
33 Magpie Hollow Road

Traffic Impact Assessment

Prepared for: Mass Group

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Revision

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Acknowledgment of Country

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1. Introduction

1.1 Background

Stantec has been commissioned by MASS Group to prepare a Traffic Impact Assessment (TIA) for the eastern subdivision of the proposed multi-unit community plan development located at 33 Magpie Hollow Road, South Bowenfels. The site is located 5km southwest of the Lithgow Town Centre within the Lithgow City Council LGA.

This assessment has been undertaken to assess the impacts of the development on traffic, transport, and local road infrastructure, as well as to demonstrate the compliance of the development with relevant standards and Council controls where relevant for the eastern subdivision.

A previous development application (DA022/18) under Lithgow City Council, for the same site was approved subject to condition on 18/09/2018 for a 79-lot subdivision, creating 78 new residential allotments and an open space reserve.

1.2 Purpose of this Report

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

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

1.3 References

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

- Australian/New Zealand Standard, Parking Facilities (AS 2890)
- traffic and car parking surveys undertaken by Geocounts as referenced in the context of this report
- Guide to Traffic Generating Developments (Transport for NSW, 2002)
- Technical Direction (Transport for NSW TS 00085 | Version 1.1)
- 41 Magpie Hollow Road Traffic Impact Assessment (TTPA, 2007)
- Lithgow City Council Development Control Plan (Lithgow City Council, 2021)
- South Bowenfels Development Control Plan- Residential Development (Lithgow City Council, 2006)
- Lithgow 2040 Local Strategic Planning Statement (Lithgow City Council, 2021)
- Draft Lithgow Active Transport Plan (Lithgow City Council, 2019)
- Guidelines for Civil Engineering Design and Construction for Development (Lithgow City Council, 2012)
- Future Transport Strategy (Transport for NSW, 2022)
- Draft Central West and Orana Transport Plan (Transport for NSW, 2025)
- Public Transport Service Planning Guidelines – Rural and Regional NSW (Transport for NSW, 2015)
- other documents and data as referenced in this report.



2. Strategic Context

This section summarises the strategic transport and land use plans for the study area in and around Magpie Hollow Road. It also identifies relevant transport programs available to encourage road safety and the use of active transport modes.

2.1 NSW State Policies

There are plans to develop Sydney to align with three distinct cities that have employment opportunities, health, education and recreation destinations within 30 minutes travel of residents' homes. This can be done through integrated land use and transport planning.

2.1.1 The Central West and Orana Regional Plan 2041

The Central West and Orana Regional Plan (CWORP) establishes the strategic direction for land use planning in the region over the next 20 years, addressing future needs related to housing, employment, infrastructure, environmental health, access to green spaces, and the development of connected communities. The plan applies to the local government areas of Bathurst, Blayney, Bogan, Cabonne, Coonamble, Cowra, Dubbo, Forbes, Gilgandra, Lachlan, Lithgow, Mid-Western, Narromine, Oberon, Orange, Parkes, Warren, Warrumbungle, and Weddin. It will guide land use planning decisions made by the NSW Government, local councils, and other stakeholders through to 2041. The study area is under the Central West regional plan.

The plan identifies the Lithgow Functional Economic Region as a "Metro-satellite" due to its proximity and connectivity to major economic centres, particularly Western Sydney, Sydney, and eastern ports, as well as its concentration of high-growth mining industries. The regional cities of Bathurst and Orange in the east have relatively contained local catchments but are experiencing improved connections via Lithgow to Sydney and, alongside Cowra, to Canberra and Wollongong.

The relevant Lithgow City Council's priorities for the LGA are to capitalise on Lithgow's proximity to Sydney transport and freight connections by improving the potential for a transport interchange hub.



Figure 2.1: CWORP Inter-regional Connections



Figure 5: Inter-regional connections



2.1.2 Future Transport Strategy, Transport for NSW, 2022

The Future Transport Strategy sets the strategic directions for Transport to achieve world-leading mobility for customers, communities, businesses, and our people. It is part of a suite of government strategies, policies and plans that integrate and guide land use and transport planning across NSW.

It replaces Future Transport 2056: Shaping the Future, which was published in 2018.

The Future Transport Strategy was developed in collaboration with other government agencies to ensure the State's overarching strategies align and complement each other. Transport used a 'vision and validate' approach for Future Transport. This approach starts with a long-term vision and establishes the outcomes we need to deliver that vision for customers and communities.

The Future Transport Strategy will provide the direction for Transport in NSW based on three outcomes that form this strategy:

- Connecting our customers' whole lives
- Successful places for communities
- Enabling economic activity.

The Future Transport Strategy considers every part of our transport system from planning to operations to ensure we have a fully integrated approach. It sets the direction for localised plans and strategies, policy direction and prioritisation.

2.1.3 NSW State Infrastructure Strategy 2018 – 2038

The strategy sets out the government's priorities for the next 20 years, and combined with the Future Transport Strategy 2056, the Greater Sydney Region Plan, and the Regional Development Framework, brings together infrastructure investment and land-use planning for our cities and regions.

Amongst other initiatives, the Plan proposes to improve intercity walking and cycling connections and improve north-south transport connections, for example, Greater Parramatta to Epping and Greater Parramatta to Kogarah via Bankstown.

2.1.4 Road Safety Plan 2021, Transport for NSW, 2018

The Centre for Road Safety released its Road Safety Plan 2021 in February 2018, following an extensive consultation process that took place between late 2016 and mid-2017, with the aim of dramatically reducing the road toll in NSW. The plan is based on the Safe System approach, approaching road safety through safer roads, speeds, people and vehicles.

The plan defined six priority areas designed to help the NSW Government reach its State Priority Target of reducing the total number of road-related deaths across the State by 30 per cent by 2021. These included:

- Saving lives on country roads,
- Liveable and safe urban communities,
- Using the roads safely,
- Building a safer community culture,
- New and proven vehicle technology; and
- Building a safe future.

Over the next five years, the plan will see the NSW Government deliver across a range of priority areas, the most relevant being to:

- Increase safety for vulnerable road users by providing pedestrian crossings, refuges and traffic calming device, as well as expanding 40 km/h zones in high pedestrian and local areas,
- Deliver the Safer Roads Program – annual improvements to road safety infrastructure across the network, including local roads,
- Support the Local Government Roads Safety Program and council in their role as custodians of the vast local road network; and
- Provide high quality and enhanced fatal and serious injury crash data and analysis made available to the public and road safety delivery partners and implement a robust research program.

Furthermore, The Centre for Road Safety is developing a new, five-year action plan to build on the success of Road Safety Plan 2022. The 2026 plan will be based on the proven Safe Systems approach to road safety, so that initiatives to deliver safer roads, speeds, people, and vehicles work together to keep us protected.

2.2 Great Western Highway Upgrades

The Great Western Highway extends for 201 kilometres across the Great Dividing Range through the World Heritage-listed Blue Mountains, connecting Bathurst and the surrounding Central West and Orana region to Sydney. The highway is a key enabler of regional development as it is the major route for road freight between Sydney and the Central West and forms part of the National Land Transport Network.

The Great Western Highway upgrade is to complete the duplication of the Great Western Highway. Over 100 km of the highway has been duplicated so far, leaving a 34 km gap between Katoomba and Lithgow. A proposed program of works related to this section of the highway, referred to as the Great Western Highway Upgrade Program, is comprised of:

- East section (from Katoomba to Blackheath): The upgrade consists of:
 - Widening and upgrading the Great Western Highway between Rowan Lane in Katoomba and Bellevue Crescent in Medlow Bath to provide two lanes in each direction,
 - Widening and upgrading the Great Western Highway between Medlow Bath to the east of Tennyson Road in Blackheath to provide two lanes in each direction.
- Central section (Blackheath to Little Hartley): The upgrade consists of:



- Two identical (twin) tunnels, one eastbound and one westbound, around 11 kilometres long, generally to the south of the existing Great Western Highway and Mount Victoria,
- Two lanes of traffic flow in each tunnel, to separate traffic and increase safety,
- Tunnel operation facilities including ventilation systems, drainage management, signage, lighting, and emergency evacuation systems.
- West section (Little Hartley to Lithgow). Key features of the proposed upgrade include:
 - Widening and upgrading the Great Western Highway between Little Hartley and Lithgow to a safer four lane divided highway,
 - Provision of service roads for local traffic,
 - Safer, controlled access onto the highway,
 - Provision of two heavy/light vehicle rest areas,
 - New bridges to allow safer, separated intersections for local traffic,
 - Upgrade of the existing bridge over River Lett,
 - Provision of a westbound climbing (third) lane on River Lett Hill.

As of writing the report (April 2025) the upgrade is currently paused awaiting confirmation of funding by both the Australian and State Governments.

2.3 Local Context

2.3.1 Local Strategic Planning Statement, Lithgow City Council, 2040

The Lithgow City Local Strategic Planning Statement (LSPS) 2040 sets out a 20-year vision for land use planning in the Lithgow Local Government Area (LGA). Its strategic context is shaped by the need to respond to and align with Central West and Orana Regional Plan, Regional Plans, Local Environmental Plans, Development Control Plans, and Community Strategic Plans.

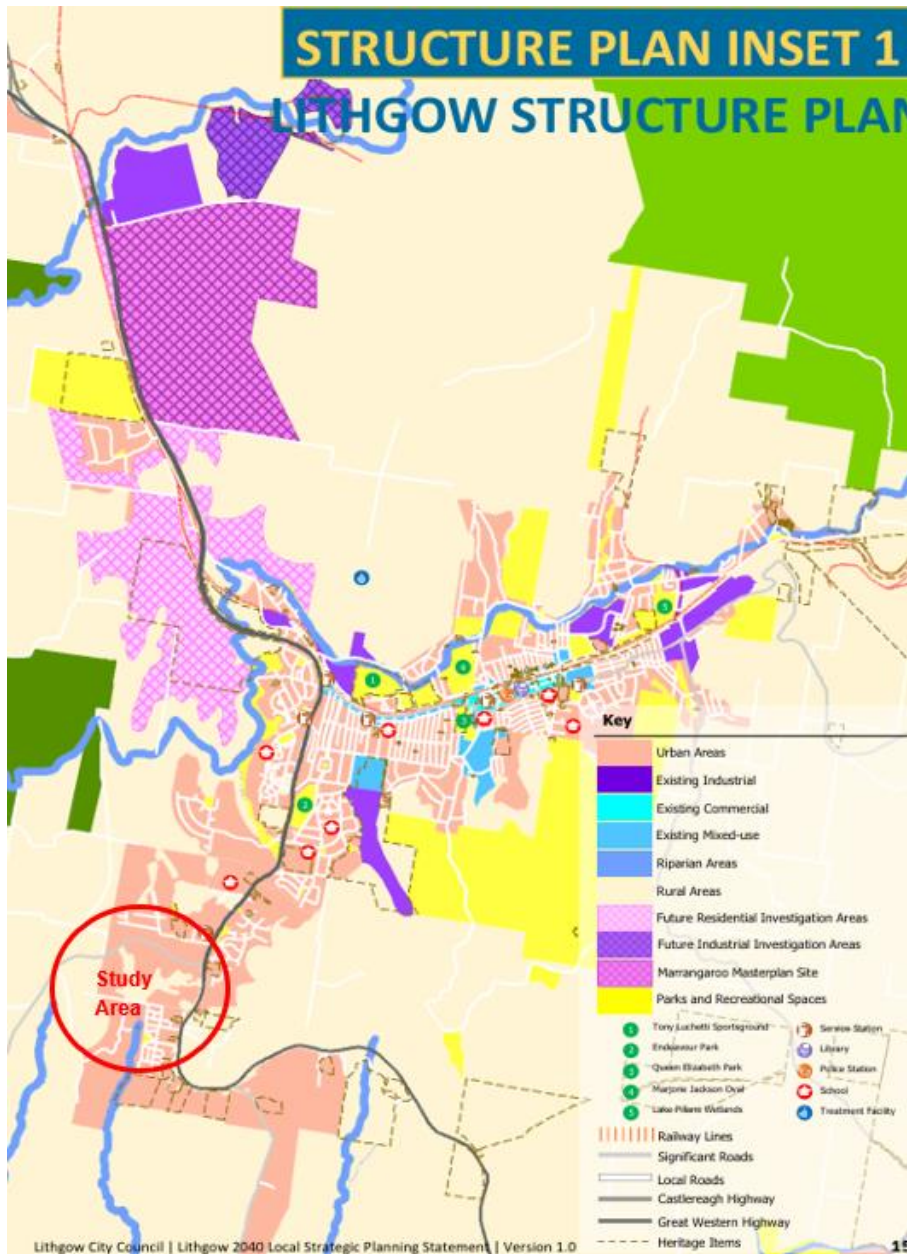
The LSPS is designed to ensure that local planning decisions and growth management are consistent with these broader strategies, particularly in managing urban growth, infrastructure provision, and environmental protection.

The LSPS provides an overarching strategic direction of how Lithgow City Council is planning for the present and the future. This statement identifies the local issues and needs of the community and establishes priorities to which planning instruments will need to be amended or reinforced to facilitate future planning directions.

The LSPS provides priorities and actions and implementation strategies considering four themes that tie into the Regional Plan, Community Strategic Plan and other council plans to ensure orderly and sustainable development.



Figure 2.2: Lithgow City LSPS Structure Plan Map



2.3.2 Lithgow City Council Active Transport Plan 2019

The Lithgow Active Transport Plan is a strategic initiative by Lithgow City Council aimed at enhancing pedestrian and cycling opportunities throughout the Lithgow Local Government Area (LGA). The plan is part of a broader effort to improve liveability, infrastructure, and connectivity for residents and visitors by prioritising active modes of transport such as walking and cycling.

The plan sets out to:

- Increase the safety, accessibility, and appeal of walking and cycling in Lithgow,
- Expand and improve the bicycle and pedestrian network across the LGA,
- Integrate active transport infrastructure with broader regional projects, including major road upgrades.

The Active Transport Plan complements major infrastructure projects like the Great Western Highway upgrade, which will provide improved facilities for both freight and active transport users, including wider shoulders for cyclists and safer pedestrian access, as well as safer road crossings and better connectivity to local amenities.

The proposed active transport plan for the study area recommends a contributions framework to Urban Release Area to pay for improvements to the Active Transport Network. The plan proposes an upgrade of existing shared paths (including new shared paths where missing) between Main Road/Great Western Highway and Mudgee Street/Great Highway

intersections through the Magpie Hollow Road intersection. The shared path upgrade works is now completed (partially) including the north-western side of Magpie Hollow Road intersection. It is anticipated that the full upgrade works will be completed in near future when fund is available.

