

Transport Assessment

Planning Proposal
24-28 Glen Innes Road & 1-7 Chester Street, Inverell

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Table of Contents

1	INTRODUCTION	1
1.1	OVERVIEW	1
1.2	OVERVIEW OF THE PROPOSAL	1
1.3	TRANSPORT ASSESSMENT TASKS	2
1.4	REFERENCE DOCUMENTS	3
1.5	CONSULTATION	3
1.6	REPORT STRUCTURE	4
2	EXISTING CONDITIONS	5
2.1	SITE LOCATION	5
2.2	EXISTING SITE CHARACTERISTICS	5
2.3	EXISTING SITE ACCESSES	5
2.4	EXISTING TRAFFIC GENERATION	5
2.5	KEY ROADS	7
2.6	HEAVY VEHICLE TRAVEL ROUTES	8
2.7	KEY INTERSECTION	8
2.8	PUBLIC & ACTIVE TRANSPORT	10
3	FUTURE CONDITIONS (WITHOUT THE PROPOSAL)	12
3.1	TINGHA ROAD AND GLEN INNES ROAD INTERSECTION UPGRADE	12
3.2	FUTURE INTERSECTION PERFORMANCE (WITHOUT THE PROPOSAL)	13
4	PARKING & SERVICING REQUIREMENTS	17
4.1	CAR PARKING REQUIREMENT	17
4.2	ADDITIONAL PARKING CONSIDERATIONS	18
5	TRAFFIC ASSESSMENT	20
5.1	TRAFFIC GENERATION	20
5.2	TRAFFIC DISTRIBUTION & ASSIGNMENT	20
5.3	TRAFFIC IMPACTS	23
6	DESIGN COMMENTARY	24
6.1	RELEVANT DESIGN STANDARDS	24
6.2	ACCESS DESIGN	24
6.3	DESIGN VEHICLES	25
7	CONCLUSIONS	26

1 Introduction

1.1 Overview

Ason Group has been engaged by Newton Denny Chapelle (NDC) on behalf of North Coast Petroleum (NCP) to prepare a Transport Assessment (TA) in support of a Planning Proposal (the Proposal) to redevelop and expand the existing service station at 24-28 Glen Innes Road & 1-7 Chester Street, Inverell (the Site). The Site is located within Inverell Shire Council Local Government Area (LGA) (the Council) and as such is subject to that Council's planning controls.

The legal description of the Site is provided in **Table 1** below.

Table 1: Legal Description of the land

Land Use	DP Number	Lot Number	Currently Zoned as ¹
Existing service station	DP322074	1 & 2	
	DP666824	1	B1 - Neighbourhood Centre
	DP334109	1	
Proposed expansion	DP326225	1 & 2	
	DP360441	3D	R1 – General Residential

Note: 1) Under Inverell Local Environmental Plan 2012 (Inverell LEP 2012).

1.2 Overview of the Proposal

A detailed description of the Planning Proposal is included in the Planning Report prepared by NDC which this TA accompanies.

In summary, the Proposal mainly seeks to:

- Alter the existing service station and amalgamate the adjacent lots as an expansion of the existing service station, as shown in **Figure 1**.
- Rezone DP326225 Lot 1 & 2 and DP360441 Lot 3D to B1 - Neighbourhood Centre as they are currently zoned as R1 – General Residential under Inverell LEP 2012,
- Overall, the Site would provide for the development of:
 - A service station shop (with an indicative Gross Floor Area (GFA) of 360m²)

- Rural supply shops on-site which is expected to sell packaged livestock food, bird seed, dog food, unpackaged hay, etc.
- A storage shed on-site (currently situated across the road)
- A total of 14 petrol pumps, including:
 - 12 petrol pumps for light vehicles, and
 - 2 petrol pumps for heavy vehicles



Figure 1: Site Location

The proposed site plan is still under development; however, it is important to state that the Proposal would not envisage to dramatically increase the scale of retail shops or the number of fuel bowsers but mainly to expand the existing site area to accommodate relocation of the storage shed that is currently situated across the road.

1.3 Transport Assessment Tasks

This TA is prepared in response to the following requirements outlined in the Preliminary Review letter from Inverell Shire Council:

“The Planning Proposal should provide discussion in relation to the traffic and transport, including the identification of further studies to be undertaken and their timing.”

Therefore, this TA provides an assessment of the relevant access, traffic and parking characteristics of the Proposal, and the potential impacts of the Proposal on the local road and parking environment. This has included detailed assessments of:

- Existing Site and local road network conditions, including the vehicular trip generation and distribution of the existing service station,
- Parking requirements, and
- The peak period vehicular trip generation and distribution of the Site further to the Proposal, and the potential impact of those trips on the key intersection.

1.4 Reference Documents

In preparing this TA, reference has been made to the following key planning documents:

- Inverell Local Environmental Plan 2012 (Inverell LEP 2012)
- Inverell Development Control Plan 2013 (Inverell DCP 2013)

This TA also references general access, traffic and parking guidelines, including:

- Roads and Maritime Services, *Guide to Traffic Generating Developments* (RMS Guide)
- Roads and Maritime Services, *Guide to Traffic Generating Developments – Updated Traffic Surveys TDT 2013/04a* (RMS Guide Update)
- National Code of Australia (NCA), *Disability (Access to Premises – Buildings) Standards* (2010)
- Australian Standard 2890.1: Parking Facilities – Off-Street Car Parking (AS 2890.1)
- Australian Standard 2890.2: Parking Facilities – Off-Street Commercial Vehicle Facilities (AS 2890.2)
- Australian Standard 2890.6: Parking Facilities – Off-Street Parking for People with a Disability (AS 2890.6)

1.5 Consultation

In the preparation of the TA, Ason Group has had the opportunity to discuss the current and future operation of the Glen Innes Road (Gwydir Highway) in the vicinity of the Site with officers from the Inverell Shire Council; Ason Group acknowledges the insights provided by these officers in regard to local and sub-regional traffic and transport operations.

1.6 Report Structure

This TA is structured as follows:

- Section 2 describes the existing Site and the existing local road network conditions.
- Section 3 describes the future context (without the Proposal) of the surrounding local road network.
- Section 4 outlines the parking requirements applicable to the Proposal.
- Section 5 assesses the potential traffic impacts of the Proposal.
- Section 6 provides some preliminary design commentaries.
- Section 7 provides a summary of the key TA conclusions.

2 Existing Conditions

2.1 Site Location

The Site is located at 24-28 Glen Innes Road & 1-7 Chester Street, Inverell. As shown in **Figure 1**, it is bordered by the existing residential dwellings to the north, Glen Innes Road (Gwydir Highway) to the south, Chester Lane to the east, and Chester Street to the west.

The Site has an area of some 4,720m² and is currently zoned as B1 - Neighbourhood Centre and R1 – General Residential under Inverell LEP 2012.

2.2 Existing Site Characteristics

As mentioned in Section 1, the Site is currently occupied by a service station with a total GFA of approximately of 244m² and 3 residential lots (Liberty service station known as Junction Service Station).

2.3 Existing Site Accesses

The existing service station currently has 4 vehicular access crossovers:

- 2 accesses at Glen Innes Road, and
- 2 accesses at Chester Street.

All accesses allow full movements in / out of the existing service station.

Additionally, all residential lots within the Site have direct access via Chester Street.

2.4 Existing Traffic Generation

2.4.1 Traffic Surveys

In order to determine the existing traffic generation of the Site, Ason Group has obtained the traffic survey data at the surrounding key intersections and all site accesses of the existing service station from Council. The survey data was dated on Thursday, 27 July 2016 and Saturday, 29 July 2017, noting that Thursdays and Saturdays represent the days of peak retail traffic generation. The received survey data is provided in **Appendix A**.

With reference to the traffic surveys, the vehicular traffic generation of the existing service station is summarised in **Table 2**.

Table 2: Existing Site Trip Generation – Service Station¹

Trip Generation	AM Peak (08:15 – 09:15)	PM Peak (15:30 – 16:30)	Saturday (11:00 – 12:00)
Inbound	39 (22)	58 (2)	62 (1)
Outbound	33 (22)	58 (2)	55 (1)
Total	72 (44)	116 (4)	117 (2)

Note: 1) Heavy vehicle trip generation are provided in brackets. It was manually counted on-site from 15 Dec 2020 to 18 Dec 2020 and from 11 Jan 2021 to 17 Jan 2021.

Detailed traffic generation at each site access is presented in **Figure 2**.

