Planning Proposal
61-79 Henry Street, Penrith
Transport Impact Assessment

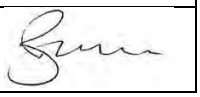
12/09/2022 **Ref: 300303389 / N179151**

PREPARED BY:

Stantec Australia Pty Ltd

Stantec

Quality Record

Issue	Date	Description	Prepared By	Checked By	Approved By	Signed
A	20/12/2019	Final	Jason Huang Jay Lee-Pieterse	Rhys Hazell	Rhys Hazell	Rhys Hazell
B	10/07/2020	Updated for revised plans	Jason Huang Jay Lee-Pieterse	Rhys Hazell	Rhys Hazell	Rhys Hazell
C	02/03/2022	Updated to include revised scheme	Mario Dizon Jr	Mackenzie Brinums	Rhys Hazell	Rhys Hazell
D	21/07/2022	Updated traffic modelling assessment	Will Finlay Mackenzie Brinums	Mackenzie Brinums	Rhys Hazell	Rhys Hazell
E	12/09/2022	Updated to address Council comments	Will Finlay Mackenzie Brinums	Mackenzie Brinums	Rhys Hazell	

Contents

1. Introduction

1.1 Background

It is understood that a planning proposal application has been lodged with Penrith City Council (Council) for a mixed development on land at 61-79 Henry Street, Penrith. The proposed development incorporates a truly mixed-use development incorporating a hotel, retail and commercial space, residential apartments and seniors within six separated buildings across the site.

Stantec (formerly GTA Consultants) was engaged in October 2019 to complete a transport impact assessment as part of the proposed development and the Transport Impact Assessment, dated 20 December 2019 formed part of the Planning Proposal application. Since lodgement, Council has provided comments in relation to several key project details some of which relate to transport matters. Issue B of the report has been completed (dated 10 July 2020) to address the transport related items raised by Council in their letter dated 1 April 2020.

Gateway determination has since been received for the Planning Proposal which requires amendments to the Transport Impact Assessment prior to public consultation. This report has been updated to consider comments provided on the Planning Proposal by Transport for NSW (TfNSW) in their later dated 11 December 2021 (as included in Appendix A), as well as traffic modelling as requested by Council in their initial letter dated 1 April 2020.

1.2 Purpose of this Report

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

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

1.3 References

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

- an inspection of the site and its surrounds
- Penrith City Council comments to the Planning Proposal in letter dated 1 April 2020
- TfNSW comments to the Planning Proposal in letter dated 11 December 2021
- Soper Place Infrastructure Civil Works – Detailed Design 21-28222 (Issue B dated 14 January 2020)
- Penrith Development Control Plan (DCP) 2014
- Penrith Local Environmental Plan (LEP) 2010
- State Environmental Planning Policy No 65 - Design Quality of Residential Apartment Development (SEPP 65)
- State Environment Planning Policy – Housing 2021 (Housing SEPP 2021)

- Transport for NSW Guide to Traffic Generating Developments (TfNSW Guide) 2002 and Technical Direction (TDT 2013/04a)
- Australian Standard/ New Zealand Standard, Parking Facilities, Part 1: Off-Street Car Parking AS/NZS 2890.1:2004 and Part 6: Off-Street Parking for People with Disabilities AS/NZS 2890.6:2009
- Australian Standard, Parking Facilities, Part 2: Off-Street Commercial Vehicle Facilities AS 2890.2:2018
- traffic and car parking surveys undertaken by Matrix Traffic and Transport as referenced in the context of this report
- plans for the proposed development prepared by Environa Studio
- other documents and data as referenced in this report.

2. Strategic Contexts

2.1 Local Policies and Strategic Context

Penrith City Centre is developed along a section of The Great Western Highway and around the traditional transport stop on The Great Western Rail Line. There are eight precincts within the City Centre with the site located in the eastern section of the Commercial Core, as shown in Figure 2.1. The commercial core is the 'gateway' to Penrith from the rail line with a focus on commercial and retail uses. Westfield Penrith is close to Penrith Station and within close proximity to the site. Council has significant assets in the CBD including the TAFE college with various Government offices 9\including Penrith Women's Health Centre, Penrith Courthouse and Penrith Police Station throughout. The area is identified for significant intensification and zoned for mixed use development (primarily commercial land uses).

The site is within the Penrith City Centre and subject to the relevant specific controls, in addition to the general controls covered by the Development Control Plan (DCP).

Figure 2.1: Penrith City Centre character areas

Source: Penrith Development Control Plan 2014, 08 February 2022

2.1.1 Penrith Core Centre Transport Management Study Plan

As part of strategic transport planning for Penrith City Centre, a 2018 Base Case traffic model (Base Model) has recently been developed for Penrith City Council using AIMSUN microsimulation modelling software. The Base Model was referred to Transport for NSW (TfNSW) for review. It is understood that TfNSW has confirmed the validated and calibrated model is 'fit for purpose'.

Upon request, Council provided access to Penrith City Centre Transportation Management Study and Plan (Penrith Core Centre TMSP)), dated 17 September 2019 for reference. The Base Case model identifies current and future traffic capacity issues in the study area shown in Figure 2.2 representing 2018 traffic conditions for both morning and afternoon weekday peak periods in-line with the traffic survey time periods. The purpose of the model is to ensure all potential development opportunities in the City Centre area adequately captured and impacts measured against the broader precinct rather than simply assessing impacts in the immediate vicinity.

This will ensure a robust and consistent approach to development and one than leverages the development opportunity of respective sites.

It is noted that there is some level of traffic congestion on the periphery of the study area with an obvious benefit for potential development sites to prevent vehicles form using local CBD roads, wherever feasible. This includes Great Western Highway (North Street), Belmore Street and Jane Street to reduce the extent of impact on local roads such as Henry Street and High Street for vehicles traversing the area in east-west direction

Figure 2.2: Base Case traffic model study area

Source: Penrith Core Centre Transport Management Study Plan, Existing Base Model Development, Calibration and Validation Report, Arcadis, 17 September 2019

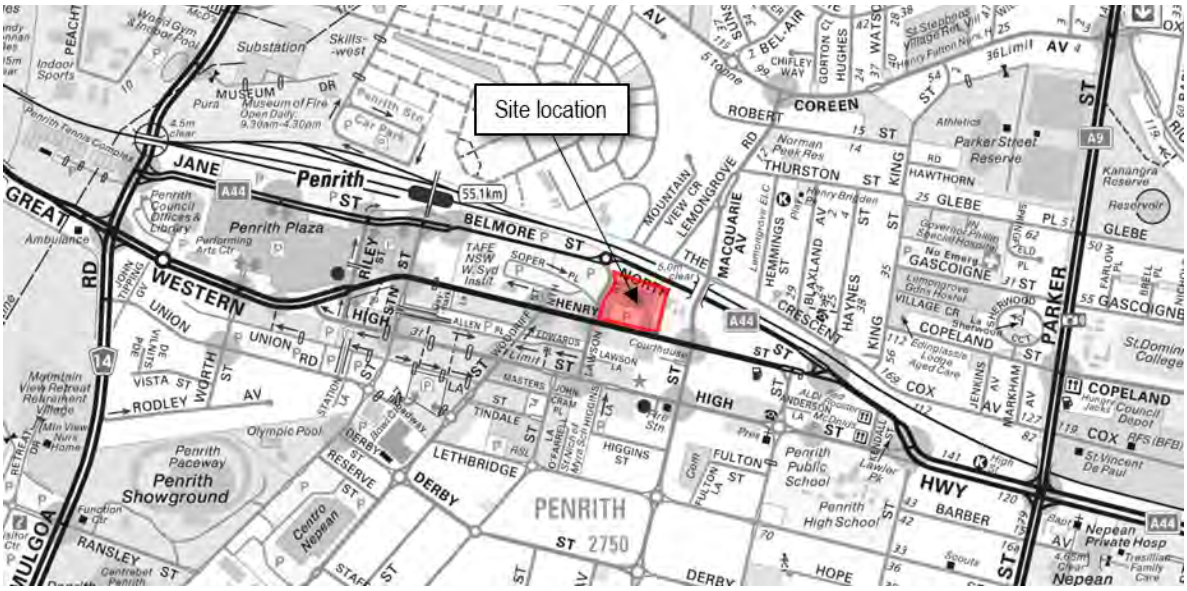
3. Existing Conditions

3.1 Site Location

The site is at 61-79 Henry Street, Penrith, otherwise referred to as Lot 1 of DP771927. The site of approximately 1.23 hectares has a frontage of 144 metres to Henry Street and 118 metres to Lawson Street. The site currently has a land use classification as B3 – Commercial Core and is occupied by three buildings comprising retail and commercial uses. The surrounding properties include mixed use developments including commercial and retail that is common throughout Penrith CBD. Penrith Courthouse is opposite the site on the southern side of Henry Street.

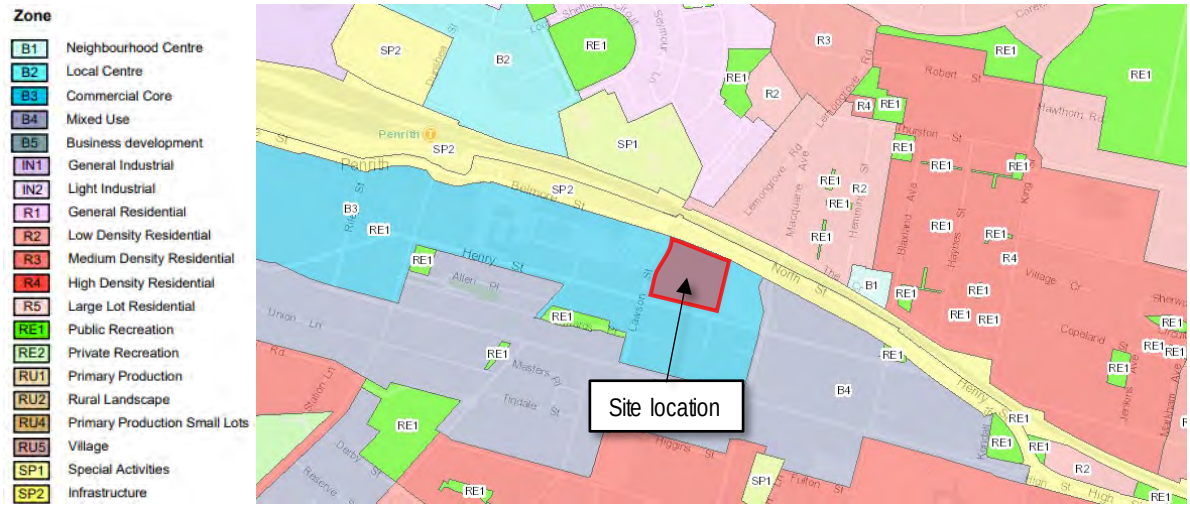
The location of the site and its surrounding environs is shown in Figure 3.1, with the LEP land use map shown in Figure 3.2.

Figure 3.1: Subject site and its environs



Base image source: Sydway, accessed 08 February 2022

Figure 3.2: Land use map



Base image source: NSW ePlanning Spatial Viewer, accessed 08 February 2022

3.2 Transport Network

3.2.1 Road Hierarchy

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

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

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

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

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

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

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

3.2.2 Surrounding Road Network

A schedule of the existing road network is presented in and shown in Table 3.1.

Table 3.1: Road network

Road Name	Class	Description	Photo
Great Western Highway (North Street)	State Road Highway (HW5)	• 2-way road with east-west alignment • 7.0-metre-wide carriageway within an approximate 35-metre-wide road reserve • 50 km/h speed limit • one traffic lane in each direction • parking is not permitted	
Henry Street	Local Collector Road	• 2-way road with east-west alignment • 12.6-metre-wide carriageway within a 20-metre-wide road reserve • 50 km/h speed limit • Generally, one traffic lane in each direction, with greater capacity at key intersections • parking is permitted but time-restricted on the northern side of the road, not permitted on the southern side	

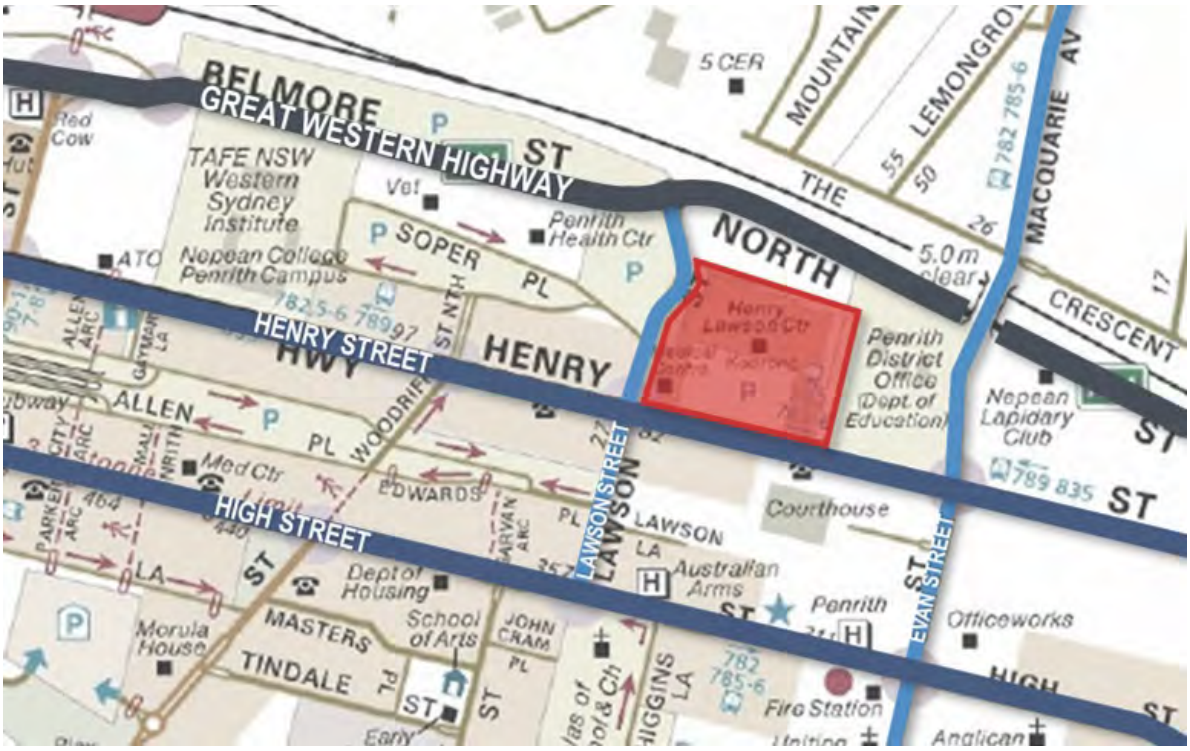
Road Name	Class	Description	Photo
Lawson Street	Local Collector Road	• 2-way road with north-south alignment • 9.5-metre-wide carriageway within a 19-metre-wide road reserve • 50 km/h speed limit • one traffic lane in each direction • kerbside parking is not permitted	
Evan Street	Local Collector Road	• 2-way road with north-south alignment • 11-metre-wide carriageway within a 20-metre-wide road reserve • 50 km/h speed limit • one lane in each direction, with turn lanes at Evan Street/ Henry Street intersection • kerbside parking is not permitted	
High Street	Local Collector Road	• 2-way road with east-west alignment • 12.8-metre-wide carriageway within a 19.5-metre-wide road reserve • 40 km/h speed limit • Generally, one traffic lane in each direction, with greater capacity at key intersections • parking is permitted but time-restricted on both the northern and southern side of the road	

3.2.3 Surrounding Intersections

The following key intersections currently exist near the site:

- Great Western Highway (North Street)/ Lawson Street (roundabout)
- Soper Place/ Lawson Street (priority controlled)
- Henry Street/ Lawson Street (signalised)
- High Street/ Lawson Street (signalised).

Figure 3.3: Road network



Base image source: Sydway

3.3 Traffic Volumes

3.3.1 Existing Site Access

Stantec commissioned traffic movement counts at the existing Henry Street site access driveway on Thursday 31 October and Saturday 2 November 2019. The site peak hours were found to occur between 12:30pm and 1:30pm on the weekday and 11:15am to 12:15pm on the Saturday. This is expected given the existing land uses and traffic movement throughout Penrith CBD across the day. A summary of the existing site generated traffic is shown in Table 3.2. Overall, the site consistently generates approximately 150 vehicle trips during the middle of the day during the week and up to 220 trips on Saturdays.

Table 3.2: A summary of existing site peak hour traffic generation

Period	Peak Hour	Site Generated trips (vehicles)		
		In	Out	Total
Weekday	12:30pm-1:30pm	60	90	**150**
Saturday	11:15am-12:15pm	74	144	**218**

3.3.2 Key Intersections

Stantec also obtained historic traffic movement counts at the following key intersections surrounding the site:

- Great Western Highway (North Street)/ Lawson Street – Thursday 28 June 2018
- Soper Place/ Lawson Street – Thursday 31 May 2018
- Henry Street/ Lawson Street – Thursday 28 June 2018
- High Street/ Lawson Street – Thursday 28 June 2018 .

The common weekday AM and PM peak hours were found to occur from 8:00am to 9:00am and 4:45pm to 5:45pm respectively. The existing peak hour traffic volumes are summarised in Appendix C.

3.4 Intersection Operation

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

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

Table 3.3 shows the criteria that SIDRA adopts in assessing the level of service.

Table 3.3: SIDRA level of service criteria

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

Table 3.4 presents a summary of the operation of the key intersections surrounding the site based on the historical 2018 traffic data. The SIDRA models have been set up as a network model to better understand the interaction between all study intersections.

Table 3.4: Existing intersection operating conditions

Intersection	Peak	Approach	Degree of saturation (DOS)	Average delay (sec)	Average queue (m)	Level of service (LOS)
Great Western Highway/ Lawson Street (roundabout)	AM	South	0.14	10	2	A
		East	0.44	10	10	A
		West	0.34	9	8	A
	PM	South	0.43	12	9	A
		East	0.64	12	19	A
		West	0.58	10	18	A
	AM	South	0.09	3	0	A

Intersection	Peak	Approach	Degree of saturation (DOS)	Average delay (sec)	Average queue (m)	Level of service (LOS)
Soper Place/ Lawson Street (priority controlled)		North	0.08	4	1	A
		West	0.04	5	1	A
	PM	South	0.11	3	0	A
		North	0.03	4	1	A
		West	0.25	7	3	A
Henry Street/ Lawson Street (signalised)	AM	South	0.47	34	17	C
		East	0.46	18	36	B
		North	0.32	37	12	C
		West	0.20	7	13	A
		Overall	**0.47**	**18**	**36**	**B**
	PM	South	0.64	31	29	C
		East	0.67	24	55	B
		North	0.52	32	30	C
		West	0.41	12	32	A
		Overall	**0.67**	**23**	**55**	**B**
High Street/ Lawson Street (signalised)	AM	East	0.26	7	21	A
		North	0.23	34	14	C
		West	0.25	13	22	A
		Overall	**0.26**	**13**	**22**	**A**
	PM	East	0.32	12	27	A
		North	0.70	34	36	C
		West	0.78	20	64	B
		Overall	**0.78**	**20**	**64**	**B**

Table 3.4 indicates that all intersections generally operate satisfactorily (generally defined as a LOS D or better), with appropriate levels of delay and queuing.

3.5 Car Parking

A review of publicly available on-street parking indicates that Henry Street generally permits 1P time restricted parking on weekdays and Saturdays. The southern side has no parking restrictions between 3:30pm and 6:00pm weekdays. Existing demand was observed to be generally moderate to high on a typical weekday.

High Street generally permits 30-minute time restricted parking on both sides of the carriageway particularly during weekdays from 8:30am to 6:00pm and Saturdays from 8:30am to 12:30pm.

The site provides around 177 on-site parking spaces within an at-grade paid car park (with the first hour being free). Parking surveys were completed at the same time as the traffic surveys at the site access. Demand is typically moderate and between 30 and 50 per cent, with peak demand around 60 per cent between 11:00am and 12:00pm on weekdays and up to 25 per cent on Saturdays.

It is also noted that there are several vacant tenancies and much of the parking demand is associated with Penrith Courthouse, opposite the site.

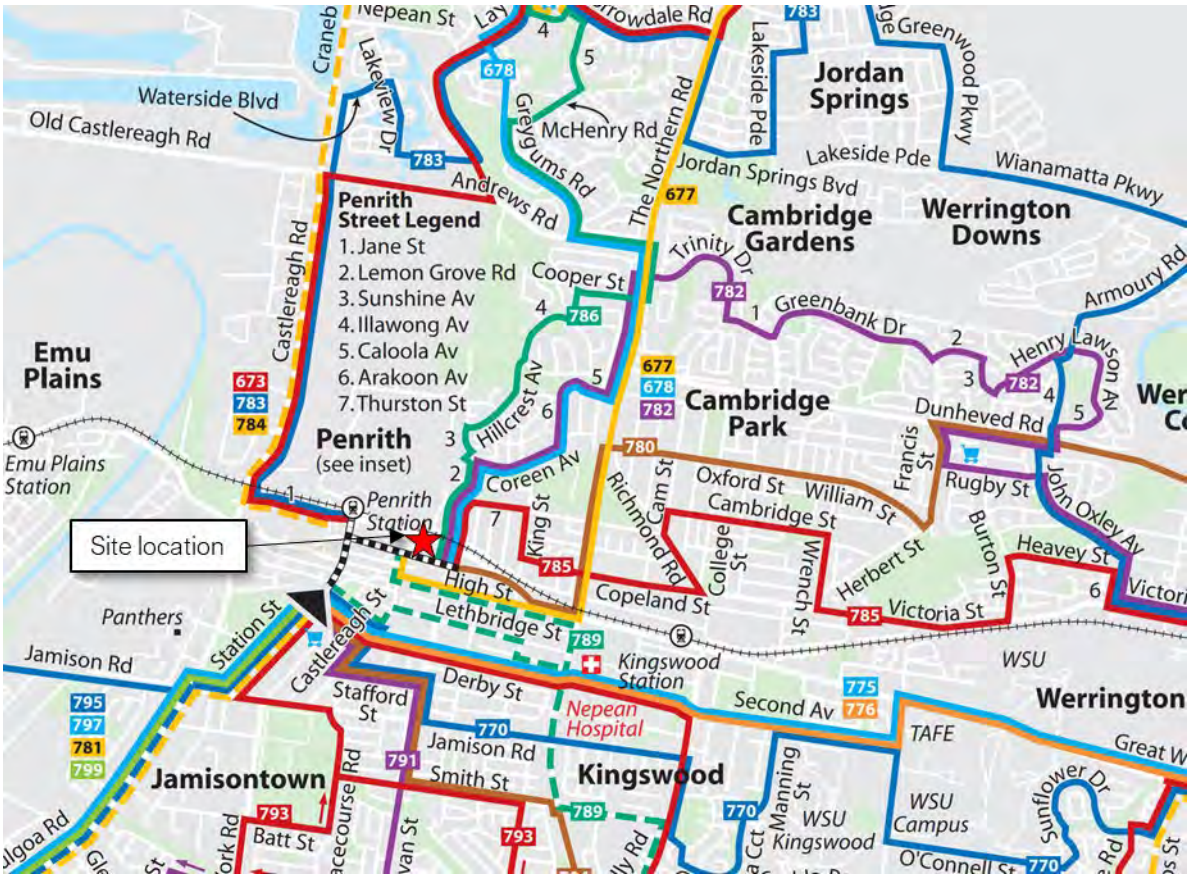
3.6 Public Transport

A review of the public transport available near the site is summarised in Table 3.5 with routes shown in Figure 3.4 and the train and bus stops within 400 metres are shown indicatively in Figure 3.5.

Table 3.5: Public transport provision

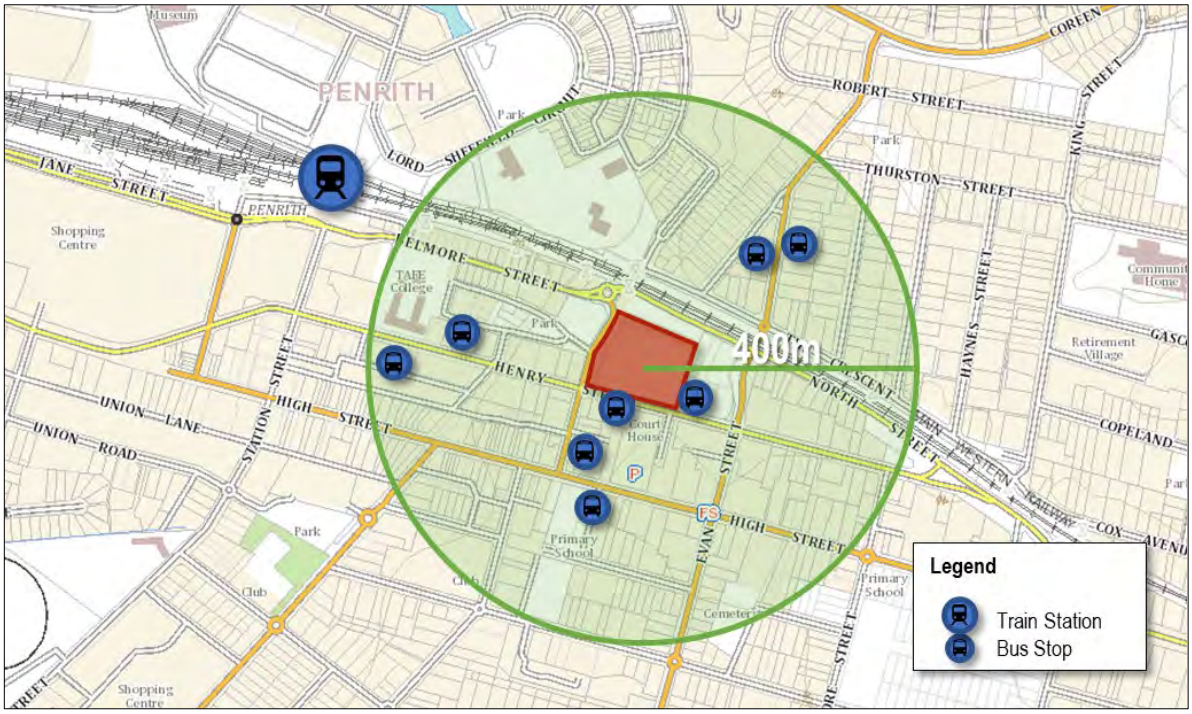
Service	Route number	Route description	Nearest Stop	Frequency on/ off-peak
Train	T1	North Shore & Western Line	Penrith Town Centre	5 mins/ 15 mins
Bus	677	Richmond to Penrith via Londonderry	Lawson Street before High Street	60 mins/ 120 mins
	678	Richmond to Penrith via Cranebrook	Penrith Court House, Henry Street	120 mins/ 240 mins
	780	Mt Druitt to Penrith via Ropes Crossing		15 mins/ 30 mins
	782	St Marys to Penrith via Werrington		60 mins
	785	Werrington to Penrith via Cambridge Park		60 mins
	786	Penrith to Cranebrook via North Penrith (Loop)		30 mins
	789	Penrith to Luddenham	St. Nicholas Church, High Street	Operates only once during AM and PM

Figure 3.4: Surrounding public transport network



Base image source: Transport for NSW, accessed February 2022

Figure 3.5: Surrounding railway station and bus stops



Base image source: Six Maps, accessed February 2022

Overall, the site is generally well serviced by public transport with reliable bus and train services operating across the day and night.

3.7 Walking and Cycling Infrastructure

There are well established facilities in the local precinct providing good connectivity to a variety of key destinations such as Westfield Penrith, Penrith City Centre and Penrith railway station.

Pedestrian paths are located as follows:

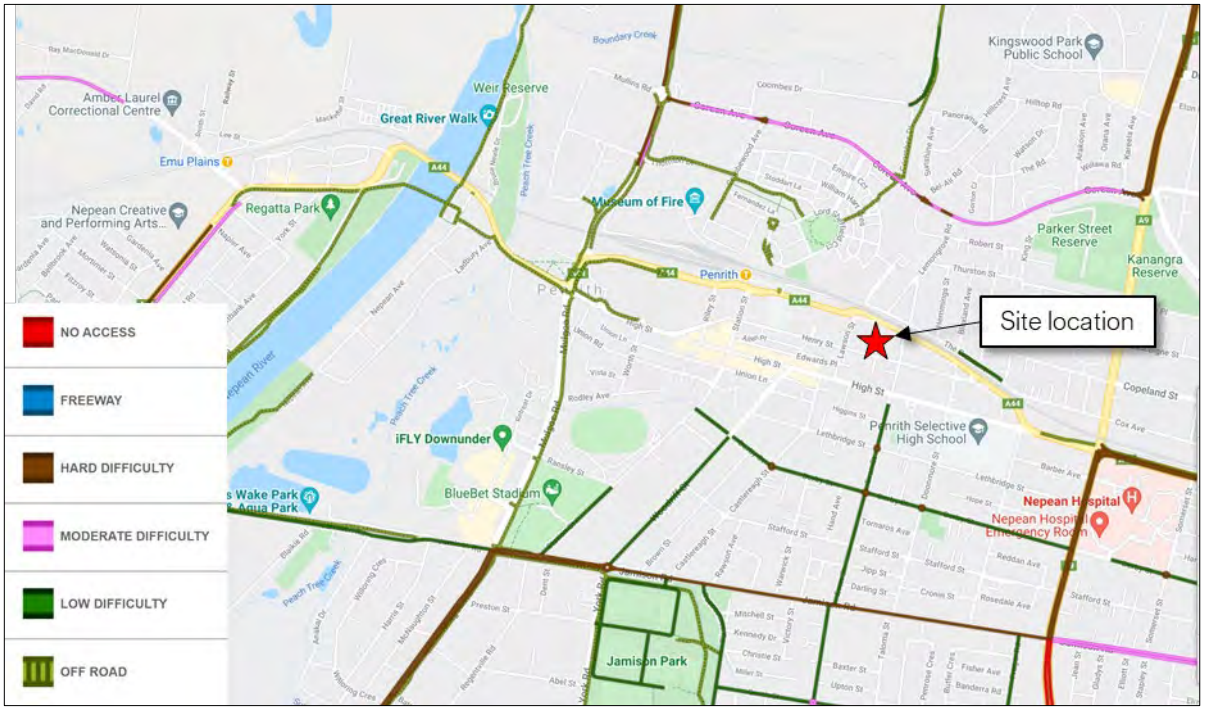
- Henry Street – 3.0 to 3.4-metre-wide footpath on both sides
- Lawson Street – 2.4 to 2.8-metre-wide footpath on both sides
- Great Western Highway (North Street) – 1.2-metre-wide footpath along the south side from Lawson Street to Evan Street overpass where staircase is provided to Evan Street.
- Evan Street – 1.8 to 2.0 metre-wide footpath along the east side from Great Western Highway to High Street; 1.2 to 3.5 metre-wide footpath along the west side from Great Western Highway to High Street.
- High Street – 3.0 to 3.4-metre-wide footpath on both sides

Pedestrian crossing points in vicinity of the site are outlined below:

- Raised wombat crossing with raised islands, mid-block of Henry Street and High Street.
- Signalised treatments, including pedestrian crossing at all legs of the Henry Street/ Lawson Street intersection.
- Signalised treatments, including pedestrian crossing at the north and east legs of the High Street/ Lawson Street intersection.

The site is not immediately serviced by formal cycling infrastructure, but the surrounding network outside Penrith CBD is well connected. The surrounding cycling infrastructure is shown in Figure 3.6.

Figure 3.6: Surrounding cycling network



Base image source: TfNSW Cycleway Finder (2022)

4. Development Proposal

4.1 Land Uses

The planning proposal includes six separate buildings incorporating a mix of residential, commercial and hotel uses evenly dispersed across the site. Most buildings include ground level retail uses with ancillary community services on the podium level in the northern two buildings.

The area schedule is summarised in Table 4.1.

Table 4.1: Development schedule

Use	Size
Residential	455 apartments
Hotel	8,080m^2 (200 rooms)
Retail	7,515m^2
Commercial	16,715m^2
Community Services	5,000m^2

It is understood that 15 per cent of the residential apartments will be associated with housing for seniors and/ or people with a disability, with five per cent the residential apartments also provided as affordable housing. This has been considered in both the parking and traffic assessment discussed later in this report.