Figure 2.3: Lithgow City Active Transport Plan 2019

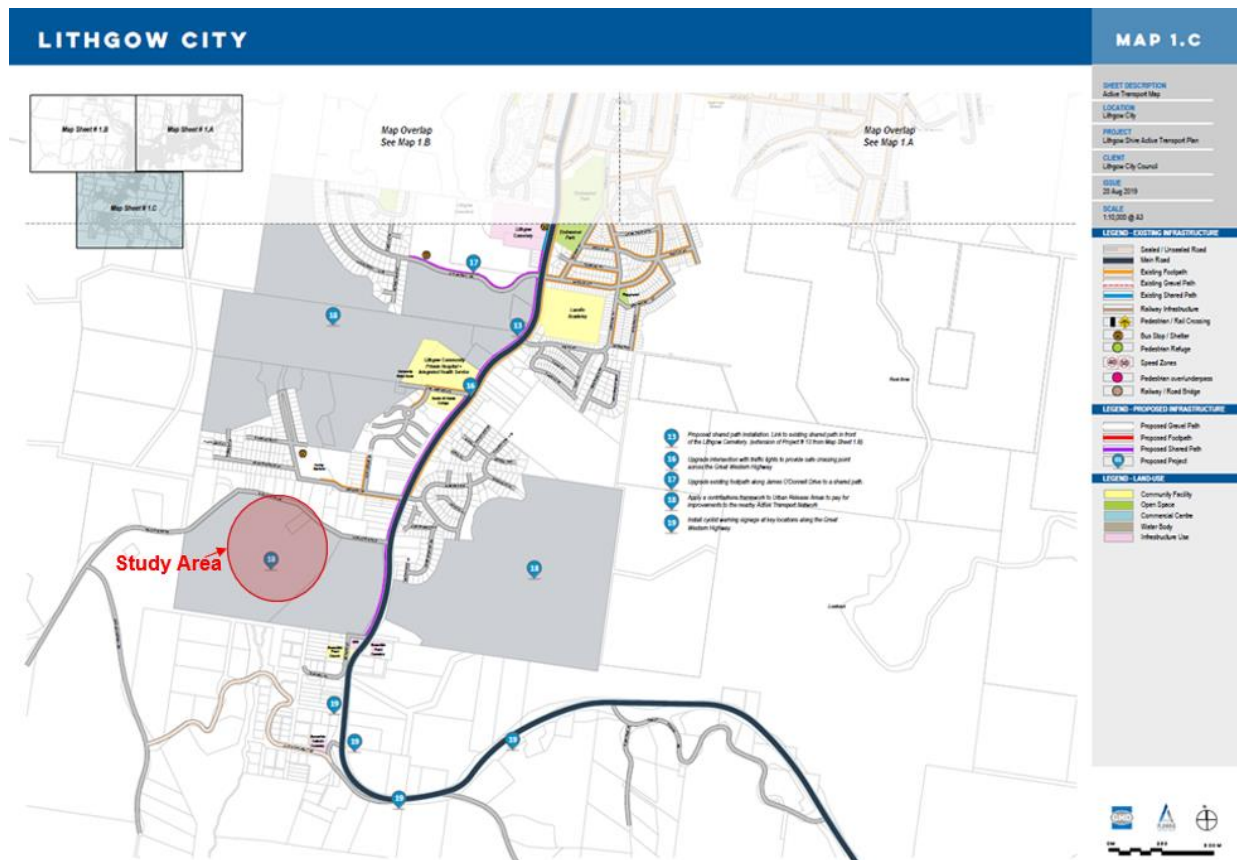
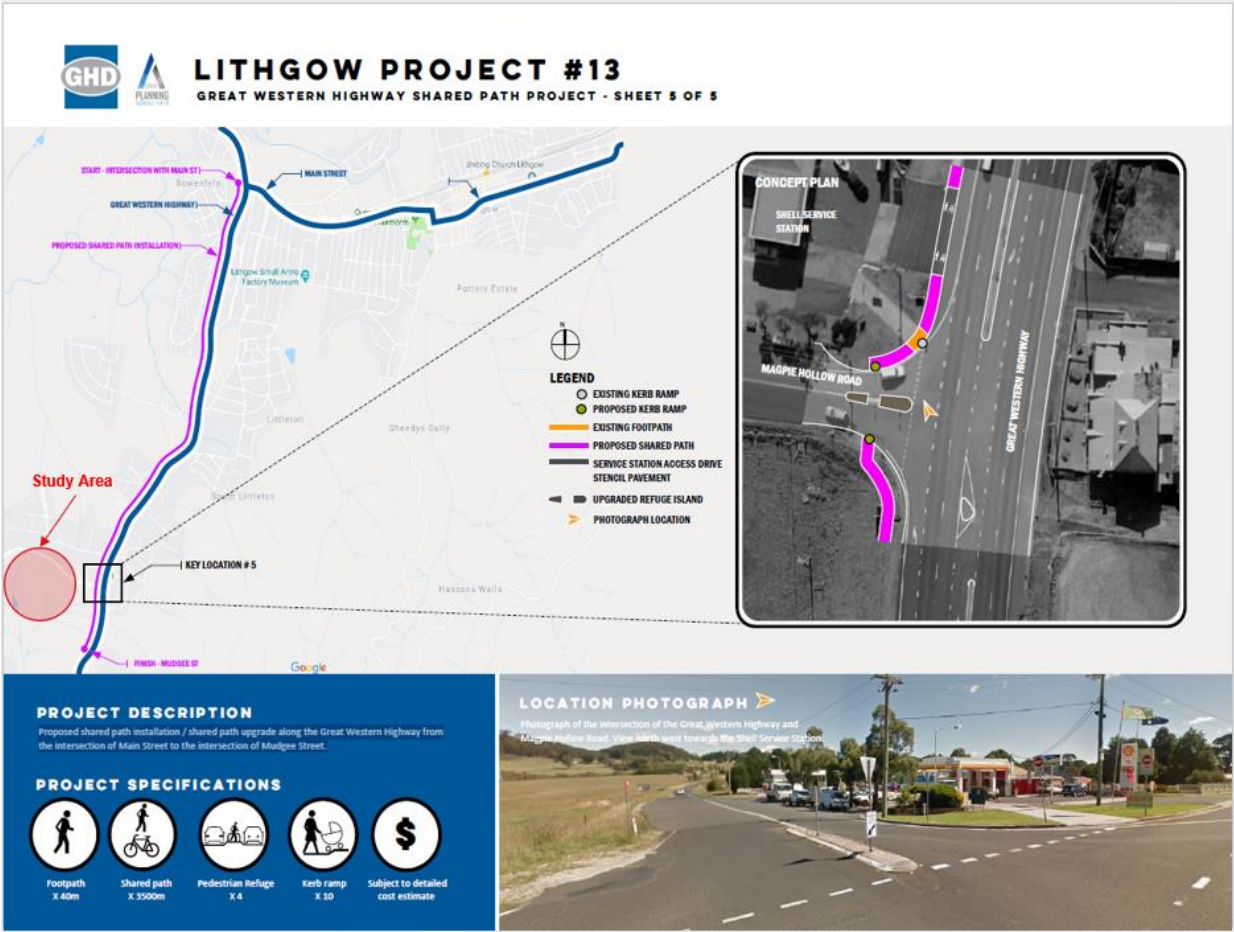


Figure 2.4: Active transport project in Lithgow Active Transport Plan 2019

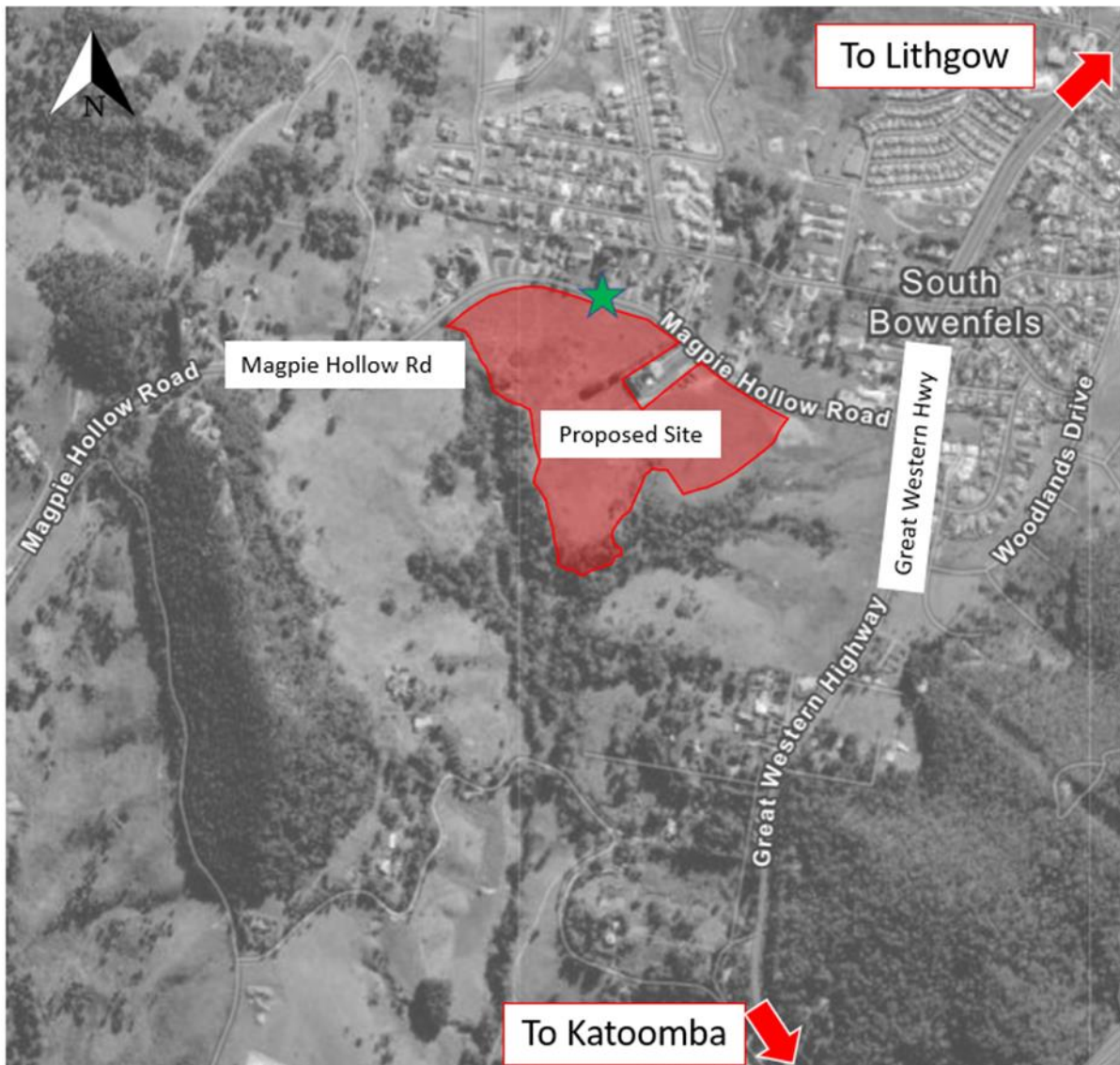


3. Existing Conditions

The proposed site is located at 33 Magpie Hollow Road, South Bowenfels. The site (Lot 2 DP1229039) is approximately 5km southwest of the Lithgow Town Centre and is located off Magpie Hollow Road 500 m to the west of the Great Western Highway.

The location of the proposed site and its surrounding environs are shown in Figure 3.1.

Figure 3.1: Proposed Site and Its Environs



3.1 Road Network

3.1.1 Road Hierarchy

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

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

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

- **Arterial Roads** – Controlled by TfNSW, typically no limit in flow and designed to carry vehicles long distances between regional centres.
- **Sub-Arterial Roads** – Managed by either Council or TfNSW under a joint agreement. Typically, their operating capacity ranges between 10,000 and 20,000 vehicles per day, and their aim is to carry through traffic between specific areas in a subregion or provide connectivity from arterial road routes (regional links).
- **Collector Roads** – Provide connectivity between local sites and the sub-arterial road network and typically carry between 2,000 and 10,000 vehicles per day.
- **Local Roads** – Provide direct access to properties and the collector road system and typically carry between 500 and 4,000 vehicles per day.

3.1.2 Surrounding Road Network

Great Western Highway

Great Western Highway is a State Road (Number 5) under the care and maintenance of TfNSW and links Sydney with Bathurst. The road functions as an arterial road and is configured as a four-lane (two per direction) and has a posted speed limit of 70 km/h.

Magpie Hollow Road

Magpie Hollow Road is a local, unclassified road under the care and maintenance of the local Council and links rural residential lands to the Great Western Highway to the east and Hampton Road to the west. The road is typically configured with a two-lane carriageway and a posted speed limit of 80 km/h (70km/h near the Great Western Highway intersection).

3.1.3 Surrounding Intersections

The following intersections currently exist in the vicinity of the site:

- Great Western Highway/ Magpie Hollow Road (un-signalised)

3.2 Traffic Volumes

Stantec commissioned/undertook traffic movement counts on key roads in the vicinity of the site on 26 June 2024 (Wednesday) during the following peak periods:

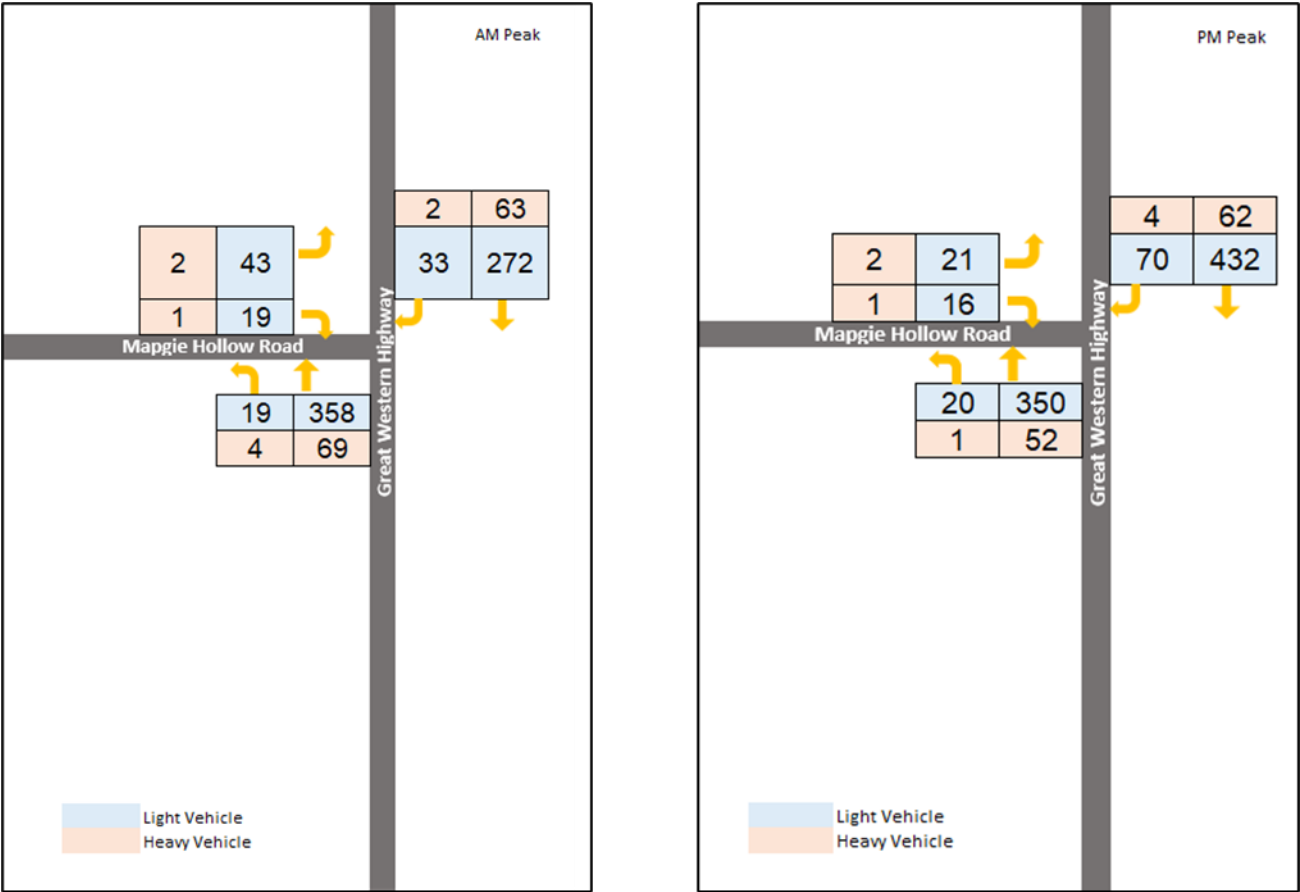
- 6:00am and 10:00am
- 3:00pm and 7:00pm

Adopting an annual growth rate of 1.0%, the traffic survey data is projected out to 2025. The annual traffic growth rate is discussed in Section 3.3.