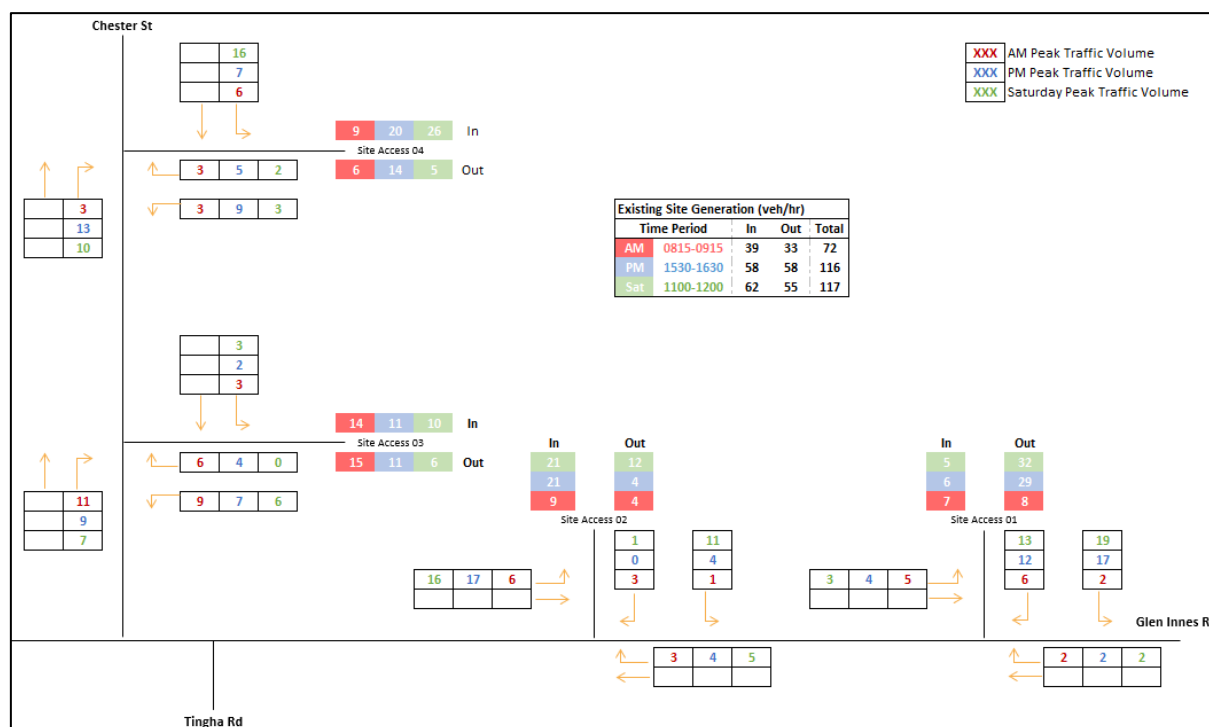


Figure 2: Existing Site Traffic Generation – Service Station

Additionally, the trip generation of the existing residential lots within the Site is estimated based on the following traffic generation rates outlined in RMS Guide Update:

- Low density residential dwellings (regional areas):
 - Morning Peak hour: 0.71 vehicle trips per dwelling
 - Evening Peak hour: 0.78 vehicle trips per dwelling

Therefore, the existing residential lots within the Site is estimated to generate approximately 2-3 vehicle trips per hour during both morning and evening peaks.

2.5 Key Roads

With reference to **Figure 3**, the key roads that may be influenced by the Proposal include:

- **Glen Innes Road (Gwydir Highway)** – an arterial road that runs to the south of the Site. It provides connection between Warialda to the west and Glen Innes to the east. In the vicinity of the Site, Glen Innes Road generally provides 2 lanes for two-way traffic (1 lane at each direction), with additional through movement and turning infrastructure at key intersections, specifically at Tingha Road. In the vicinity of the Site, Glen Innes Road has a posted speed limit of 50km/hr.
- **Chester Street** – a local road providing access for the existing service station and some residential lots, which runs to the west of the Site. Chester Street provides undivided 2 lanes for two-way traffic (1 lane at each direction).
- **Chester Lane** – a local road providing access to some residential lots, which runs to the east of the Site. Chester lane provides 1 lane for two-way traffic and has a posted speed limit of 50km/h.

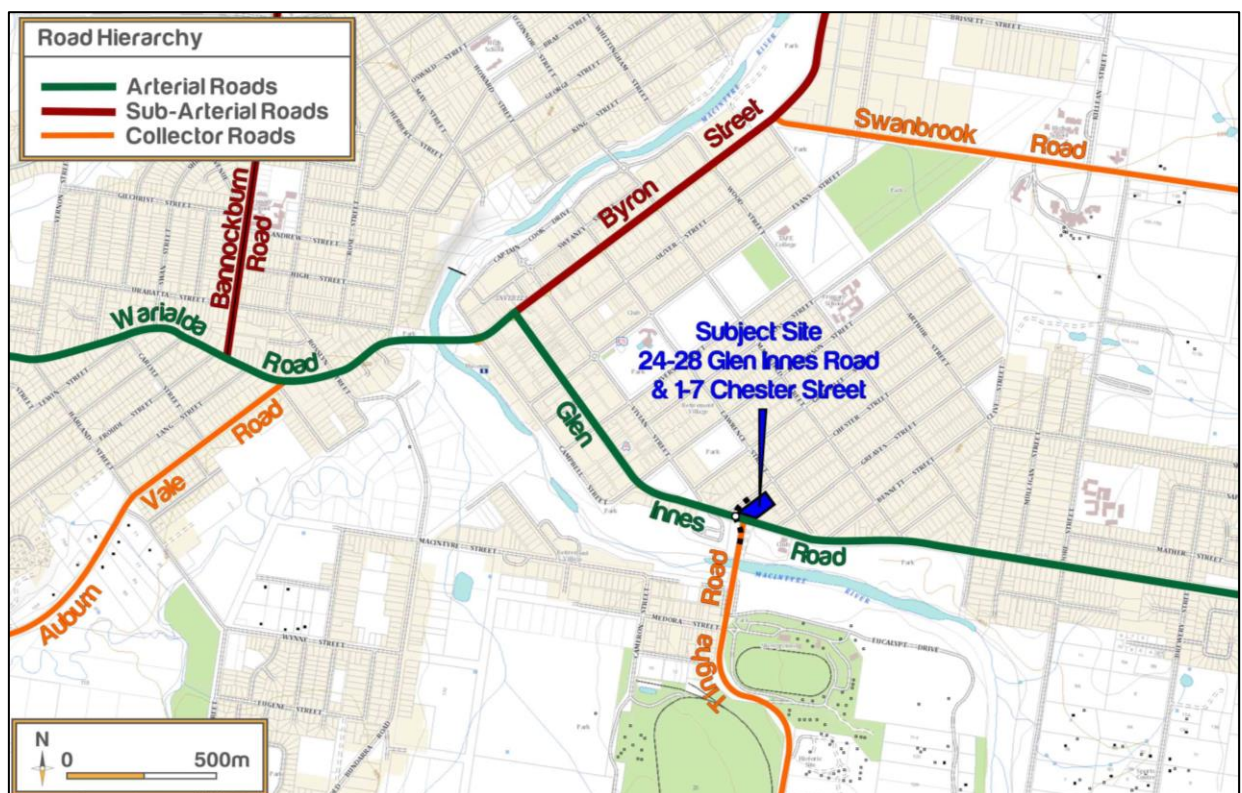


Figure 3: Road Hierarchy

2.6 Heavy Vehicle Travel Routes

Ason Group has been advised that the Site currently provides access to heavy vehicles up to 26 metre B-Doubles (for fuel delivery) and it would still be the case in the future.

The TfNSW Restricted Access Vehicle (RAV) Map indicates that the Tingha Road and Glen Innes Road (Gwydir Highway) is approved 25/26m B-double Routes and Chester Street is approved routes with travel conditions.



Figure 4: 25/26m B-double Routes

(Source: Transport for NSW, NSW Combined Higher Mass Limits (HML) and Restricted Access Vehicle (RAV) Map)

2.7 Key Intersection

The intersection of Glen Innes Road (Gwydir) / Tingha Road / Chester Street is currently a staggered T-intersections. As mentioned in Section 2.4, traffic surveys were undertaken at the key intersections as detailed above in July 2017.

With reference to the traffic surveys, the baseline traffic generation of the existing service station as well as the road network abutting the Site is presented in **Figure 5**.