4.2 Overview

The proposal focuses on a purposeful strategy to minimise the traffic related impacts on the immediate surrounding road network while delivering a cohesive mixed-use development in a changing CBD environment. Site access is dependent on a potential new roundabout-controlled intersection on Lawson Street at Soper Place which would facilitate all site generated traffic. The access would directly lead to a ramp to the three levels of basement parking that provides parking for about 1,000 cars across the respective uses. Some level of car park management and allocation of users would be required, as will separation of service vehicles within any basement loading areas.

The basement car park would also be able to facilitate set-down/ pick-up demand associated with the hotel. An indented bay is also possible on Henry Street east of the traffic signals and along the hotels frontage to ensure a ‘front entrance’ for unfamiliar users. Use of this area would need to be managed to ensure no impacts to through traffic on Henry Street.

The suitability of the proposed parking provision and loading arrangements and subsequent traffic impacts are detailed in the following sections.

5. Parking Assessment

5.1 Car Parking

5.1.1 Requirements

The proposed land uses, and the respective parking requirements are detailed in the following sections.

Residential

SEPP 65 and the Apartment Design Guide states that developments located in the following areas should provide the minimum residential car parking requirement as specified in the TfNSW Guide 2002, or the car parking requirement prescribed by the relevant council, whichever is less:

- on sites that are within 800 metres of a railway station or light rail stop in the Sydney Metropolitan Area, or
- on land zoned, and sites within 400 metres of land zoned, B3 Commercial Core, B4 Mixed Use or equivalent in a nominated regional centre.

Given the site is located within 800 metres of Penrith railway station and is zoned B3 Commercial Core, this requirement applies to the proposal.

Affordable Housing

The Housing SEPP 2021 states that for infill affordable housing, the following minimum parking is to be provided for affordable housing dwellings:

- 0.5 resident car spaces per one-bedroom dwelling
- 1 resident car space per two-bedroom dwelling
- 1.5 resident car spaces per three or more-bedroom dwellings.

Seniors Independent Living Units

Reference has been made to the car parking rates for Independent Living Units referenced in the Housing SEPP 2021. For visitor parking requirements, the TfNSW Guide 2002 has also been referenced.

A summary of the relevant minimum parking requirements detailed in Table 5.1 and Table 5.2.

Table 5.1: Housing SEPP 2021 car parking requirements

Description	Housing SEPP 2021 minimum parking rate
Independent Living Units (ILU)	0.5 spaces per bedroom

Table 5.2: TfNSW Guide 2002 car parking requirements

Use	Minimum parking rate
Self-contained dwelling (developer funded)	1 visitor space per 5 dwellings
Self-contained dwelling (subsidised development)	1 visitor space per 10 dwellings
Nursing homes	1 visitor space per 10 beds

Based on the review of the Housing SEPP 2021 and TfNSW Guide 2002 parking rates, it is recommended that the following minimum rates for Independent Living Units (ILU) be applied:

- 0.5 resident car spaces per one-bedroom dwelling
- 1 resident car spaces per two-bedroom dwelling
- 1.5 resident car spaces per three-bedroom dwelling
- 0.2 visitor spaces per dwelling.

Hotel

DCP 2014 specifies one space per room plus one space per six employees and one space per manager.

The Guide 2002 specifies a parking rate of one space per four bedrooms for three and four-star hotels and one space per five bedrooms for five-star hotels.

The DCP 2014 rate would likely result in a significant overprovision of parking, to the extent that the basement car park would be underutilised and/ or misused. Stantec's own database and experience with hotel developments also confirms this, with application of the TfNSW rate considered appropriate.

Notwithstanding the above, the DCP 2014 rates have been adopted for the purposes of this assessment, with any such deviation from the DCP rates able to be investigated further as part of any future development application on the site. Such an approach to parking is important to ensure an appropriate quantum having regard to the sites location and obvious overlapping land uses and associated demand profiles.

Retail and Commercial

The car parking requirements for retail and commercial uses for Penrith City Centre set out in DCP 2014 as follows:

- Retail – one space per 30 square metres GFA
- Commercial – one space per 100 square metres GFA.

In addition, DCP 2014 specifies that a maximum 60 per cent of all commercial parking spaces, other than for service vehicles, car wash 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 be subject to a contribution under an adopted Contribution Plan or as set by the terms of a Voluntary Planning Agreement.

Accessible Parking

DCP 2014 requires accessible spaces to be provided in accordance with the Access to Premises Standards, Building Code of Australia (BCA) and AS2890. A review of the BCA suggests that the proposed development generates a People with Disabilities (PWD) car parking requirement of one PWD space for every 100 spaces or part thereof.

5.1.2 Parking Requirement

Table 5.3 and Table 5.4 summarise the parking requirements for the proposed uses based on the different parking rates discussed above.

Table 5.3: Parking requirement

Use	Description	Size/ No.	Car parking rate		Car parking requirement (spaces)	
			Penrith DCP	TfNSW	Penrith DCP	TfNSW
Residential	1 bedroom	73	1 per 1-bed	0.4 per 1-bed	73	29
	2 bedroom	218	1 per 2-bed	0.7 per 2-bed	218	153
	3 bedroom	73	2 per 3-bed	1.2 per 3-bed	145	87
	Visitors	363	1 per 5 dwellings	1 per 7 apts	73	52
				Sub-total	**509**	**321**
Hotel	Rooms	200 rooms	1 per room	1 per 4 beds	200	-
	Employees	50 staff	1 space per 6 employees	-	25	-
	Managers	1 manager	1 space per manager	-	1	-
				Sub-total	**226**	**N/A**
Retail	Supermarket	7,515m^2	1 per 30m^2	6.1 per 100m^2 (75% GLFA)	251	-
Commercial	Office space	8,645m^2	1 per 100m^2	1 per 100m^2 GFA	100	-
				Total	**1086**	**898 [1]**

[1] adopts DCP rates for non-residential land uses

Table 5.4: Housing SEPP 2021 parking requirement

Use	Description	Size	Parking rate	Car parking requirement (spaces)
Affordable housing	1 bedroom	5 apartments	0.5 per 1-bedroom	3
	2 bedroom	13 apartments	1 per 2-bedroom	13
	3 bedroom	5 apartments	2 per 3-bedroom	7
			Sub-total	**23**
ILU	1 bedroom	69 units	0.5 per bedroom	35
	Visitor		0.2 per dwelling	14
			Sub-total	**49**
			Total	**72**

Based on the above, the planning proposal is required to provide between 970 and 1,160 parking spaces. This includes adopting the DCP 2014 parking rates for all land uses (which results in 1,160 spaces). When including TfNSW rates for the residential land uses (and retaining the DCP rates for all non-residential), the provision reduces to 970 spaces.

Car wash spaces, ambulance bay and details around accessible parking would also need to be further considered. Motorcycle parking should also be applied at the rate of one space for every 20 car parking spaces. This would equate to about 50 to 60 motorcycle spaces based on the above.

Given the size of the proposal and mixed-use nature of the site in Penrith CBD, a consolidated parking scheme that facilitates the best use of available parking is likely to result in manageable outcomes. For example, the hotel may be able to make use of commercial parking overnight when it experiences peak demand, and the commercial uses their lowest demand. This would require management plans to be in place and availability of valet services.

It is important to note that a compliant scheme comprising some 15,000 square metres of retail and 45,000 square metres of commercial space plus a 700-room hotel would require at least 970 on-site parking spaces. This is relatively consistent with DCP 2014 as it relates to the planning proposal, particularly if adopting TfNSW rates for the residential land uses.

5.2 Potential Access Treatments

Roundabout concept designs for the Lawson Street/ Soper Place intersection have been prepared and are included in Appendix B. Two design options have been prepared:

- Option 1 – 14.7-metre radius roundabout which is generally compliant with Austroads requirements
- Option 2 – 10-metre radius roundabout consistent with roundabout controlled intersections throughout Penrith CBD (including newly constructed intersections).

The existing road alignments and potential future Soper Place alignment have been considered based on plans provided by Council on 12 August 2022.

Option 1 includes a raised central roundabout island and Option 2 a fully mountable central island to accommodate design vehicle turning movements. Several swept paths including the largest design vehicles are included. This includes 14.5 metre buses along Lawson Street and 12.5 metre heavy rigid trucks to and from the site and Soper Place. The roundabout would be located north of Henry Street and at least 40 metres north of the traffic signal hold line.

The concept design intends to inform potential future road alignments and intersection configurations and ability to incorporate the necessary site access arrangements and Soper Place alignment. The plans are to a concept plan detail and intended to inform the overarching design intent and for the purposes of ongoing stakeholder engagement.

Option 2 remains the preferred design on account of it maintaining appropriate public domain space, delivering a functional roundabout of suitable size consistent with other existing recently installed roundabouts in Penrith CBD and can accommodate the future Soper Place alignment.

5.3 Loading and Servicing

DCP 2014 does not outline a requirement for the number of service vehicle bays, however a dedicated loading dock is proposed within the upper level of the basement car park along the eastern boundary of the site, with access provided via the proposed roundabout at Lawson Street and Soper Place.

There is opportunity for the upper level of the basement car park to accommodate smaller service vehicles (perhaps vans/ utes and 6.4m small rigid vehicles) for smaller deliveries and those that require faster turnaround. The loading dock and other informal smaller deliveries would be managed by the hotel to always ensure appropriate use.

All service vehicles would enter and exit the site in a forward direction with sufficient capacity to avoid the desire for any such on-street activity. Waste collection would also need to be accommodated, with the largest design vehicle likely to be a 12.5-metre-long large rigid vehicle. Bins would need to be moved to a bin storage area for collection as required.

A detailed loading assessment would be included as part of any future Development Application, including loading dock location, access arrangements and practical use.

6. Sustainable Transport

6.1 Bicycle Parking and End of Trip Facilities

Bicycle parking requirements are not specified in DCP 2014 however it references *Planning Guidelines for Walking and Cycling* (PGWC) (NSW Government, 2004). A review of the bicycle parking requirement rates and the floor area schedule results in a parking requirement as summarised in Table 6.1.

Table 6.1: PWGC bicycle parking requirements

Use	Description	Bicycle parking rate
Residential	Resident	20-30% of dwellings
	Visitor	5-10% of dwellings
Retirement Living	Residents and visitors	3-5% of residents
Retail	Staff	3-5% of staff
	Employee	5-10% of staff
Commercial	Staff	3-5% of staff
	Visitor	5-10% of staff

The PGWC also recommends that in addition to bicycle parking facilities, end of trip facilities, such as lockers, change rooms and showers should be provided at workplaces. Based on the number of staff projected, the provision of these facilities will be confirmed in the Development Application stage.

6.2 Walking and Cycling Network

The existing pedestrian infrastructure surrounding the site discussed in Section 3.7 connects the site well with Penrith CBD and railway station. The cycling network in the proximity also connects the CBD with the local areas of Penrith.

Within the site, pedestrian amenity is a key design consideration, with a high level of permeability afforded by a generous through site link and open space through the centre of the site. This open space connects Henry Street with the public space proposed to the north. This will also further activate the ground level retail space.

The convenient connections between the multiple pedestrians through site links and the well-established existing pedestrian network along the site frontages will also be key to ensuring the area functions as intended.

6.3 Public Transport

As discussed, the site is well served by rail services and bus routes via proximity to the Penrith Station. Rail services provide access to local and regional destinations as discussed in Section 3.6. Considering the variety of public transport services available to residents, staff and visitors when traveling to and from the site, it is unlikely that the development would significantly impact the surrounding public transport network.

As part of Development Application, an overview Green Travel Plan can provide context and strategies necessary to implement small measures over time to encourage non-car-based trips in the heart of the CBD.

7. Traffic Assessment

7.1 Overview

Traffic generation estimates for the proposed development have been sourced from Penrith City Council, TfNSW Guide 2002 and Technical Direction (TDT 2013/ 04a).

Residential

Council specified traffic generation rates for high density residential flat building development are shown in Table 7.1.

Table 7.1: Penrith City Council high density residential flat traffic generation rate

Year average	Peak trip/ apartment
2019 - 2026	0.33
2027 - 2031	0.30
2032 - 2036	0.26

TDT 2013/ 04a provides updated rates for high density residential flat dwellings (2012 surveys) that are close to public transport services, greater than six storeys and almost exclusively residential in nature. TDT 2013/ 04a specifies an average AM peak hour trip generation for Sydney of 0.19 trips per apartment. The PM peak hour trip generation rate is slightly lower at 0.15 trips per apartment, accounting for a greater 'spread' over a longer peak period.

Given the site is well located to public transport services, with Penrith railway station within an easy 5 to 10-minute walk, although also recognising the location on the outskirts of Sydney, the proposed development would likely generate slightly higher traffic volumes than those specified above. As such, a slightly higher average trip generation rate of 0.20 vehicle trips per apartment is considered appropriate for the proposal.

For the purposes of presenting a conservatively high assessment and one that is consistent with the Council specified rates for the 2019 to 2026 period, the 0.33 trips per apartment rate has been applied. The lower rates in years 2027 to 2036 would naturally represent less increases in overall vehicle trips over the subsequent years.

ILU

TDT 2013/ 04a recommends a rate of 0.40 vehicle trips per occupied dwelling during the weekday PM peak period for housing for seniors. It is noted that the AM site peak hour does not generally coincide with the general network AM peak hour. As such, a rate of 0.20 vehicle trips per dwelling has been adopted for the AM peak hour.

The directional split of traffic (i.e. the ratio between the inbound and outbound traffic movements) is assumed to be 20:80 in the AM peak. The reverse directional split is assumed in the PM peak.

Hotel/ Retail/ Commercial

Rates for the retail and commercial uses have been sourced from TDT 2013/ 04a and detailed in Table 7.2. The weekday morning retail rate is expected to be lower than the evening given much of the retail shops are likely to be closed during the broader road network peak hours. As such, the adopted rate is assumed to be half the evening rate for the purposes of this assessment.

The hotel rates are based on a combination of Guide 2002 rates and Stantec's own database of similar developments. The Guide 2002 states that a rate of 0.4 trips per room assumes 100 per cent occupancy with an average 85 percent occupancy on the peak weekday appropriate. This would result in 68 trips noting that the 80 trips stated below assume that staff trips are included (noting too that staff largely travel outside peak periods). It is also noted the 2002 Guide rate specifies the evening peak hour, with this rate also conservatively applied to the morning peak.

Table 7.2 sets out the anticipated traffic generation for the planning proposal. The respective rates adopted for the various uses will be further assessed as part of a future development application.

Table 7.2: Traffic generation estimates

Use	Size	Traffic generation rate		Traffic generation estimates (trips / hour)	
		AM	PM	AM	PM
Residential	386 dwellings	0.33 vehicle trips/ dwelling		128	128
Seniors Living	69 dwellings	0.2 vehicle trips/ dwelling	0.4 vehicle trips/ dwelling	14	28
Hotel	200 rooms	0.4 vehicle trips/ room	0.4 vehicle trips/ room	80	80
Retail	7,515m^2 GFA 5,636m^2 GLFA	6.3 vehicle trips/ 100m^2 GLFA	12.5 vehicle trips/ 100m^2 GLFA	284	564
Commercial	16,715m^2	1.6 vehicle trips/ 100m^2	1.2 vehicle trips/ 100m^2	267	201
			Total	**773**	**999**

Table 7.2 indicates that the site could potentially generate approximately 775 and 1,000 vehicle trips in the AM and PM peak hours respectively.

As discussed, the survey results indicate that the existing commercial and retail uses generate around 124 vehicle trips in the weekday AM and PM peak hours. This results in the planning proposal representing a net increase of around 650 and 880 vehicle trips in the AM and PM peak hours respectively.

Equally, an assessment based on a compliant scheme would result in significant more traffic generation. This is mostly attributed to low traffic generation associated with residential units compared with retail shops. Overall, an indicative compliant scheme (100 per cent commercial) could generate between 1,500 and 1,900 vehicle trips in any peak hour, which is significantly higher compared to the planning proposal which would generate between 775 and 1,000 trips.

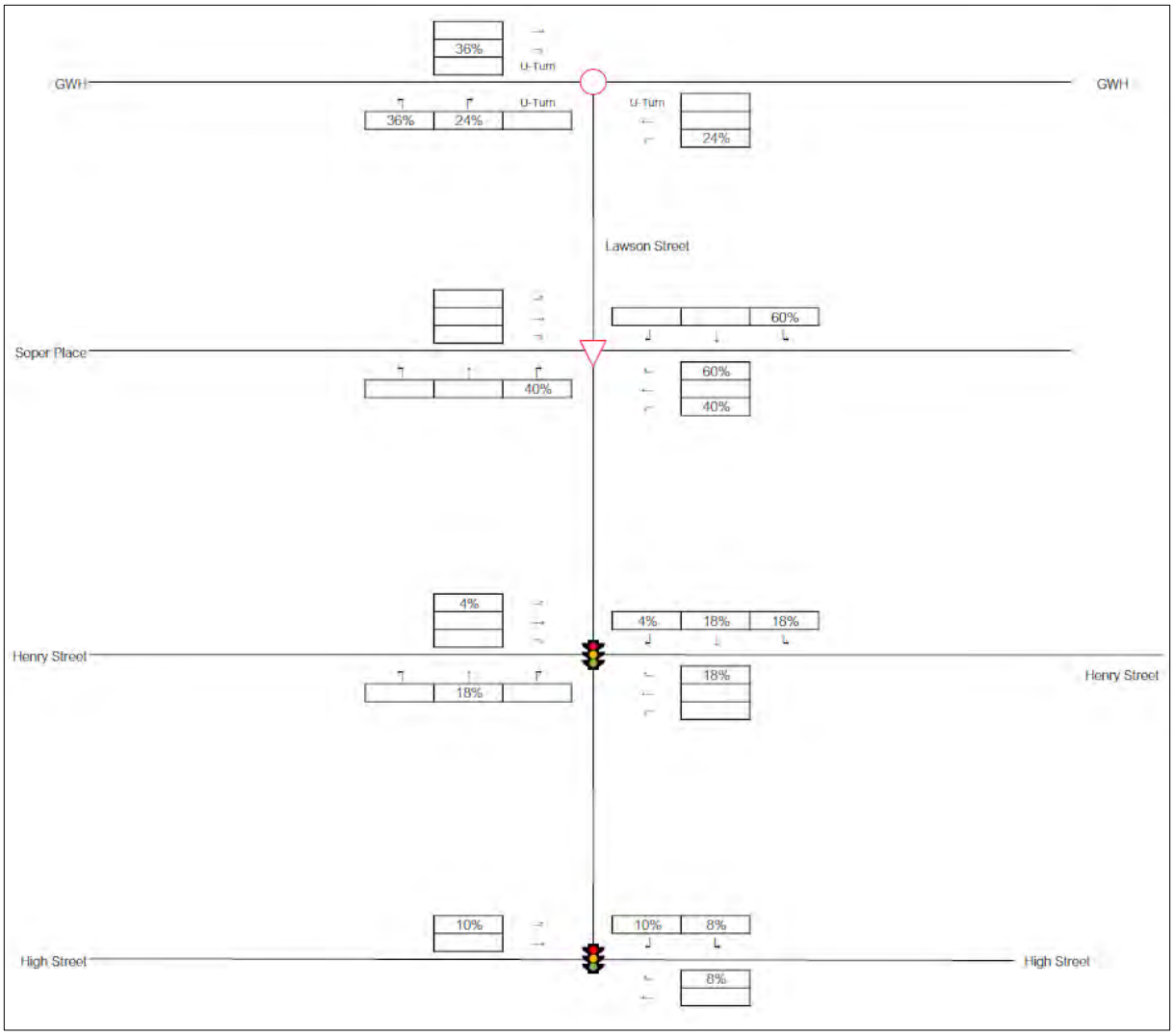
7.2 Traffic Distribution

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
- distribution of households in the vicinity of the site
- surrounding employment centres, retail centres and schools in relation to the site
- likely distribution of employee's residences in relation to the site
- configuration of access points to the site.

The distributions shown in Figure 7.1 have been estimated and largely based on historical traffic counts at key intersections surrounding the site. It is noted that while broadly consistent with the assumptions adopted for the adjacent Soper Place development as per information provided by Council, it does provide a more even distribution of traffic, as requested by Council.

Figure 7.1: Assumed development traffic distribution



In addition, the following directional splits of traffic (i.e., the ratio between the inbound and outbound traffic movements) have been assumed which is consistent with common traffic engineering practice:

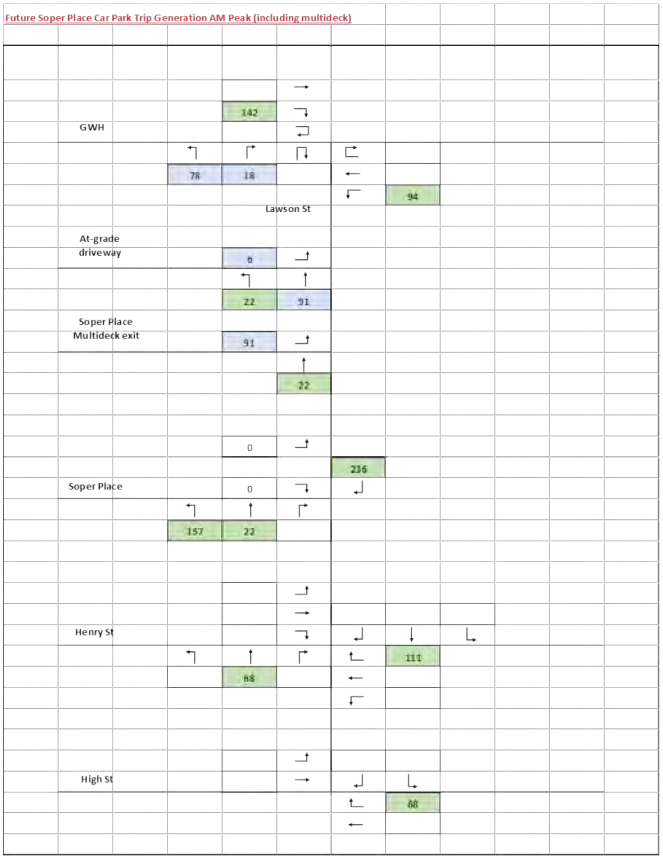
- Residential: 80% out and 20% in during AM peak hour and vice versa in PM peak hour
- Seniors: 80% out and 20% in during AM peak hour and vice versa in PM peak hour
- Commercial: 20% out and 80% in during AM peak hour and vice versa in PM peak hour
- Retail: 50% out and 50% in during AM peak hour and the same in PM peak hour
- Hotel: 50% out and 50% in during AM peak hour and the same in PM peak hour.

Traffic modelling has been completed for the following scenarios:

- 2032 without development
- 2032 with development.
- 2042 without development
- 2042 with development.

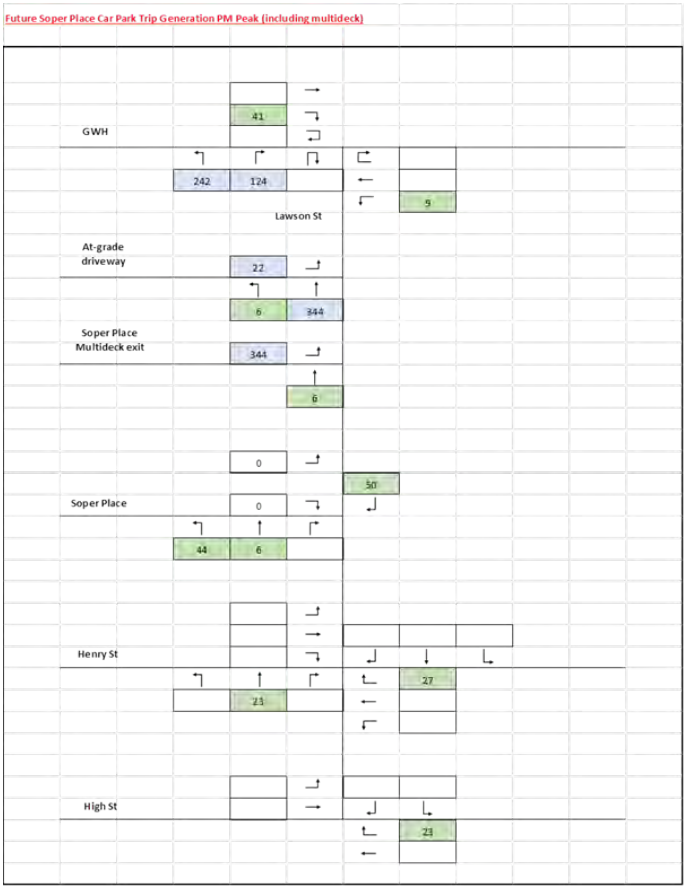
For the purposes of estimating future background traffic volumes, a traffic growth rate of two per cent per annum has been applied to all intersections as advised by Council on a nearby project. The without development scenarios also consider the adjacent Soper Place development, including the reconfiguration of the intersection with Lawson Street whereby Soper Place is envisaged to be one-way westbound as advised by Council. The anticipated traffic volumes for the Soper Place development as provided by Council are summarised in Figure 7.1 and Figure 7.1.

Figure 7.2: Soper Place AM peak hour development traffic volumes



Source: Penrith City Council

Figure 7.3: Soper Place PM peak hour development traffic volumes



Source: Penrith City Council

Considering the above, the anticipated traffic volumes for all modelled scenarios above are summarised in Appendix C.

7.3 Traffic Impact

The impact of this additional traffic on the nearby intersections have been assessed using SIDRA intersection. The summary of the anticipated future operation of the key intersections surrounding the site in the 2032 and 2042 without development scenarios is provided in Table 7.3 and Table 7.4.

Table 7.3: 2032 intersection operating conditions without development

Intersection	Peak	Approach	Degree of saturation (DOS)	Average delay (sec)	Average queue (m)	Level of service (LOS)
Great Western Highway/ Lawson Street (roundabout)	AM	South	0.31	7	6	A
		East	0.67	7	22	A
		West	0.5	5	16	A
	PM	South	1.09	134	85	F
		East	0.94	24	81	B
		West	0.82	8	41	A
Soper Place/ Lawson Street	AM	South	0.17	3	0	A
		North	0.18	5	3	A

Intersection	Peak	Approach	Degree of saturation (DOS)	Average delay (sec)	Average queue (m)	Level of service (LOS)
(priority controlled)		West	0.00	7	0	A
	PM	South	0.09	3	50	A
		North	0.03	4	1	A
		West	0.00	7	0	A
Henry Street/ Lawson Street (signalised)	AM	South	0.88	76	59	F
		East	0.91	32	95	C
		North	0.38	67	25	E
		West	0.32	11	37	A
		Overall	**0.91**	**35**	**95**	**C**
	PM	South	1.80	510	120	F
		East	4.94	1081	865	F
		North	0.72	44	50	D
		West	1.24	119	257	F
		Overall	**4.94**	**537**	**865**	**F**
High Street/ Lawson Street (signalised)	AM	East	0.51	8	22	A
		North	0.35	16	8	B
		West	0.74	16	22	B
		Overall	**0.74**	**12**	**22**	**A**
	PM	East	1.11	62	144	E
		North	1.21	172	120	F
		West	1.22	165	366	F
		Overall	**1.22**	**129**	**366**	**F**

Table 7.4: 2042 intersection operating conditions without development

Intersection	Peak	Approach	Degree of saturation (DOS)	Average delay (sec)	Average queue (m)	Level of service (LOS)
Great Western Highway/ Lawson Street (roundabout)	AM	South	0.30	8	6	A
		East	0.81	11	41	B
		West	0.57	5	1	A
	PM	South	1.17	195	85	F
		East	1.23	226	440	F
		West	0.98	21	123	C
Soper Place/ Lawson Street	AM	South	0.11	3	0	A
		North	0.16	4	3	A

Intersection	Peak	Approach	Degree of saturation (DOS)	Average delay (sec)	Average queue (m)	Level of service (LOS)
(priority controlled)		West	0.00	7	0	A
	PM	South	0.10	3	50	A
		North	0.03	4	1	A
		West	0.00	7	1	A
Henry Street/ Lawson Street (signalised)	AM	South	0.89	68	64	E
		East	3.74	594	425	F
		North	0.31	63	26	E
		West	1.00	52	111	D
		Overall	**3.74**	**331**	**425**	**F**
	PM	South	1.66	418	120	F
		East	5.63	4156	1718	F
		North	0.32	20	41	C
		West	3.55	1863	1151	F
		Overall	**5.63**	**2267**	**1718**	**F**
High Street/ Lawson Street (signalised)	AM	East	0.43	11	67	B
		North	0.62	44	32	D
		West	0.62	29	67	C
		Overall	**0.62**	**21**	**67**	**C**
	PM	East	0.63	19	84	B
		North	0.97	79	63	E
		West	0.98	49	210	D
		Overall	**0.98**	**42**	**210**	**D**

Table 7.3 and Table 7.4 indicate that the 2032 and 2042 background traffic volumes would result in the Lawson Street/ Henry Street and Lawson Street/ High Street intersection operating well over capacity without the proposed development traffic. This is obvious given the and corresponding LOS F and extensive queue DOS being over 1.00. In this regard, it is also understood that a broader traffic model has been prepared for Penrith CBD which also details the need for upgrades at the Lawson Street/ Henry Street intersection. The Lawson Street/ High Street is understood to not form part of the CBD traffic study.

Considering the above, potential mitigation measures have been investigated for the Great Western Highway/ Lawson Street, Lawson Street/ Henry Street and Lawson Street/ High Street intersections to assist with accommodating the anticipated background traffic growth. For the purposes of this assessment, the measures shown in Figure 7.4 to Figure 7.6 have been adopted.