The AM and PM peak hour traffic volumes are summarised in Figure 3.2, with full results contained in the Appendix.



Figure 3.2: Base 2025 AM/PM Peak Hour Traffic Volumes

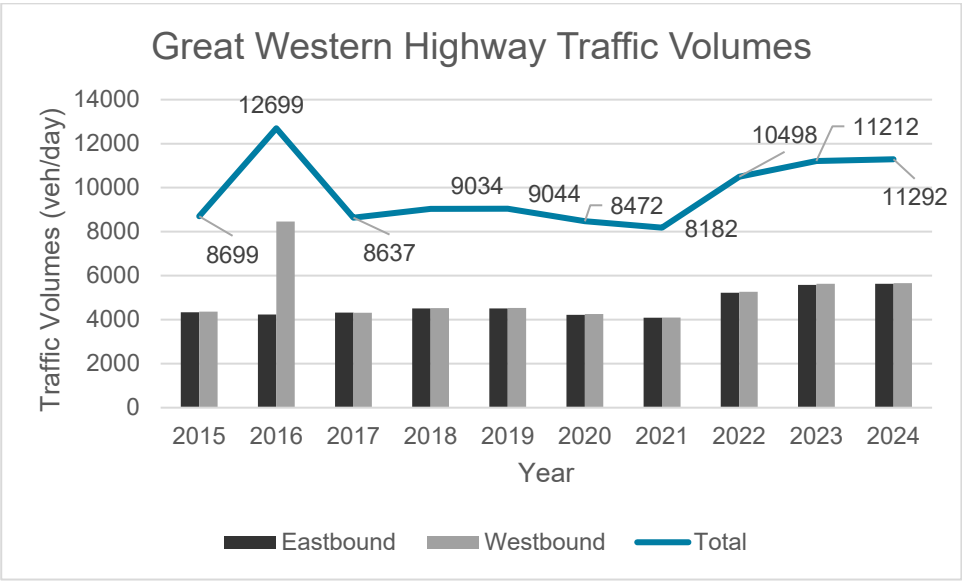


Source: Traffic Surveys conducted on 26 June 2024

3.3 Historic traffic volumes and annual growth

Transport for NSW (TfNSW) collects traffic counts at various locations across NSW. In order to estimate the traffic growth rate in the area and to form the 2025 base traffic volume, TfNSW's permanent counter data (Station ID 6191) is used and presented in Figure 3.3. The counter is located south of Magpie Hollow Road near South of Forty Bends Road.

Figure 3.3: Great Western Highway AADT



3.3.1 Annual Growth Rate

The data for the permanent count station showed that the traffic volumes remained slightly lower in 2020-21 when compared to 2018-19 as the traffic volumes in these years were affected by the COVID-19 pandemic. As a result, to estimate the annual traffic growth rate, data from 2022 is used to avoid the distortions caused by the COVID-19 pandemic during 2020-21.

In 2022, the total average traffic volume was 10,498 vehicles/day. This has increased by 6.8% to 11,212 in 2023. From 2023, it increased by 0.7% in 2024 to 11,292 vehicles/day.

It is noted that the 2022-23 growth rate of 6.8% is higher than average, which can be attributed to a rebound in traffic activity post-COVID-19. Traffic volumes have stabilised in 2023-24, where the growth rate is 0.7%. As a result, a growth rate of 1.0% is adopted for this assessment.

3.4 Intersection Operation

The operation of the key intersections within the study area has been assessed using SIDRA INTERSECTION, a modelling software package which calculates intersection performance.

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

Table 3.1 shows the criteria that SIDRA INTERSECTION adopts in assessing the level of service.

Table 3.1: SIDRA INTERSECTION Level of Service Criteria

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

Source: Austroads 2020a, Guide to Traffic Management Part 3.

Table 3.2 presents a summary of the existing operation of the intersection, with full results presented in Appendix B of this report. The survey data was collected on Wednesday 26 June 2024.

Table 3.2: Existing Operating Conditions

Intersection	Peak	Leg	Degree of Saturation (DOS)	Average Delay (sec)	95th Percentile Queue (m)	Level of Service (LOS)
Great Western Highway/ Magpie Hollow Road	AM	Total (Worst Delay)	0.170	28.2	4.1	B
	PM	Total (Worst Delay)	0.180	38.8	4.0	C

On the basis of the above assessment, it is clear that the intersection of Great Western Highway/ Magpie Hollow Road performs satisfactorily during both the AM and PM peak periods.



3.5 Public Transport

A review of the public transport available in the vicinity of the site is summarised below. Bus Route Number 100 (Lithgow to Littleton via Lithgow Hospital & Kirkley Gardens) runs via the Bus Stops at the Great Western Highway.

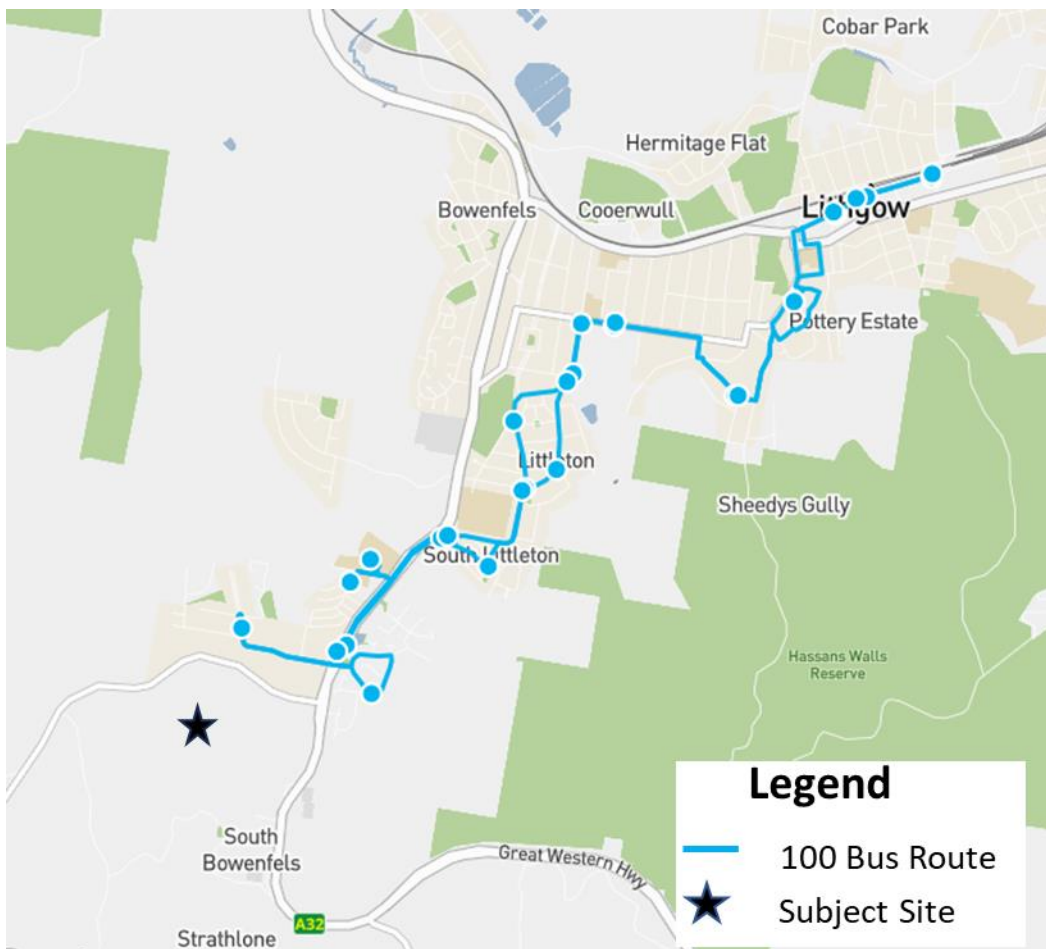
Table 3.3 provides a guide to the frequency of the existing bus services.

Table 3.3: Public Transport Provision

Route Number	Route Name	Weekday Frequency	Weekend Frequency
100	Lithgow via Littleton	1-2 Hours	Three Services Daily

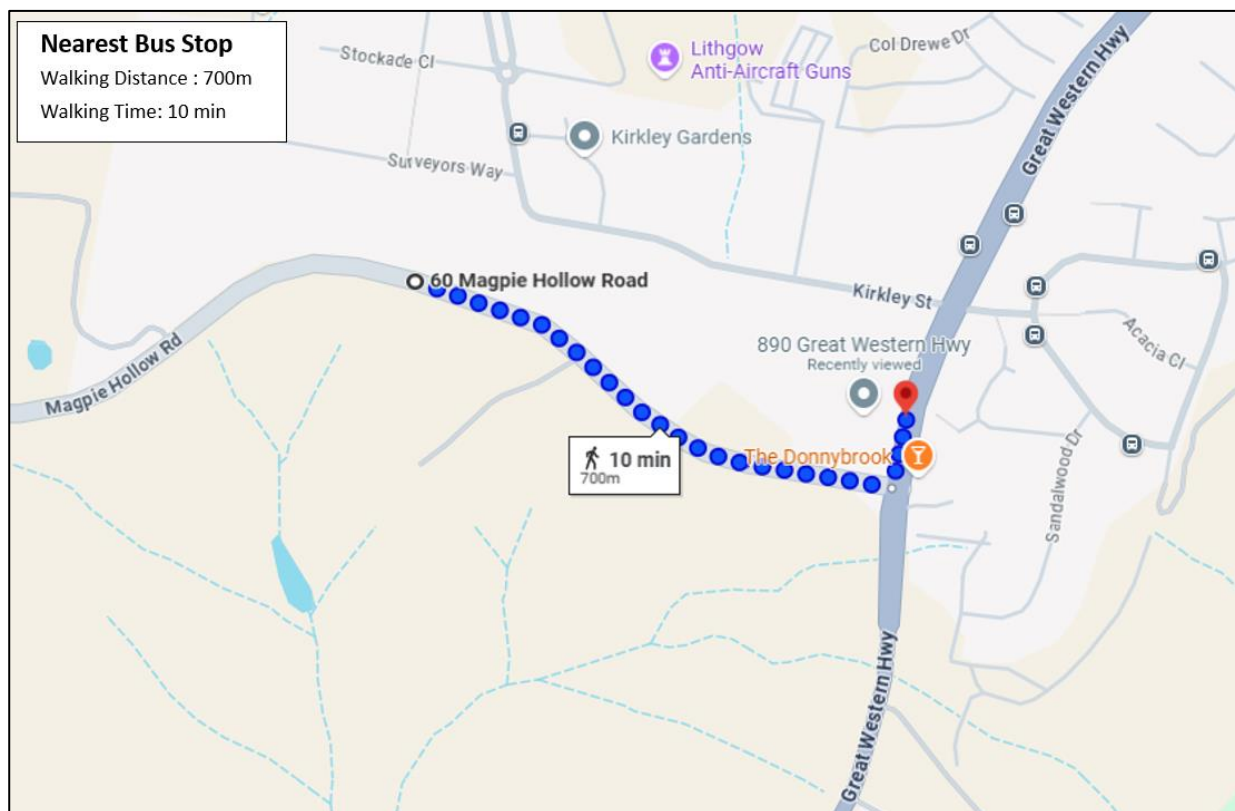
The Bus Route Map is provided in Figure 3.4. It has been noted from a desktop review that the existing public transport service serving immediately near the development site is limited.

Figure 3.4: Bus Route Map



Stantec undertook a desktop analysis using Google Maps to assess the walking distance and time required to access the nearest existing bus stop at Great Western Highway (after Kirkley Street).

Figure 3.5: Walking Catchment Analysis



Based on the current bus network, a resident of the subject site would need to walk at least 700 metres, or 10 minutes from the site to reach the nearest bus stop at Great Western Highway (as shown in Figure 3.5) to access bus route 100. Another bus stop is located just 200 metres away on Kirkley Street; however, there is currently no direct access from the proposed development.

The future public transport provision will be designed in accordance with the *Future Transport Strategy* from TfNSW and the supporting *Draft Central West and Orana Transport Plan*, which will tie into the nearby existing bus/train network in the Lithgow area. Based on the *Public Transport Service Planning Guidelines – Rural and Regional NSW*, a detailed review of the proposed public transport provision linking to the broader public transport network will be undertaken at a later design stage.

3.6 Pedestrian and Cyclist Infrastructure

There is an approximately 2.0-metre-wide shared path running along the north-western side of the Great Western Highway, adjacent to Magpie Hollow Road, as shown in Figure 3.6. There is no footpath or shared path on Magpie Hollow Road. An informal crossing with a pedestrian refuge is located 180 to 220 metres before the bus stops along the Great Western Highway.

The *Lithgow Active Transport Plan 2019* aims to meet the needs of both pedestrians and cyclists, encouraging greater use of the footpath and bike path network. The strategy proposes the installation and upgrade of shared paths along the Great Western Highway, from the intersection with Main Street to the intersection with Mudgee Street (see Figure 2.4). Construction of this shared path has been partially completed, as shown in Figure 3.7.

