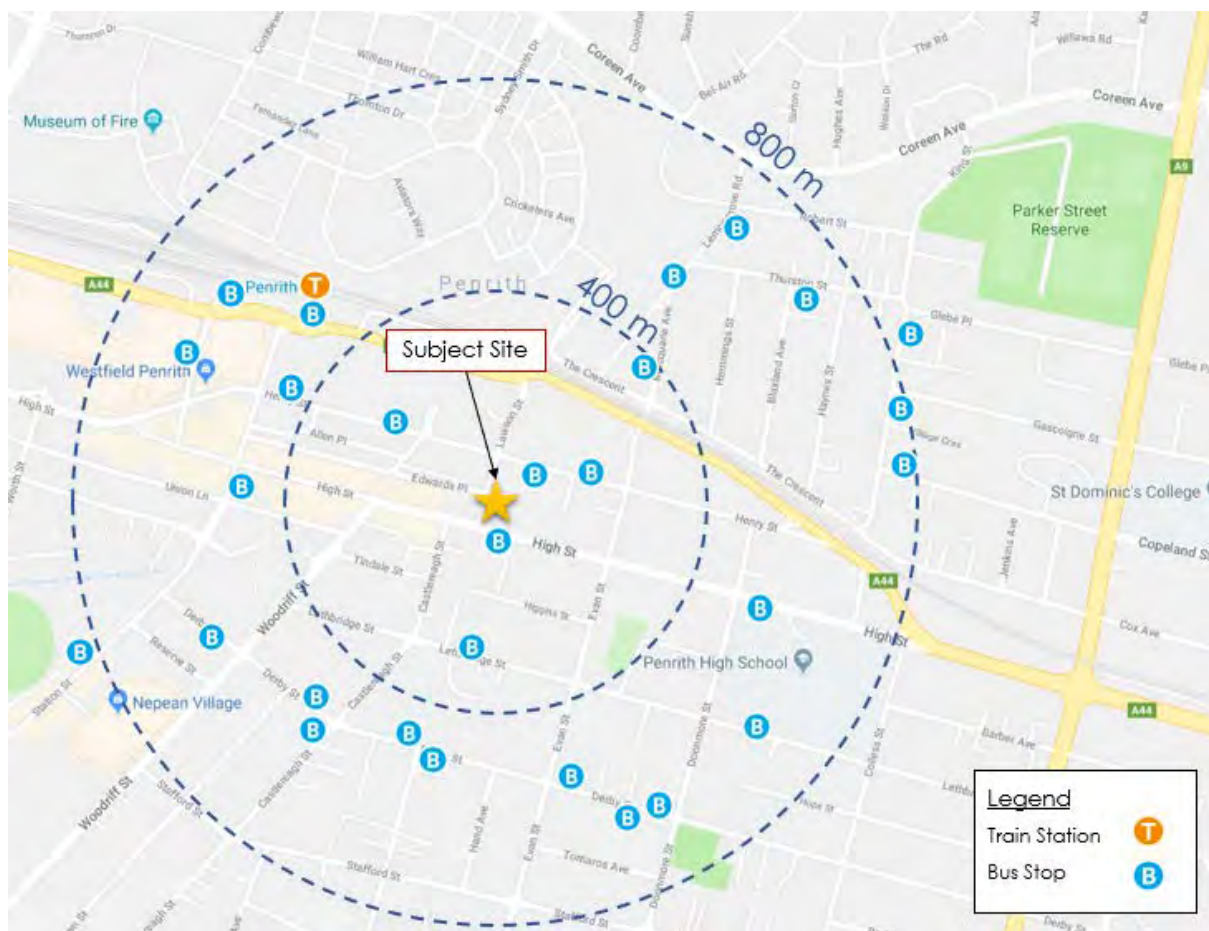
**Table 2.2: Existing Public Transport Services and Frequencies**

Service	Route	Route Description	Site Proximity	Frequency (on-peak/off-peak)	
				Weekday	Saturday
Bus	673	Windsor to Penrith via Bligh Park, Illandilo & Cranebrook	< 400m	30-mins-hourly/ 1 services	2 services
	677	Richmond to Penrith via Londonderry & The Northern Road	Immediately outside site	4 services / 2 hours	2 services
	678	Richmond to Penrith via Agnes Banks, Castlereagh & Cranebrook	< 300m	2 services	2 services
	688	Penrith to Emu Heights (loop service)	<30m	2 services / hourly	Hourly
	689	Penrith to Leonay (loop service)	<30m	1 service / hourly	Hourly
	770	Penrith to Mt Druitt via Claremont Meadows, St Marys & Colyton	<30m	30-mins / 30-mins	Hourly
	774	Penrith to Mt Druitt via St Marys & Oxley Park	<400m	30-mins / 30-mins	Hourly
	775	Penrith to Mt Druitt via St Marys & Erskine Park	<30m	30-mins / 30-mins	Hourly
	776	Penrith to Mt Druitt via St Marys & St Clair	<30m	30-mins / 30-mins	Hourly
	780	Penrith to Cambridge Park, Ropes Crossing & Mt Druitt	Immediately outside site	15-mins / 30-mins	30 mins to hourly
	782	Penrith to St Marys via Cambridge Gardens & Werrington Station	<30m	30-mins / 30-mins	Hourly
	785	Penrith to Werrington Station via Cambridge Park	<280m	30-mins / 30-mins	Hourly
	786	Penrith to Cranebrook via Greygums Road	<280m	30-mins / 30-mins	Hourly
	789	Penrith to Luddenham	<30m	1-2 services	No service
Rail	T1 Western Line	Between Emu Plains or Richmond & City	< 850m	15-mins / 30-mins	15 to 30 mins
	Blue Mountains Line	Between Bathurst & Central*	< 850m	Hourly	Every 2 Hours

\*Note: Most services operate between Lithgow and Central.

The site proximity to surrounding public transport services is graphically presented in Figure 2.21.

Figure 2.21: Site Proximity to Existing Public Transport Services



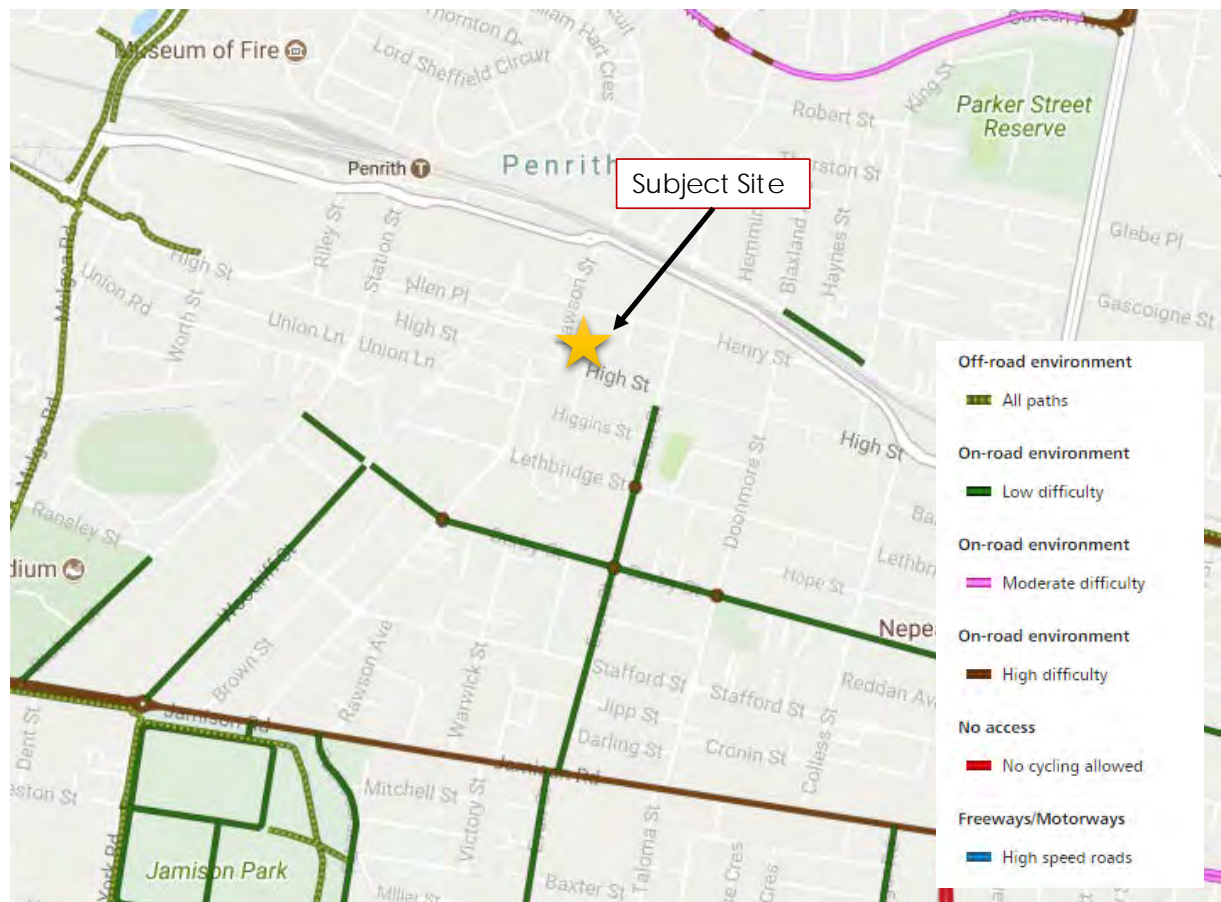
Basemap source: Google Maps Australia

## 2.8 Pedestrian and Cyclist Facilities

Pedestrian footpaths are provided on all roads surrounding the site, except for some low pedestrian traffic roads such as Lawson Lane. Pedestrian crossing facilities through signalised intersections are available in all surrounding streets including the signalised crossings with audio facility at the intersection of Lawson Street with High Street, located immediately next to the subject site.

Cycling routes surrounding the site include off-road and on-road environments as shown in the cycleway network map in Figure 2.22.

Figure 2.22: Surrounding Cycleways



Source: Roads and Maritime Services Cycleway Finder 2016 (accessed 27/02/18)

## 2.9 Future Developments

A research on the Penrith city centre indicates the following developments are being planned in the vicinity of the subject site:

- Redevelopment of the Soper Place and North Street car parks by 2019 into two multi-level car parks with an addition of 1,000 spaces. Council is currently inviting tenders for design plans.
- Redevelopment of the Union Street car park into mixed use buildings (beyond 2027/2028).

Penrith City Council has invited partners to develop within the Opportunity Precincts as part of the City Centre vision to maximise the City's potential as the "New West". No public available information has been released regarding any approved developments.

## 3 Proposed Redevelopment

### 3.1 Proposed Design

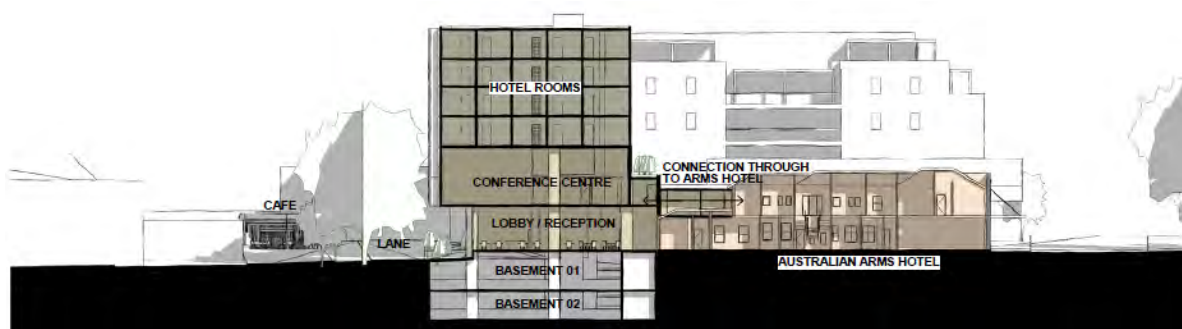
The proposed redevelopment involves the alteration of the existing pub to retain the heritage character; the demolition of the existing restaurant, at-grade car park and commercial premises located north of the existing pub; and construction of a consolidated hotel with a building height of 24m.