Figure 7.4: Adopted Great Western Highway / Lawson Street mitigation measures

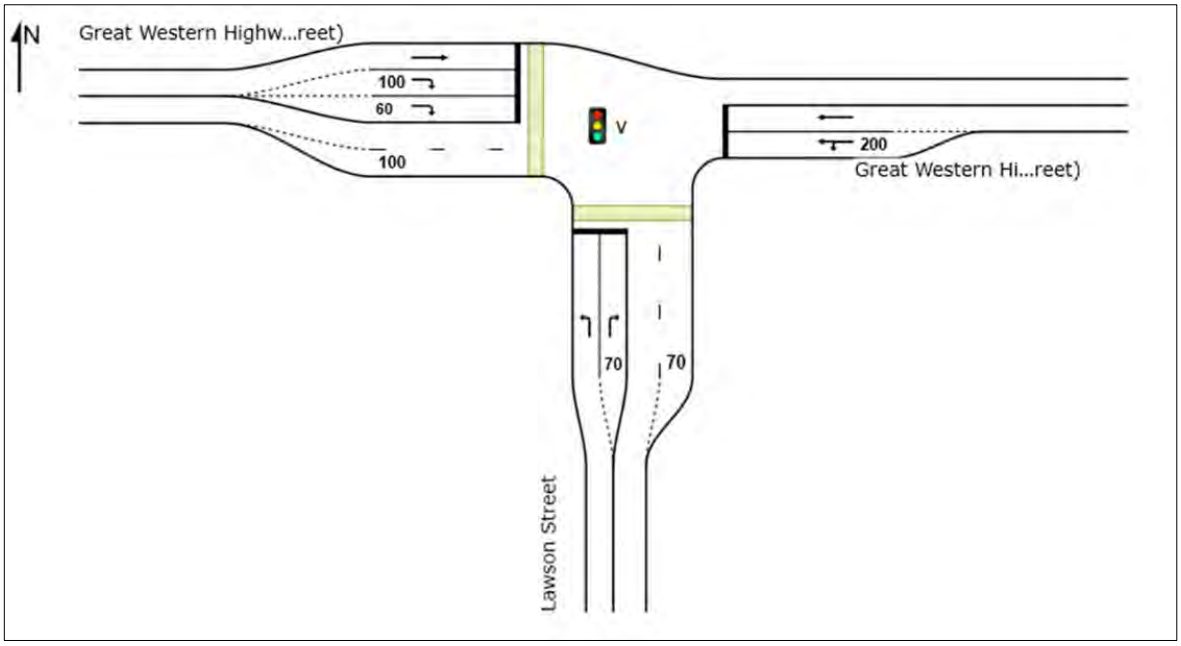


Figure 7.5: Adopted Lawson Street/ Henry Street mitigation measures

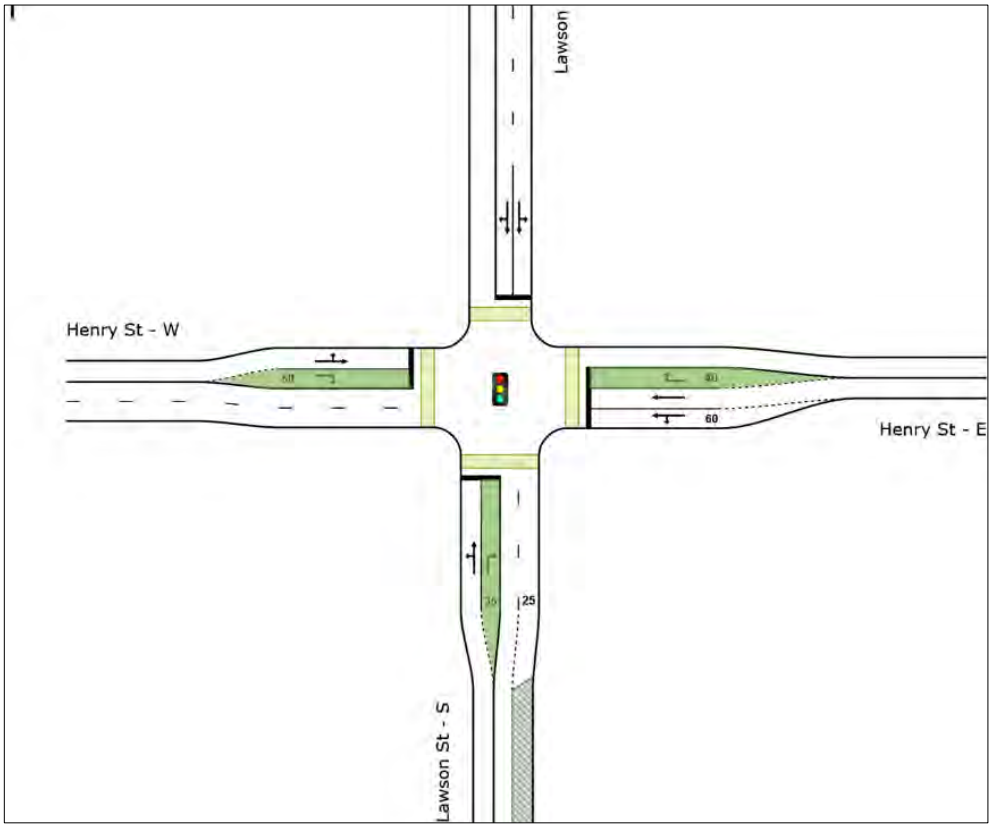


Figure 7.6: Adopted Lawson Street/ High Street mitigation measures

Table 7.5 and Table 7.6 set out the anticipated 2032 and 2042 intersection operating conditions without the proposed development and with the assumed mitigation measures outlined above.

Table 7.5: 2032 intersection operating conditions without development with mitigation measures

Intersection	Peak	Approach	Degree of saturation (DOS)	Average delay (sec)	Average queue (m)	Level of service (LOS)
Great Western Highway/ Lawson Street (signalised)	AM	South	0.33	35	30	C
		East	0.49	17	67	B
		West	0.50	18	37	B
		Overall	**0.50**	**20**	**67**	**B**
	PM	South	0.45	27	49	B
		East	0.89	42	137	C
		West	0.52	19	73	B
		Overall	**0.89**	**29**	**137**	**C**
Soper Place/ Lawson Street (roundabout)	AM	South	0.17	3	0	A
		North	0.18	5	3	A
		West	0.00	6	0	A
	PM	South	0.14	3	0	A
		North	0.04	4	1	A
		West	0.00	7	1	A

Intersection	Peak	Approach	Degree of saturation (DOS)	Average delay (sec)	Average queue (m)	Level of service (LOS)
Henry Street/ Lawson Street (signalised)	AM	South	0.22	19	19	B
		East	0.91	42	70	C
		North	0.11	21	14	B
		West	0.89	52	93	D
		Overall	**0.91**	**40**	**93**	**C**
	PM	South	0.41	33	37	C
		East	0.91	29	66	C
		North	0.37	13	17	A
		West	0.9	44	159	D
		Overall	**0.91**	**32**	**159**	**C**
High Street/ Lawson Street (signalised)	AM	East	0.33	7	34	A
		North	0.43	26	17	B
		West	0.41	32	35	C
		Overall	**0.43**	**17**	**35**	**B**
	PM	East	0.47	17	44	B
		North	0.65	29	36	C
		West	0.63	25	73	B
		Overall	**0.65**	**23**	**73**	**B**

Table 7.6: 2042 intersection operating conditions without development with mitigation measures

Intersection	Peak	Approach	Degree of saturation (DOS)	Average delay (sec)	Average queue (m)	Level of service (LOS)
Great Western Highway/ Lawson Street (signalised)	AM	South	0.38	27	23	C
		East	0.57	18	83	B
		West	0.57	17	49	B
		Overall	**0.57**	**19**	**83**	**B**
	PM	South	0.73	43	80	D
		East	0.73	25	128	C
		West	0.72	20	82	C
		Overall	**0.73**	**27**	**128**	**C**
Soper Place/ Lawson Street (roundabout)	AM	South	0.18	3	0	A
		North	0.19	5	3	A
		West	0.00	8	0	A
	PM	South	0.27	3	0	A

Intersection	Peak	Approach	Degree of saturation (DOS)	Average delay (sec)	Average queue (m)	Level of service (LOS)
		North	0.04	5	1	A
		West	0.00	8	0	A
Henry Street/ Lawson Street (signalised)	AM	South	0.30	21	23	C
		East	0.90	37	73	D
		North	0.13	26	14	C
		West	0.89	48	112	D
		Overall	**0.90**	**37**	**112**	**D**
	PM	South	1.19	113	88	F
		East	0.90	25	73	C
		North	0.57	52	50	D
		West	0.90	39	195	D
		Overall	**1.19**	**47**	**195**	**D**
High Street/ Lawson Street (signalised)	AM	East	0.41	8	49	A
		North	0.55	26	21	C
		West	0.50	32	43	C
		Overall	**0.55**	**18**	**49**	**B**
	PM	East	0.73	23	61	C
		North	0.86	39	61	D
		West	0.84	38	127	D
		Overall	**0.86**	**33**	**127**	**C**

Table 7.5 indicates that with the mitigation measures, all intersections would operate at a satisfactory LOS and DOS in 2032.

Table 7.6 indicates that Henry Street/ Lawson Street performs marginally above capacity with a DOS of 1.19 recorded however the potential mitigation works remain practical for assessing traffic impacts in 2042 especially given the need to apply a two per cent background traffic growth rate of the 20 years.

Table 7.7 and Table 7.8 set out the anticipated 2032 and 2042 intersection operating conditions with the proposed development and with the mitigation measures outlined above. Also included are upgrades to the Lawson Street/ Soper Place intersection to include a roundabout, consistent with the concept plans included in Appendix B.

Table 7.7: 2032 intersection operating conditions with development and mitigation measures

Intersection	Peak	Approach	Degree of saturation (DOS)	Average delay (sec)	Average queue (m)	Level of service (LOS)
Great Western Highway/ Lawson Street (signalised)	AM	South	0.50	35	51	C
		East	0.60	21	93	B
		West	0.61	22	58	B
		Overall	**0.61**	**24**	**93**	**B**
	PM	South	0.86	40	85	C
		East	0.83	31	135	C
		West	0.85	26	78	B
		Overall	**0.86**	**32**	**135**	**C**
Soper Place/ Lawson Street (roundabout)	AM	South	0.51	10	10	A
		East	0.37	11	8	A
		North	0.56	7	14	A
	PM	South	0.68	10	10	A
		East	0.89	24	30	B
		North	0.65	7	15	A
Henry Street/ Lawson Street (signalised)	AM	South	0.40	28	40	B
		East	0.88	38	66	C
		North	0.30	23	29	B
		West	0.90	58	103	E
		Overall	**0.90**	**39**	**103**	**C**
	PM	South	0.72	42	65	C
		East	0.85	28	61	B
		North	0.40	30	35	C
		West	0.91	46	167	D
		Overall	**0.91**	**36**	**167**	**C**
High Street/ Lawson Street (signalised)	AM	East	0.39	11	50	A
		North	0.49	28	25	B
		West	0.47	32	41	C
		Overall	**0.49**	**21**	**50**	**B**
	PM	East	0.58	21	52	B
		North	0.75	28	45	B
		West	0.73	28	81	B
		Overall	**0.75**	**26**	**81**	**B**

Table 7.8: 2042 intersection operating conditions with development and mitigation measures

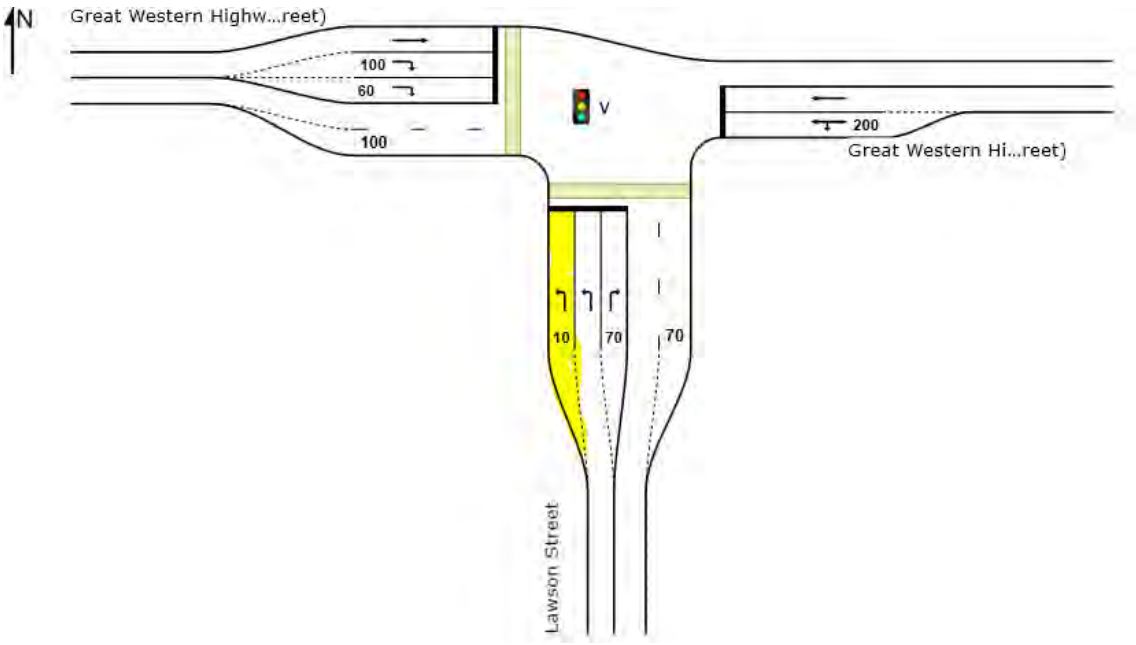
Intersection	Peak	Approach	Degree of saturation (DOS)	Average delay (sec)	Average queue (m)	Level of service (LOS)
Great Western Highway/ Lawson Street (signalised)	AM	South	0.64	37	57	D
		East	0.63	17	96	B
		West	0.92	27	75	C
		Overall	**0.92**	**25**	**96**	**C**
	PM	South	1.02	74	85	E
		East	0.89	37	195	D
		West	1.03	42	139	D
		Overall	**1.03**	**49**	**195**	**D**
Soper Place/ Lawson Street (roundabout)	AM	South	0.57	13	11	A
		East	0.46	13	8	A
		North	0.65	12	16	A
	PM	South	0.72	7	24	A
		East	1.14	155	161	F
		North	0.99	23	55	C
Henry Street/ Lawson Street (signalised)	AM	South	0.76	45	62	D
		East	0.89	51	95	D
		North	0.49	41	38	D
		West	0.75	31	87	C
		Overall	**0.89**	**44**	**95**	**D**
	PM	South	1.16	89	82	F
		East	1.20	76	125	E
		North	0.92	62	50	E
		West	1.23	245	522	F
		Overall	**1.23**	**123**	**522**	**F**
High Street/ Lawson Street (signalised)	AM	East	0.48	13	55	A
		North	0.59	27	27	B
		West	0.56	31	46	C
		Overall	**0.59**	**21**	**55**	**B**
	PM	East	0.81	28	75	C
		North	0.94	47	86	D
		West	0.91	50	144	D
		Overall	**0.94**	**42**	**144**	**D**

Table 7.7 indicates that the network with the proposed mitigation measures will be able to accommodate the background traffic growth and development traffic in 2032 with each intersection operating an acceptable level. All sites across all peaks record a DOS < 1 and LOS < D.

Table 7.8 indicates that with the anticipated development traffic, the Great Western Highway/ Lawson Street intersection in 2042 is expected to operate at capacity in the PM peak hour with a DOS close to 1.0 for the east approach (DOS = 1.03). Similarly, the Henry Street/ Lawson Street intersection is anticipated to operate above capacity with a DOS of 1.23 recorded, noting that the without development traffic scenario also recorded a similar DOS resulting in a minor net difference as a result of the proposed development traffic. It is demonstrated that some internal site queuing may occur at the Soper Place/ Lawson Street roundabout for the east approach (DOS = 1.14) as a result of Western Highway/ Lawson Street intersection queuing on the south approach.

These results also indicate that the average queue for the south approach to the Great Western Highway/ Lawson Street intersection could extend to the Soper Place/ Lawson Street intersection in the PM peak (a distance of about 85 metres). While noting that the average queue without development could also extend as far as Soper Place in the same peak (about 80 metres in 2042), access to and from the proposed Soper Place development is critical and any overflow traffic at the Soper Place/ Lawson Street intersection may impact its operation. As such, a further potential mitigation measure has been investigated at the Great Western Highway/ Lawson Street intersection to limit the likelihood of queuing on the south approach to the intersection. This includes an additional short left turn lane, as shown in Figure 7.7.

Figure 7.7: Great Western Highway / Lawson Street intersection Additional Mitigation Measure



A review of existing lot boundaries indicates the above measure could be accommodated, noting the intersection would benefit by realigning the Lawson Street approach to intersect with the Great Western Highway at a straightened T-intersection and better use the wide road corridor to the east.

Table 7.9 and Table 7.10 set out the anticipated 2032 and 2042 intersection operating conditions with the proposed development and additional minor mitigation measure outlined above.

Table 7.9: 2032 intersection operating conditions with development and additional mitigation measure

Intersection	Peak	Approach	Degree of saturation (DOS)	Average delay (sec)	Average queue (m)	Level of service (LOS)
Great Western Highway/ Lawson Street (signalised)	AM	South	0.50	33	32	C
		East	0.59	21	92	B
		West	0.60	22	58	B
		Overall	**0.60**	**24**	**92**	**B**
	PM	South	0.82	33	72	C
		East	0.85	33	138	C
		West	0.84	26	77	B
		Overall	**0.85**	**30**	**138**	**C**
Soper Place/ Lawson Street (roundabout)	AM	South	0.51	10	10	A
		East	0.37	11	8	A
		North	0.56	7	14	A
	PM	South	0.58	7	9	A
		East	0.74	15	18	A
		North	0.65	7	15	A
Henry Street/ Lawson Street (signalised)	AM	South	0.40	28	40	B
		East	0.88	38	66	C
		North	0.30	23	29	B
		West	0.90	58	103	E
		Overall	**0.90**	**39**	**103**	**C**
	PM	South	0.72	42	65	C
		East	0.85	28	61	B
		North	0.40	30	35	C
		West	0.91	46	167	D
		Overall	**0.91**	**36**	**167**	**C**
High Street/ Lawson Street (signalised)	AM	East	0.39	11	50	A
		North	0.49	28	25	B
		West	0.47	32	41	C
		Overall	**0.49**	**21**	**50**	**B**
	PM	East	0.58	21	52	B
		North	0.75	28	45	B
		West	0.73	28	81	B
		Overall	**0.75**	**26**	**81**	**B**

Table 7.10: 2042 intersection operating conditions with development and additional mitigation measure

Intersection	Peak	Approach	Degree of saturation (DOS)	Average delay (sec)	Average queue (m)	Level of service (LOS)
Great Western Highway/ Lawson Street (signalised)	AM	South	0.51	35	35	C
		East	0.62	17	95	B
		West	0.91	27	73	B
		Overall	**0.91**	**24**	**95**	**B**
	PM	South	0.93	37	79	C
		East	0.98	52	217	D
		West	1.00	35	112	C
		Overall	**1.00**	**43**	**217**	**C**
Soper Place/ Lawson Street (roundabout)	AM	South	0.54	12	11	A
		East	0.43	13	8	A
		North	0.65	12	16	A
	PM	South	0.66	12	10	A
		East	1.05	98	110	F
		North	0.99	29	54	C
Henry Street/ Lawson Street (signalised)	AM	South	0.76	45	62	D
		East	0.89	51	95	D
		North	0.49	41	38	D
		West	0.75	31	87	C
		Overall	**0.89**	**44**	**95**	**D**
	PM	South	1.15	83	73	F
		East	1.09	46	85	D
		North	0.82	48	50	D
		West	1.20	214	456	F
		Overall	**1.20**	**100**	**456**	**F**
High Street/ Lawson Street (signalised)	AM	East	0.48	13	55	A
		North	0.59	27	27	B
		West	0.56	31	46	C
		Overall	**0.59**	**21**	**55**	**B**
	PM	East	0.88	27	69	B
		North	0.98	50	81	D
		West	0.94	53	134	D
		Overall	**0.98**	**43**	**134**	**D**

Table 7.9 indicates that the network with the additional mitigation measure will be able to accommodate the background traffic growth and development traffic in 2032 with each intersection operating an acceptable level. All sites across all peaks record a DOS < 1 and LOS < D. In addition, the average south approach queue to the Great Western Highway/ Lawson Street intersection remains within the available 85 metres back to the Soper Place/ Lawson Street intersection.

Table 7.10 indicates that with the anticipated development traffic, the Great Western Highway/ Lawson Street intersection in 2042 is expected to operate at capacity in the PM peak hour with a DOS reaching 1.0 for the west approach. Similarly, the Henry Street/ Lawson Street intersection is anticipated to operate above capacity with a DOS of 1.20 recorded, noting that the without development traffic scenario also recorded a similar DOS resulting in a minor net difference as a result of the proposed development. Some internal site queuing may occur at the Soper Place/ Lawson Street roundabout for the east approach (DOS = 1.05). Again, the average south approach queue to the Great Western Highway/ Lawson Street intersection remains within the available 85 metres back to the Soper Place.

It is important to note that the CBD traffic study has identified several intersections that require upgrades, with such measures naturally able to further improve the operation of key intersections near the site. The CBD traffic study is also the critical modelling package to reference with respect to future CBD operating conditions to ensure that all development potential in the CBD is realised while also considering all development impacts rather than specific site-based assessments.

Further to this, the traffic generation associated with the planning proposal will be significantly less than that associated with a compliant scheme. This is mostly attributed to the low traffic generation associated with residential apartments and seniors living.

Overall, an indicative compliant scheme (100 per cent commercial) could generate between 1,500 and 1,900 vehicle trips in any peak hour which is almost double that of the planning proposal which would generate between 775 and 1,000 trips. As such, the planning proposal represents an improved planning outcome from a traffic generation and impact perspective compared to the current planning controls.

Considering the above, the proposed land uses that make up the planning proposal can be supported from a traffic perspective, with more detailed traffic modelling able to be completed as part of any future development application.

8. Conclusion

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

1. The site is well located and close to established public transport services. This includes a five to 10 minute-walk from Penrith railway station.
2. The planning proposal generates a parking requirement of between 970 and 1,158 spaces.
3. A review of the concept design plans indicates that the basement car park and access driveway are generally in accordance with the relevant Australian Standards subject to further design development as part of a future development application.
4. All site generated traffic would access the site via Lawson Street and meets both Councils and Transport for NSW requirements with respect to access roads and broader planning intent.
5. The proposal is expected to result in an increase in traffic generation and when compared with the existing site uses, there is likely to be a net increase between 650 and 880 vehicle trips in any peak hour.
6. A compliant scheme would result in significant increases in traffic generation when compared with the planning proposal. A complaint scheme could generate between 1,500 and 1,900 vehicle trips per hour and clearly represents an unmanageable traffic impact.
7. It is understood that a Penrith CBD traffic model has been completed and identifies intersection upgrades at several intersections near the site to accommodate anticipated background traffic growth and CBD development potential.
8. The surrounding intersections would require a range of upgrades to ensure 2032 and 2042 traffic can be accommodated throughout, with modelling options realising the benefits of some of these upgrades. It is noted that the Henry Street/ Lawson Street intersection operates at capacity in 2042, even with the investigated mitigation measures. There would appear to be limited ability to further increase the capacity of this intersection within the CBD environment.
9. Modelling confirms that the proposed development traffic would not materially further impact the operation of key intersections. Further reference to the Penrith CBD traffic model is important in this regard to ensure any such upgrades are considered in light of uplift right across the CBD rather than part of an individual site-based assessment.
10. There is an obvious traffic and transport benefit associated with the planning proposal given that is has been identified as generating significantly less traffic than a compliant scheme on the site.
11. Overall, the planning proposal can be supported from a traffic and parking perspective with further traffic modelling to be defined at the development application stage and to ensure consistency with the recommendations of the Penrith CBD traffic study.

Appendix A TfNSW Response Letter

11 December 2021

TfNSW Reference: SYD21/01298/01

Mr Warwick Winn
General Manager
Penrith City Council
P.O. Box 60
Penrith, NSW, 2751

Attention: Breannan Dent

Dear Mr. Winn,

PLANNING PROPOSAL
61-79 HENRY STREET, PENRITH

Thank you for providing Transport for NSW (TfNSW) an opportunity to comment on the Planning Proposal for 61-79 Henry Street, Penrith. TfNSW notes that the Proposal seeks to:

- Amend planning controls within Penrith Local Environmental Plan 2010 to permit Residential Accommodation as an Additional Permitted Use on the subject land.
- Amend the planning controls as they relate to this site to ensure that a minimum delivery of non-residential land uses is required to support the commercial core.
- A "sunset clause" is proposed so that the LEP provision will cease to be able to be applied to new development applications five years after the date the LEP amendment is made. This sunset clause is proposed to ensure that the development of the site occurs in a timely manner.

TfNSW notes that the Proposal does not increase the density and / or scale of development on the subject land as it only proposes to permit the addition of residential uses within the commercial core whilst retaining a commercial component. As such, TfNSW raises no objections to the Proposal, however, provides some advisory comments for Council's consideration prior to the making of the plan in **TAB A**.

Thank you again for providing TfNSW an opportunity to comment on the Proposal. Should you have any questions or further enquiries in relation to this matter Chris King, Land Use Planner, would be pleased to take your call on phone 0419 484 667 or via email at: development.sydney@transport.nsw.gov.au.

Yours sincerely,

Brendan Pegg
Senior Land Use Planner
Planning and Programs, Greater Sydney Division

TAB A – Advisory comments

1. Due consideration of the initiatives of the Hawkesbury Nepean Valley Program under the Hawkesbury Nepean Flood Risk Management Strategy 2017 and referral to State Emergency Services of NSW for assessment, including:
    - Evacuation Road Flood Resilience Upgrade Program
    - Evacuation and Signage Strategy
    - Regional Evacuation Road Master Plan (Guidelines)
    - Evacuation Road Model

2. As Council would be aware, TfNSW's current access management practice is that no new access is to be permitted to any classified road if an alternative access is available via the unclassified road network. In this instance an alternative vehicular access to the site would be available via Lawson/Henry Streets. This is supported by *State Environmental Planning Policy (Infrastructure) 2007*, which states "*the consent authority must not grant consent to development on land that has a frontage to a classified road unless it is satisfied that, where practicable and safe, vehicular access to the land is provided by a road other than the classified road*."

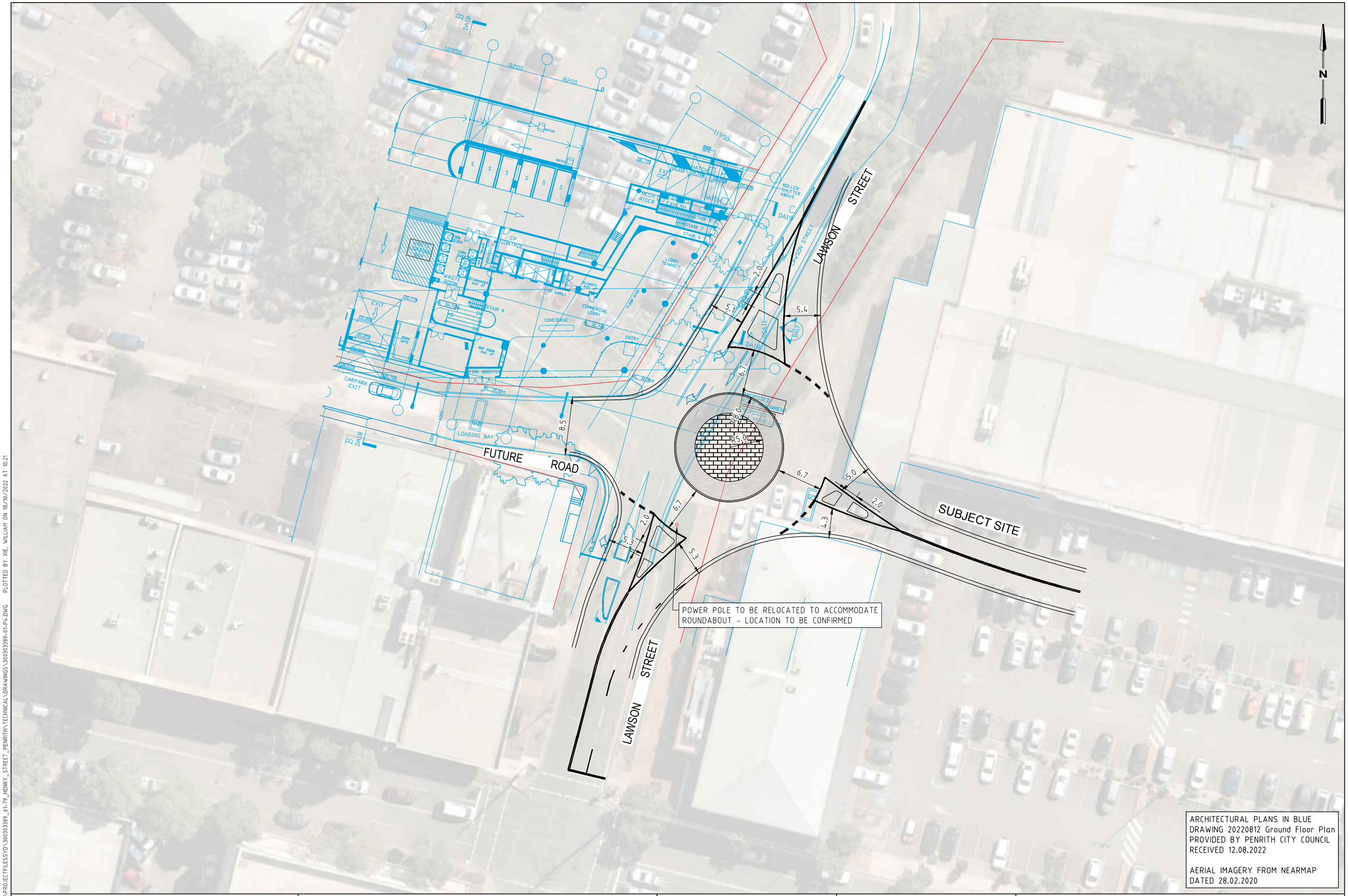
3. Excavation proposed adjacent to a classified road corridor (including above road tunnels) may require the developer to submit detailed geotechnical reports relating to the excavation of the site and support structures to TfNSW for consideration and approval.

4. Should post-development stormwater discharge into the TfNSW drainage system exceed pre-development discharge, TfNSW may require detailed design plans and hydraulic calculations of any changes to the stormwater drainage system to be submitted to TfNSW for consideration and approval.

5. Any proposed works on, or installation of, traffic signals on any road would require TfNSW approval under section 87 of the *Roads Act, 1993* and a Works Authorisation Deed. The installation of new traffic signals will be subject to the intersections meeting the warrants as outlined under Section 2 (Warrants) of the *TfNSW Traffic Signal Design* manual. A warrant assessment should be provided, broken down to demonstrate that the proposed signals can meet the criteria based on the four one-hour periods of an average day. If the site satisfies the warrants, it does not necessarily mean that traffic signals are the best solution. All traffic data should be analysed, and alternative treatments considered to determine the optimum treatment. Intersection modelling in SIDRA would be required for treatments considered to demonstrate optimal operation and design requirements

6. TfNSW is supportive of travel demand management measures, such as appropriate maximum parking rates, to reduce private vehicle dependence. Council may wish to consider setting appropriate maximum off street parking rates for new residential developments near transport interchanges in order to help curtail the growth of private vehicle travel and support a shift to public transport and other sustainable modes of travel. To encourage the use of public and active transport infrastructure, restrained maximum car parking rates for sites within the walking catchment (i.e., 800m) of X Station could be considered in the Development Control Plan (DCP).