Figure 3.6: Surrounding active transport network

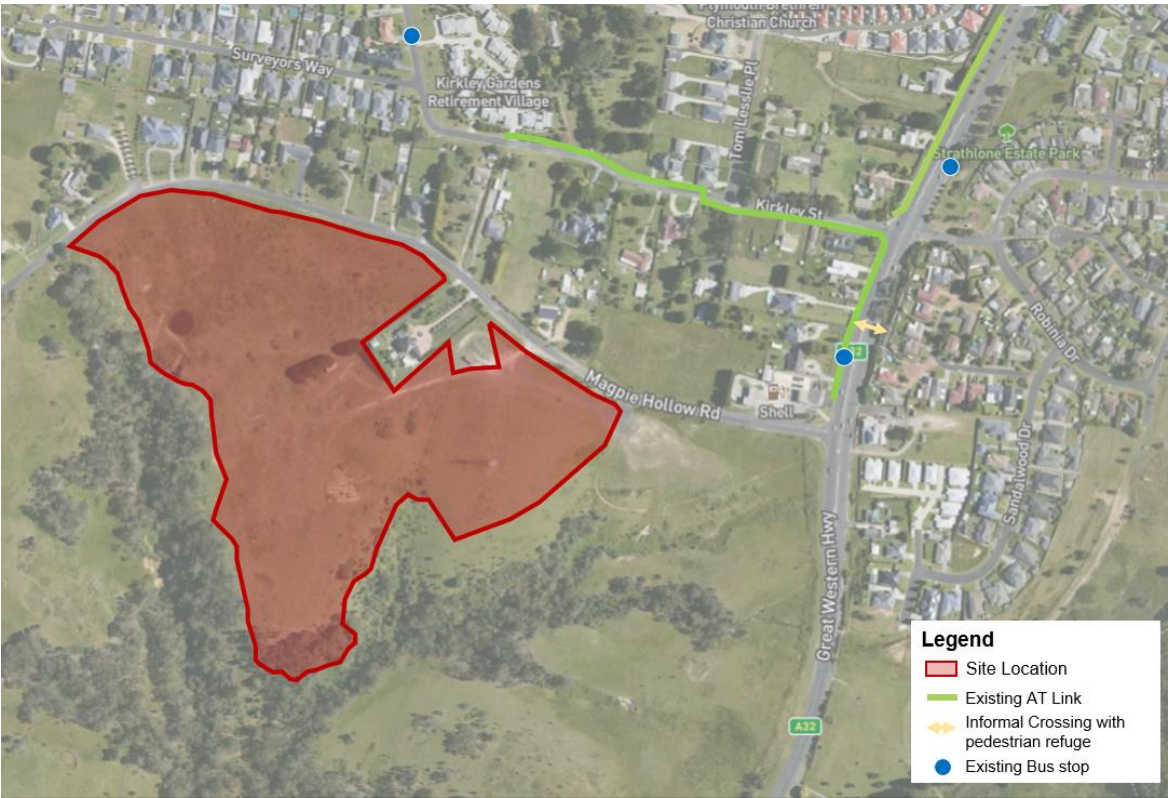
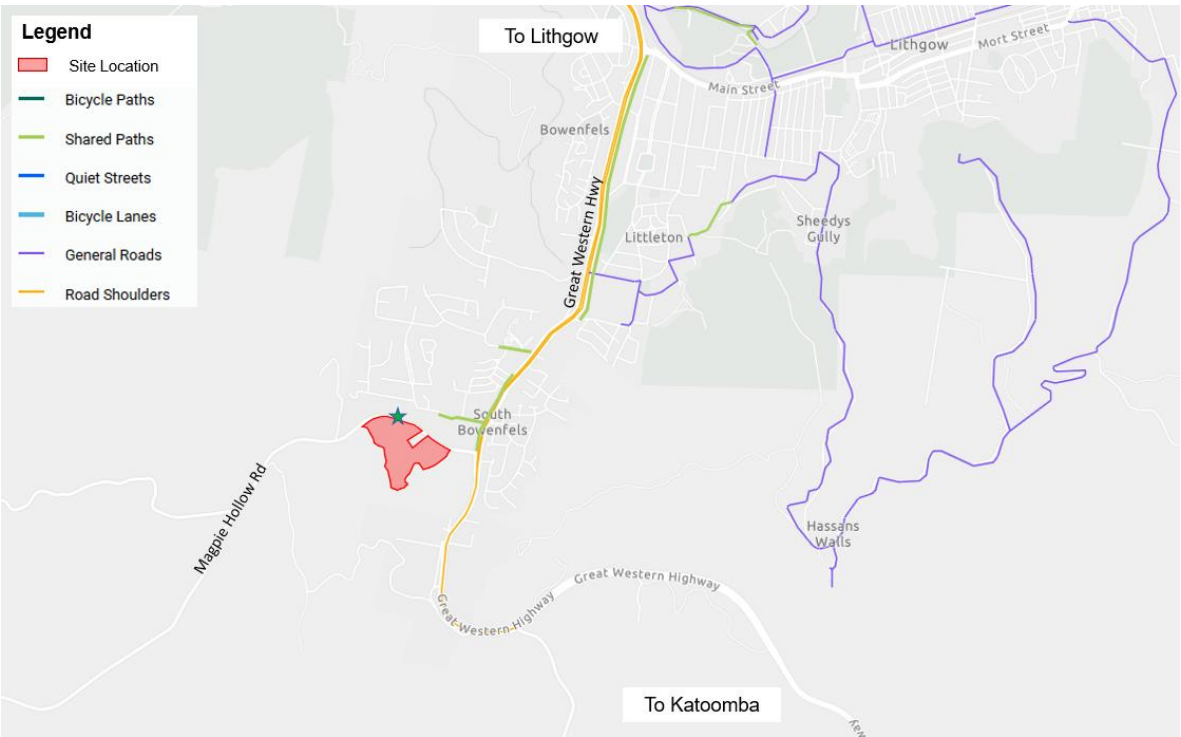


Figure 3.7: Surrounding cycling network



Source: TfNSW Cycleway Finder Map, accessed 13 May 2025

3.7 Crash History

An analysis of the most recent five-year period of available crash data from 2019 to 2023 has been undertaken based on crash data provided by TfNSW for the roads surrounding the site. The locations and severity of the crash data for the five years are shown in Figure 3.8 and Table 3.4.

Figure 3.8: Crash location

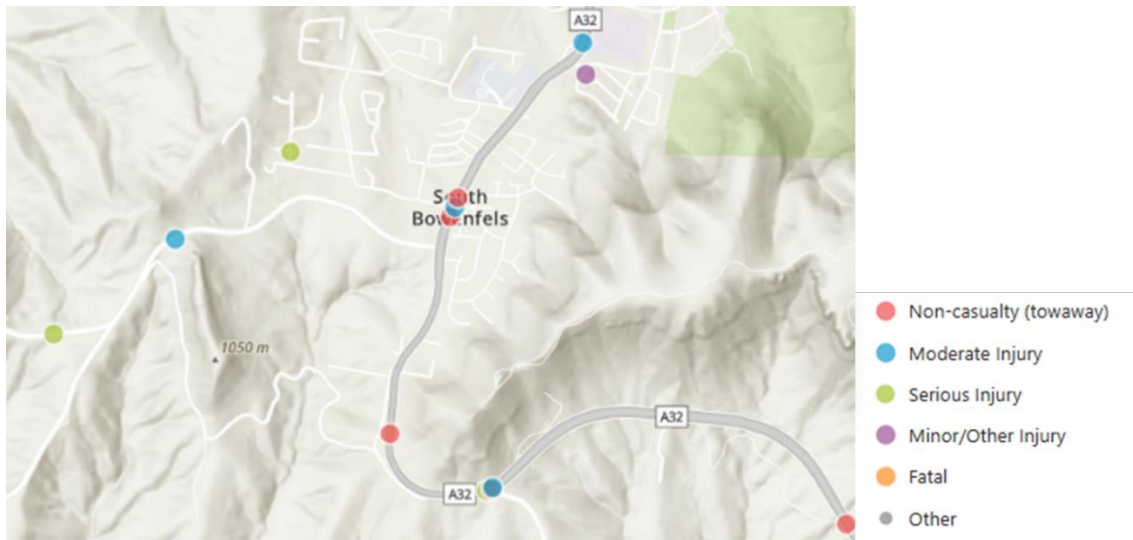


Table 3.4: Crash Data

Crash ID	Degree of Crash	RUM Code	RUM Description	Number injured
1203403	Non-casualty (towaway)	20	Head on	
1225178	Moderate Injury	32	Right rear	1
1243469	Minor/Other Injury	11	Right far	1
1261071	Serious Injury	73	Off rd right => obj	1
1261876	Moderate Injury	81	Off left/rt bnd =>obj	2
1264802	Moderate Injury	4	Ped walk with	1
1268258	Non-casualty (towaway)	85	Off rt/lft bnd => obj	
1291014	Serious Injury	87	Off lft /lft bnd => obj	2
1316668	Serious Injury	88	Out of cont on bend	1
1317791	Moderate Injury	10	Cross traffic	1
1318773	Non-casualty (towaway)	37	Left turn sideswipe	
1328962	Non-casualty (towaway)	30	Rear end	
1329931	Non-casualty (towaway)	73	Off rd right => obj	

Source: Transport for NSW, Accessed: 15/04/2025

The following key statistics can be drawn from the crash data:

- No fatality was recorded during the five years surrounding the site.
- There were no crashes observed at the Great Western Highway/Magpie Hollow Road intersection.
- There was one crash observed along Magpie Hollow Road that caused moderate Injury.

Although the surrounding road network has recorded 13 incidents over the five-year period, the data does not indicate any safety concerns. Moreover, the development is not anticipated to materially change the types of vehicles or significantly increase traffic volumes at key intersections surrounding the site. Therefore, the proposal would not impact road safety surrounding the site.

4. Development Proposal

4.1 Land Uses

A preliminary concept plan has been developed for the eastern part of the site as summarised in Table 4.1. The eastern subdivision will comprise of multi-dwelling housing (moveable dwellings) and community facilities, to be designed and operated as a Manufactured Home Estate, featuring 201 dwelling sites.

Table 4.1: Development Schedule

Use	Yield
Multi-dwelling housing (eastern subdivision)	201 lots
Community facilities (lots 89 & 193)	2 lots

The proposed development layout is illustrated in Figure 4.1.

Figure 4.1: Proposal Development Layout



4.2 Proposed Vehicle Access

The main access road in and out of the subdivision is proposed via one (1) access point at the north end of the site to link Magpie Hollow Road to the proposed internal road network. The access between the internal road and Magpie Hollow Road will be a priority/stop-controlled intersection with all movements allowed to access the site. All vehicular access to the site will be designed in accordance with the various standards and council's requirements to accommodate to largest design vehicles (garbage trucks, service vehicles etc.). A design review of the proposed access point linking to the external road network will be undertaken at a later design stage.

4.3 Proposed Internal Road Network

In all areas, a road hierarchy must be established to ensure that a safe and efficient environment is provided for motorists and pedestrians. The road network shall be designed to passively discourage through traffic in residential areas, by creating a noticeable difference in speed environment and geometric characteristics relative to arterial routes.

Table 4.2 outlines the proposed road reserve and carriageway widths for various road types within the development, as derived from the civil engineering plans. Notwithstanding, each road type is designed with reference to the relevant standards, such as the Local Government Manufactured Home Estates (LG MHE) Regulation and the NSW Rural Fire Service's Planning for Bushfire Protection (RFS PBP 2019) guidelines for compliance.

All internal roads will be designed in accordance with the various standards. A detailed review of all internal roads will be undertaken at a later design stage.

Table 4.2: Proposal Road Reserve and Road Widths

Road Type	Road Reserve Width	Carriageway Width	Footpath / Verge Details	Compliance Reference
Local Road (MC03–MC10)	9.0m	5.7m (2 x 2.85m travel lanes)	2 x 1.65m (Verge on both sides), stormwater network integrated	LG MHE Regulation – suitable for internal access roads
Local Road (MC01–MC02)	12.0m	8.0m (2 x 4m travel lanes)	2.3m (1.2 m concrete footpath + verge); 1.7m verge, stormwater infrastructure)	Complies with RFS PBP 2019 for emergency access
Perimeter Road (MC02)	12.0m	8.0m (2 x 4m travel lanes)	2.5m, (1.5 m verge; stormwater network); 1.5m verge, parking/landscaping options	Meets RFS PBP 2019 turning and access requirements
Driveway (MC11)	6.5m	4.0m	1.5m, 1.0m (Narrow verge; no dedicated footpath)	LG MHE Regulation – acceptable for private access, not suitable for emergency vehicles
Driveway (MC12)	4.5m	4.5m	stormwater network; no dedicated footpath or verge	LG MHE Regulation – suitable for internal access roads

Source: Civil Engineering Plans compliance with LG MHE Regulation and NSW RFS Planning for Bushfire Protection 2019

While residential subdivisions allow for vehicles to park on driveways and garages as part of each residential lot, the internal road cross-section does allow for on-street parking with low demand and driveways ensuring appropriate two-way movements throughout for the intended largest vehicles (Garbage trucks, removalist/service trucks etc.).

4.4 Active Transport Facilities and Connectivity

The proposed site plan includes a comprehensive road network for the development. All internal roads, including pedestrian walkways, will be designed in accordance with relevant standards and will connect seamlessly to the existing and future pedestrian walkways along Magpie Hollow Road. A detailed review of the proposed pedestrian walkway linking the internal network to the external road network will be conducted at a later design stage.

Currently, there is no footpath or shared path along Magpie Hollow Road as shown in Figure 4.2. It is recommended to provide active transport facilities and appropriate pedestrian crossing facilities on Magpie Hollow Road to improve pedestrian permeability and public transport accessibility. Details of the recommendations are discussed in Section 5.

Figure 4.2: Existing and proposed pedestrian facilities

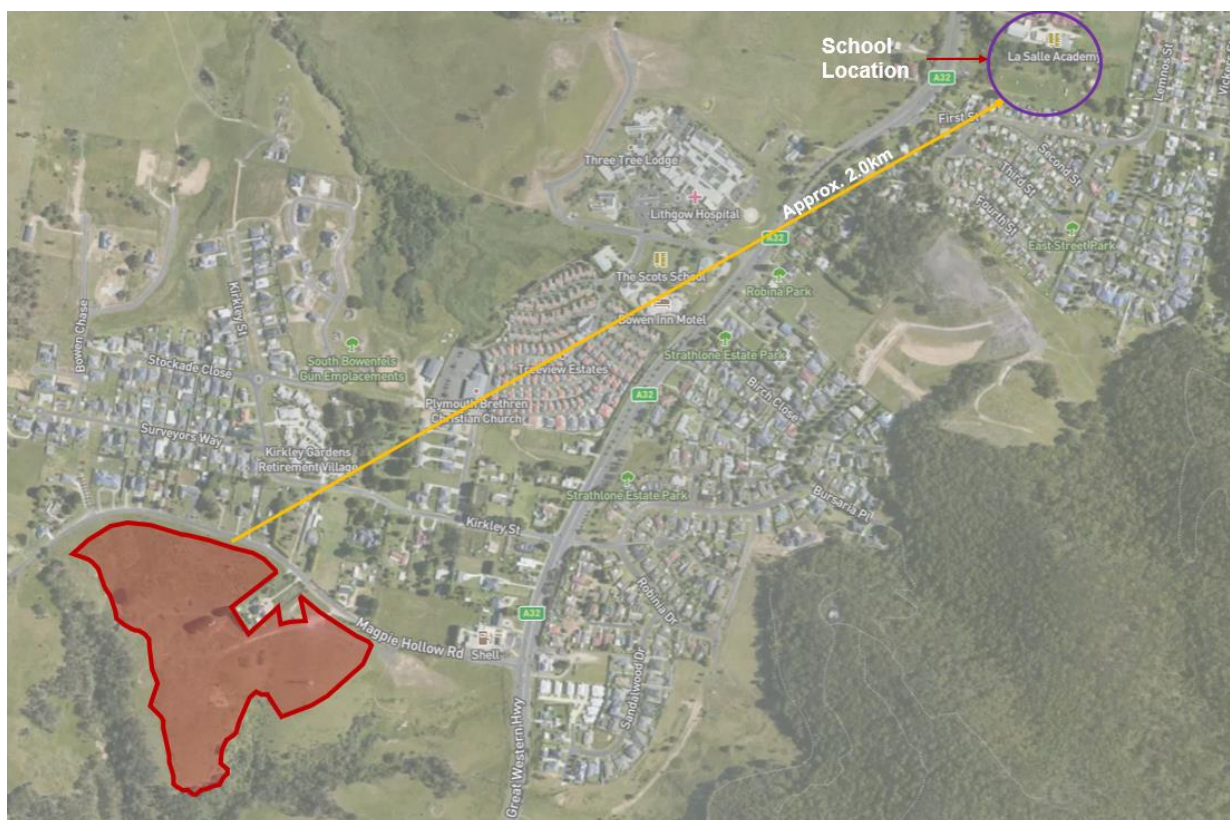


4.5 School Access Considerations

La Salle Academy access from Rabaul Street is located within about two kilometres of the site, as indicatively shown in Figure 4.3. Such walking distances are not ideal, particularly for school students and when combined with missing links in the available footpath network along Magpie Hollow Road (together with minimal pedestrian crossing facilities).