The proposed redevelopment consists of the following key features, as shown in Figure 3.1 and Figure 3.2:

- Retention and upgrade of the existing pub
- Provision of a new accommodation for 110 hotel rooms and retaining 12 existing rooms
- Provision of a new conference and function facility
- Provision of a new basement car park with approximately 62 spaces
- Provision of a 10km/h shared zone in Lawson Lane with a porte cochère entrance to the hotel.

It is noted that the basement car park design would be available in the Development Application stage.

**Figure 3.1: Concept Design**



Source: The NRA Collaborative Urban Design Report, November 2017. The café located adjacent the landscape space is no longer included in the design.

Figure 3.2: Proposed Floor Plan for Ground Floor and Level 1



#### GROUND FLOOR

#### LEVEL 01

Source: The NRA Collaborative Urban Design Report, November 2017. The café located adjacent to the landscape space is no longer included in the design.

**Figure 3.3: Proposed Floor Plan for Level 2 to 6**



#### LEVEL 02

#### LEVEL 03 - 06

Source: The NRA Collaborative Urban Design Report, November 2017

The proposal comprises the following land uses and sizes:

- Pub (the existing 240m<sup>2</sup> serving area and bar area to be maintained)
- Hotel rooms (110 new rooms as the 12 existing rooms are to be retained in the upper level of the pub)
- Conference centre/ function room (370m<sup>2</sup> seating area within the pre-function area and conference area)
- Restaurant (230m<sup>2</sup> seating area).

The conference centre/function room located in the first floor of the hotel building are to be hired for private functions.

## 3.2 Shared Zone in Lawson Lane

It is proposed to implement a 10km/h shared zone (category 1) in Lawson Lane to be shared by vehicles and pedestrians, subject to approval.

Category 1 shared zones are provided on a road with clearly different coloured and textured surface treatment from the surrounding roads, and typically does not have kerbs.

In accordance with the Roads and Maritime Technical Direction TTD 2016/001 (February 2016), kerbs would not be provided in the shared zone to ensure a discernible change in the environment from the surrounding roads, and to facilitate the ease of movement and indicate the priority for pedestrians, especially disabled pedestrians.

The proposed shared zone would be designed in accordance with the Roads and Maritime specifications, including the road surface treatment with no provision of kerbs, speed limit, marked parking bays and the associated signage.

The width of Lawson Lane is proposed to vary between 6m and 12m, with a greater width provided in the eastern end near the car park entrance and exit. The relatively narrower width in the entry of the shared zone would encourage drivers to reduce their speeds. Access to car park and loading bay is kept to the eastern end of Lawson Lane.

It is noted that the Lawson Lane shared zone is only applicable between Lawson Street and the western end of the proposed loading bay. Given there are a number of car park accesses located in the eastern end of Lawson Lane, the road section between the proposed loading bay and the cul-de-sac should be excluded from the shared zone where the priority is reverted to vehicular traffic through the use of End Shared Zone sign and asphalt pavement.

### 3.3 Access to Hotel Car Park and Adjacent Private Car Parks

As discussed earlier, the use of Lawson Lane would be shared by traffic associated with other commercial premises and the hotel visitors and staff. As such, it is proposed to introduce a small semi-mountable roundabout at the end of Lawson Lane to facilitate the turning movements into and out of the hotel car park and the other two private car parks. The roundabout would also assist the U-turn movement of vehicles accessing the drop off bays in the porte cochère.

Figure 3.4: Proposed Roundabout in Lawson Lane



Source of base diagram: The NRA Collaborative Urban Design Report, November 2017. The café located adjacent to the landscape space is no longer included in the design.

### 3.4 Drop Off Zone

A drop off zone would be provided on the south side of Lawson Lane at the porte cochère entrance. Vehicles such as taxis and private vehicles entering the drop off zone are to make a U-turn movement at the roundabout at the end of Lawson Lane and subsequently travel west towards the drop off zone.

A Park in Bays Only (R5-65) sign would be provided under the shared zone (R4-4) signs at the entry into the shared zone. The drop off zone would be marked with the length and width in accordance to AS2890.5.

### 3.5 Loading Zone

The existing Loading zone (14m long) in the Lawson Street frontage would be used to set down and pick up passengers to and from the hotel buses/coaches.

### 3.6 Loading Bay

A loading bay is proposed to be accessed in Lawson Lane and to facilitate delivery vehicles and waste collection vehicles which would occur predominantly during the night time. Appendix C shows the swept path of an 8.8m Medium Rigid Vehicle entering and leaving the loading bay. A spotter would be in place to control traffic movements at the loading bay, if necessary.

### 3.7 Pedestrian Access

Pedestrian access to the pub will be retained at the existing entrance in Lawson Street.

The shared zone would be a pedestrian priority environment and as such no pedestrian crossing facilities would be provided in Lawson Lane.

Pedestrian access to the nearby on-street parking spaces and off-street public car parks would be accommodated by the existing pedestrian crossing facilities that are available in the surrounding streets.

## 4 Parking Assessment

The objective of the following parking assessment is to estimate the parking requirement and the parking impacts of the proposed development, and to provide an outline of the parking layout review.

### 4.1 Parking Provision

#### 4.1.1 DCP Parking Requirements

*Penrith Development Control Plan (DCP) 2014 – Section 10 Transport, Access and Parking:* Table C10.2: Car Parking Rates states that a maximum of the total number of commercial parking spaces required by a development. This DCP requirement is extracted as follows:

**Penrith City Centre – A maximum 60% of the total number of commercial parking spaces required by a development, other than for service vehicles, car washing bays and parking spaces allocated to people with a disability, are to be provided on-site.**

The balance of the total required number of spaces not provided on-site would need to subject to a contribution under an adopted Contribution Plan or as set by the terms of a Voluntary Planning Agreement.

In light of the above DCP requirement, the proposed basement car park would not fully accommodate the likely parking demands associated with the subject site. Notably, Section 10.5.1 (4) of the DCP states that any reduction of parking spaces required for a particular site if the reduced provision can be justified in a traffic impact statement in terms of proximity to public transport nodes, opportunity to share parking with another use, or an empirical assessment of car parking.

Table 4.1 provides a summary of the parking demands for the proposed land uses in accordance with the parking rates provided in the Penrith DCP.

**Table 4.1: Parking Requirement based on DCP Rates**

Land Use	Parking Rate	Proposed Yield	Assumptions on Workforce	Parking Generation (Customers) based on DCP Rates	Parking Generation (Staff) based on DCP Rates	Total Parking Generation based on DCP Rates
Hotel (Proposed)	1 space per unit plus 1 space per manager plus 1 space per 6 employees	122 rooms	2 managers and 6 employees at any one time	122.0	3.0	125.0
Conference Centre/ Function Room (Proposed)	1 space per 6m <sup>2</sup> of seating area, plus 1 space per employee	370m <sup>2</sup> seating area	6 employees at any one time	61.7	6.0	67.7

Land Use	Parking Rate	Proposed Yield	Assumptions on Workforce	Parking Generation (Customers) based on DCP Rates	Parking Generation (Staff) based on DCP Rates	Total Parking Generation based on DCP Rates
Restaurant (Proposed)	1 space per 6m <sup>2</sup> of seating area, plus 1 space per employee	220m <sup>2</sup> floor area (currently 120m <sup>2</sup> floor area)	6 employees at any one time	38.3	6.0	44.3
Pub (Existing)	1 space per 4m <sup>2</sup> of bar floor area plus 1 per 6m <sup>2</sup> lounge and dining room	120m <sup>2</sup> of bar floor area and 110m <sup>2</sup> lounge/dining room	4 employees at any one time	44.3	4.0	48.3
<b>Total parking requirement (rounded up)</b>				<b>267</b>	<b>19</b>	<b>286</b>

Table 4.1 shows the DCP parking requirement in terms of simply adding up the individual elements is 286 spaces. Justification for reducing the parking demand is provided in Section 4.1.2 in terms of multi-purpose trips and proximity to public transport.

#### 4.1.2 Reduced Parking Demand

The parking requirement would involve a high degree of multi-purpose trips between the conference centre/function room and the hotel, given a proportion of event attendees are expected to stay in the hotel for overnight accommodation if the events are held more than one day, or finished late at night.

Similarly, some of the demand for parking associated with the restaurant and pub is likely to be generated by the conference/function attendees and hotel guests.

Other than the conference/function attendees, the restaurant and pub are intended to cater primarily for a local clientele, particularly the residents as well as employees in the town centre who will be able to walk to the hotel at lunch time or after work, given the centralised location of the proposed hotel within the town centre. It is however understood that some patrons may choose to drive to the restaurant/pub, particularly on Thursday or Saturday evenings, when there would be substantial reduction of traffic and parking activities in the town centre as most of the nearby shops are closed.

In light of the above, the parking requirements would be reduced by:

- 30% reduction to the parking requirement associated with the hotel as it would be used by those attending conferences/functions being held at the conference centre/function room.
- 15% reduction to the parking requirement associated with the restaurant and pub as it would be used by hotel guests

- 15% reduction to the parking requirement associated with the restaurant and pub as it would be used by those attending conferences/function being held at the conference centre/function room
- 20% reduction to the parking requirement associated with the restaurant and pub as these facilities would be used by local clientele.

Furthermore, it is anticipated that not all staff would drive to work as the Journey to Work 2011 data indicates that 76% of employees travel to Penrith CBD (travel zone 4979) by cars, with 8% being passengers. On this basis, 24% of staff trips would be made via public transport, walking or be dropped off as passengers.

In light of the above, the reduced parking demands have been summarised in Table 4.2.

**Table 4.2: Reduced Parking Demand**

Land Use	Parking Generation (Customers) based on DCP Rates	Parking Generation (Staff) based on DCP Rates	Total Parking Generation based on DCP Rates	Proposed Reduction to Customer Parking	Proposed Reduction to Staff Parking	Reduced Parking Demand (Customer + Staff)
Hotel (Proposed)	122.0	3.0	125.0	-30%	-24%	88
Conference Centre/ Function Room (Proposed)	61.7	6.0	67.7	-	-24%	66
Restaurant (Proposed)	38.3	6.0	44.3	-50%	-24%	24
Pub (Existing)	44.3	4.0	48.3	-50%	-24%	25
<b>Total parking requirement</b>	<b>267</b>	<b>19</b>	<b>286</b>	<b>-</b>	<b>-</b>	<b>203</b>

*Note: The number of the parking spaces has been rounded up*

The estimated parking demand for the site would be 203 spaces for both visitors and staff. Overall, this is 71% of the DCP parking requirement. Given that 62 spaces are proposed, the development technically incurs a shortfall in the order of 141 spaces.

### 4.1.3 Adequacy of Parking Supply

The basement car park would not fully accommodate the likely parking demand associated the development as the DCP requires a maximum of 60% of the total number of commercial parking spaces required by the development. The proposed parking provision (62 spaces) is 31% of the total parking requirement (203 spaces).

