



Transport Assessment
Molong Residential Planning Proposal
for
Wakefield Ashurst Developments Pty Ltd

Document Control

Project No: 0316

Project: Molong Residential Planning Proposal

Client: Wakefield Ashurst Developments Pty Ltd

File Reference: P0316r1v3 Molong Residential Planning Proposal Transport Assessment

Revision History

Revision	Date	Details	Approved by
v1	18/04/2023	Draft 1	A. Reisch
v2	1/05/2023	Final 1	A. Reisch
v3	2/05/2023	Final 2	A. Reisch

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Table of Contents

1	Introduction.....	1
1.1	Overview.....	1
1.2	Transport Assessment Tasks.....	1
1.3	Reference Documents	2
1.4	Consultation.....	3
2	Existing Conditions	4
2.1	Site Location	4
2.2	Current Site Characteristics	6
2.3	Past Site Approvals.....	7
3	Planning Strategies and Controls	10
3.1	Cabonne Local Strategic Planning Statement 2020	10
3.2	Cabonne Settlement Strategies	10
3.3	Cabonne Road Contributions Plan	14
4	Existing Local Conditions.....	15
4.1	Key Roads	15
4.2	Key Intersections	16
4.3	Existing Traffic Conditions.....	16
4.4	Future Base Traffic Conditions.....	20
4.5	Crash Data.....	24
4.6	Public Transport Services	25
4.7	Active Transport.....	26
4.8	Railway Crossing	28
5	The Proposal.....	29
5.1	Overview.....	29
5.2	Access	30
5.3	Trip Generation	30
5.4	Trip Distribution.....	31
5.5	Future Intersection Operations.....	36
5.6	Interface Intersection Designs.....	38
5.7	Internal Road Network	42
5.8	External Road Upgrades.....	45
5.9	Public Transport.....	47
5.10	Active Transport.....	48
5.11	Compliance with Previous Conditions	54
6	Conclusions.....	56

Appendix A: Traffic Surveys

Appendix B: SIDRA Movement Reports

1 Introduction

1.1 Overview

arc traffic + transport has been engaged by Wakefield Ashurst Developments Pty Ltd (**Wakefield Ashurst**) to prepare a Transport Assessment (**TA**) relating to the proposed development of a large residential subdivision (the **Proposal**) at 92 Euchareena Road and 168 Euchareena Road, Molong (the **Site**). The Proposal would provide:

- A total of approximately 620 residential lots;
- New internal road and pedestrian infrastructure;
- New access roads to Euchareena Road, Marsden Street and Back Salesyard Road; and
- Appropriate upgrades of Marsden Street and Back Salesyard Road to accommodate the additional traffic volumes generated to these road.

Full details of the Proposal are provided in the broader **Planning Proposal** to be submitted to Cabonne Council (**Council**) and in turn the NSW Department of Planning & Environment (**DPE**) to be assessed through the Gateway process.

From the outset, it is noted that arc traffic + transport previously prepared a Transport Assessment (**TA 2022**) for land at Lots 11 and 12 in Deposited Plan 546140, which lie in the north-eastern portion of the Site. Further to a review of TA April 2022, Council and DPE determined that an assessment of not only that smaller site, but also of the adjacent sites, was required to provide certainty in regard to the operation of the future road network. This TA provides that broader assessment as requested by Council and DPE.

1.2 Transport Assessment Tasks

This TA provides an assessment of the relevant access and traffic characteristics of the Proposal; this has included consideration of the following:

- Existing and future base traffic conditions in the local road network providing for the Site, including specific consideration of the proposed Site intersections to existing local roads;
- Existing and future public and active transport services and infrastructure;
- The future vehicle trip generation and distribution of the Site, and the potential impact of those trips on the local road network and key intersections;
- The design of new interface intersections between the Site and existing local roads, and potential mitigation treatments to minimise traffic impacts where required;
- An assessment of the operation of the Site's internal road network; and
- A detailed assessment of appropriate road profiles for adoption within the internal road network.

It is noted that this TA is supporting a Planning Proposal; while this TA provides a significant level of detailed analysis in response to the scope of work discussed with Council and DPE, it is important to note that the assessment provided in this TA essentially supports a “proof of concept” of the Proposal. As such, detailed design and plans for – for example – future intersections are not provided in this TA, but would necessarily be provided as part of any future Development Application (**DA**).

1.3 Reference Documents

1.3.1 Planning Controls and Strategies

As discussed, the Site lies within the Cabonne Council Shire (the **Shire**); key Council planning and strategic documents referenced in the preparation of this TA include:

- Cabonne Development Control Plan 5: General Rural Zones (**DCP 5**);
- Cabonne Roads Contribution Plan (**Contributions Plan**);
- Cabonne Local Strategic Planning Statement 2020 (**LSPS 2020**);
- Cabonne Settlement (Land Use) Strategy, 2020 - 2021 (**Settlement Strategy**);
- Cabonne Settlement Strategy 2021 – 2041 Settlement Options Paper (**Settlement Strategy OP**);
- Cabonne Active Transport Plan – Pedestrian Access and Mobility Plan 2020, prepared by Constructive Solutions (**Cabonne PAMP**);
- Cabonne Active Transport Plan – Bike Plan 2020, prepared by Constructive Solutions (**Cabonne Bike Plan**); and
- Guidelines for Engineering Works 2009, prepared by the WBC Strategic Alliance (**Engineering Guidelines**).

1.3.2 Traffic and Transport Guidelines

This TA also references general traffic and transport guidelines, including:

- Guide to Traffic Generating Developments 2002, Roads & Traffic Authority (**RTA Guide**);
- Guide to Traffic Generating Developments – Updated Traffic Surveys 2013, Roads & Maritime Services (**RMS Guide Update**);
- Traffic Control at Work Sites Manual 2022, TfNSW (**TCW Manual**);
- Austroads Guide to Road Design Part 3: Geometric Design (**GRD Part 3**);
- Austroads Guide to Road Design Part 4: Intersections & Crossings General (**GRD Part 4**);
- Austroads Guide to Road Design Part 4A: Unsignalised & Signalised Intersections (**GRD Part 4A**);
- Austroads Guide to Traffic Management Part 6: Intersections, Interchanges and Crossing Movements (**GTM Part 6**); and

- Austroads Guide to Traffic Management Part 12: Integrated Transport Assessments for Developments.

1.4 Consultation

During the preparation of TA 2022, arc traffic + transport and the broader Project Team had the opportunity to discuss the previous Site proposal with officers of Council's planning and traffic sections, particularly in regard to existing and future local conditions, and the appropriate scope of work provided in TA 2022.

The Project Team has again discussed the current Proposal with Council officers to ensure that the scope of work provided in the TA is appropriate, and reviewed the comments provided by Council in regard to TA 2022 which, in addition to the need for the broader Site assessment requirement, requests updated traffic surveys, noting that the TA 2022 referenced surveys undertaken in 2021 during the COVID pandemic.

arc traffic + transport again acknowledge the assistance and insights provided by Council and DPE officers, and notes that all issues raised by Council and DPE have been appropriately addressed in this TA.

2 Existing Conditions

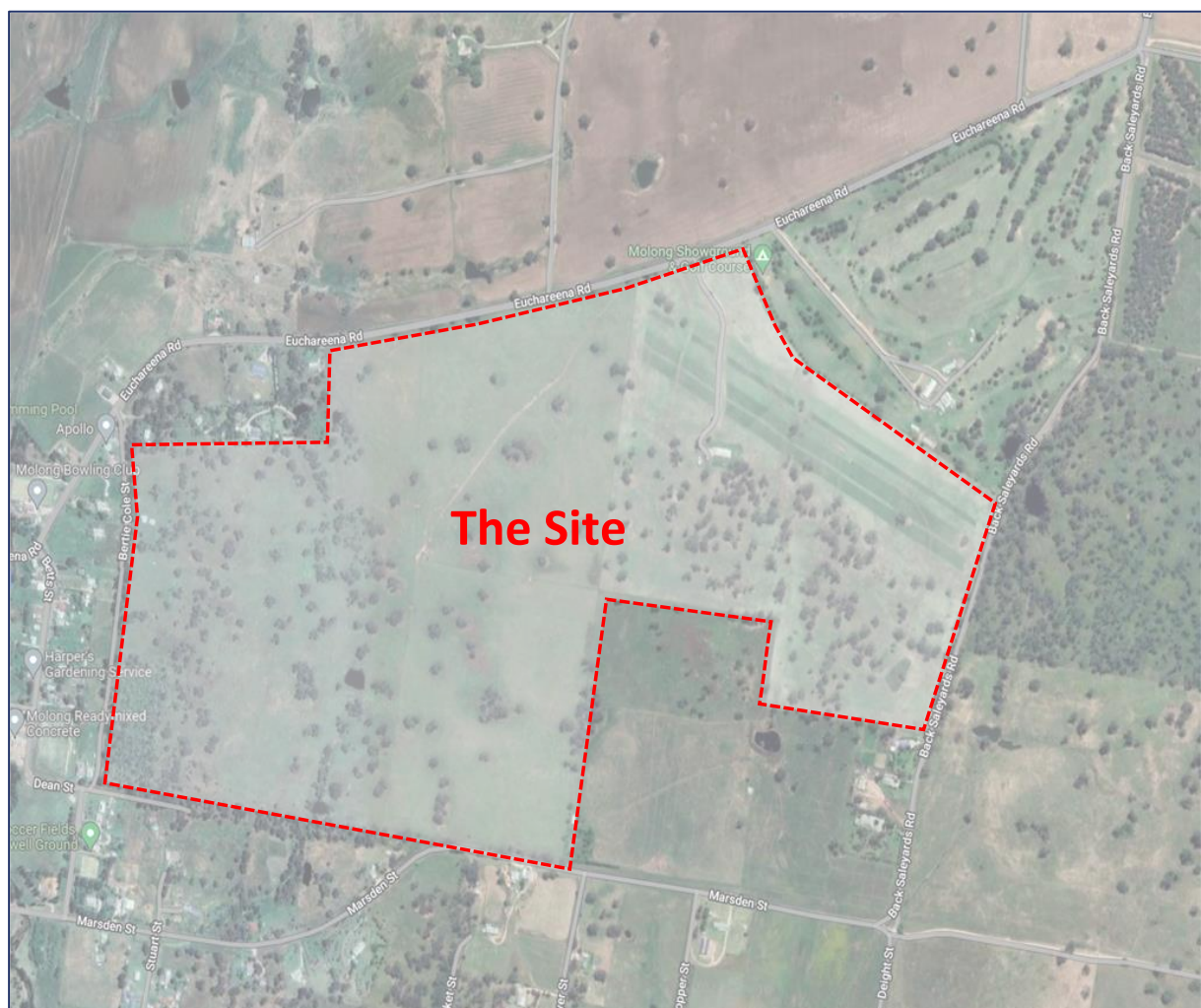
2.1 Site Location

The Site is officially referenced as Lot A in Deposited Plan 961931, and Lots 11 and 12 in Deposited Plan 546140, with street addresses of 92 Euchareena Road and 168 Euchareena Road, Molong, respectively.

For ease of reference, Euchareena Road is considered to run east-west in the vicinity of the Site, and as such the Site is bordered by Euchareena Road to the north, Marsden Street to the south, Back Salesyard Road and Molong Golf Course (the **Golf Course**) to the east, and Bertie Cole Street to the west.

The Site has an area of approximately 118 hectares, and is shown in [Figure 1](#); the Site in its local and broader sub-regional context is shown in [Figure 2](#) and [Figure 3](#) respectively.

Figure 1: The Site



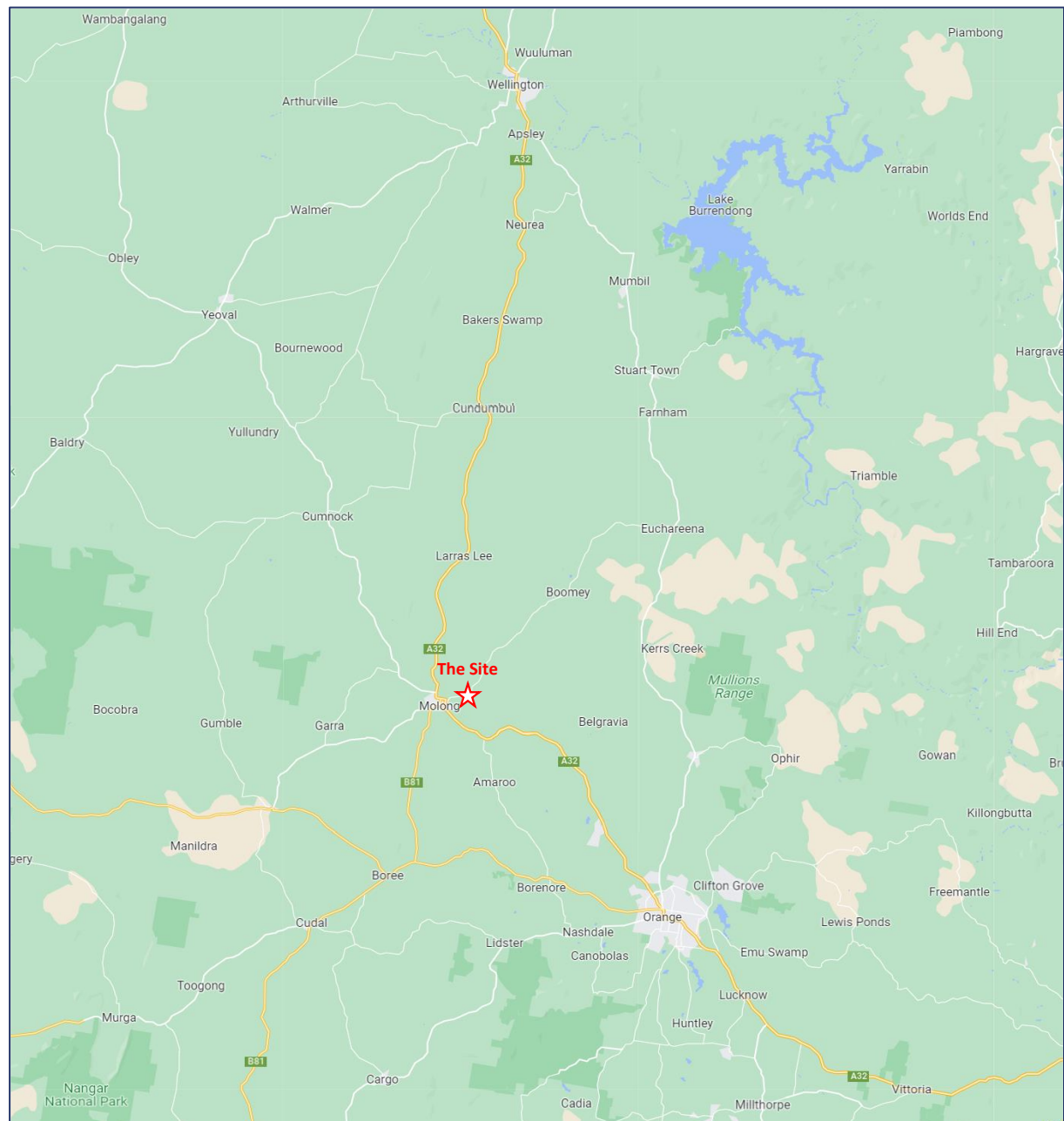
Source: Google

Figure 2: Site Local Context



Source: Google

Figure 3: Site Sub-Regional Context



Source: Google

2.2 Current Site Characteristics

2.2.1 Site Use

The Site is currently occupied by a small number of rural dwellings and out buildings, as well as partially developed and undeveloped pastureland.

DA 2006/251 was subsequently approved by Council in 2008; while minor preliminary works subsequently commenced, the approved development was not (and will not) be pursued further, but rather be superseded by the current Proposal.

2.3.2 DA 2006/251 Consent Conditions

Notwithstanding that DA 2006/251 did not proceed, a review of the Conditions of Consent provided in the DA 2006/251 approval provides guidance in regard to the access and road infrastructure that Council is anticipated to require for the Site if developed for residential lots in accordance with the Proposal. In this regard, we note the following:

- **Road Improvement Contribution** (Condition 5): To mitigate the impact of additional Site traffic on the Euchareena Road carriageway over time, a contribution of \$177,908.30 was determined by Council. It is anticipated that a similar (indexed and proportional) contribution may be levied for the Proposal, but also extend to any upgrades required in other frontage roads including Back Salesyard Road and Marsden Street.
- **Traffic Safety** (Condition 22): To maximise safety for vehicles entering and departing the Estate, it was recommended that a request to reduce the posted speed limit from 100km/h to 50km/h in Euchareena Road (between the Site and the existing 50km/h speed zone east of the Molong **Town Centre**) be referred to Council's Traffic Committee for approval. It is anticipated that this request will again be prepared, and also potentially provide for reduced speed limits in other frontage roads including Back Salesyard Road and Marsden Street.
- **Road Design & Construction** (Condition 32): To ensure that safe, all-weather public access was available to and through the Golf Estate, internal access roads were to be constructed in accordance with Council's [then] Engineering Specifications as Non Rural Class 2 Level 2 roads. The design of internal (and indeed external) roads now references the current Engineering Specifications.
- **Construction Traffic & Pedestrian Management Plan** (Condition 36): To ensure that any traffic or pedestrian movements in Euchareena Road past the Site were safe and efficient during the construction of the Golf Estate, a Construction Traffic Management Plan (**CTMP**) was to be prepared detailing the measures to be implemented to maintain the safety of vehicle passengers and pedestrians past the Site.

A Draft CTMP outlining the broad strategies that would be in place during future construction across the Site is provided in [Section 5.12](#), and would be further developed as part of a future DA.

- **Intersection of Euchareena Road & Estate** (Condition 40): To ensure road safety, the intersection of Euchareena Road & Golf Estate was to be designed with a Basic Right (**BAR**) treatment in accordance with Austroads guidelines. An assessment of the appropriate treatments for all proposed access intersections to the Site has been provided in this TA, again referencing the appropriate Austroads guidelines.

- **Staging** (Condition 45): To allow for the Golf Estate to be developed based on housing demand, the Golf Estate was to be development in stages, notwithstanding compliance with other conditions relevant to appropriate access etc for all lots at all times. The anticipated staging of development across the Site has been reviewed in this TA, though the final staging of development will be determined during the future DA process.
- **Bicycle Accessway** (Condition 48): To allow active transport access between the Golf Estate and Back Saleyards Road, a 3m wide path was required between the internal access road and Back Saleyards Road. Active transport connections to all frontage roads have been assessed as part of this TA.

Further to the above, each of these DA 2006/251 Conditions of Consent have necessarily been considered in the preparation of this TA, as they are anticipated to be applied in a similar manner to the Proposal.

3 Planning Strategies and Controls

3.1 Cabonne Local Strategic Planning Statement 2020

3.1.1 Overview

LSPS 2020 sets out a 20-year vision for land-use planning across the Shire, including how growth will be managed while retaining the unique characteristics of the Shire. LSPS 2020 planning priorities, strategic directions and actions provide the rationale for the decisions about how to provide development across the Shire to achieve the community's broader goals in regard to liveability, safety and movement equality.

LSPS 2020 sets out 4 key goals:

- Developing a diverse regional economy;
- Establishing a stronger, healthier environment and diverse heritage;
- Providing quality freight, transport and infrastructure networks; and
- Creating dynamic, vibrant and healthy communities.

3.1.2 Residential Strategy

Planning Priority 5 of LSPS 2020 is to *Provide opportunities to ensure a variety of housing types are available across our shire*. The rationale for this Planning Priority includes consideration of existing and future housing demands, and the type of dwellings required to provide residents with real housing choice, including offering viable options for older residents so that they can remain in the Shire.

LSPS 2020 also provides what is essentially a checklist by which to determine appropriate development; with specific reference to the Proposal, this requires consideration of:

- **Strategic Direction**, focusing on growth opportunities in proximity to existing urban centres, and ensuring appropriate housing stock is availability to the elderly.
- **Actions**, including identifying short, medium and long term residential development opportunities, and providing appropriate controls by which to implement that development in a properly staged and structured manner.

Further to our review of LSPS 2020, it is apparent that the Proposal is entirely in line with the key objectives of LSPS 2020.

3.2 Cabonne Settlement Strategies

3.2.1 Overview

The Settlement Strategy compliments LSPS 2020 (and other key Council strategies) and seeks to determine an appropriate supply of land for the projected growth in key areas of the Shire - and particularly urban and large lot residential land uses - so as to address future projected changes in population and demand for a variety of land uses, and to facilitate sustainable growth.

The underlying objectives of the Settlement Strategy specifically relevant to the Proposal include:

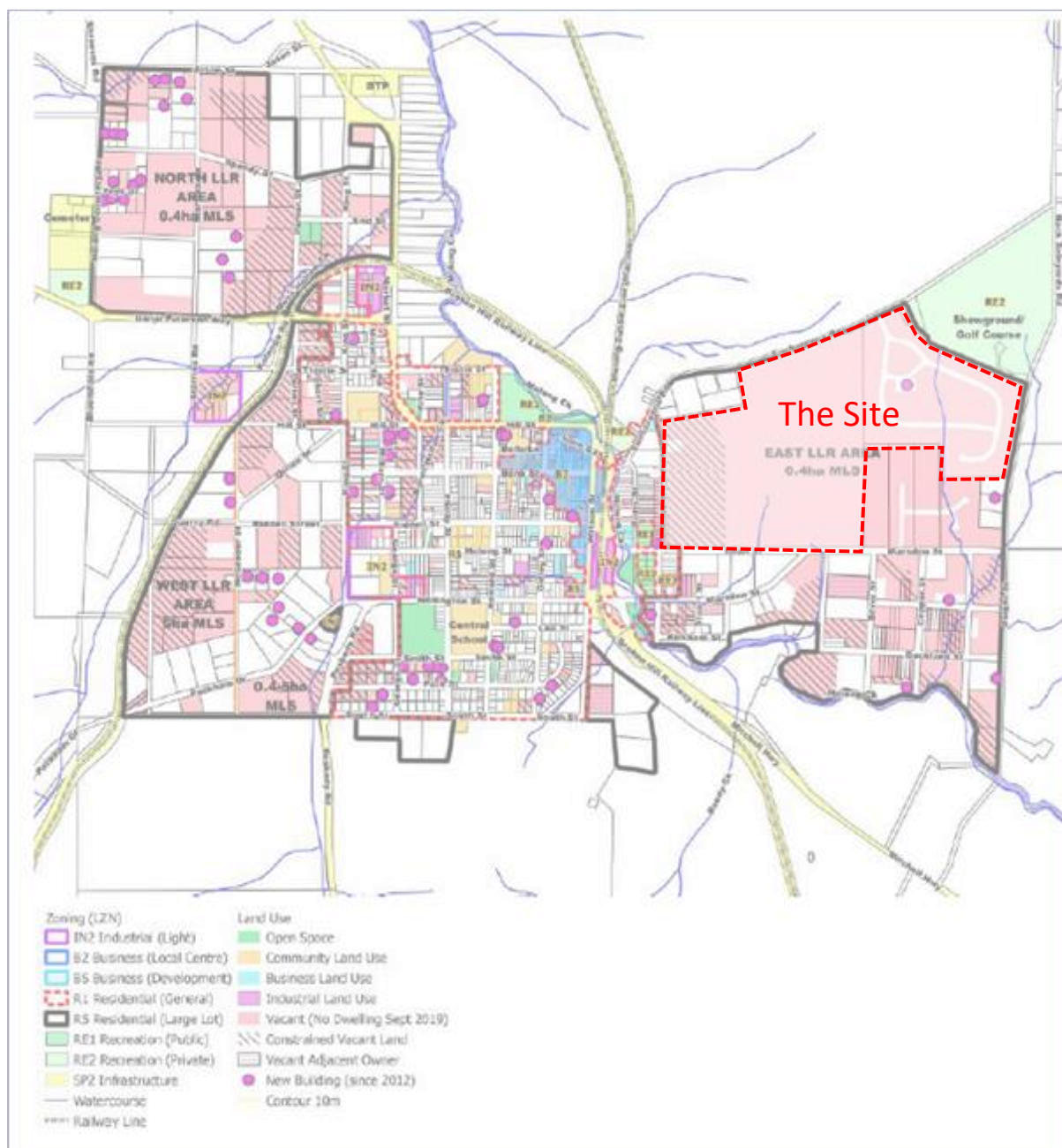
- **Ensuring sustainable development** that meets short-term demand without compromising future growth opportunities.
- **Locating development in appropriate areas**, focusing on areas with a suitable supply of land for growth, appropriate infrastructure, minimisation of land use conflicts, and opportunities to improve the diversity and affordability of new dwellings.
- Providing **supporting infrastructure that enables sustainable and affordable development that connects communities with key production and market centres**.
- Promoting housing types that **support suitable security, amenity & choice for all people at all stages of their lives**.
- Ensuring housing supply **meets the demand for diverse, affordable & resilient housing, and is provided with appropriate consideration of environmental, cultural, social and economic outcomes**.
- Promoting development that provides **appropriate connectivity (for all modes of transport), legibility (way-finding), amenity, safety, and existing and desired future local character**.

3.2.2 Molong Settlement Strategies

Given that Molong is an established centre that provides many essential services, and the availability of land in the immediate vicinity of the Town Centre suitable for residential development (such as the Site), the Settlement Strategy identifies a number of infill and greenfield sites for consideration for residential (and other) development.

These sites, and potential land uses for each, are shown in Figure 7 of the Settlement Strategy, which is reproduced below.