Provision of school bus services and regular route bus routes are key to ensuring appropriate access to these schools for future residents. With the nearest bus stop currently located on Great Western Highway about one kilometre to the north-east, there is potential to include either a new school bus route through the site or new bus stop facilities along Magpie Hollow Road close to the proposed site access.

Figure 4.3: Location of Existing School



4.6 Rural Fire Truck Access

The access for the rural fire truck will be provided contacting with RFB in DA stage.

4.7 Car Parking Requirements

Table 4.3 outlines the minimum car parking requirements for the development, based on Lithgow City Council Development Control Plan (DCP) 2021. The planning proposal is required to provide a minimum of 241 parking spaces per DCP 2021.

Table 4.3: Lithgow City Council DCP 2021 Minimum Car Parking Requirements

Description	Land Use	Size	Statutory Car Parking Rate	Minimum Car Parking Requirement
Eastern subdivision	Residential accommodation	201 dwellings	Residential parking: 1-2 beds: 1 per unit 3 or more beds: 2 per unit 1 visitor space per 5 units	241

It is proposed that the eastern subdivision will require a minimum of 241 parking spaces, assuming all required spaces will be provided within the lot as part of the future DA. All parking spaces will be designed to the relevant standard: AS2890:1-6 series.

4.8 Accessible Parking Requirements

Accessible parking will be provided in accordance with the Lithgow City Council Development Control Plan (DCP) 2021. Any accessible parking requirements for individual lot will be undertaken as part of future DA process.

4.9 Bicycle Parking Requirements

The Lithgow City Council Development Control Plan (DCP) 2021 does not specify any requirements for bicycle parking in low-density residential areas. Any bicycle parking requirements for the individual lot will be undertaken as part of the future DA process.



5. Traffic Impact Assessment

5.1 Traffic Generation

5.1.1 Design Rates

Traffic generation estimates for the proposed development have been sourced from *TfNSW Guide to Traffic Generating Developments TS 00085 | Version 1.1*.

Low-Density Residential Dwellings

AM peak hour vehicle trip rate: 0.83 per dwelling

PM peak hour vehicle trip rate: 0.84 per dwelling

Estimates of peak hours and daily traffic volumes resulting from the proposal are set out in Table 5.1.

Table 5.1: Traffic Generation Estimates

Land Use	No of Lots	Traffic Generation	
		AM Peak	PM Peak
Multi-dwelling housing (eastern subdivision)	201	167	169

It is evident that based on the maximum yield of 201 lots, the site is estimated to generate nearly 167 and 169 vehicular trips in the morning and evening peaks, respectively.

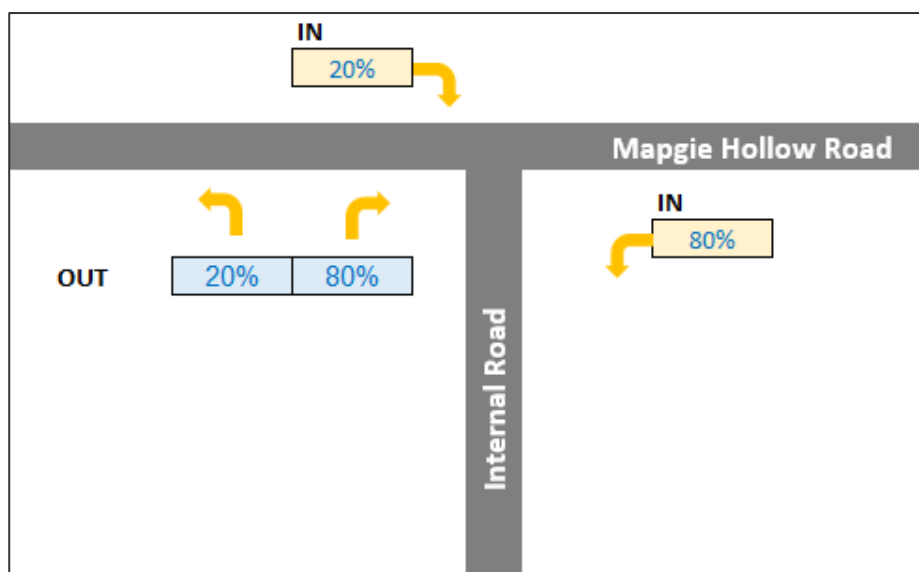
5.2 Development In/Out Directional Split

In addition to the trip distribution discussed in Section 4.2, directional splits were applied to the trip generation in order to estimate the volume of traffic accessing/egressing from the proposed development during each of the AM and PM peak periods. The use of these splits, shown in Table 5.2 and Figure 5.1, allows for the modelling of the directional nature of peak period traffic; for instance, a high volume of departing residential traffic during the AM peak period, and similarly a high volume of returning residential traffic during the PM peak period.

Table 5.2: Development Direction Split

Land Use	AM Peak		PM Peak	
	Inbound	Outbound	Inbound	Outbound
Residential	20%	80%	80%	20%

Figure 5.1: Diagram of the Development Direction Split



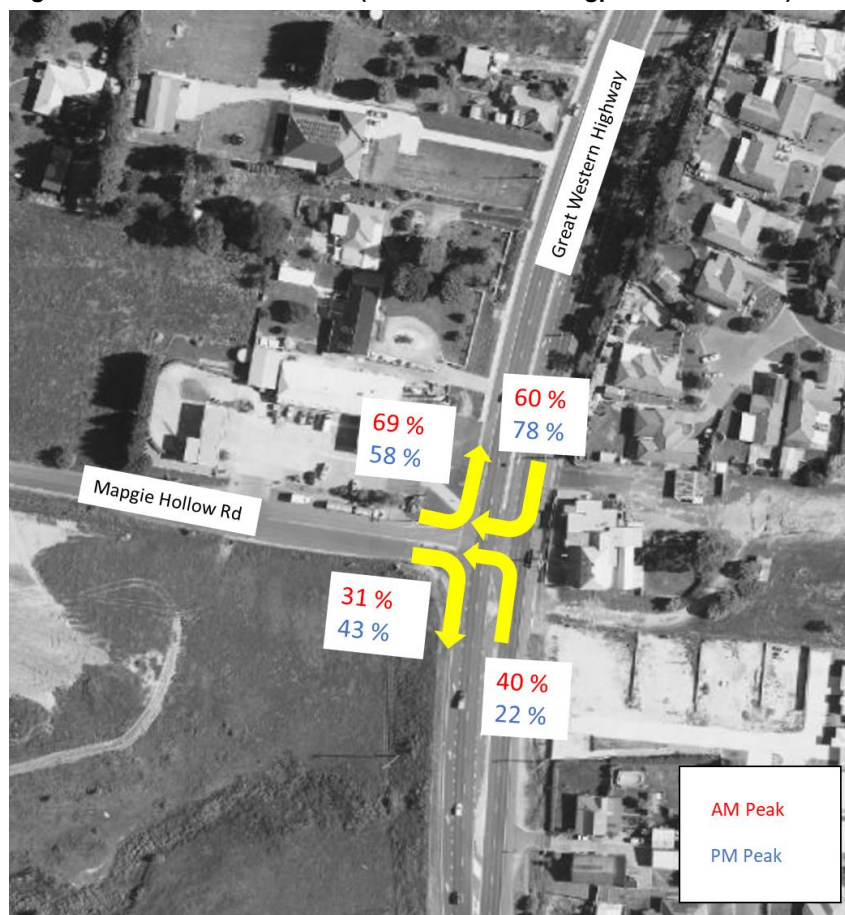
5.3 Traffic Distribution and Assignment

The 2024 surveyed turning count proportions were adopted to distribute the North/South trips going in/out of via the Great Western Highway/Magpie Hollow Road Intersection. The North/South trip assignment obtained from the survey turning counts is summarised in Figure 5.2 and shown in Table 5.3. While no travel destination is currently available for development traffic to travel west (via Magpie Hollow Road), for the purpose of traffic modelling and site access assessment, a small proportion of development traffic is assumed to travel to/from the west.

Table 5.3: Traffic Distribution

Direction of Travel	Approach	Movement (Direction)	AM Volumes (Percentage)	PM Volumes (Percentage)
Inbound	Great Western Highway Northern Approach	Right (North)	35 (60%)	73 (78%)
	Great Western Highway Southern Approach	Left (South)	23 (40%)	21 (22%)
Outbound	Magpie Hollow Road Western Approach	Left (North)	45 (69%)	23 (58%)
	Magpie Hollow Road Western Approach	Right (South)	20 (31%)	17 (43%)

Figure 5.2: Traffic Distribution (Internal Road & Magpie Hollow Road)



5.4 Traffic Growth Rate

For this assessment, annual growth rates of 1.0% have been adopted. The annual traffic growth rate is discussed in Section 3.3.

5.5 Traffic Modelling Scenarios

The traffic modelling detailed in this assessment is based on the following:

- Existing Conditions
- 2035 Future Design Year
- Development Impact

Table 5.4: List of Traffic Modelling Scenarios

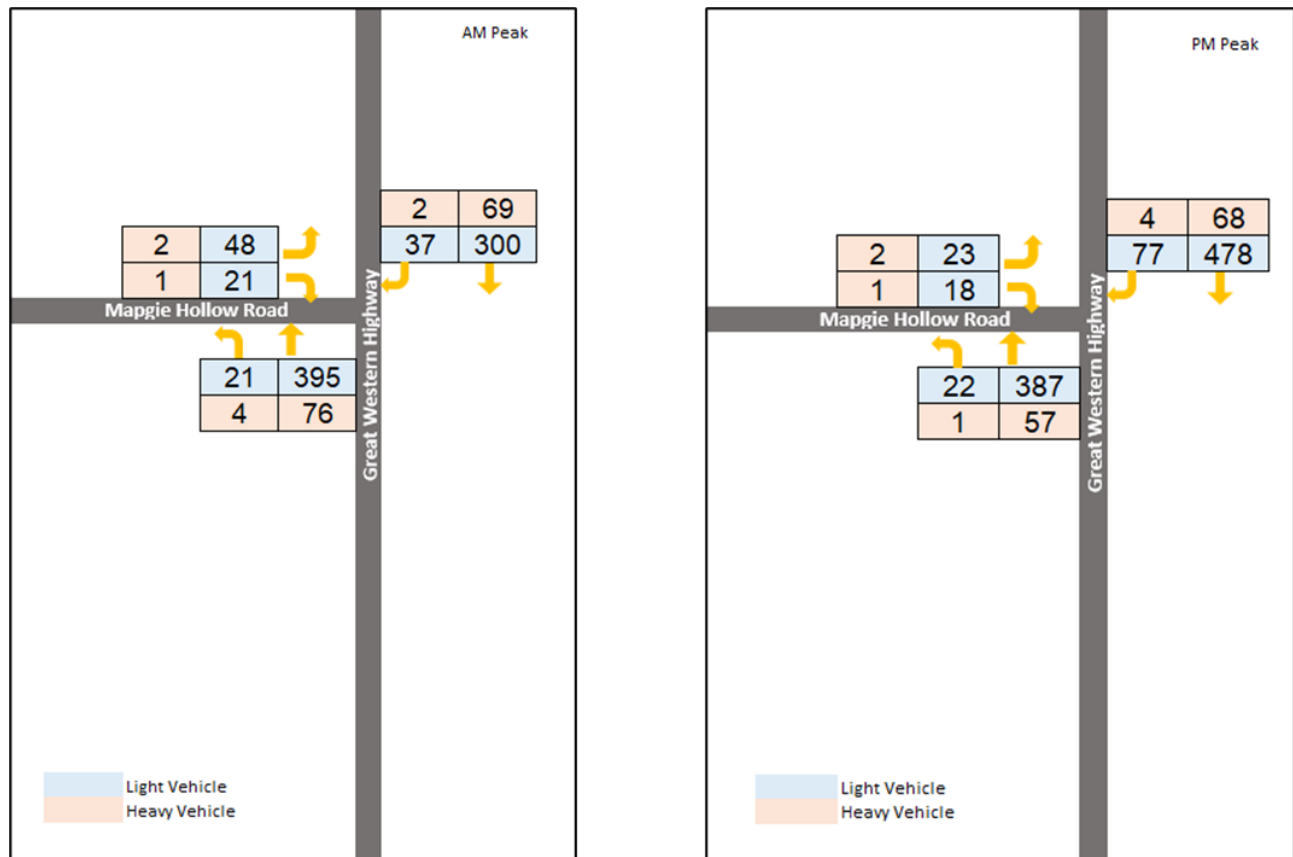
Year	Scenario	Land Use Development
Base Year 2025	Base Case Without Development	No Development
Design Horizon Year 2035	Base Case Without Development	No Development
	East Development	201 Lots

5.5.1 Traffic Distribution for the 2035 Future Design Year (No Development)

Adopting an annual growth rate of 1.0%, the traffic distribution for the 2035 future design year (no development) is summarised in Figure 5.3 during the following peak periods:

- 6:00am and 10:00am
- 3:00pm and 7:00pm.