Nevertheless, the estimated parking demands generated by the site could be accommodated by the parking supply in the surrounding on-street and off-street car parks as shown in the parking survey results in Section 2.6.2. There are vacant spaces along High Street, Henry Street, as well as the Allen Place, Edwards Place and Soper Place off-street public car parks during both Thursday and Saturday, that would be available for patrons' use at any given time of the day. In particular, there are untimed parking spaces available in Soper Place off-street car park within easy walking distance of the site that can support long term parking needs. The on-street parking along the retail strip currently have spare capacity for most of the day.

Parking spaces in the vicinity of the site are available in the evening as the survey indicates the peak parking occupancies were 70% at 5pm on Thursday and 60% at 12pm on Saturday. There is at least a minimum of 256 vacant parking spaces available from 5 pm onwards on Thursday, and at least 356 vacant parking spaces from 12pm onwards on Saturday.

Therefore, it is concluded that on-street parking within the vicinity of the site has sufficient capacity to accommodate the estimated parking demands that would be generated by the redevelopment. Furthermore, Penrith Council has announced the upgrade of the existing Soper Place car park by 2019 into a multi-level car park with additional spaces to be provided. This would support the parking needs of the site.

#### 4.1.4 Minimisation of Parking Demands

Despite the conclusion that the parking supply within the vicinity of the site has sufficient capacity to accommodate the estimated parking demands, it is considered appropriate to manage parking demand by the following measures:

- Promotion of responsible drink-driving attitude with carpooling with designated drivers and taxi services.
- Encourage the use of alternative transport modes as the site is conveniently located in close vicinity to bus stops and train station.
- Assign on-site parking to a proportion of staff members only to increase the availability of customer parking spaces which have higher turnover due to a relatively shorter length of stay.
- Produce a Transport Access Guide which can be given to staff and customers to indicate how they can travel to the site by means other than car.

#### 4.1.5 Accessible Parking

The DCP specifies that accessible car spaces should be in accordance with the Access to Premises Standards, Building Code of Australia and AS2890. The parking requirement for car park Class 6 (including land uses such as restaurant, bar area and hotel) is:

- One accessible space for every 50 carparking spaces or part thereof.

Therefore, two accessible parking spaces would be provided within the 62-space basement car park.

#### 4.1.6 Bicycle Parking Requirements

The provisions set out in the DCP state that bicycle parking shall be provided in accordance the *NSW Government – 2004 Planning Guidelines for Walking and Cycling*. The required bicycle parking provision is 3% to 5% of the staff and 3% to 5% of hotel rooms and seating capacity (by number of customers). The following seating capacity has been assumed for the purposes of this assessment:

- Conference centre/function room = 200 customers
- Restaurant = 100 customers
- Pub = 100 customers.

Table 4.3 provides a summary of the bicycle parking requirement.

**Table 4.3: Bicycle Parking Requirement**

Proposed Land Use Within Site	Unit	Parking Rate	Bicycle Parking Requirement
Hotel	8 staff 122 rooms	3-5% of staff 3-5% of rooms	3.9 to 7.0
Conference Centre/ Function Room	6 staff 200 customers	3-5% of staff 3-5% of seating capacity for customers	6.2 to 10.3
Restaurant and pub	10 staff 200 customers	3-5% of staff 3-5% of seating capacity for customers	6.3 to 10.5
<b>Total</b>			<b>17 to 28</b>

*Note: The number of the parking spaces has been rounded up*

Accordingly, the development requires to provide up to 28 bicycle parking spaces. Bicycle racks would be provided for staff and customers.

#### 4.1.7 Motorcycle Parking

The DCP does not have any specific requirement for motorcycle parking.

## 4.2 Parking Layout

The proposed development will be served by a two-level basement car park with a car park access off Lawson Lane.

It is the intention that the basement car park design will comply with the requirements of AS2890.1 (2004) and AS2890.6 (2009) during the Development Application stage.

## 5 Traffic Analysis

The objective of the following traffic analysis is to determine the potential traffic impacts of the proposed development at the assessed intersections.

### 5.1 Future Background Traffic

Future traffic growth has been estimated based on the Sydney's Strategic Travel Model (STM) provided by Roads and Maritime. The STM is a strategic transport planning model that considers population and employment growths and is used for high level of assessment of major infrastructure proposals, transport strategies and policy decision making.

The STM provides future year traffic volumes to determine the relative traffic growth between years for application to the baseline traffic (e.g. surveyed traffic volumes) to provide estimations for future year traffic conditions.

Traffic data from the STM for the relevant roads in the local road network are presented in Table 5.1 and Appendix D. Future developments such as Penrith Lakes, Panthers and Thornton have been included in the land use assumptions in the STM model.

**Table 5.1: STM Traffic Flow and Growth**

Intersection	Road Name	Approach to Intersection	Growth per Annum (2016-2026)	
			AM Peak	PM Peak
Lawson Street-Henry Street	Henry Street	East	1.8%	-0.7%
	Lawson Street	South	-	-
	Henry Street	West	-1.5%	1.0%
	Lawson Street	North	-	-
Lawson Street-High Street	High Street	East	1.2%	-1.0%
	High Street	West	1.5%	1.3%
	Lawson Street	North	-	-

Table 5.2 shows the STM household and employment forecasts for 2026, 2036 and 2041 as compared against 2016 in Penrith city centre (zone 4979). The STM information is shown in Appendix D.

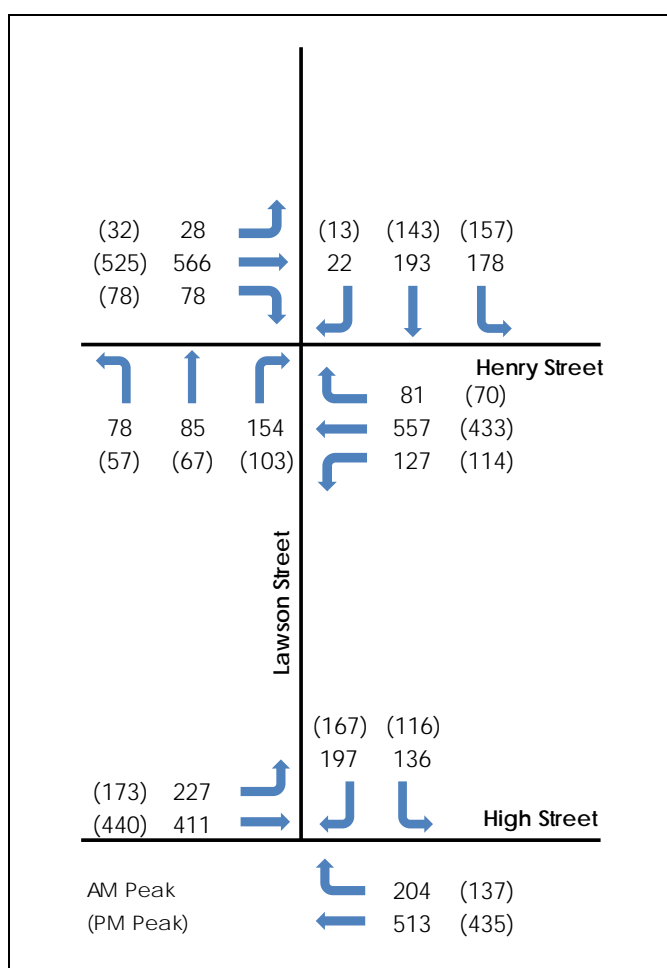
**Table 5.2: STM Household and Employment Forecasts**

Zone 4979	2016	2026	2036	2041	Growth (2016-2026)	Growth (2016-2036)	Growth (2016-2041)
Population	505	975	1,666	2,421	9.3%	11.5%	15.2%
Employment	14,354	16,395	18,592	19,206	1.4%	1.5%	1.4%

The traffic growth rates as indicated in Table 5.1 display negative growths in a number of road sections despite a substantial population growth in the future years as shown in Table 5.2. This assessment has adopted more conservative and higher growth rates taken into consideration the potential developments that are likely to create additional traffic movements in the Penrith city centre. A robust growth rate of 1.5% per annum has been applied for all traffic movements, except for the westbound movements in Henry Street (east of Lawson Street) where the STM forecasts a higher growth rate of 1.8% per annum.

Figure 5.1 shows the estimated future traffic volumes in a 10-year planning horizon.

**Figure 5.1: Future Traffic Volumes (2028 Without Redevelopment)**



Note: AM peak hour (7.45am-8.45am) and PM peak hour (4.30pm-5.30pm)

## 5.2 Traffic Generation

### 5.2.1 Hotel

Roads and Maritime's *Guide to Traffic Generating Developments 2002* provides a traffic generation rate for motel as follows:

- Evening peak hour vehicle trips = 0.4 per unit

The hotel with 110 new rooms is expected to generate in the order of 44 two-way vehicle trips per hour. Notably, traffic generation in relation to the existing 12 rooms has been captured in the traffic survey undertaken in March 2018.

### 5.2.2 Conference Centre

No provision is provided in Roads and Maritime's *Guide to Traffic Generating Developments 2002* for conference centres/function rooms. Thus, traffic generation for conference centre/function room is assessed in first principle. It has been assumed that the conference centre/function room has the capacity of accommodating a maximum of 200 people.

It has been assumed that 80% (160 guests) would arrive via private cars and 10% (20 guests) would arrive via private drop off/ pick up, and 10% (20 guests) would arrive via a combination of Uber, taxis, public transport (trains or buses) or by walking.

Application of a conservative car occupancy rate of 1.5 guests per car results in the following number of cars:

- 160 guests in private cars @ 1.5 guests per car = 107 cars
- 20 guests in private drop off/ pick up @ 1.5 guests per car = 13 cars.

In terms of traffic movements, the private cars equate to one pre-function vehicle movement (arrival trip) and 1 post-function vehicle movement (departure trip). However, the drop-off/ pick-up movements generate 2 pre-function vehicle movements (an arrival and departure trip) and 2 post-function vehicle movements. On this basis, the following pre-function and post-function traffic generation analysis can be determined:

- 133 pre-function trips (120 arrival, 13 departure)
- 133 post-function trips (13 arrival, 120 departure).

### 5.2.3 Restaurant

Roads and Maritime's *Guide to Traffic Generating Developments 2002* provides a traffic generation rate for restaurants as follows:

- Evening peak hour vehicle trips = 5 per 100 m<sup>2</sup> gross floor area

On the basis the restaurant has a seating area of 230m<sup>2</sup> less the existing 120m<sup>2</sup> seating area, the net change in traffic generated would be in the order of six two-way vehicle trips per hour.

### 5.2.4 Pub

Traffic generation associated with the pub is expected to be reduced from the existing situation due to the multi-purpose trips as discussed in Section 4.1.3. Notwithstanding this,

given the traffic generation associated with the existing use of the pub has been captured in the traffic survey undertaken in March 2018, it is proposed to retain the existing traffic generation for analytical purposes.

### 5.2.5 Total Traffic Generation

Table 5.3 provides a summary of the total traffic generation as discussed in Sections 5.2.1 to 5.2.2.

As discussed in Section 4.1.4, a reduction would be applied to the traffic generation to account for the “multi-purpose” nature of trips accessing the various land uses of the site.

Section 4.1.2 shows the justification in relation to the estimated parking demand being 71% of the DCP parking requirement. Therefore, it is assumed that 29% of total traffic generation would be reduced as patrons tend to visit more than facilities within the site and hence reducing the vehicular trips associated with the site.