Appendix B Roundabout Concept Design Plans



Stantec

nearmap.com

PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY
SUBJECT TO CHANGE WITHOUT NOTIFICATION

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

DESIGNED W.XIE	DESIGN CHECK R.HAZELL
APPROVED BY R.HAZELL	DATE ISSUED 12 AUGUST 2022

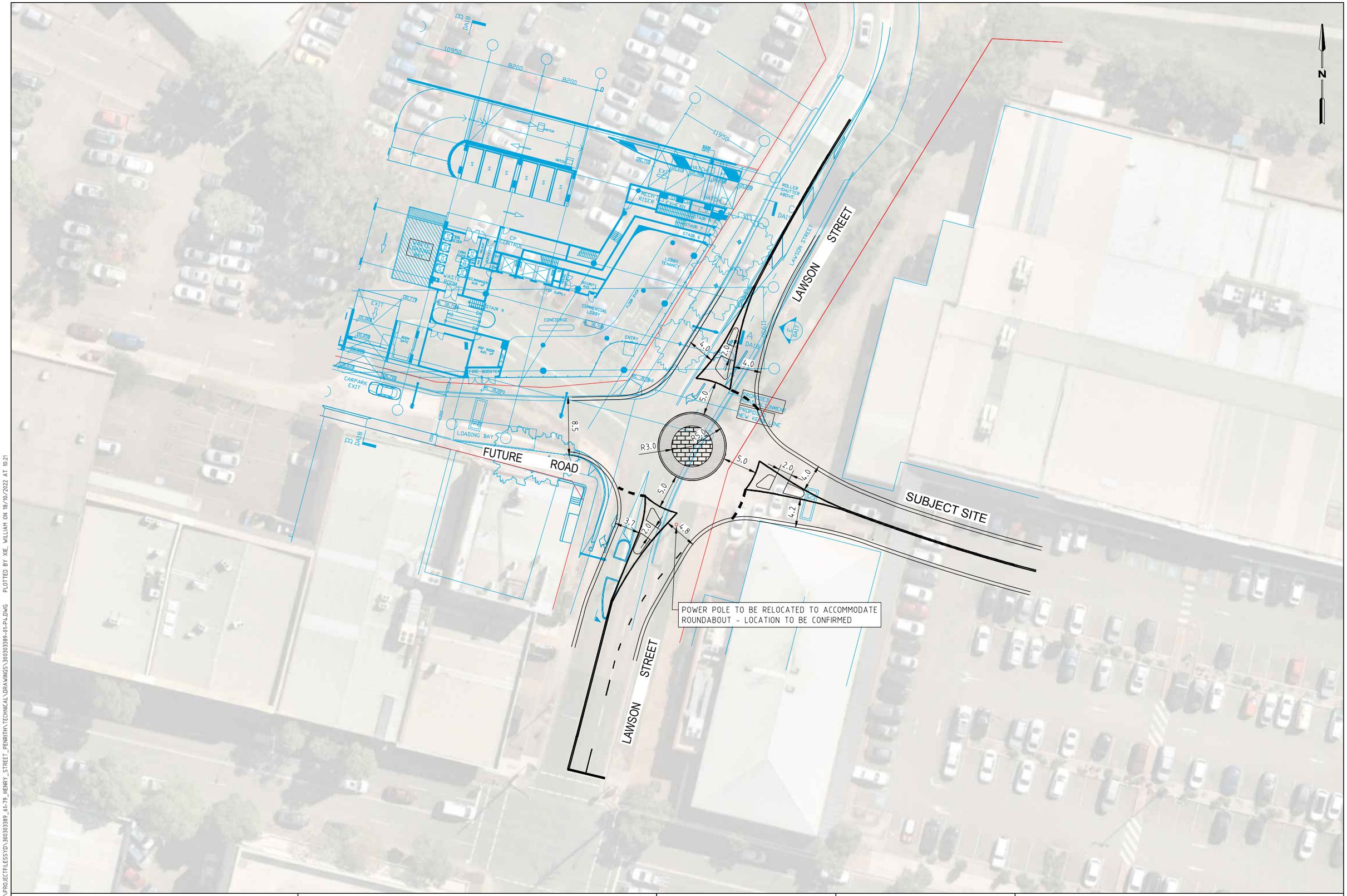
SCALE A3 0 2.5 5 10 1:500

CAD FILE NO. 300303389-01-P4.DWG

61-79 HENRY STREET, PENRITH

CONCEPT DESIGN - OPTION 1

DRAWING NO. 300303389-01-01 SHEET 01 OF 04 ISSUE P4



Stantec

nearmap.com

PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY
SUBJECT TO CHANGE WITHOUT NOTIFICATION

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

DESIGNED W.XIE	**DESIGN CHECK** R.HAZELL
APPROVED BY R.HAZELL	**DATE ISSUED** 12 AUGUST 2022

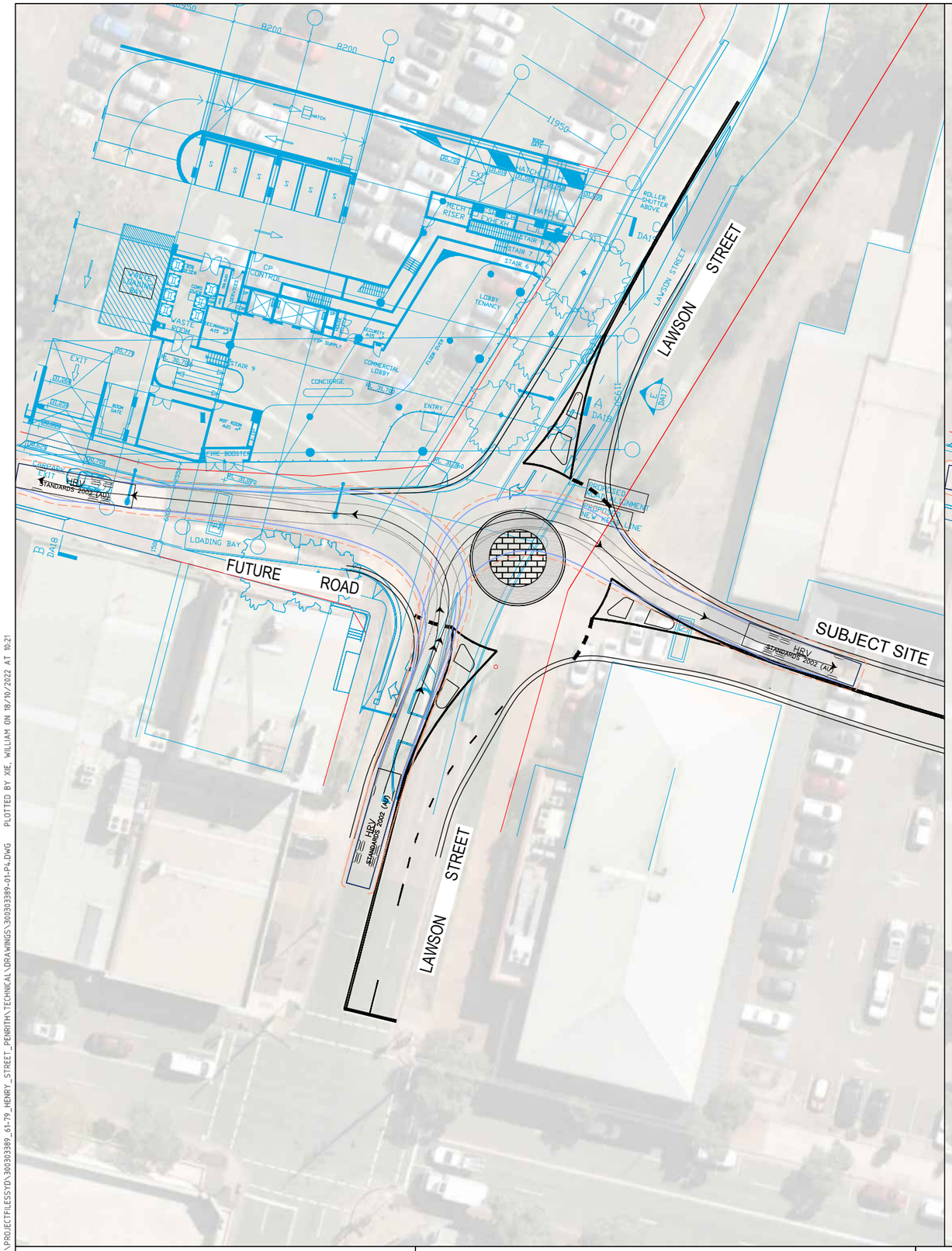
SCALE A3 0 2.5 5 10 1:500

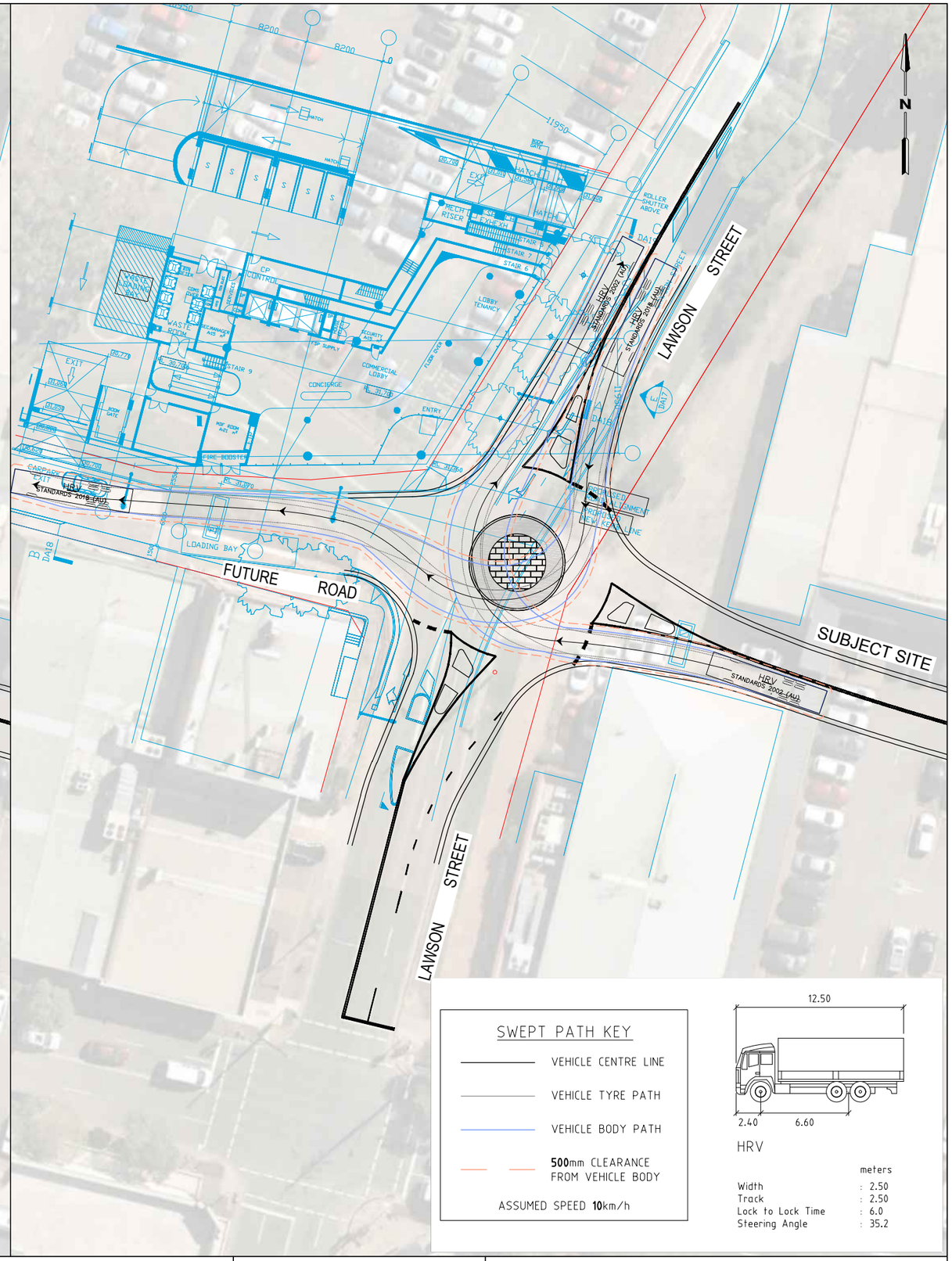
CAD FILE NO. 300303389-01-P4.DWG

61-79 HENRY STREET, PENRITH

CONCEPT DESIGN - OPTION 2

DRAWING NO. 300303389-01-02 **SHEET** 02 OF 04 **ISSUE** P4





SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- **500**mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED **10**km/h

HRV

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

Stantec

nearmap.com

PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY
SUBJECT TO CHANGE WITHOUT NOTIFICATION

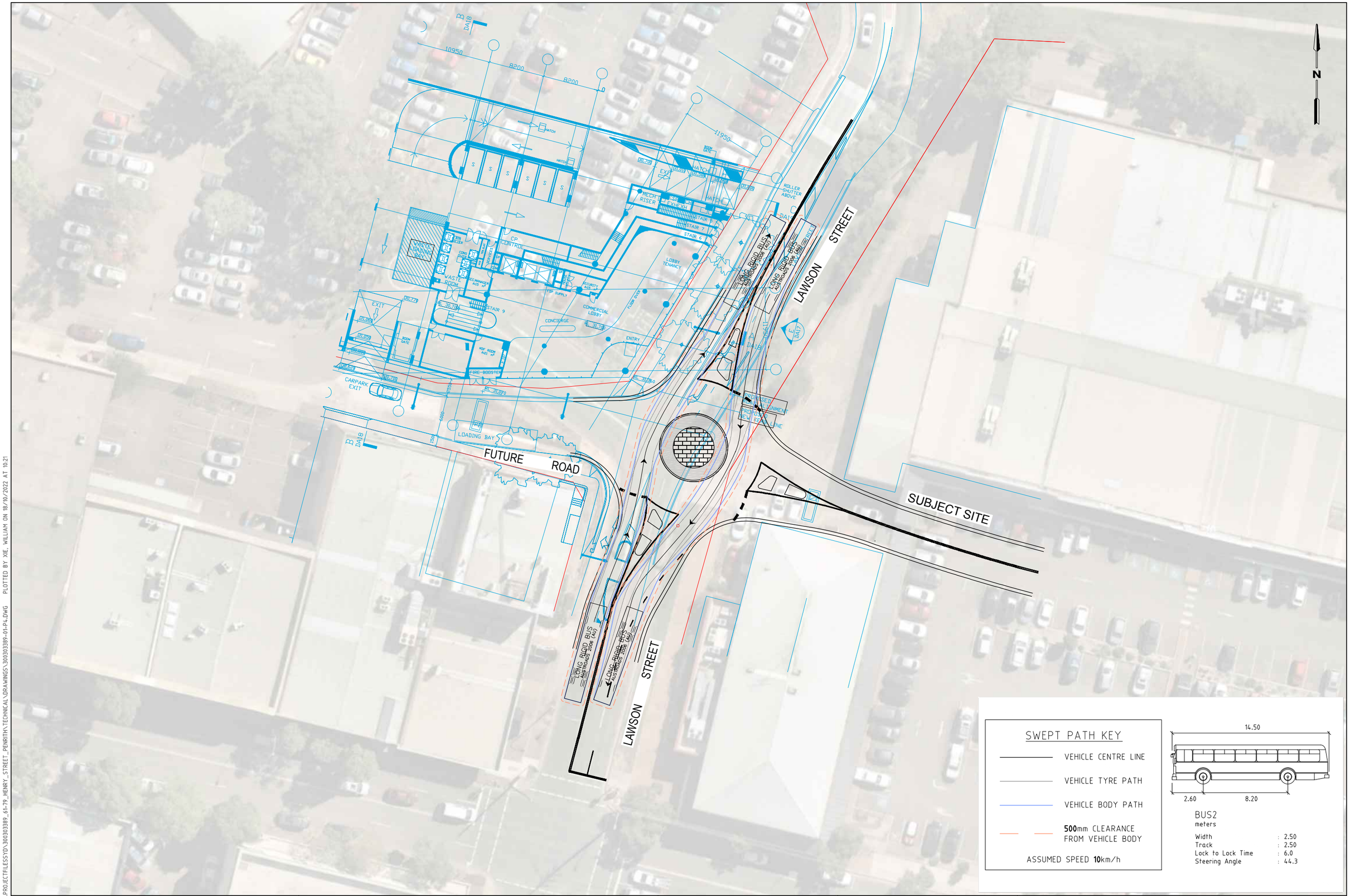
WARNING
BEWARE OF UNDERGROUND SERVICES
THE LOCATIONS OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

DESIGNED W.XIE	**DESIGN CHECK** R.HAZELL
APPROVED BY R.HAZELL	**DATE ISSUED** 12 AUGUST 2022
SCALE A3	0 2.5 5 10 1:500
CAD FILE NO. 300303389-01-P4.DWG	

61-79 HENRY STREET, PENRITH

VEHICLE SWEPT PATH ASSESSMENT

DRAWING NO. 300303389-01-03 **SHEET** 03 OF 04 **ISSUE** P4



SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- **500**mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED **10**km/h