Figure 5.3: 2035 Future Design Year AM/PM Peak Hour Traffic Volumes (no development)

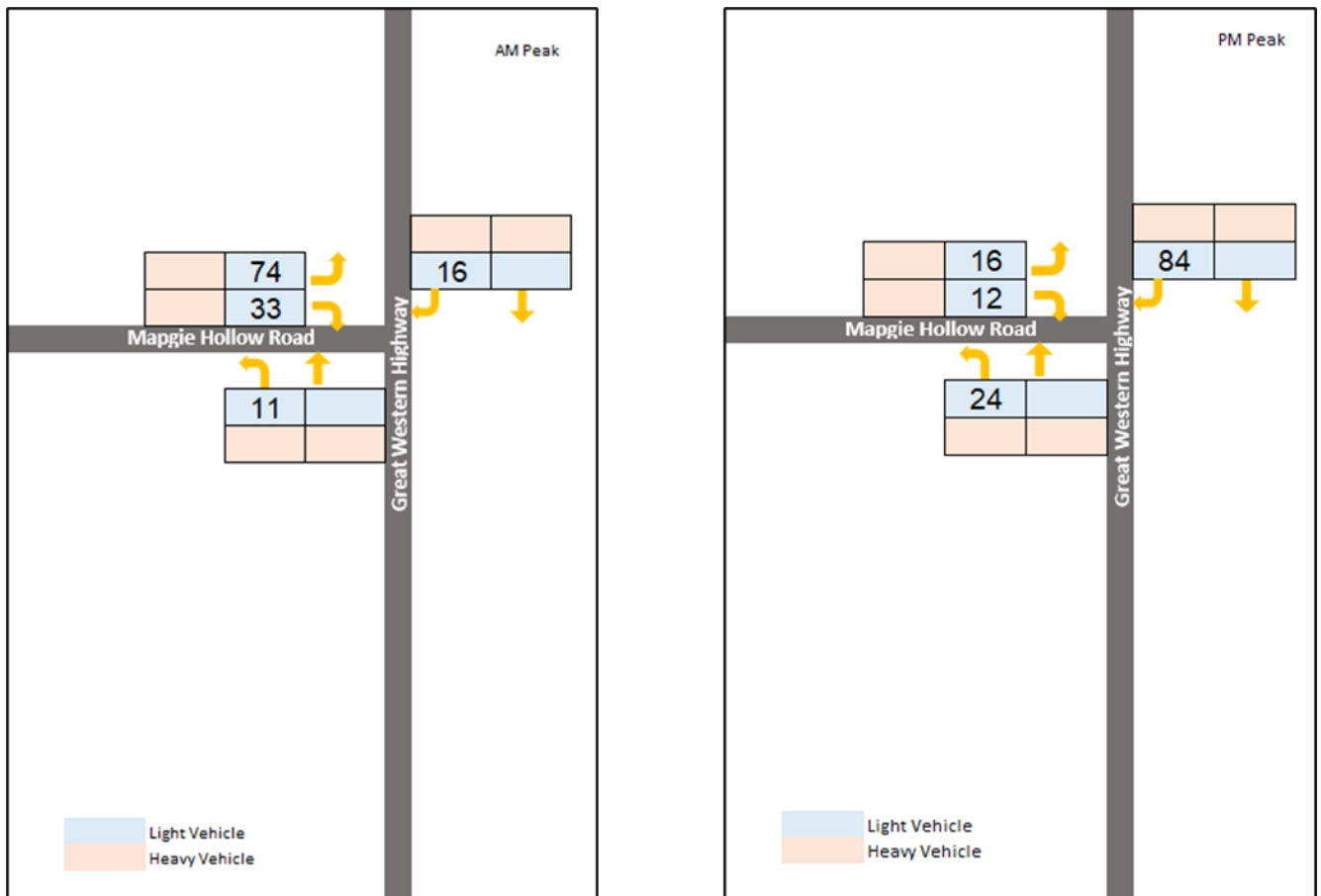


5.5.2 Traffic Distribution for the Development

The impact of the development for traffic distribution is summarised in Figure 5.4 during the following peak periods:

- 6:00am and 10:00am
- 3:00pm and 7:00pm.

Figure 5.4: Distribution of development traffic on AM/PM Peak Hour Traffic Volumes

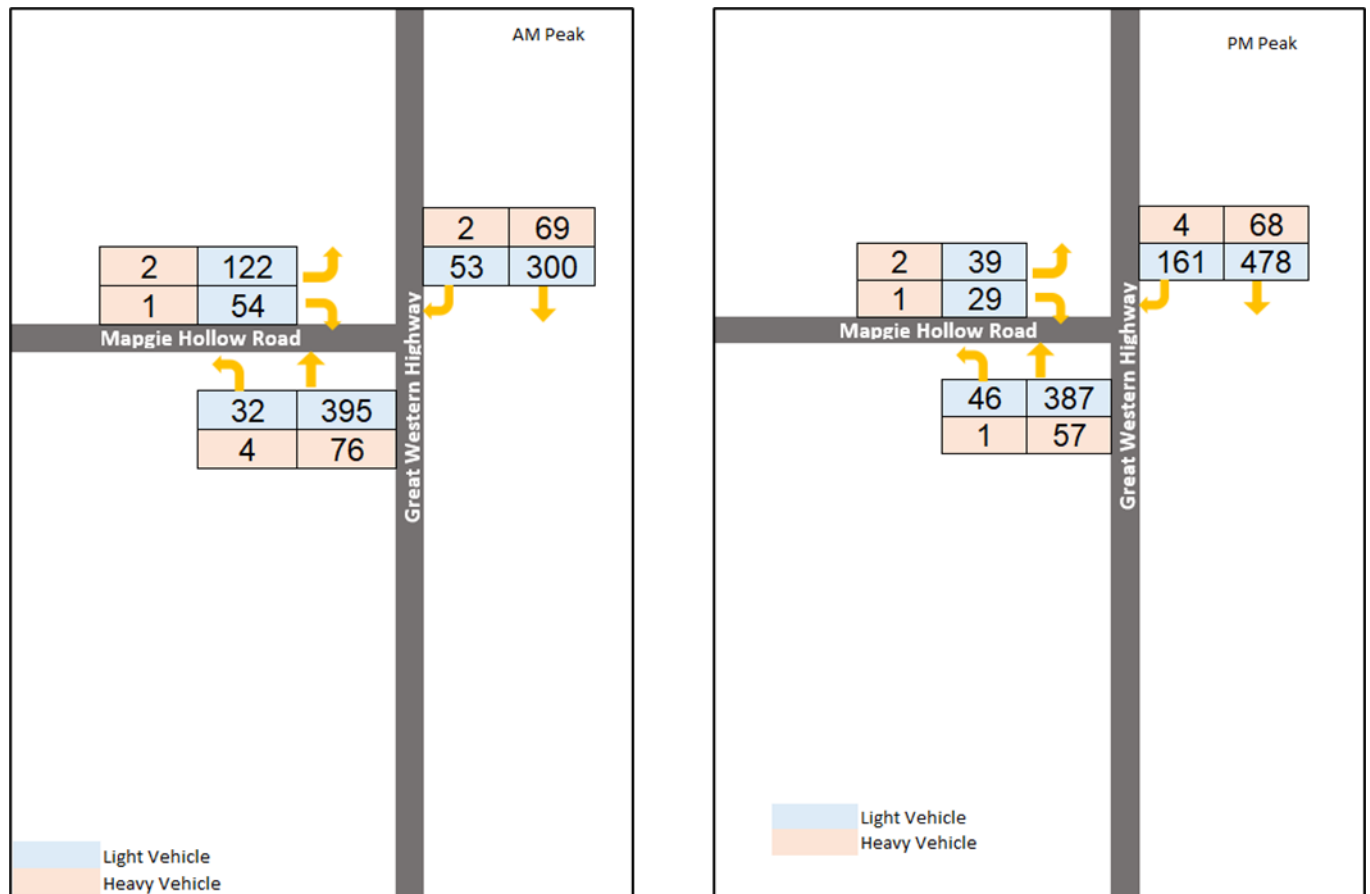


5.5.3 Combined Traffic Distribution

Figure 5.5 shows the combined traffic distribution effects of the 2035 future design year and the proposed development for the Great Western Highway/Maggie Hollow Road Intersection for the following peak periods:

- 6:00am and 10:00am
- 3:00pm and 7:00pm.

Figure 5.5: Combined traffic (background + development) on AM/PM Peak Hour Traffic Volumes



5.6 Traffic Impact Summary

5.6.1 2035 Design Horizon Year

The SIDRA Intersection modelling for the 2035 design horizon year, including the additional traffic generated by the staged development, is summarised below.

Table 5.5: Design Horizon Year SIDRA Results

Scenario	Leg	Weekday AM Peak			Weekday PM Peak				
		DoS	Delay (sec)	LoS	95th Percentile Queue (m)	DoS	Delay (sec)	LoS	95th Percentile Queue (m)
2035 Base	Total (Worst Delay)	0.217	33.9	C	5.3	0.171	31.2	C	3.6
2035 Base with Development Traffic	Total (Worst Delay)	0.531	43.6	D	22.5	0.307	38.9	C	7.6

On the basis of the above assessment, it is clear that the performance of the intersection of Great Western Highway/ Magpie Hollow Road will operate satisfactorily and similar to the without development traffic scenario. Some minor increase delay and queue length is expected in 10-year's future scenario (2035). Overall, no significant impact is envisaged on the performance of the Magpie Hollow Road/Great Western Highway intersection due to the proposed development.

5.6.2 Site Access

As discussed, access to the site is proposed via a priority/stop-controlled intersection with all movements allowed to access the site. While the design of the site access will be developed at later stage, an indicative intersection layout is assumed (with basic movements) to assess the performance of the proposed site access. The indicative intersection layout is shown in Figure 5.6. The intersection performance results are presented in Table 5.6.

Figure 5.6: Indicative Layout of Magpie Hollow Road/Site Access Road

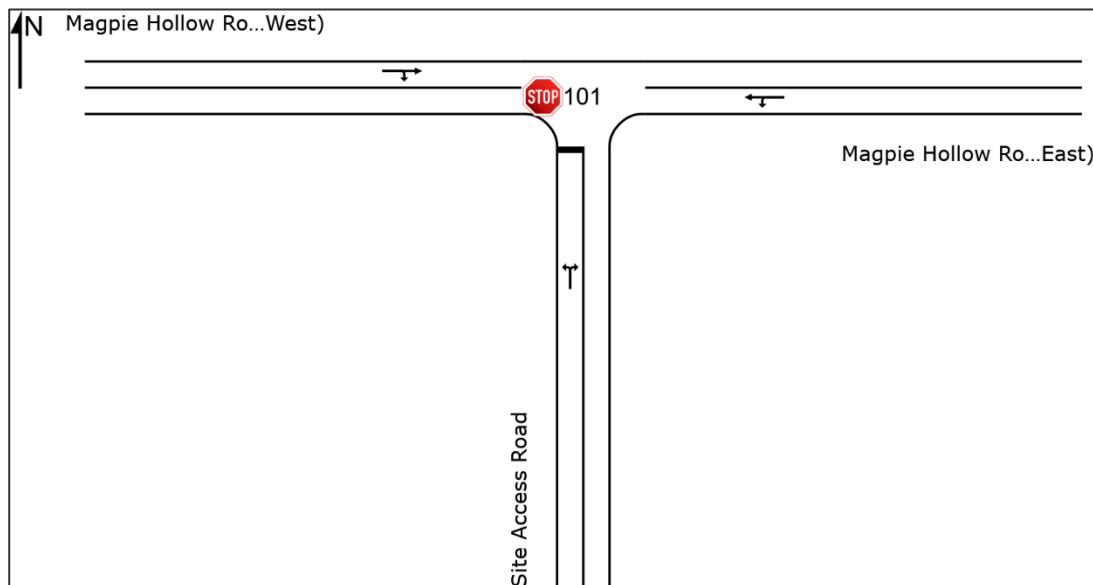


Table 5.6: Design Horizon Year SIDRA Results

Scenario	Leg	Weekday AM Peak				Weekday PM Peak			
		DoS	Delay (sec)	LoS	95th Percentile Queue (m)	DoS	Delay (sec)	LoS	95th Percentile Queue (m)
2035 Base	Total (Worst Delay)	0.135	8.3	A	3.5	0.037	8.6	A	0.9

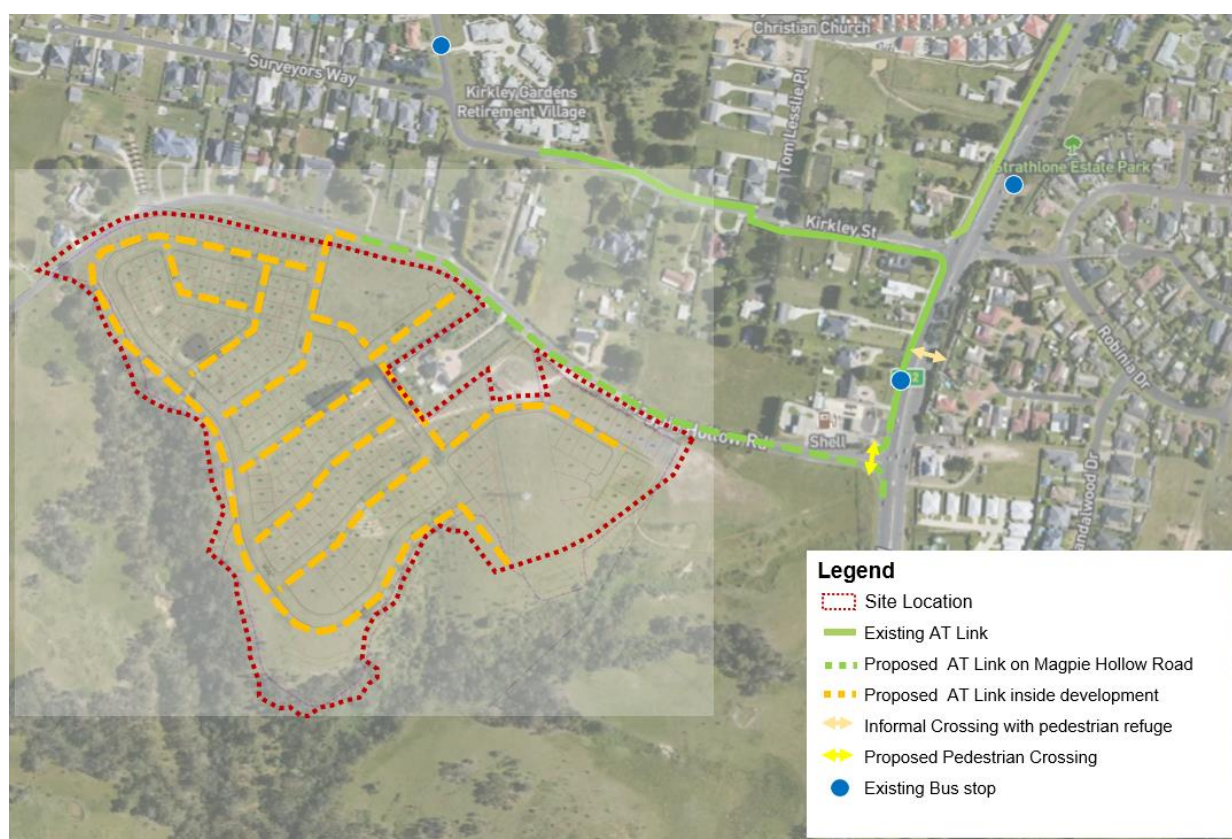
As shown, the site access and intersection is expected to perform satisfactorily with minor delays in future year 2035 during both AM and PM peak hours.

5.7 Proposed Mitigation Measures/Recommendations

The following works are proposed on the existing road infrastructure in the vicinity of the site to minimise any adverse effects on road safety and operational efficiency and retain, within practical limitations, the level of safety and operational efficiency that would have existed without the development. The proposed mitigation measures and indicative location are also shown in Figure 5.7.

- A new footpath connection along Magpie Hollow Road is recommended to provide connectivity with existing AT link along Great Western Highway.
- It is understood that a pedestrian crossing will be provided on Magpie Hollow Road approach at Magpie Hollow Road/Great Western Highway intersection as part of the Council's on-going active transport improvement/upgrade works.
- Two bus stops with shelters are located along the Great Western Highway, providing access to public transport for future residents. However, to improve pedestrian safety when crossing the Great Western Highway, it is recommended that appropriate measures be identified or raised with the authorities to upgrade the existing mid-block pedestrian crossing (shown in 5.7). Enhancing this crossing will support safer movement across the highway.