**Table 5.3: Traffic Generation Summary**

Land Use	Size/Number of People	Traffic Generation Rate	Total Traffic Generation
Hotel (traffic generation of 12 existing rooms already captured in traffic survey)	110 rooms (net change)	0.4 trips/unit	44
Conference Centre/ Function Room	200 people	First Principle (Section 5.2.2)	133
Restaurant	110m <sup>2</sup> (net change)	5 trips per 100m <sup>2</sup> GFA	6
Pub (already captured in traffic survey)	-	-	-
<b>Sub-total</b>			183
Assume a <b>29%</b> discount of parking generation to account for multi-purpose trips for various land uses within the redevelopment.			
<b>Total</b>			<b>130</b>

Table 5.3 indicates that the net change in traffic generation associated with the site would be in the order of 130 trips per hour (two-way). Conservatively, it has been assumed all of these trips would occur concurrently during the same peak hours, albeit in reality this may not be practicable given the conferences/functions being held at the conference centre may start/end outside the commuter peak periods. For analytical purposes, the above peak hour traffic generation has been adopted in the traffic assessment and is considered a robust approach.

## 5.3 Traffic Distribution

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

- configuration of the arterial road network in the immediate vicinity of the site
- existing operation of intersections providing access between the local and arterial road network.
- configuration of access point to the site.

Having considered the above, for the purposes of estimating vehicle movements, the proposed directional distributions are shown in Table 5.4 for the AM peak hour. It has been assumed that the reverse travel pattern will occur in the PM peak hour.

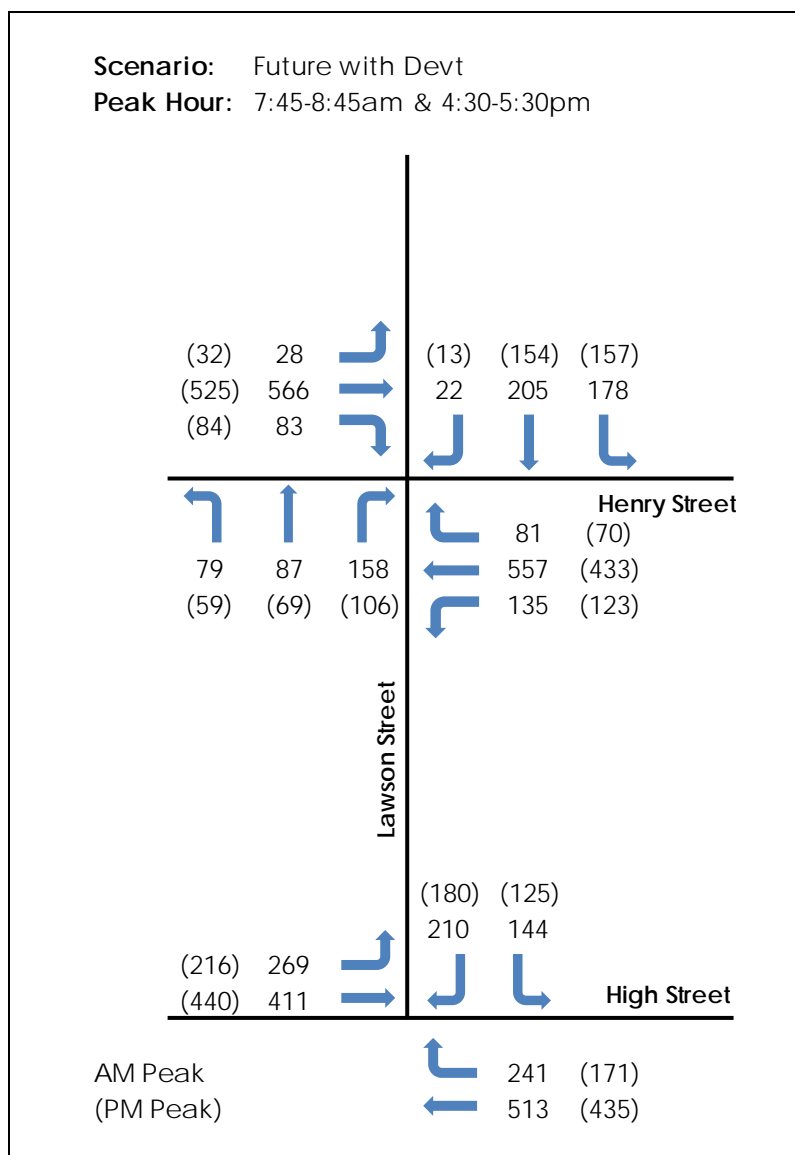
**Table 5.4: Traffic Distribution**

Travel Direction To/From Lawson Street	AM Peak	PM Peak
North	25%	25%
South	75%	75%
<b>Total</b>	<b>100%</b>	<b>100%</b>

## 5.4 Future Traffic Volumes

Figure 5.2 presents the traffic forecasts with site related traffic superimposed on the road network. It should be acknowledged that parking may occur on surrounding streets or public car parks as such drivers may not traverse the key intersections. However, it has been conservatively assumed that all site related traffic is distributed to and from the site via the key intersections.

**Figure 5.2: Future Traffic Volumes (2028 with Redevelopment)**



Note: AM peak hour (7.45am-8.45am) and PM peak hour (4.30pm-5.30pm)

## 5.5 Intersection Capacity Assessment

The operation of the key intersections has been assessed using SIDRA Intersection 7, a computer based modelling package which assesses intersection performance under prevailing traffic conditions.

Intersection configurations were sourced from Roads and Maritime traffic signal plans and aerial photos. Signal phasing information was obtained in the site inspection to observe operational conditions.

The SIDRA modelling was validated to the conditions observed during the surveys.

## 5.5.1 Model Performance Indicators

SIDRA Intersection 7 modelling provides several useful indicators to determine the level of intersection performance.

### 5.5.1.1 Level of Service (LoS)

LoS is a basic performance parameter used to describe the operation of an intersection. Levels of service indicators range from A (indicating good intersection operation) to F (indicating over-saturated conditions with long delays and queues). At priority controlled (give-way and stop controlled) and roundabout intersections, the LoS is based on the modelled delay (seconds per vehicle) for the most delayed movement (refer to Table 5.5).

**Table 5.5: Level of Service Criteria for Intersections**

Level of Service	Average Delay (seconds per vehicle)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	Less than 14	good operation	good operation
B	15 to 28	good with acceptable delays and spare capacity	acceptable delays and spare capacity
C	29 to 42	satisfactory	satisfactory, but accident study required
D	43 to 56	operating near capacity	near capacity and accident study required
E	57 to 70	at capacity At signals, incidents will cause excessive delays.	at capacity, requires other control mode
F	Greater than 71	unsatisfactory with excessive queuing	unsatisfactory with excessive queuing; requires other control mode

Source: RMS Guide to Traffic Generating Developments, 2002

### 5.5.1.2 Average Delay

Delay is the difference between interrupted and uninterrupted travel times through the intersection and is measured in seconds per vehicle. At priority controlled intersections, the average delay for the most delayed movement is usually reported.

## 5.5.2 Intersection Operational Conditions

Intersection analysis was conducted for the key intersections based on the existing peak hour flows as shown in Figure 2.3 and the estimated future peak hour flows shown in Figure 5.2 (without redevelopment) and Figure 5.2 (with redevelopment). The analysis results for traffic conditions are presented in Table 5.6.

**Table 5.6: Operating Conditions**

Scenario	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (sec/veh)	Level of Service	Delay (sec/veh)	Level of Service
2018 Existing	Lawson Street-Henry Street	22	B	36	C
	Lawson Street-High Street	21	B	14	A
2028 Future base (without redevelopment)	Lawson Street-Henry Street	28	B	63	E
	Lawson Street-High Street	21	B	20	B
2028 Future (with redevelopment)	Lawson Street-Henry Street	36	C	50	D
	Lawson Street-High Street	29	C	15	B

The results indicate that the key intersections currently operate satisfactorily at LoS C or better during the peak hours. The worst movement at the Lawson Street with Henry Street intersection during the PM peak is the westbound right turn movement from Henry Street into Lawson Street north. The operating conditions including phase times and queue lengths match with the observation on site.

The 2028 base case model (without redevelopment) has taken into account the background traffic growth and the same traffic signal phase times as per the existing situation. The results indicate that the key intersections would operate at LoS C or better, except for the Lawson Street with Henry Street intersection which is forecast to operate at LoS E during the PM peak. The worst movement of this intersection would be the westbound right turn movement from Henry Street into Lawson Street north during the PM peak.

For the 2028 future case model (with redevelopment), a minor adjustment has been applied to the phase times whilst maintaining the existing cycle times at the key intersections. The adjustment has been made within the range of the phase times observed on site by reallocating the phase times to maximise the throughput at the intersection. This adjustment would not disrupt the current SCATS operation as the phase times adopted in the model are within the minimum and maximum phase times as determined by the adaptive SCATS system based on traffic demands.

On this basis, the results of the 2028 future case model (with redevelopment) indicate that the key intersections would operate satisfactorily at LoS B, except for the Lawson Street with Henry Street intersection which is forecast to operate acceptably at LoS D during the PM peak based on the existing intersection layout and phase sequence. This indicates the site related traffic would not impose adverse traffic impacts on the road network.

## 6 Conclusions

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

- The operation of the proposed redevelopment would generate in the order of 203 spaces with some demand to be accommodate within the 62-space basement car park.
- The parking demands of the remaining 141 spaces could be satisfactorily accommodated in the spare parking spaces that are readily available in the vicinity:
  - There was at least a minimum of 302 and 356 vacant parking spaces being available during peak parking occupancy during the lunch time trading periods (11am to 2pm) on Thursday and Saturday respectively.
  - There was at least a minimum of 256 vacant parking spaces available from 5pm onwards on Thursday, and at least 617 vacant parking spaces from 5pm onwards on Saturday, to accommodate the parking demands during the dinner trading periods.
- Notwithstanding the above, the proposed pub would minimise parking demands by promoting responsible drink-driving behaviour with carpooling and taxi services, and encouraging the use of public transport as there are options and services for public transport provided to the subject site. Further, the existing Soper Place car park would be upgraded to be a multi-level car park with additional spaces to be provided. This would support the parking needs of the site.
- The site is expected to generate in the order of 130 two-way vehicle trips in the peak hour. The assessed intersections would operate satisfactorily even when the additional traffic associated with traffic growth and the proposed redevelopment. There is adequate capacity in the surrounding road network to cater for the additional traffic generated by the proposed redevelopment.
- Parking layout would be designed in accordance with Australian Standard AS 2890.1 and AS 2890.6.
- The 10km/h shared zone in Lawson Lane between Lawson Street and the western end of the loading bay would be designed in accordance with the Roads and Maritime specifications.
- A small semi-mountable roundabout is proposed to be introduced at the eastern end of Lawson Lane to facilitate the vehicle turning movements into and out of the car parks.
- The loading bay in Lawson Lane would facilitate delivery vehicles and waste collection vehicles which would occur predominantly during the night time. A spotter would be in place to control traffic movements at the loading bay, if necessary.

Overall, it is concluded that the proposed hotel development at 351 and 359 High Street and 18 Lawson Street, Penrith, is not expected to have an adverse traffic and parking effect on the surrounding transport network.