Figure 5: Molong Settlement Strategy



Source: Settlement Strategy

With reference to Figure 5, the Site is clearly identified within the *East Large Lot Residential (East LLR)* area, including, we note, the road network previously proposed for the Golf Estate. This area is also referenced as Molong 2 (**MOL 2**) and Molong 3 (**MOL 3**) in the Settlement Strategy and Settlement Strategy OP, with the Site occupying both of these land parcels.

Importantly, in the original Settlement Strategy (Figure 5) the entire East LLR area was earmarked for large lot residential uses (~0.4ha lots). However, the potential rapid rate of growth in Molong required a broader review of the area, noting that the development of large lot residential dwellings would result in a lost opportunity for future standard urban growth.

In this regard, the Settlement Strategy OP states the following of particular relevance to this TA:

As Strategy Areas MOL2 & MOL3 are relatively undeveloped, it makes sense to use this land as efficiently as possible (smaller lot sizes) to minimise future need to expand the urban area into surrounding agricultural lands.

CLEP2012 currently only has the following residential zones: Zone R1 General Residential (broad permissibility of residential uses including medium and high density) and Zone R5 Large Lot Residential.

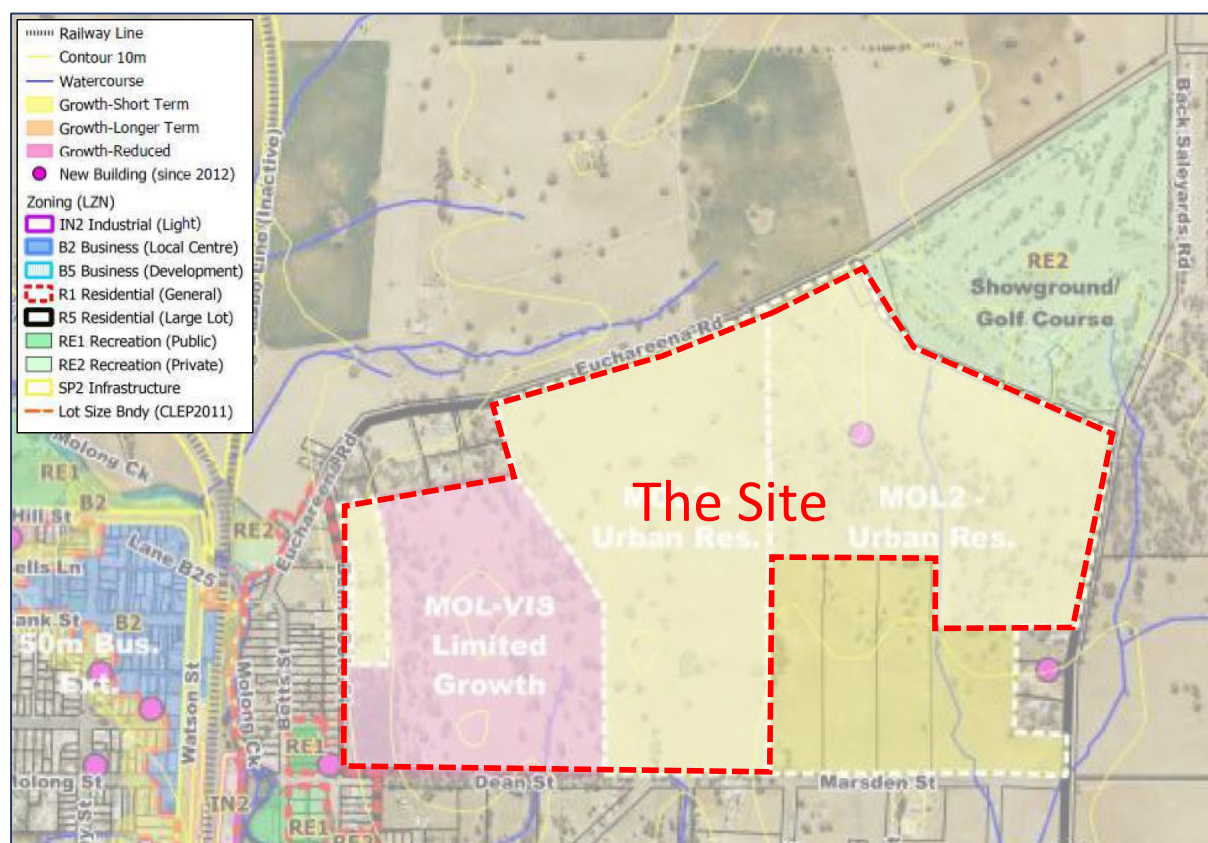
Strategy Area MOL2 & 3 may be more suited to a low-density residential zone (not currently in the LEP) but this requires further investigation. If Seniors Living is proposed then Zone R1 may be more suitable.

There should be a diversity of lot sizes taking into account site constraints ranging from pockets of smaller 500-600m² lots (possibly some Seniors Living areas subject to connection to Bank St services) ranging up to 4,000m² lots (with an average around 1,200-1,600m²). Dwelling lot yield is roughly estimated to produce in MOL2 >300-400 lots & in MOL3 >200-300 lots.

This higher density should be able to fund improved urban design outcomes including, but not limited to: local road connections between adjacent sites; on-site stormwater detention and water quality management; and pedestrian & cycle connections back to Bank St.

Further to the above, the revised land use strategy for MOL 2 and MOL 3 is illustrated in Figure 14 of the Settlement Strategy OP, which is reproduced below, noting that the Proposal is entirely in line with the objectives of the broader Settlement Strategy and the subsequent recommendations of the Settlement Strategy OP.

Figure 6: Revised Molong Settlement Strategy



Source: Settlement Strategy OP

With reference to Figure 6, the Site now also incorporates what is referred to as MOL-V13, which would provide for limited development (likely large lot rural residential) based, we understand, on the environmental sensitivity of this land.

3.3 Cabonne Road Contributions Plan

The Contributions Plan provides guidance in regard to where a developer will need to provide funds for upgrades of the local road network, noting that such are specifically required only where upgrades are a direct result of a development. In this regard, the Contributions Plan states:

The basis of Council's position with respect to nexus for Road Contributions is that additional subdivision development generates additional traffic on the service roads to such developments, which in turn increases and brings forwards the need for capital development to such roads...the developer should therefore pay for that part of the increase in road standard needed to address the impacts of his/her development.

Road infrastructure upgrades will be required to facilitate the traffic generated by the Proposal; these are anticipated to be undertaken by the proponent, and potentially be augmented by contributions for the upkeep of (for example) Euchareena Road and other key roads now proposed to provide access to the Site. More detail in this regard is provided in Section 5.6.

4 Existing Local Conditions

4.1 Key Roads

4.1.1 Euchareena Road

Euchareena Road is an unclassified local road that generally runs north-south and then east-west (along the northern boundary of the Site) between Euchareena and Molong. In the vicinity of the Site – and generally for its entire length - it provides 1 traffic lane in each direction, each of a width between 3.0m and 3.5m, and informal verges. Euchareena Road has a posted speed limit of 100km/h, which reduces to 50km/h west of the Site on the approach to the Town Centre.

4.1.2 Mitchell Highway (Watson Street)

Mitchell Highway is a State Road that forms part of the A32, identified by TfNSW as a classified *Route of National Significance*. The A32 starts at the end of the M4 at Emu Plains, then runs through a large number of significant regional centres including Lithgow, Bathurst and Orange, then north through Molong (as Watson Street) to Dubbo and Broken Hill.

Within Molong, Mitchell Highway provides 1 wide traffic lane in each direction and on-street parking on both sides of the road, and has a posted speed limit of 50km/h. North and south of Molong, Mitchell Highway generally provides 1 traffic lane in each direction, sealed verges, and a posted speed limit of 100km/h.

4.1.3 Bank Street

Bank Street is a local road which runs east-west between Mitchell Highway and King Street, and is the location of many local commercial and retail premises within the Town Centre. It provides 1 traffic lane in each direction, angled parking on both sides of the road, and a posted speed limit of 50km/h.

4.1.4 Back Salesyard Road

Back Salesyard Road is a local rural road which generally runs north-south between Euchareena Road and Marsden Street. It provides an unsealed carriageway with a width of approximately 5.0m to 6.0m for two-way traffic and unsealed verges, and has a nominal speed limit (based on this profile) of 60km/h.

4.1.5 Marsden Street

Marsden Street is a local road that generally runs east-west between Back Salesyard Road and Mitchell Highway. It provides a sealed carriageway of approximately 6.0m to 7.0m for two-way traffic and unsealed verges, and have a nominal speed limit of 60km west of Back Salesyard Road, and a nominal speed limit of 50km/h from Silver Street through to Mitchell Highway.

4.1.6 Other Local Roads

Bertie Coles Street is a narrow unformed road that runs north-south between Euchareena Road and Dean Street; it provides 1 wide traffic lane for two-way traffic, and has a nominal speed limit of 40km/h. Dean Street is a local road that runs east-west from a terminus east of Bertie Coles Street to Betts Street. It provides 1 wide traffic lane in each direction, and has a nominal speed limit of 50km/h.

Neither of these roads are anticipated to carry any additional traffic further to the Proposal.

4.2 Key Intersections

4.2.1 Mitchell Highway & Euchareena Road

This intersection operates under priority control (Give Way) and provides one lane approaches in Euchareena Road and Mitchell Highway north, while a short auxiliary lane in the Mitchell Highway southern approach to Euchareena Street allows northbound vehicles to pass a vehicle turning right to Euchareena Road.

4.2.2 Mitchell Highway & Bank Street

This intersection nominally operates under priority control (Give Way) and provides two (short) lanes on each approach, allowing southbound vehicles to pass a vehicle turning right to Bank Street, and for a vehicle to turn left from Bank Street without being delayed by a vehicle turning right from Bank Street.

4.2.3 Mitchell Highway & Marsden Street

This intersection operates under priority control (Give Way) and provides a Channelised Left (**CHL**) turn lane and Channelised Right (**CHR**) turn lane for movements from Mitchell Highway to Marsden Street.

4.2.4 Local Intersections

The majority of local intersection in Molong, and specifically along the Mitchell Highway, operate under priority control, and there are few instances of auxiliary lane infrastructure based on what are, simply, low traffic volumes (see also Section 4.3).

4.3 Existing Traffic Conditions

4.3.1 Traffic Surveys

arc traffic + transport engaged Heath Consulting Engineers to undertake peak period traffic surveys at the key intersections identified in Section 4.2. The surveys were conducted in August 2022 during extended AM and PM peak periods, with the peak hours being determined as 8:00am – 9:00am and 3:00pm – 4:00pm in the AM and PM peak periods respectively.

The results of the surveys are summarised in the figures below, while the full survey data set is provided in Appendix A.

Figure 7: 2022 AM Peak Hour Traffic Volumes

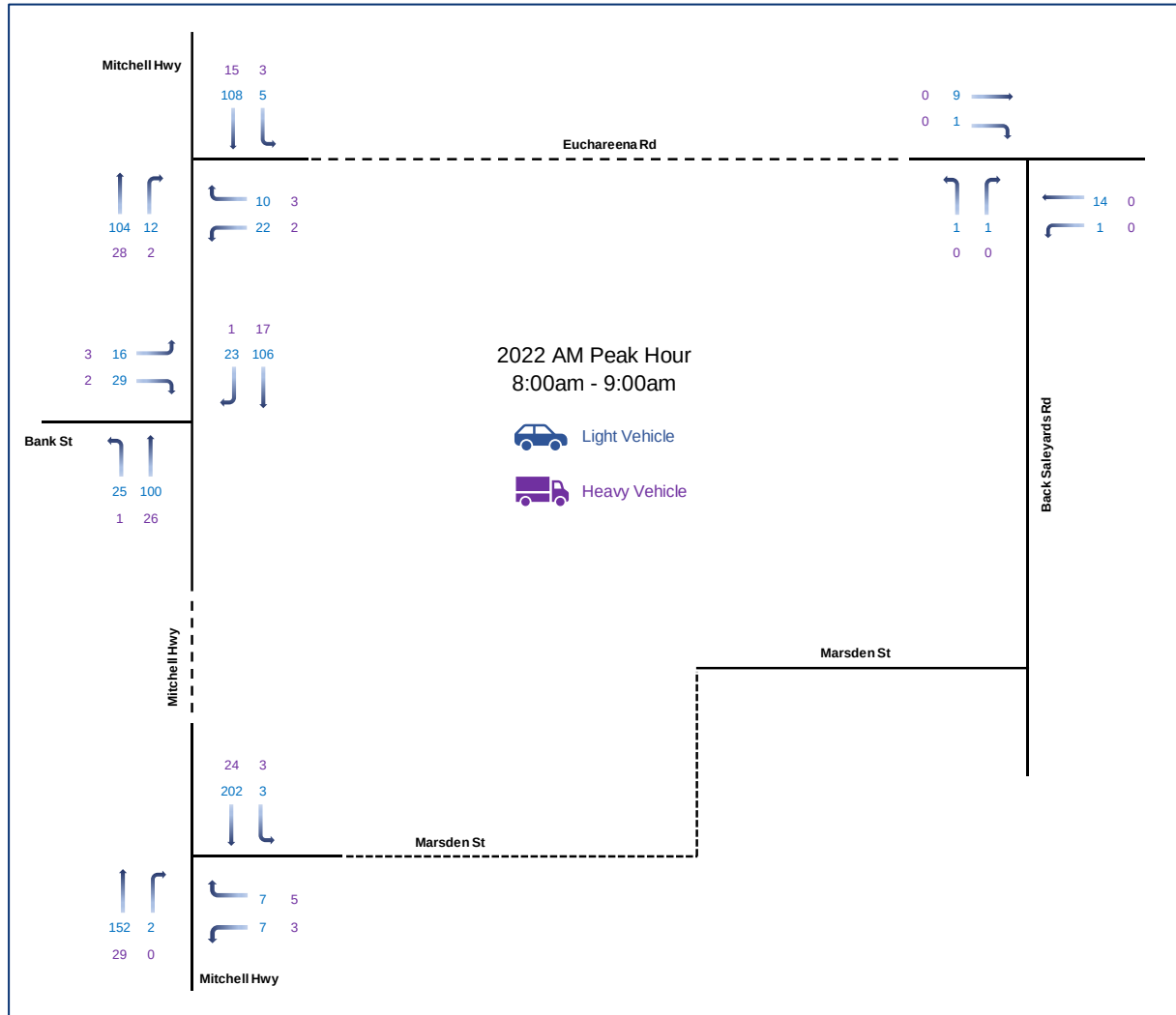
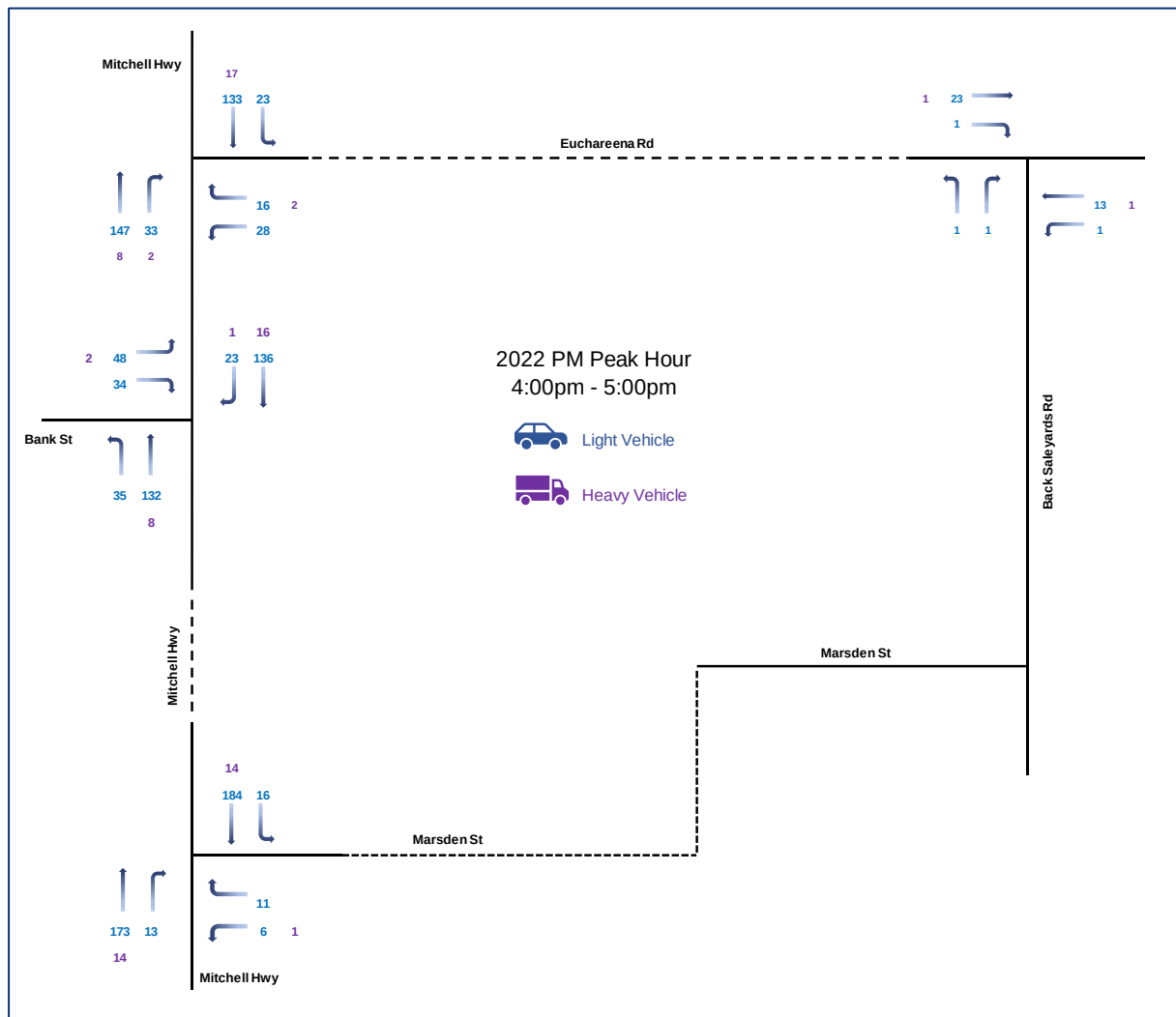


Figure 8: 2022 PM Peak Hour Traffic Volumes



4.3.2 Intersection Operations

The existing operation of the key intersections has been assessed using the SIDRA intersection model, which provides the most appropriate model for the assessment of priority intersections.

SIDRA provides a number of outputs by which to measure the performance of an intersection, including:

- **Degree of Saturation:** Degree of Saturation is defined as the ratio of demand (arrival) flow to capacity. Degrees of Saturation above 1.0 represent over-saturated conditions (demand flows exceed capacity) and degrees of saturation below 1.0 represent under-saturated conditions (demand flows are below capacity)
- **Average Vehicle Delay:** Average Vehicle Delay represents the difference between interrupted and uninterrupted travel times through an intersection, and is measured in seconds per vehicle in this assessment. Delays include queued vehicles accelerating and decelerating from/to the intersection stop, as well as general delays to all vehicles travelling through the intersection.

With reference to the Level of Service criteria below, the average intersection delay for signals and roundabouts represents an average of delays to all vehicles on all approaches, while for priority intersections the average delay for the worst movement is used.

- **Level of Service:** Level of Service is a basic performance parameter assigned to an intersection based on average delay; we note that we have assessed the intersections using the SIDRA default RTA parameters, which use only delay in the calculation of Level of Service.

For signalised and roundabout intersections, Level of Service is based on the average delay to all vehicles, while at priority controlled intersections Level of Service is based on the worst minor approach movement delay.

Table 1 provides a summary of the SIDRA recommended criteria for the assessment of intersections.

Table 1: SIDRA Level of Service Criteria

Level of Service	Average Delay (seconds per vehicle)	Traffic Signals & Roundabouts	Stop & Give Way
A	less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays Roundabouts require other control mode	At capacity, requires other control mode
F	More than 70	Unsatisfactory and requires additional capacity.	Unsatisfactory and requires other control mode or major treatment.

Source: SIDRA Systems

The results of the SIDRA analysis of existing intersection operations are summarised in Table 2, and detailed SIDRA Movement Summaries are provided in Appendix B.

Table 2: 2022 Intersection Operations

2022 Intersection Operations	Level of Service		Average Delay (s)		Worst Delay (s)		Degree of Saturation	
	AM	PM	AM	PM	AM	PM	AM	PM
Mitchell Hwy & Euchareena Rd	A	A	1.1	1.5	7.0	7.3	0.077	0.100
Mitchell Hwy & Bank St	A	A	1.8	1.9	6.6	7.0	0.067	0.080
Mitchell Hwy & Marsden St	A	A	0.4	0.7	11.2	7.6	0.177	0.104
Euchareena Rd & Back Salesyard Rd	A	A	1.8	0.6	7.8	7.8	0.008	0.014

With reference to Table 2, it is immediately apparent that all of the key intersections operate at a good Level of Service, with minimal delays and significant spare capacity. A review of the SIDRA Movement Summaries provided in Appendix B also shows there is little if any queuing in the minor approaches at these intersections.

4.4 Future Base Traffic Conditions

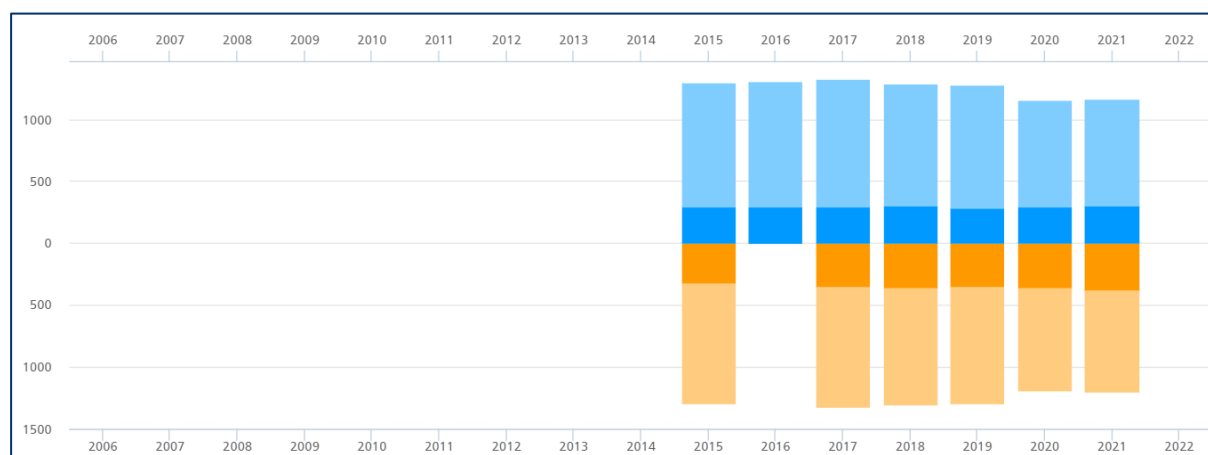
4.4.1 Annual Average Growth

Annual average growth refers to the background traffic growth that occurs as a result of broader development in the sub-region each year.

With reference to all available information, and particularly the Settlement Strategy, the only growth that is like to occur in the short-medium term in the key roads is anticipated to result from developments such as the Proposal.

In this regard, it is instructive to note Average Annual Daily Traffic (**AADT**) volumes provided by TfNSW's Count Station 6169, which is located in Mitchell Highway north of Euchareena Road. AADT volumes for Count Station 6169 are available for the years 2015 – 2021, and are summarised in Figure 9.

Figure 9: Count Station 6169 Mitchell Highway AADT Volumes



Source: TfNSW

With reference to [Figure 9](#), traffic volumes were generally static between 2015 and 2018, but were marginally reduced prior to and then through the COVID pandemic; notwithstanding conditions between 2019 and 2021, the data AADT indicates that there was little annual traffic growth in Mitchell Highway. A similar lack of significant growth can be seen further to reference to TfNSW Count Station data for other regional highways, including Great Western Highway, Newell Highway and Golden Highway.

Regardless, and as agreed with Council, a very conservative annual growth rate of 1% per year has been applied to the 2022 traffic volumes over 10 years to provide **Base 2032** traffic volumes for the assessment of future conditions. The Base 2032 volumes are shown in the figures below.