BUS2
meters

Width	:	2.50
Track	:	2.50
Lock to Lock Time	:	6.0
Steering Angle	:	44.3

Stantec

nearmap

PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY
SUBJECT TO CHANGE WITHOUT NOTIFICATION

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

DESIGNED	W.XIE
DESIGN CHECK	R.HAZELL
APPROVED BY	R.HAZELL
DATE ISSUED	12 AUGUST 2022
CAD FILE NO.	300303389-01-P4.DWG

SCALE A3 0 2.5 5 10 1:500

61-79 HENRY STREET, PENRITH

VEHICLE SWEPT PATH ASSESSMENT

DRAWING NO. 300303389-01-04 SHEET 04 OF 04 ISSUE P4

Appendix C Traffic Volumes

Figure C.1: Existing AM peak hour traffic volumes

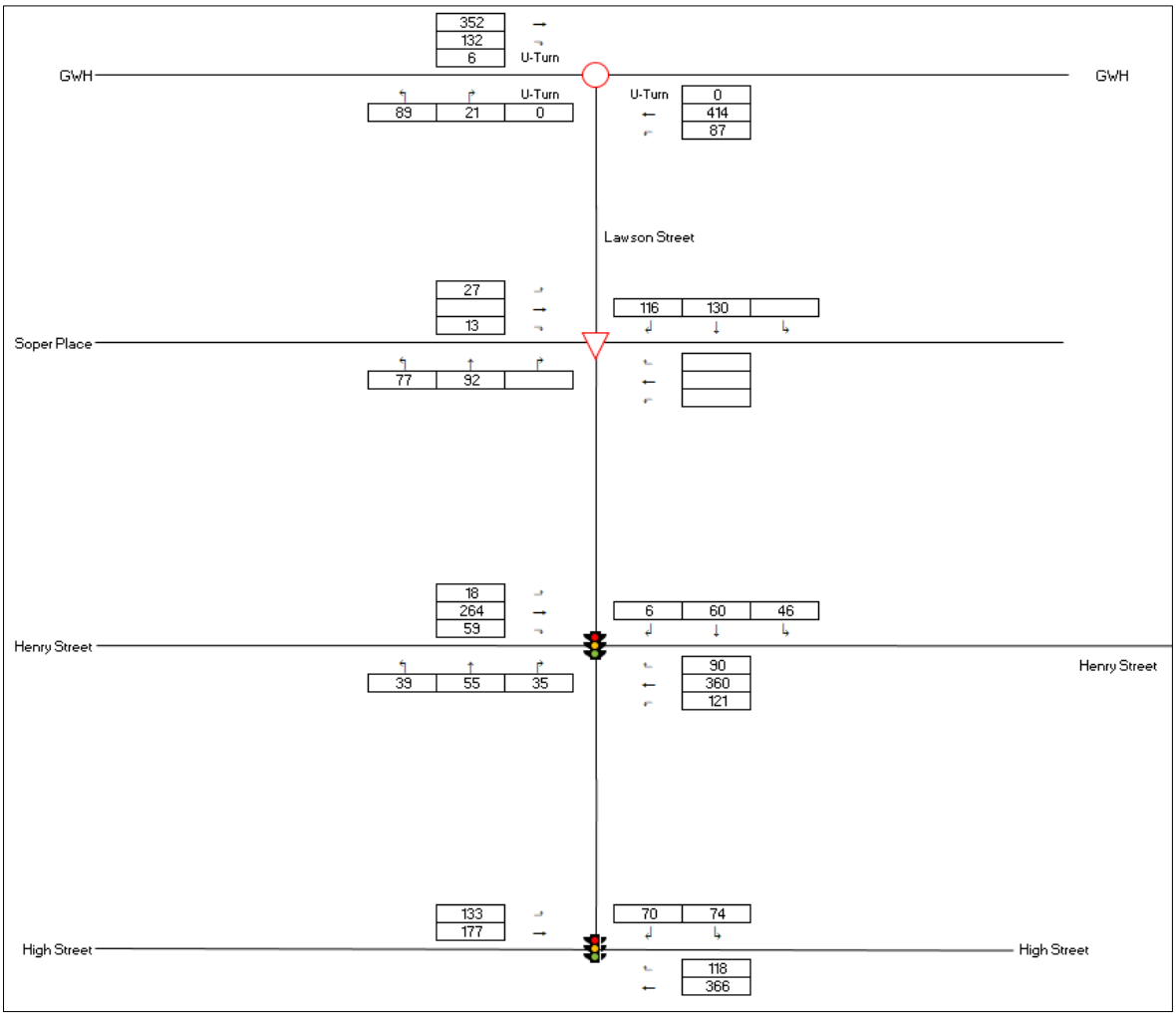


Figure C.2: Existing PM peak hour traffic volumes

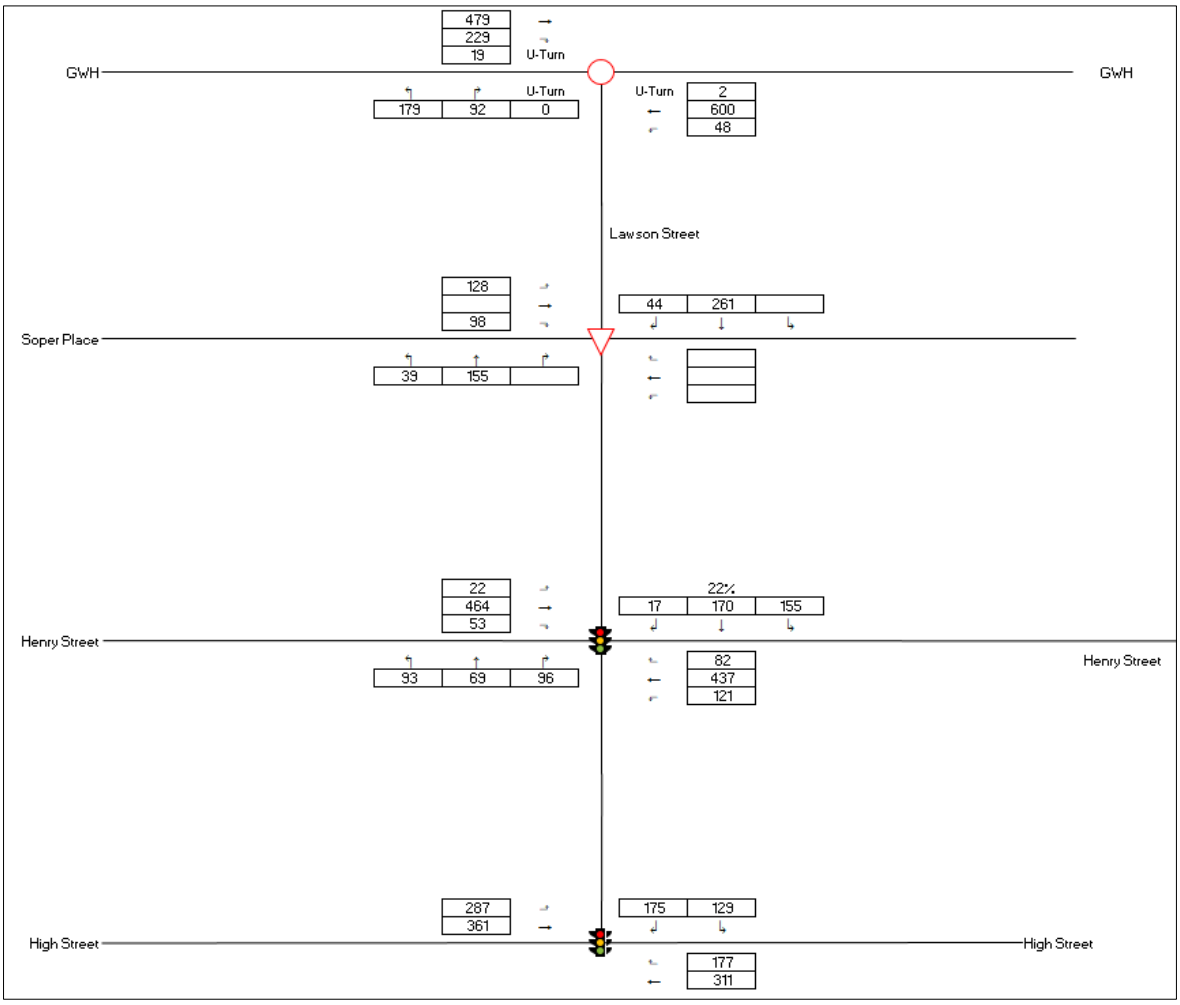


Figure C.3: 2032 AM peak hour traffic volumes without development

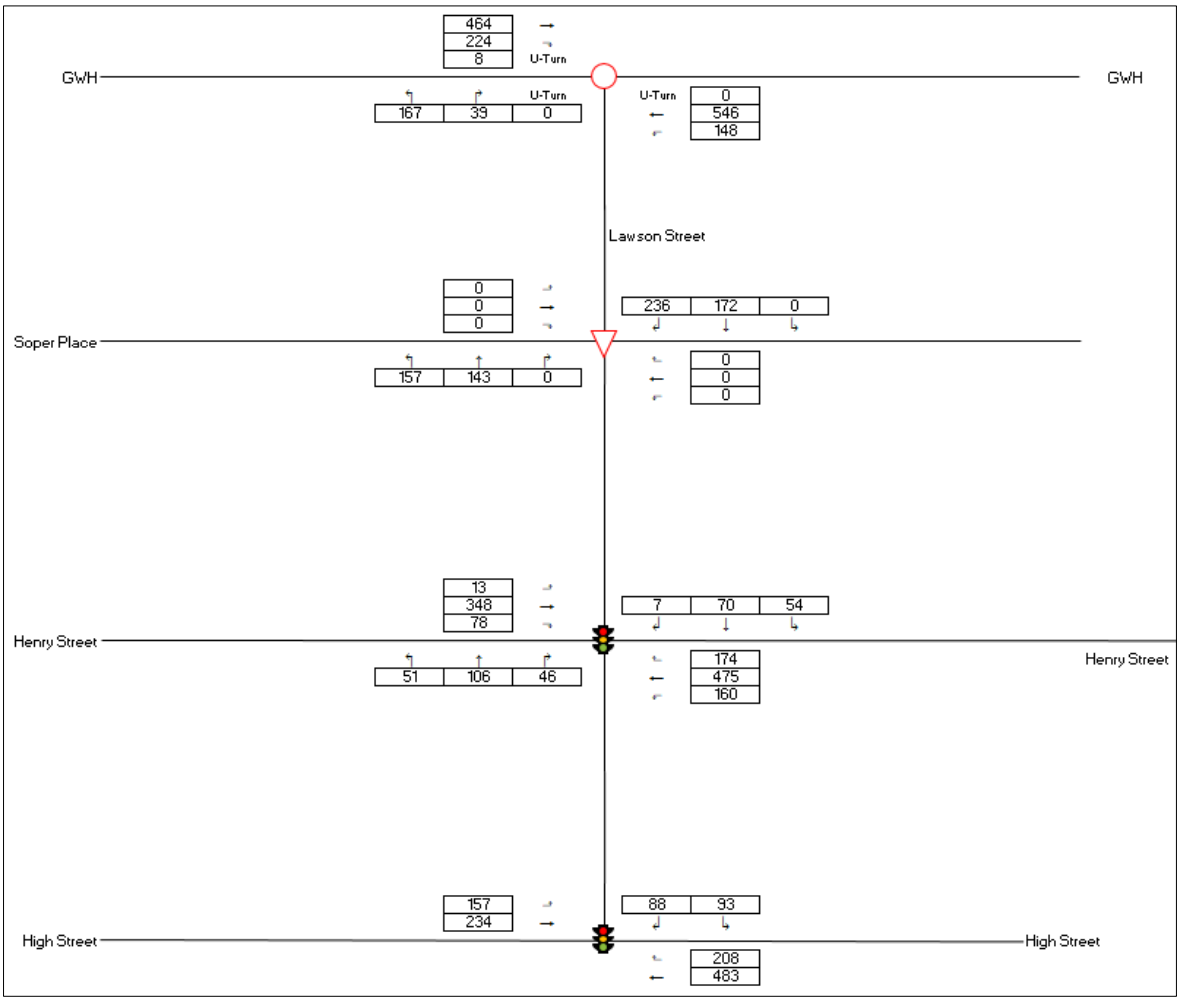


Figure C.4: 2032 PM peak hour traffic volumes without development

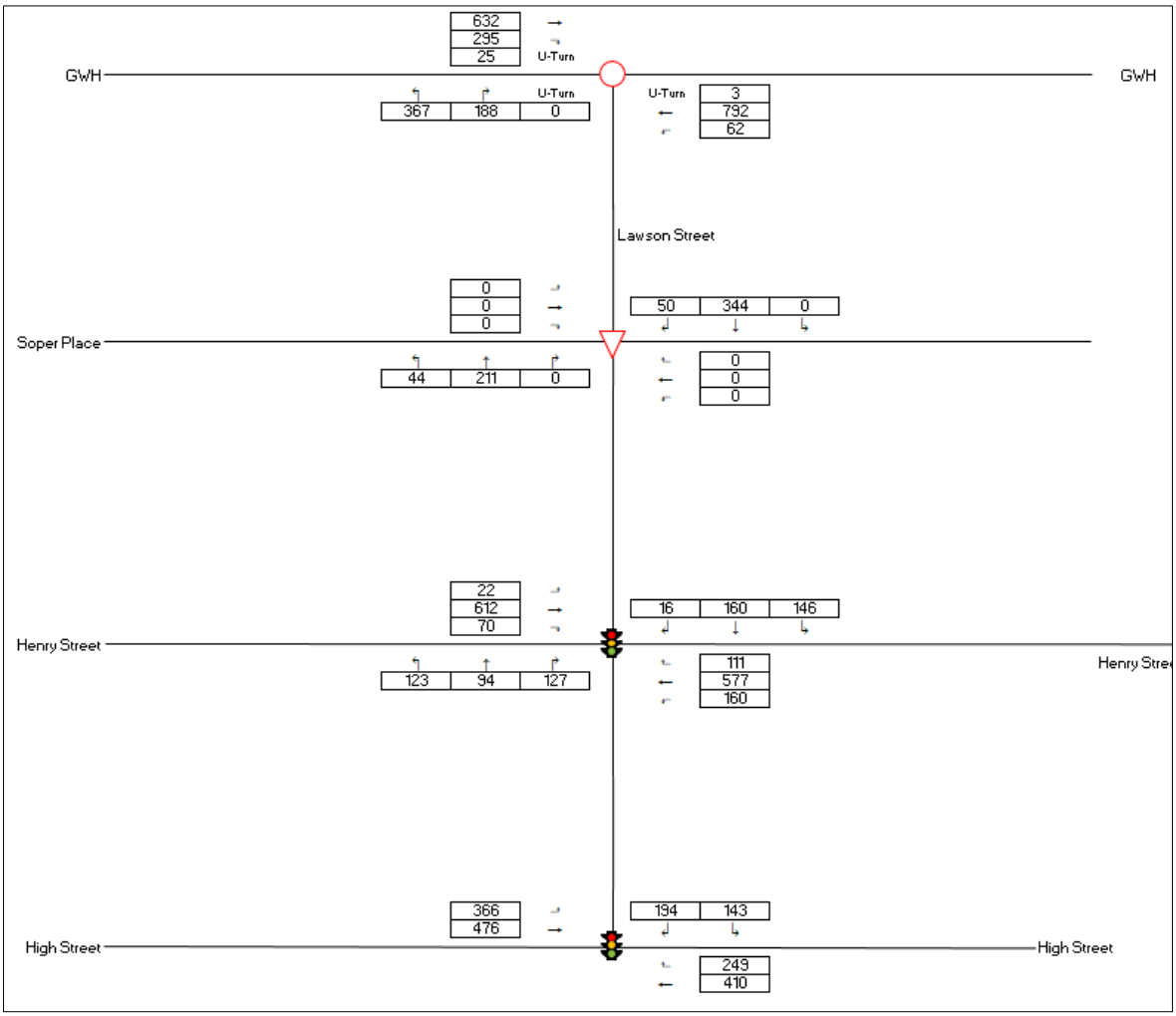


Figure C.5: 2032 AM peak hour traffic volumes with development

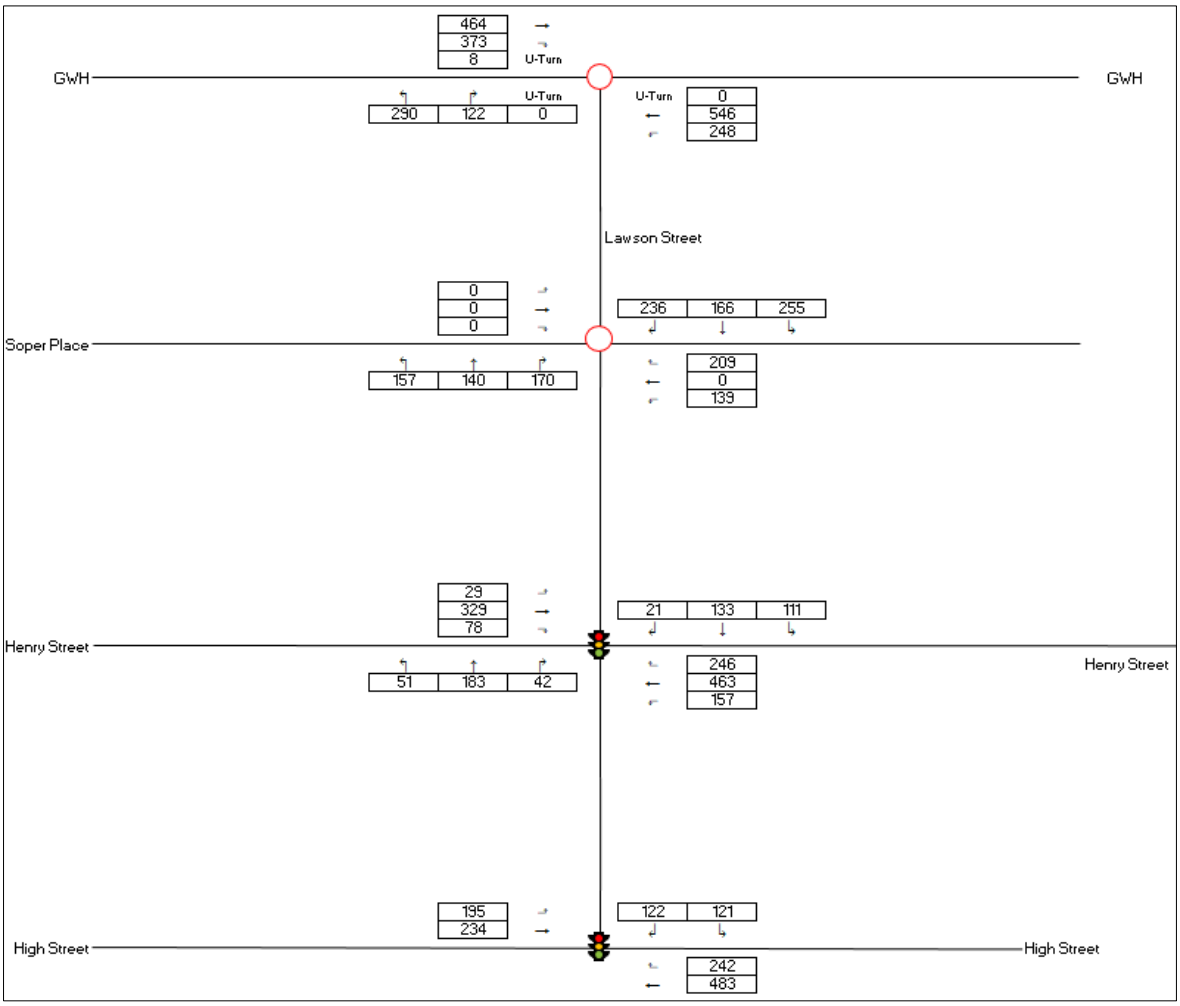


Figure C.6: 2032 PM peak hour traffic volumes with development

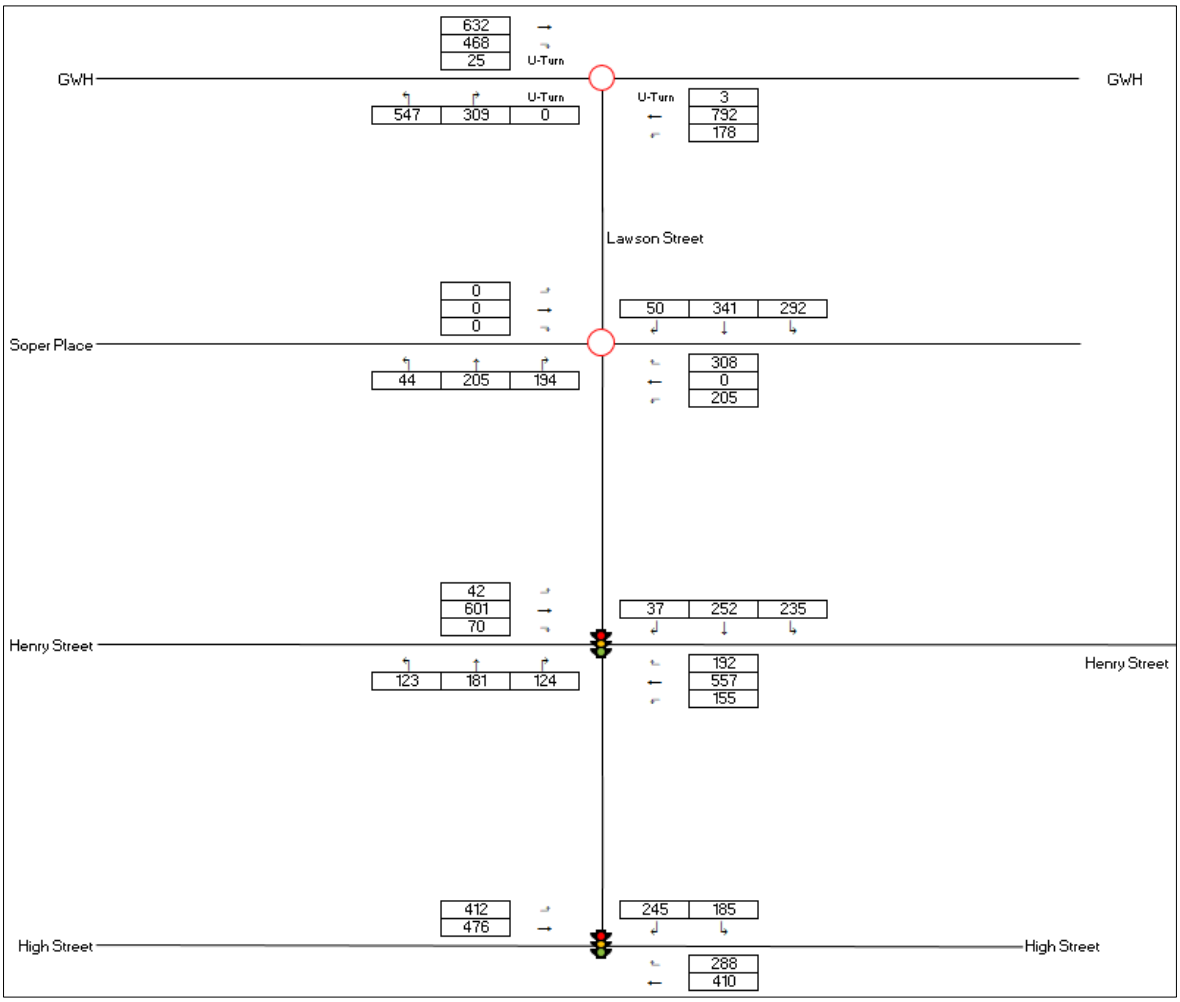


Figure C.7: 2042 AM peak hour traffic volumes without development

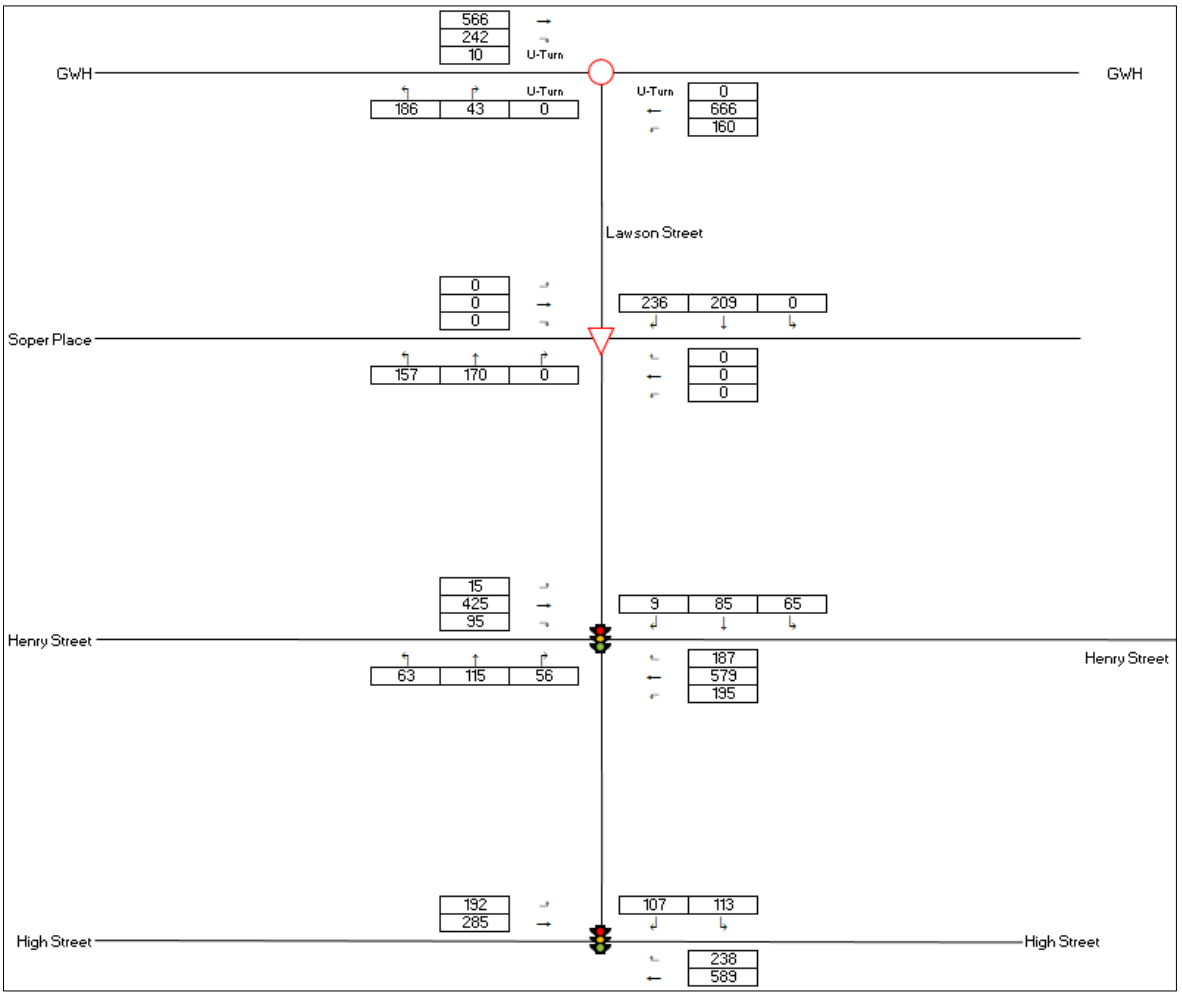


Figure C.8: 2042 PM peak hour traffic volumes without development

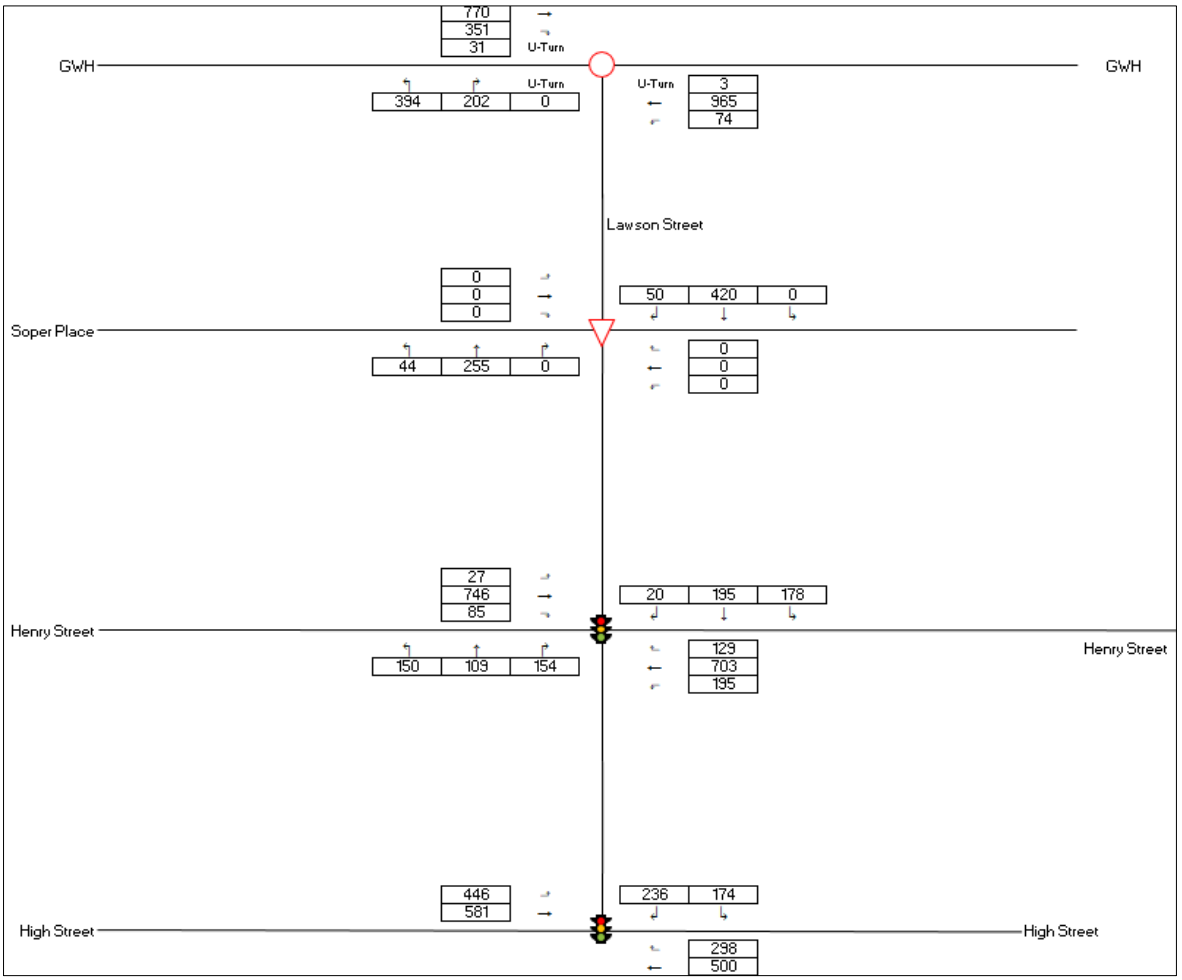


Figure C.9: 2042 AM peak hour traffic volumes with development

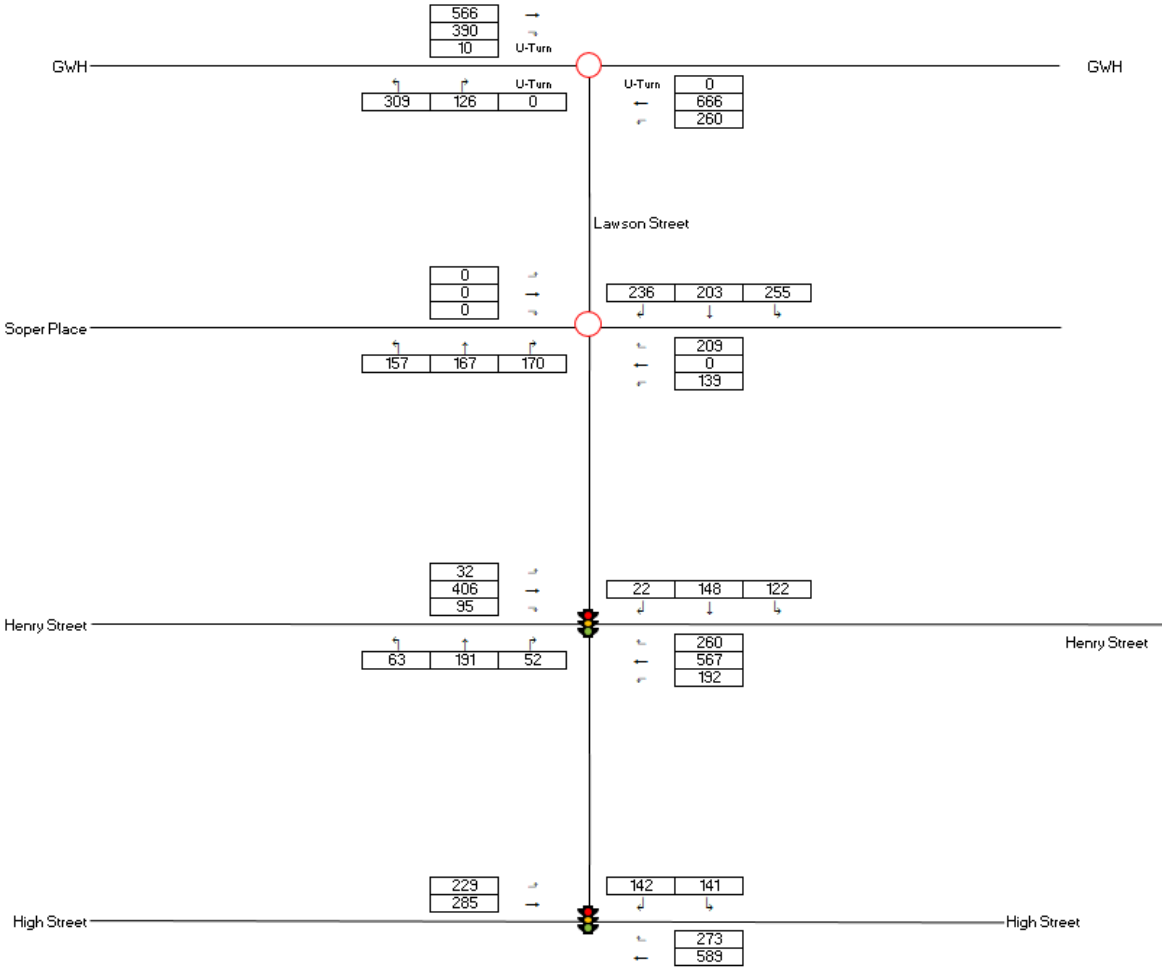
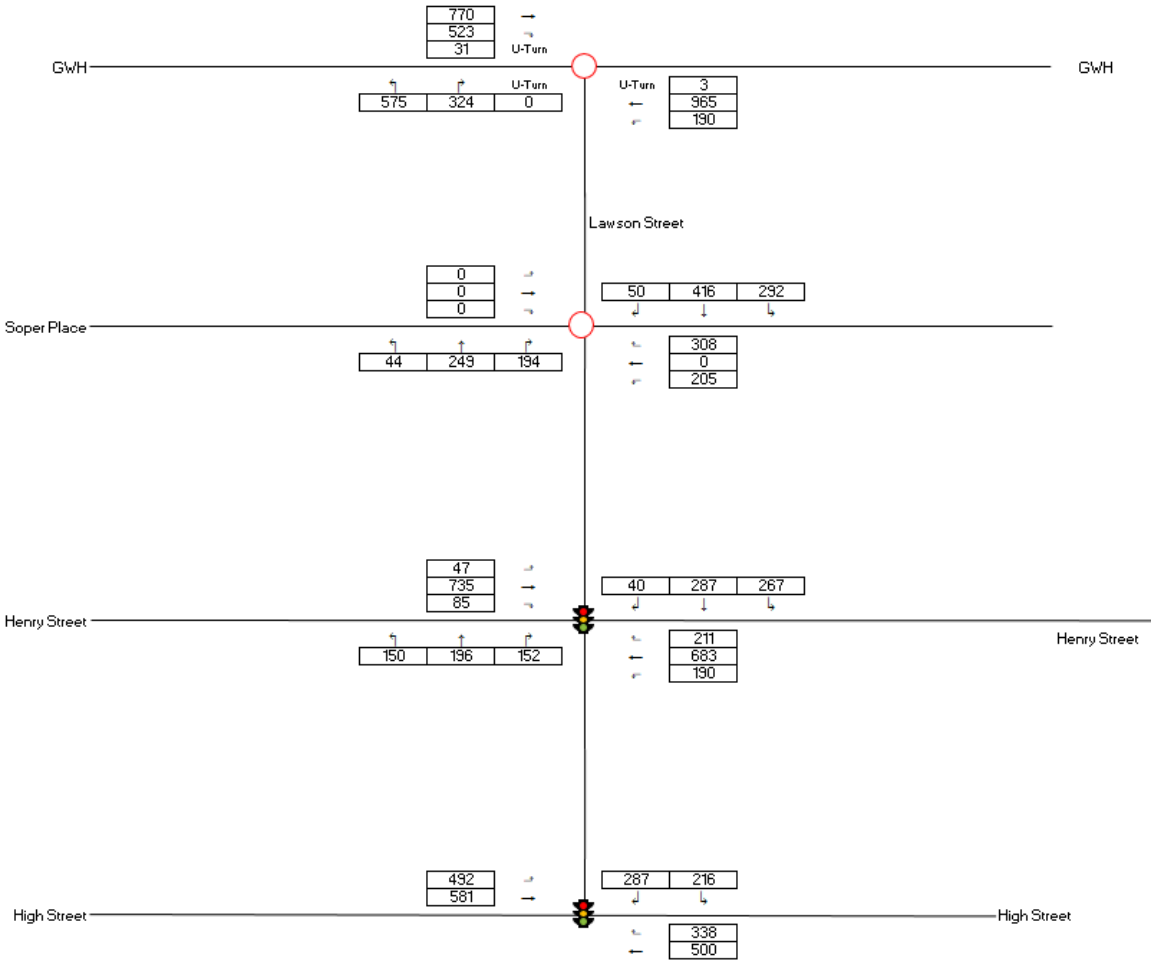


Figure C.10: 2042 PM peak hour traffic volumes with development



Appendix D SIDRA Outputs

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: sid_220224_3389_61_79_henry_street_penrith

Template: Default Site User Report

Site: [GWH/Lawson - AM Ex (Site Folder: Existing - AM)]

Network: 1 [Network AM Ex (Network Folder: General)]

Site Category: -
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson Street														
1	L2	94	5.6	94	5.6	0.138	5.0	LOS A	0.3	2.4	0.61	0.63	0.61	39.2
3	R2	22	0.0	22	0.0	0.138	8.2	LOS A	0.3	2.4	0.61	0.63	0.61	43.5
3u	U	1	0.0	1	0.0	0.138	9.6	LOS A	0.3	2.4	0.61	0.63	0.61	24.8
Approach		117	4.5	117	4.5	0.138	5.6	LOS A	0.3	2.4	0.61	0.63	0.61	40.2
East: Great Western Higway (North Street)														
4	L2	92	0.0	92	0.0	0.436	4.3	LOS A	1.3	9.6	0.46	0.49	0.46	43.5
5	T1	436	5.8	436	5.8	0.436	4.5	LOS A	1.3	9.6	0.46	0.49	0.46	46.4
6u	U	1	0.0	1	0.0	0.436	9.9	LOS A	1.3	9.6	0.46	0.49	0.46	47.7
Approach		528	4.8	528	4.8	0.436	4.5	LOS A	1.3	9.6	0.46	0.49	0.46	46.0
West: Great Western Highway (Belmore Street)														
11	T1	371	6.5	371	6.5	0.342	3.5	LOS A	1.1	8.2	0.17	0.44	0.17	46.7
12	R2	139	2.3	139	2.3	0.342	7.2	LOS A	1.1	8.2	0.17	0.44	0.17	41.1
12u	U	6	0.0	6	0.0	0.342	8.9	LOS A	1.1	8.2	0.17	0.44	0.17	46.9
Approach		516	5.3	516	5.3	0.342	4.5	LOS A	1.1	8.2	0.17	0.44	0.17	45.9
All Vehicles		1161	5.0	1161	5.0	0.436	4.6	LOS A	1.3	9.6	0.35	0.48	0.35	45.5

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

Site: [Soper Pl/Lawson St - AM Ex (Site Folder: Existing - AM)]

Network: 1 [Network AM Ex (Network Folder: General)]

Site Category: -
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson St - S														
1	L2	81	0.0	81	0.0	0.094	3.4	LOS A	0.0	0.0	0.00	0.21	0.00	18.6
2	T1	97	4.3	97	4.3	0.094	0.0	LOS A	0.0	0.0	0.00	0.21	0.00	31.4
Approach		178	2.4	178	2.4	0.094	1.6	NA	0.0	0.0	0.00	0.21	0.00	22.6
North: Lawson Street - N														
8	T1	137	4.6	137	4.6	0.075	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	40.0
9	R2	122	0.9	122	0.9	0.079	4.1	LOS A	0.2	1.2	0.30	0.47	0.30	26.9
Approach		259	2.8	259	2.8	0.079	1.9	NA	0.2	1.2	0.14	0.22	0.14	31.6
West: Soper Place														
10	L2	28	3.7	28	3.7	0.036	3.2	LOS A	0.1	0.5	0.19	0.46	0.19	21.4
12	R2	14	0.0	14	0.0	0.036	5.2	LOS A	0.1	0.5	0.19	0.46	0.19	21.4
Approach		42	2.5	42	2.5	0.036	3.9	LOS A	0.1	0.5	0.19	0.46	0.19	21.4
All Vehicles		479	2.6	479	2.6	0.094	2.0	NA	0.2	1.2	0.09	0.24	0.09	27.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: [Henry St/Lawson St - AM Ex (Site Folder: Existing - AM)] Network: 1 [Network AM Ex (Network Folder: General)]

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 80 seconds (Site User-Given Cycle Time)

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

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson St - S														
1	L2	41	17.9	41	17.9	0.075	22.9	LOS B	0.7	5.4	0.71	0.67	0.71	20.1
2	T1	58	7.3	58	7.3	* 0.469	37.2	LOS C	2.2	16.5	0.97	0.77	0.97	9.6
3	R2	37	5.7	37	5.7	0.469	40.6	LOS C	2.2	16.5	0.97	0.77	0.97	18.4
Approach		136	10.1	136	10.1	0.469	33.8	LOS C	2.2	16.5	0.89	0.74	0.89	15.4
East: Henry St - E														
4	L2	127	0.0	127	0.0	0.364	18.4	LOS B	4.8	34.3	0.69	0.65	0.69	23.0
5	T1	379	3.1	379	3.1	* 0.455	17.0	LOS B	5.1	36.2	0.73	0.67	0.73	25.8
6	R2	95	1.1	95	1.1	0.455	22.0	LOS B	5.1	36.2	0.77	0.70	0.77	21.1
Approach		601	2.1	601	2.1	0.455	18.1	LOS B	5.1	36.2	0.73	0.67	0.73	24.6
North: Lawson St - N														
7	L2	48	0.0	48	0.0	0.214	38.8	LOS C	1.1	7.6	0.93	0.73	0.93	16.4
8	T1	63	6.7	63	6.7	0.319	36.1	LOS C	1.6	11.7	0.95	0.73	0.95	5.6
9	R2	6	0.0	6	0.0	0.319	39.6	LOS C	1.6	11.7	0.95	0.73	0.95	12.5
Approach		118	3.6	118	3.6	0.319	37.4	LOS C	1.6	11.7	0.94	0.73	0.94	11.5
West: Henry St - W														
10	L2	19	0.0	19	0.0	* 0.163	8.8	LOS A	1.8	13.0	0.41	0.35	0.41	26.9
11	T1	278	4.5	278	4.5	0.204	5.8	LOS A	1.8	13.0	0.46	0.41	0.46	33.5
12	R2	62	3.4	62	3.4	0.204	9.4	LOS A	1.4	10.1	0.54	0.53	0.54	24.8
Approach		359	4.1	359	4.1	0.204	6.6	LOS A	1.8	13.0	0.47	0.43	0.47	32.5
All Vehicles		1214	3.7	1214	3.7	0.469	18.3	LOS B	5.1	36.2	0.69	0.61	0.69	23.7

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

* Critical Movement (Signal Timing)

Site: [High St/Lawson St - AM Ex (Site Folder: Existing - AM)]

Network: 1 [Network AM Ex (Network Folder: General)]

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 101 seconds (Site User-Given Phase Times)

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

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: High Street - E														
5	T1	385	2.5	385	2.5	0.261	6.3	LOS A	2.9	20.4	0.40	0.38	0.40	34.2
6	R2	124	10.2	124	10.2	* 0.261	10.8	LOS A	2.8	20.9	0.47	0.53	0.47	28.3
Approach		509	4.3	509	4.3	0.261	7.3	LOS A	2.9	20.9	0.42	0.42	0.42	33.1
North: Lawson St - N														
7	L2	78	8.1	78	8.1	0.140	25.1	LOS B	1.5	11.4	0.75	0.70	0.75	22.8
9	R2	74	1.4	74	1.4	0.232	42.5	LOS D	1.9	13.8	0.90	0.74	0.90	16.0
Approach		152	4.9	152	4.9	0.232	33.6	LOS C	1.9	13.8	0.82	0.72	0.82	19.2
West: High Street - W														
10	L2	140	3.8	140	3.8	* 0.120	8.4	LOS A	1.3	9.4	0.41	0.60	0.41	27.1
11	T1	186	1.1	186	1.1	* 0.250	15.8	LOS B	3.2	22.4	0.61	0.50	0.61	28.3
Approach		326	2.3	326	2.3	0.250	12.6	LOS A	3.2	22.4	0.52	0.54	0.52	28.0
All Vehicles		987	3.7	987	3.7	0.261	13.1	LOS A	3.2	22.4	0.51	0.50	0.51	28.5

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

* Critical Movement (Signal Timing)

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: sid_220224_3389_61_79_henry_street_penrith

Template: Default Site User Report

Site: [GWH/Lawson - PM Ex (Site Folder: Existing - PM)]

Network: 2 [Network PM Ex (Network Folder: General)]

Site Category: -
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson Street														
1	L2	188	0.6	188	0.6	0.426	7.6	LOS A	1.3	9.2	0.87	0.89	0.90	36.2
3	R2	97	0.0	97	0.0	0.426	11.0	LOS A	1.3	9.2	0.87	0.89	0.90	40.9
3u	U	3	0.0	3	0.0	0.426	12.4	LOS A	1.3	9.2	0.87	0.89	0.90	20.8
Approach		288	0.4	288	0.4	0.426	8.8	LOS A	1.3	9.2	0.87	0.89	0.90	38.0
East: Great Western Higway (North Street)														
4	L2	51	2.1	51	2.1	0.639	6.5	LOS A	2.7	19.0	0.76	0.70	0.81	41.8
5	T1	632	1.2	632	1.2	0.639	6.5	LOS A	2.7	19.0	0.76	0.70	0.81	45.2
6u	U	2	0.0	2	0.0	0.639	12.0	LOS A	2.7	19.0	0.76	0.70	0.81	46.7
Approach		684	1.2	684	1.2	0.639	6.6	LOS A	2.7	19.0	0.76	0.70	0.81	45.0
West: Great Western Highway (Belmore Street)														
11	T1	504	0.6	504	0.6	0.577	4.2	LOS A	2.6	17.9	0.53	0.51	0.53	45.5
12	R2	241	0.0	241	0.0	0.577	8.0	LOS A	2.6	17.9	0.53	0.51	0.53	38.8
12u	U	20	0.0	20	0.0	0.577	9.7	LOS A	2.6	17.9	0.53	0.51	0.53	45.2
Approach		765	0.4	765	0.4	0.577	5.6	LOS A	2.6	17.9	0.53	0.51	0.53	44.3
All Vehicles		1738	0.7	1738	0.7	0.639	6.5	LOS A	2.7	19.0	0.68	0.65	0.70	43.8

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

Site: [Soper Pl/Lawson St - PM Ex (Site Folder: Existing - PM)]

Network: 2 [Network PM Ex (Network Folder: General)]

Site Category: -
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson St - S														
1	L2	41	2.6	41	2.6	0.107	3.4	LOS A	0.0	0.0	0.00	0.09	0.00	19.4
2	T1	165	1.3	165	1.3	0.107	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	35.8
Approach		206	1.5	206	1.5	0.107	0.7	NA	0.0	0.0	0.00	0.09	0.00	29.0
North: Lawson Street - N														
8	T1	275	0.0	275	0.0	0.150	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	40.0
9	R2	46	0.0	46	0.0	0.030	4.1	LOS A	0.1	0.5	0.31	0.46	0.31	26.9
Approach		321	0.0	321	0.0	0.150	0.6	NA	0.1	0.5	0.04	0.07	0.04	36.6
West: Soper Place														
10	L2	135	0.0	135	0.0	0.249	3.6	LOS A	0.5	3.3	0.34	0.54	0.34	18.9
12	R2	103	1.0	103	1.0	0.249	6.9	LOS A	0.5	3.3	0.34	0.54	0.34	18.9
Approach		238	0.4	238	0.4	0.249	5.0	LOS A	0.5	3.3	0.34	0.54	0.34	18.9
All Vehicles		765	0.6	765	0.6	0.249	2.0	NA	0.5	3.3	0.12	0.22	0.12	29.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: [Henry St/Lawson St - PM Ex (Site Folder: Existing - PM)] Network: 2 [Network PM Ex (Network Folder: General)]

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 80 seconds (Site User-Given Cycle Time)