## Appendix A

### Intersection Movements Counts Survey (March 2018)

Survey Start	AM:	7:00	PM:	N/A
Vehicular Peakhour		Pedestrians Peakhour		
AM:	N/A	AM:	N/A	
PM:	7:45 AM-8:45 AM	PM:	N/A	

Time		North Approach Lawson St				East Approach Henry St				South Approach Lawson St				West Approach Henry St				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
7:00	7:15	0	2	23	31	0	13	136	18	0	11	19	12	0	20	116	7	1633	
7:15	7:30	0	3	25	24	0	21	123	32	0	25	11	12	0	16	82	8	1697	
7:30	7:45	0	5	26	26	0	18	117	31	0	16	16	7	0	14	113	7	1790	
7:45	8:00	0	2	47	45	0	24	118	26	0	25	15	16	0	15	110	4	1830	Peak
8:00	8:15	0	3	45	38	0	16	105	37	0	36	15	14	0	15	141	7	1759	
8:15	8:30	0	9	41	48	0	7	115	18	0	31	29	22	0	19	128	8		
8:30	8:45	0	5	33	22	0	21	128	25	0	41	14	15	0	18	109	5		
8:45	9:00	0	3	30	39	0	14	121	24	0	18	13	13	0	17	79	5		

Peak Time		North Approach Lawson St				East Approach Henry St				South Approach Lawson St				West Approach Henry 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	19	166	153	0	68	466	106	0	133	73	67	0	67	488	24	1830

Diagram illustrating a four-way intersection with vehicle counts for the AM Peak (7:45 AM - 8:45 AM). The intersection is labeled "Henry St" on both the left and right sides. The top approach is labeled "North".

**Approach: North (Top)**

- Left Turn: 0
- Through/Right Turn: 19
- Through/Right Turn: 166
- Through/Right Turn: 153

**Approach: South (Bottom)**

- Left Turn: 67
- Through/Right Turn: 73
- Through/Right Turn: 133
- Through/Right Turn: 0

**Approach: East (Right)**

- Left Turn: 0
- Through/Right Turn: 68
- Through/Right Turn: 466
- Through/Right Turn: 106

**Approach: West (Left)**

- Left Turn: 24
- Through/Right Turn: 488
- Through/Right Turn: 67
- Through/Right Turn: 0

**Center Labels:**

- Vehicles
- AM Peak 7:45 AM-8:45 AM

Time		North Approach Lawson St				East Approach Henry St				South Approach Lawson St				West Approach Henry St			
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L
7:00	7:15	0	2	22	31	0	13	135	18	0	11	19	12	0	20	108	6
7:15	7:30	0	3	25	24	0	21	120	32	0	25	11	12	0	16	82	8
7:30	7:45	0	5	26	26	0	18	115	31	0	16	15	7	0	14	107	7
7:45	8:00	0	2	47	45	0	24	114	25	0	25	15	15	0	15	107	4
8:00	8:15	0	3	45	38	0	16	101	37	0	35	15	13	0	15	137	7
8:15	8:30	0	9	41	48	0	7	113	18	0	31	29	22	0	18	125	8
8:30	8:45	0	5	33	22	0	21	124	25	0	41	14	15	0	18	104	4
8:45	9:00	0	3	30	39	0	13	118	24	0	18	13	13	0	17	79	5

[illegible]

# TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY

Intersection of Lawson St and High St, Penrith

trafficsurvey.com.au



Date:	Thu 22/03/18
Weather:	Fine
Suburban:	Penrith
Customer:	TTPP

North:	Lawson St
East:	High St
South:	N/A
West:	High St

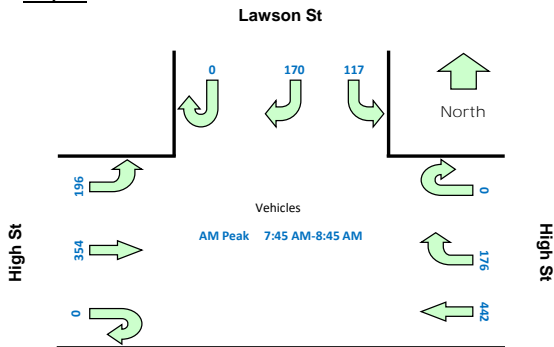
Survey Start		
AM:	7:00	PM: N/A
Vehicular Peakhour Start		
AM:	N/A	PM: 7:45 AM-8:45 AM

## All Vehicles

Time		North Approach Lawson St			East Approach High St			West Approach High St			Hourly Total	
Period Start	Period End	U	R	L	U	R	WB	U	EB	L	Hour	Peak
7:00	7:15	0	28	21	0	37	120	0	94	29	1368	
7:15	7:30	0	27	26	0	53	121	0	91	38	1434	
7:30	7:45	0	32	22	0	23	91	0	109	33	1431	
7:45	8:00	0	44	30	0	49	111	0	97	42	1455	Peak
8:00	8:15	0	46	32	0	46	118	0	98	55	1390	
8:15	8:30	0	39	24	0	47	109	0	75	59		
8:30	8:45	0	41	31	0	34	104	0	84	40		
8:45	9:00	0	35	24	0	31	116	0	74	28		

Peak Time		North Approach Lawson St			East Approach High St			West Approach High St			Peak total
Period Start	Period End	U	R	L	U	R	WB	U	EB	L	
7:45	8:45	0	170	117	0	176	442	0	354	196	1455

## Graphic



## Light Vehicles

Time		North Approach Lawson St			East Approach High St			West Approach High St		
Period Start	Period End	U	R	L	U	R	WB	U	EB	L
7:00	7:15	0	28	20	0	37	119	0	94	29
7:15	7:30	0	27	26	0	52	120	0	91	38
7:30	7:45	0	32	22	0	21	90	0	109	33
7:45	8:00	0	44	30	0	47	110	0	96	42
8:00	8:15	0	46	32	0	45	117	0	97	55
8:15	8:30	0	39	23	0	47	108	0	75	59
8:30	8:45	0	41	31	0	34	103	0	84	40
8:45	9:00	0	35	24	0	30	116	0	74	28

## Heavy Vehicles

Time		North Approach Lawson St			East Approach High St			West Approach High St		
Period Start	Period End	U	R	L	U	R	WB	U	EB	L
7:00	7:15	0	0	1	0	0	1	0	0	0
7:15	7:30	0	0	0	0	1	1	0	0	0
7:30	7:45	0	0	0	0	2	1	0	0	0
7:45	8:00	0	0	0	0	2	1	0	1	0
8:00	8:15	0	0	0	0	1	1	0	1	0
8:15	8:30	0	0	1	0	0	1	0	0	0
8:30	8:45	0	0	0	0	0	1	0	0	0
8:45	9:00	0	0	0	0	1	0	0	0	0

# TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY

trafficsurvey.com.au



Intersection of Carpark

Date:	Thu 22/03/18
Weather:	Fine
Suburban:	Penrith
Customer:	TTPP

## All Vehicles

Time		North Carpark Access				East Carpark Access				South Carpark Access			
		In		Out		In		Out		In		Out	
Period Start	Period End	Car	Truck	Car	Truck	Car	Truck	Car	Truck	Car	Truck	Car	Truck
7:00	7:15	2	0	2	0	1	0	1	0	1	0	3	0
7:15	7:30	5	0	1	0	0	0	2	0	0	0	0	0
7:30	7:45	3	0	2	0	0	0	1	0	1	0	3	0
7:45	8:00	1	0	3	0	0	0	2	0	1	0	0	0
8:00	8:15	7	0	2	0	0	0	2	0	0	0	2	0
8:15	8:30	7	0	3	0	0	0	6	0	3	0	2	0
8:30	8:45	3	0	4	0	0	0	2	0	0	0	3	0
8:45	9:00	2	0	4	0	0	0	0	0	5	0	10	0

<b>Survey Start</b>	<b>AM:</b>	<b>N/A</b>	<b>PM:</b>	<b>16:00</b>
<b>Vehicular Peakhour</b>		<b>Pedestrians Peakhour</b>		
<b>AM:</b>	<b>N/A</b>	<b>AM:</b>	<b>N/A</b>	
<b>PM:</b>	<b>4:30 PM-5:30 PM</b>	<b>PM:</b>	<b>N/A</b>	

[illegible]

# TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY

Intersection of Lawson St and High St, Penrith

trafficsurvey.com.au



Date:	Thu 15/03/18
Weather:	Fine
Suburban:	Penrith
Customer:	TTPP

North:	Lawson St
East:	High St
South:	N/A
West:	High St

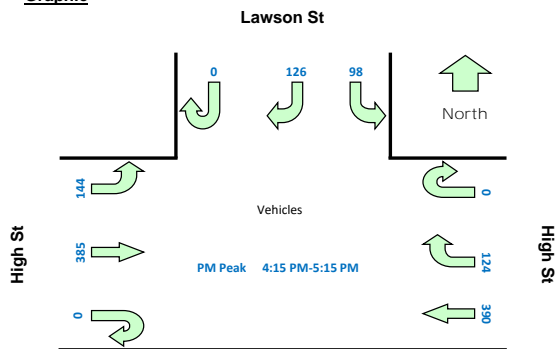
Survey Start		
AM:	N/A	PM: 16:00
Vehicular Peakhour Start		
AM:	N/A	PM: 4:15 PM-5:15 PM

## All Vehicles

Time		North Approach Lawson St			East Approach High St			West Approach High St			Hourly Total	
Period Start	Period End	U	R	L	U	R	WB	U	EB	L	Hour	Peak
16:00	16:15	0	19	26	0	36	97	0	99	48	1257	
16:15	16:30	0	21	22	0	37	110	0	106	39	1267	Peak
16:30	16:45	0	26	28	0	31	91	0	101	34	1265	
16:45	17:00	0	28	18	0	36	93	0	84	27	1221	
17:00	17:15	0	51	30	0	20	96	0	94	44	1205	
17:15	17:30	0	39	24	0	31	95	0	100	44		
17:30	17:45	0	30	19	0	22	96	0	69	31		
17:45	18:00	0	29	24	0	19	84	0	93	21		

Peak Time		North Approach Lawson St			East Approach High St			West Approach High St			Peak total
Period Start	Period End	U	R	L	U	R	WB	U	EB	L	
16:15	17:15	0	126	98	0	124	390	0	385	144	1267

## Graphic



## Light Vehicles

Time		North Approach Lawson St			East Approach High St			West Approach High St		
Period Start	Period End	U	R	L	U	R	WB	U	EB	L
16:00	16:15	0	19	26	0	33	97	0	99	48
16:15	16:30	0	21	22	0	37	110	0	104	38
16:30	16:45	0	26	28	0	31	91	0	101	33
16:45	17:00	0	27	18	0	35	93	0	84	27
17:00	17:15	0	51	30	0	20	96	0	94	43
17:15	17:30	0	39	23	0	30	95	0	100	42
17:30	17:45	0	29	19	0	22	96	0	69	31
17:45	18:00	0	29	24	0	19	83	0	93	21

## Heavy Vehicles

Time		North Approach Lawson St			East Approach High St			West Approach High St		
Period Start	Period End	U	R	L	U	R	WB	U	EB	L
16:00	16:15	0	0	0	0	3	0	0	0	0
16:15	16:30	0	0	0	0	0	0	0	2	1
16:30	16:45	0	0	0	0	0	0	0	0	1
16:45	17:00	0	1	0	0	1	0	0	0	0
17:00	17:15	0	0	0	0	0	0	0	0	1
17:15	17:30	0	0	1	0	1	0	0	0	2
17:30	17:45	0	1	0	0	0	0	0	0	0
17:45	18:00	0	0	0	0	0	1	0	0	0

# TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY

trafficsurvey.com.au



## Intersection of Carpark

<b>Date:</b>	Thu 15/03/18
<b>Weather:</b>	Fine
<b>Suburban:</b>	Penrith
<b>Customer:</b>	TTPP