Figure 5.7: Proposed AT Links and Potential Future connection



6. Conclusion

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

1. The proposal would provide 201 subdivision lots and is anticipated to generate up to 169 vehicle trips in any weekday peak hour.
2. Access to the site is proposed via Magpie Hollow Road with detailed design and stakeholder engagement key to confirming the most appropriate intersection layout.
3. The internal road cross-sections will be designed in accordance with the Council's DCP and design standards. All internal roads will be designed to have appropriate active transport/pedestrian footpaths and provision for on-street parking facilities.
4. The traffic assessment and SIDRA modelling indicates that all study intersections currently operate satisfactorily.
5. An annual traffic growth factor of one per cent is assumed as a conservative approach to estimate the 10-year future background traffic.
6. The future modelling assessment indicates that all study intersections, including the site access road would operate satisfactorily with and without development traffic. All intersections would perform similarly to the without development scenario. The development traffic is expected to have minor impacts on the future intersection performance (2035 AM and PM).
7. To alleviate such constraints at this intersection in the future, minor modifications to signal phasing could be implemented without the need for any such infrastructure works. This includes adding a single signal phase to the existing two-phase arrangement to better accommodate traffic volumes.
8. An assessment of accessibility associated with the nearby schools indicates some constraint with respect to walking facilities however opportunity to deliver an additional or rerouted bus route with additional/new bus stops to address school accessibility.

On this basis, the proposed development is supported from traffic and transport perspectives.

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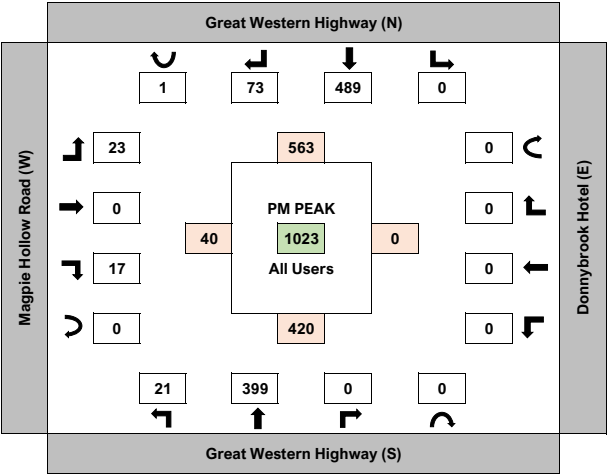
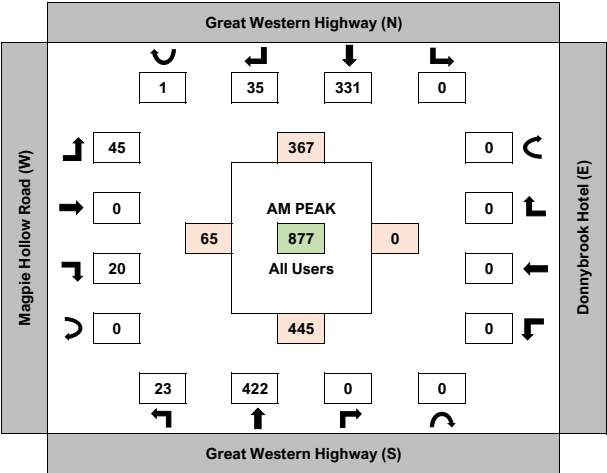
Appendix A. Traffic Surveys

Report Type:	Peak Hour Volume Diagram
Geocounts Job ID:	1691111592156
Client Job Number:	n/a
Client Name:	Stantec
Location:	South Bowenfels
Survey Site:	IC01 (Great Western Hwy/Magpie Hollow Rd)
Survey Date:	Wednesday, 26 June 2024
Site Coordinates:	-33.5062918, 150.1245663

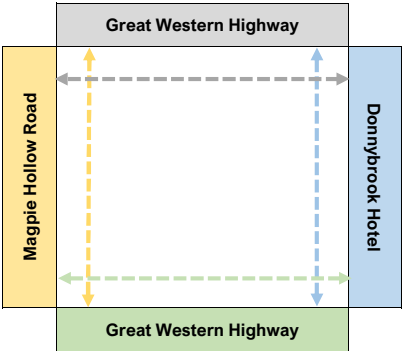
AM Peak Hour:	8:15 to 9:15
PM Peak Hour:	15:00 to 16:00
AM Peak Hour Volume:	877
PM Peak Hour Volume:	1,023

Select Vehicle Type

All Users



Report Type:	Pedestrian Data
Geocounts Job ID:	1691111592156
Client Job Number:	n/a
Client Name:	Stantec
Location:	South Bowenfels
Survey Site:	IC01 (Great Western Hwy/Magpie Hollow Rd)
Survey Date:	Wednesday, 26 June 2024
Site Coordinates:	-33.5062918, 150.1245663



	North	East	South	West	Total
Peds Crossing AM:	0	0	0	1	1
Peds Crossing PM:	0	0	0	0	0
Peak Hour Peds AM:	6:30 to 7:30				
Peak Hour Peds PM:	n/a				



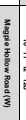
15min (PEDS)

Leg	North	East	South	West	Total
6:00 to 6:15	0	0	0	0	0
6:15 to 6:30	0	0	0	0	0
6:30 to 6:45	0	0	0	0	0
6:45 to 7:00	0	0	0	0	0
7:00 to 7:15	0	0	0	0	0
7:15 to 7:30	0	0	0	1	1
7:30 to 7:45	0	0	0	0	0
7:45 to 8:00	0	0	0	0	0
8:00 to 8:15	0	0	0	0	0
8:15 to 8:30	0	0	0	0	0
8:30 to 8:45	0	0	0	0	0
8:45 to 9:00	0	0	0	0	0
9:00 to 9:15	0	0	0	0	0
9:15 to 9:30	0	0	0	0	0
9:30 to 9:45	0	0	0	0	0
9:45 to 10:00	0	0	0	0	0
15:00 to 15:15	0	0	0	0	0
15:15 to 15:30	0	0	0	0	0
15:30 to 15:45	0	0	0	0	0
15:45 to 16:00	0	0	0	0	0
16:00 to 16:15	0	0	0	0	0
16:15 to 16:30	0	0	0	0	0
16:30 to 16:45	0	0	0	0	0
16:45 to 17:00	0	0	0	0	0
17:00 to 17:15	0	0	0	0	0
17:15 to 17:30	0	0	0	0	0
17:30 to 17:45	0	0	0	0	0
17:45 to 18:00	0	0	0	0	0
18:00 to 18:15	0	0	0	0	0
18:15 to 18:30	0	0	0	0	0
18:30 to 18:45	0	0	0	0	0
18:45 to 19:00	0	0	0	0	0

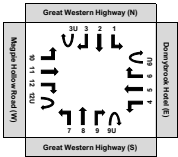
60min (PEDS)

Leg	North	East	South	West	Total
6:00 to 7:00	0	0	0	0	0
6:15 to 7:15	0	0	0	0	0
6:30 to 7:30	0	0	0	1	1
6:45 to 7:45	0	0	0	1	1
7:00 to 8:00	0	0	0	1	1
7:15 to 8:15	0	0	0	1	1
7:30 to 8:30	0	0	0	0	0
7:45 to 8:45	0	0	0	0	0
8:00 to 9:00	0	0	0	0	0
8:15 to 9:15	0	0	0	0	0
8:30 to 9:30	0	0	0	0	0
8:45 to 9:45	0	0	0	0	0
9:00 to 10:00	0	0	0	0	0
15:00 to 16:00	0	0	0	0	0
15:15 to 16:15	0	0	0	0	0
15:30 to 16:30	0	0	0	0	0
15:45 to 16:45	0	0	0	0	0
16:00 to 17:00	0	0	0	0	0
16:15 to 17:15	0	0	0	0	0
16:30 to 17:30	0	0	0	0	0
16:45 to 17:45	0	0	0	0	0
17:00 to 18:00	0	0	0	0	0
17:15 to 18:15	0	0	0	0	0
17:30 to 18:30	0	0	0	0	0
17:45 to 18:45	0	0	0	0	0
18:00 to 19:00	0	0	0	0	0

2014-09-26 07:43:42

[illegible]

Report Type: Classified Intersection Data - **6066**
Accounts Job ID: 160111552156
Client Job Number: N/A
Client Name: Starzec
Location: South Bowenfels
Survey Site: CD1 (Great Western Hwy/Maggie Hollow Rd)
Survey Date: Wednesday, 26 June 2024
Site Coordinates: 33.502918, 156.1245663



AM Peak Hour:	8:15 to 9:15
PM Peak Hour:	15:00 to 16:00
AM Peak Hour Activity:	877
PM Peak Hour Activity:	1,023

Great Western Highway (N)												Donnybrook Hotel (E)												Great Western Highway (S)												Maggie Hollow Road (W)												ALL MOVEMENTS																							
Movement	Movement 1 (Left Turn)				Movement 2 (Through)				Movement 3 (Right Turn)				Movement 4 (Left Turn)				Movement 5 (Through)				Movement 6 (Right Turn)				Movement 7 (Left Turn)				Movement 8 (Through)				Movement 9 (Right Turn)				Movement 10 (Left Turn)				Movement 11 (Through)				Movement 12 (Right Turn)				Movement 13 (Left Turn)																						
Time Interval	Light	Heavy	Base	System	Total	Light	Heavy	Base	System	Total	Light	Heavy	Base	System	Total	Light	Heavy	Base	System	Total	Light	Heavy	Base	System	Total	Light	Heavy	Base	System	Total	Light	Heavy	Base	System	Total	Light	Heavy	Base	System	Total	Light	Heavy	Base	System	Total	Light	Heavy	Base	System	Total																					
6:00 to 7:00	0	0	0	0	0	174	36	3	0	213	23	0	0	0	23	0	0	0	0	0	0	0	0	0	0	0	11	3	0	0	14	160	52	0	1	213	0	0	0	0	0	0	0	0	0	12	0	0	0	0	10	0	0	0	0	0	300	91	3	1	403										
6:15 to 7:15	0	0	0	0	0	173	33	6	0	212	25	1	1	0	27	1	0	0	0	1	0	0	0	0	0	0	0	12	3	0	0	15	167	49	0	1	237	0	0	0	0	0	0	0	0	0	10	0	0	0	0	11	0	0	0	0	0	419	86	7	1	513									
6:30 to 7:30	0	0	0	0	0	188	36	7	0	231	27	2	1	0	30	1	0	0	0	1	0	0	0	0	0	0	0	14	3	0	0	17	201	44	0	2	247	0	0	0	0	0	0	0	0	0	0	17	0	0	0	0	9	0	0	0	0	0	457	85	8	2	562								
6:45 to 7:45	0	0	0	0	0	205	38	6	0	249	31	2	1	0	34	2	1	0	3	0	0	0	0	0	0	0	0	24	3	0	0	27	238	49	0	1	278	0	0	0	0	0	0	0	0	0	0	22	0	0	0	0	0	14	1	0	0	0	15	0	0	0	0	0	526	94	7	1	628		
7:00 to 8:00	0	0	0	0	0	228	42	5	0	275	33	2	1	0	36	2	1	0	3	0	0	0	0	0	0	0	0	30	2	0	0	32	235	41	0	1	277	0	0	0	0	0	0	0	0	0	0	26	1	0	0	0	0	15	0	0	0	0	0	569	90	6	1	666							
7:15 to 8:15	0	0	0	0	0	248	46	3	0	295	39	1	0	0	40	1	1	0	2	0	0	0	0	0	0	0	0	32	2	0	0	34	256	39	0	1	296	0	0	0	0	0	0	0	0	0	0	32	1	0	0	0	0	13	1	0	0	0	14	0	0	0	0	0	619	91	3	1	714		
7:30 to 8:30	0	0	0	0	0	261	54	2	0	317	39	1	0	0	40	2	1	0	3	0	0	0	0	0	0	0	0	26	3	0	0	31	266	45	3	0	334	0	0	0	0	0	0	0	0	0	0	33	1	1	0	0	0	16	1	0	0	0	17	0	0	0	0	0	685	106	6	0	777		
7:45 to 8:45	0	0	0	0	0	242	60	2	0	304	37	2	0	0	39	1	0	0	1	0	0	0	0	0	0	0	0	19	4	0	0	23	214	49	4	0	347	0	0	0	0	0	0	0	0	0	0	40	1	1	0	0	0	17	1	0	0	0	18	0	0	0	0	0	670	117	7	0	794		
8:00 to 9:00	0	0	0	0	0	254	58	2	0	314	34	2	0	0	36	1	0	0	1	0	0	0	0	0	0	0	0	19	3	0	0	22	240	52	4	0	416	0	0	0	0	0	0	0	0	0	0	42	1	1	0	0	0	16	1	0	0	0	17	0	0	0	0	0	715	127	7	0	840		
8:15 to 9:15	0	0	0	0	0	266	61	1	0	331	33	2	0	0	35	1	0	0	1	0	0	0	0	0	0	0	0	19	4	0	0	23	254	64	4	0	422	0	0	0	0	0	0	0	0	0	0	0	43	1	1	0	0	0	19	1	0	0	0	20	0	0	0	0	0	738	133	6	0	877	
8:30 to 9:30	0	0	0	0	0	275	55	0	0	330	38	2	0	0	40	0	0	0	0	0	0	0	0	0	0	0	0	25	3	0	0	28	246	60	2	0	408	0	0	0	0	0	0	0	0	0	0	0	40	1	0	0	0	0	16	1	0	0	0	19	0	0	0	0	0	742	122	2	0	866	
8:45 to 9:45	0	0	0	0	0	262	66	1	0	348	40	1	0	0	41	0	0	0	0	0	0	0	0	0	0	0	0	27	1	0	0	28	303	52	1	0	356	0	0	0	0	0	0	0	0	0	0	26	1	0	0	0	0	16	0	0	0	0	0	694	125	2	0	819							
9:00 to 10:00	0	0	0	0	0	252	71	1	0	324	36	1	0	0	37	0	0	0	0	0	0	0	0	0	0	0	0	26	1	0	0	29	286	49	1	0	336	0	0	0	0	0	0	0	0	0	0	25	0	0	0	0	0	19	1	0	0	0	20	0	0	0	0	0	646	123	2	0	771		
10:00 to 10:00	0	0	0	0	0	428	57	4	0	489	69	3	1	0	73	1	0	0	1	0	0	0	0	0	0	0	0	20	1	0	0	21	347	46	5	1	399	0	0	0	0	0	0	0	0	0	0	21	2	0	0	0	0	16	1	0	0	0	17	0	0	0	0	0	8	932	110	10	1	1,019	
10:15 to 10:15	2	0	0	0	2	417	51	4	1	473	66	3	1	0	70	1	0	0	1	0	0	0	0	0	0	0	0	20	0	0	0	20	364	44	4	0	412	1	0	0	0	1	0	0	0	0	0	0	20	2	0	0	0	0	15	1	0	0	0	16	0	0	0	0	0	8	958	101	9	1	1,019
10:30 to 10:30	2	0	0	0	2	410	46	4	1	463	62	2	1	0	65	1	0	0	1	0	0	0	0	0	0	0	0	22	0	0	0	22	345	38	6	0	389	1	0	0	0	1	0	0	0	0	0	0	20	1	0	0	0	0	14	1	0	0	0	15	0	0	0	0	0	8	880	90	11	1	982
10:45 to 10:45	2	0	0	0	2	413	47	2	1	463	55	2	1	0	58	1	0	0	1	0	0	0	0	0	0	0	0	21	0	0	0	21	341	38	6	0	385	3	0	0	0	3	0	0	0	0	0	0	18	1	1	0	0	0	16	2	0	0	0	18	0	0	0	0	0	8	874	90	10	1	975
10:00 to 17:00	4	0	0	0	4	407	41	0	1	449	56	1	0	0	57	1	0	0	1	0	0	0	0	0	0	0	0	20	1	0	0	21	333	28	3	0	344	0	0	0	0	0	0	0	0	0	0	25	0	1	0	0	0	23	0	0	0	0	0	8	874	75	4	1	952						
16:15 to 17:15	2	0	0	0	2	465	40	1	0	447	57	1	0	0	58	1	0	0	1	0	0	0	0	0	0	0	0	17	1	0	0	18	307	26	4	0	346	0	0	0	0	3	0	0	0	0	0	0	28	0	1	0	0	0	20	2	0	0	0	22	0	0	0	0	0	8	844	80	6	0	919
16:30 to 17:30	2	0	0	0	2	371	36	1	1	411	60	1	0	0	61	1	0	0	1	0	0	0	0	0	0	0	0	17	1	0	0	18	306	25	2	0	333	2	0	0	0	2	0	0	0	0	0	0	32	0	1	0	0	0	19	1	0	0	0	0	8	816	86	4	1	887					
16:45 to 17:45	3	1	0	0	4	321	32	1	1	355	55	0	0	0	54	2	0	0	2	0	0	0	0	0	0	0	0	23	1	0	0	24	304	30	4	0	338	3	0	0	0	3	0	0	0	0	0	0	33	0	0	0	0	0	16	0	0	0	0	16	0	0	0	0	0	8	783	84	5	1	833
17:00 to 18:00	3	1	0	0	4	300	29	2	1	332	46	0	0	0	46	3	0	0	3	0	0	0	0	0	0	0	0	22	0	0	0	22	276	28	3	0	307	6	0	0	0	4	0	0	0	0	0	0	31	0	0	0	0	1	11	0	0	0	0	11	0	0	0	0	0	8	752	81	5	1	788
17:15 to 18:15	4	1	0	0	5	284	27	2	1	314	43	0	0	0	43	3	0	0	3	0	0	0	0	0	0	0	0	25	0	0	0	25	264	32	3	0	299	6	0	0	0	6	0	0	0	0	0	0	26	1	0	0	0	1	11	0	0	0	0	11	0	0	0	0	0	8	671	61	5	1	738
17:30 to 18:30	5	1	0	0	6	247	22	2	0	271	31	0	0	0	31	4	0	0	4	0	0	0	0	0	0	0	0	25	0	0	0	25	250	30	3	0	262	6	0	0	0	6	0	0	0	0	0	0	22	1	0	0	0	1	8	0	0	0	0	8	0	0	0	0	0	8	580	54	5	0	639
17:45 to 18:45	4	0	0	0	4	211	26	2	0	235	29	0	0	0	29	4	0	0	0	0	0	0	0	0	0	0	0	18	1	0	0	19	165	17	1	0	213	3	0	0	0	3	0	0	0	0	0	0	17	1	0	0	0	7	0	0	0	0	0	8	492	45	3	0	540						
18:00 to 19:00	2	0	0	0	2	178	32	1	0	212	30	0	0	0	33	2	0	0	0	2	1	0	0	1	0	0	0	17	1	0	0	18	160	17	0	0	201	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	4	0	0	0	0	4	0	0	0	0	0	8	443	58	2	0	499		