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

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson St - S														
1	L2	98	3.2	98	3.2	0.150	22.0	LOS B	1.6	11.4	0.71	0.70	0.71	20.5
2	T1	73	1.4	73	1.4	* 0.641	34.6	LOS C	4.1	28.8	0.97	0.84	1.03	10.0
3	R2	101	0.0	101	0.0	0.641	38.0	LOS C	4.1	28.8	0.97	0.84	1.03	18.9
Approach		272	1.6	272	1.6	0.641	31.3	LOS C	4.1	28.8	0.88	0.79	0.91	17.3
East: Henry St - E														
4	L2	118	0.0	118	0.0	0.536	21.3	LOS B	7.7	55.0	0.79	0.71	0.79	21.6
5	T1	460	3.2	460	3.2	* 0.670	22.6	LOS B	7.7	55.0	0.84	0.76	0.86	23.4
6	R2	86	0.0	86	0.0	0.670	35.4	LOS C	5.3	37.6	0.96	0.86	1.02	15.9
Approach		664	2.2	664	2.2	0.670	24.0	LOS B	7.7	55.0	0.85	0.76	0.87	22.1
North: Lawson St - N														
7	L2	163	0.0	163	0.0	0.424	33.6	LOS C	3.5	24.3	0.91	0.78	0.91	17.8
8	T1	179	0.0	179	0.0	0.523	31.0	LOS C	4.3	30.3	0.94	0.77	0.94	6.3
9	R2	18	5.9	18	5.9	0.523	34.5	LOS C	4.3	30.3	0.94	0.77	0.94	13.8
Approach		360	0.3	360	0.3	0.523	32.4	LOS C	4.3	30.3	0.92	0.78	0.92	13.2
West: Henry St - W														
10	L2	23	0.0	23	0.0	* 0.329	13.2	LOS A	4.5	32.2	0.57	0.47	0.57	21.6
11	T1	488	2.8	488	2.8	0.411	11.3	LOS A	4.5	32.2	0.65	0.55	0.65	29.8
12	R2	56	3.8	56	3.8	0.411	15.5	LOS B	2.6	19.0	0.81	0.69	0.81	19.2
Approach		567	2.8	567	2.8	0.411	11.8	LOS A	4.5	32.2	0.67	0.56	0.67	29.0
All Vehicles		1863	1.9	1863	1.9	0.670	23.0	LOS B	7.7	55.0	0.81	0.71	0.82	21.4

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

* Critical Movement (Signal Timing)

Site: [High St/Lawson St - PM Ex (Site Folder: Existing - PM)]

Network: 2 [Network PM Ex (Network Folder: General)]

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 101 seconds (Site User-Given Phase Times)

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

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: High Street - E														
5	T1	327	0.0	327	0.0	0.316	7.2	LOS A	3.8	26.7	0.42	0.37	0.42	33.9
6	R2	186	2.8	186	2.8	* 0.316	19.0	LOS B	3.5	25.1	0.69	0.73	0.69	21.4
Approach		514	1.0	514	1.0	0.316	11.5	LOS A	3.8	26.7	0.52	0.50	0.52	29.6
North: Lawson St - N														
7	L2	136	5.4	136	5.4	0.207	21.0	LOS B	2.4	17.7	0.70	0.70	0.70	24.6
9	R2	184	0.6	184	0.6	0.697	43.9	LOS D	5.2	36.4	0.93	0.84	1.02	15.7
Approach		320	2.6	320	2.6	0.697	34.1	LOS C	5.2	36.4	0.83	0.78	0.88	18.8
West: High Street - W														
10	L2	302	0.7	302	0.7	* 0.319	10.5	LOS A	3.5	24.9	0.50	0.65	0.50	25.1
11	T1	380	0.0	380	0.0	* 0.778	27.3	LOS B	9.2	64.1	0.78	0.75	0.87	23.4
Approach		682	0.3	682	0.3	0.778	19.8	LOS B	9.2	64.1	0.66	0.70	0.71	23.8
All Vehicles		1516	1.0	1516	1.0	0.778	20.0	LOS B	9.2	64.1	0.65	0.65	0.68	24.2

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

* Critical Movement (Signal Timing)

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: sid_220719_3389_61_79_henry_street_penrith **Template: New User Report**

Site: [GWH/Lawson - 2032 w/out Dev AM (Site Folder: 2032 w/out Dev - AM)]

Network: 3 [Network 2032 w/out Dev - AM (Network Folder: General)]

Site Category: -
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson Street														
1	L2	176	5.6	176	5.6	0.312	6.6	LOS A	0.9	6.3	0.80	0.79	0.80	37.6
3	R2	41	0.0	41	0.0	0.312	9.8	LOS A	0.9	6.3	0.80	0.79	0.80	42.1
3u	U	1	0.0	1	0.0	0.312	11.2	LOS A	0.9	6.3	0.80	0.79	0.80	22.4
Approach		218	4.5	218	4.5	0.312	7.2	LOS A	0.9	6.3	0.80	0.79	0.80	38.7
East: Great Western Higway (North Street)														
4	L2	156	0.0	156	0.0	0.673	6.6	LOS A	3.0	21.8	0.76	0.70	0.82	41.9
5	T1	575	5.8	575	5.8	0.673	6.9	LOS A	3.0	21.8	0.76	0.70	0.82	45.2
6u	U	1	0.0	1	0.0	0.673	12.2	LOS A	3.0	21.8	0.76	0.70	0.82	46.7
Approach		732	4.6	732	4.6	0.673	6.9	LOS A	3.0	21.8	0.76	0.70	0.82	44.7
West: Great Western Highway (Belmore Street)														
11	T1	488	6.5	488	6.5	0.504	3.7	LOS A	2.1	15.5	0.31	0.45	0.31	46.1
12	R2	236	2.3	236	2.3	0.504	7.4	LOS A	2.1	15.5	0.31	0.45	0.31	40.1
12u	U	8	0.0	8	0.0	0.504	9.1	LOS A	2.1	15.5	0.31	0.45	0.31	46.1
Approach		733	5.1	733	5.1	0.504	4.9	LOS A	2.1	15.5	0.31	0.45	0.31	45.0
All Vehicles		1682	4.8	1682	4.8	0.673	6.1	LOS A	3.0	21.8	0.57	0.60	0.59	44.3

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

Site: [Soper Pl/Lawson St - 2032 w/out Dev AM (Site Folder: 2032 w/out Dev - AM)]

Network: 3 [Network 2032 w/out Dev - AM (Network Folder: General)]

Site Category: -
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson St - S														
1	L2	165	0.0	165	0.0	0.167	3.4	LOS A	0.0	0.0	0.00	0.24	0.00	18.3
2	T1	151	4.3	151	4.3	0.167	0.0	LOS A	0.0	0.0	0.00	0.24	0.00	30.4
Approach		316	2.1	316	2.1	0.167	1.8	NA	0.0	0.0	0.00	0.24	0.00	21.5
North: Lawson Street - N														
8	T1	181	4.6	181	4.6	0.099	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	40.0
9	R2	248	0.9	248	0.9	0.180	4.8	LOS A	0.4	3.1	0.44	0.53	0.44	26.1
Approach		429	2.4	429	2.4	0.180	2.8	NA	0.4	3.1	0.25	0.31	0.25	29.7
West: Soper Place														
10	L2	1	3.7	1	3.7	0.003	3.4	LOS A	0.0	0.0	0.29	0.46	0.29	18.4
12	R2	1	0.0	1	0.0	0.003	7.0	LOS A	0.0	0.0	0.29	0.46	0.29	18.4
Approach		2	1.9	2	1.9	0.003	5.2	LOS A	0.0	0.0	0.29	0.46	0.29	18.4
All Vehicles		747	2.3	747	2.3	0.180	2.4	NA	0.4	3.1	0.15	0.28	0.15	26.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: [Henry St/Lawson St - 2032 w/out Dev AM (Site Folder: 2032 w/out Dev - AM)]

Network: 3 [Network 2032 w/out Dev - AM (Network Folder: General)]

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 150 seconds (Site Practical Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: Two-Phase
Reference Phase: Phase B
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson St - S														
1	L2	54	17.9	54	17.9	0.154	55.1	LOS D	2.0	15.8	0.85	0.73	0.85	11.8
2	T1	112	7.3	112	7.3	* 0.876	81.9	LOS F	7.9	58.8	1.00	1.05	1.32	5.1
3	R2	48	5.7	48	5.7	0.876	85.4	LOS F	7.9	58.8	1.00	1.05	1.32	11.4
Approach		214	9.6	214	9.6	0.876	75.9	LOS F	7.9	58.8	0.96	0.97	1.20	8.2
East: Henry St - E														
4	L2	168	0.0	168	0.0	0.730	15.6	LOS B	13.3	95.1	0.52	0.53	0.52	25.1
5	T1	500	3.1	500	3.1	* 0.912	17.7	LOS B	13.3	95.1	0.56	0.57	0.59	25.5
6	R2	183	1.1	183	1.1	0.912	84.5	LOS F	11.6	81.9	0.96	1.06	1.34	8.3
Approach		852	2.0	852	2.0	0.912	31.6	LOS C	13.3	95.1	0.64	0.67	0.74	18.9
North: Lawson St - N														
7	L2	57	0.0	57	0.0	0.236	66.8	LOS E	2.3	16.2	0.93	0.75	0.93	11.4
8	T1	74	6.7	74	6.7	0.377	66.0	LOS E	3.4	25.1	0.96	0.75	0.96	3.3
9	R2	7	0.0	7	0.0	0.377	69.5	LOS E	3.4	25.1	0.96	0.75	0.96	8.0
Approach		138	3.6	138	3.6	0.377	66.5	LOS E	3.4	25.1	0.95	0.75	0.95	7.4
West: Henry St - W														
10	L2	14	0.0	14	0.0	* 0.258	9.8	LOS A	5.1	37.3	0.33	0.28	0.33	25.8
11	T1	366	4.5	366	4.5	0.322	7.5	LOS A	5.1	37.3	0.36	0.31	0.36	32.4
12	R2	82	3.4	82	3.4	0.322	27.0	LOS B	2.4	17.1	0.79	0.72	0.79	12.5
Approach		462	4.2	462	4.2	0.322	11.1	LOS A	5.1	37.3	0.43	0.38	0.43	28.8
All Vehicles		1665	3.7	1665	3.7	0.912	34.5	LOS C	13.3	95.1	0.65	0.64	0.73	17.3

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

* Critical Movement (Signal Timing)

Site: [High St/Lawson St - 2032 w/out Dev AM (Site Folder: 2032 w/out Dev - AM)]

Network: 3 [Network 2032 w/out Dev - AM (Network Folder: General)]

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 40 seconds (Site Practical Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: Two-Phase
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: High Street - E														
5	T1	508	1.8	508	1.8	0.511	6.6	LOS A	3.0	21.5	0.65	0.57	0.65	34.1
6	R2	219	10.2	219	10.2	* 0.511	12.2	LOS A	2.6	19.6	0.84	0.74	0.84	26.4
Approach		727	4.3	727	4.3	0.511	8.3	LOS A	3.0	21.5	0.71	0.62	0.71	32.2
North: Lawson St - N														
7	L2	98	8.1	98	8.1	0.186	10.6	LOS A	0.7	5.0	0.77	0.70	0.77	30.5
9	R2	93	1.4	93	1.4	* 0.347	21.3	LOS B	1.1	7.7	0.94	0.75	0.94	22.8
Approach		191	4.9	191	4.9	0.347	15.8	LOS B	1.1	7.7	0.85	0.73	0.85	26.5
West: High Street - W														
10	L2	165	3.8	165	3.8	0.305	11.0	LOS A	1.2	8.6	0.81	0.73	0.81	24.7
11	T1	246	1.1	246	1.1	* 0.738	19.0	LOS B	3.1	22.1	0.97	0.94	1.23	26.7
Approach		412	2.2	412	2.2	0.738	15.8	LOS B	3.1	22.1	0.90	0.86	1.06	26.2
All Vehicles		1329	3.7	1329	3.7	0.738	11.7	LOS A	3.1	22.1	0.79	0.71	0.84	29.4

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

* Critical Movement (Signal Timing)

Organisation: STANTEC NEW ZEALAND | Licence: NETWORK / Enterprise | Created: Tuesday, 19 July 2022 5:52:02 PM
Project: \\Corp.ads\gtadata\ProjectFilesSyd\300303389_61-79_henry_street_penrith\technical\modelling\sid_220719_3389_61_79_henry_street_penrith.sip9

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: sid_220719_3389_61_79_henry_street_penrith **Template: New User Report**

Site: [GWH/Lawson - 2032 w/out Dev PM (Site Folder: 2032 w/out Dev PM)] **Network: 4 [Network 2032 w/out Dev - PM (Network Folder: General)]**

Site Category: -
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson Street														
1	L2	386	0.6	332	0.6	1.091	132.3	LOS F	12.1	85.0	1.00	3.33	5.42	8.9
3	R2	198	0.0	170	0.0	1.091	135.7	LOS F	12.1	85.0	1.00	3.33	5.42	12.2
3u	U	1	0.0	1	0.0	1.091	137.1	LOS F	12.1	85.0	1.00	3.33	5.42	2.6
Approach		585	0.4	503 N1	0.4	1.091	133.5	LOS F	12.1	85.0	1.00	3.33	5.42	10.1
East: Great Western Higway (North Street)														
4	L2	65	2.1	65	2.1	0.938	23.9	LOS B	11.4	80.6	1.00	1.37	1.94	30.6
5	T1	834	1.2	834	1.2	0.938	23.9	LOS B	11.4	80.6	1.00	1.37	1.94	36.2
6u	U	3	0.0	3	0.0	0.938	29.3	LOS C	11.4	80.6	1.00	1.37	1.94	38.6
Approach		902	1.2	902	1.2	0.938	23.9	LOS B	11.4	80.6	1.00	1.37	1.94	35.9
West: Great Western Highway (Belmore Street)														
11	T1	665	0.6	665	0.6	0.824	6.6	LOS A	5.8	40.8	0.94	0.67	0.99	44.1
12	R2	311	0.0	311	0.0	0.824	10.4	LOS A	5.8	40.8	0.94	0.67	0.99	36.3
12u	U	26	0.0	26	0.0	0.824	12.1	LOS A	5.8	40.8	0.94	0.67	0.99	43.4
Approach		1002	0.4	1002	0.4	0.824	7.9	LOS A	5.8	40.8	0.94	0.67	0.99	42.6
All Vehicles		2489	0.7	2407 N1	0.7	1.091	40.2	LOS C	12.1	85.0	0.98	1.49	2.27	27.4

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

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

Site: [Soper Pl/Lawson St - 2032 w/out Dev PM (Site Folder: 2032 w/out Dev PM)]

Network: 4 [Network 2032 w/out Dev - PM (Network Folder: General)]

Site Category: -
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson St - S														
1	L2	46	2.6	29	3.9	0.087	3.4	LOS A	7.0	50.0	0.00	0.08	0.00	19.5
2	T1	222	1.3	139	2.0	0.087	0.0	LOS A	7.0	50.0	0.00	0.08	0.00	36.3
Approach		268	1.5	168[N1]	2.3	0.087	0.6	NA	7.0	50.0	0.00	0.08	0.00	29.9
North: Lawson Street - N														
8	T1	362	0.0	362	0.0	0.290	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	39.8
9	R2	53	0.0	53	0.0	0.033	4.0	LOS A	0.1	0.5	0.28	0.45	0.28	27.1
Approach		415	0.0	415	0.0	0.290	0.5	NA	0.1	0.5	0.04	0.06	0.04	37.0
West: Soper Place														
10	L2	1	0.0	1	0.0	0.005	3.3	LOS A	0.1	0.4	0.28	0.47	0.28	19.0
12	R2	1	1.0	1	1.0	0.005	6.5	LOS A	0.1	0.4	0.28	0.47	0.28	19.0
Approach		2	0.5	2	0.5	0.005	4.9	LOS A	0.1	0.4	0.28	0.47	0.28	19.0
All Vehicles		685	0.6	584[N1]	0.7	0.290	0.6	NA	7.0	50.0	0.03	0.07	0.03	35.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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

Site: [Henry St/Lawson St - 2032 w/out Dev PM (Site Folder: 2032 w/out Dev PM)]

Network: 4 [Network 2032 w/out Dev - PM (Network Folder: General)]

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 150 seconds (Site Practical Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: Two-Phase
Reference Phase: Phase B
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson St - S														
1	L2	129	3.2	129	3.2	0.121	17.4	LOS B	2.5	17.8	0.46	0.63	0.46	22.9
2	T1	99	1.4	99	1.4	* 1.802	782.2	LOS F	17.1	120.0	1.00	2.71	3.85	0.6
3	R2	134	0.0	134	0.0	1.802	785.7	LOS F	17.1	120.0	1.00	2.71	3.85	1.5
Approach		362	1.5	362	1.5	1.802	510.0	LOS F	17.1	120.0	0.81	1.97	2.64	1.7
East: Henry St - E														
4	L2	168	0.0	168	0.0	1.716	708.3	LOS F	121.0	865.2	1.00	2.86	3.63	1.2
5	T1	607	3.2	607	3.2	* 1.716	705.2	LOS F	121.0	865.2	1.00	2.86	3.63	1.7
6	R2	117	0.0	117	0.0	4.937	3571.8	LOS F	29.5	206.4	1.00	2.29	5.87	0.2
Approach		893	2.2	893	2.2	4.937	1081.0	LOS F	121.0	865.2	1.00	2.79	3.92	1.0
North: Lawson St - N														
7	L2	154	0.0	154	0.0	0.165	23.8	LOS B	3.6	25.0	0.56	0.67	0.56	21.3
8	T1	168	0.0	168	0.0	0.720	60.5	LOS E	7.1	50.0	0.98	0.88	1.04	3.5
9	R2	17	5.9	17	5.9	0.720	64.0	LOS E	7.1	50.0	0.98	0.88	1.04	8.5
Approach		339	0.3	339	0.3	0.720	44.0	LOS D	7.1	50.0	0.79	0.78	0.82	10.6
West: Henry St - W														
10	L2	23	0.0	23	0.0	0.990	102.7	LOS F	35.9	257.3	1.00	1.48	1.38	4.3
11	T1	644	2.8	644	2.8	1.237	102.0	LOS F	35.9	257.3	1.00	1.48	1.40	9.7
12	R2	74	3.8	74	3.8	* 1.237	269.3	LOS F	6.9	50.1	1.00	1.38	2.59	1.4
Approach		741	2.8	741	2.8	1.237	118.7	LOS F	35.9	257.3	1.00	1.47	1.51	7.8
All Vehicles		2335	2.0	2335	2.0	4.937	536.5	LOS F	121.0	865.2	0.94	1.95	2.51	1.8

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

* Critical Movement (Signal Timing)

Site: [High St/Lawson St - 2032 w/out Dev PM (Site Folder: 2032 w/out Dev PM)]

Network: 4 [Network 2032 w/out Dev - PM (Network Folder: General)]

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 150 seconds (Site Practical Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: Two-Phase
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: High Street - E														
5	T1	432	0.0	432	0.0	0.286	4.6	LOS A	5.2	36.1	0.30	0.27	0.30	35.7
6	R2	262	2.8	262	2.8	* 1.114	155.7	LOS F	20.1	144.2	1.00	1.24	2.04	3.7
Approach		694	1.1	694	1.1	1.114	61.7	LOS E	20.1	144.2	0.56	0.63	0.95	11.0
North: Lawson St - N														
7	L2	151	5.4	142	5.7	0.309	34.5	LOS C	4.1	30.1	0.74	0.72	0.74	19.6
9	R2	204	0.6	192	0.6	* 1.209	273.3	LOS F	17.1	120.0	1.00	1.58	2.40	3.6
Approach		355	2.6	334 N1	2.8	1.209	171.8	LOS F	17.1	120.0	0.89	1.21	1.69	5.8
West: High Street - W														
10	L2	385	0.7	385	0.7	0.691	20.3	LOS B	8.3	58.7	0.68	0.82	0.68	18.6
11	T1	501	0.0	501	0.0	* 1.219	276.6	LOS F	52.2	365.7	1.00	1.94	2.35	4.8
Approach		886	0.3	886	0.3	1.219	165.2	LOS F	52.2	365.7	0.86	1.46	1.62	5.9
All Vehicles		1935	1.0	1914 N1	1.0	1.219	128.8	LOS F	52.2	365.7	0.76	1.11	1.39	7.1

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: sid_220719_3389_61_79_henry_street_penrith **Template: New User Report**

Site: v [GWH/Lawson - 2032 w/out Dev Mit AM - Conversion (Site Folder: 2032 w/out Dev - AM)] **Network: 12 [Network 2032 w/out Dev Mit - AM (Network Folder: General)]**

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network Optimum Cycle Time - Minimum Delay)

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

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson Street														
1	L2	176	5.6	176	5.6	0.333	28.6	LOS C	3.4	25.3	0.77	0.73	0.77	24.6
3	R2	41	0.0	41	0.0	* 0.155	49.0	LOS D	1.2	8.4	0.99	0.74	0.99	23.0
Approach		217	4.6	217	4.6	0.333	32.4	LOS C	3.4	25.3	0.81	0.73	0.81	24.2
East: Great Western Higway (North Street)														
4	L2	156	0.0	156	0.0	0.278	16.9	LOS B	3.1	22.4	0.60	0.67	0.60	35.8
5	T1	575	5.8	575	5.8	* 0.486	16.8	LOS B	9.1	66.8	0.69	0.63	0.69	38.8
Approach		731	4.6	731	4.6	0.486	16.8	LOS B	9.1	66.8	0.67	0.64	0.67	38.4
West: Great Western Highway (Belmore Street)														
11	T1	488	6.5	488	6.5	0.347	4.8	LOS A	5.0	37.1	0.38	0.34	0.38	46.3
12	R2	236	2.3	236	2.3	* 0.497	44.7	LOS D	4.6	32.7	0.93	0.78	0.93	17.2
Approach		724	5.1	724	5.1	0.497	17.8	LOS B	5.0	37.1	0.56	0.48	0.56	36.4
All Vehicles		1672	4.8	1672	4.8	0.497	19.3	LOS B	9.1	66.8	0.64	0.59	0.64	35.8

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

* Critical Movement (Signal Timing)

Site: [Soper Pl/Lawson St - 2032 w/out Dev AM (Site Folder: 2032 w/out Dev - AM)]

Network: 12 [Network 2032 w/out Dev Mit - AM (Network Folder: General)]

Site Category: -
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson St - S														
1	L2	165	0.0	165	0.0	0.167	3.4	LOS A	0.0	0.0	0.00	0.24	0.00	18.3
2	T1	151	4.3	151	4.3	0.167	0.0	LOS A	0.0	0.0	0.00	0.24	0.00	30.4
Approach		316	2.1	316	2.1	0.167	1.8	NA	0.0	0.0	0.00	0.24	0.00	21.5
North: Lawson Street - N														
8	T1	181	4.6	181	4.6	0.099	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	40.0
9	R2	248	0.9	248	0.9	0.181	4.8	LOS A	0.4	2.5	0.33	0.52	0.33	26.7
Approach		429	2.4	429	2.4	0.181	2.8	NA	0.4	2.5	0.19	0.30	0.19	30.2
West: Soper Place														
10	L2	1	3.7	1	3.7	0.002	3.4	LOS A	0.0	0.0	0.30	0.46	0.30	19.1
12	R2	1	0.0	1	0.0	0.002	6.4	LOS A	0.0	0.0	0.30	0.46	0.30	19.1
Approach		2	1.9	2	1.9	0.002	4.9	LOS A	0.0	0.0	0.30	0.46	0.30	19.1
All Vehicles		747	2.3	747	2.3	0.181	2.4	NA	0.4	2.5	0.11	0.28	0.11	26.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: [Henry St/Lawson St - 2032 w/out Dev AM Mit (Site Folder: 2032 w/out Dev - AM)]

Network: 12 [Network 2032 w/out Dev Mit - AM (Network Folder: General)]

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: Two-Phase
Reference Phase: Phase B
Input Phase Sequence: B, C, C1*, C2*, D
Output Phase Sequence: B, C, C1*, D
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson St - S														
1	L2	54	17.9	54	17.9	0.218	20.4	LOS B	2.5	18.9	0.53	0.51	0.53	22.6
2	T1	112	7.3	112	7.3	* 0.218	16.8	LOS B	2.5	18.9	0.53	0.51	0.53	16.2
3	R2	48	5.7	48	5.7	0.090	20.6	LOS B	0.7	5.1	0.50	0.61	0.50	24.9
Approach		214	9.6	214	9.6	0.218	18.6	LOS B	2.5	18.9	0.53	0.54	0.53	20.7
East: Henry St - E														
4	L2	168	0.0	168	0.0	0.713	38.2	LOS C	9.9	70.0	0.94	0.84	0.97	15.1
5	T1	500	3.1	500	3.1	0.713	34.2	LOS C	9.9	70.0	0.92	0.81	0.95	19.4
6	R2	183	1.1	183	1.1	* 0.913	65.9	LOS E	6.6	46.5	1.00	1.08	1.52	9.9
Approach		852	2.0	852	2.0	0.913	41.8	LOS C	9.9	70.0	0.94	0.88	1.08	16.1
North: Lawson St - N														
7	L2	57	0.0	57	0.0	0.053	17.5	LOS B	1.2	8.1	0.73	0.69	0.73	24.3
8	T1	74	6.7	74	6.7	0.112	22.9	LOS B	1.9	13.8	0.82	0.66	0.82	8.1
9	R2	7	0.0	7	0.0	0.112	26.3	LOS B	1.9	13.8	0.82	0.66	0.82	16.6
Approach		138	3.6	138	3.6	0.112	20.9	LOS B	1.9	13.8	0.78	0.67	0.78	16.8
West: Henry St - W														
10	L2	14	0.0	14	0.0	0.885	53.7	LOS D	12.8	93.0	1.00	1.09	1.30	7.7
11	T1	366	4.5	366	4.5	* 0.885	50.3	LOS D	12.8	93.0	1.00	1.09	1.30	15.7
12	R2	82	3.4	82	3.4	0.661	56.8	LOS E	2.6	18.8	1.00	0.84	1.13	6.9
Approach		462	4.2	462	4.2	0.885	51.6	LOS D	12.8	93.0	1.00	1.05	1.27	14.2
All Vehicles		1665	3.7	1665	3.7	0.913	39.8	LOS C	12.8	93.0	0.89	0.86	1.04	15.8

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

* Critical Movement (Signal Timing)

Site: [High St/Lawson St - 2032 w/out Dev AM Mit (Site Folder: 2032 w/out Dev - AM)]

Network: 12 [Network 2032 w/out Dev Mit - AM (Network Folder: General)]

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: Two-Phase
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: High Street - E														
5	T1	508	1.8	508	1.8	0.330	4.7	LOS A	4.6	34.1	0.37	0.36	0.37	35.2
6	R2	219	10.2	219	10.2	* 0.330	10.8	LOS A	4.6	34.1	0.50	0.57	0.50	28.0
Approach		727	4.3	727	4.3	0.330	6.5	LOS A	4.6	34.1	0.41	0.42	0.41	33.5
North: Lawson St - N														
7	L2	98	8.1	98	8.1	0.101	11.6	LOS A	1.2	9.0	0.53	0.64	0.53	29.8
9	R2	93	1.4	93	1.4	* 0.439	42.0	LOS C	2.4	17.1	0.87	0.74	0.87	16.1
Approach		191	4.9	191	4.9	0.439	26.3	LOS B	2.4	17.1	0.70	0.69	0.70	21.6
West: High Street - W														
10	L2	165	3.8	165	3.8	0.410	29.9	LOS C	4.5	32.7	0.85	0.84	0.85	15.1
11	T1	246	1.1	246	1.1	* 0.410	32.5	LOS C	4.9	34.8	0.88	0.75	0.88	21.5
Approach		412	2.2	412	2.2	0.410	31.5	LOS C	4.9	34.8	0.86	0.79	0.86	19.5
All Vehicles		1329	3.7	1329	3.7	0.439	17.1	LOS B	4.9	34.8	0.59	0.57	0.59	26.1

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

* Critical Movement (Signal Timing)

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: sid_220719_3389_61_79_henry_street_penrith **Template: New User Report**

Site: v [GWH/Lawson - 2032 w/out Dev PM - Conversion (Site Folder: 2032 w/out Dev PM)] **Network: 11 [Network 2032 w/out Dev Mit - PM (Network Folder: General)]**

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: Opposed Turns
Reference Phase: Phase B
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson Street														
1	L2	386	0.6	386	0.6	0.445	20.7	LOS B	7.0	49.4	0.77	0.77	0.77	29.3
3	R2	198	0.0	198	0.0	* 0.454	39.4	LOS C	5.3	36.9	0.93	0.80	0.93	25.6
Approach		584	0.4	584	0.4	0.454	27.0	LOS B	7.0	49.4	0.82	0.78	0.82	27.6
East: Great Western Higway (North Street)														
4	L2	65	2.1	65	2.1	0.508	37.7	LOS C	7.5	53.0	0.85	0.80	0.85	26.3
5	T1	834	1.2	834	1.2	* 0.888	42.3	LOS C	19.4	136.9	0.95	0.98	1.11	29.3
Approach		899	1.2	899	1.2	0.888	42.0	LOS C	19.4	136.9	0.95	0.97	1.09	29.2
West: Great Western Highway (Belmore Street)														
11	T1	665	0.6	665	0.6	0.519	9.8	LOS A	10.3	72.8	0.57	0.52	0.57	42.9
12	R2	311	0.0	311	0.0	* 0.446	37.6	LOS C	5.5	38.7	0.87	0.78	0.87	19.2
Approach		976	0.4	976	0.4	0.519	18.6	LOS B	10.3	72.8	0.66	0.60	0.66	36.0
All Vehicles		2459	0.7	2459	0.7	0.888	29.2	LOS C	19.4	136.9	0.81	0.78	0.86	31.2

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

* Critical Movement (Signal Timing)

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: sid_220905_3389_61_79_henry_street_penrith **Template: New User Report**

Site: v [GWH/Lawson - 2032 w Dev Mit AM - Conversion (Site Folder: 2032 w Dev - AM)] **Network: 5 [Network 2032 w Dev Mit - AM (Network Folder: General)]**

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 110 seconds (Network Optimum Cycle Time - Minimum Delay)

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

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson Street														
1	L2	305	5.6	305	5.6	0.472	28.3	LOS B	6.9	50.5	0.82	0.78	0.82	24.9
3	R2	128	0.0	128	0.0	* 0.497	52.1	LOS D	4.0	28.2	0.97	0.79	0.97	22.2
Approach		434	4.0	434	4.0	0.497	35.3	LOS C	6.9	50.5	0.87	0.78	0.87	23.8
East: Great Western Higway (North Street)														
4	L2	261	0.0	261	0.0	0.341	17.5	LOS B	4.9	34.6	0.64	0.72	0.64	34.9
5	T1	575	5.8	575	5.8	* 0.596	23.0	LOS B	12.6	92.8	0.79	0.72	0.79	36.0
Approach		836	4.0	836	4.0	0.596	21.3	LOS B	12.6	92.8	0.74	0.72	0.74	35.7
West: Great Western Highway (Belmore Street)														
11	T1	488	6.5	488	6.5	0.341	4.7	LOS A	5.2	38.4	0.36	0.32	0.36	46.3
12	R2	393	2.3	393	2.3	* 0.607	43.6	LOS D	8.2	58.2	0.91	0.81	0.91	17.4
Approach		881	4.6	881	4.6	0.607	22.1	LOS B	8.2	58.2	0.60	0.54	0.60	33.2
All Vehicles		2151	4.2	2151	4.2	0.607	24.4	LOS B	12.6	92.8	0.71	0.66	0.71	32.3

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

* Critical Movement (Signal Timing)

Site: v [Soper Pl/Lawson St - 2032 w Dev AM - Wapp exit only (Site Folder: 2032 w Dev - AM)]

Network: 5 [Network 2032 w Dev Mit - AM (Network Folder: General)]

Site Category: -
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson St - S														
1	L2	165	0.0	165	0.0	0.511	5.3	LOS A	1.3	9.6	0.50	0.65	0.52	21.9
2	T1	147	4.3	147	4.3	0.511	5.0	LOS A	1.3	9.6	0.50	0.65	0.52	21.5
3	R2	179	0.0	179	0.0	0.511	10.1	LOS A	1.3	9.6	0.50	0.65	0.52	48.3
Approach		492	1.3	492	1.3	0.511	7.0	LOS A	1.3	9.6	0.50	0.65	0.52	37.9
East: Site Access														
4	L2	146	0.0	146	0.0	0.374	6.7	LOS A	1.1	7.6	0.64	0.70	0.64	46.4
5	T1	1	0.0	1	0.0	0.374	6.9	LOS A	1.1	7.6	0.64	0.70	0.64	45.8
6	R2	220	0.0	220	0.0	0.374	11.0	LOS A	1.1	7.6	0.64	0.70	0.64	46.4
Approach		367	0.0	367	0.0	0.374	9.3	LOS A	1.1	7.6	0.64	0.70	0.64	46.4
North: Lawson Street - N														
7	L2	268	0.0	268	0.0	0.563	5.2	LOS A	2.0	13.9	0.41	0.53	0.41	48.1
8	T1	175	4.6	175	4.6	0.563	3.1	LOS A	2.0	13.9	0.41	0.53	0.41	27.8
9	R2	248	0.9	248	0.9	0.563	6.9	LOS A	2.0	13.9	0.41	0.53	0.41	12.3
Approach		692	1.5	692	1.5	0.563	5.3	LOS A	2.0	13.9	0.41	0.53	0.41	31.1
All Vehicles		1551	1.1	1551	1.1	0.563	6.8	LOS A	2.0	13.9	0.49	0.61	0.50	37.1