### All Vehicles

Time		North Carpark Access				East Carpark Access				South Carpark Access		
		In		Out		In		Out		In		Out
Period Start	Period End	Car	Truck	Car	Truck	Car	Truck	Car	Truck	Car	Truck	Car
16:00	16:15	2	0	0	0	1	0	0	0	0	0	0
16:15	16:30	1	0	4	0	0	0	0	0	3	0	0
16:30	16:45	4	0	2	0	1	0	3	0	1	0	2
16:45	17:00	5	0	3	1	0	0	0	0	2	0	1
17:00	17:15	2	0	4	0	0	0	5	0	4	0	2
17:15	17:30	2	0	0	0	0	0	10	0	4	0	5
17:30	17:45	4	0	4	0	1	0	2	0	4	0	4
17:45	18:00	0	0	3	0	0	0	1	0	3	0	6

## Appendix B

### Parking Occupancy Survey (March 2018)



Parking Survey.xlsx

1			Lawson St to Woodriff St		1P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		2	1	1	1	2	2	2	2	2
1					1P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		9	7	7	7	6	4	4	4	4
1			Woodriff St to Gaymark La		1P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		15	11	11	12	11	8	8	6	5
1					No Parking 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		2	0	0	0	0	1	1	1	1
1					1P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		6	5	5	5	6	6	5	4	4
0					Bus Zone		6	0	0	0	0	0	0	0	0
1			Gaymark La to Station St		1/2P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		4	2	2	2	2	1	1	1	1
0		Lawson St	Soper Place to Henry St	E	No Stopping		1	0	0	0	0	0	0	0	0
1			Henry St to Lawson La		1P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		2	2	1	1	1	1	1	1	1
0			Lawson La to High St		Bus Zone		4	0	0	0	0	1	1	1	1
1					Loading Zone		3	0	0	0	0	0	0	0	0
1		Lawson St	High St to Edwards Pl	W	1P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		4	4	3	3	2	2	1	1	1
1			Edwards Pl to Henry St		1P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		3	1	1	1	1	3	3	2	2
0			Henry St to Soper Place		No Stopping		1	0	0	0	0	0	0	0	0
1		Castlereagh St	Lethbridge St Round About to Tindale St	W	1/2P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		13	11	11	11	9	8	8	5	5
1			Tindale St to Masters Place Car Park		1/2P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		2	2	1	1	1	1	1	1	1
1			Masters Place Car Park to High St		1/2P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		6	4	4	4	5	6	4	4	4
1			High St to John Cram Place	E	1/2P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		3	3	3	3	3	2	2	2	2
1			John Cram Place to Lethbridge St Round About		1/2P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		5	5	5	5	5	5	5	4	4
1					1P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		16	11	11	9	6	6	6	4	3
1		High St	Station St to Opposite Ofwoodriff St	N	1/2P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		9	8	5	5	3	3	3	4	3
1					1/2P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		10	9	7	7	6	6	5	5	4
1					1/2P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		10	9	9	9	9	7	7	7	6
1			Opposite Ofwoodriff St to Lawson St		1/2P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		6	6	5	3	3	1	1	1	1
0					Motor Bike Only		2	0	0	0	0	0	0	0	0
0					Aus Post Vehicles Only		1	0	0	0	0	0	0	0	0
0					Taxi Zone		1	0	0	0	0	0	0	0	0
1					P15 Min 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		5	5	5	5	5	3	2	2	2
1					1/2P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		4	4	4	4	4	4	3	3	2
1			Lawson St to Evans St		Unrestricted	No Parking 7am-6pm Mon-Fri	7	0	0	0	1	2	2	2	2
0					Police Vehicles Only		9	2	2	2	3	3	3	3	2

Parking Survey.xlsx

0					Police Vehicles Only		2	0	0	0	0	0	0	0	0	0	0	0
1					1/2P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		12	5	3	3	3	3	3	3	3	3	3	2
0		High St	Evans St to Higgins Ln	S	Aus Post Vehicles Only		1	0	0	0	0	0	0	0	0	0	0	0
1					1/4P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		4	1	1	1	1	2	2	1	1	1	1	1
1					1P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		5	2	2	2	2	2	2	0	0	0	0	0
0					Motor Bike Only		2	0	0	0	0	0	0	0	0	0	0	0
1					1P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		6	5	5	4	4	4	2	2	2	2	2	2
0					Motor Bike Only		1	0	0	0	0	0	0	0	0	0	0	0
0			Higgins Ln to Castlereagh St		Bus Zone		5	0	0	0	0	0	0	0	0	0	0	0
1					1/2P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		5	5	5	5	5	5	5	0	0	0	0	0
1			Castlereagh St to Woodriff St		1/2P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		5	5	5	5	5	5	5	4	3	3	3	3
1					1/2P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		7	7	7	7	6	6	5	5	4	3	3	3
1			Woodriff St to Station St		1/2P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		6	6	6	6	6	6	6	4	4	4	4	4
1					1/2P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		10	10	10	10	9	9	8	8	6	6	6	6
1					1/2P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		8	7	7	7	7	6	5	5	5	5	4	4
		PUBLIC CAPACITY						914	914	914	914	914	914	914	914	914	914	914
		PUBLIC OCCUPANCIES						576	574	516	485	456	394	337	283	251	251	251
		PUBLIC VACANCIES						338	340	398	429	458	520	577	631	663	663	663
		PUBLIC % OCCUPANCIES						63%	63%	56%	53%	50%	43%	37%	31%	27%	27%	27%

not available for public parking

Parking Survey.xlsx



Parking Occupancy Survey

Date:	Saturday, 17 March 2018
Location:	Penrith
Weather:	Fine
Customer:	TTTP

Public Parking (1/0)	Map Ref	Street	Section	Side	Restriction	Clear Way	Capacity	Parking Occupancy								
								17:00	17:30	18:00	18:30	19:00	19:30	20:00	20:30	21:00
1		Soper Place Car Park			Unrestricted		124	3	3	3	3	5	5	6	3	3
0					Motor Bike Only		5	0	0	0	0	0	0	0	0	0
1					Unrestricted		135	6	6	9	8	7	7	5	4	2
1					Disable		3	1	1	0	0	0	0	0	0	0
1					3P 8:30am-6pm Mon-Fri, 8:30am-4:30pm Sat		87	11	10	3	3	4	5	5	3	3
1					Disable		2	0	0	0	0	0	0	0	0	0
1		Edward Place Car Park			2P 8:30am-6pm Mon-Fri, 8:30am-4:30pm Sat		82	21	21	35	35	31	33	33	30	21
1					Disable		2	0	1	1	1	1	0	0	0	0
1		Allen Place Car Park			Disable		2	0	0	0	0	0	0	0	0	0
1					1P 8:30am-6pm Mon-Fri, 8:30am-4:30pm Sat		17	7	7	10	10	12	15	15	10	9
1					2P 8:30am-6pm Mon-Fri, 8:30am-4:30pm Sat		160	56	53	48	47	40	38	34	28	22
0					Motor Bike Only		8	0	0	0	0	0	0	0	0	0
1					Disable		7	0	0	0	0	0	0	0	0	0
1					1P 8:30am-6pm Mon-Fri, 8:30am-4:30pm Sat		24	1	1	3	4	4	5	6	5	3
0		Henry St	Station St to Woodriff St	N	Bus Zone		7	0	0	0	0	0	0	0	0	0
1					1P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		16	6	6	7	7	9	6	6	6	5
0					Bus Zone		8	0	0	0	0	0	0	0	0	0
1					1P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		3	2	1	1	1	2	2	2	2	2
1			Woodriff St to Lawson St		1P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		13	1	1	2	2	2	2	2	1	1
1			Lawson St to Evans St		1P 8:30am-3:30pm Mon-Fri, 8:30am-12:30pm Sat	No Parking 3:30pm-6:30pm Mon-Fri	12	4	4	10	12	12	12	11	8	8
0					Bus Zone		2	0	0	0	0	0	0	0	0	0
1		Henry St	Evans St to Lawson St	S	Unrestricted	No Parking 3:30pm-6:30pm Mon-Fri	11	0	0	0	0	0	0	0	0	0
0					Bus Zone		3	0	0	0	1	1	1	0	0	0



Parking Survey.xlsx

0					Police Vehicles Only		2	2	1	0	0	0	0	0	0	0	0	0
1					1/2P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		12	5	6	7	6	5	4	3	3	3	3	3
0		High St	Evans St to Higgins Ln	S	Aus Post Vehicles Only		1	0	0	0	0	0	0	0	0	0	0	0
1					1/4P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		4	1	1	4	3	2	1	1	1	1	1	1
1					1P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		5	0	1	5	4	3	4	4	4	4	3	3
0					Motor Bike Only		2	0	0	0	0	0	0	0	0	0	0	0
1					1P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		6	3	4	6	6	5	5	4	3	3	3	3
0					Motor Bike Only		1	0	0	0	0	0	0	0	0	0	0	0
0			Higgins Ln to Castlereagh St		Bus Zone		5	0	0	0	0	0	0	0	0	0	0	0
1					1/2P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		5	5	4	4	4	5	5	5	5	5	3	3
1			Castlereagh St to Woodriff St		1/2P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		5	0	1	1	2	3	3	4	4	4	4	4
1					1/2P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		7	0	1	1	2	7	7	7	7	7	4	4
1			Woodriff St to Station St		1/2P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		6	0	0	2	5	5	6	6	6	6	5	5
1					1/2P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		10	0	2	2	5	7	7	9	8	8	6	6
1					1/2P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		8	0	2	2	5	6	6	7	6	6	3	3
		PUBLIC CAPACITY						914	914	914	914	914	914	914	914	914	914	914
		PUBLIC OCCUPANCIES						193	211	254	268	271	278	278	235	235	179	179
		PUBLIC VACANCIES						721	703	660	646	643	636	636	679	679	735	735
		PUBLIC % OCCUPANCIES						21%	23%	28%	29%	30%	30%	30%	26%	26%	20%	20%

not available for public parking

<b>Date:</b>	Thursday, 22 March 2018
<b>Location:</b>	Penrith
<b>Weather:</b>	Fine
<b>Customer:</b>	TTPP