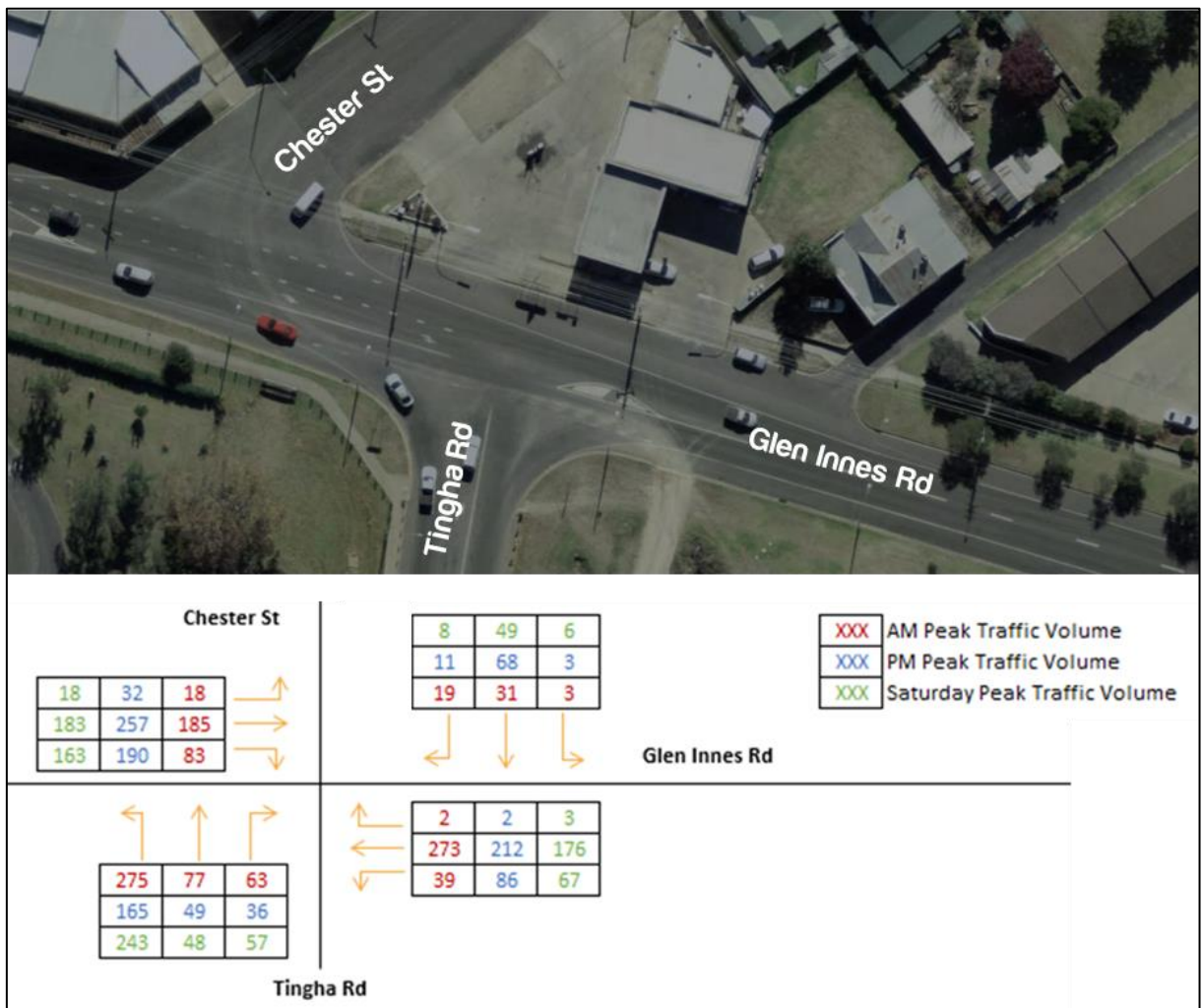


Figure 5: Baseline Traffic Volume (Year 2017) – Tingha Rd x Glen Innes Rd x Chester St

It is noted that a commitment has been made by Australian Government to upgrade the above intersection to a roundabout to improve safety and efficiency at this junction. This upgrade will be further discussed in Section 3.1.

2.8 Public & Active Transport

2.8.1 Public Transport

Transport for NSW guidelines state that bus services influence the travel mode choices of sites within 400 metres (approximately 5 minutes) of a bus stop.

With reference to **Figure 7**, the Site has limited access to public transport. There is only 1 bus stop at Mansfield Street that is located within the 400 metres radius of the Site. This bus stop is serviced by the following bus routes:

Table 3: Bus Service – Bus Stop: Mansfield St at Greaves St, Inverell

Bus Route	Description	Frequency
Route 471	Inverell CBD to Ross Hill & Southside	Weekdays: 16:49
Route 472	Inverell CBD to Belgravia	Monday / Wednesday / Friday: 09:50 / 12:28 Tuesday / Thursday: 09:50

2.8.2 Active Transport

With reference to **Figure 6** and **Figure 7**, the Site is currently served by shared walking / cycling paths along Glen Innes Road and Tingha Road.

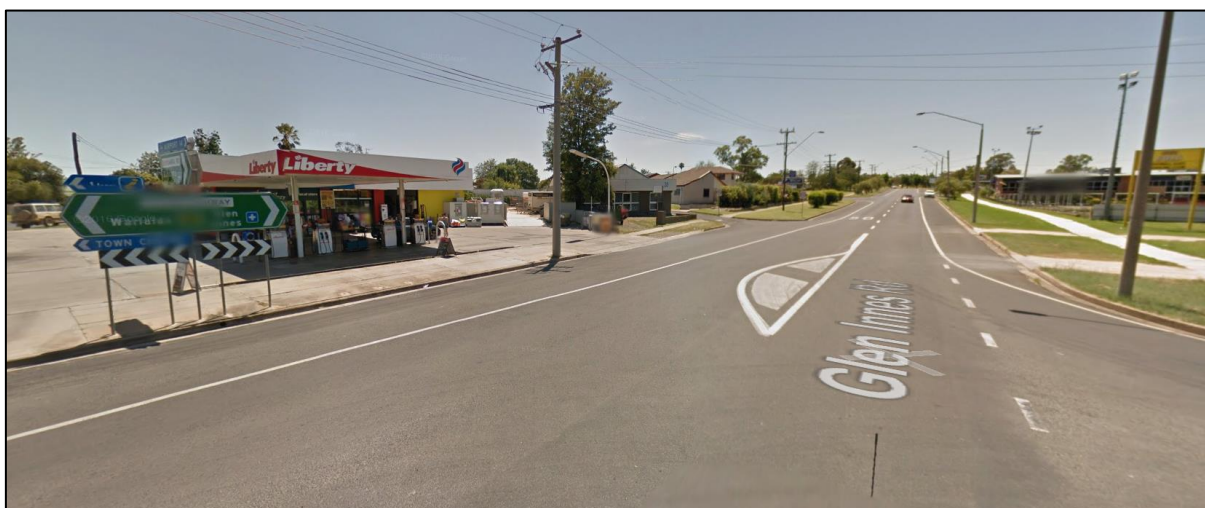


Figure 6: Off-Road Shared Path on Glen Innes Road

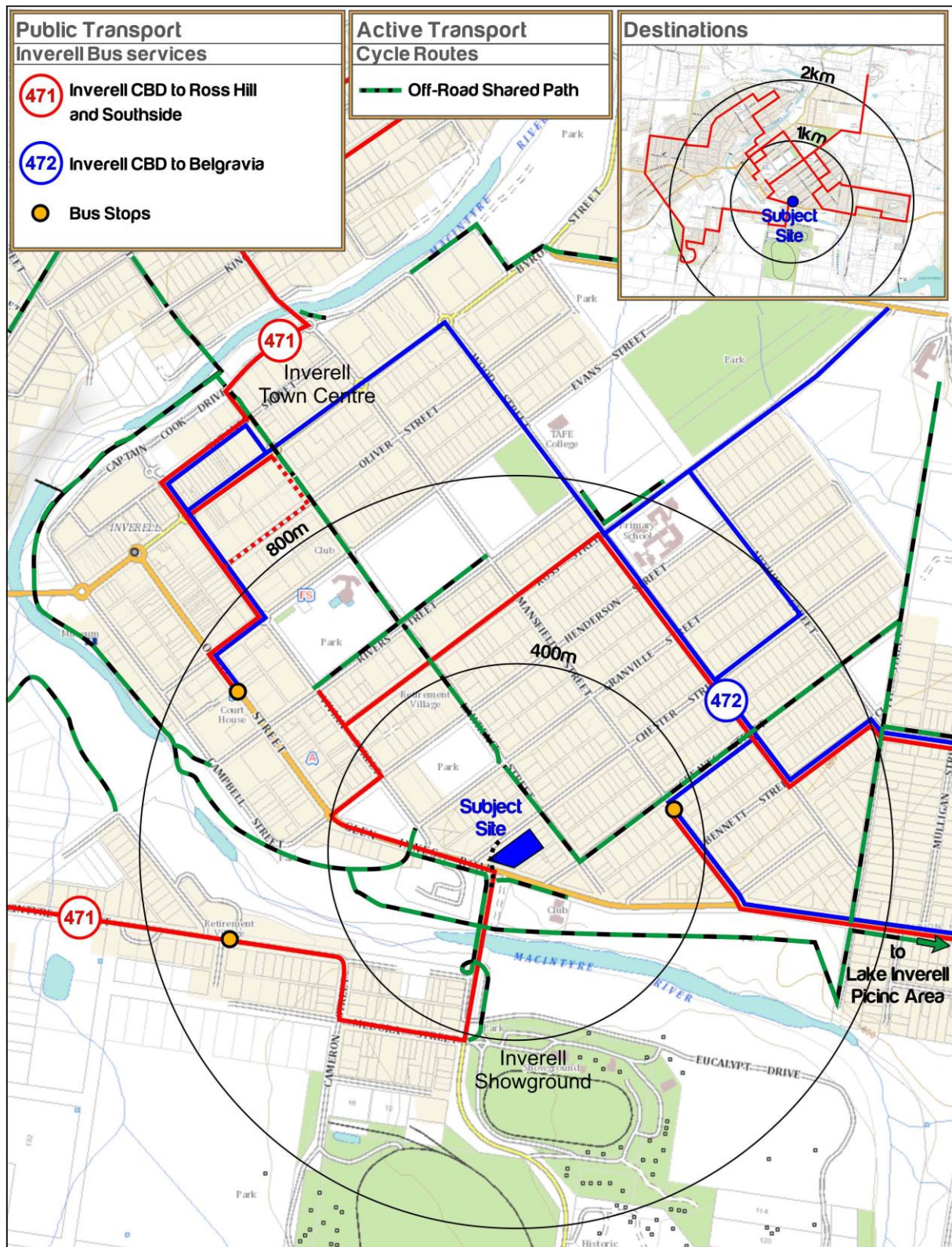


Figure 7: Public Transport Services & Cycling Routes

3 Future Conditions (without the Proposal)

3.1 Tingha Road and Glen Innes Road Intersection Upgrade

As mentioned in Section 2.6, a commitment has been made by Australian Government to upgrade the intersection of Glen Innes Road (Gwydir Highway) / Tingha Road / Chester Street to a roundabout to improve safety and efficiency at this junction.¹

This upgrade is currently in Planning stage and the construction is expected to commence in early 2022 and be completed by late 2022. At the moment of preparing this TA, Ason Group has been advised by the Council that the preferred upgrade design of the new roundabout is a one-lane roundabout with a dedicated left turn short lane from Tingha Road. An indicative upgrade plan is presented in **Figure 8**.