Appendix B. SIDRA Outputs



MOVEMENT SUMMARY

▼ Site: 101 [Base AM (Site Folder: 2025 Base)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. Dist] veh m		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Great Western Hwy															
1	L2	All MCs	24	17.4	24	17.4	0.015	6.6	LOS A	0.0	0.0	0.00	0.61	0.00	54.3
2	T1	All MCs	449	16.2	449	16.2	0.127	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach			474	16.2	474	16.2	0.127	0.4	NA	0.0	0.0	0.00	0.03	0.00	68.9
North: Great Western Hwy															
8	T1	All MCs	353	18.8	353	18.8	0.101	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
9	R2	All MCs	37	5.7	37	5.7	0.070	10.5	LOS A	0.2	1.7	0.50	0.76	0.50	56.1
Approach			389	17.6	389	17.6	0.101	1.0	NA	0.2	1.7	0.05	0.07	0.05	68.3
West: Magpie Hollow Rd															
10	L2	All MCs	47	4.4	47	4.4	0.170	8.2	LOS A	0.6	4.1	0.59	0.73	0.59	53.8
12	R2	All MCs	21	5.0	21	5.0	0.170	28.2	LOS B	0.6	4.1	0.59	0.73	0.59	53.7
Approach			68	4.6	68	4.6	0.170	14.3	LOS A	0.6	4.1	0.59	0.73	0.59	53.8
All Vehicles			932	15.9	932	15.9	0.170	1.7	NA	0.6	4.1	0.06	0.10	0.06	67.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akcelik M3D).

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

▼ Site: 101 [Base PM (Site Folder: 2025 Base)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh. veh	Dist] m				
			veh/h		veh/h		v/c	sec							km/h
South: Great Western Hwy															
1	L2	All MCs	22	4.8	22	4.8	0.012	6.4	LOS A	0.0	0.0	0.00	0.61	0.00	57.6
2	T1	All MCs	423	12.9	423	12.9	0.118	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach			445	12.5	445	12.5	0.118	0.3	NA	0.0	0.0	0.00	0.03	0.00	69.2
North: Great Western Hwy															
8	T1	All MCs	520	12.6	520	12.6	0.144	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
9	R2	All MCs	78	5.4	78	5.4	0.140	10.3	LOS A	0.5	3.5	0.50	0.78	0.50	56.3
Approach			598	11.6	598	11.6	0.144	1.4	NA	0.5	3.5	0.07	0.10	0.07	67.8
West: Magpie Hollow Rd															
10	L2	All MCs	24	8.7	24	8.7	0.180	8.2	LOS A	0.5	4.0	0.72	0.78	0.72	48.1
12	R2	All MCs	18	5.9	18	5.9	0.180	38.8	LOS C	0.5	4.0	0.72	0.78	0.72	48.6
Approach			42	7.5	42	7.5	0.180	21.2	LOS B	0.5	4.0	0.72	0.78	0.72	48.3
All Vehicles			1085	11.8	1085	11.8	0.180	1.7	NA	0.5	4.0	0.06	0.10	0.06	67.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

▼ Site: 101 [AM (Site Folder: 2035 Base)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh. veh]	[Dist] m				
South: Great Western Hwy															
1	L2	All MCs	26	16.0	26	16.0	0.016	6.6	LOS A	0.0	0.0	0.00	0.61	0.00	54.6
2	T1	All MCs	496	16.1	496	16.1	0.140	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach			522	16.1	522	16.1	0.140	0.4	NA	0.0	0.0	0.00	0.03	0.00	68.9
North: Great Western Hwy															
8	T1	All MCs	388	18.7	388	18.7	0.112	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
9	R2	All MCs	41	5.1	41	5.1	0.084	11.1	LOS A	0.3	2.0	0.53	0.80	0.53	55.7
Approach			429	17.4	429	17.4	0.112	1.1	NA	0.3	2.0	0.05	0.08	0.05	68.3
West: Magpie Hollow Rd															
10	L2	All MCs	53	4.0	53	4.0	0.217	8.4	LOS A	0.7	5.3	0.66	0.76	0.67	52.5
12	R2	All MCs	23	4.5	23	4.5	0.217	33.9	LOS C	0.7	5.3	0.66	0.76	0.67	52.4
Approach			76	4.2	76	4.2	0.217	16.2	LOS B	0.7	5.3	0.66	0.76	0.67	52.4
All Vehicles			1027	15.8	1027	15.8	0.217	1.8	NA	0.7	5.3	0.07	0.10	0.07	67.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

▼ Site: 101 [PM (Site Folder: 2035 Base)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh. veh	Dist] m				
			veh/h		veh/h		v/c	sec							km/h
South: Great Western Hwy															
1	L2	All MCs	24	4.3	24	4.3	0.013	6.4	LOS A	0.0	0.0	0.00	0.61	0.00	57.7
2	T1	All MCs	467	12.8	467	12.8	0.130	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach			492	12.4	492	12.4	0.130	0.3	NA	0.0	0.0	0.00	0.03	0.00	69.2
North: Great Western Hwy															
8	T1	All MCs	575	12.5	575	12.5	0.159	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
9	R2	All MCs	85	4.9	85	4.9	0.163	10.9	LOS A	0.6	4.1	0.53	0.81	0.53	55.9
Approach			660	11.5	660	11.5	0.163	1.4	NA	0.6	4.1	0.07	0.10	0.07	67.7
West: Magpie Hollow Rd															
10	L2	All MCs	26	8.0	26	8.0	0.171	8.3	LOS A	0.5	3.6	0.66	0.79	0.66	50.2
12	R2	All MCs	20	5.3	20	5.3	0.171	31.2	LOS C	0.5	3.6	0.66	0.79	0.66	50.8
Approach			46	6.8	46	6.8	0.171	18.2	LOS B	0.5	3.6	0.66	0.79	0.66	50.5
All Vehicles			1198	11.7	1198	11.7	0.171	1.6	NA	0.6	4.1	0.06	0.10	0.06	67.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akcelik M3D).

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: U:\300305555\technical\modelling\Final\Base_all_MS.sip9

MOVEMENT SUMMARY

Site: 101 [AM (Site Folder: 2035 (combined w/ E Dev))]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh]	[Dist] m				km/h
South: Great Western Hwy															
1	L2	All MCs	38	11.1	38	11.1	0.022	6.5	LOS A	0.0	0.0	0.00	0.61	0.00	55.9
2	T1	All MCs	496	16.1	496	16.1	0.140	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach			534	15.8	534	15.8	0.140	0.5	NA	0.0	0.0	0.00	0.04	0.00	68.7
North: Great Western Hwy															
8	T1	All MCs	388	18.7	388	18.7	0.112	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
9	R2	All MCs	58	3.6	58	3.6	0.118	11.2	LOS A	0.4	2.8	0.54	0.82	0.54	55.9
Approach			446	16.7	446	16.7	0.118	1.5	NA	0.4	2.8	0.07	0.11	0.07	67.7
West: Magpie Hollow Rd															
10	L2	All MCs	131	1.6	131	1.6	0.531	12.1	LOS A	3.2	22.5	0.80	0.94	1.30	49.0
12	R2	All MCs	58	1.8	58	1.8	0.531	43.6	LOS D	3.2	22.5	0.80	0.94	1.30	49.0
Approach			188	1.7	188	1.7	0.531	21.8	LOS B	3.2	22.5	0.80	0.94	1.30	49.0
All Vehicles			1168	13.9	1168	13.9	0.531	4.3	NA	3.2	22.5	0.16	0.21	0.24	64.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akcelik M3D).

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

▼ Site: 101 [PM (Site Folder: 2035 (combined w/ E Dev))]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh.]	[Dist]				
			veh/h		veh/h		v/c	sec		veh	m				km/h
South: Great Western Hwy															
1	L2	All MCs	49	2.1	49	2.1	0.027	6.4	LOS A	0.0	0.0	0.00	0.61	0.00	58.3
2	T1	All MCs	467	12.8	467	12.8	0.130	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach			517	11.8	517	11.8	0.130	0.6	NA	0.0	0.0	0.00	0.06	0.00	68.6
North: Great Western Hwy															
8	T1	All MCs	575	12.5	575	12.5	0.159	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
9	R2	All MCs	174	2.4	174	2.4	0.334	12.2	LOS A	1.4	10.3	0.59	0.88	0.73	55.4
Approach			748	10.1	748	10.1	0.334	2.9	NA	1.4	10.3	0.14	0.20	0.17	65.9
West: Magpie Hollow Rd															
10	L2	All MCs	43	4.9	43	4.9	0.307	9.5	LOS A	1.1	7.6	0.74	0.85	0.91	48.3
12	R2	All MCs	32	3.3	32	3.3	0.307	38.9	LOS C	1.1	7.6	0.74	0.85	0.91	48.6
Approach			75	4.2	75	4.2	0.307	21.9	LOS B	1.1	7.6	0.74	0.85	0.91	48.4
All Vehicles			1340	10.4	1340	10.4	0.334	3.1	NA	1.4	10.3	0.12	0.18	0.14	65.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

 **Site: 101 [Site Access_AM (Site Folder: 2035 (combined w/ E Dev))]**

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Site Access Road															
1	L2	All MCs	28	0.0	28	0.0	0.135	8.3	LOS A	0.5	3.5	0.25	0.89	0.25	46.7
3	R2	All MCs	113	0.0	113	0.0	0.135	8.3	LOS A	0.5	3.5	0.25	0.89	0.25	46.3
Approach			141	0.0	141	0.0	0.135	8.3	LOS A	0.5	3.5	0.25	0.89	0.25	46.4
East: Magpie Hollow Road (East)															
4	L2	All MCs	28	0.0	28	0.0	0.053	5.6	LOS A	0.0	0.0	0.00	0.17	0.00	53.6
5	T1	All MCs	68	10.8	68	10.8	0.053	0.0	LOS A	0.0	0.0	0.00	0.17	0.00	58.3
Approach			97	7.6	97	7.6	0.053	1.6	NA	0.0	0.0	0.00	0.17	0.00	57.3
West: Magpie Hollow Road (West)															
11	T1	All MCs	76	4.2	76	4.2	0.044	0.0	LOS A	0.0	0.3	0.04	0.06	0.04	59.3
12	R2	All MCs	7	0.0	7	0.0	0.044	6.0	LOS A	0.0	0.3	0.04	0.06	0.04	54.5
Approach			83	3.8	83	3.8	0.044	0.5	NA	0.0	0.3	0.04	0.06	0.04	59.0
All Vehicles			321	3.3	321	3.3	0.135	4.3	NA	0.5	3.5	0.12	0.46	0.12	53.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

 **Site: 101 [Site Access_PM (Site Folder: 2035 (combined w/ E Dev))]**

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Site Access Road															
1	L2	All MCs	7	0.0	7	0.0	0.037	8.4	LOS A	0.1	0.9	0.29	0.88	0.29	46.5
3	R2	All MCs	28	0.0	28	0.0	0.037	8.6	LOS A	0.1	0.9	0.29	0.88	0.29	46.2
Approach			36	0.0	36	0.0	0.037	8.5	LOS A	0.1	0.9	0.29	0.88	0.29	46.2
East: Magpie Hollow Road (East)															
4	L2	All MCs	114	0.0	114	0.0	0.120	5.6	LOS A	0.0	0.0	0.00	0.30	0.00	52.1
5	T1	All MCs	111	5.7	111	5.7	0.120	0.0	LOS A	0.0	0.0	0.00	0.30	0.00	57.2
Approach			224	2.8	224	2.8	0.120	2.8	NA	0.0	0.0	0.00	0.30	0.00	55.2
West: Magpie Hollow Road (West)															
11	T1	All MCs	47	6.7	47	6.7	0.045	0.0	LOS A	0.2	1.2	0.24	0.29	0.24	57.1
12	R2	All MCs	28	0.0	28	0.0	0.045	6.8	LOS A	0.2	1.2	0.24	0.29	0.24	51.4
Approach			76	4.2	76	4.2	0.045	2.6	NA	0.2	1.2	0.24	0.29	0.24	55.4
All Vehicles			336	2.8	336	2.8	0.120	3.4	NA	0.2	1.2	0.09	0.36	0.09	54.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