Public Parking (1/0)	Map Ref	Street	Section	Side	Restriction	Clear Way	Capacity	Parking Occupancy																				
								7:00	7:30	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00
1		Soper Place Car Park			Unrestricted		124	6	6	6	7	15	18	49	53	55	63	52	44	44	47	52	52	52	55	60	62	67
0					Motor Bike Only		5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1					Unrestricted		135	10	11	11	12	25	52	57	61	61	62	55	55	45	47	47	47	50	59	60	71	68
1					Disable		3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1					3P 8:30am-6pm Mon-Fri, 8:30am-4:30pm Sat		87	12	12	15	16	16	35	48	57	57	60	54	46	33	33	41	51	51	51	51	51	52
1					Disable		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1		Edward Place Car Park			2P 8:30am-6pm Mon-Fri, 8:30am-4:30pm Sat		82	5	5	18	18	18	37	39	42	49	53	44	36	29	29	30	31	31	32	32	37	37
1					Disable		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1		Allen Place Car Park			Disable		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1					1P 8:30am-6pm Mon-Fri, 8:30am-4:30pm Sat		17	3	5	5	6	6	13	16	15	15	15	12	12	11	11	11	11	12	14	15	15	16
1					2P 8:30am-6pm Mon-Fri, 8:30am-4:30pm Sat		160	14	21	27	28	30	67	96	103	119	125	116	105	84	84	85	99	100	115	123	126	140
0					Motor Bike Only		8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1					Disable		7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1					1P 8:30am-6pm Mon-Fri, 8:30am-4:30pm Sat		24	2	2	5	6	7	17	17	18	19	22	16	14	14	14	17	19	19	19	21	23	21
0		Henry St	Station St to Woodriff St	N	Bus Zone		7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1					1P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		16	9	9	9	11	12	13	14	14	14	15	15	15	13	14	14	14	16	16	16	16	15
0					Bus Zone		8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1					1P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		3	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
1			Woodriff St to Lawson St		1P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		13	5	5	6	6	6	7	7	7	8	8	8	9	9	10	11	13	13	13	13	13	12
1			Lawson St to Evans St		1P 8:30am-3:30pm Mon-Fri, 8:30am-12:30pm Sat	No Parking 3:30pm-6:30pm Mon-Fri	12	7	7	7	8	8	9	9	9	9	9	11	10	10	10	9	8	8	8	8	7	
0					Bus Zone		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1		Henry St	Evans St to Lawson St	S	Unrestricted	No Parking 3:30pm-6:30pm Mon-Fri	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0					Bus Zone		3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1			Lawson St to Woodriff St		1P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		2	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
1					1P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		9	4	5	5	5	6	6	6	6	7	8	8	8	8	8	9	9	9	9	9	8	8
1			Woodriff St to Gaymark La		1P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		15	6	7	8	8	11	11	11	13	13	14	15	14	14	13	13	15	15	15	15	15	15
1					No Parking 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1					1P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		6	2	3	4	5	5	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6
0					Bus Zone		6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1			Gaymark La to Station St		1/2P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		4	1	2	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
0		Lawson St	Soper Place to Henry St	E	No Stopping		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1			Henry St to Lawson La		1P 8:30am-6pm Mon-Fri, 8:30am-12:30pm Sat		2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0			Lawson La to High St		Bus Zone		4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Parking Survey.xlsx

[illegible]

*not available for public parking*



Parking Survey.xlsx

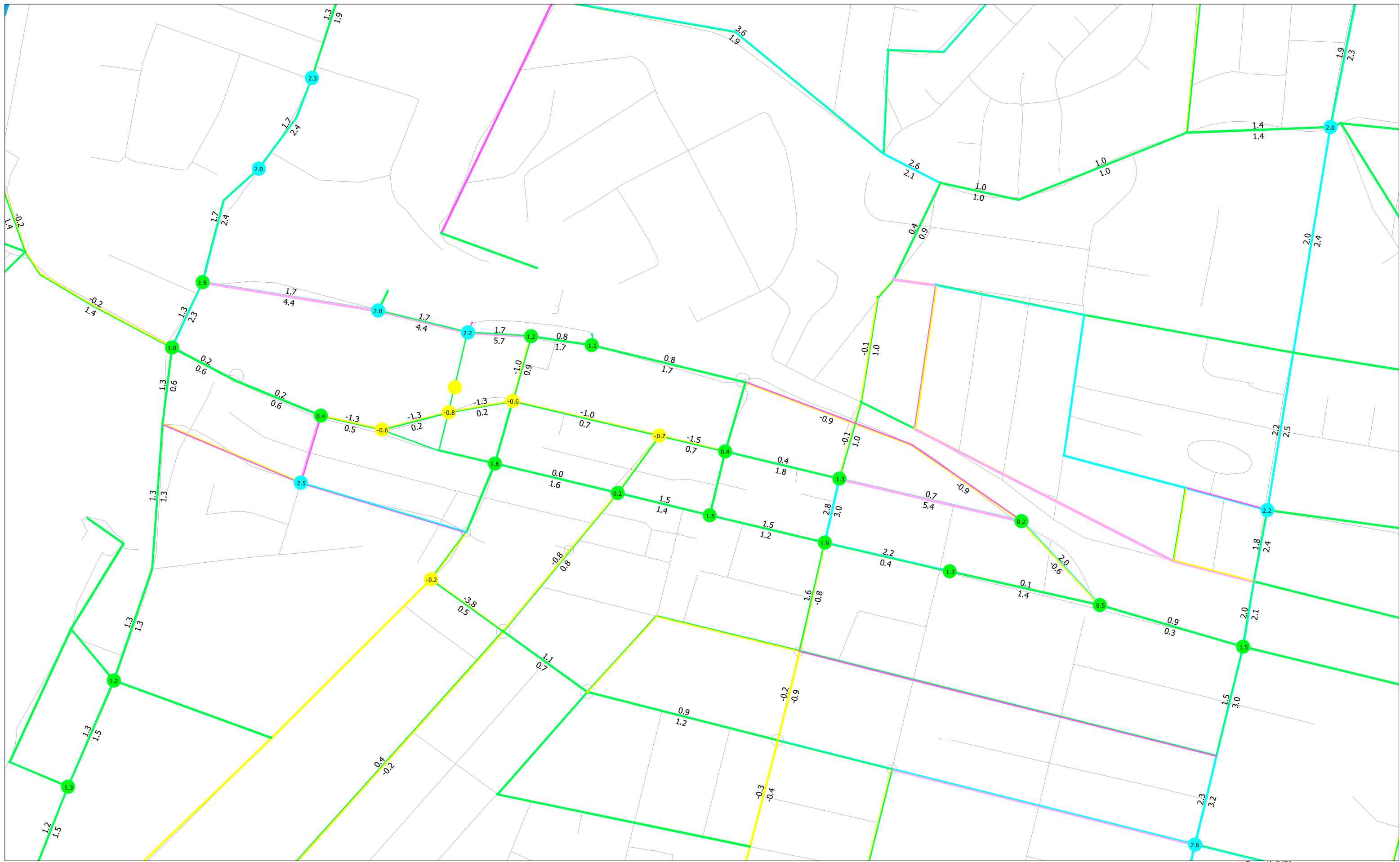
[illegible]

*not available for public parking*

## Appendix C

### Strategic Traffic Model (Traffic Growth Per Year 2016-2026)

# ROAD TRAFFIC GROWTH (%YR, 2HRSPK) LINKS & INTERSECTIONS

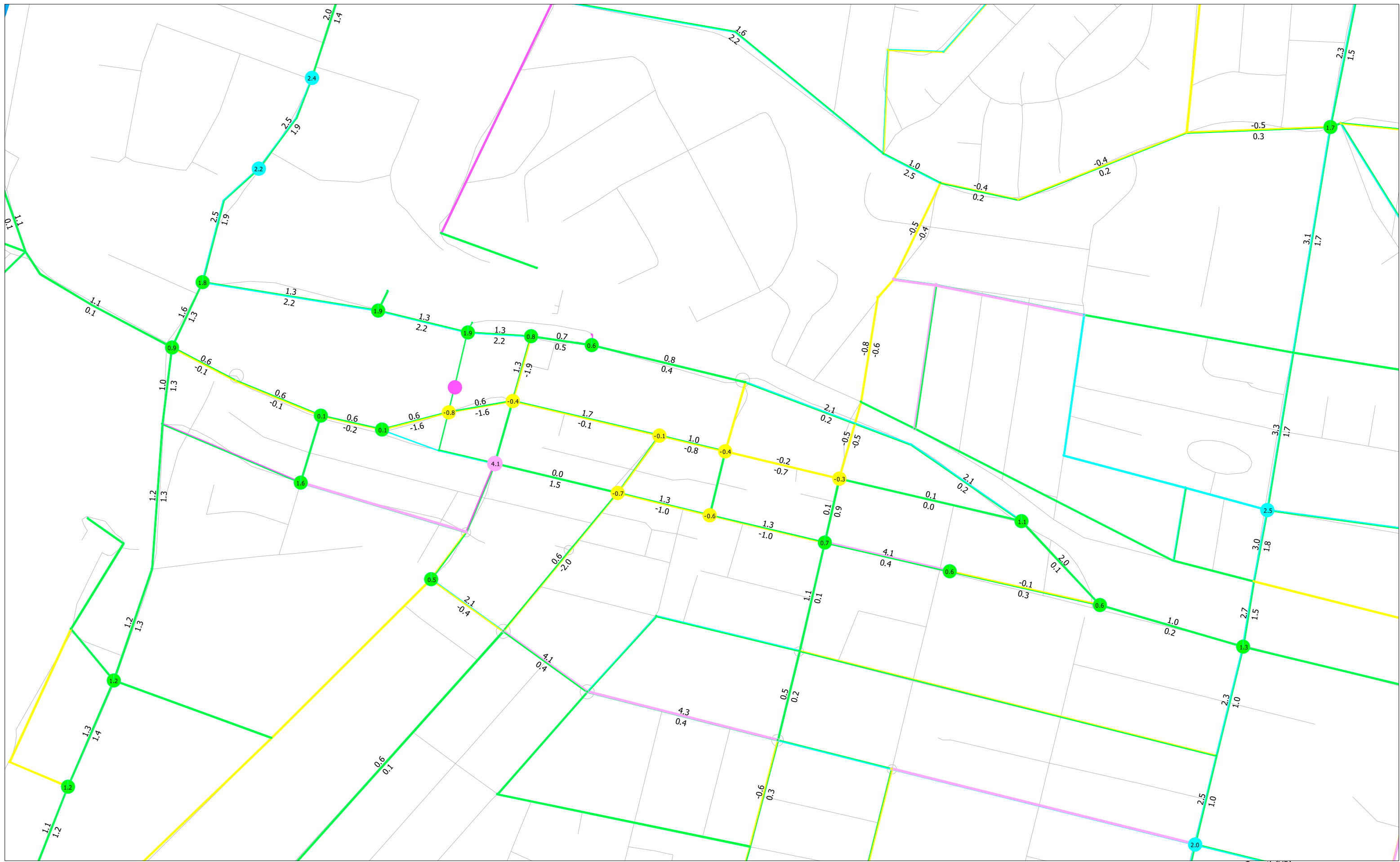


2011TZ SYDNEY GMA STRATEGIC TRAFFIC FORECASTING MODEL  
 Scenario 2026: 2026 SYDNEY TRAFFIC FORECASTING MODEL(LU2016V1.3)7-9AM(mf34)  
 2018-04-06 13:50

Growth(YR):

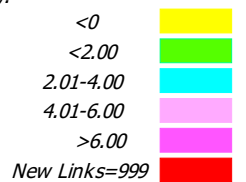
<0  
 <2.00  
 2.01-4.00  
 4.01-6.00  
 >6.00  
 New Links=999