Figure 8: Preferred Roundabout Upgrade at Tingha Rd x Glen Innes Rd x Chester St (indicative)

Additionally, as results of this upgrade:

- Right in and out movements of Chester Lane to / from Glen Innes Road is expected to be restricted by the proposed raised median on Glen Innes Road.

¹ [Tingha - Bundarra Road and Gwydir Highway Intersection](#)

- The future southernmost access to the Site on Chester Street might need to be restricted to left-in / left-out due to the proposed raised median on Chester Street near Glen Innes Road.

3.2 Future Intersection Performance (without the Proposal)

3.2.1 Future Traffic Volume at Key Intersection

As discussed earlier, traffic survey data has been obtained for the key intersection of Glen Innes Road (Gwydir Highway) / Tingha Road / Chester Street and the existing service station. By excluding the existing traffic generation of the Site from the surveyed traffic volume at the key intersection, **Figure 9** provides net existing traffic volume at the intersection.

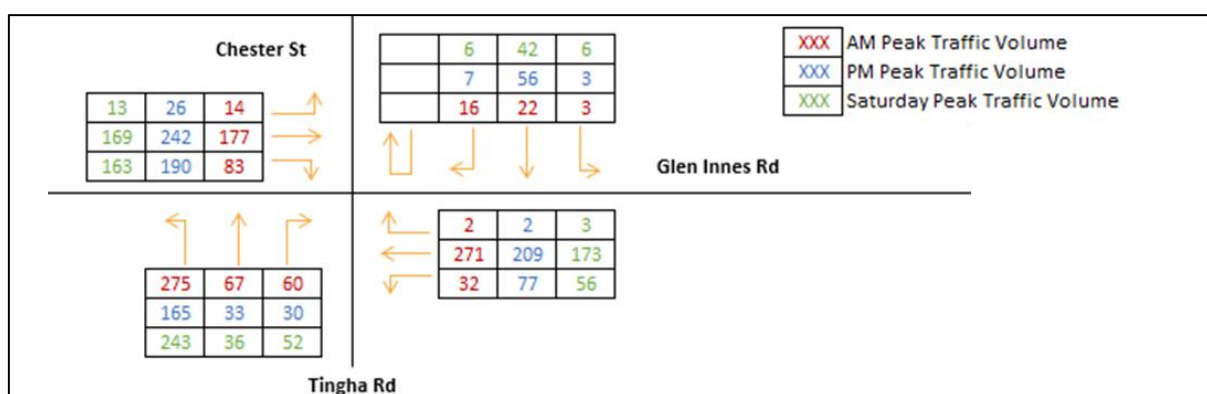


Figure 9: Baseline Traffic Volume (Year 2017) – Without Traffic Generation of the Site

The roundabout upgrade at the intersection of Glen Innes Road (Gwydir Highway) / Tingha Road / Chester Street is expected to be finished by late 2022. Therefore, future intersection performance has been assessed for the Baseline Year (Year 2022) and 10 years after the Baseline Year (Year 2032).

An annual compound growth rate of 2.5% per annum has been adopted based on Council's advice.

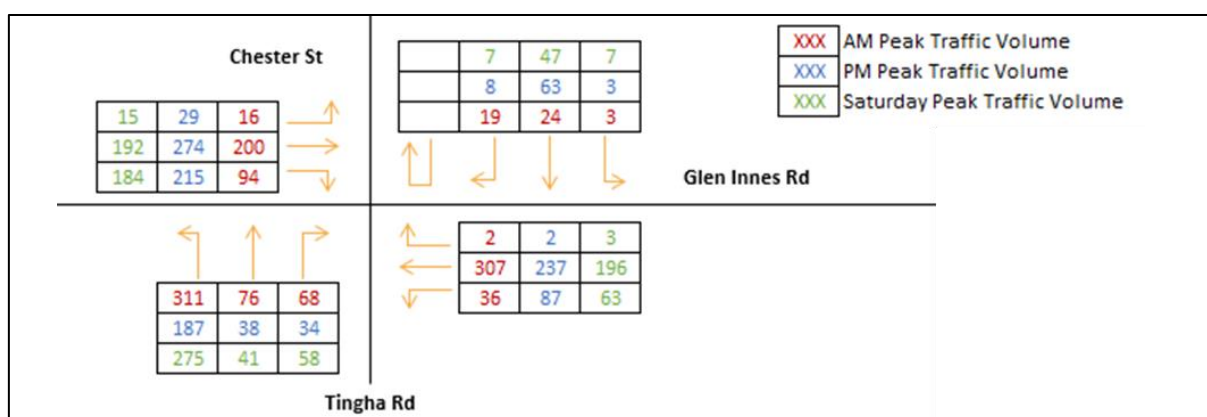


Figure 10: Future Traffic Volume (Year 2022) – Without the Proposal

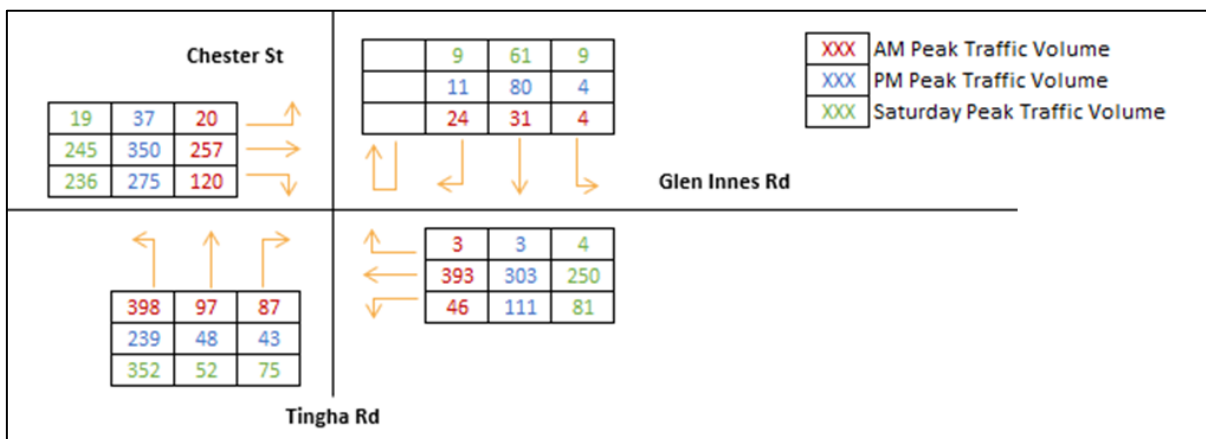


Figure 11: Future Traffic Volume (Year 2032) – Without the Proposal

3.2.2 SIDRA Intersection Layout

Having regard to the future roundabout upgrade – as discussed in Section 3.1 – the SIDRA layout for the future intersection of Glen Innes Road (Gwydir Highway) / Tingha Road / Chester Street is shown in **Figure 12**.

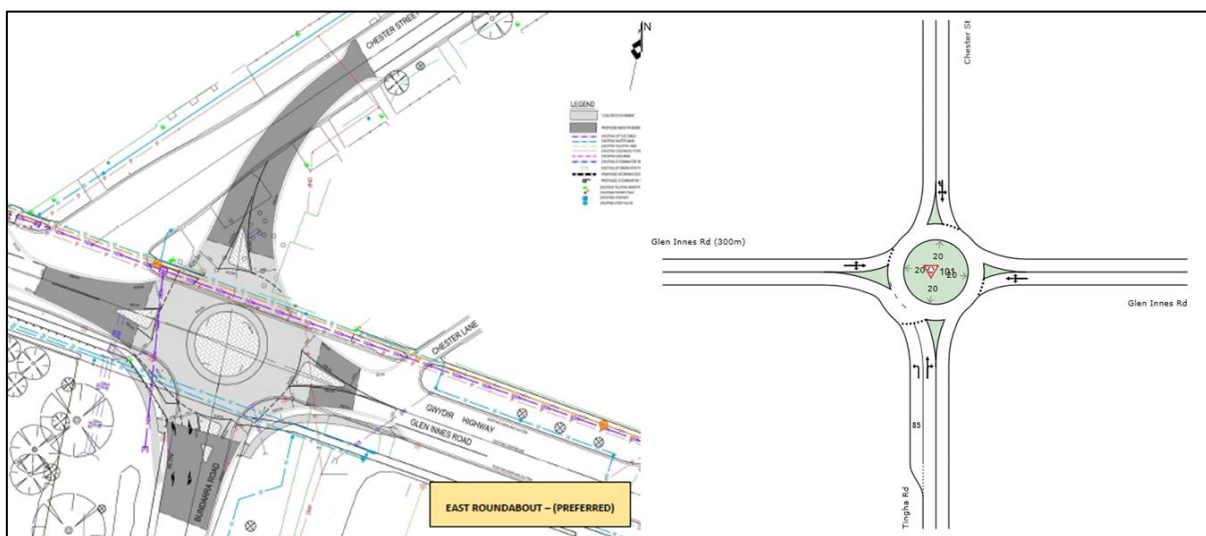


Figure 12: SIDRA Modelling Layout

3.2.3 SIDRA Modelling Results

The performance of the key intersection in future 'Baseline' (Year 2022) and future 'Base Case' (Year 2032) has been analysed using the RMS approved SIDRA modelling software. SIDRA modelling outputs a range of performance measures, in particular:

- *Degree of Saturation (DOS)* – The DOS is defined as the ratio of demand (arrival) flow to capacity. The DOS is used to measure the performance of intersections where a value of 1.0 represents an

intersection at theoretical capacity, 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). As the performance of an intersection approaches DOS of 1.0, queue lengths and delays increase rapidly. It is usual to attempt to keep DOS to less than 0.9, with satisfactory intersection operation generally achieved with a DOS below 0.8.