Figure 10: Base 2032 AM Peak Hour Traffic Volumes

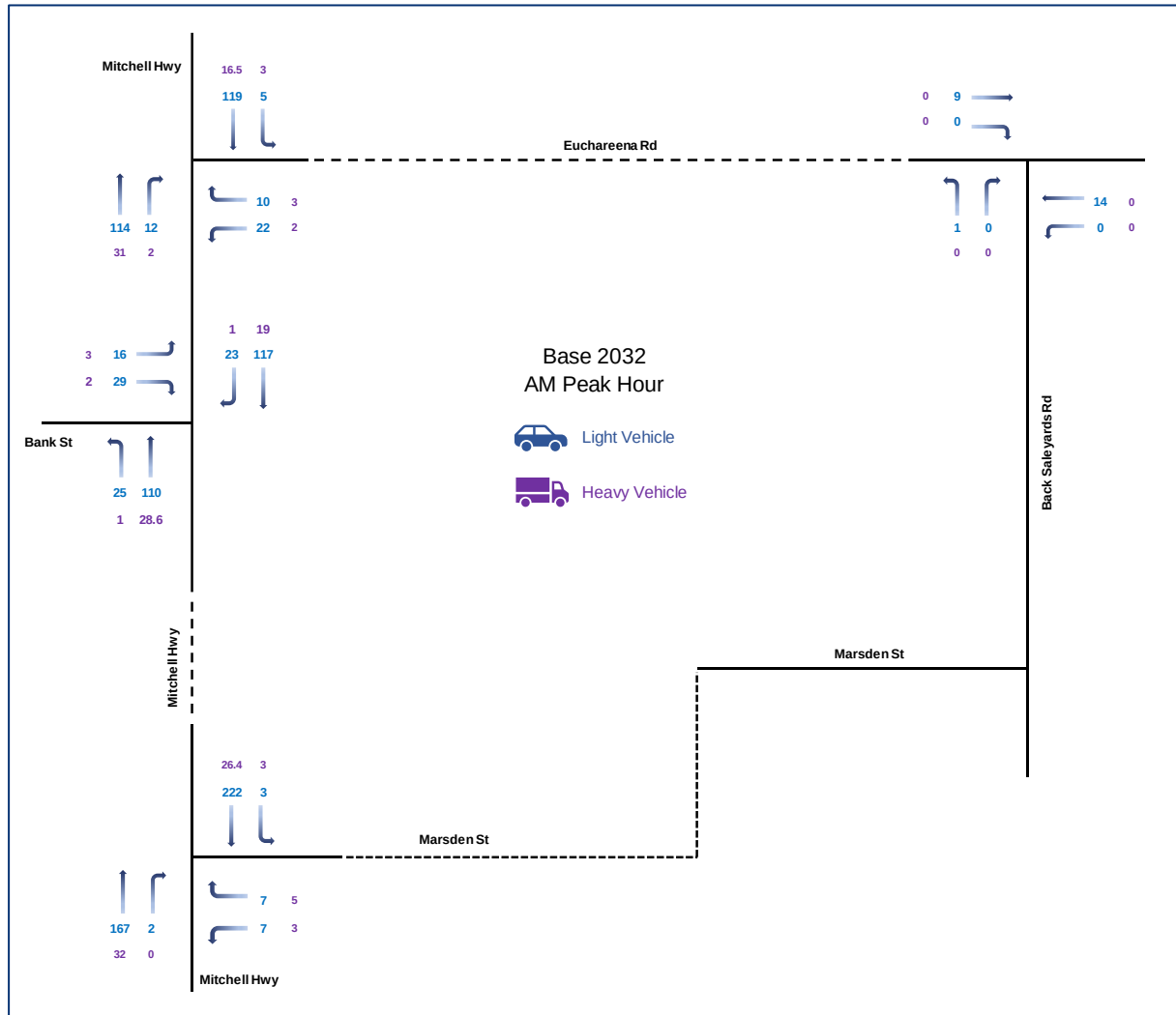
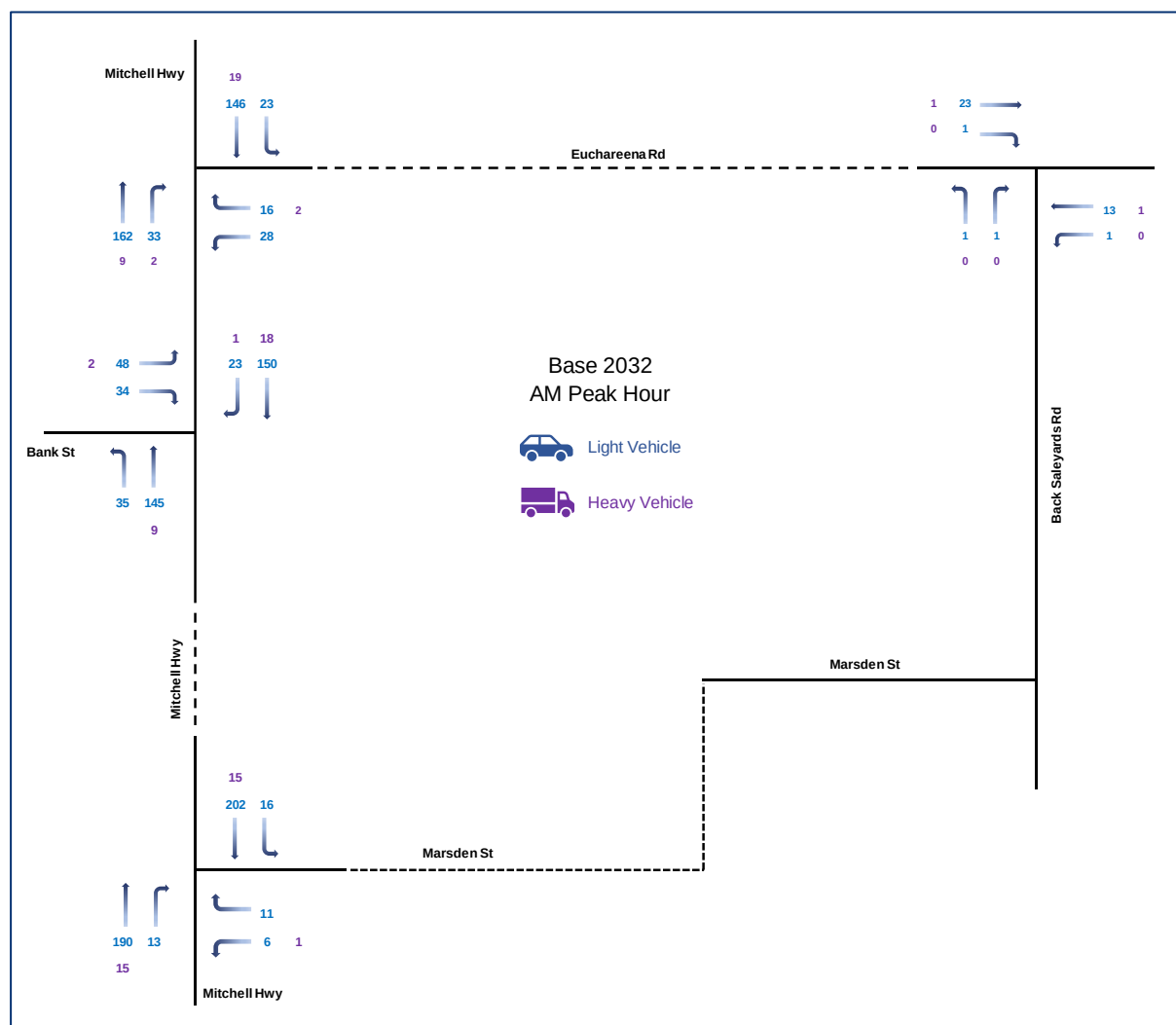


Figure 11: Base 2032 PM Peak Hour Traffic Volumes



4.4.2 Base 2032 Intersection Operations

SIDRA has again been used to determine the operation of the key intersections under Base 2032 conditions; the results of this analysis are summarised in Table 3, while SIDRA Movement reports are again provided in Appendix B.

Table 3: Base 2032 Intersection Operations

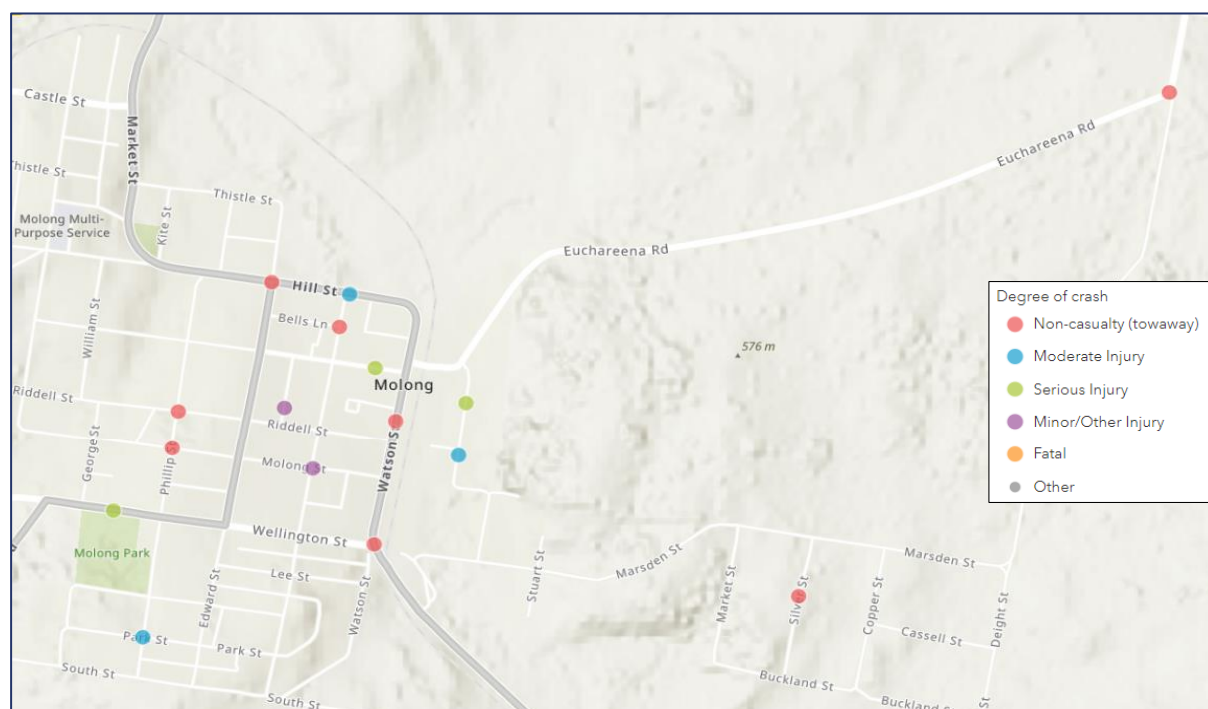
Base 2032 Intersection Operations	Level of Service		Average Delay (s)		Worst Delay (s)		Degree of Saturation	
	AM	PM	AM	PM	AM	PM	AM	PM
Mitchell Hwy & Euchareena Rd	A	A	1	1.5	7.3	7.3	0.085	0.1
Mitchell Hwy & Bank St	A	A	1.7	1.9	6.9	7.0	0.072	0.08
Mitchell Hwy & Marsden St	A	A	0.4	0.7	12.1	7.6	0.129	0.104
Euchareena Rd & Back Salesyard Rd	A	A	1.8	0.6	7.8	7.8	0.008	0.014

With reference to Table 3, all of the key intersections continue to operate with minimal delays and significant spare capacity further to the addition of background traffic growth through to 2032. With reference to the SIDRA Movement reports in Appendix B, there is again little if any queuing in the minor approaches to these intersection.

4.5 Crash Data

Crash data is available from TfNSW's Centre for Road Safety, and provides information about crashes in the vicinity of the Site between 2017 and 2021 inclusive; a summary of crash locations is provided in Figure 12.

Figure 12: Crash Locations



Source: TfNSW

With reference to Figure 12, the majority of crashes along the key access roads for the Site were non-casualty crashes, and the TfNSW data indicates that speeding and/or fatigue was a factor in the reported serious injury crashes. Overall, there is no evidence in the crash data of any systematic safety issues arising from the design and/or general operation of local roads, but rather simply human error resulting in these crashes, noting that there were no crashes reported at the intersections of Mitchell Highway & Euchareena Road or Mitchell Highway & Marsden Street through which the majority of additional traffic generated by the Proposal are anticipated to travel.

As previously discussed, it is anticipated that an application will be made to Council's Traffic Committee to extend the existing 50km/h speed zone in the western portion of Euchareena Road to the east past the Site (as detailed in the Golf Estate Conditions); as well as additional reduced speed limits in Back Salesyard Road and Marsden Street adjacent to the Site.

More details in this regard are provided in Section 5.6.

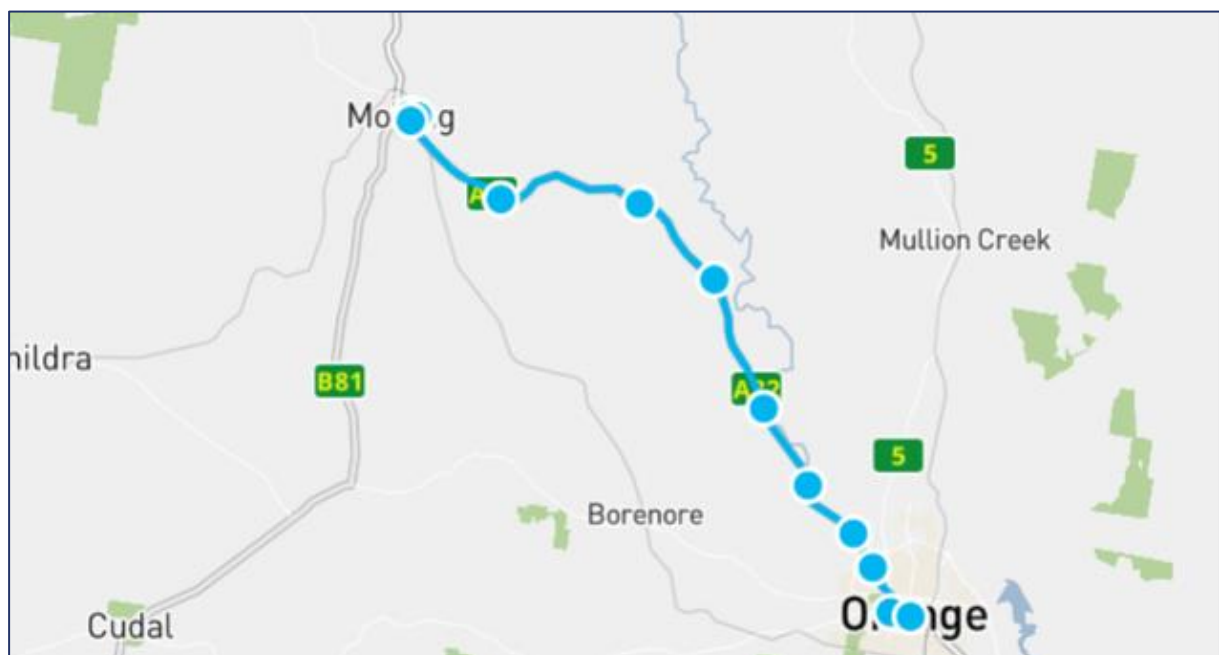
4.6 Public Transport Services

4.6.1 Existing Bus Services

Orange Bus Services operates Route 536 between Molong and Orange on school days and weekdays. School day services include one bus in each direction prior to and following school hours, while an additional service operates in each direction on weekdays generally prior to and following standard work hours. No bus services are available on weekends.

The current Route 536 is shown in Figure 13.

Figure 13: Bus Route 536 Molong to Orange



Source: Transport for NSW

4.6.2 Future Public Transport Services

While there is no information available suggesting that new bus services will be provided in the near future, the potential exists to revisit the need for additional services further to the development of the Site and the broader sites identified in the Settlement Strategy. This will need to be discussed with Council and local bus companies as the residential population of Molong increases over time, and more equitable [i.e. public] transport options are required to serve a diverse population.

4.7 Active Transport

4.7.1 Existing Active Transport Infrastructure

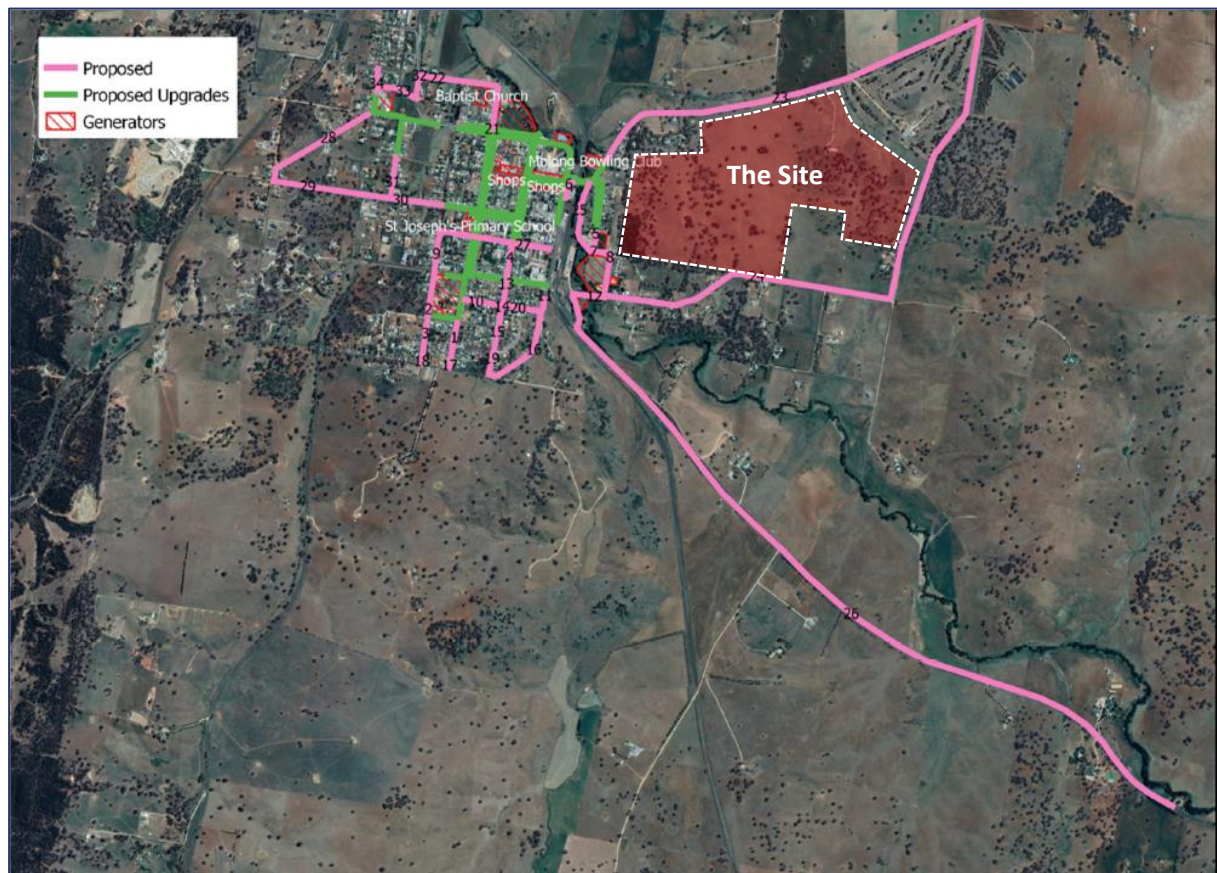
Pedestrian footpaths are provided on each side of Euchareena Road between Betts Street and Mitchell Highway, but no footpaths are available east of Betts Street. Footpaths are also provided in Mitchell Highway through the Town Centre on at least one side of the road (primarily the western side) and on all roads within the Town Centre.

While these are generally wide footpaths, there are only a small number of dedicated **shared paths**, again generally limited to the Town Centre; notwithstanding, the wide traffic lanes and verges/parking lanes, and low speed traffic conditions, would generally provide for safe on-road cycling.

4.7.2 Future Active Transport Infrastructure

Both the Cabonne PAMP and Cabonne Bike Plan identify the extension of active transport facilities along Euchareena Road from Watson Street to Back Saleyards Road; in Back Salesyard Road; and in Marsden Street. These paths are shown in Figure 22 of the Cabonne Bike Plan, which is reproduced below.

Figure 14: Cabonne Bike Plan Proposed Paths



Source: Bike Plan

While the Cabonne Bike Plan does not provide specific commitments with respect to what sort of active path is to be provided in these roads, the cost calculations in Appendix 4 of the Cabonne PAMP are based on a path width of 2.5m, i.e. a width suitable for a shared path, which would provide for both pedestrians and cyclists.

In regard to the priority of active transport projects for Molong, the path extensions along Euchareena Road and new paths in Back Salesyard Road and Marsden Street, are ranked relatively low out of all the projects identified in the Cabonne PAMP; however, having a new residential population on the Site will certainly increase demand for active transport facilities, and indeed would likely see these new paths having a higher priority than is currently the case.

Notwithstanding, and with reference to the discussion of active transport further to the Proposal provided in Section 5.11, given the proposed active transport infrastructure to be provided across the Site, it is unlikely that active transport infrastructure would be used (and therefore warranted) in Back Salesyard Road.

4.7.3 Active Transport Infrastructure Funding

Both the Cabonne PAMP and Cabonne Bike Plan identify the following potential funding sources for the extension and augmentation of active transport infrastructure:

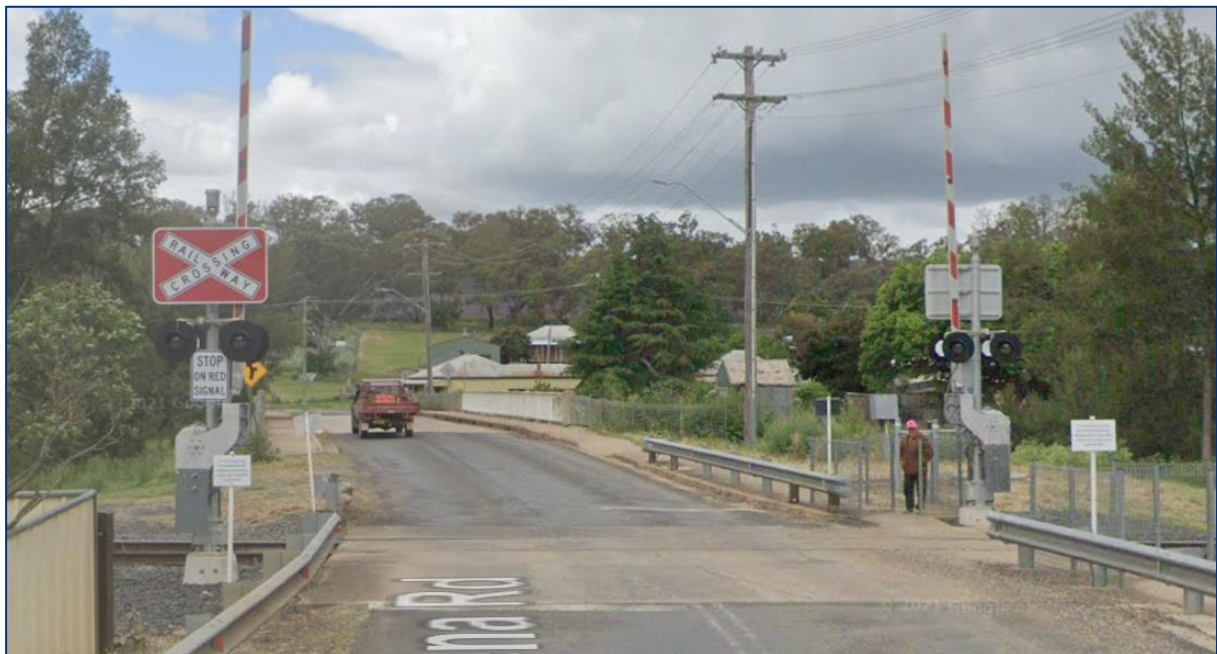
- The Australian Government Black Spot Program;
- The Australian Government Building Better Regions Fund; and
- The NSW Government Safer Roads Program.

It is noted that there is currently no specific reference to the provision of active transport infrastructure in the Contributions Plan.

4.8 Euchareena Road Level Crossing

A level crossing of the Broken Hill rail line is located in Euchareena Road approximately 40m east of Mitchell Highway. The level crossing is effectively provided with the highest level of safety infrastructure, including approach signage, warning signage, warning lights and barriers, as shown in Figure 15.

Figure 15: Euchareena Road Level Crossing



Source: Google

While we have not been able to source any specific information in regard to the frequency of trains through the level crossing, we understand that these are limited to freight trains only. Based on our discussions with Wakehurst Ashfield, the rail line is used only a small number of times each day, though it is acknowledged that freight trains might close Euchareena Road for more time than a standard level crossing given their length and speed.

In our discussion with Council in the preparation of TA 2022, it was agreed that an additional trip distribution scenario would be assessed whereby all trips to the south of Molong (i.e. Mitchell Highway) would be via Marsden Street and the intersection of Mitchell Highway & Marsden Street. This scenario has again been assessed to ensure that – should there be extensive delays at the level crossing – the alternative route (via Marsden Street) can appropriately accommodate the higher traffic volumes (see also Section 5.5.2).

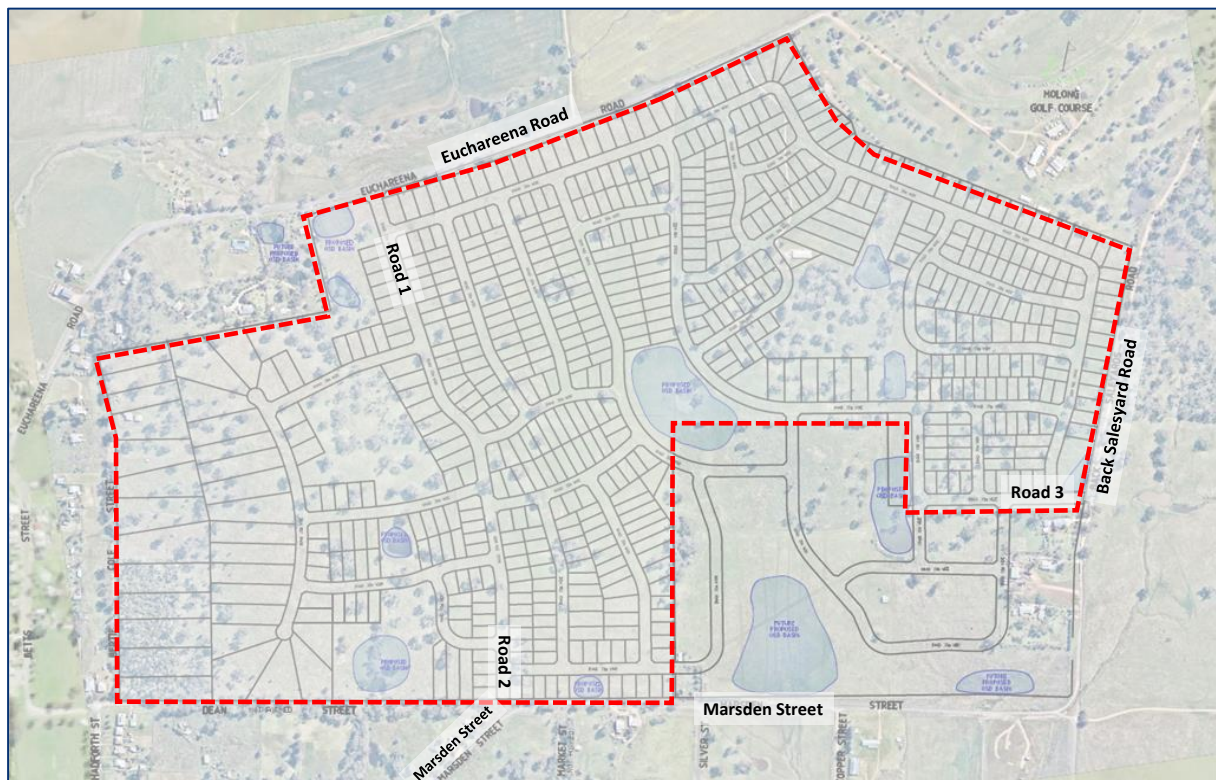
5 The Proposal

5.1 Overview

As discussed in the [Introduction](#), the Proposal provides for the development of low density residential lots across the Site; the Proposal would provide for approximately 620 low density residential lots.