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

Site: [Henry St/Lawson St - 2032 w Dev Mit AM (Site Folder: 2032 w Dev - AM)]

Network: 5 [Network 2032 w Dev Mit - AM (Network Folder: General)]

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 110 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: Two-Phase
Reference Phase: Phase B
Input Phase Sequence: B, C, C1*, C2*, D
Output Phase Sequence: B, C, C1*, D
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson St - S														
1	L2	54	17.9	54	17.9	0.403	30.6	LOS C	5.3	39.8	0.69	0.62	0.69	18.1
2	T1	193	7.3	193	7.3	* 0.403	27.1	LOS B	5.3	39.8	0.69	0.62	0.69	12.2
3	R2	44	5.7	44	5.7	0.125	26.5	LOS B	0.8	6.0	0.58	0.64	0.58	22.4
Approach		291	9.0	291	9.0	0.403	27.7	LOS B	5.3	39.8	0.67	0.62	0.67	15.5
East: Henry St - E														
4	L2	165	0.0	165	0.0	0.523	32.2	LOS C	9.1	64.9	0.83	0.76	0.83	16.8
5	T1	487	3.1	487	3.1	0.523	28.0	LOS B	9.1	64.9	0.81	0.71	0.81	21.3
6	R2	259	1.1	259	1.1	* 0.880	59.2	LOS E	9.3	65.7	0.97	1.00	1.30	10.8
Approach		912	1.9	912	1.9	0.880	37.6	LOS C	9.3	65.7	0.86	0.80	0.95	16.9
North: Lawson St - N														
7	L2	117	0.0	117	0.0	0.106	12.9	LOS A	1.6	11.0	0.44	0.62	0.44	27.2
8	T1	140	6.7	140	6.7	0.302	29.8	LOS C	4.0	29.3	0.79	0.67	0.79	6.5
9	R2	22	0.0	22	0.0	0.302	33.3	LOS C	4.0	29.3	0.79	0.67	0.79	14.1
Approach		279	3.3	279	3.3	0.302	23.0	LOS B	4.0	29.3	0.64	0.65	0.64	16.1
West: Henry St - W														
10	L2	31	0.0	31	0.0	0.903	60.9	LOS E	14.2	103.2	1.00	1.11	1.32	6.9
11	T1	346	4.5	346	4.5	* 0.903	57.5	LOS E	14.2	103.2	1.00	1.11	1.32	14.5
12	R2	82	3.4	82	3.4	0.509	57.4	LOS E	2.7	19.5	1.00	0.77	1.00	6.9
Approach		459	4.0	459	4.0	0.903	57.7	LOS E	14.2	103.2	1.00	1.05	1.26	12.9
All Vehicles		1940	3.7	1940	3.7	0.903	38.8	LOS C	14.2	103.2	0.83	0.81	0.94	15.4

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

* Critical Movement (Signal Timing)

Site: [High St/Lawson St - 2032 w Dev Mit AM (Site Folder: 2032 w Dev - AM)]

Network: 5 [Network 2032 w Dev Mit - AM (Network Folder: General)]

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 110 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: Two-Phase
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: High Street - E														
5	T1	508	2.5	508	2.5	0.391	8.4	LOS A	6.7	50.1	0.47	0.44	0.47	32.4
6	R2	255	10.2	255	10.2	* 0.391	17.4	LOS B	6.7	50.1	0.64	0.69	0.64	22.9
Approach		763	5.0	763	5.0	0.391	11.4	LOS A	6.7	50.1	0.52	0.52	0.52	29.7
North: Lawson St - N														
7	L2	127	8.1	127	8.1	0.123	11.8	LOS A	1.8	13.4	0.55	0.65	0.55	29.6
9	R2	128	1.4	128	1.4	* 0.493	44.9	LOS D	3.5	25.0	0.86	0.76	0.86	15.5
Approach		256	4.8	256	4.8	0.493	28.4	LOS B	3.5	25.0	0.71	0.70	0.71	20.8
West: High Street - W														
10	L2	205	3.8	205	3.8	0.470	26.7	LOS B	5.3	38.0	0.86	0.79	0.86	16.1
11	T1	246	1.1	246	1.1	* 0.470	37.1	LOS C	5.9	41.4	0.91	0.76	0.91	20.2
Approach		452	2.3	452	2.3	0.470	32.4	LOS C	5.9	41.4	0.89	0.78	0.89	18.9
All Vehicles		1471	4.2	1471	4.2	0.493	20.8	LOS B	6.7	50.1	0.67	0.63	0.67	24.0

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

* Critical Movement (Signal Timing)

Organisation: STANTEC NEW ZEALAND | Licence: NETWORK / Enterprise | Created: Thursday, 8 September 2022 9:34:36 AM
Project: \\Corp.ads\gtadata\ProjectFilesSyd\300303389_61-79_henry_street_penrith\technical\modelling\sid_220905_3389_61_79_henry_street_penrith.sip9

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: sid_220719_3389_61_79_henry_street_penrith **Template: New User Report**

Site: v [GWH/Lawson - 2032 w Dev Mit PM - Conversion (Site Folder: 2032 w Dev PM)] **Network: 6 [Network 2032 w Dev Mit - PM (Network Folder: General)]**

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network Optimum Cycle Time - Minimum Delay)

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

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson Street														
1	L2	576	0.6	576	0.6	0.804	33.0	LOS C	12.1	85.0	0.94	0.90	1.01	24.1
3	R2	325	0.0	325	0.0	* 0.858	53.5	LOS D	10.7	75.2	1.00	1.00	1.25	21.9
Approach		901	0.4	901	0.4	0.858	40.4	LOS C	12.1	85.0	0.96	0.94	1.10	23.0
East: Great Western Higway (North Street)														
4	L2	187	2.1	187	2.1	0.476	27.7	LOS B	6.9	48.8	0.78	0.81	0.78	30.1
5	T1	834	1.2	834	1.2	* 0.833	32.1	LOS C	19.2	135.7	0.93	0.91	1.00	32.6
Approach		1021	1.3	1021	1.3	0.833	31.3	LOS C	19.2	135.7	0.90	0.89	0.96	32.3
West: Great Western Highway (Belmore Street)														
11	T1	665	0.6	665	0.6	0.496	8.2	LOS A	9.4	66.5	0.52	0.47	0.52	43.9
12	R2	493	0.0	493	0.0	* 0.852	49.4	LOS D	11.2	78.3	0.97	0.91	1.13	16.1
Approach		1158	0.4	1158	0.4	0.852	25.7	LOS B	11.2	78.3	0.71	0.66	0.78	31.6
All Vehicles		3080	0.7	3080	0.7	0.858	31.8	LOS C	19.2	135.7	0.85	0.82	0.93	29.4

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

* Critical Movement (Signal Timing)

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: sid_220719_3389_61_79_henry_street_penrith **Template: New User Report**

Site: [GWH/Lawson - 2042 w/out Dev - AM (Site Folder: 2042 w/out Dev - AM)]

Network: 16 [Network 2042 w/out Dev - AM (Network Folder: General)]

Site Category: -
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson Street														
1	L2	196	5.6	137	7.2	0.301	7.8	LOS A	0.9	6.4	0.88	0.87	0.88	36.4
3	R2	45	0.0	31	0.0	0.301	10.9	LOS B	0.9	6.4	0.88	0.87	0.88	41.2
3u	U	1	0.0	1	0.0	0.301	12.3	LOS B	0.9	6.4	0.88	0.87	0.88	20.8
Approach		242	4.5	168 N1	5.9	0.301	8.4	LOS A	0.9	6.4	0.88	0.87	0.88	37.5
East: Great Western Higway (North Street)														
4	L2	168	0.0	168	0.0	0.811	10.4	LOS B	5.6	40.7	0.94	0.91	1.18	39.0
5	T1	701	5.8	701	5.8	0.811	10.7	LOS B	5.6	40.7	0.94	0.91	1.18	43.0
6u	U	1	0.0	1	0.0	0.811	16.0	LOS B	5.6	40.7	0.94	0.91	1.18	44.8
Approach		871	4.7	871	4.7	0.811	10.7	LOS B	5.6	40.7	0.94	0.91	1.18	42.4
West: Great Western Highway (Belmore Street)														
11	T1	596	6.5	596	6.5	0.572	3.6	LOS A	2.8	20.5	0.30	0.44	0.30	46.2
12	R2	255	2.3	255	2.3	0.572	7.4	LOS A	2.8	20.5	0.30	0.44	0.30	40.2
12u	U	11	0.0	11	0.0	0.572	9.0	LOS A	2.8	20.5	0.30	0.44	0.30	46.2
Approach		861	5.2	861	5.2	0.572	4.8	LOS A	2.8	20.5	0.30	0.44	0.30	45.2
All Vehicles		1974	4.9	1900 N1	5.1	0.811	7.8	LOS A	5.6	40.7	0.65	0.69	0.76	43.3

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

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

Site: [Soper Pl/Lawson St - 2042 w/out Dev - AM (Site Folder: 2042 w/out Dev - AM)]

Network: 16 [Network 2042 w/out Dev - AM (Network Folder: General)]

Site Category: -
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson St - S														
1	L2	165	0.0	95	0.0	0.106	3.4	LOS A	0.0	0.0	0.00	0.22	0.00	18.5
2	T1	179	4.3	105	6.3	0.106	0.0	LOS A	0.0	0.0	0.00	0.22	0.00	31.0
Approach		344	2.3	200 N1	3.3	0.106	1.6	NA	0.0	0.0	0.00	0.22	0.00	22.2
North: Lawson Street - N														
8	T1	220	4.6	220	4.6	0.121	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	40.0
9	R2	248	0.9	248	0.9	0.163	4.2	LOS A	0.4	2.8	0.34	0.48	0.34	26.7
Approach		468	2.6	468	2.6	0.163	2.3	NA	0.4	2.8	0.18	0.26	0.18	30.7
West: Soper Place														
10	L2	1	3.7	1	3.7	0.002	3.3	LOS A	0.0	0.0	0.23	0.46	0.23	18.7
12	R2	1	0.0	1	0.0	0.002	6.8	LOS A	0.0	0.0	0.23	0.46	0.23	18.7
Approach		2	1.9	2	1.9	0.002	5.0	LOS A	0.0	0.0	0.23	0.46	0.23	18.7
All Vehicles		815	2.5	671 N1	3.0	0.163	2.1	NA	0.4	2.8	0.13	0.25	0.13	28.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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

Site: [Henry St/Lawson St - 2042 w/out Dev - AM (Site Folder: 2042 w/out Dev - AM)]

Network: 16 [Network 2042 w/out Dev - AM (Network Folder: General)]

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 150 seconds (Network Practical Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: Two-Phase
Reference Phase: Phase B
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson St - S														
1	L2	66	17.9	66	17.9	0.095	30.4	LOS C	1.5	12.2	0.55	0.64	0.55	17.3
2	T1	121	7.3	121	7.3	* 0.885	81.3	LOS F	8.7	64.2	1.00	0.95	1.18	5.1
3	R2	59	5.7	59	5.7	0.885	84.8	LOS F	8.7	64.2	1.00	0.95	1.18	11.4
Approach		246	9.8	246	9.8	0.885	68.4	LOS E	8.7	64.2	0.88	0.87	1.01	9.1
East: Henry St - E														
4	L2	205	0.0	205	0.0	1.055	135.9	LOS F	59.6	425.1	1.00	1.36	1.61	5.6
5	T1	609	3.1	609	3.1	* 1.055	132.5	LOS F	59.6	425.1	1.00	1.36	1.61	7.8
6	R2	197	1.1	197	1.1	3.743	2501.2	LOS F	45.9	324.1	1.00	2.78	5.48	0.3
Approach		1012	2.1	1012	2.1	3.743	594.1	LOS F	59.6	425.1	1.00	1.64	2.36	1.8
North: Lawson St - N														
7	L2	68	0.0	68	0.0	0.312	63.9	LOS E	3.6	25.7	0.93	0.76	0.93	11.9
8	T1	89	6.7	89	6.7	0.312	62.0	LOS E	3.6	25.7	0.93	0.74	0.93	3.4
9	R2	9	0.0	9	0.0	0.312	66.0	LOS E	3.1	23.0	0.94	0.74	0.94	8.3
Approach		167	3.6	167	3.6	0.312	63.0	LOS E	3.6	25.7	0.93	0.75	0.93	7.7
West: Henry St - W														
10	L2	16	0.0	16	0.0	0.201	10.0	LOS A	3.1	22.5	0.34	0.29	0.34	25.4
11	T1	447	4.5	447	4.5	1.003	45.9	LOS D	15.2	110.5	0.69	0.74	0.98	12.8
12	R2	100	3.4	100	3.4	* 1.003	84.7	LOS F	15.2	110.5	1.00	1.13	1.57	3.5
Approach		563	4.2	563	4.2	1.003	51.7	LOS D	15.2	110.5	0.73	0.79	1.07	10.7
All Vehicles		1988	3.8	1988	3.8	3.743	330.7	LOS F	59.6	425.1	0.90	1.23	1.71	2.8

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: [High St/Lawson St - 2042 w/out Dev - AM (Site Folder: 2042 w/out Dev - AM)]

Network: 16 [Network 2042 w/out Dev - AM (Network Folder: General)]

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 150 seconds (Network Practical Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: Two-Phase
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: High Street - E														
5	T1	620	2.5	620	2.5	0.430	8.0	LOS A	9.0	67.0	0.39	0.38	0.39	33.1
6	R2	251	10.2	251	10.2	* 0.430	18.4	LOS B	9.0	67.0	0.61	0.66	0.61	22.4
Approach		871	4.7	871	4.7	0.430	11.0	LOS B	9.0	67.0	0.46	0.46	0.46	30.4
North: Lawson St - N														
7	L2	119	8.1	116	8.3	0.161	22.8	LOS C	2.7	20.4	0.62	0.68	0.62	23.8
9	R2	113	1.4	109	1.5	* 0.618	66.2	LOS E	4.5	31.9	0.95	0.78	0.96	12.0
Approach		232	4.9	225 N1	5.0	0.618	43.9	LOS D	4.5	31.9	0.78	0.73	0.79	16.5
West: High Street - W														
10	L2	202	3.8	202	3.8	0.243	19.5	LOS B	4.3	31.0	0.56	0.66	0.56	19.0
11	T1	300	1.1	300	1.1	* 0.624	34.7	LOS C	9.5	67.4	0.77	0.66	0.77	21.0
Approach		502	2.2	502	2.2	0.624	28.6	LOS C	9.5	67.4	0.68	0.66	0.68	20.5
All Vehicles		1604	3.9	1598 N 1	3.9	0.624	21.2	LOS C	9.5	67.4	0.57	0.56	0.57	24.2

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: sid_220719_3389_61_79_henry_street_penrith **Template: New User Report**

Site: [GWH/Lawson - 2042 w/out Dev PM (Site Folder: 2042 w/out Dev PM)] **Network: 17 [Network 2042 w/out Dev - PM (Network Folder: General)]**

Site Category: -
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson Street														
1	L2	415	0.6	358	0.6	1.173	193.8	LOS F	12.1	85.0	1.00	4.29	7.23	6.5
3	R2	213	0.0	184	0.0	1.173	197.1	LOS F	12.1	85.0	1.00	4.29	7.23	9.1
3u	U	1	0.0	1	0.0	1.173	198.5	LOS F	12.1	85.0	1.00	4.29	7.23	1.9
Approach		628	0.4	543 N1	0.4	1.173	194.9	LOS F	12.1	85.0	1.00	4.29	7.23	7.4
East: Great Western Higway (North Street)														
4	L2	78	2.1	78	2.1	1.232	225.6	LOS F	62.2	440.1	1.00	5.52	9.61	7.2
5	T1	1016	1.2	1016	1.2	1.232	225.6	LOS F	62.2	440.1	1.00	5.52	9.61	10.5
6u	U	3	0.0	3	0.0	1.232	231.0	LOS F	62.2	440.1	1.00	5.52	9.61	12.4
Approach		1097	1.2	1097	1.2	1.232	225.6	LOS F	62.2	440.1	1.00	5.52	9.61	10.3
West: Great Western Highway (Belmore Street)														
11	T1	811	0.6	811	0.6	0.977	20.0	LOS C	17.4	122.5	1.00	0.95	1.49	37.4
12	R2	369	0.0	369	0.0	0.977	23.8	LOS C	17.4	122.5	1.00	0.95	1.49	26.6
12u	U	33	0.0	33	0.0	0.977	25.5	LOS C	17.4	122.5	1.00	0.95	1.49	35.3
Approach		1213	0.4	1213	0.4	0.977	21.3	LOS C	17.4	122.5	1.00	0.95	1.49	35.2
All Vehicles		2938	0.7	2852 N1	0.7	1.232	132.9	LOS F	62.2	440.1	1.00	3.34	5.70	13.6

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

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

Site: [Soper Pl/Lawson St - 2042 w/out Dev PM (Site Folder: 2042 w/out Dev PM)]

Network: 17 [Network 2042 w/out Dev - PM (Network Folder: General)]

Site Category: -
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson St - S														
1	L2	46	2.6	28	3.9	0.097	3.4	LOS A	7.0	50.0	0.00	0.07	0.00	19.6
2	T1	268	1.3	159	2.0	0.097	0.0	LOS A	7.0	50.0	0.00	0.07	0.00	36.8
Approach		315	1.5	186[N1]	2.2	0.097	0.5	NA	7.0	50.0	0.00	0.07	0.00	31.0
North: Lawson Street - N														
8	T1	442	0.0	429	0.0	0.228	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	39.9
9	R2	53	0.0	51	0.0	0.033	4.1	LOS A	0.1	0.5	0.29	0.46	0.29	27.0
Approach		495	0.0	480[N1]	0.0	0.228	0.4	NA	0.1	0.5	0.03	0.05	0.03	37.4
West: Soper Place														
10	L2	1	0.0	1	0.0	0.004	3.4	LOS A	0.1	0.7	0.31	0.47	0.31	18.0
12	R2	1	1.0	1	1.0	0.004	7.4	LOS A	0.1	0.7	0.31	0.47	0.31	18.0
Approach		2	0.5	2	0.5	0.004	5.4	LOS A	0.1	0.7	0.31	0.47	0.31	18.0
All Vehicles		812	0.6	669[N1]	0.7	0.228	0.5	NA	7.0	50.0	0.02	0.06	0.02	35.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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

Site: [Henry St/Lawson St - 2042 w/out Dev PM (Site Folder: 2042 w/out Dev PM)]

Network: 17 [Network 2042 w/out Dev - PM (Network Folder: General)]

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 150 seconds (Network Practical Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: Two-Phase
Reference Phase: Phase B
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson St - S														
1	L2	158	3.2	153	3.1	0.108	7.5	LOS A	1.8	12.9	0.29	0.57	0.29	30.5
2	T1	115	1.4	111	1.4	* 1.655	649.7	LOS F	17.1	120.0	1.00	2.51	3.53	0.7
3	R2	162	0.0	158	0.0	1.655	653.1	LOS F	17.1	120.0	1.00	2.51	3.53	1.8
Approach		435	1.6	422 N1	1.5	1.655	417.8	LOS F	17.1	120.0	0.74	1.81	2.35	2.1
East: Henry St - E														
4	L2	205	0.0	205	0.0	5.632	4216.5	LOS F	240.4	1718.9	1.00	4.55	5.98	0.2
5	T1	740	3.2	740	3.2	* 5.632	4213.1	LOS F	240.4	1718.9	1.00	4.55	5.98	0.3
6	R2	136	0.0	136	0.0	5.137	3754.5	LOS F	34.5	241.7	1.00	2.40	5.91	0.2
Approach		1081	2.2	1081	2.2	5.632	4156.1	LOS F	240.4	1718.9	1.00	4.28	5.97	0.3
North: Lawson St - N														
7	L2	187	0.0	182	0.0	0.319	13.3	LOS B	5.8	40.6	0.43	0.53	0.43	28.0
8	T1	203	0.0	197	0.0	0.319	22.1	LOS C	5.8	40.6	0.55	0.58	0.55	7.9
9	R2	21	5.9	20	6.1	0.319	62.4	LOS E	2.8	19.7	0.91	0.74	0.91	8.6
Approach		412	0.3	399 N1	0.3	0.319	20.2	LOS C	5.8	40.6	0.52	0.56	0.52	17.7
West: Henry St - W														
10	L2	28	0.0	28	0.0	0.711	66.9	LOS E	8.0	57.3	0.97	0.94	1.01	6.3
11	T1	785	2.8	785	2.8	3.551	1873.4	LOS F	160.4	1150.8	0.99	3.39	4.49	0.7
12	R2	89	3.8	89	3.8	* 3.551	2343.4	LOS F	160.4	1150.8	1.00	4.02	5.38	0.2
Approach		903	2.8	903	2.8	3.551	1863.1	LOS F	160.4	1150.8	0.99	3.38	4.47	0.6
All Vehicles		2831	2.0	2806 N1	2.0	5.632	2266.7	LOS F	240.4	1718.9	0.89	3.09	4.17	0.5

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Site: [High St/Lawson St - 2042 w/out Dev PM (Site Folder: 2042 w/out Dev PM)]

Network: 17 [Network 2042 w/out Dev - PM (Network Folder: General)]

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 150 seconds (Network Practical Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: Two-Phase
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: High Street - E														
5	T1	526	0.0	526	0.0	0.352	5.2	LOS A	6.9	48.6	0.33	0.30	0.33	35.2
6	R2	314	2.8	314	2.8	* 0.635	41.8	LOS D	11.7	83.6	0.94	0.99	0.94	13.8
Approach		840	1.1	840	1.1	0.635	18.9	LOS B	11.7	83.6	0.56	0.56	0.56	25.2
North: Lawson St - N														
7	L2	183	5.4	120	6.8	0.286	41.6	LOS D	4.2	30.8	0.87	0.75	0.87	17.7
9	R2	248	0.6	161	0.7	* 0.971	107.6	LOS F	9.0	63.4	1.00	1.13	1.58	8.3
Approach		432	2.6	281 N1	3.3	0.971	79.4	LOS E	9.0	63.4	0.94	0.97	1.28	11.1
West: High Street - W														
10	L2	469	0.7	469	0.7	0.407	11.2	LOS B	7.5	53.1	0.45	0.64	0.45	24.4
11	T1	612	0.0	612	0.0	* 0.984	78.3	LOS E	30.0	209.7	0.70	0.94	1.09	13.1
Approach		1081	0.3	1081	0.3	0.984	49.2	LOS D	30.0	209.7	0.59	0.81	0.81	14.9
All Vehicles		2353	1.0	2202 N1	1.1	0.984	41.5	LOS D	30.0	209.7	0.62	0.73	0.78	17.0

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: sid_220719_3389_61_79_henry_street_penrith **Template: New User Report**

Site: v [GWH/Lawson - 2042 w/out Dev - AM - Conversion (Site Folder: 2042 w/out Dev - AM)] **Network: 18 [Network 2042 w/out Dev Mit - AM (Network Folder: General)]**

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network Optimum Cycle Time - Minimum Delay)

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

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson Street														
1	L2	196	5.6	196	5.6	0.384	21.9	LOS C	3.2	23.3	0.64	0.69	0.64	28.0
3	R2	45	0.0	45	0.0	* 0.171	49.1	LOS D	1.3	9.2	0.99	0.75	0.99	22.9
Approach		241	4.6	241	4.6	0.384	27.0	LOS C	3.2	23.3	0.70	0.70	0.70	26.5
East: Great Western Higway (North Street)														
4	L2	168	0.0	168	0.0	0.325	18.3	LOS B	4.2	30.0	0.61	0.69	0.61	35.0
5	T1	701	5.8	701	5.8	* 0.568	17.4	LOS B	11.3	83.2	0.72	0.67	0.72	38.6
Approach		869	4.7	869	4.7	0.568	17.6	LOS B	11.3	83.2	0.70	0.67	0.70	38.1
West: Great Western Highway (Belmore Street)														
11	T1	596	6.5	596	6.5	0.424	5.2	LOS A	6.6	49.0	0.41	0.37	0.41	46.0
12	R2	255	2.3	255	2.3	* 0.568	46.1	LOS D	5.1	36.2	0.95	0.79	0.95	16.8
Approach		851	5.3	851	5.3	0.568	17.4	LOS B	6.6	49.0	0.57	0.50	0.57	36.8
All Vehicles		1961	4.9	1961	4.9	0.568	18.7	LOS B	11.3	83.2	0.64	0.60	0.64	36.3

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: sid_220719_3389_61_79_henry_street_penrith **Template: New User Report**

Site: v [GWH/Lawson - 2042 w/out Dev PM - Conversion (Site Folder: 2042 w/out Dev PM)] **Network: 19 [Network 2042 w/out Dev Mit - PM (Network Folder: General)]**

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 110 seconds (Network Optimum Cycle Time - Minimum Delay)

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

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson Street														
1	L2	415	0.6	415	0.6	0.699	38.1	LOS D	11.3	79.6	0.98	0.85	0.98	22.3
3	R2	213	0.0	213	0.0	* 0.726	53.5	LOS D	7.1	49.6	1.00	0.86	1.06	21.9
Approach		627	0.4	627	0.4	0.726	43.3	LOS D	11.3	79.6	0.99	0.86	1.01	22.1
East: Great Western Higway (North Street)														
4	L2	78	2.1	78	2.1	0.415	26.9	LOS C	7.9	55.7	0.68	0.67	0.68	31.1
5	T1	1016	1.2	1016	1.2	* 0.726	24.4	LOS C	18.0	127.5	0.80	0.74	0.80	35.9
Approach		1094	1.2	1094	1.2	0.726	24.6	LOS C	18.0	127.5	0.79	0.74	0.79	35.6
West: Great Western Highway (Belmore Street)														
11	T1	811	0.6	811	0.6	0.558	6.8	LOS A	11.7	82.3	0.49	0.45	0.49	44.8
12	R2	369	0.0	369	0.0	* 0.722	50.2	LOS D	8.4	58.6	0.97	0.84	1.01	15.9
Approach		1180	0.4	1180	0.4	0.722	20.4	LOS C	11.7	82.3	0.64	0.57	0.65	35.1
All Vehicles		2901	0.7	2901	0.7	0.726	26.9	LOS C	18.0	127.5	0.77	0.69	0.78	32.4

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: sid_220719_3389_61_79_henry_street_penrith **Template: New User Report**

Site: v [GWH/Lawson - 2042 w Dev AM - Conversion (Site Folder: 2042 w Dev - AM)] **Network: 20 [Network 2042 w Dev Mit - AM (Network Folder: General)]**

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: Opposed Turns
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson Street														
1	L2	325	5.6	325	5.6	0.637	33.0	LOS C	7.7	56.7	0.93	0.82	0.93	23.3
3	R2	133	0.0	133	0.0	* 0.500	47.6	LOS D	3.8	26.5	0.97	0.79	0.97	23.3
Approach		458	4.0	458	4.0	0.637	37.2	LOS D	7.7	56.7	0.94	0.81	0.94	23.3
East: Great Western Higway (North Street)														
4	L2	274	0.0	274	0.0	0.358	15.2	LOS B	4.3	30.3	0.60	0.71	0.60	36.7
5	T1	701	5.8	701	5.8	* 0.627	18.0	LOS B	13.1	96.0	0.75	0.70	0.75	38.3
Approach		975	4.2	975	4.2	0.627	17.2	LOS B	13.1	96.0	0.71	0.70	0.71	38.0
West: Great Western Highway (Belmore Street)														
11	T1	596	6.5	596	6.5	0.424	5.2	LOS A	6.6	49.0	0.41	0.37	0.41	46.0
12	R2	411	2.3	411	2.3	* 0.916	59.2	LOS E	10.5	74.8	0.98	0.98	1.29	14.1
Approach		1006	4.8	1006	4.8	0.916	27.2	LOS C	10.5	74.8	0.64	0.62	0.77	31.1
All Vehicles		2439	4.4	2439	4.4	0.916	25.1	LOS C	13.1	96.0	0.73	0.69	0.78	32.3

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: sid_220719_3389_61_79_henry_street_penrith **Template: New User Report**

Site: v [GWH/Lawson - 2042 w Dev PM - Conversion (Site Folder: 2042 w Dev PM)] **Network: 21 [Network 2042 w Dev Mit - PM (Network Folder: General)]**

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 110 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: Opposed Turns
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson Street														
1	L2	605	0.6	593	0.6	0.905	54.7	LOS D	12.1	85.0	0.99	1.05	1.23	18.5
3	R2	341	0.0	334	0.0	* 1.021	108.8	LOS F	12.1	85.0	1.00	1.34	1.81	14.0
Approach		946	0.4	928 N1	0.4	1.021	74.2	LOS E	12.1	85.0	1.00	1.16	1.44	16.1
East: Great Western Higway (North Street)														
4	L2	200	2.1	200	2.1	0.510	28.8	LOS C	9.2	65.4	0.76	0.80	0.76	29.7
5	T1	1016	1.2	1016	1.2	* 0.892	38.4	LOS D	27.5	194.5	0.94	0.97	1.05	30.8
Approach		1216	1.3	1216	1.3	0.892	36.8	LOS D	27.5	194.5	0.91	0.94	1.01	30.6
West: Great Western Highway (Belmore Street)														
11	T1	811	0.6	811	0.6	0.572	7.8	LOS A	12.5	88.0	0.52	0.48	0.52	44.2
12	R2	551	0.0	551	0.0	* 1.025	91.7	LOS F	19.9	139.0	0.97	1.11	1.52	10.1
Approach		1361	0.4	1361	0.4	1.025	41.8	LOS D	19.9	139.0	0.70	0.73	0.93	25.8
All Vehicles		3523	0.7	3504 N1	0.7	1.025	48.6	LOS D	27.5	194.5	0.85	0.92	1.09	24.5

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: sid_220905_3389_61_79_henry_street_penrith **Template: New User Report**

Site: v [GWH/Lawson - 2032 w Dev Mit AM - additional - Conversion (Site Folder: 2032 w Dev - AM)]

Network: 24 [Network 2032 w Dev Mit - AM - Additional (Network Folder: General)]

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 110 seconds (Network Optimum Cycle Time - Minimum Delay)

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

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson Street														
1	L2	305	5.6	305	5.6	0.381	25.5	LOS B	4.3	31.5	0.75	0.72	0.75	25.8
3	R2	128	0.0	128	0.0	* 0.497	52.1	LOS D	4.0	28.2	0.97	0.79	0.97	22.2
Approach		434	4.0	434	4.0	0.497	33.3	LOS C	4.3	31.5	0.82	0.74	0.82	24.3
East: Great Western Higway (North Street)														
4	L2	261	0.0	261	0.0	0.348	18.0	LOS B	4.9	34.5	0.65	0.73	0.65	34.6
5	T1	575	5.8	575	5.8	* 0.590	22.9	LOS B	12.5	91.6	0.78	0.71	0.78	36.0
Approach		836	4.0	836	4.0	0.590	21.4	LOS B	12.5	91.6	0.74	0.72	0.74	35.7
West: Great Western Highway (Belmore Street)														
11	T1	488	6.5	488	6.5	0.341	4.7	LOS A	5.2	38.4	0.36	0.32	0.36	46.4
12	R2	393	2.3	393	2.3	* 0.601	43.6	LOS D	8.1	57.5	0.91	0.81	0.91	17.6
Approach		881	4.6	881	4.6	0.601	22.0	LOS B	8.1	57.5	0.60	0.54	0.60	33.3
All Vehicles		2151	4.2	2151	4.2	0.601	24.0	LOS B	12.5	91.6	0.70	0.65	0.70	32.5