- *Average Vehicle Delay (AVD)* – Delay represents the difference between interrupted and uninterrupted travel times through an intersection and is measured in seconds per vehicle. Delays include queued vehicles accelerating and decelerating from/to the intersection stop lines, as well as general delays to all vehicles travelling through the intersection. The AVD (or average delay per vehicle in seconds) for intersections also provides a measure of the operational performance of an intersection and is used to determine an intersection's Level of Service (see below). For signalised intersections, the AVD reported relates to the average of all vehicle movements through the intersection. For priority (Give Way, Stop & Roundabout controlled) intersections, the AVD reported is that for the movement with the highest AVD.
- *Level of Service (LOS)* – This is a comparative measure that provides an indication of the operating performance, based on AVD. For signalised and roundabout intersections, LOS is based on the average delay to all vehicles, while at priority-controlled intersections LOS is based on the worst approach delay.

Table 4 outlines the relevant performance criteria in accordance with the RMS Guide.

Table 4: Intersection Assessment Criteria

Level of Service	Average Delay per Vehicle (sec/veh)	Traffic Signals, Roundabout	Give Way and Stop Signs
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.

Having regard to the above, a summary of the modelling results is provided in the table below.

Table 5: Modelling Results – Glen Innes Road / Tingha Road / Chester Street

Peak Period	Future Baseline (Year 2022)			Future Base Case (Year 2032)		
	Max. DoS	Max. Delay (sec)	LoS	Max. DoS	Max. Delay (sec)	LoS
AM Peak	0.29	11.2	A	0.39	12.0	A
PM Peak	0.39	10.4	A	0.51	11.5	A
Saturday	0.31	10.2	A	0.41	11.1	A

With reference to **Table 5**:

- The intersection of Glen Innes Road / Tingha Road / Chester Street is expected to operate at a satisfactory LoS A during all peak periods in both future 'Baseline' (Year 2022) and future 'Base Case' (Year 2032).
- Under future 'Base Case', the maximum queue on Chester St is expected to occur during the evening peak, which is approximately 6 metres.

4 Parking & Servicing Requirements

4.1 Car Parking Requirement

4.1.1 RMS Guide

Section 5.7.2 of the RMS Guide provides the following parking rates that are considered applicable for the Proposal:

- Service Station:
 - 6 spaces per work bay, plus
 - 5 spaces per 100m² of GFA for convenience stores, plus
 - 15 spaces per 100m² of GFA or 1 space per 3 seats for restaurant, whichever is greater.
- Speciality Shops:
 - 4.5 spaces per 100m² of GFA

4.1.2 Inverell DCP 2013

Clause 5.3 of the Inverell DCP 2013 provides the following parking rates that are considered applicable for the Proposal:

- Service Station:
 - 4 spaces per work bay, plus
 - 5 spaces per 100m² of GFA for convenience stores, plus
 - 15 spaces per 100m² of GFA or 1 space per 3 seats for restaurant, whichever is greater.
- Retail Premises:
 - Shops where the total GFA is less than 4,000m² – 1 space per 25m² of GFA
 - Shops where the total GFA is greater than 4,000m² – 1 space per 40m² of GFA

Additionally, Clause 5.4 of the Inverell DCP 2013 states that the provision of car parking should be consistent with the demand likely to be generated. When it comes to the existing development, the following principles should be considered:

- *All existing on-site car parking is to be retained. Relocation of parking bays is acceptable.*

- *Alterations and additions to existing premises which result in an increase in floor space, and/or intensified use, should provide additional on-site parking in accordance with Clause 5.3 for the alterations and additions.*

As mentioned earlier, while the proposed site plan is still under development, it is noted that the Proposal would not envisage to dramatically increase the scale of retail shops but mainly to expand the site area to accommodate relocation of the storage shed that is currently situated across the road.

Having regard to the above, it is expected that the on-site car parking provision would be retained at a similar level as existing. However, in the event that the Proposal results in any increase in floor space of the service station shop or / and rural supply shops, additional parking spaces should be provided in accordance with the Inverell DCP 2013. It is noteworthy that the ultimate parking demand vs. supply analysis can be reviewed in detail as part of the future Development Application (DA) for the Site and when the Site plan is finalised. Ason Group is currently working with the Project Team to finalise the Site plan.

4.2 Additional Parking Considerations

4.2.1 Accessible Parking

While Inverell DCP 2013 does not provide any specific requirements in regard to the provision of accessible parking, the *Disability (Access to Premises – Buildings) Standards* 2010 from the National Code of Australia (NCA) provide the following standard accessible parking rate for retail developments:

- Up to 1000 car parking spaces: 1 space for every 50 car parking spaces or part thereof (rounded up).

4.2.2 Bicycle Parking

While Inverell DCP 2013 does not provide any specific requirements in regard to the provision of bicycle parking, the *Planning Guidelines for Walking and Cycling* (December 2004, NSW Department of Infrastructure, Planning and Natural Resources, Road and Traffic Authority) provide the following bicycle rates for service station and retail shops:

- Staff Bicycle Parking Requirement: 3-5% of staff number
- Visitor Bicycle Parking Requirement: 5-10% of staff number

4.2.3 Servicing Vehicle Parking

While Inverell DCP 2013 does not provide any specific requirements in regard to the provision of service / loading bays, the RMS Guide provide the following:

- Shops:
 - < 2,000m² GFA: 1 space per 400m² of GFA
 - > 2,000m² GFA: 5 + 1 space per 1,000m² of GFA over 2,000m²

Provision must be made on-site at a convenient location for the type of delivery service vehicles appropriate to the Proposal. Furthermore, all service areas are expected to be designed to in accordance with AS 2890.2.

5 Traffic Assessment

5.1 Traffic Generation

As mentioned earlier, Ason Group has been advised by NDC that the Proposal would not envisage to dramatically increase the scale of retail shops or the number of fuel bowzers and therefore the Proposal is not expected to generate additional traffic comparing to what the Site generates currently.

However, for conservative assessment, an annual compound growth rate of 2.5% per annum has been adopted for the site traffic generation under the future 'Project Case' assessment to allow for potential increase of passing trade as a result of the increase on traffic along surrounding road network. Therefore, the traffic analysis contained in this TA are considered CONSERVATIVE.

Table 6: Future 'Project Case' Site Trip Generation – Year 2032

Trip Generation	AM Peak (08:15 – 09:15)	PM Peak (15:30 – 16:30)	Saturday (11:00 – 12:00)
Inbound	54	80	85
Outbound	45	80	76
Total	99	160	161

5.2 Traffic Distribution & Assignment

As discussed in Section 3.1, the new roundabout upgrade would potentially result in restricted left-in / left-out accesses of:

- Chester Lane to / from Glen Innes Road
- The subject Site to / from Chester Street

Additionally, Ason Group has been advised that the Site is expected to provide two access points at Chester Street, including:

- An entry only access near the northern boundary of the Site
- A left-out only access near the Glen Innes Road intersection

Consultation with the Council regarding above access strategy has been undertaken on 27 April 2021, and as suggested by the Council, the access at Chester Lane will be restricted for emergency access only.

An indicative future access plan is provided in **Figure 13**.



Figure 13: Indicative Future Access Plan

With reference to sections above, the peak hour traffic generation of the Site has been assigned to the key intersection for the future 'Project Case' (Year 2032), as shown in the figure below.