The Concept Plan for the Site is shown in [Figure 16](#), noting that arc traffic + transport has named some of the key internal roads for ease of reference.

Figure 16: Planning Proposal Concept Plan



Source: Heath Consulting Engineers

In line with the intent of both the Settlement Strategy and LSPS 2020, the Proposal does not provide for large rural residential lots, but rather what are considered to be standard residential lots, the average area of most being approximately 800m², with a small number of larger lots in the western portion of the Site based on environmental considerations.

With reference to [Figure 16](#), it is noted that an additional parcel of land is located at the north-western corner of the intersection of Marsden Street & Back Salesyard Road. This land does not form part of the Proposal, but is also zoned for future residential development within MOL 2. In order to provide a worst case assessment of future conditions, this parcel of land – which is estimated to provide for up to 100 additional residential lots – has been included in the traffic analysis provided in sections below to ensure that the Proposal does not rule out, or be ruled out by, the development of this land at some time in the future.

5.2 Access

5.2.1 Access Roads

Access to the local road network is proposed from all adjacent roads, including:

- 1 access road to Euchareena Road;
- 1 access road to Back Saleyards Road; and
- 1 access road to Marsden Street.

The design of these interface intersections has been determined further to a review of existing and future traffic volumes at each, and is discussed further in [Section 5.6](#).

5.2.2 Internal Access

With reference to [Figure 16](#), the internal road network would provide a number of collector roads (providing access to the key interface intersections) and then local roads. The design of these internal roads is examined further in [Section 5.8](#).

5.2.3 Emergency Access

Further to preliminary bushfire studies, parts of the Site are anticipated to be designated as lying in a *bushfire prone zone*, and as such would require perimeter (and potentially internal) roads that provide compliance with the requirements of PBP 2019. Further assessment in this regard will be required as part of future DAs to determine the location of these roads, and also their potential role in providing parts of any required Asset Protection Zones (**APZs**).

5.3 Trip Generation

The RMS Guide provides trip generation rates for standard residential dwellings in regional centres; these rates are:

- 0.78 trips per dwelling in the AM peak hour; and
- 0.71 trips per dwelling in the PM peak hour.

Importantly, all of the residential suburbs surveyed for the RMS Guide are located in close proximity to a major regional centre, including Wollongong, Dubbo, Wagga and Orange, and moreover within a 5 – 10 minute drive to key destinations within each centre.

With reference to our past work on regional subdivisions not in immediate proximity to a regional centre, residential trip rates are generally lower than the RMS Guide rates, being 0.5 – 0.6 trips per dwelling in the peak hours, and 5 – 6 trips per dwelling daily. These trip rates have also been endorsed by Council, with the Contributions Plan stating the following:

Monitoring of the shire roads by Council has indicated that a very conservative AADT for a rural lot with a permissible dwelling is six (6) light vehicle equivalents...Council has decided to adopt the lower figure of six (6) AADT per additional residence...

We note further that these rates (0.6 trips per dwelling in a peak hour) were discussed and agreed with Council as part of the consultation in the preparation of TA 2022, and as such have been adopted for the traffic analysis provided in sections below.

5.4 Trip Distribution

5.4.1 Key Destinations

While there is little available information in regard to the distribution of residential trips in Molong, including no TfNSW Travel Zone data or the like, the distribution of trips has considered the following:

- The surveyed distribution of trips, particularly at the intersections of Mitchell Highway with Euchareena Road and Marsden Street;
- Major employment, education, retail and service centres for future residents lie to the south of Molong, including Orange (approximately 30 minute drive) and Bathurst (75 minute drive);
- A minor proportion of trips travelling to the north towards Wellington and Dubbo; and
- A moderate proportion of trips being contained within Molong itself, including school, shopping, local service and recreational trips.

Further to these considerations, **arc traffic + transport** has adopted the same distribution profile as previously discuss with Council (and adopted in TA 2022), being:

- 20% of trips to/from Mitchell Highway north of Molong;
- 60% of trips to/from Mitchell Highway south of Molong;
- 5% of trips to/from Euchareena Road east of Back Salesyard Road; and
- 15% of trips to/from the Town Centre (assigned to Bank Street).

5.4.2 External Routes

Further to the provision of access to Euchareena Road, Marsden Street and Back Salesyard Road, the key routes anticipated to be used include:

➤ [Trips to/from the North \(Mitchell Highway\)](#)

All Site trips to/from the north from all parts of the Site will be more efficient via Road 1 and Euchareena Road.

➤ [Trips to/from the South \(Mitchell Highway\)](#)

Trips between the northern parts of the Site and Mitchell Highway south of Marsden Street will be more efficient via Road 1 and Euchareena Road, while trips between the central and eastern parts of the Site and Mitchell Highway south of Marsden Street will be more efficient via Road 2 and Marsden Street.

➤ Trips to/from the East (Euchareena Road)

Trips between the northern, central and southern parts of the Site and Euchareena Road east of Back Salesyard Road will be more efficient via Road 1 and Euchareena Road, while trips from the eastern part of the Site to Euchareena Road east of Back Salesyard Road would be more efficient via Road 3 and Back Salesyard Road.

➤ Trips to/from the West (Town Centre)

Trips between the northern and central parts of the Site and the Town Centre will be more efficient via Road 1 and Euchareena Road, while trips between the southern part of the Site and the Town Centre will be more efficient via Marsden Street. Trips between the eastern part of the Site and the Town Centre would generally be split between these two routes.

5.4.3 Internal Trip Distribution

In determining the internal distribution of trips within the Site to the key interface intersections, **arc traffic + transport** has designated key intersections of collector roads and local roads as internal zones so as to appropriately determine the most viable routes through the Site and then to the interface intersections.

5.4.4 Arrival & Departure Profile

Based on our surveys of residential subdivisions in regional areas, it is estimated that:

- 30% of trips will be inbound and 70% of trips will be outbound in the AM peak period; and
- 70% of trips will be inbound and 30% of trips will be outbound in the PM peak period.

5.4.5 Trip Assignment

Further to sections above, **Figure 17** and **Figure 18** report the total trips generated by the Site in the AM and PM peak hours respectively further to the complete development of the Site in accordance with the Proposal.

The total future trips at all key intersections under a Base 2032 + Site scenario are shown in **Figure 19** and **Figure 20** for the AM and PM peak hours respectively.

Figure 17: AM Peak Hour Site Trips

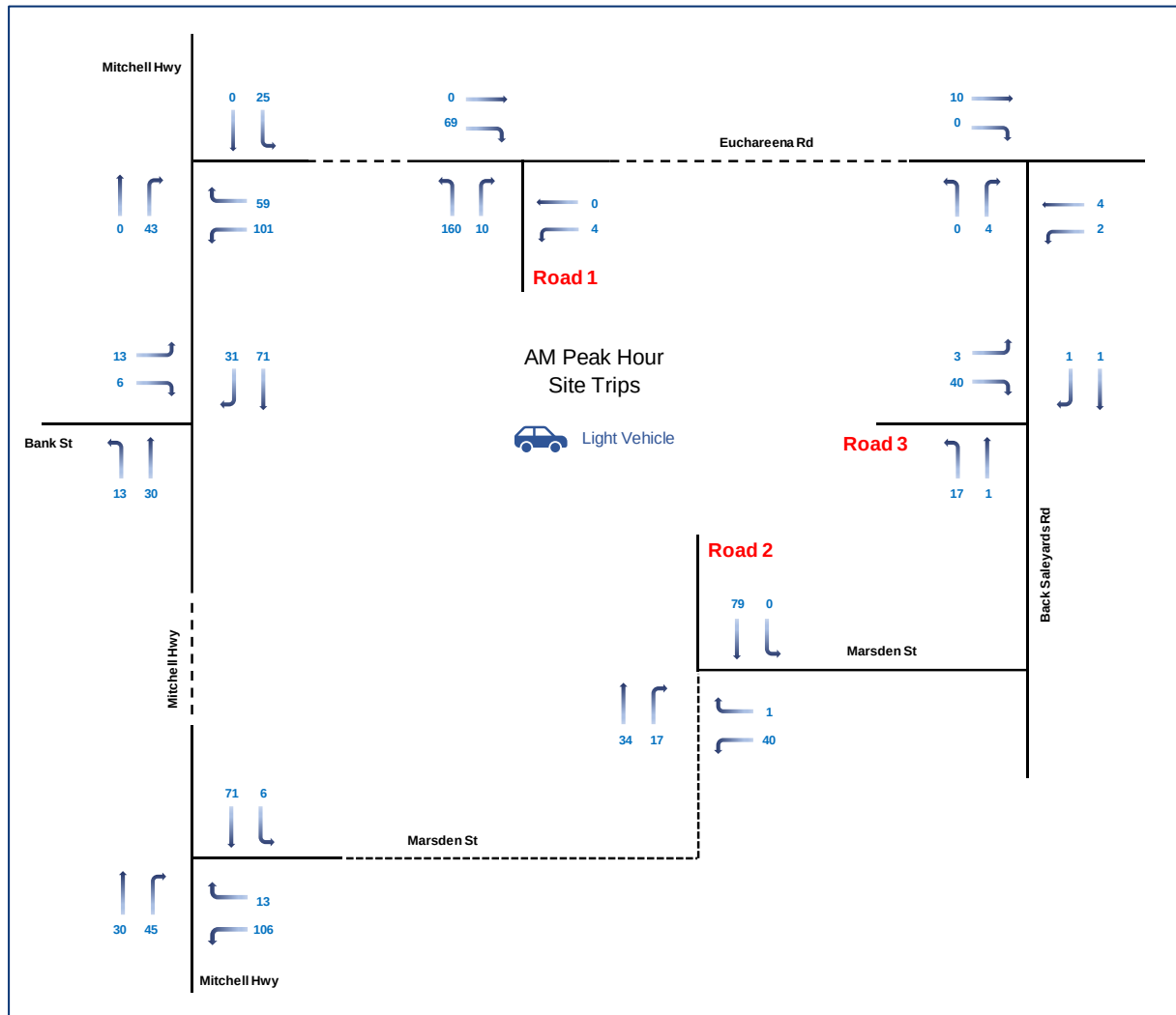


Figure 18: PM Peak Hour Site Trips

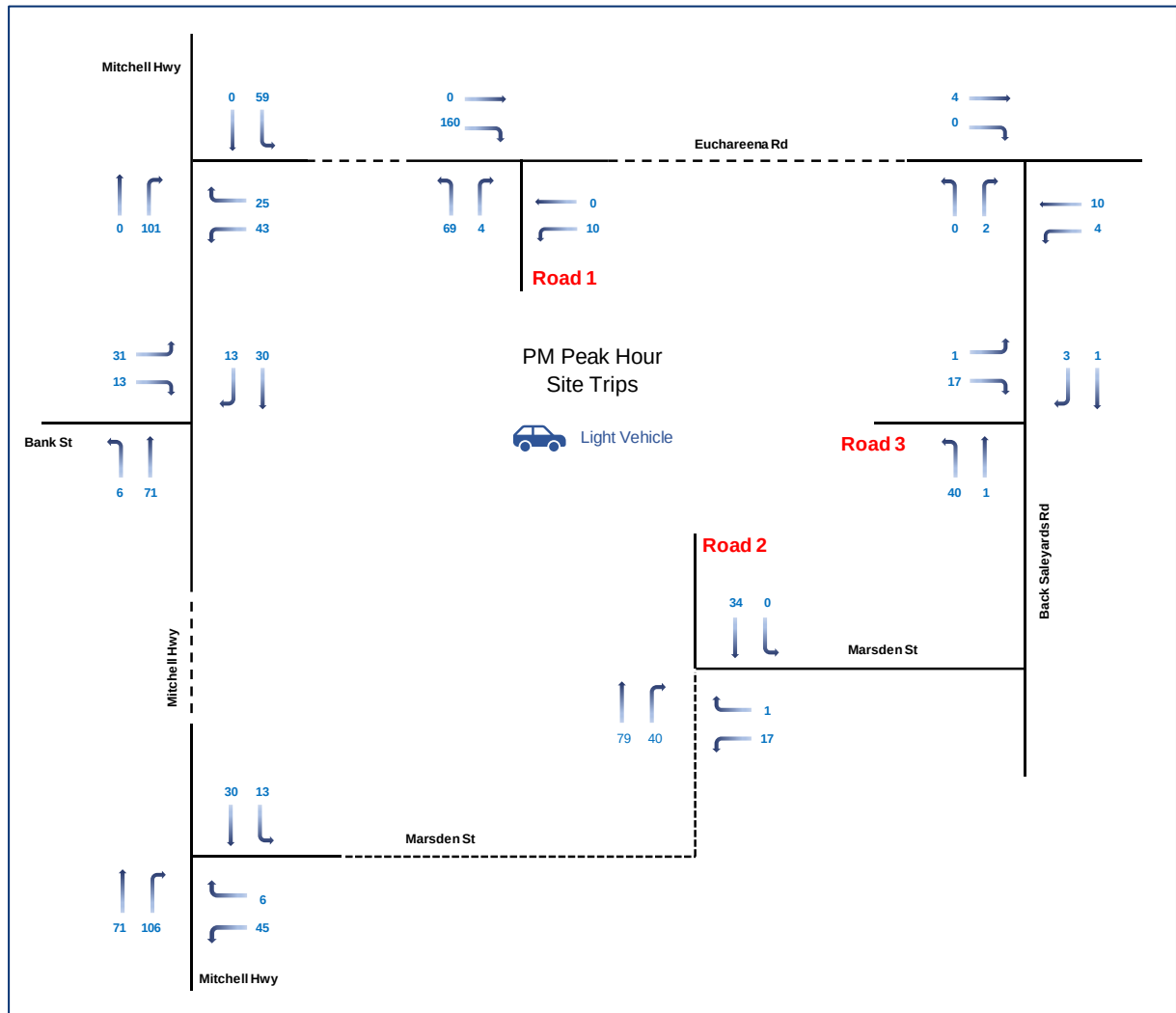


Figure 19: 2032 AM Peak Hour Base 2032 + Site Trips

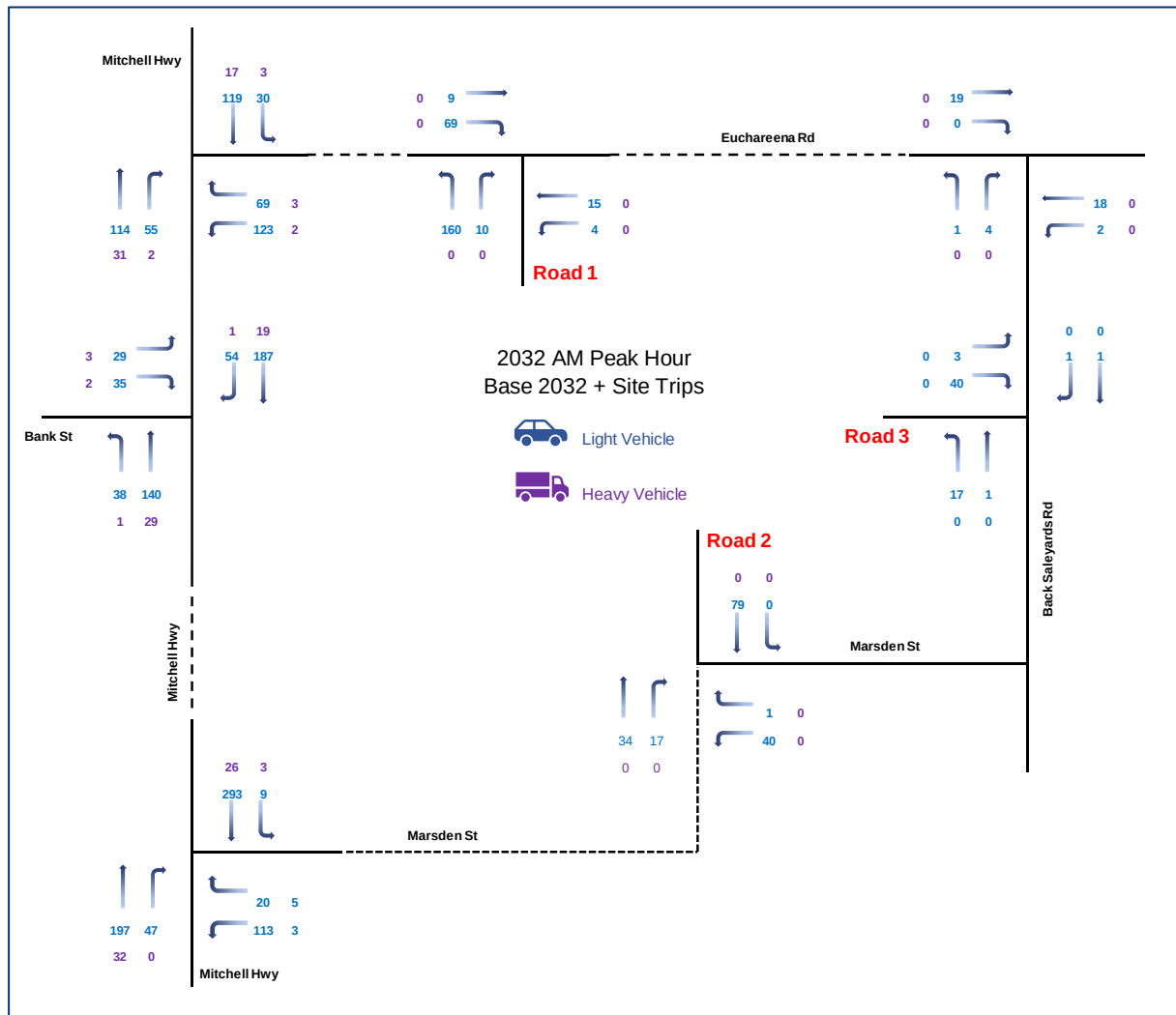
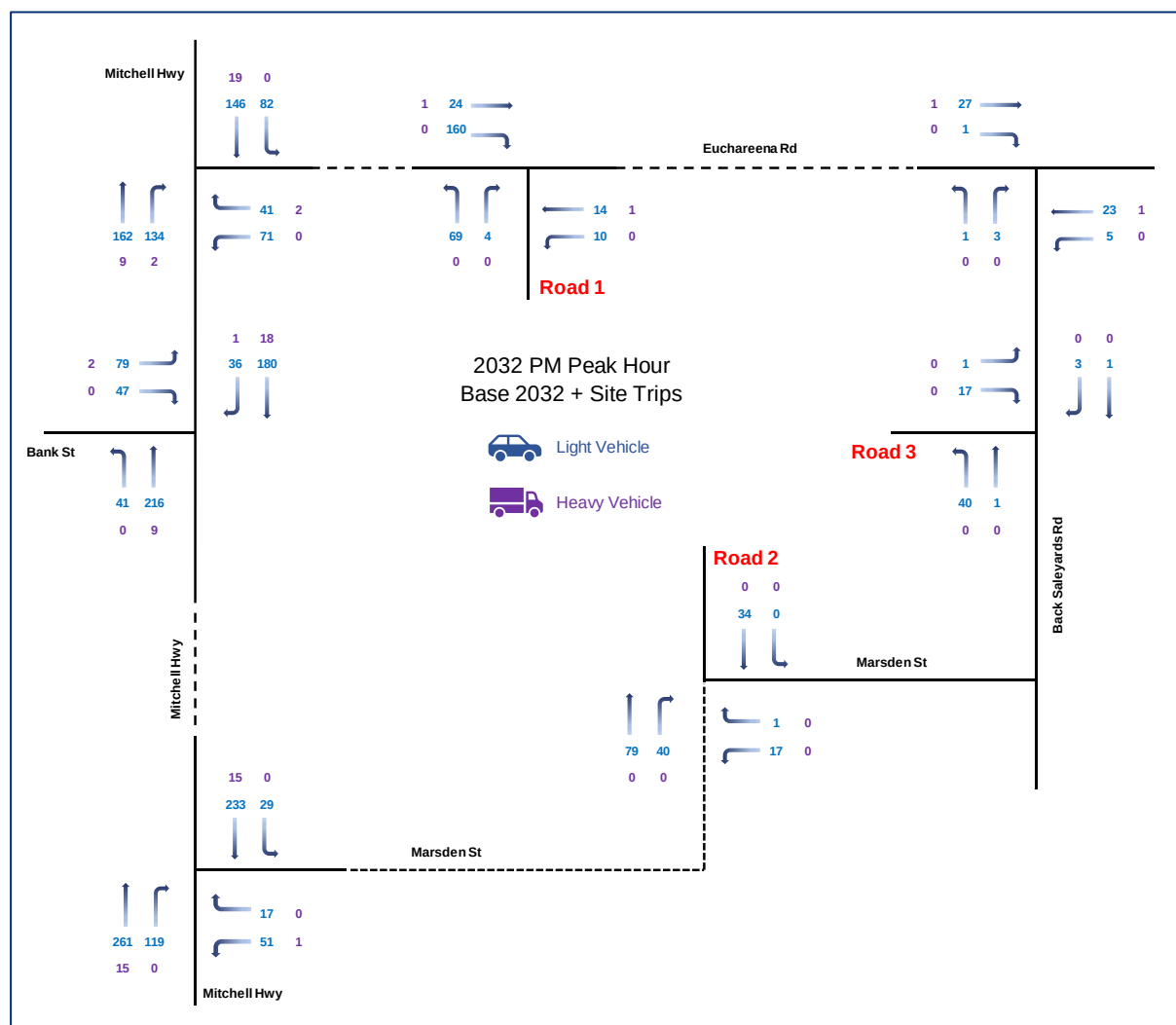


Figure 20: 2032 PM Peak Hour Base 2032 + Site Trips



5.5 Future Intersection Operations

5.5.1 Intersection Profiles

In order to assess the operation of the key intersections using SIDRA, it is in the first instance assumed that all existing intersections retain their existing geometry, while the new Site intersections to Euchareena Road and Back Salesyard Road will provide BAL and BAR treatments only, i.e. no additional turning lanes.

For the intersection of Marsden Street & Road 2, it is assumed that – given the significantly higher traffic volumes travelling north-south between Marsden Street and Road 2 – a T Intersection would be provided with priority to Marsden Street (southern approach) and Road 2, with Marsden Street (eastern approach) operating under Give Way control.

5.5.2 Future Intersection Operations

Further to the above, SIDRA has again been utilised to determine the future operation of the key intersections under the future Base 2032 + Site scenario; the results of the analysis are provided in Table 4.

Table 4: Base 2032 + Site Intersection Operations

Base 2032 + Site Intersection Operations	Level of Service		Average Delay (s)		Worst Delay (s)		Degree of Saturation	
	AM	PM	AM	PM	AM	PM	AM	PM
Mitchell Hwy & Euchareena Rd	A	A	2.9	3.0	7.5	9.0	0.194	0.157
Mitchell Hwy & Bank St	A	A	2.0	2.1	8.4	8.6	0.126	0.111
Mitchell Hwy & Marsden St	A	A	1.9	1.9	12.0	10.8	0.167	0.147
Euchareena Rd & Back Salesyard Rd	A	A	1.0	1.1	7.8	7.8	0.011	0.016
Euchareena Rd & Road 1	A	A	5.0	5.7	7.8	7.8	0.113	0.110
Marsden Rd & Road 2	A	A	1.7	1.6	5.0	5.1	0.043	0.067
Back Salesyard Rd & Road 3	A	A	4.4	4.4	4.6	4.7	0.035	0.023

With reference to Table 4, it is clear that total trip generation of the Site can be accommodated by the existing intersections, all of which continue to operate at a Level of Service A with very minimal delays and significant spare capacity.

With regard to queuing, reference to the SIDRA Movement reports in Appendix B indicates that:

- The 95%ile queue length – being the maximum queue length 95% of the time - in Euchareena Road on the approach to Mitchell Highway is 6.0m, i.e. 1 vehicle;
- The 95%ile queue length in Marsden Street on the approach to Mitchell Highway is 3.3m, i.e. less than 1 vehicle; and
- All other queues in minor approaches are less than 1 vehicles in both peak periods.

Also with reference to Table 4, all of the new interface intersections will operate at a Level of Service A, with very minimal average delays, significant spare capacity and minimal queues, if constructed to the simple T Intersection designs discussed in Section 5.5.1.