# ROAD TRAFFIC GROWTH (%YR, 2HRSPK) LINKS & INTERSECTIONS

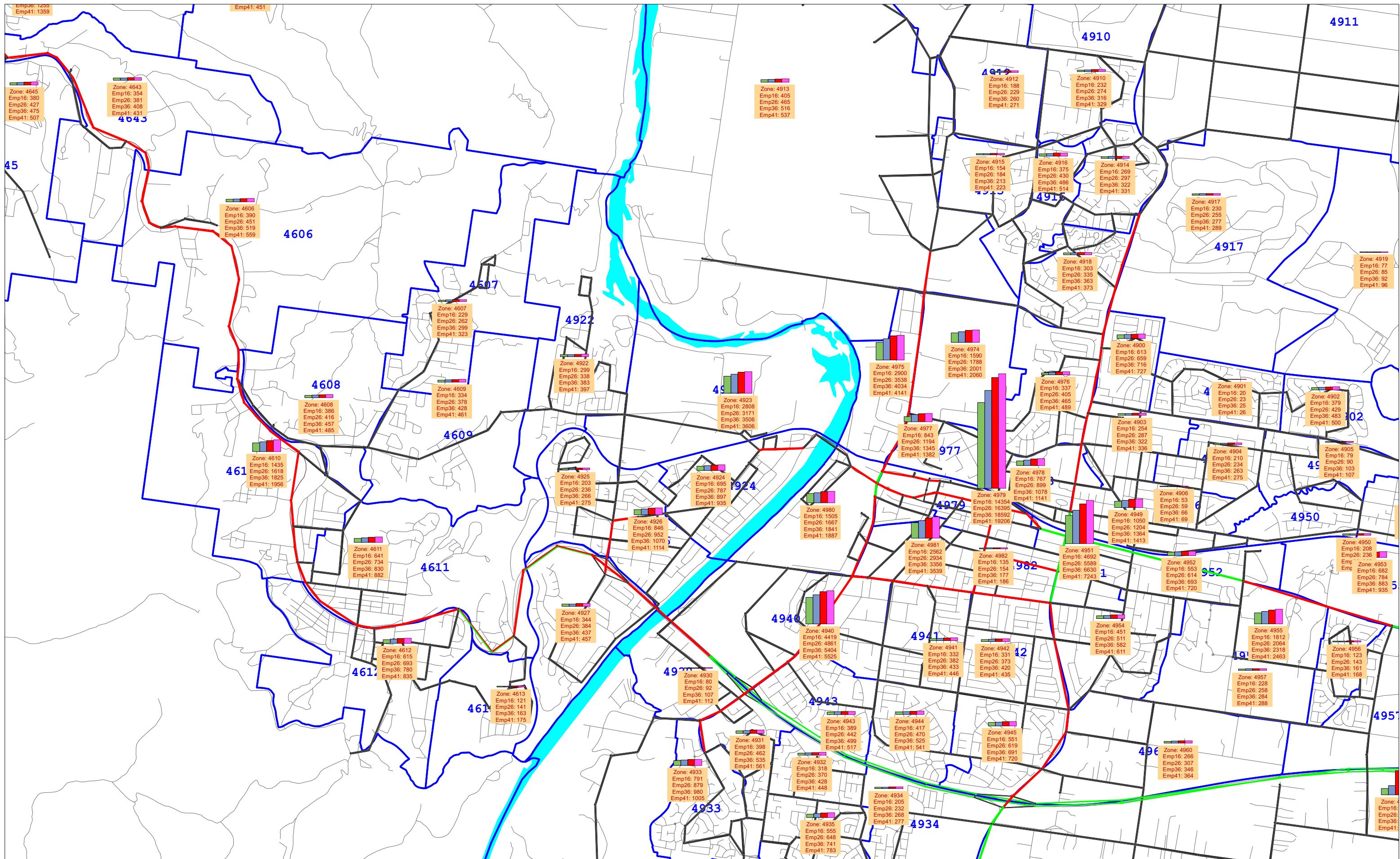


2011TZ SYDNEY GMA STRATEGIC TRAFFIC FORECASTING MODEL  
 Scenario 20260: 2026 SYDNEY TRAFFIC FORECASTING MODEL(LU2016V1.3)4-6PM(mf54)  
 2018-04-06 13:53

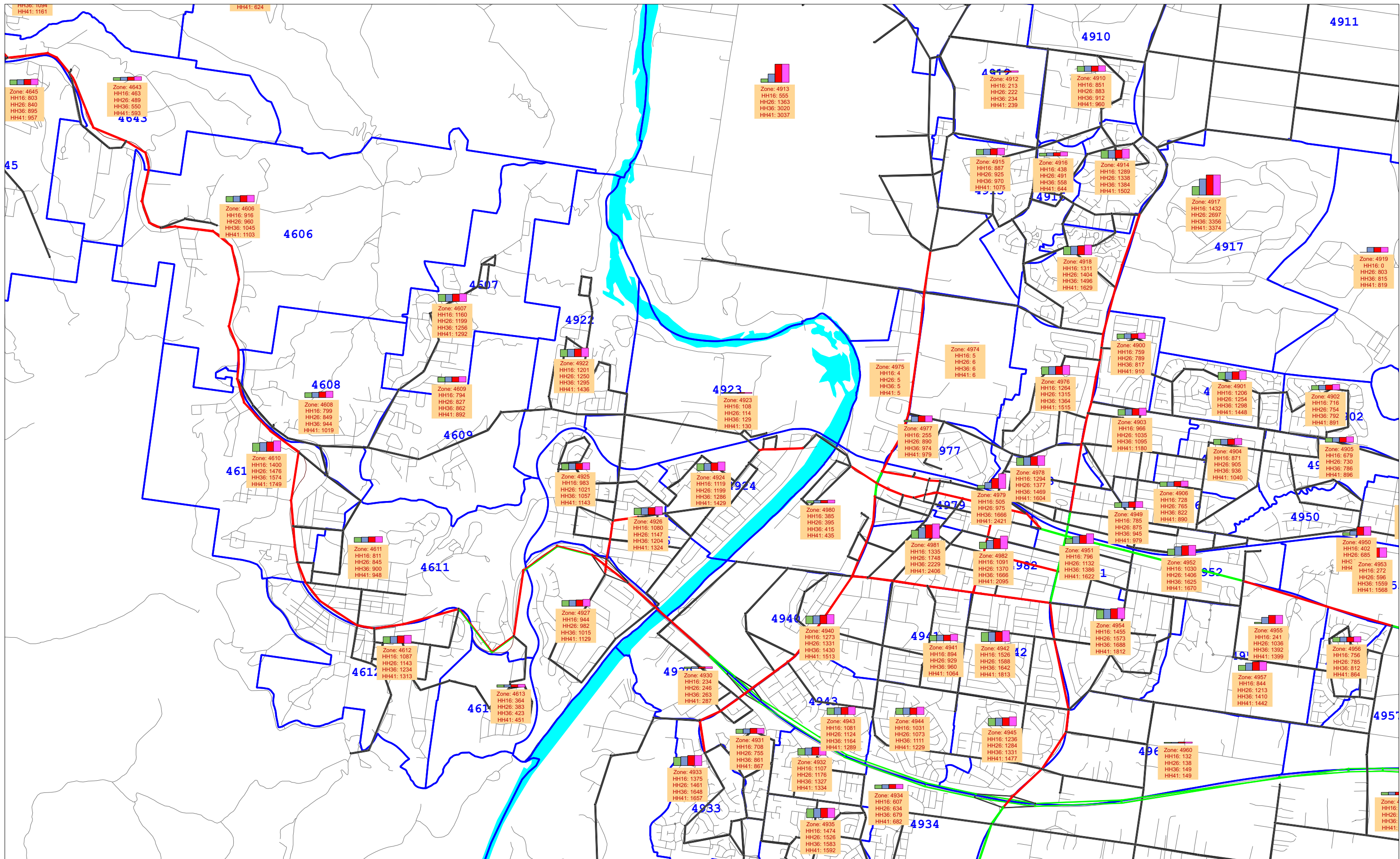
Growth(YR):



LU\_HHs&EMPs\_ZONAL\_DATA

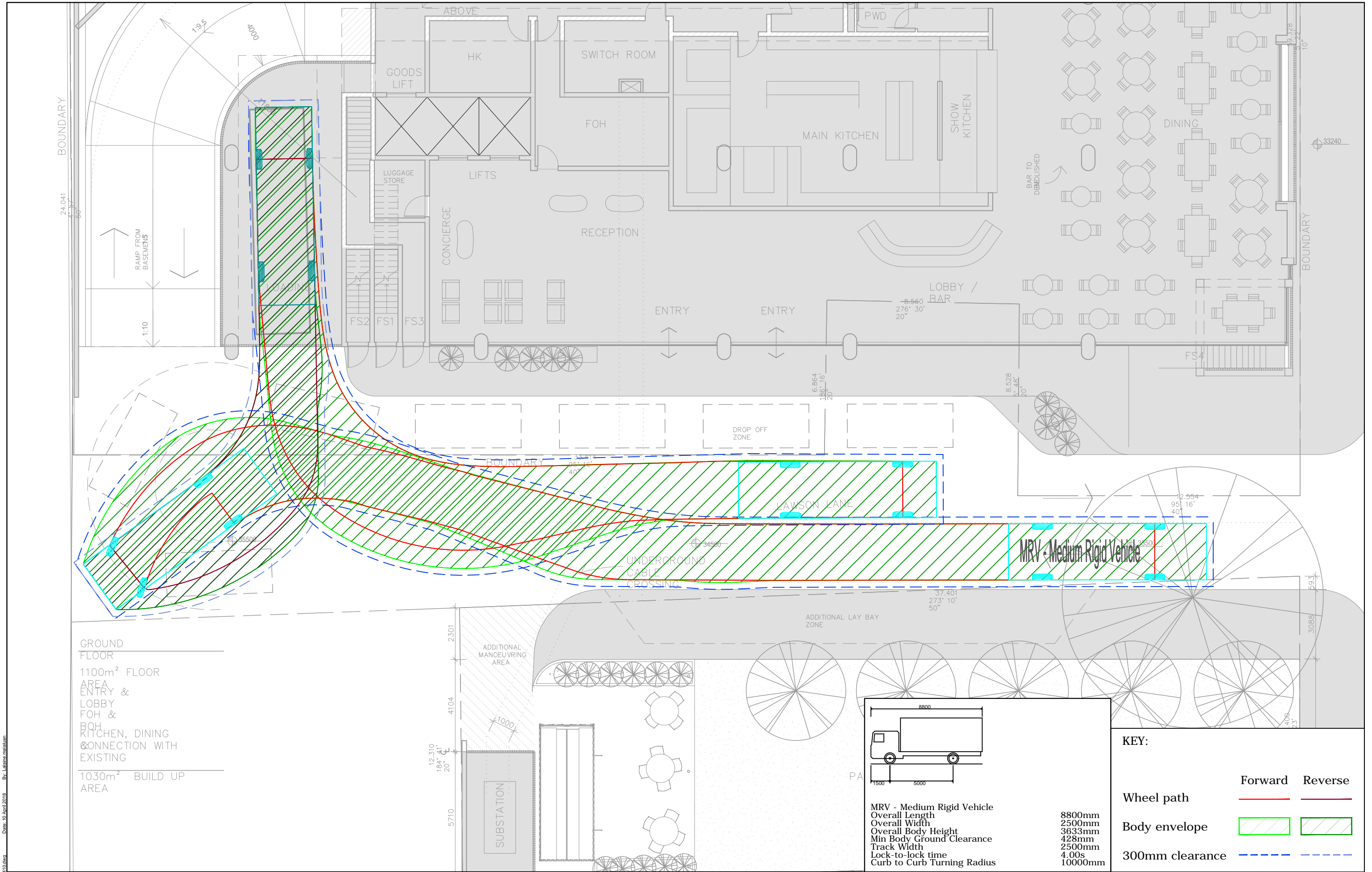


LU\_HHs&EMPs\_ZONAL\_DATA



## Appendix D

### Swept Path Assessment



REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	LM	DL	DL	10/04/18

**The Transport Planning Partnership**

Suite 402, 22 Alchison Street  
St. Leonards NSW 2065  
Tel: 02 9437 7800  
Email: info@tpp.net.au

PROJECT: THE AUSTRALIAN ARMS HOTEL, PENRITH

TITLE: MRV SWEEP PATH (NO TURNTABLE)

DWG No. FIGURE 2		
DATE STAMP 10 APRIL 2018		
PROJECT No. 18054	SCALE 1:150 @A3	REV. A

The Transport Planning Partnership  
Suite 402 Level 4, 22 Atchison Street  
St Leonards NSW 2065

P.O. Box 237  
St Leonards NSW 1590

02 8437 7800

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