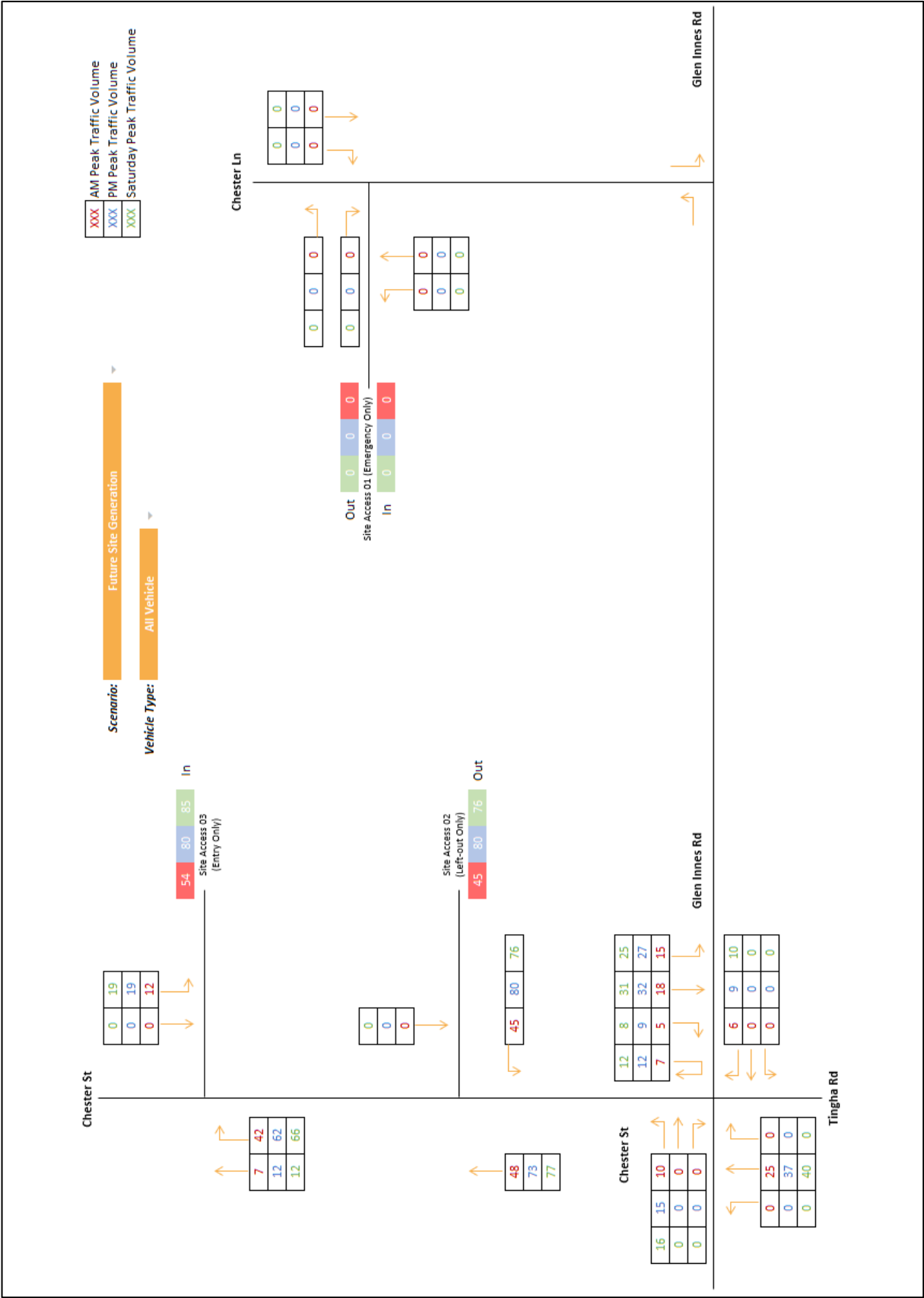


Figure 14: Future Traffic Generation of the Proposal (Year 2032)

5.3 Traffic Impacts

The operation of the key intersection in the Year 2032 further to the Proposal has again be assessed using the SIDRA model. The results of the analysis are provided in **Table 7**.

Table 7: Modelling Results Comparison – Glen Innes Road / Tingha Road / Chester Street

Peak Period	Future Base Case (Year 2032 - without Proposal)			Future Project Case (Year 2032 - with Proposal)		
	Max. DoS	Max. Delay (sec)	LoS	Max. DoS	Max. Delay (sec)	LoS
AM Peak	0.39	12.0	A	0.41	16.0	B
PM Peak	0.51	11.5	A	0.56	15.7	B
Saturday	0.41	11.1	A	0.45	14.2	A

With reference to the tables above:

- The Proposal has no material impact on the performance of the Glen Innes Road / Tingha Road / Chester Street intersection.
- The intersection of Glen Innes Road / Tingha Road / Chester Street is expected to still performance at a satisfactory LoS (LoS B or better) during all peak periods with the Proposal.

6 Design Commentary

6.1 Relevant Design Standards

The following relevant Australian Standards are considered applicable to the Proposal:

- AS2890.1 for car parking areas;
- AS2890.2 for commercial vehicle loading areas; and
- AS 2890.6 for accessible parking spaces

It is expected that the design of car park or site access would comply with these Standards and detailed swept paths analysis will be undertaken as part of the Development Application (DA) Stage.

6.2 Access Design

With reference to **Figure 15**, all heavy vehicles are expected to enter the Site via Chester Street northern access, and exit the Site via the left-out access to the future roundabout of Chester Street and Glen Innes Road.

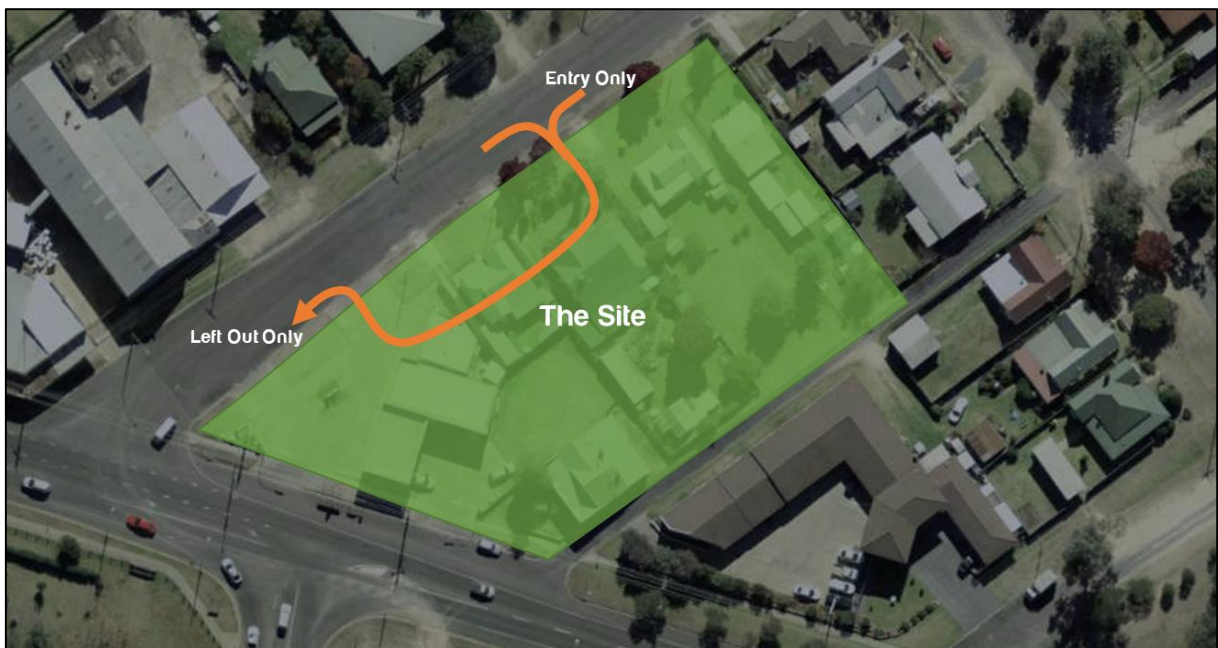


Figure 15: Indicative Heavy Vehicle Internal Circulation

Additionally, the SIDRA modelling results indicate that – with the Proposal – the maximum queue on Chester St is expected to occur during the evening peak, which is approximately 10 metres. Therefore,

it is recommended that the left-out exit at Chester Street should be located at least 10 metres away from the future roundabout of Chester Street and Glen Innes Road.

6.3 Design Vehicles

As mentioned in Section 2.6, the Site currently provides access to heavy vehicles up to 26 metre B-Doubles (for fuel delivery) and it would still be the case in the future. Therefore, a 26 metre B-double should be adopted as the relevant 'design vehicle' when assessing the heavy vehicle access driveways. Detailed swept paths analysis should be undertaken as part of the DA Stage.