More details in regard to the design of these intersections is provided in Section 5.6.

5.5.3 Level Crossing Trip Redistribution

As discussed in Section 4.8, the potential exists that during some peak periods vehicles could be delayed at the Euchareena Road level crossing. While the discussion of the level crossing provided in Section 4.8 indicates that there would be few instances of the level crossing being used (i.e. stopping vehicles), as a worst case arc traffic + transport has examined a scenario where all Site trips generated to/from the south use Marsden Street to Mitchell Highway, i.e. all trips to/from the south utilise the intersection of Mitchell Highway & Marsden Street.

The results of this SIDRA analysis indicate that the intersection would continue to operate with only minor delays, reporting a Level of Service B (worst delay 15.4 seconds) and Level of Service A (worst delay 12.0 seconds) in the AM and PM peak hours respectively. With reference to the detailed SIDRA Movement reports provided in Appendix B, under these conditions the intersection still retains significant spare capacity, and the 95%ile queue length in the Mitchell Highway right turn lane to Marsden Street does not exceed 2 vehicles, i.e. it is easily accommodated in the existing right turn lane.

As such, even if the distribution of trips was to be impacted by delays at the level crossing, the alternative southern route via the Mitchell Highway & Marsden Street intersection could easily accommodate the additional trip generation.

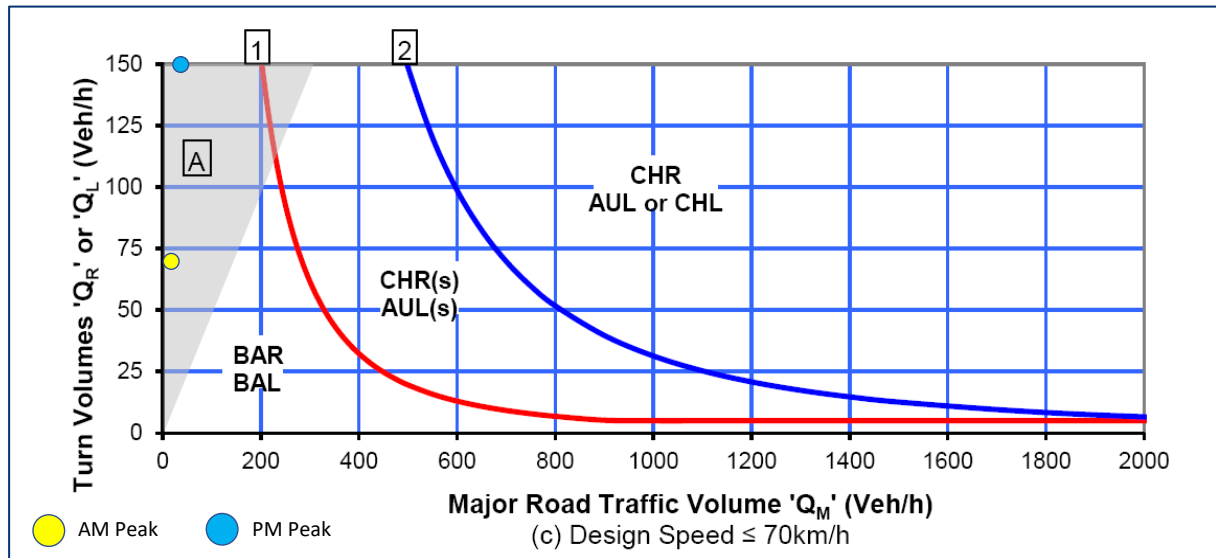
5.6 Interface Intersection Designs

5.6.1 Design Warrants

Warrants for the design of new intersections are provided in Austroads GTM Part 6, which include warrants for more urbanised areas where the speed in the major road is 70km/h or lower. As discussed, it is anticipated that speed limits in the key roads adjacent to the Site will – further to a submission to the Local Traffic Committee – be reduced to reflect the urbanised environment, likely to 50km/h. Notwithstanding, the GTM Part 6 70km/h warrants are the most appropriate for the assessment.

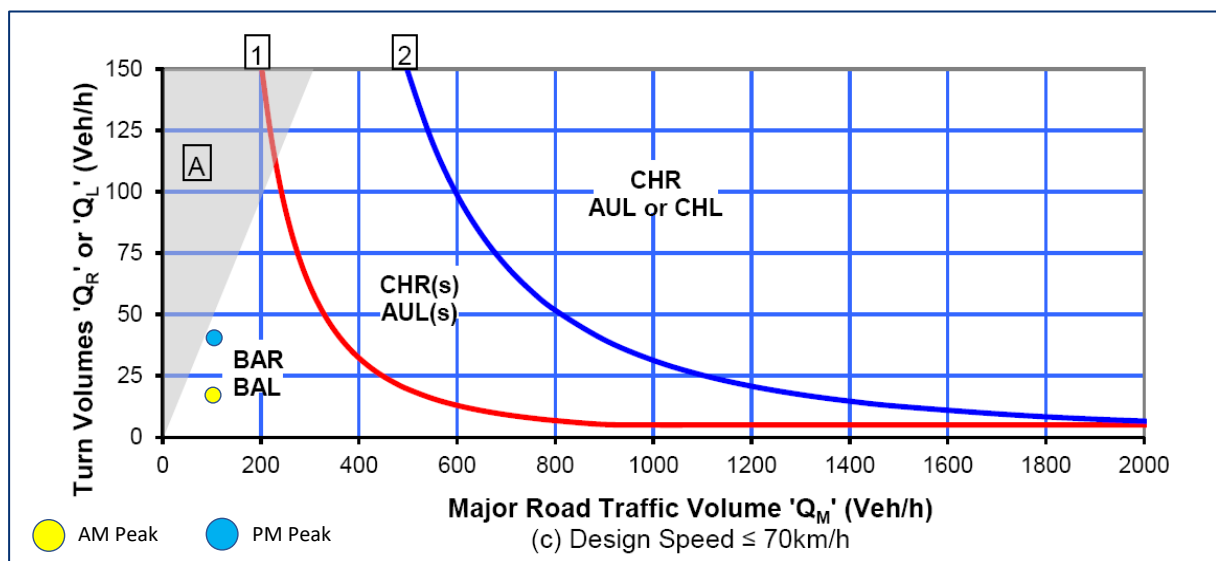
Figure 2.25 of GTM Part 6 – which provides warrants for roads with a design speed of equal to or less than 70km/h - is reproduced below for each of the new interface intersections, as well as the future traffic volumes at each intersection.

Figure 21: GTM Part 6 Intersection Warrants: Euchareena Road & Road 1



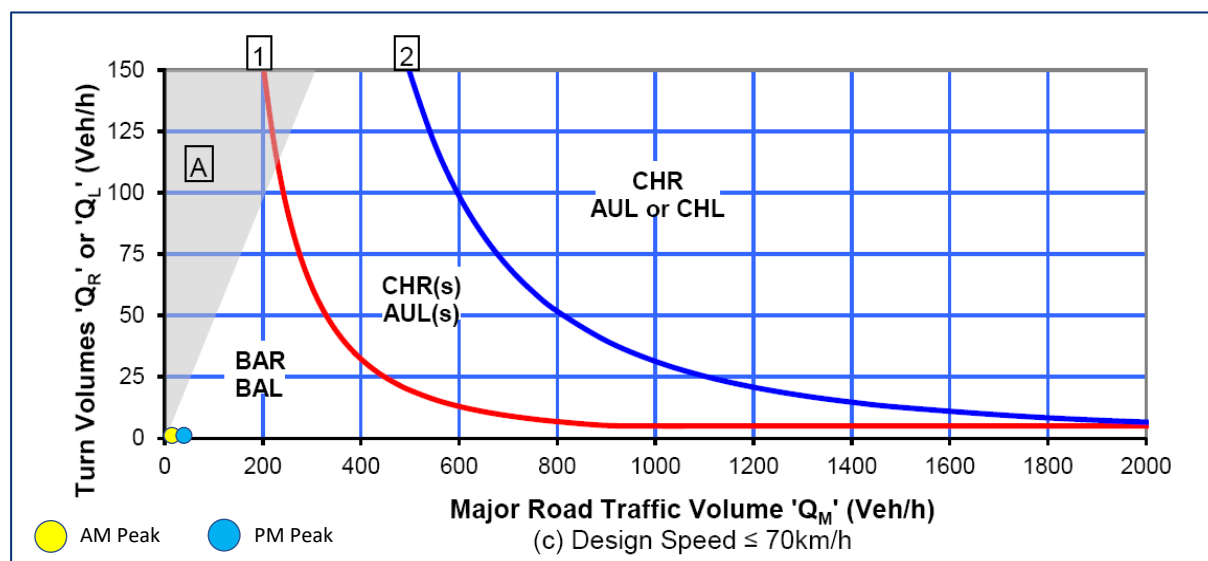
Source: Austroads GTM Part 6

Figure 22: GTM Part 6 Intersection Warrants: Marsden Street & Road 2



Source: Austroads GTM Part 6

Figure 23: GTM Part 3 Intersection Warrants: Back Salesyard Road & Road 3



Source: Austroads GTM Part 6

5.6.2 Euchareena Road & Road 1 Warrants

With reference to Figure 21, a BAR and BAL treatment is warranted at the intersection of Euchareena Road & Road 1. Notwithstanding, the significantly higher traffic volumes turning to (and from) Road 1 in both peak periods suggests that the priority movement should perhaps be the movements from Euchareena Road (east) to/from Road 1. A discussion of such circumstances is provided in Section 3.3.6 of GTM Part 6, which states:

If more than 50% of the traffic approaching on a major road leg turns left or right, consideration needs to be given to possible realignment of the intersection to suit the major traffic movement. However, route continuity issues must also be considered (for example, realigning a highway to suit the major traffic movement into and out of a minor road would be unlikely to meet driver expectation).

Notwithstanding, it is our opinion that, given the clear identification of Euchareena Road as a sub-regional connection between Euchareena and Molong, and therefore a driver's expectations approaching the intersection, that priority should remain to eastbound and westbound traffic in Euchareena Road.

In addition, it is the opinion of **arc traffic + transport** that while the warrants fully support the provision of only BAR and BAL treatments (given the minimal volumes in Euchareena Road) it would be appropriate to provide a formal Channelised Right (**CHR**) turn treatment for the movement Euchareena Road to Road 1. This recommendation reflects the future adjacent urban environment, and will also provide a more identifiable formal entrance to the Site.

The CHR, BAR and BAL designs are discussed in further detail in Section 5.7.

5.6.3 Marsden Street & Road 2

With reference to Figure 22, BAR and BAL treatments are warranted at the intersection of Marsden Street & Road 2, noting again the discussion in Section 5.5.1 that prioritising north-south movements between Marsden Street & Road 2 reflects both the majority of the traffic volume and the geometry of the future intersection.

arc traffic + transport does not consider a higher order treatment (such as a CHR) as being required for the right turn movement Marsden Street south to Marsden Street east given the very minimal right turn traffic volumes.

5.6.4 Back Salesyard Road & Road 3

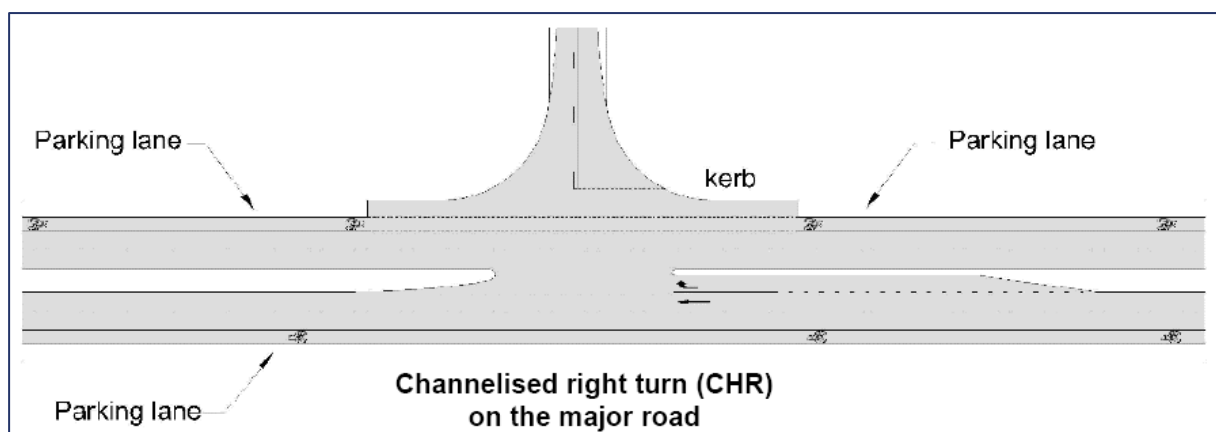
With reference to Figure 23, BAR and BAL treatments are required at the intersection of Back Salesyard Road & Road 3. Again noting the discussion in Section 5.6.2, it is our opinion that prioritising the movements from Back Salesyard Road (south) and Road 3 would be contrary to the drivers expectations approaching the intersection (from Back Salesyard Road north).

arc traffic + transport does not consider a higher order treatment (such as a CHR) as being required for the right turn movement Back Salesyard Road to Road 3 given the very minimal right turn traffic volumes.

5.7 Intersection Design

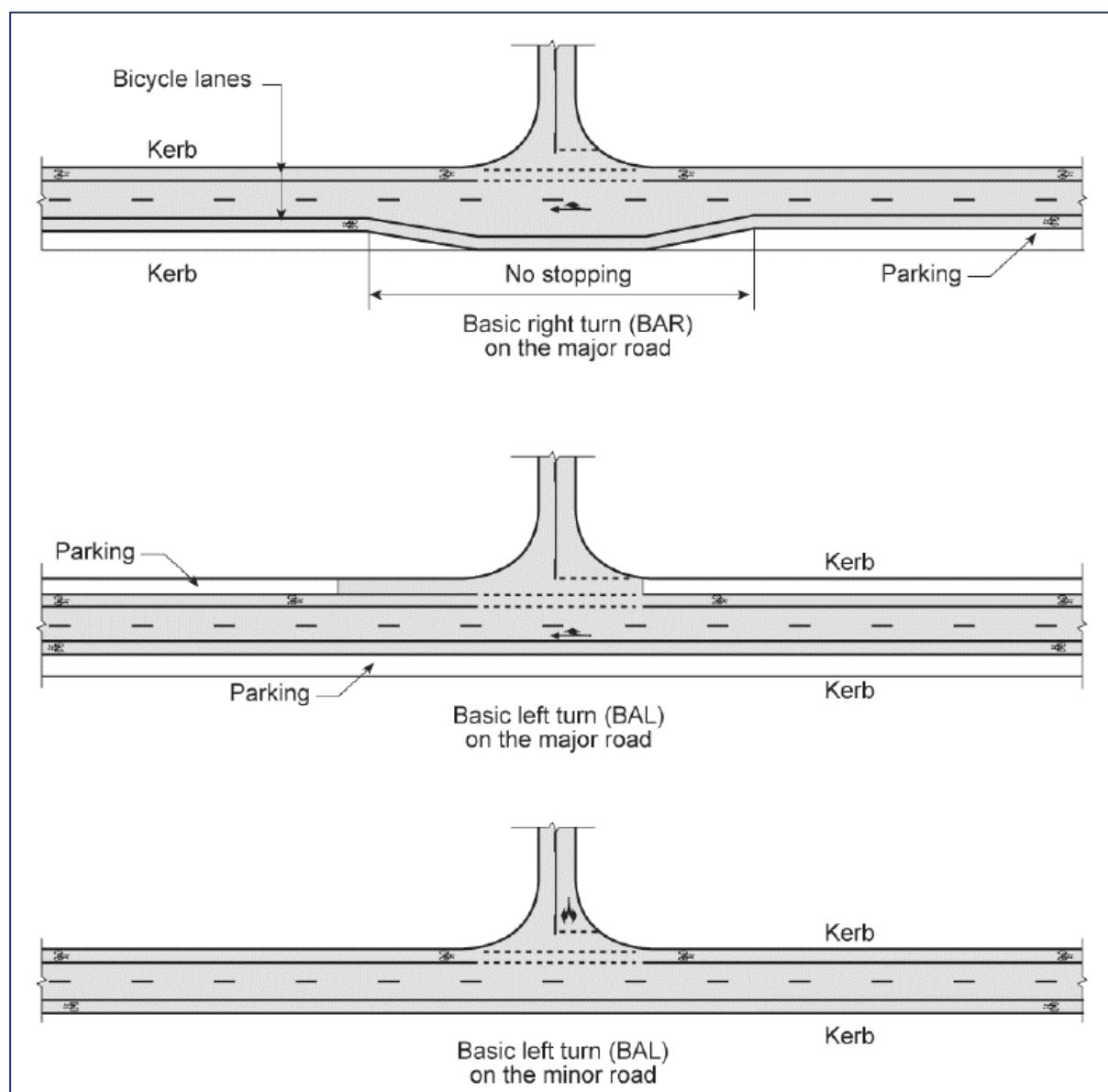
All auxiliary lane treatments at each of the interface intersections will be designed to provide full compliance with the GRD Part 4 warrants. The design of an urban CHR treatment is shown in Figure A.9 of GRD Part 4, while the design of the urban BAR and BAL treatments are shown in Figure A.3 of GRD Part 4; both these figures are reproduced below.

Figure 24: Austroads Urban Channelised Right Treatment



Source: GRD Part 4

Figure 25: Austroads Urban Basic Treatments



Source: Austroads GRD 4

The intersection treatments detailed above will provide for the full development of the Site in accordance with the Proposal.

The final detailed design of all interface intersections will be determined as part of the future DA process.

5.8 Internal Road Network

5.8.1 Council's Engineering Guidelines

Council's recommended road hierarchy for new residential estates is generally based on the number of residential lots with access to each road; this hierarchy is detailed in Table 2.1 of the Engineering Guidelines, which is reproduced below.

Table 5: Engineering Guidelines Road Hierarchy

Function	Max. No. of Dwellings/Lots Served	Design Traffic (ESA's)	Frontage Access	Design Speed Environment (km/h)
Urban				
Urban Collector	300	2.0×10^6	Yes	50
Urban Local Access	100	6.0×10^5	Yes	50
Urban Cul-de-sac	25	2.0×10^5	Yes	40
Industrial		1.0×10^7	Yes	50
Rural				
Rural Collector		2.0×10^6	Yes	80 - 100
Rural Local Access		1.0×10^5	Yes	60

Source: Engineering Guidelines

In turn, the recommended profile of these roads is detailed in Table 2.3 of the Engineering Guidelines, which is reproduced below.

Table 6: Engineering Guidelines Road Profiles

Class of Road	Width of Road Reserve	Footway Width	C'way Width	Traffic Lanes	Parking Lanes	Seal Width	Formation Width	Shoulder Width
Urban								
Urban Collector	20	2 / 3.5	13.0	2 / 3.5	2 / 3.0			
Urban Local Access	17	2 / 3.5	10.0	2 / 3.0	2 / 2.0			
Urban Cul-de-sac	15	2 / 3.5	8.0	2 / 3.0	2 / 1.0			
Industrial	20	2 / 3.5	13.0	2 / 3.5	2 / 3.0			
Rural*								
Rural Collector	20					8.0	10.0	2 / 1.0
Rural Local Access	20					6.0	8.0	2 / 1.0
Pedestrian Facilities								
Pathway	5	1.2						
Cycleway	5	2.0 – 2.5						

Source: Engineering Guidelines

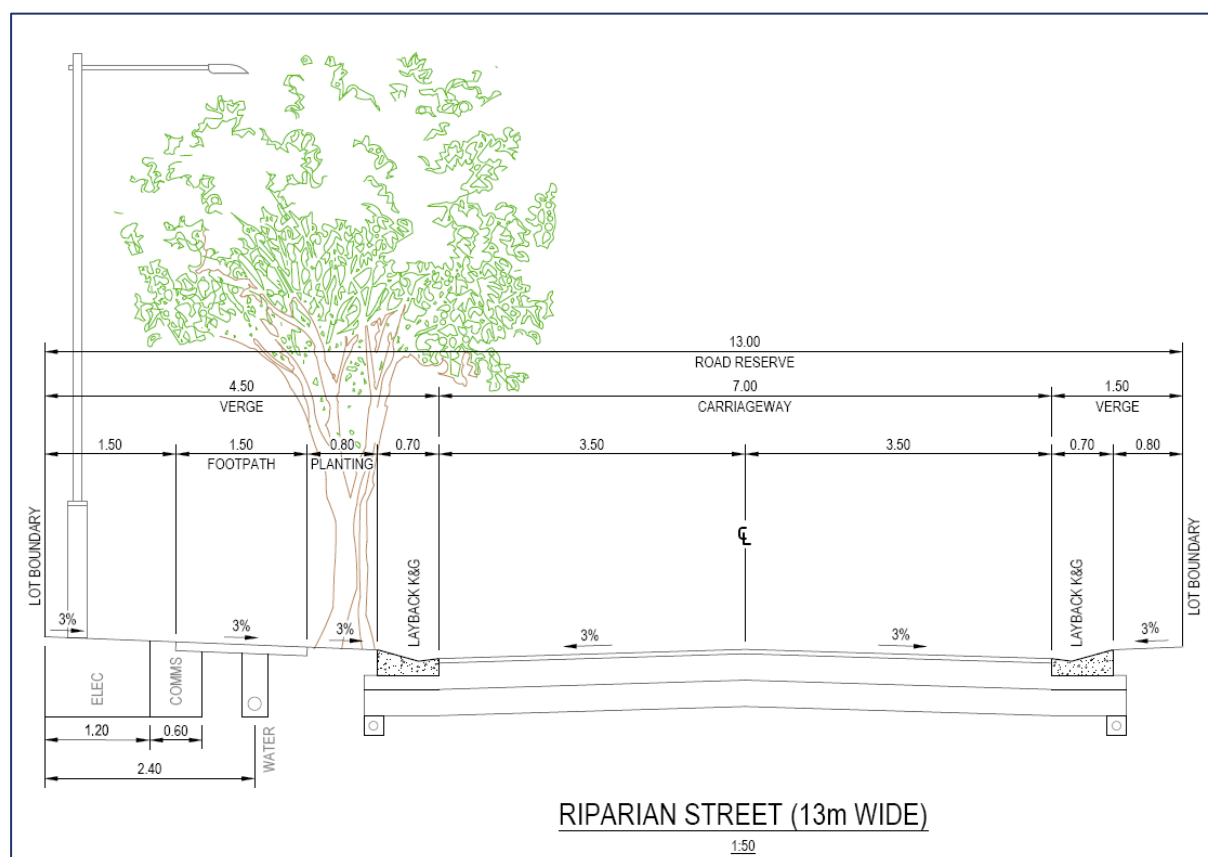
5.8.2 Proposed Road Profiles

While the Proposal provides for all internal roads to be constructed in accordance with the Engineering Guidelines, the Proposal provides for the Urban Collector roads to include a shared path on one side of the road, and a footpath on the other; while the Urban Local Access roads will provide footpaths on both sides of the road.

It is noted that a number of internal roads are adjacent to riparian corridors, and as such would generally provide a reduced road reserve as some of the reserve is accommodated in the riparian corridor.

In this regard, arc traffic + transport has recently completed a detailed review of road profiles for a number of new urban release areas across the NSW south coast; based on our review of DPE and (numerous) Council road profiles, the recommended Riparian Street profile identified by arc traffic + transport for application in future release areas is shown in Figure 26.

Figure 26: General Riparian Street Profile



Source: arc traffic + transport

With reference to Figure 26, if the general principles of this Riparian Street profile were applied to the Engineering Guidelines' Urban Collector and Urban Local Access roads, the intent would be to reduce the width of the verge adjacent to the riparian corridor from 3.5m to 1.5m. It is noted that APZs can also be provided as part of the Riparian Street where required.

The final design of any roads adjacent to riparian corridors will be determined in consultation with Council as part of future DAs.

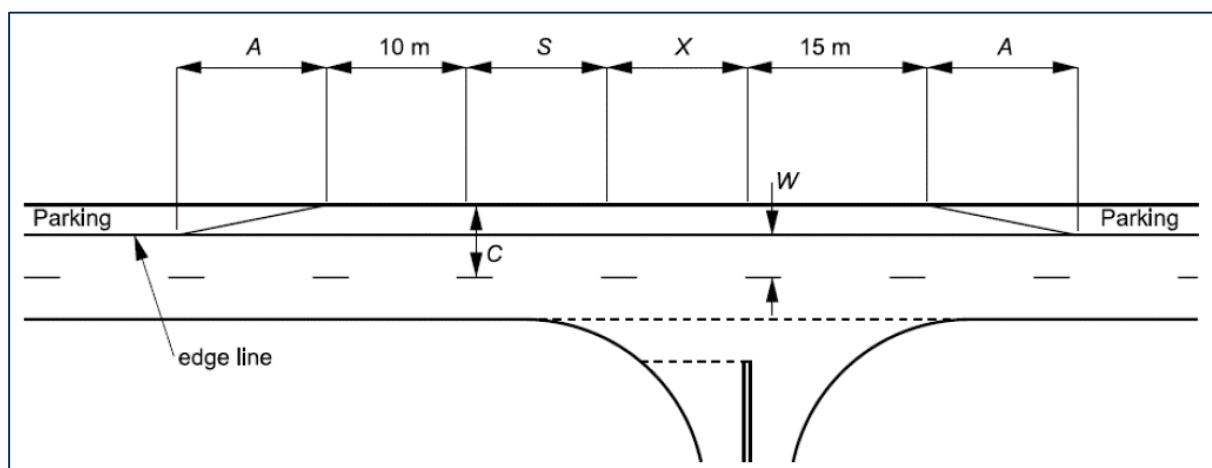
5.8.3 Internal Intersections

The internal road network has been designed so as to reduce to as great an extent as possible straight sections of road with priority such as would potentially lead to higher vehicle speeds that the local road design speed of 50km/h. This is primarily achieved by providing a road network which uses T Intersections (generally under priority control) at the junctions of collector roads and local roads, and of local roads and local roads.