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

* Critical Movement (Signal Timing)

Site: v [Soper Pl/Lawson St - 2032 w Dev AM - Wapp exit only (Site Folder: 2032 w Dev - AM)]

Network: 24 [Network 2032 w Dev Mit - AM - Additional (Network Folder: General)]

Site Category: -
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson St - S														
1	L2	165	0.0	165	0.0	0.508	5.3	LOS A	1.3	9.5	0.50	0.65	0.51	21.9
2	T1	147	4.3	147	4.3	0.508	5.0	LOS A	1.3	9.5	0.50	0.65	0.51	21.5
3	R2	179	0.0	179	0.0	0.508	10.1	LOS A	1.3	9.5	0.50	0.65	0.51	48.3
Approach		492	1.3	492	1.3	0.508	7.0	LOS A	1.3	9.5	0.50	0.65	0.51	37.9
East: Site Access														
4	L2	146	0.0	146	0.0	0.368	6.7	LOS A	1.1	7.6	0.64	0.70	0.64	46.4
5	T1	1	0.0	1	0.0	0.368	6.9	LOS A	1.1	7.6	0.64	0.70	0.64	45.8
6	R2	220	0.0	220	0.0	0.368	11.0	LOS A	1.1	7.6	0.64	0.70	0.64	46.4
Approach		367	0.0	367	0.0	0.368	9.3	LOS A	1.1	7.6	0.64	0.70	0.64	46.4
North: Lawson Street - N														
7	L2	268	0.0	268	0.0	0.563	5.2	LOS A	2.0	13.9	0.41	0.53	0.41	48.1
8	T1	175	4.6	175	4.6	0.563	3.1	LOS A	2.0	13.9	0.41	0.53	0.41	27.8
9	R2	248	0.9	248	0.9	0.563	6.9	LOS A	2.0	13.9	0.41	0.53	0.41	12.3
Approach		692	1.5	692	1.5	0.563	5.3	LOS A	2.0	13.9	0.41	0.53	0.41	31.1
All Vehicles		1551	1.1	1551	1.1	0.563	6.8	LOS A	2.0	13.9	0.49	0.61	0.50	37.1

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

Site: [Henry St/Lawson St - 2032 w Dev Mit AM (Site Folder: 2032 w Dev - AM)]

Network: 24 [Network 2032 w Dev Mit - AM - Additional (Network Folder: General)]

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 110 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: Two-Phase
Reference Phase: Phase B
Input Phase Sequence: B, C, C1*, C2*, D
Output Phase Sequence: B, C, C1*, D
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson St - S														
1	L2	54	17.9	54	17.9	0.403	30.6	LOS C	5.3	39.8	0.69	0.62	0.69	18.1
2	T1	193	7.3	193	7.3	* 0.403	27.1	LOS B	5.3	39.8	0.69	0.62	0.69	12.2
3	R2	44	5.7	44	5.7	0.125	26.5	LOS B	0.8	6.0	0.58	0.64	0.58	22.4
Approach		291	9.0	291	9.0	0.403	27.7	LOS B	5.3	39.8	0.67	0.62	0.67	15.5
East: Henry St - E														
4	L2	165	0.0	165	0.0	0.523	32.2	LOS C	9.1	64.9	0.83	0.76	0.83	16.8
5	T1	487	3.1	487	3.1	0.523	28.0	LOS B	9.1	64.9	0.81	0.71	0.81	21.3
6	R2	259	1.1	259	1.1	* 0.880	59.2	LOS E	9.3	65.7	0.97	1.00	1.30	10.8
Approach		912	1.9	912	1.9	0.880	37.6	LOS C	9.3	65.7	0.86	0.80	0.95	16.9
North: Lawson St - N														
7	L2	117	0.0	117	0.0	0.106	12.9	LOS A	1.6	11.0	0.44	0.62	0.44	27.2
8	T1	140	6.7	140	6.7	0.302	29.8	LOS C	4.0	29.3	0.79	0.67	0.79	6.5
9	R2	22	0.0	22	0.0	0.302	33.3	LOS C	4.0	29.3	0.79	0.67	0.79	14.1
Approach		279	3.3	279	3.3	0.302	23.0	LOS B	4.0	29.3	0.64	0.65	0.64	16.1
West: Henry St - W														
10	L2	31	0.0	31	0.0	0.903	60.9	LOS E	14.2	103.2	1.00	1.11	1.32	6.9
11	T1	346	4.5	346	4.5	* 0.903	57.5	LOS E	14.2	103.2	1.00	1.11	1.32	14.5
12	R2	82	3.4	82	3.4	0.509	57.4	LOS E	2.7	19.5	1.00	0.77	1.00	6.9
Approach		459	4.0	459	4.0	0.903	57.7	LOS E	14.2	103.2	1.00	1.05	1.26	12.9
All Vehicles		1940	3.7	1940	3.7	0.903	38.8	LOS C	14.2	103.2	0.83	0.81	0.94	15.4

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

* Critical Movement (Signal Timing)

Site: [High St/Lawson St - 2032 w Dev Mit AM (Site Folder: 2032 w Dev - AM)]

Network: 24 [Network 2032 w Dev Mit - AM - Additional (Network Folder: General)]

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 110 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: Two-Phase
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: High Street - E														
5	T1	508	2.5	508	2.5	0.391	8.4	LOS A	6.7	50.1	0.47	0.44	0.47	32.4
6	R2	255	10.2	255	10.2	* 0.391	17.4	LOS B	6.7	50.1	0.64	0.69	0.64	22.9
Approach		763	5.0	763	5.0	0.391	11.4	LOS A	6.7	50.1	0.52	0.52	0.52	29.7
North: Lawson St - N														
7	L2	127	8.1	127	8.1	0.123	11.8	LOS A	1.8	13.4	0.55	0.65	0.55	29.6
9	R2	128	1.4	128	1.4	* 0.493	44.9	LOS D	3.5	25.0	0.86	0.76	0.86	15.5
Approach		256	4.8	256	4.8	0.493	28.4	LOS B	3.5	25.0	0.71	0.70	0.71	20.8
West: High Street - W														
10	L2	205	3.8	205	3.8	0.470	26.7	LOS B	5.3	38.0	0.86	0.79	0.86	16.1
11	T1	246	1.1	246	1.1	* 0.470	37.1	LOS C	5.9	41.4	0.91	0.76	0.91	20.2
Approach		452	2.3	452	2.3	0.470	32.4	LOS C	5.9	41.4	0.89	0.78	0.89	18.9
All Vehicles		1471	4.2	1471	4.2	0.493	20.8	LOS B	6.7	50.1	0.67	0.63	0.67	24.0

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

* Critical Movement (Signal Timing)

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: sid_220905_3389_61_79_henry_street_penrith **Template: New User Report**

Site: v [GWH/Lawson - 2032 w Dev Mit PM - additional - Conversion (Site Folder: 2032 w Dev PM)]

Network: 25 [Network 2032 w Dev Mit - PM - Additional (Network Folder: General)]

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network Optimum Cycle Time - Minimum Delay)

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

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson Street														
1	L2	576	0.6	576	0.6	0.617	23.1	LOS B	7.8	55.1	0.78	0.76	0.78	27.5
3	R2	325	0.0	325	0.0	* 0.817	49.5	LOS D	10.2	71.5	1.00	0.95	1.17	22.9
Approach		901	0.4	901	0.4	0.817	32.6	LOS C	10.2	71.5	0.86	0.83	0.92	25.2
East: Great Western Higway (North Street)														
4	L2	187	2.1	187	2.1	0.499	28.6	LOS C	7.3	51.7	0.80	0.81	0.80	29.7
5	T1	834	1.2	834	1.2	* 0.845	34.1	LOS C	19.5	138.0	0.94	0.93	1.02	32.1
Approach		1021	1.3	1021	1.3	0.845	33.1	LOS C	19.5	138.0	0.91	0.91	0.98	31.8
West: Great Western Highway (Belmore Street)														
11	T1	665	0.6	665	0.6	0.503	8.7	LOS A	9.7	68.6	0.54	0.49	0.54	43.6
12	R2	493	0.0	493	0.0	* 0.841	48.6	LOS D	10.9	76.5	0.97	0.90	1.11	16.4
Approach		1158	0.4	1158	0.4	0.841	25.7	LOS B	10.9	76.5	0.72	0.67	0.78	31.7
All Vehicles		3080	0.7	3080	0.7	0.845	30.1	LOS C	19.5	138.0	0.82	0.79	0.89	30.0

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

* Critical Movement (Signal Timing)

Site: v [Soper Pl/Lawson St - 2032 w Dev PM - Wapp exit only (Site Folder: 2032 w Dev PM)]

Network: 25 [Network 2032 w Dev Mit - PM - Additional (Network Folder: General)]

Site Category: -
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson St - S														
1	L2	46	2.6	46	2.6	0.578	4.7	LOS A	1.2	8.6	0.45	0.65	0.48	23.1
2	T1	216	1.3	216	1.3	0.578	4.3	LOS A	1.2	8.6	0.45	0.65	0.48	23.2
3	R2	204	0.0	204	0.0	0.578	9.4	LOS A	1.2	8.6	0.45	0.65	0.48	48.9
Approach		466	0.8	466	0.8	0.578	6.6	LOS A	1.2	8.6	0.45	0.65	0.48	41.4
East: Site Access														
4	L2	216	0.0	216	0.0	0.735	10.4	LOS A	2.6	18.3	0.73	0.82	0.92	42.6
5	T1	1	0.0	1	0.0	0.735	10.5	LOS A	2.6	18.3	0.73	0.82	0.92	42.4
6	R2	324	0.0	324	0.0	0.735	14.7	LOS B	2.6	18.3	0.73	0.82	0.92	42.6
Approach		541	0.0	541	0.0	0.735	12.9	LOS A	2.6	18.3	0.73	0.82	0.92	42.6
North: Lawson Street - N														
7	L2	307	0.0	307	0.0	0.646	5.5	LOS A	2.2	15.4	0.42	0.49	0.42	49.0
8	T1	359	0.0	359	0.0	0.646	3.3	LOS A	2.2	15.4	0.42	0.49	0.42	29.0
9	R2	53	0.0	53	0.0	0.646	7.2	LOS A	2.2	15.4	0.42	0.49	0.42	12.2
Approach		719	0.0	719	0.0	0.646	4.5	LOS A	2.2	15.4	0.42	0.49	0.42	40.5
All Vehicles		1726	0.2	1726	0.2	0.735	7.7	LOS A	2.6	18.3	0.53	0.64	0.59	41.6

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

Site: [Henry St/Lawson St - 2032 w Dev Mit PM (Site Folder: 2032 w Dev PM)]

Network: 25 [Network 2032 w Dev Mit - PM - Additional (Network Folder: General)]

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: Two-Phase
Reference Phase: Phase B
Input Phase Sequence: B, C, C1*, C2*, D
Output Phase Sequence: B, C, C1*, D
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson St - S														
1	L2	129	3.2	129	3.2	0.706	41.6	LOS C	9.1	64.8	0.98	0.86	1.01	14.7
2	T1	191	1.4	191	1.4	* 0.706	38.1	LOS C	9.1	64.8	0.98	0.86	1.01	9.4
3	R2	131	0.0	131	0.0	0.717	48.3	LOS D	3.9	27.4	0.98	0.84	1.06	16.3
Approach		451	1.5	451	1.5	0.717	42.1	LOS C	9.1	64.8	0.98	0.85	1.02	13.5
East: Henry St - E														
4	L2	163	0.0	163	0.0	0.487	23.5	LOS B	8.6	61.2	0.75	0.70	0.75	20.3
5	T1	586	3.2	586	3.2	0.487	19.4	LOS B	8.6	61.2	0.72	0.64	0.72	24.8
6	R2	202	0.0	202	0.0	* 0.846	57.4	LOS E	6.7	46.9	1.00	0.98	1.31	11.0
Approach		952	2.0	952	2.0	0.846	28.2	LOS B	8.6	61.2	0.78	0.73	0.85	20.1
North: Lawson St - N														
7	L2	247	0.0	247	0.0	0.326	24.3	LOS B	4.9	34.6	0.71	0.74	0.71	21.1
8	T1	26	0.0	26	0.0	0.395	47.1	LOS D	1.9	13.8	0.97	0.75	0.97	4.2
9	R2	39	5.9	39	5.9	0.395	50.5	LOS D	1.9	13.8	0.97	0.75	0.97	10.0
Approach		313	0.7	313	0.7	0.395	29.5	LOS C	4.9	34.6	0.77	0.74	0.77	17.9
West: Henry St - W														
10	L2	44	0.0	44	0.0	0.913	48.4	LOS D	23.3	166.8	0.97	1.07	1.23	8.4
11	T1	633	2.8	633	2.8	* 0.913	45.0	LOS D	23.3	166.8	0.97	1.07	1.23	16.8
12	R2	74	3.8	74	3.8	0.462	52.7	LOS D	2.2	16.0	0.99	0.76	0.99	7.4
Approach		751	2.7	751	2.7	0.913	46.0	LOS D	23.3	166.8	0.97	1.04	1.21	15.6
All Vehicles		2465	2.0	2465	2.0	0.913	36.3	LOS C	23.3	166.8	0.87	0.85	0.98	17.0

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

* Critical Movement (Signal Timing)

Site: [High St/Lawson St - 2032 w Dev Mit PM (Site Folder: 2032 w Dev PM)]

Network: 25 [Network 2032 w Dev Mit - PM - Additional (Network Folder: General)]

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: Two-Phase
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: High Street - E														
5	T1	432	0.0	432	0.0	0.381	11.5	LOS A	6.7	47.1	0.57	0.50	0.57	30.8
6	R2	303	2.8	303	2.8	* 0.578	35.5	LOS C	7.2	51.5	0.90	0.99	0.90	15.3
Approach		735	1.2	735	1.2	0.578	21.4	LOS B	7.2	51.5	0.71	0.70	0.71	23.8
North: Lawson St - N														
7	L2	195	5.4	195	5.4	0.228	14.1	LOS A	2.4	17.3	0.50	0.64	0.50	28.2
9	R2	258	0.6	258	0.6	* 0.745	37.7	LOS C	6.3	44.6	0.82	0.82	0.90	17.2
Approach		453	2.7	453	2.7	0.745	27.6	LOS B	6.3	44.6	0.69	0.74	0.73	21.0
West: High Street - W														
10	L2	434	0.7	434	0.7	0.729	22.7	LOS B	7.9	55.9	0.91	0.89	0.91	17.7
11	T1	501	0.0	501	0.0	* 0.729	32.3	LOS C	11.5	80.7	0.95	0.86	0.97	21.6
Approach		935	0.3	935	0.3	0.729	27.8	LOS B	11.5	80.7	0.93	0.87	0.94	20.3
All Vehicles		2122	1.1	2122	1.1	0.745	25.6	LOS B	11.5	80.7	0.80	0.79	0.82	21.6

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

* Critical Movement (Signal Timing)

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: sid_220905_3389_61_79_henry_street_penrith **Template: New User Report**

Site: v [GWH/Lawson - 2042 w Dev AM - additional - Conversion (Site Folder: 2042 w Dev - AM)]

Network: 23 [Network 2042 w Dev Mit - AM - Additional (Network Folder: General)]

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: Opposed Turns
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson Street														
1	L2	325	5.6	325	5.6	0.506	29.2	LOS C	4.8	35.4	0.84	0.75	0.84	24.2
3	R2	133	0.0	133	0.0	* 0.500	47.6	LOS D	3.8	26.5	0.97	0.79	0.97	23.3
Approach		458	4.0	458	4.0	0.506	34.6	LOS C	4.8	35.4	0.88	0.76	0.88	23.9
East: Great Western Higway (North Street)														
4	L2	274	0.0	274	0.0	0.366	15.6	LOS B	4.2	30.1	0.61	0.71	0.61	36.5
5	T1	701	5.8	701	5.8	* 0.621	18.0	LOS B	12.9	94.5	0.75	0.70	0.75	38.4
Approach		975	4.2	975	4.2	0.621	17.3	LOS B	12.9	94.5	0.71	0.70	0.71	38.0
West: Great Western Highway (Belmore Street)														
11	T1	596	6.5	596	6.5	0.424	5.2	LOS A	6.6	49.0	0.41	0.37	0.41	46.0
12	R2	411	2.3	411	2.3	* 0.907	57.8	LOS E	10.2	72.8	0.98	0.97	1.27	14.5
Approach		1006	4.8	1006	4.8	0.907	26.7	LOS B	10.2	72.8	0.64	0.61	0.76	31.4
All Vehicles		2439	4.4	2439	4.4	0.907	24.4	LOS B	12.9	94.5	0.71	0.68	0.76	32.6

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

* Critical Movement (Signal Timing)

Site: v [Soper Pl/Lawson St - 2042 w Dev AM - Wapp exit only (Site Folder: 2042 w Dev - AM)]

Network: 23 [Network 2042 w Dev Mit - AM - Additional (Network Folder: General)]

Site Category: -
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson St - S														
1	L2	165	0.0	165	0.0	0.542	5.6	LOS A	1.5	10.9	0.52	0.67	0.55	21.6
2	T1	176	4.3	176	4.3	0.542	5.3	LOS A	1.5	10.9	0.52	0.67	0.55	21.1
3	R2	179	0.0	179	0.0	0.542	10.4	LOS A	1.5	10.9	0.52	0.67	0.55	48.0
3u	U	1	0.0	1	0.0	0.542	12.3	LOS A	1.5	10.9	0.52	0.67	0.55	21.1
Approach		521	1.5	521	1.5	0.542	7.2	LOS A	1.5	10.9	0.52	0.67	0.55	37.1
East: Site Access														
4	L2	143	0.0	143	0.0	0.425	7.1	LOS A	1.2	8.1	0.68	0.73	0.68	46.0
5	T1	1	0.0	1	0.0	0.425	7.3	LOS A	1.2	8.1	0.68	0.73	0.68	30.8
6	R2	220	0.0	220	0.0	0.425	11.4	LOS A	1.2	8.1	0.68	0.73	0.68	46.0
6u	U	1	0.0	1	0.0	0.425	13.3	LOS A	1.2	8.1	0.68	0.73	0.68	52.5
Approach		365	0.0	365	0.0	0.425	9.7	LOS A	1.2	8.1	0.68	0.73	0.68	45.9
North: Lawson Street - N														
7	L2	268	0.0	268	0.0	0.650	5.3	LOS A	2.2	15.8	0.43	0.53	0.43	48.1
8	T1	214	4.6	214	4.6	0.650	3.2	LOS A	2.2	15.8	0.43	0.53	0.43	27.7
9	R2	248	0.9	248	0.9	0.650	7.0	LOS A	2.2	15.8	0.43	0.53	0.43	12.3
9u	U	1	0.0	1	0.0	0.650	11.6	LOS A	2.2	15.8	0.43	0.53	0.43	27.7
Approach		732	1.6	732	1.6	0.650	5.3	LOS A	2.2	15.8	0.43	0.53	0.43	31.0
All Vehicles		1618	1.2	1618	1.2	0.650	6.9	LOS A	2.2	15.8	0.51	0.62	0.53	36.6

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

Site: [Henry St/Lawson St - 2042 w Dev AM Mit (Site Folder: 2042 w Dev - AM)]

Network: 23 [Network 2042 w Dev Mit - AM - Additional (Network Folder: General)]

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: Two-Phase
Reference Phase: Phase B
Input Phase Sequence: B, C, C1*, C2*, D
Output Phase Sequence: B, C, C2*, D
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson St - S														
1	L2	66	17.9	66	17.9	0.762	47.8	LOS D	8.2	62.1	1.00	0.93	1.11	13.5
2	T1	201	7.3	201	7.3	* 0.762	44.3	LOS D	8.2	62.1	1.00	0.93	1.11	8.5
3	R2	55	5.7	55	5.7	0.329	46.6	LOS D	1.5	11.1	0.91	0.73	0.91	16.7
Approach		322	9.2	322	9.2	0.762	45.4	LOS D	8.2	62.1	0.99	0.89	1.08	11.4
East: Henry St - E														
4	L2	202	0.0	202	0.0	0.890	52.1	LOS D	13.3	94.2	0.97	1.05	1.27	12.2
5	T1	597	3.1	597	3.1	* 0.890	48.5	LOS D	13.3	94.2	0.96	1.06	1.27	16.0
6	R2	274	1.1	274	1.1	* 0.893	56.7	LOS E	9.2	65.3	0.96	1.03	1.36	11.1
Approach		1073	2.0	1073	2.0	0.893	51.3	LOS D	13.3	95.4	0.96	1.05	1.29	14.1
North: Lawson St - N														
7	L2	128	0.0	128	0.0	0.493	40.0	LOS C	5.3	38.0	0.92	0.79	0.92	16.3
8	T1	156	6.7	156	6.7	0.493	41.3	LOS C	5.3	38.0	0.95	0.78	0.95	4.8
9	R2	23	0.0	23	0.0	0.493	48.9	LOS D	3.1	22.6	0.97	0.77	0.97	10.5
Approach		307	3.4	307	3.4	0.493	41.4	LOS C	5.3	38.0	0.94	0.78	0.94	10.8
West: Henry St - W														
10	L2	34	0.0	34	0.0	0.746	33.8	LOS C	12.0	87.2	0.91	0.82	0.94	11.2
11	T1	427	4.5	427	4.5	0.746	30.4	LOS C	12.0	87.2	0.91	0.82	0.94	20.6
12	R2	100	3.4	100	3.4	0.188	31.5	LOS C	2.2	16.0	0.78	0.73	0.78	11.0
Approach		561	4.1	561	4.1	0.746	30.8	LOS C	12.0	87.2	0.89	0.80	0.91	18.9
All Vehicles		2263	3.7	2263	3.7	0.893	44.0	LOS D	13.3	95.4	0.94	0.93	1.12	14.4

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

* Critical Movement (Signal Timing)

Site: [High St/Lawson St - 2042 w Dev AM Mit (Site Folder: 2042 w Dev - AM)]

Network: 23 [Network 2042 w Dev Mit - AM - Additional (Network Folder: General)]

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network Optimum Cycle Time - Minimum Delay)

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

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: High Street - E														
5	T1	620	2.5	620	2.5	0.480	9.2	LOS A	7.4	55.2	0.52	0.50	0.52	31.9
6	R2	287	10.2	287	10.2	* 0.480	19.9	LOS B	7.4	55.2	0.71	0.81	0.71	21.6
Approach		907	4.9	907	4.9	0.480	12.6	LOS A	7.4	55.2	0.58	0.60	0.58	29.0
North: Lawson St - N														
7	L2	148	8.1	148	8.1	0.148	11.8	LOS A	2.0	14.9	0.58	0.67	0.58	29.6
9	R2	149	1.4	149	1.4	* 0.594	41.9	LOS C	3.8	26.8	0.87	0.76	0.87	16.1
Approach		298	4.8	298	4.8	0.594	26.9	LOS B	3.8	26.8	0.73	0.72	0.73	21.4
West: High Street - W														
10	L2	241	3.8	241	3.8	0.558	27.2	LOS B	5.7	40.9	0.89	0.86	0.89	16.0
11	T1	300	1.1	300	1.1	* 0.558	34.7	LOS C	6.6	46.4	0.93	0.80	0.93	20.8
Approach		541	2.3	541	2.3	0.558	31.4	LOS C	6.6	46.4	0.91	0.82	0.91	19.2
All Vehicles		1746	4.1	1746	4.1	0.594	20.8	LOS B	7.4	55.2	0.71	0.69	0.71	24.1

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

* Critical Movement (Signal Timing)

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: sid_220905_3389_61_79_henry_street_penrith **Template: New User Report**

Site: v [GWH/Lawson - 2042 w Dev PM - addtional - Conversion (Site Folder: 2042 w Dev PM)]

Network: 21 [Network 2042 w Dev Mit - PM - Additional (Network Folder: General)]

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 90 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: Opposed Turns
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson Street														
1	L2	605	0.6	590	0.6	0.670	24.5	LOS B	7.7	53.9	0.81	0.77	0.81	27.6
3	R2	341	0.0	332	0.0	* 0.928	60.3	LOS E	11.3	79.2	1.00	1.15	1.50	20.5
Approach		946	0.4	922 N1	0.4	0.928	37.4	LOS C	11.3	79.2	0.88	0.90	1.06	23.8
East: Great Western Higway (North Street)														
4	L2	200	2.1	200	2.1	0.576	27.5	LOS B	8.4	59.8	0.82	0.83	0.82	30.5
5	T1	1016	1.2	1016	1.2	* 0.976	56.7	LOS E	30.7	216.7	0.96	1.19	1.35	26.1
Approach		1216	1.3	1216	1.3	0.976	51.8	LOS D	30.7	216.7	0.93	1.13	1.26	26.5
West: Great Western Highway (Belmore Street)														
11	T1	811	0.6	811	0.6	0.606	8.4	LOS A	11.8	82.9	0.59	0.54	0.59	43.8
12	R2	551	0.0	551	0.0	* 1.001	73.4	LOS F	16.0	112.3	0.97	1.13	1.54	12.2
Approach		1361	0.4	1361	0.4	1.001	34.7	LOS C	16.0	112.3	0.75	0.78	0.97	28.3
All Vehicles		3523	0.7	3499 N1	0.7	1.001	41.4	LOS C	30.7	216.7	0.85	0.94	1.10	26.6

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Site: v [Soper Pl/Lawson St - 2042 w Dev PM - Wapp exit only (Site Folder: 2042 w Dev PM)]

Network: 21 [Network 2042 w Dev Mit - PM - Additional (Network Folder: General)]

Site Category: -
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson St - S														
1	L2	46	2.6	42	2.8	0.659	5.1	LOS A	1.4	9.7	0.46	0.67	0.53	22.6
2	T1	262	1.3	238	1.4	0.659	4.7	LOS A	1.4	9.7	0.46	0.67	0.53	22.5
3	R2	204	0.0	185	0.0	0.659	9.9	LOS A	1.4	9.7	0.46	0.67	0.53	48.6
3u	U	1	0.0	1	0.0	0.659	11.8	LOS A	1.4	9.7	0.46	0.67	0.53	22.5
Approach		514	0.9	467 N1	1.0	0.659	6.8	LOS A	1.4	9.7	0.46	0.67	0.53	40.0
East: Site Access														
4	L2	216	0.0	216	0.0	1.053	92.2	LOS F	15.8	110.9	1.00	2.36	4.37	15.0
5	T1	1	0.0	1	0.0	1.053	92.4	LOS F	15.8	110.9	1.00	2.36	4.37	13.4
6	R2	324	0.0	324	0.0	1.053	96.5	LOS F	15.8	110.9	1.00	2.36	4.37	15.0
6u	U	1	0.0	1	0.0	1.053	98.4	LOS F	15.8	110.9	1.00	2.36	4.37	23.8
Approach		542	0.0	542	0.0	1.053	94.8	LOS F	15.8	110.9	1.00	2.36	4.37	15.0
North: Lawson Street - N														
7	L2	307	0.0	307	0.0	0.993	23.0	LOS B	7.7	53.7	0.43	0.85	0.97	35.4
8	T1	438	0.0	438	0.0	0.993	20.8	LOS B	7.7	53.7	0.43	0.85	0.97	12.7
9	R2	53	0.0	53	0.0	0.993	24.7	LOS B	7.7	53.7	0.43	0.85	0.97	8.7
9u	U	1	0.0	1	0.0	0.993	29.3	LOS C	7.7	53.7	0.43	0.85	0.97	12.7
Approach		799	0.0	799	0.0	0.993	21.9	LOS B	7.7	53.7	0.43	0.85	0.97	24.5
All Vehicles		1855	0.2	1808 N1	0.3	1.053	39.9	LOS C	15.8	110.9	0.61	1.25	1.88	20.5

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

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

Site: [Henry St/Lawson St - 2042 w Dev PM Mit (Site Folder: 2042 w Dev PM)]

Network: 21 [Network 2042 w Dev Mit - PM - Additional (Network Folder: General)]

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 90 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: Two-Phase
Reference Phase: Phase B
Input Phase Sequence: B, C, C1*, C2*, D
Output Phase Sequence: B, C, C1*, D
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawson St - S														
1	L2	158	3.2	158	3.2	0.720	37.7	LOS C	9.5	67.9	1.00	0.88	1.03	15.7
2	T1	206	1.4	206	1.4	0.720	34.3	LOS C	9.5	67.9	1.00	0.88	1.03	10.2
3	R2	160	0.0	160	0.0	1.149	190.5	LOS F	10.4	72.6	1.00	1.76	2.77	5.8
Approach		524	1.5	524	1.5	1.149	83.0	LOS F	10.4	72.6	1.00	1.15	1.56	8.2
East: Henry St - E														
4	L2	200	0.0	200	0.0	0.686	26.3	LOS B	9.7	69.1	0.85	0.78	0.85	19.0
5	T1	719	3.2	719	3.2	0.686	22.6	LOS B	9.9	71.2	0.84	0.75	0.84	23.4
6	R2	222	0.0	222	0.0	* 1.088	143.8	LOS F	12.2	85.2	1.00	1.58	2.45	5.2
Approach		1141	2.0	1141	2.0	1.088	46.8	LOS D	12.2	85.2	0.88	0.92	1.16	15.1
North: Lawson St - N														
7	L2	281	0.0	281	0.0	0.882	46.6	LOS D	7.1	50.0	0.94	1.04	1.27	14.8
8	T1	302	0.0	302	0.0	* 0.882	48.7	LOS D	7.1	50.0	0.98	1.10	1.36	4.2
9	R2	42	5.9	42	5.9	0.882	55.0	LOS D	7.1	50.0	1.00	1.14	1.41	9.6
Approach		625	0.4	625	0.4	0.882	48.2	LOS D	7.1	50.0	0.96	1.07	1.32	10.0
West: Henry St - W														
10	L2	49	0.0	49	0.0	1.203	235.0	LOS F	63.8	456.4	1.00	2.44	2.97	1.9
11	T1	774	2.8	774	2.8	* 1.203	231.6	LOS F	63.8	456.4	1.00	2.44	2.97	4.8
12	R2	89	3.8	89	3.8	0.661	50.6	LOS D	2.6	18.5	1.00	0.85	1.14	7.6
Approach		913	2.7	913	2.7	1.203	214.1	LOS F	63.8	456.4	1.00	2.28	2.79	4.8
All Vehicles		3203	1.8	3203	1.8	1.203	100.6	LOS F	63.8	456.4	0.95	1.37	1.72	7.9

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

* Critical Movement (Signal Timing)

Site: [High St/Lawson St - 2042 w Dev PM Mit (Site Folder: 2042 w Dev PM)]

Network: 21 [Network 2042 w Dev Mit - PM - Additional (Network Folder: General)]

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 90 seconds (Network User-Given Cycle Time)

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

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: High Street - E														
5	T1	526	0.0	526	0.0	0.457	10.6	LOS A	7.7	54.1	0.59	0.53	0.59	31.3
6	R2	356	2.8	356	2.8	* 0.878	51.5	LOS D	9.6	69.0	1.00	1.23	1.32	12.0
Approach		882	1.1	882	1.1	0.878	27.1	LOS B	9.6	69.0	0.76	0.81	0.89	21.6
North: Lawson St - N														
7	L2	227	5.4	227	5.4	0.295	14.1	LOS A	2.7	19.5	0.54	0.66	0.54	28.2
9	R2	302	0.6	302	0.6	* 0.976	76.4	LOS F	11.5	81.2	0.93	1.24	1.71	10.8
Approach		529	2.7	529	2.7	0.976	49.7	LOS D	11.5	81.2	0.77	0.99	1.21	15.2
West: High Street - W														
10	L2	518	0.7	518	0.7	0.940	51.7	LOS D	16.6	116.7	1.00	1.24	1.43	10.2
11	T1	612	0.0	612	0.0	* 0.940	54.6	LOS D	19.2	134.1	1.00	1.23	1.44	16.4
Approach		1129	0.3	1129	0.3	0.940	53.3	LOS D	19.2	134.1	1.00	1.23	1.43	14.0
All Vehicles		2541	1.1	2541	1.1	0.976	43.4	LOS D	19.2	134.1	0.87	1.04	1.20	16.4

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

* Critical Movement (Signal Timing)

w

Level 16
207 Kent Street
Sydney NSW 2000
Tel +61 2 8448 1800

Stantec

Connect with us

stantec.com/australia