7 Conclusions

Further to a detailed assessment of the Planning Proposal, Ason Group provides the following conclusions:

- Ason Group has been engaged by Newton Denny Chapelle (NDC) on behalf of North Coast Petroleum (NCP) to prepare a Transport Assessment (TA) in support of a Planning Proposal (the Proposal) to redevelop / expand the existing service station at 24-28 Glen Innes Road & 1-7 Chester Street, Inverell (the Site). The Site is located within the Local Government Area (LGA) of Inverell Shire Council (the Council) and as such is subject to that Council's planning controls.
- the Proposal mainly seeks to:
 - Alter the existing service station, and amalgamate the adjacent lots as an expansion of the existing service station.
 - Rezone DP326225 Lot 1& 2 and DP360441 Lot 3D to B1 - Neighbourhood Centre as they are currently zoned as R1 – General Residential under Inverell LEP 2012.
- The proposed site plan is still under development; however, it is important to state that the Proposal would not envisage to dramatically increase the scale of retail shops but mainly to expand the site area to accommodate relocation of the storage shed that is currently situated across the road.
- Therefore, the Proposal is not expected to generate additional traffic movements comparing to what the Site generates currently. However, for conservative assessment, an annual compound growth rate of 2.5% per annum has been adopted for the site traffic generation under the future 'Project Case' (Year 2032) assessment.
- A commitment has been made by Australian Government to upgrade the intersection of Glen Innes Road (Gwydir Highway) / Tingha Road / Chester Street to a roundabout to improve safety and efficiency at this junction. This upgrade is currently in Planning stage and the construction is expected to commence in early 2022 and be completed by late 2022.
- SIDRA modelling has been undertaken to confirm that the future new roundabout would operate at a satisfactory LoS A during all peak periods with the Proposal in the future 'Project Case' (Year 2032) scenario.
- Clause 5.4 of the Inverell DCP 2013 states that the provision of car parking should be consistent with the demand likely to be generated. When it comes to the existing development, the following principles should be considered:
 - *All existing on-site car parking is to be retained. Relocation of parking bays is acceptable.*

- *Alterations and additions to existing premises which result in an increase in floor space, and/or intensified use, should provide additional on-site parking in accordance with Clause 5.3 for the alterations and additions.*
- Having regard to the above, while the proposed site plan is still under development, it is noted that the Proposal would not envisage to dramatically increase the scale of retail shops. Therefore, it is expected that the on-site car parking provision would be retained at a similar level as existing. However, in the event that the Proposal results in any increase in floor space of the service station shop or / and rural supply shops, additional parking spaces should be provided in accordance with the Inverell DCP 2013.
- As a result of the future new roundabout:
 - Right in and out movements of Chester Lane to / from Glen Innes Road is expected to be restricted by the proposed raised median on Glen Innes Road.
 - Future accesses to the Site on Chester Street might need to be restricted to left-out due to the proposed raised median on Chester Street near Glen Innes Road.
- Therefore, the Site is expected to provide two access points at Chester Street, including:
 - An entry only access near the northern boundary of the Site on Chester Street,
 - A left-out only access near the Glen Innes Road intersection
- The Proposal will also provide an emergency only access on Chester Lane.
- All heavy vehicles (up to 26 metre B-double) are expected to enter the Site via the northern access from on Chester Street, and exit the Site via the left-out access to the future roundabout of Chester Street and Glen Innes Road.
- It is expected that the design of car park or site access would comply with the relevant Australian Standards and detailed swept paths analysis will be undertaken as part of the Development Application (DA) Stage.

In summary, the Proposal is supportable on traffic planning grounds and will not result in any adverse impacts on the surrounding road network.