Based on the future traffic volumes within the Site, the only intersections that would require additional consideration in regard to the provision of any auxiliary treatments are those along Road 1, Road 2 and Road 3. In this regard, these intersections would also be designed to provide BAR and BAL treatments in accordance with the GTM Part 6 warrants discussed in [Section 5.6.1](#); however, the design of the BAR treatment is different to those of the interface intersections, utilising the carriageway width otherwise provided for – for example – on-street parking instead.

The design of this BAR treatment is shown in Figure 7.6 of GRD Part 4A, and is reproduced below.

Figure 27: Austroads Urban BAR Treatment (with Parking)



Source: GRD Part 4A

It is noted that – based on the design of all collector and local roads within the Site – BAR and BAL treatments will essentially be provided at all intersections simply based on the width of carriageway for all roads in accordance with the Engineering Guidelines.

5.9 External Road Upgrades

5.9.1 Overview

As discussed in [Section 5.5.2](#), the SIDRA analysis indicates that the key existing intersections along Euchareena Road and Mitchell Highway do not require upgrades to accommodate the additional traffic generated by the Proposal.

However, road upgrades will be required in the key roads providing access for the Site that are currently designed to a lower standard than required under the Engineering Guidelines. This specifically includes sections of Marsden Street and Back Salesyard Road; the upgrade of these roads is discussed further in sections below.

5.9.3 Marsden Street

As discussed in [Section 4.1.5](#), Marsden Street provides a sealed carriageway between Back Salesyard Road and Mitchell Highway that varies in width between approximately 6.0m (in the immediate vicinity of the Site) and approximately 8.0m through the existing urban area (generally west from Stuart Street). Other than on the immediate approach to Mitchell Highway, Marsden Street does not provide a profile that meets the Engineering Guidelines requirements; while the trafficable width is generally compliant, there are no sealed verges, nor in turn active transport infrastructure.

As discussed in [Section 5.8](#), the road hierarchy (and in turn road profiles) is based on the number of residential lots are provided with access to a road, but additional width is also provided in urban areas for kerbside parking which significantly widens the road reserve.

For Marsden Street, the number of lots generating traffic to Marsden Street in the future indicates that it would require a Collector Road profile, and as such would need to be widened to a 20.0m reserve. However, it is questionable whether the Collector Road profile is required for the entire length of Marsden Street given that for the majority of its length (between the Site and Mitchell Highway) it is providing access for only a small number of dwellings, i.e. there would be little demand for the additional carriageway width provided as kerbside lanes for – primarily – parking.

In this regard, it is of course instructive to look at the profile of Euchareena Road, and again specifically sections of Euchareena Road which provide access only to a small number of dwellings; typically, the sealed carriageway in Euchareena Road is between 6.0m and 7.0m between Back Salesyard Road and the railway crossing.

This width is more than appropriate to the traffic volumes that will be generated in Euchareena Road in the future, but as importantly this width – a minimum of 6.0m – would be appropriate to the future traffic volumes in Marsden Street.

Notwithstanding, and as discussed in [Section 4.7.2](#), the Cabonne PAMP and Cabonne Bike Plan include a new shared path also Marsden Street, which would of course require a widening of the sealed portion of Marsden Street.

Ultimately, any upgrade of Marsden Street will need to consider the additional traffic generated by the Site; the need for on-street parking; and the proposed provision of active transport infrastructure. This will require further consultation with Council as part of the future DA process.

5.9.4 Back Salesyard Road

Much of the discussion above in regard to an upgrade of Marsden Street is also applicable to a future upgrade of Back Salesyard Road, particularly sections adjacent to the Site south from Road 3, where – as a minimum – a sealed carriageway of 6.0m would be required (based on the relatively minor future traffic volumes) which might then be widened to provide active transport infrastructure.

North of Road 3 (through to Euchareena Road) future traffic volumes would be very minimal, but a sealed carriageway of 6.0m minimum would still be required. As discussed in [Section 4.7.2](#), there is unlikely to be any active transport demand in this section of Back Salesyard Road given the active transport provisions through the Site, and as such a widened reserve (to provide a shared path) would likely not be warranted.

Ultimately again, any upgrade of Back Salesyard Road will need to consider the additional traffic generated by the Site and the proposed provision of active transport infrastructure. This will require further consultation with Council as part of the future DA process.

5.10 Public Transport

With the significant increase in population arising not only from the Proposal but also other residential release areas in Molong (and across the Shire) there is significant potential for the introduction of new bus services; in the short term these might provide occasional services between the Site and the Town Centre, but in the medium to long term these route would likely extend to Orange; given a trip time of approximately 30 minutes between Molong and Orange, this is a more than viable alternative to a private vehicle trip.

Section 5.2 of the Bus Infrastructure Guide requires a minimum travel lane width of 3.2m, and a minimum kerbside lane width of 3.0m, to accommodate buses in new residential estates. With reference to [Table 5](#), these minimum widths are provided under the Urban Collector profiles which will be adopted for the collector roads within the Site.

In the first instance, and depending on the staging of development, it may be that a bus route is provided only though the centre of the Site (north-south via Road 1 and Road 2), but further to full development the route could be extended into the eastern part of the Site such that all residential lots lie within 400m of a bus route. An example of such a route is shown in [Figure 28](#).

Figure 28: Potential Bus Route



Ultimately, the introduction of new bus routes will be determined further to discussions with local bus companies, and further to consultation with Council and future residents.

5.11 Active Transport

As discussed, all roads within the Site will provide footpaths on one or both sides of the road, and the collector roads will also provide a shared path on one side of the road.

As discussed in Section 4.7.2, both the Cabonne PAMP and Cabonne Bike Plan indicate future bike (or shared) paths along Euchareena Road to Back Salesyard Road, along Back Salesyard Road and Marsden Street south-west to Mitchell Highway, and then along Mitchell Highway to Orange.

It may be that the extension of the bike path in Euchareena Road east of the Site could be replaced by the shared path through the Site (via Road 1 and Road 2) to Marsden Street, as the demand for active transport in this section of Euchareena Road (and in Back Salesyard Road between Euchareena Road and Marsden Street at Road 2) would likely be very minimal. This would also provide more funding for the provision of a bike path along Marsden Street between Road 2 and Mitchell Highway.

This is an issue that can be determined in a future DA further to consultation with Council.

5.12 Draft Construction Traffic Management Plan

5.12.1 General Construction Characteristics

In order to determine the means of appropriately managing construction traffic, it will in the first instance be necessary to define the key construction characteristics; this would include consideration of:

- Construction timeframe;
- Construction staff numbers;
- Construction heavy vehicle numbers;
- Key construction staff and materials origins/destinations.

These characteristics would be finalised with construction companies based on the staging of development across the Site.

5.12.2 Construction Hours

Construction hours are anticipated to be 7:00am – 5:00pm Monday to Friday and 8:00am – 12:00pm Saturday in line with standard construction hours in residential area; no works would be undertaken on Sundays or public holidays.

While not anticipated at this time, where it is necessary for works to occur outside of these hours, an application for an Outside of Hours Work Permit (**OHW Permit**) would be submitted to Council, and adjacent residents would also be notified of the proposed works. Any out of hours works would only commence further to an approval of the OHW Permit.

5.12.3 Site Access

It is anticipated that access to the Site during construction would be provided at the identified future intersections at Euchareena Road & Road 1, Marsden Street & Road 2 and Back Salesyard Road & Road 3.

5.12.4 Construction Trucks

➤ Truck Movement Hours

It is anticipated that truck movements will be limited to the same general construction hours as detailed in Section 5.12.2 to minimise the disruption to local residents; any out of hours truck movements would also be subject to the same OHW Permit application and notification process as described in Section 5.12.2.

➤ Truck Types

The majority of trucks required during the construction are anticipated to be Medium Rigid Vehicles (**MRVs**) and Heavy Rigid Vehicles (**HRVs**).

➤ Designated Truck Routes

Designated truck routes will be determined that, where possible, use higher order roads more suited to accommodating trucks rather than local residential streets.

Notwithstanding, given the relatively limited access routes, it is anticipated that a designated truck route will be via Road 1, Euchareena Road and Mitchell Highway; and via Road 2, Marsden Street and Mitchell Highway. The use of these routes will be finalised further to consideration of minimising amenity impacts, and of course the location of construction materials and the like.

5.12.5 Traffic

The traffic generation of the Site during construction will be detailed in the final CTMP, and include consideration of staff and heavy vehicle trips, and the distribution of those trips to the local road network. SIDRA analysis such as that provided in support of the Proposal would also be undertaken to ensure that all intersections operate at an appropriate Level of Service through the construction period, but given that the trips generated during the construction period would likely be much lower than residential trips further to full Site development, construction traffic is unlikely to have any significant impact on key roads and intersections.

5.12.6 Parking

The peak construction parking demand will be determined with consideration of the number of staff and any on-site truck parking provisions. Regardless, it is anticipated that there will be no issue providing all construction parking on-site, and as such parking in adjacent roads would not be permitted.

5.12.7 Construction Management

➤ Staff Parking

As discussed, all construction parking is to be provided on-site so as to minimise impacts on traffic flows in adjacent roads, and existing on-street parking demand.

➤ Deliveries & Materials Handling

All deliveries and materials handling will occur on-site at all times.

➤ Work Zones

Work zones may be required at different stages of Site development; a separate application to Council would be required in the event that any special or discreet work activities requiring the occupancy of any local roads.

➤ Pedestrian Management

Appropriate fencing will be provided along all Site boundaries so as to prevent unwanted pedestrian access.

➤ Traffic Guidance Scheme

For any works occurring in any of the frontage carriageways, an appropriate Traffic Guidance Scheme (**TGS** – formerly referenced as a Traffic Control Plan) would necessarily be prepared by persons accredited to Prepare a Work Zone Traffic Management Plan in accordance with the TCW Manual and AS1742.3. Where relevant, a TGS would be updated to respond to any changes to prevailing traffic conditions throughout the course of the construction works.

5.12.8 Project Manager Responsibilities

➤ Site Induction

All construction staff will be properly inducted prior to commencing work on-site. The induction will detail the Site's construction safety protocols, including:

- Site safety;
- Site access, amenities and general procedures;
- Truck movements and on-site parking;
- Client & neighbour requirements; and
- Project Management's policies and procedures.

➤ Truck Movements

The Project Manager will be required to take all steps necessary to ensure all trucks, and truck movements, are as safe as possible, and will not require truck drivers to drive under conditions that are unsafe. This will be achieved by undertaking the following:

- Ensuring all trucks are well maintained and that the equipment enhances driver, operator and passenger to as great an extent as practicable;
- Ensuring all truck drivers have a valid Verification of Competency for the class of vehicle they are driving;
- Identifying truck driver training needs and arranging appropriate training or re-training. This is anticipated to include truck driver competency assessments as part of all inductions, and regular Toolbox Talks on safety conditions, managing fatigue, approved truck routes and truck driver responsibilities; and
- Encouraging safe driving behaviour by not covering or re-imbursing staff speeding or other infringement notices, ensuring the legal use of mobile phones only while driving and providing training on, and circulating information about, travel planning and efficient truck driving habits.

➤ Communications Strategy

A Communications Strategy will be established by the Project Manager and included in the CTMP.

The Communications Strategy will outline the most effective communication methods to ensure adequate information is provided to relevant authorities and the local community, and will assist the Project Team to deliver any construction traffic changes with minimal disruption to the on-site vehicle and pedestrian environment.

The Communications Strategy will include:

- The erection of signs providing advanced notice of works and/or any traffic control measures to be implemented (on or off-site);
- Written notices to surrounding residents who would potential be impacted by the construction works (prior to commencement of those works); and
- A contact person from the Project Team to answer enquiries from local residents.

➤ CTMP Monitoring and Review

The development of a program to monitor the effectiveness of the CTMP will also be established by the Project Manager. The CTMP will be subject to ongoing review to further enhance the safety and efficiency of the construction works; any and all reviews will be documented by the Project Manager, with considerations for review potentially including the following:

- Tracking deliveries and general construction vehicle movements against estimated volumes;
- Identifying any shortfalls in the existing CTMP, and developing an updated action plan to address issues that may arise during construction (for example, parking or access issues);
- Ensuring that any required TCPs (where require) are updated by accredited persons to ensure they remain consistent with construction requirements and the intent of the CTMP; and/or
- Undertaking regular checks to ensure all loads are leaving the Site appropriately covered (where relevant).

5.12.9 Drivers Code of Conduct:

➤ Drivers Code of Conduct Objectives

Further to the above, a Drivers Code of Conduct (**Drivers COC**) will be prepared and provided to all truck and company vehicle drivers accessing the Site. The objectives of the Drivers COC include:

- Minimising the impact of truck movements on the on-site vehicle and pedestrian environment and local road network;
- Minimising conflict with other on and off-site road users;
- Minimising truck traffic noise; and
- Ensuring truck drivers use the designated truck routes (as detailed in Section 3.3.3) based on the size of truck they are driving.

The Drivers COC will also require that, while driving any truck or company vehicle for construction related purposes, drivers must:

- Demonstrate safe driving and road safety activities;
- Abide by traffic and road legislation; and
- Follow Site signage and instructions at all times.

➤ Breach of Drivers Code of Conduct

The following activities by any truck or company vehicle drivers would be considered as a breach of the Drivers COC:

- Reckless or dangerous driving causing injury or death;
- Driving whilst disqualified or not correctly licensed;
- Drinking or being under the influence of drugs while driving;
- Failing to stop after an incident;
- Loss of demerit points leading to suspension of licence;
- Any actions that warrant the suspension of a licence; and/or
- Exceeding the speed limit in place on any permanent or temporary roads.

Any drivers found to be in breach of the Code of Conduct would be notified of the breach, as would their immediate managers, who would in turn be required to provide additional training/guidance to the driver. Any repeat offenders would be prevented from returning to Site.

➤ Driver Responsibilities

All truck and company vehicle drivers must:

- Be responsible and accountable for their actions when operating a truck or company vehicle;
- Ensure they have a current driver licence for the class of vehicle they are driving, and this licence is to be carried with them at all times;
- Immediately notify their manager if their drivers' licence has been suspended, cancelled, or has had limitations applied;
- Comply with all traffic and road legislation when driving;
- Regularly check the operating condition of trucks or company vehicles;
- Not drive along routes other than the designated truck routes in accordance with the size of vehicle they are driving.
- Never drive under the influence of alcohol or drugs;
- Wear a safety seat belt at all times when in the vehicle;
- Report any near-hits, crashes and scrapes to their manager, including those that do not result in injury;
- Report infringements to a manager at the earliest opportunity;
- Report vehicle defects to a manager prior to the next use of the vehicle; and

- Keep loads covered at all times (where relevant).

➤ Crash or incident Procedure

In the event of a crash or other traffic incident, the truck or company vehicle driver is required to:

- Stop the vehicle as close to it as possible to the scene, making sure this not hindering traffic.
- Ensure one's own safety first, then help any injured people and seek assistance immediately if required;
- Ensure that key information is exchanged with the other driver, including the registration, names and insurance details of other vehicles/drivers;
- Ensure that the police are contacted should there be a disagreement over the cause of the crash, if there are injuries or if property is damaged; and
- As soon as reasonably practical, report all details gathered to the Project Manager.

5.13 Compliance with Previous Conditions

Noting that any Conditions of Consent provided further to an approval of the Proposal are anticipated to reflect those provided in regard to the DA 2006/295 approval, a brief response to each of these previous Conditions as they relate to the Proposal is provided below:

- **Road Improvement Contribution:** It is anticipated that a road improvement contribution will be levied by Council for the ongoing maintenance of Euchareena Road based on the additional trip generation of the Site, while the upgrade of Marsden Street and Back Salesyard Road would be the subject of a VPA.
- **Traffic Safety:** To maximise safety for vehicles entering and departing the Site, a submission will be prepared for consideration by Council's Traffic Committee for a reduced speed limit of 50km/h in Euchareena Road (through to Back Salesyard Road), Back Salesyard Road and Marsden Street.
- **Road Design and Construction:** All internal roads will be designed in accordance with the Engineering Guidelines.
- **Construction Management:** Construction will only commence further to the preparation and approval of a CTMP to maximise the safety of vehicle passengers and pedestrians during the construction period. A CTMP will necessarily be prepared as part of the future DA process.
- **Intersection of Euchareena Road & Road 1:** As discussed in Section 5.6, the intersection of Euchareena Road & Road 1 will be upgraded in accordance with Austroads GRD 4 to provide BAL and BAR turn treatments, as will the intersections of Marsden Street & Road 2, and Back Salesyard Road & Road 3.
- **Staging:** The Site is anticipated to be developed in stages, but the critical interface intersections and external road upgrades required to accommodate the total traffic generation of the Site will be provided prior to any new lots being occupied.

- **Bicycle Access to Back Salesyard Road:** As discussed in Section 5.11, shared paths will be provided through the Site and connect to Euchareena Road, Back Salesyard Road and Marsden Street, all of which are anticipated to provide shared paths in accordance with the PAMP and Bike Plan.

Overall therefore, the Proposal appropriately responds to all of the Conditions previously provided in regard to DA 2006/295.

6 Conclusions

Further to our assessment of the Proposal, arc traffic + transport has determined the following:

- The Proposal is entirely in line with the objectives of the Settlement Strategy and LSPS 2020.
- While bus services are not currently provided in Euchareena Road, the potential exists for future services to be introduced as the residential population of the Site and other identified residential releases increases.
- An active travel path is identified in the PAMP and Bike Plan, which would provide a dedicated active transport route between the Site and the Town Centre, significantly increasing the potential for active transport trips.
- Active transport infrastructure, including shared paths and foot paths, will be provided in all roads within the Site in line with the Engineering Guidelines requirements for Urban Collector and Urban Local Access road profiles.
- The trip generation of the Site is relatively moderate; based on our surveys of similar residential subdivisions and Council's own data, a trip rate of 0.6 trips per dwelling in the peak hours has been adopted, resulting in a total trip generation of approximately 370vph in both peak periods further to the full development of the Site.
- SIDRA analysis indicates that the key intersections will continue to operate at a good Level of Service further to the full development of the Site regardless of the distribution of trips to Mitchell Highway south, with very moderate delays and the retention of significant capacity.
- The intersection of Euchareena Road & Road 1 will be upgraded to provide a CHR and a BAL, a design which exceeds the Austroads warrant requirements.
- The intersections of Marsden Street & Road 2, and Back Salesyard Road & Road 3, will be upgraded to provide BAR and BAL treatments which meet the Austroads warrant requirements.
- Marsden Street and Back Salesyard Road will be upgrade in line with the Engineering Guidelines to ensure that they provide an appropriate design to meet the future traffic demands of the Site. The final design of these roads – and specifically the incorporation of widened reserves to provide for on-street parking and/or active transport infrastructure will be determined further to consultation with Council.

In summary, arc traffic + transport has determined that the Planning Proposal is fully supportable further to access, traffic and transport considerations.

Appendix A: Traffic Surveys

Intersection Watson Street & Euchareena Road

Date: Friday 12th August 2022							
Overcast & Raining							
Movement	Vehicle Class	 Watson Northbound	 Watson North to Euchareena	 Euchareena to Watson South	 Euchareena to Watson North	 Watson Southbound	 Watson South to Euchareena
7:00 to 7:15am	Cars/Vans	11	1	2	2	15	1
	Trucks/Buses	5	0	0	1	3	0
7:15 to 7:30am	Cars/Vans	9	4	5	3	15	3
	Trucks/Buses	2	2	2	0	4	0
7:30 to 7:45am	Cars/Vans	9	2	3	3	26	0
	Trucks/Buses	6	3	0	1	5	0
7:45 to 8:00am	Cars/Vans	19	5	2	0	19	1
	Trucks/Buses	5	1	2	1	7	0
8:00 to 8:15am	Cars/Vans	28	1	4	2	29	1
	Trucks/Buses	6	0	0	0	4	1
8:15 to 8:30am	Cars/Vans	30	4	6	4	36	0
	Trucks/Buses	8	1	0	0	6	2
8:30 to 8:45am	Cars/Vans	18	4	9	1	24	2
	Trucks/Buses	5	0	2	3	2	0
8:45 to 9:00am	Cars/Vans	28	3	3	3	19	0
	Trucks/Buses	9	1	0	0	3	2
3:00 to 3:15am	Cars/Vans	37	7	7	2	40	2
	Trucks/Buses	6	0	0	0	5	2
3:15 to 3:30am	Cars/Vans	39	11	7	2	23	0
	Trucks/Buses	1	1	0	0	2	0
3:30 to 3:45am	Cars/Vans	48	4	9	5	27	3
	Trucks/Buses	6	0	0	1	3	0
3:45 to 4:00am	Cars/Vans	37	9	8	5	30	2
	Trucks/Buses	1	0	0	0	5	0
4:00 to 4:15am	Cars/Vans	38	9	5	1	26	4
	Trucks/Buses	3	1	0	0	3	0
4:15 to 4:30am	Cars/Vans	43	14	6	4	29	6
	Trucks/Buses	2	0	0	0	3	0
4:30 to 4:45am	Cars/Vans	36	4	11	5	35	8
	Trucks/Buses	2	1	0	2	6	0
4:45 to 5:00am	Cars/Vans	30	6	6	6	43	5
	Trucks/Buses	1	0	0	0	5	0

Intersection Watson Street & Bank Street

Date: Friday 12th August 2022

Overcast & Raining

Movement	Vehicle Class							
		Watson Northbound	Watson North to Bank	Bank to Watson North	Bank to Watson South	Watson Southbound	Watson South to Bank	Bank East Bound U-Turn around end of median
7:00 to 7:15am	Cars/Vans	11	1	1	3	16	1	
	Trucks/Buses	5	0	0	0	3	0	
7:15 to 7:30am	Cars/Vans	10	5	3	1	15	5	
	Trucks/Buses	3	1	1	0	6	0	
7:30 to 7:45am	Cars/Vans	9	5	2	6	27	2	
	Trucks/Buses	9	0	0	0	4	1	
7:45 to 8:00am	Cars/Vans	21	5	3	2	20	1	
	Trucks/Buses	6	0	0	0	9	0	
8:00 to 8:15am	Cars/Vans	27	7	2	1	26	7	
	Trucks/Buses	5	0	1	1	4	0	
8:15 to 8:30am	Cars/Vans	29	4	5	10	33	9	
	Trucks/Buses	7	0	1	0	6	0	
8:30 to 8:45am	Cars/Vans	19	6	3	9	27	6	1
	Trucks/Buses	5	1	0	1	3	1	
8:45 to 9:00am	Cars/Vans	25	8	6	9	21	1	
	Trucks/Buses	9	0	1	0	3	0	
3:00 to 3:15am	Cars/Vans	35	11	9	11	43	4	
	Trucks/Buses	6	0	0	0	5	0	
3:15 to 3:30am	Cars/Vans	39	8	12	13	25	5	3
	Trucks/Buses	2	0	0	0	2	0	
3:30 to 3:45am	Cars/Vans	39	11	13	6	26	10	1
	Trucks/Buses	6	0	0	0	3	0	
3:45 to 4:00am	Cars/Vans	29	6	17	8	32	6	
	Trucks/Buses	1	0	0	0	5	0	
4:00 to 4:15am	Cars/Vans	34	7	13	9	26	5	
	Trucks/Buses	4	0	0	0	3	0	
4:15 to 4:30am	Cars/Vans	39	13	18	15	31	4	
	Trucks/Buses	2	0	0	0	3	0	
4:30 to 4:45am	Cars/Vans	33	11	7	6	37	9	1
	Trucks/Buses	2	0	1	0	5	1	
4:45 to 5:00am	Cars/Vans	26	4	10	4	44	5	
	Trucks/Buses	0	0	1	0	5	0	

Intersection Mitchell Highway & Marsden Street

Date: Friday 12th August 2022

Overcast & Raining

Movement	Vehicle Class	 Mitchell Highway Northbound	 Mitchell Highway Nth to Marsden	 Mitchell Highway Southbound	 Mitchell Highway Sth to Marsden	 Marsden to Mitchell Highway South	 Marsden to Mitchell Highway North
7:00 to 7:15am	Cars/Vans	17	0	24	0	1	0
	Trucks/Buses	4	0	3	1	0	0
7:15 to 7:30am	Cars/Vans	14	0	20	1	1	0
	Trucks/Buses	4	0	5	0	0	0
7:30 to 7:45am	Cars/Vans	16	1	25	3	2	1
	Trucks/Buses	4	0	0	0	0	0
7:45 to 8:00am	Cars/Vans	30	3	25	3	3	1
	Trucks/Buses	5	0	10	0	0	1
8:00 to 8:15am	Cars/Vans	40	0	39	0	2	1
	Trucks/Buses	5	0	4	2	3	1
8:15 to 8:30am	Cars/Vans	33	1	70	0	2	1
	Trucks/Buses	11	0	8	0	0	2
8:30 to 8:45am	Cars/Vans	36	0	42	2	3	1
	Trucks/Buses	3	0	7	1	0	2
8:45 to 9:00am	Cars/Vans	43	1	51	1	0	4
	Trucks/Buses	10	0	5	0	0	0

3:00 to 3:15am	Cars/Vans	55	0	60	5	1	2
	Trucks/Buses	6	0	5	0	0	1
3:15 to 3:30am	Cars/Vans	43	1	38	4	1	1
	Trucks/Buses	1	1	2	0	0	0
3:30 to 3:45am	Cars/Vans	44	2	43	3	3	1
	Trucks/Buses	10	1	3	0	0	0
3:45 to 4:00am	Cars/Vans	41	4	40	4	4	4
	Trucks/Buses	1	0	3	2	1	0
4:00 to 4:15am	Cars/Vans	39	5	36	2	1	3
	Trucks/Buses	6	0	1	0	0	0
4:15 to 4:30am	Cars/Vans	40	2	39	6	0	4
	Trucks/Buses	4	0	2	0	1	0
4:30 to 4:45am	Cars/Vans	45	4	43	3	4	2
	Trucks/Buses	4	0	5	0	0	0
4:45 to 5:00am	Cars/Vans	49	2	66	5	1	2
	Trucks/Buses	0	0	6	0	0	0

Intersection Back Saleyards Road & Euchareena Road

Date: Thursday 11th August 2022

Overcast

Movement	Vehicle Class								
		Euchareena Northbound	Euchareena Northbound to Back Saleyards	Euchareena Southbound to Back Saleyards	Euchareena Southbound	Back Saleyards to Euchareena North	Back Saleyards to Euchareena South	Euchareena Northbound into Farm Access	Euchareena Southbound into Farm Access
7:00 to 7:15am	Cars/Vans	1	0	0	1	0	0	0	0
	Trucks/Buses	1	0	0	0	0	0	0	0
7:15 to 7:30am	Cars/Vans	3	0	0	2	0	0	1	0
	Trucks/Buses	1	0	0	0	0	0	0	0
7:30 to 7:45am	Cars/Vans	4	0	0	3	0	0	0	0
	Trucks/Buses	0	0	0	1	0	0	0	0
7:45 to 8:00am	Cars/Vans	5	0	0	8	0	0	1	1
	Trucks/Buses	1	0	0	1	0	0	0	0
8:00 to 8:15am	Cars/Vans	2	0	0	1	0	0	0	0
	Trucks/Buses	0	0	0	0	0	0	0	0
8:15 to 8:30am	Cars/Vans	2	0	0	4	0	0	1	0
	Trucks/Buses	0	0	0	1	0	0	0	0
8:30 to 8:45am	Cars/Vans	3	0	0	5	0	1	0	0
	Trucks/Buses	4	1	0	1	0	0	0	0
8:45 to 9:00am	Cars/Vans	2	0	0	4	0	0	0	0
	Trucks/Buses	0	0	0	4	0	0	0	0
3:00 to 3:15am	Cars/Vans	3	0	0	6	0	0	0	0
	Trucks/Buses	0	0	0	1	0	0	0	0
3:15 to 3:30am	Cars/Vans	5	1	0	1	0	0	0	0
	Trucks/Buses	0	1	0	3	0	0	0	0
3:30 to 3:45am	Cars/Vans	0	1	0	3	0	0	0	0
	Trucks/Buses	0	0	0	0	0	0	0	0
3:45 to 4:00am	Cars/Vans	8	0	0	2	1	0	0	0
	Trucks/Buses	0	0	0	1	0	0	0	0
4:00 to 4:15am	Cars/Vans	4	0	0	3	0	0	0	1
	Trucks/Buses	0	0	0	0	0	0	0	0
4:15 to 4:30am	Cars/Vans	8	0	0	3	0	0	0	0
	Trucks/Buses	1	0	0	0	0	0	0	0
4:30 to 4:45am	Cars/Vans	5	1	0	3	0	0	0	0
	Trucks/Buses	0	0	0	0	0	0	0	0
4:45 to 5:00am	Cars/Vans	6	1	0	4	0	1	1	1
	Trucks/Buses	0	0	0	1	0	0	0	0

Appendix B: SIDRA Movement Summaries

Base 2022 AM Peak Hour

MOVEMENT SUMMARY

▼ Site: 101 [Mitchell Highway & Euchareena Road AM 2022 (Site Folder: General)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Mitchell Highway														
2	T1	132	28	139	21.2	0.072	0.1	LOS A	0.1	0.9	0.06	0.05	0.06	49.5
3	R2	14	2	15	14.3	0.072	5.2	LOS A	0.1	0.9	0.07	0.07	0.07	48.4
Approach		146	30	154	20.5	0.072	0.6	NA	0.1	0.9	0.06	0.05	0.06	49.4
East: Euchareena Road														
4	L2	24	2	25	8.3	0.037	5.1	LOS A	0.1	1.1	0.28	0.53	0.28	45.9
6	R2	13	3	14	23.1	0.037	7.0	LOS A	0.1	1.1	0.28	0.53	0.28	45.2
Approach		37	5	39	13.5	0.037	5.8	LOS A	0.1	1.1	0.28	0.53	0.28	45.6
North: Mitchell Highway														
7	L2	8	3	8	37.5	0.077	4.9	LOS A	0.0	0.0	0.00	0.03	0.00	48.7
8	T1	123	15	129	12.2	0.077	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	49.8
Approach		131	18	138	13.7	0.077	0.3	NA	0.0	0.0	0.00	0.03	0.00	49.8
All Vehicles		314	53	331	16.9	0.077	1.1	NA	0.1	1.1	0.06	0.10	0.06	49.1

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

MOVEMENT SUMMARY

▼ Site: 101 [Mitchell Highway & Bank Street AM 2022 (Site Folder: General)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Mitchell Highway														
1	L2	25	1	26	4.0	0.039	4.6	LOS A	0.0	0.0	0.00	0.21	0.00	48.1
2	T1	100	26	105	26.0	0.039	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	49.4
Approach		125	27	132	21.6	0.039	0.9	NA	0.0	0.0	0.00	0.11	0.00	49.2
North: Mitchell Highway														
8	T1	106	17	112	16.0	0.067	0.2	LOS A	0.2	1.4	0.09	0.09	0.09	49.2
9	R2	23	1	24	4.3	0.067	5.2	LOS A	0.2	1.4	0.13	0.12	0.13	48.3
Approach		129	18	136	14.0	0.067	1.1	NA	0.2	1.4	0.10	0.10	0.10	49.0
West: Bank Street														
10	L2	16	3	17	18.8	0.014	4.9	LOS A	0.1	0.4	0.12	0.50	0.12	46.1
12	R2	29	2	31	6.9	0.041	6.6	LOS A	0.2	1.2	0.40	0.60	0.40	45.2
Approach		45	5	47	11.1	0.041	6.0	LOS A	0.2	1.2	0.30	0.56	0.30	45.5
All Vehicles		299	50	315	16.7	0.067	1.8	NA	0.2	1.4	0.09	0.17	0.09	48.5

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

MOVEMENT SUMMARY

▼ Site: 101 [Mitchell Highway & Marsden Street AM 2022 (Site Folder: General)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Mitchell Highway														
2	T1	152	29	160	19.1	0.092	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
3	R2	2	0	2	0.0	0.002	5.4	LOS A	0.0	0.0	0.32	0.50	0.32	45.7
Approach		154	29	162	18.8	0.092	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
East: Marsden Street														
4	L2	7	3	7	42.9	0.009	6.2	LOS A	0.0	0.3	0.33	0.53	0.33	45.2
6	R2	7	5	7	71.4	0.019	11.2	LOS A	0.1	0.8	0.54	0.67	0.54	42.2
Approach		14	8	15	57.1	0.019	8.7	LOS A	0.1	0.8	0.44	0.60	0.44	43.7
North: Mitchell Highway														
7	L2	3	3	3	100.0	0.003	5.4	LOS A	0.0	0.0	0.00	0.51	0.00	44.7
8	T1	202	24	213	11.9	0.117	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		205	27	216	13.2	0.117	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
All Vehicles		373	64	393	17.2	0.117	0.4	NA	0.1	0.8	0.02	0.03	0.02	49.6

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

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

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).

Queue Model: SIDRA Standard.

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

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

MOVEMENT SUMMARY

▼ Site: [Euchareena Road & Back Salesyard Road AM 2022 (Site Folder: General)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Back Salesyard Road														
1	L2	9	0	9	0.0	0.007	4.6	LOS A	0.0	0.2	0.06	0.51	0.06	57.1
3	R2	1	0	1	0.0	0.007	4.6	LOS A	0.0	0.2	0.06	0.51	0.06	56.8
Approach		10	0	11	0.0	0.007	4.6	LOS A	0.0	0.2	0.06	0.51	0.06	57.0
East: Euchareena Road														
4	L2	1	0	1	0.0	0.008	7.8	LOS A	0.0	0.0	0.00	0.05	0.00	88.6
5	T1	14	0	15	0.0	0.008	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	98.6
Approach		15	0	16	0.0	0.008	0.5	NA	0.0	0.0	0.00	0.05	0.00	97.8
West: Euchareena Road														
11	T1	1	0	1	0.0	0.001	0.0	LOS A	0.0	0.0	0.06	0.33	0.06	90.2
12	R2	1	0	1	0.0	0.001	7.4	LOS A	0.0	0.0	0.06	0.33	0.06	60.9
Approach		2	0	2	0.0	0.001	3.7	NA	0.0	0.0	0.06	0.33	0.06	72.7
All Vehicles		27	0	28	0.0	0.008	2.3	NA	0.0	0.2	0.03	0.24	0.03	75.8

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

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

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).

Queue Model: SIDRA Standard.

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

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

Base 2022 PM Peak Hour

MOVEMENT SUMMARY

▼ Site: 101 [Mitchell Highway & Euchareena Road PM 2022 (Site Folder: General)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV/ veh/h	[Total veh/h	HV/ %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Mitchell Highway														
2	T1	155	8	163	5.2	0.089	0.2	LOS A	0.3	1.9	0.12	0.10	0.12	49.1
3	R2	35	2	37	5.7	0.089	5.3	LOS A	0.3	1.9	0.16	0.13	0.16	48.1
Approach		190	10	200	5.3	0.089	1.2	NA	0.3	1.9	0.12	0.10	0.12	48.9
East: Euchareena Road														
4	L2	28	0	29	0.0	0.047	5.1	LOS A	0.2	1.3	0.32	0.55	0.32	45.8
6	R2	18	2	19	11.1	0.047	7.3	LOS A	0.2	1.3	0.32	0.55	0.32	45.3
Approach		46	2	48	4.3	0.047	5.9	LOS A	0.2	1.3	0.32	0.55	0.32	45.6
North: Mitchell Highway														
7	L2	23	0	24	0.0	0.100	4.6	LOS A	0.0	0.0	0.00	0.07	0.00	49.0
8	T1	150	17	158	11.3	0.100	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	49.5
Approach		173	17	182	9.8	0.100	0.6	NA	0.0	0.0	0.00	0.07	0.00	49.4
All Vehicles		409	29	431	7.1	0.100	1.5	NA	0.3	1.9	0.09	0.14	0.09	48.7

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

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

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).

Queue Model: SIDRA Standard.

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

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

MOVEMENT SUMMARY

▼ Site: 101 [Mitchell Highway & Bank Street PM 2022 (Site Folder: General)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h]		DEMAND FLOWS [Total veh/h]		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. Dist] veh m		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Mitchell Highway														
1	L2	35	0	37	0.0	0.047	4.6	LOS A	0.0	0.0	0.00	0.23	0.00	48.2
2	T1	132	8	139	6.1	0.047	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	49.5
Approach		167	8	176	4.8	0.047	1.0	NA	0.0	0.0	0.00	0.11	0.00	49.2
North: Mitchell Highway														
8	T1	136	16	143	11.8	0.080	0.2	LOS A	0.2	1.5	0.09	0.08	0.09	49.3
9	R2	23	1	24	4.3	0.080	5.4	LOS A	0.2	1.5	0.12	0.10	0.12	48.5
Approach		159	17	167	10.7	0.080	1.0	NA	0.2	1.5	0.10	0.08	0.10	49.2
West: Bank Street														
10	L2	48	2	51	4.2	0.041	4.8	LOS A	0.1	1.1	0.13	0.50	0.13	46.3
12	R2	34	0	36	0.0	0.050	7.0	LOS A	0.2	1.3	0.44	0.63	0.44	45.0
Approach		82	2	86	2.4	0.050	5.7	LOS A	0.2	1.3	0.26	0.55	0.26	45.7
All Vehicles		408	27	429	6.6	0.080	1.9	NA	0.2	1.5	0.09	0.19	0.09	48.5

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

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

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).

Queue Model: SIDRA Standard.

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

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

MOVEMENT SUMMARY

▼ Site: 101 [Mitchell Highway & Marsden Street PM 2022 (Site Folder: General)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Mitchell Highway														
2	T1	173	14	182	8.1	0.098	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
3	R2	13	0	14	0.0	0.012	5.4	LOS A	0.0	0.3	0.31	0.53	0.31	45.7
Approach		186	14	196	7.5	0.098	0.4	NA	0.0	0.3	0.02	0.04	0.02	49.6
East: Marsden Street														
4	L2	6	1	6	16.7	0.006	5.6	LOS A	0.0	0.2	0.29	0.51	0.29	45.7
6	R2	11	0	12	0.0	0.018	7.6	LOS A	0.1	0.5	0.48	0.62	0.48	44.7
Approach		17	1	18	5.9	0.018	6.9	LOS A	0.1	0.5	0.41	0.58	0.41	45.1
North: Mitchell Highway														
7	L2	16	0	17	0.0	0.009	4.6	LOS A	0.0	0.0	0.00	0.53	0.00	46.6
8	T1	184	14	194	7.6	0.104	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		200	14	211	7.0	0.104	0.4	NA	0.0	0.0	0.00	0.04	0.00	49.7
All Vehicles		403	29	424	7.2	0.104	0.7	NA	0.1	0.5	0.03	0.06	0.03	49.4

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

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

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).

Queue Model: SIDRA Standard.

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

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

MOVEMENT SUMMARY

▼ Site: [Euchareena Road & Back Salesyard Road PM 2022 (Site Folder: General)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Back Salesyard Road														
1	L2	1	0	1	0.0	0.001	4.6	LOS A	0.0	0.0	0.06	0.52	0.06	57.1
3	R2	1	0	1	0.0	0.001	4.7	LOS A	0.0	0.0	0.06	0.52	0.06	56.8
Approach		2	0	2	0.0	0.001	4.6	LOS A	0.0	0.0	0.06	0.52	0.06	56.9
East: Euchareena Road														
4	L2	1	0	1	0.0	0.008	7.8	LOS A	0.0	0.0	0.00	0.05	0.00	87.4
5	T1	14	1	15	7.1	0.008	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	98.5
Approach		15	1	16	6.7	0.008	0.5	NA	0.0	0.0	0.00	0.05	0.00	97.7
West: Euchareena Road														
11	T1	24	1	25	4.2	0.014	0.0	LOS A	0.0	0.0	0.01	0.03	0.01	99.1
12	R2	1	0	1	0.0	0.014	7.4	LOS A	0.0	0.0	0.01	0.03	0.01	64.8
Approach		25	1	26	4.0	0.014	0.3	NA	0.0	0.0	0.01	0.03	0.01	97.0
All Vehicles		42	2	44	4.8	0.014	0.6	NA	0.0	0.0	0.01	0.06	0.01	94.1

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

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

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).

Queue Model: SIDRA Standard.

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

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

Base 2032 AM Peak Hour

MOVEMENT SUMMARY

▼ Site: 101 [Mitchell Highway & Euchareena Road AM Base 2032 (Site Folder: General)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h]		DEMAND FLOWS [Total veh/h]		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh]		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Mitchell Highway														
2	T1	145	31	153	21.4	0.079	0.1	LOS A	0.1	0.9	0.06	0.05	0.06	49.6
3	R2	14	2	15	14.3	0.079	5.3	LOS A	0.1	0.9	0.07	0.06	0.07	48.5
Approach		159	33	167	20.8	0.079	0.6	NA	0.1	0.9	0.06	0.05	0.06	49.5
East: Euchareena Road														
4	L2	24	2	25	8.3	0.038	5.1	LOS A	0.1	1.1	0.30	0.54	0.30	45.8
6	R2	13	3	14	23.1	0.038	7.3	LOS A	0.1	1.1	0.30	0.54	0.30	45.1
Approach		37	5	39	13.5	0.038	5.9	LOS A	0.1	1.1	0.30	0.54	0.30	45.6
North: Mitchell Highway														
7	L2	8	3	8	37.5	0.085	4.9	LOS A	0.0	0.0	0.00	0.03	0.00	48.7
8	T1	136	17	143	12.5	0.085	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	49.8
Approach		144	20	152	13.9	0.085	0.3	NA	0.0	0.0	0.00	0.03	0.00	49.8
All Vehicles		340	58	358	17.1	0.085	1.0	NA	0.1	1.1	0.06	0.09	0.06	49.1

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

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

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).

Queue Model: SIDRA Standard.

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

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

MOVEMENT SUMMARY

▼ Site: 101 [Mitchell Highway & Bank Street AM Base 2032 (Site Folder: General)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h]		DEMAND FLOWS [Total veh/h]		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh]		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Mitchell Highway														
1	L2	25	1	26	4.0	0.042	4.6	LOS A	0.0	0.0	0.00	0.20	0.00	48.2
2	T1	110	29	116	26.4	0.042	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	49.5
Approach		135	30	142	22.2	0.042	0.9	NA	0.0	0.0	0.00	0.10	0.00	49.2
North: Mitchell Highway														
8	T1	117	19	123	16.2	0.072	0.2	LOS A	0.2	1.4	0.09	0.09	0.09	49.2
9	R2	23	1	24	4.3	0.072	5.2	LOS A	0.2	1.4	0.12	0.11	0.12	48.4
Approach		140	20	147	14.3	0.072	1.0	NA	0.2	1.4	0.10	0.09	0.10	49.1
West: Bank Street														
10	L2	16	3	17	18.8	0.015	4.9	LOS A	0.1	0.4	0.13	0.50	0.13	46.0
12	R2	29	2	31	6.9	0.043	6.9	LOS A	0.2	1.2	0.42	0.61	0.42	45.0
Approach		45	5	47	11.1	0.043	6.2	LOS A	0.2	1.2	0.32	0.57	0.32	45.4
All Vehicles		320	55	337	17.2	0.072	1.7	NA	0.2	1.4	0.09	0.16	0.09	48.6

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

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

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).

Queue Model: SIDRA Standard.

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

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

MOVEMENT SUMMARY

▼ Site: 101 [Mitchell Highway & Marsden Street AM Base 2032 (Site Folder: General)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	HV] veh/h	[Total veh/h]	HV] %	v/c	sec		[Veh. veh]	Dist] m				km/h
South: Mitchell Highway														
2	T1	167	32	176	19.2	0.101	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
3	R2	2	0	2	0.0	0.002	5.5	LOS A	0.0	0.0	0.33	0.51	0.33	45.7
Approach		169	32	178	18.9	0.101	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
East: Marsden Street														
4	L2	7	3	7	42.9	0.009	6.4	LOS A	0.0	0.3	0.35	0.54	0.35	45.2
6	R2	7	5	7	71.4	0.020	12.1	LOS A	0.1	0.8	0.56	0.70	0.56	41.8
Approach		14	8	15	57.1	0.020	9.2	LOS A	0.1	0.8	0.46	0.62	0.46	43.4
North: Mitchell Highway														
7	L2	3	3	3	100.0	0.003	5.4	LOS A	0.0	0.0	0.00	0.51	0.00	44.7
8	T1	222	26	234	11.7	0.129	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		225	29	237	12.9	0.129	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
All Vehicles		408	69	429	16.9	0.129	0.4	NA	0.1	0.8	0.02	0.03	0.02	49.6

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

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

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).

Queue Model: SIDRA Standard.

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

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

MOVEMENT SUMMARY

▼ Site: [Euchareena Road & Back Salesyard Road AM Base 2032 (Site Folder: General)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h]		DEMAND FLOWS [Total veh/h]		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh]		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Back Salesyard Road														
1	L2	9	0	9	0.0	0.007	4.6	LOS A	0.0	0.2	0.06	0.51	0.06	57.1
3	R2	1	0	1	0.0	0.007	4.6	LOS A	0.0	0.2	0.06	0.51	0.06	56.8
Approach		10	0	11	0.0	0.007	4.6	LOS A	0.0	0.2	0.06	0.51	0.06	57.0
East: Euchareena Road														
4	L2	1	0	1	0.0	0.008	7.8	LOS A	0.0	0.0	0.00	0.05	0.00	88.6
5	T1	14	0	15	0.0	0.008	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	98.6
Approach		15	0	16	0.0	0.008	0.5	NA	0.0	0.0	0.00	0.05	0.00	97.8
West: Euchareena Road														
11	T1	9	0	9	0.0	0.005	0.0	LOS A	0.0	0.0	0.01	0.07	0.01	97.8
12	R2	1	0	1	0.0	0.005	7.4	LOS A	0.0	0.0	0.01	0.07	0.01	64.2
Approach		10	0	11	0.0	0.005	0.7	NA	0.0	0.0	0.01	0.07	0.01	92.9
All Vehicles		35	0	37	0.0	0.008	1.8	NA	0.0	0.2	0.02	0.18	0.02	80.2

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

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

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).

Queue Model: SIDRA Standard.

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

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

Base 2032 PM Peak Hour

MOVEMENT SUMMARY

▼ Site: 101 [Mitchell Highway & Euchareena Road PM Base 2032 (Site Folder: General)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No Cycles	Aver Speed
		[Total veh/h]	HV] veh/h	[Total veh/h]	HV] %	v/c	sec		[Veh. veh]	Dist] m				km/h
South: Mitchell Highway														
2	T1	155	8	163	5.2	0.089	0.2	LOS A	0.3	1.9	0.12	0.10	0.12	49.1
3	R2	35	2	37	5.7	0.089	5.3	LOS A	0.3	1.9	0.16	0.13	0.16	48.1
Approach		190	10	200	5.3	0.089	1.2	NA	0.3	1.9	0.12	0.10	0.12	48.9
East: Euchareena Road														
4	L2	28	0	29	0.0	0.047	5.1	LOS A	0.2	1.3	0.32	0.55	0.32	45.8
6	R2	18	2	19	11.1	0.047	7.3	LOS A	0.2	1.3	0.32	0.55	0.32	45.3
Approach		46	2	48	4.3	0.047	5.9	LOS A	0.2	1.3	0.32	0.55	0.32	45.6
North: Mitchell Highway														
7	L2	23	0	24	0.0	0.100	4.6	LOS A	0.0	0.0	0.00	0.07	0.00	49.0
8	T1	150	17	158	11.3	0.100	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	49.5
Approach		173	17	182	9.8	0.100	0.6	NA	0.0	0.0	0.00	0.07	0.00	49.4
All Vehicles		409	29	431	7.1	0.100	1.5	NA	0.3	1.9	0.09	0.14	0.09	48.7

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

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

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).

Queue Model: SIDRA Standard.

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

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

MOVEMENT SUMMARY

▼ Site: 101 [Mitchell Highway & Bank Street PM 2 Base 2032 (Site Folder: General)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver Delay	Level of Service	95% BACK OF QUEUE		Prop Que	Effective Stop Rate	Aver. No Cycles	Aver Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Mitchell Highway														
1	L2	35	0	37	0.0	0.047	4.6	LOS A	0.0	0.0	0.00	0.23	0.00	48.2
2	T1	132	8	139	6.1	0.047	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	49.5
Approach		167	8	176	4.8	0.047	1.0	NA	0.0	0.0	0.00	0.11	0.00	49.2
North: Mitchell Highway														
8	T1	136	16	143	11.8	0.080	0.2	LOS A	0.2	1.5	0.09	0.08	0.09	49.3
9	R2	23	1	24	4.3	0.080	5.4	LOS A	0.2	1.5	0.12	0.10	0.12	48.5
Approach		159	17	167	10.7	0.080	1.0	NA	0.2	1.5	0.10	0.08	0.10	49.2
West: Bank Street														
10	L2	48	2	51	4.2	0.041	4.8	LOS A	0.1	1.1	0.13	0.50	0.13	46.3
12	R2	34	0	36	0.0	0.050	7.0	LOS A	0.2	1.3	0.44	0.63	0.44	45.0
Approach		82	2	86	2.4	0.050	5.7	LOS A	0.2	1.3	0.26	0.55	0.26	45.7
All Vehicles		408	27	429	6.6	0.080	1.9	NA	0.2	1.5	0.09	0.19	0.09	48.5

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

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

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).

Queue Model: SIDRA Standard.

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

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

MOVEMENT SUMMARY

▼ Site: 101 [Mitchell Highway & Marsden Street PM Base 2032 (Site Folder: General)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV/ veh/h	[Total veh/h	HV/ %	v/c	sec		[Veh. veh	Dist m				km/h
South: Mitchell Highway														
2	T1	173	14	182	8.1	0.098	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
3	R2	13	0	14	0.0	0.012	5.4	LOS A	0.0	0.3	0.31	0.53	0.31	45.7
Approach		186	14	196	7.5	0.098	0.4	NA	0.0	0.3	0.02	0.04	0.02	49.6
East: Marsden Street														
4	L2	6	1	6	16.7	0.006	5.6	LOS A	0.0	0.2	0.29	0.51	0.29	45.7
6	R2	11	0	12	0.0	0.018	7.6	LOS A	0.1	0.5	0.48	0.62	0.48	44.7
Approach		17	1	18	5.9	0.018	6.9	LOS A	0.1	0.5	0.41	0.58	0.41	45.1
North: Mitchell Highway														
7	L2	16	0	17	0.0	0.009	4.6	LOS A	0.0	0.0	0.00	0.53	0.00	46.6
8	T1	184	14	194	7.6	0.104	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		200	14	211	7.0	0.104	0.4	NA	0.0	0.0	0.00	0.04	0.00	49.7
All Vehicles		403	29	424	7.2	0.104	0.7	NA	0.1	0.5	0.03	0.06	0.03	49.4

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

MOVEMENT SUMMARY

▼ Site: [Euchareena Road & Back Salesyard Road PM Base 2032 (Site Folder: General)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	HV veh/h]	[Total veh/h]	HV %	v/c	sec		[Veh. veh]	Dist m]				km/h
South: Back Salesyard Road														
1	L2	1	0	1	0.0	0.001	4.6	LOS A	0.0	0.0	0.06	0.52	0.06	57.1
3	R2	1	0	1	0.0	0.001	4.7	LOS A	0.0	0.0	0.06	0.52	0.06	56.8
Approach		2	0	2	0.0	0.001	4.6	LOS A	0.0	0.0	0.06	0.52	0.06	56.9
East: Euchareena Road														
4	L2	1	0	1	0.0	0.008	7.8	LOS A	0.0	0.0	0.00	0.05	0.00	87.4
5	T1	14	1	15	7.1	0.008	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	98.5
Approach		15	1	16	6.7	0.008	0.5	NA	0.0	0.0	0.00	0.05	0.00	97.7
West: Euchareena Road														
11	T1	24	1	25	4.2	0.014	0.0	LOS A	0.0	0.0	0.01	0.03	0.01	99.1
12	R2	1	0	1	0.0	0.014	7.4	LOS A	0.0	0.0	0.01	0.03	0.01	64.8
Approach		25	1	26	4.0	0.014	0.3	NA	0.0	0.0	0.01	0.03	0.01	97.0
All Vehicles		42	2	44	4.8	0.014	0.6	NA	0.0	0.0	0.01	0.06	0.01	94.1

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

Base 2032 + Planning Proposal AM Peak Hour

MOVEMENT SUMMARY

▼ Site: [Mitchell Highway & Euchareena Road AM Base 2032 + Site (Site Folder: General)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				
South: Mitchell Highway														
2	T1	145	31	153	21.4	0.101	0.3	LOS A	0.4	2.8	0.14	0.14	0.14	48.7
3	R2	57	2	60	3.5	0.101	5.1	LOS A	0.4	2.8	0.20	0.20	0.20	47.5
Approach		202	33	213	16.3	0.101	1.7	NA	0.4	2.8	0.16	0.16	0.16	48.4
East: Euchareena Road														
4	L2	125	2	132	1.6	0.194	5.1	LOS A	0.8	6.0	0.32	0.58	0.32	45.8
6	R2	72	3	76	4.2	0.194	7.5	LOS A	0.8	6.0	0.32	0.58	0.32	45.3
Approach		197	5	207	2.5	0.194	6.0	LOS A	0.8	6.0	0.32	0.58	0.32	45.6
North: Mitchell Highway														
7	L2	8	3	8	37.5	0.085	4.9	LOS A	0.0	0.0	0.00	0.03	0.00	48.7
8	T1	136	17	143	12.5	0.085	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	49.8
Approach		144	20	152	13.9	0.085	0.3	NA	0.0	0.0	0.00	0.03	0.00	49.8
All Vehicles		543	58	572	10.7	0.194	2.9	NA	0.8	6.0	0.18	0.28	0.18	47.7

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

MOVEMENT SUMMARY

▼ Site: [Mitchell Highway & Bank Street AM Base 2032 + Site (Site Folder: General)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h] HV] veh/h]		DEMAND FLOWS [Total veh/h] HV] %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh] Dist] m]		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Mitchell Highway														
1	L2	38	1	40	2.6	0.054	4.6	LOS A	0.0	0.0	0.00	0.23	0.00	48.0
2	T1	140	29	147	20.7	0.054	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	49.4
Approach		178	30	187	16.9	0.054	1.0	NA	0.0	0.0	0.00	0.12	0.00	49.1
North: Mitchell Highway														
8	T1	187	19	197	10.2	0.126	0.4	LOS A	0.4	3.3	0.14	0.12	0.14	48.9
9	R2	54	1	57	1.9	0.126	5.5	LOS A	0.4	3.3	0.20	0.16	0.20	48.0
Approach		241	20	254	8.3	0.126	1.5	NA	0.4	3.3	0.16	0.13	0.16	48.7
West: Bank Street														
10	L2	29	3	31	10.3	0.025	4.9	LOS A	0.1	0.7	0.14	0.50	0.14	46.1
12	R2	35	2	37	5.7	0.063	8.4	LOS A	0.2	1.7	0.51	0.70	0.51	44.2
Approach		64	5	67	7.8	0.063	6.8	LOS A	0.2	1.7	0.35	0.61	0.35	45.1
All Vehicles		483	55	508	11.4	0.126	2.0	NA	0.4	3.3	0.12	0.19	0.12	48.3

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

MOVEMENT SUMMARY

▼ Site: [Mitchell Highway & Marsden Street AM Base 2032 + Site (Site Folder: General)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No Cycles	Aver Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				
South: Mitchell Highway														
2	T1	197	32	207	16.2	0.118	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
3	R2	47	0	49	0.0	0.048	6.0	LOS A	0.2	1.3	0.40	0.60	0.40	45.5
Approach		244	32	257	13.1	0.118	1.2	NA	0.2	1.3	0.08	0.11	0.08	49.0
East: Marsden Street														
4	L2	113	3	119	2.7	0.125	6.1	LOS A	0.5	3.3	0.40	0.62	0.40	45.6
6	R2	20	5	21	25.0	0.054	12.0	LOS A	0.2	1.6	0.61	0.79	0.61	42.2
Approach		133	8	140	6.0	0.125	7.0	LOS A	0.5	3.3	0.43	0.65	0.43	45.1
North: Mitchell Highway														
7	L2	9	3	9	33.3	0.006	4.9	LOS A	0.0	0.0	0.00	0.52	0.00	46.1
8	T1	293	26	308	8.9	0.167	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		302	29	318	9.6	0.167	0.2	NA	0.0	0.0	0.00	0.02	0.00	49.8
All Vehicles		679	69	715	10.2	0.167	1.9	NA	0.5	3.3	0.11	0.17	0.11	48.5

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

MOVEMENT SUMMARY

▼ Site: [Euchareena Road & Back Salesyard Road AM Base 2032 + Site (Site Folder: General)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h]		DEMAND FLOWS [Total veh/h]		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh]		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Back Salesyard Road														
1	L2	1	0	1	0.0	0.004	4.6	LOS A	0.0	0.1	0.08	0.52	0.08	57.0
3	R2	4	0	4	0.0	0.004	4.7	LOS A	0.0	0.1	0.08	0.52	0.08	56.7
Approach		5	0	5	0.0	0.004	4.7	LOS A	0.0	0.1	0.08	0.52	0.08	56.8
East: Euchareena Road														
4	L2	2	0	2	0.0	0.011	7.8	LOS A	0.0	0.0	0.00	0.07	0.00	88.0
5	T1	18	0	19	0.0	0.011	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	97.9
Approach		20	0	21	0.0	0.011	0.8	NA	0.0	0.0	0.00	0.07	0.00	96.8
West: Euchareena Road														
11	T1	19	0	20	0.0	0.011	0.0	LOS A	0.0	0.0	0.01	0.03	0.01	98.9
12	R2	1	0	1	0.0	0.011	7.5	LOS A	0.0	0.0	0.01	0.03	0.01	64.7
Approach		20	0	21	0.0	0.011	0.4	NA	0.0	0.0	0.01	0.03	0.01	96.3
All Vehicles		45	0	47	0.0	0.011	1.0	NA	0.0	0.1	0.01	0.10	0.01	89.6

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

MOVEMENT SUMMARY

▼ Site: [Euchareena Road & Road 1 AM Base 2032 + Site (Site Folder: General)]

Site Category: Proposed Design 1
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h] HV] veh/h		DEMAND FLOWS [Total veh/h] HV] %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh] Dist] m		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Back Salesyard Road														
1	L2	160	0	168	0.0	0.113	4.6	LOS A	0.5	3.4	0.06	0.51	0.06	57.0
3	R2	10	0	11	0.0	0.113	4.9	LOS A	0.5	3.4	0.06	0.51	0.06	56.8
Approach		170	0	179	0.0	0.113	4.6	LOS A	0.5	3.4	0.06	0.51	0.06	57.0
East: Euchareena Road														
4	L2	4	0	4	0.0	0.010	7.8	LOS A	0.0	0.0	0.00	0.14	0.00	86.2
5	T1	15	0	16	0.0	0.010	0.0	LOS A	0.0	0.0	0.00	0.14	0.00	95.7
Approach		19	0	20	0.0	0.010	1.7	NA	0.0	0.0	0.00	0.14	0.00	93.5
West: Euchareena Road														
11	T1	9	0	9	0.0	0.046	0.1	LOS A	0.2	1.5	0.08	0.57	0.08	84.2
12	R2	69	0	73	0.0	0.046	7.5	LOS A	0.2	1.5	0.08	0.57	0.08	58.0
Approach		78	0	82	0.0	0.046	6.6	NA	0.2	1.5	0.08	0.57	0.08	60.2
All Vehicles		267	0	281	0.0	0.113	5.0	NA	0.5	3.4	0.06	0.50	0.06	59.6

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

MOVEMENT SUMMARY

▼ Site: [Marsden Street & Road 2 AM Base 2032 + Site (Site Folder: General)]

Site Category: Proposed Design 1
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %	v/c	sec		[Veh. veh	[Dist] m				km/h
South: Marsden Street														
2	T1	34	0	36	0.0	0.029	0.1	LOS A	0.1	0.7	0.12	0.18	0.12	48.3
3	R2	17	0	18	0.0	0.029	4.8	LOS A	0.1	0.7	0.12	0.18	0.12	47.7
Approach		51	0	54	0.0	0.029	1.7	NA	0.1	0.7	0.12	0.18	0.12	48.3
East: Marsden Street														
4	L2	40	0	42	0.0	0.028	4.8	LOS A	0.1	0.8	0.17	0.50	0.17	46.2
6	R2	1	0	1	0.0	0.028	5.0	LOS A	0.1	0.8	0.17	0.50	0.17	45.8
Approach		41	0	43	0.0	0.028	4.8	LOS A	0.1	0.8	0.17	0.50	0.17	46.2
North: Road 2														
7	L2	1	0	1	0.0	0.043	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.5
8	T1	79	0	83	0.0	0.043	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
Approach		80	0	84	0.0	0.043	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
All Vehicles		172	0	181	0.0	0.043	1.7	NA	0.1	0.8	0.08	0.18	0.08	48.5

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

MOVEMENT SUMMARY

▽ Site: [Back Salesyard Road & Road 3 AM Base 2032 + Site (Site Folder: General)]

Site Category: Proposed Design 1
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h]		DEMAND FLOWS [Total veh/h]		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh]		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Back Salesyard Road														
1	L2	17	0	18	0.0	0.010	4.6	LOS A	0.0	0.0	0.00	0.50	0.00	46.8
2	T1	1	0	1	0.0	0.010	0.0	LOS A	0.0	0.0	0.00	0.50	0.00	47.2
Approach		18	0	19	0.0	0.010	4.3	NA	0.0	0.0	0.00	0.50	0.00	46.8
North: Back Salesyard Road														
8	T1	1	0	1	0.0	0.001	0.0	LOS A	0.0	0.0	0.06	0.27	0.06	48.3
9	R2	1	0	1	0.0	0.001	4.6	LOS A	0.0	0.0	0.06	0.27	0.06	47.4
Approach		2	0	2	0.0	0.001	2.3	NA	0.0	0.0	0.06	0.27	0.06	47.9
West: Road 3														
10	L2	3	0	3	0.0	0.035	4.6	LOS A	0.1	0.8	0.03	0.55	0.03	46.6
12	R2	40	0	42	0.0	0.035	4.6	LOS A	0.1	0.8	0.03	0.55	0.03	46.1
Approach		43	0	45	0.0	0.035	4.6	LOS A	0.1	0.8	0.03	0.55	0.03	46.2
All Vehicles		63	0	66	0.0	0.035	4.4	NA	0.1	0.8	0.02	0.52	0.02	46.4

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

Base 2032 + Planning Proposal PM Peak Hour

MOVEMENT SUMMARY

Site: [Mitchell Highway & Euchareena Road PM Base 2032 + Site (Site Folder: General)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	[HV] veh/h	[Total veh/h]	[HV] %	v/c	sec		[Veh. veh]	[Dist] m				km/h
South: Mitchell Highway														
2	T1	170	8	179	4.7	0.157	0.6	LOS A	0.8	5.7	0.21	0.20	0.21	48.4
3	R2	136	2	143	1.5	0.157	5.6	LOS A	0.8	5.7	0.37	0.35	0.37	46.6
Approach		306	10	322	3.3	0.157	2.8	NA	0.8	5.7	0.28	0.26	0.28	47.6
East: Euchareena Road														
4	L2	71	0	75	0.0	0.129	5.1	LOS A	0.5	3.7	0.36	0.60	0.36	45.5
6	R2	43	2	45	4.7	0.129	9.0	LOS A	0.5	3.7	0.36	0.60	0.36	45.0
Approach		114	2	120	1.8	0.129	6.6	LOS A	0.5	3.7	0.36	0.60	0.36	45.3
North: Mitchell Highway														
7	L2	82	0	86	0.0	0.140	4.6	LOS A	0.0	0.0	0.00	0.18	0.00	48.4
8	T1	163	17	172	10.4	0.140	0.0	LOS A	0.0	0.0	0.00	0.18	0.00	48.8
Approach		245	17	258	6.9	0.140	1.6	NA	0.0	0.0	0.00	0.18	0.00	48.7
All Vehicles		665	29	700	4.4	0.157	3.0	NA	0.8	5.7	0.19	0.29	0.19	47.6

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

MOVEMENT SUMMARY

Site: [Mitchell Highway & Bank Street PM Base 2032 + Site (Site Folder: General)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h] HV] veh/h		DEMAND FLOWS [Total veh/h] HV] %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh] [Dist] m		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Mitchell Highway														
1	L2	41	0	43	0.0	0.071	4.6	LOS A	0.0	0.0	0.00	0.17	0.00	48.5
2	T1	216	8	227	3.7	0.071	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	49.6
Approach		257	8	271	3.1	0.071	0.7	NA	0.0	0.0	0.00	0.09	0.00	49.4
North: Mitchell Highway														
8	T1	180	16	189	8.9	0.111	0.4	LOS A	0.3	2.5	0.14	0.09	0.14	49.1
9	R2	36	1	38	2.8	0.111	5.8	LOS A	0.3	2.5	0.19	0.12	0.19	48.3
Approach		216	17	227	7.9	0.111	1.3	NA	0.3	2.5	0.15	0.10	0.15	49.0
West: Bank Street														
10	L2	79	2	83	2.5	0.069	4.9	LOS A	0.3	1.8	0.19	0.51	0.19	46.1
12	R2	47	0	49	0.0	0.085	8.6	LOS A	0.3	2.2	0.53	0.72	0.53	44.2
Approach		126	2	133	1.6	0.085	6.3	LOS A	0.3	2.2	0.32	0.59	0.32	45.4
All Vehicles		599	27	631	4.5	0.111	2.1	NA	0.3	2.5	0.12	0.20	0.12	48.3

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

MOVEMENT SUMMARY

▼ Site: [Mitchell Highway & Marsden Street PM Base 2032 + Site (Site Folder: General)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h]		DEMAND FLOWS [Total veh/h]		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh]		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Mitchell Highway														
2	T1	261	14	275	5.4	0.147	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
3	R2	119	0	125	0.0	0.115	5.8	LOS A	0.5	3.3	0.38	0.60	0.38	45.6
Approach		380	14	400	3.7	0.147	1.9	NA	0.5	3.3	0.12	0.19	0.12	48.5
East: Marsden Street														
4	L2	51	1	54	2.0	0.052	5.6	LOS A	0.2	1.3	0.33	0.56	0.33	45.8
6	R2	17	0	18	0.0	0.041	10.8	LOS A	0.1	1.0	0.61	0.77	0.61	43.0
Approach		68	1	72	1.5	0.052	6.9	LOS A	0.2	1.3	0.40	0.61	0.40	45.1
North: Mitchell Highway														
7	L2	29	0	31	0.0	0.016	4.6	LOS A	0.0	0.0	0.00	0.53	0.00	46.6
8	T1	233	14	245	6.0	0.131	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		262	14	276	5.3	0.131	0.5	NA	0.0	0.0	0.00	0.06	0.00	49.6
All Vehicles		710	29	747	4.1	0.147	1.9	NA	0.5	3.3	0.10	0.18	0.10	48.5

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

MOVEMENT SUMMARY

▼ Site: [Euchareena Road & Back Salesyard Road PM Base 2032 + Site (Site Folder: General)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h]		DEMAND FLOWS [Total veh/h]		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh]		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Back Salesyard Road														
1	L2	1	0	1	0.0	0.003	4.6	LOS A	0.0	0.1	0.10	0.52	0.10	57.0
3	R2	3	0	3	0.0	0.003	4.7	LOS A	0.0	0.1	0.10	0.52	0.10	56.7
Approach		4	0	4	0.0	0.003	4.7	LOS A	0.0	0.1	0.10	0.52	0.10	56.8
East: Euchareena Road														
4	L2	5	0	5	0.0	0.016	7.8	LOS A	0.0	0.0	0.00	0.12	0.00	85.7
5	T1	24	1	25	4.2	0.016	0.0	LOS A	0.0	0.0	0.00	0.12	0.00	96.3
Approach		29	1	31	3.4	0.016	1.4	NA	0.0	0.0	0.00	0.12	0.00	94.3
West: Euchareena Road														
11	T1	28	1	29	3.6	0.016	0.0	LOS A	0.0	0.0	0.01	0.02	0.01	99.2
12	R2	1	0	1	0.0	0.016	7.5	LOS A	0.0	0.0	0.01	0.02	0.01	64.8
Approach		29	1	31	3.4	0.016	0.3	NA	0.0	0.0	0.01	0.02	0.01	97.4
All Vehicles		62	2	65	3.2	0.016	1.1	NA	0.0	0.1	0.01	0.10	0.01	91.7

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

MOVEMENT SUMMARY

▼ Site: [Euchareena Road & Road 1 PM Base 2032 + Site (Site Folder: General)]

Site Category: Proposed Design 1
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h]		DEMAND FLOWS [Total veh/h]		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh]		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Back Salesyard Road														
1	L2	69	0	73	0.0	0.049	4.6	LOS A	0.2	1.4	0.05	0.51	0.05	57.1
3	R2	4	0	4	0.0	0.049	5.3	LOS A	0.2	1.4	0.05	0.51	0.05	56.8
Approach		73	0	77	0.0	0.049	4.6	LOS A	0.2	1.4	0.05	0.51	0.05	57.1
East: Euchareena Road														
4	L2	10	0	11	0.0	0.014	7.8	LOS A	0.0	0.0	0.00	0.27	0.00	82.1
5	T1	15	1	16	6.7	0.014	0.0	LOS A	0.0	0.0	0.00	0.27	0.00	91.8
Approach		25	1	26	4.0	0.014	3.1	NA	0.0	0.0	0.00	0.27	0.00	87.6
West: Euchareena Road														
11	T1	25	1	26	4.0	0.110	0.1	LOS A	0.5	3.8	0.10	0.55	0.10	84.2
12	R2	160	0	168	0.0	0.110	7.5	LOS A	0.5	3.8	0.10	0.55	0.10	58.1
Approach		185	1	195	0.5	0.110	6.5	NA	0.5	3.8	0.10	0.55	0.10	60.6
All Vehicles		283	2	298	0.7	0.110	5.7	NA	0.5	3.8	0.08	0.52	0.08	61.3

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

MOVEMENT SUMMARY

▼ Site: [Marsden Street & Road 2 PM Base 2032 + Site (Site Folder: General)]

Site Category: Proposed Design 1
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h]		DEMAND FLOWS [Total veh/h]		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh]		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Marsden Street														
2	T1	79	0	83	0.0	0.067	0.1	LOS A	0.2	1.6	0.08	0.18	0.08	48.8
3	R2	40	0	42	0.0	0.067	4.7	LOS A	0.2	1.6	0.08	0.18	0.08	47.8
Approach		119	0	125	0.0	0.067	1.6	NA	0.2	1.6	0.08	0.18	0.08	48.5
East: Marsden Street														
4	L2	17	0	18	0.0	0.012	4.7	LOS A	0.0	0.3	0.10	0.50	0.10	46.4
6	R2	1	0	1	0.0	0.012	5.1	LOS A	0.0	0.3	0.10	0.50	0.10	46.0
Approach		18	0	19	0.0	0.012	4.7	LOS A	0.0	0.3	0.10	0.50	0.10	46.4
North: Road 2														
7	L2	1	0	1	0.0	0.019	4.6	LOS A	0.0	0.0	0.00	0.02	0.00	49.4
8	T1	34	0	36	0.0	0.019	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	49.9
Approach		35	0	37	0.0	0.019	0.1	NA	0.0	0.0	0.00	0.02	0.00	49.9
All Vehicles		172	0	181	0.0	0.067	1.6	NA	0.2	1.6	0.06	0.18	0.06	48.5

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

MOVEMENT SUMMARY

▼ Site: [Back Salesyard Road & Road 3 PM Base 2032 + Site (Site Folder: General)]

Site Category: Proposed Design 1
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h]		DEMAND FLOWS [Total veh/h]		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh]		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Back Salesyard Road														
1	L2	40	0	42	0.0	0.023	4.6	LOS A	0.0	0.0	0.00	0.52	0.00	46.7
2	T1	1	0	1	0.0	0.023	0.0	LOS A	0.0	0.0	0.00	0.52	0.00	47.1
Approach		41	0	43	0.0	0.023	4.5	NA	0.0	0.0	0.00	0.52	0.00	46.7
North: Back Salesyard Road														
8	T1	1	0	1	0.0	0.002	0.1	LOS A	0.0	0.1	0.12	0.39	0.12	47.5
9	R2	3	0	3	0.0	0.002	4.7	LOS A	0.0	0.1	0.12	0.39	0.12	46.6
Approach		4	0	4	0.0	0.002	3.5	NA	0.0	0.1	0.12	0.39	0.12	46.8
West: Road 3														
10	L2	1	0	1	0.0	0.015	4.6	LOS A	0.0	0.3	0.03	0.55	0.03	46.5
12	R2	17	0	18	0.0	0.015	4.6	LOS A	0.0	0.3	0.03	0.55	0.03	46.1
Approach		18	0	19	0.0	0.015	4.6	LOS A	0.0	0.3	0.03	0.55	0.03	46.1
All Vehicles		63	0	66	0.0	0.023	4.4	NA	0.0	0.3	0.02	0.52	0.02	46.5

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

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

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).

Queue Model: SIDRA Standard.

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

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

Base 2032 + Planning Proposal Mitchell Highway & Marsden Street Sensitivity Test

MOVEMENT SUMMARY

▼ Site: [Mitchell Highway & Marsden Street AM Base 2032 + Site Max (Site Folder: General)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Mitchell Highway														
2	T1	167	32	176	19.2	0.102	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
3	R2	128	0	135	0.0	0.120	5.7	LOS A	0.5	3.5	0.36	0.59	0.36	45.6
Approach		295	32	311	10.8	0.120	2.5	NA	0.5	3.5	0.16	0.25	0.16	48.0
East: Marsden Street														
4	L2	301	3	317	1.0	0.304	5.9	LOS A	1.3	9.3	0.40	0.62	0.40	45.7
6	R2	7	5	7	71.4	0.026	15.4	LOS B	0.1	1.0	0.65	0.78	0.65	40.3
Approach		308	8	324	2.6	0.304	6.2	LOS A	1.3	9.3	0.40	0.62	0.40	45.5
North: Mitchell Highway														
7	L2	3	3	3	100.0	0.003	5.4	LOS A	0.0	0.0	0.00	0.51	0.00	44.7
8	T1	222	26	234	11.7	0.129	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		225	29	237	12.9	0.129	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
All Vehicles		628	69	672	8.3	0.304	3.2	NA	1.3	9.3	0.21	0.32	0.21	47.5

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

MOVEMENT SUMMARY

▼ Site: [Mitchell Highway & Marsden Street PM Base 2032 + Site Max (Site Folder: General)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h HV] veh/h		DEMAND FLOWS [Total veh/h HV] %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh Dist] m		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Mitchell Highway														
2	T1	190	14	200	7.4	0.109	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
3	R2	307	0	323	0.0	0.283	5.8	LOS A	1.3	9.4	0.40	0.61	0.40	45.5
Approach		497	14	523	2.8	0.283	3.6	NA	1.3	9.4	0.25	0.37	0.25	47.1
East: Marsden Street														
4	L2	132	1	139	0.8	0.129	5.6	LOS A	0.5	3.4	0.32	0.57	0.32	45.9
6	R2	11	0	12	0.0	0.030	12.0	LOS A	0.1	0.7	0.65	0.79	0.65	42.4
Approach		143	1	151	0.7	0.129	6.0	LOS A	0.5	3.4	0.35	0.59	0.35	45.6
North: Mitchell Highway														
7	L2	16	0	17	0.0	0.009	4.6	LOS A	0.0	0.0	0.00	0.53	0.00	46.6
8	T1	202	15	213	7.4	0.114	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		218	15	229	6.9	0.114	0.4	NA	0.0	0.0	0.00	0.04	0.00	49.7
All Vehicles		858	30	903	3.5	0.283	3.2	NA	1.3	9.4	0.20	0.32	0.20	47.5

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