Appendix A

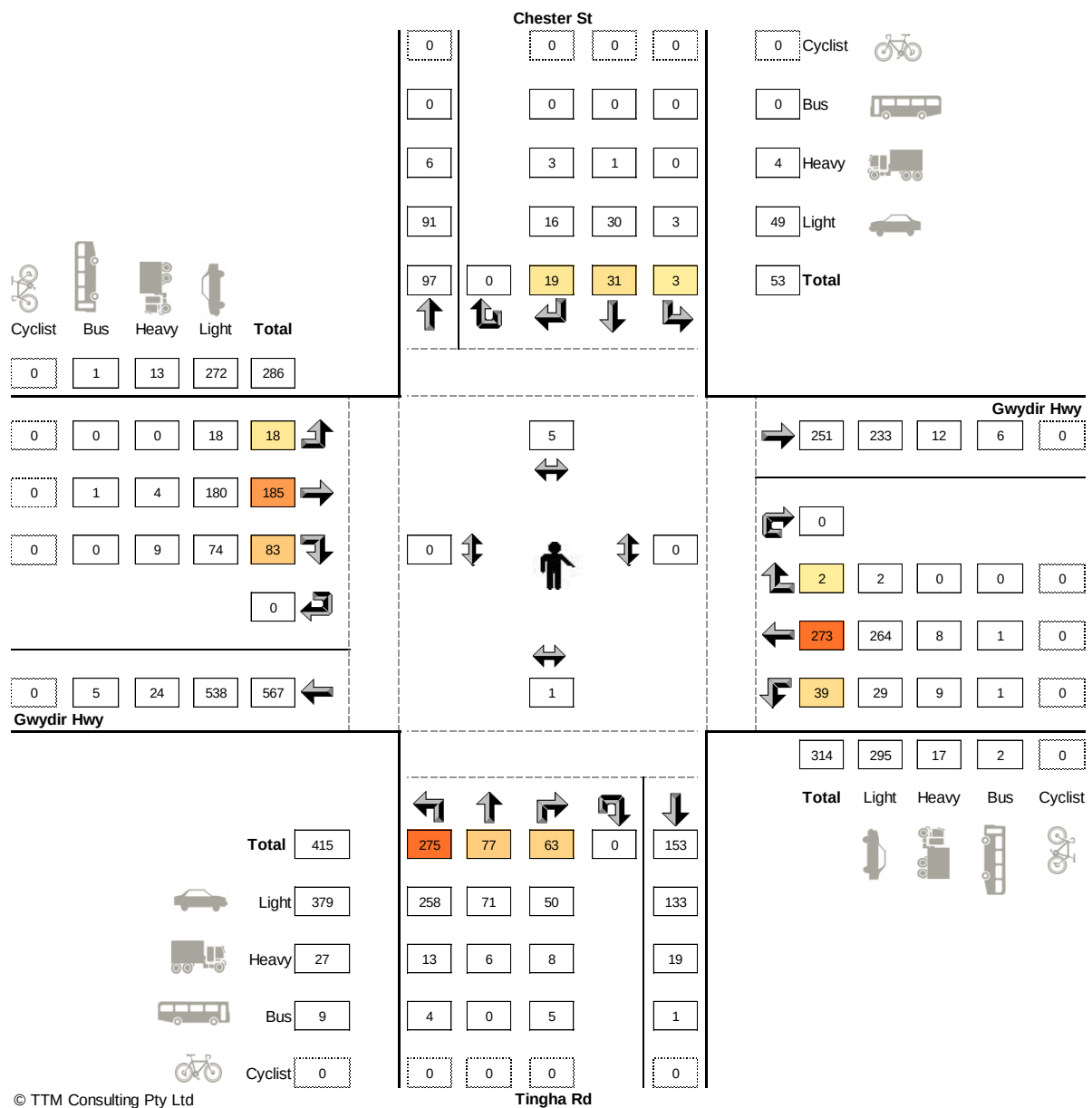


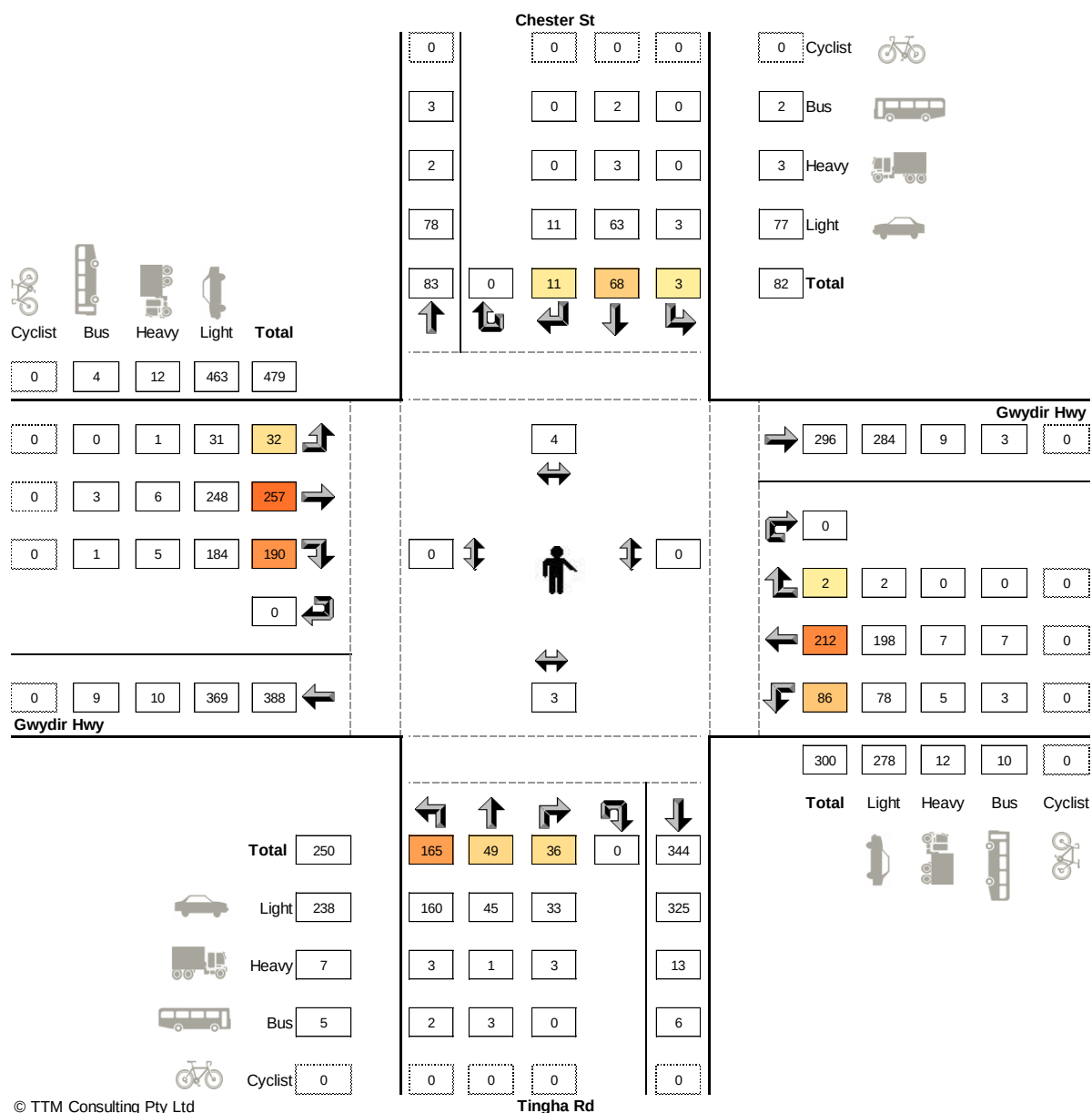
TPSGROUP™

Traffic & Parking Systems

**Glen Innes Road / Chester Street / Bundarra (Tingha) Road
Intersection**

Traffic Survey Data

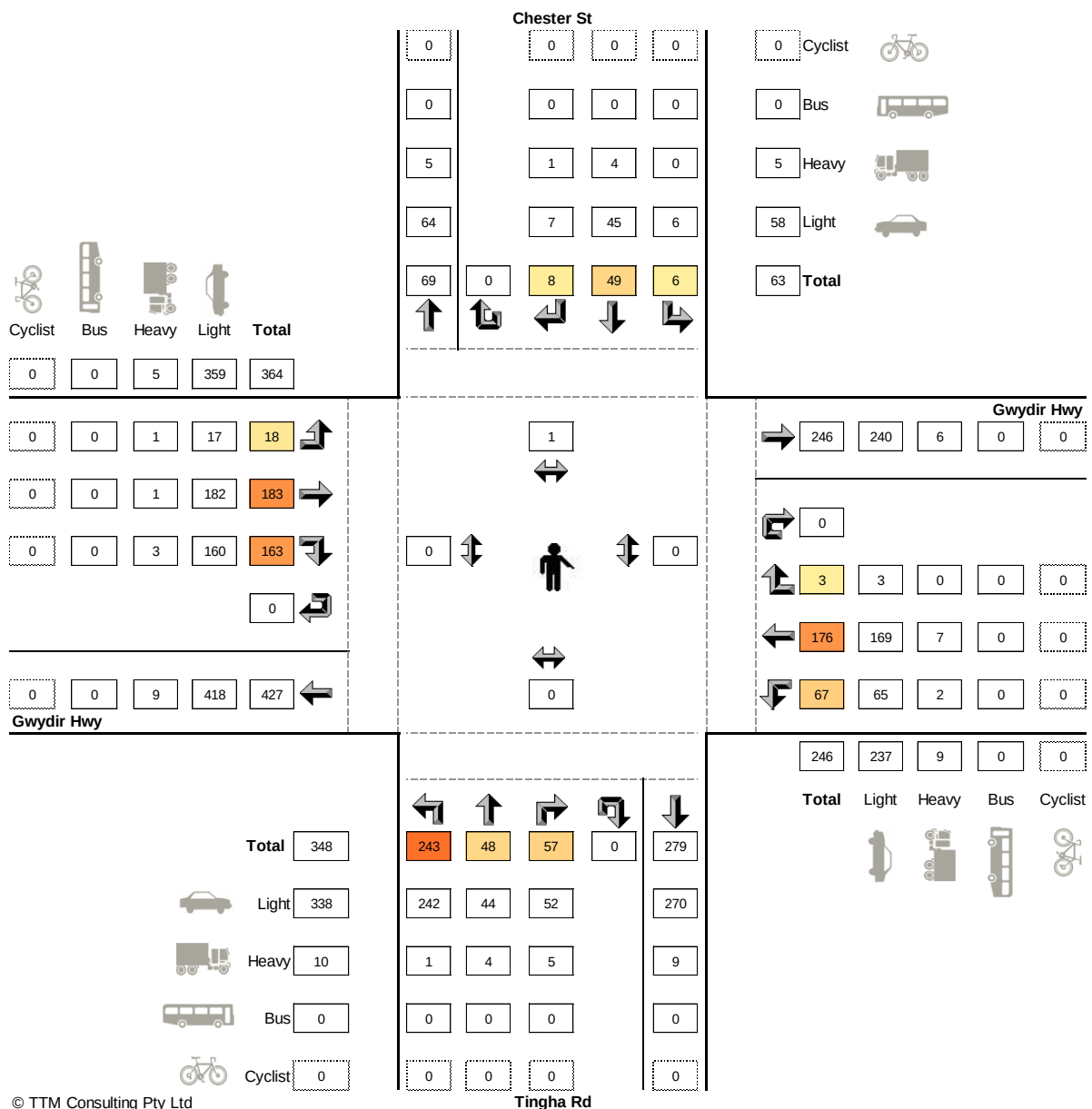


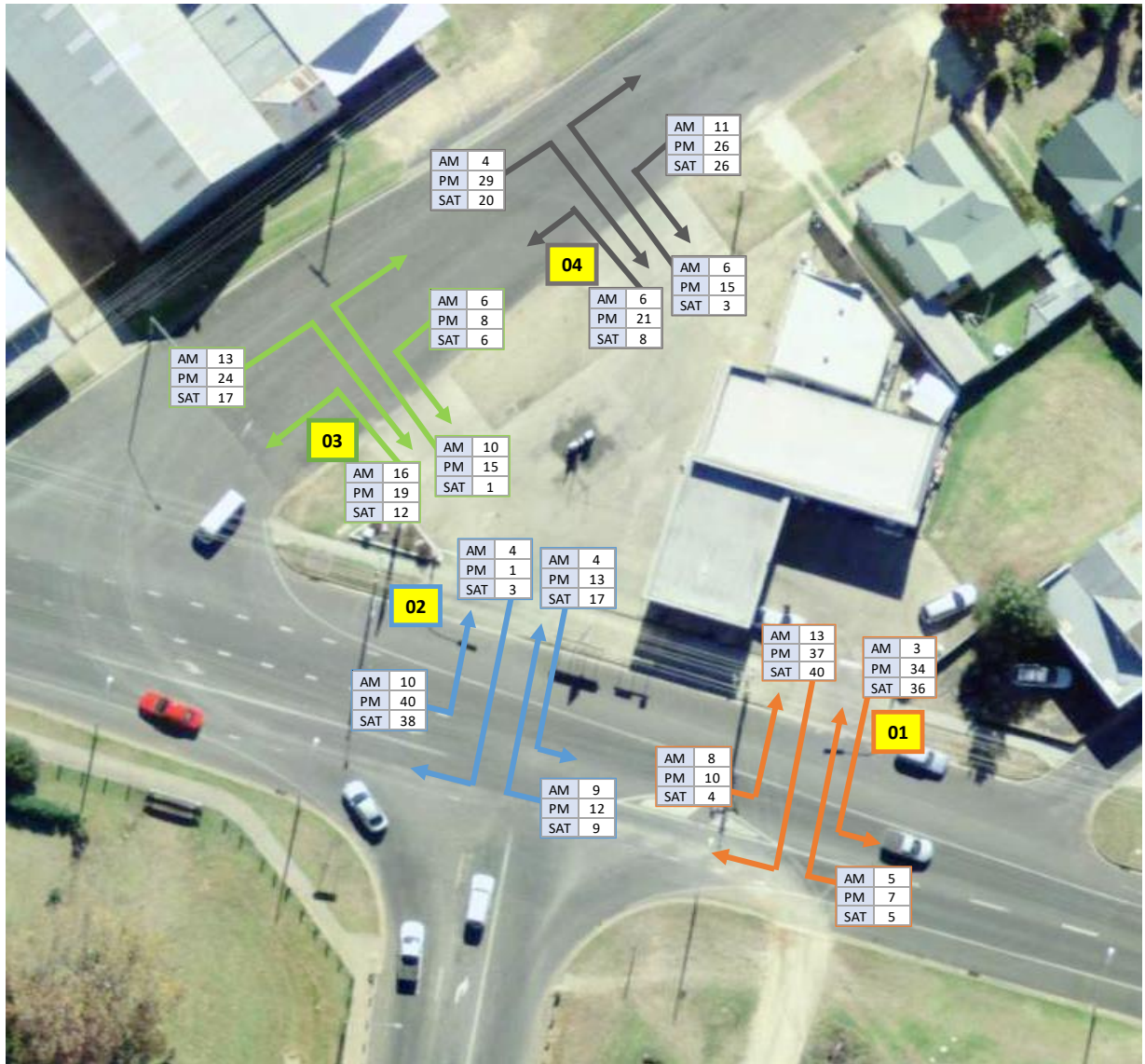


TTM Reference: 17SYD0096
 Location: Gywdir Hwy & Tingha Rd
 Suburb: Inverell
 Date: Saturday, 29 July 2017
 AM Peak: 1100-1200
 Weather: Fine



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TTM Data

TTM Reference: 17SYD0096
Location: Service Station, corner of Gwydir Hwy & Chester St
Suburb: Inverell
Weather: Fine
Notes:

Thursday, 27 July 2017

Time	Driveway 01					Driveway 02					Driveway 03					Driveway 04				
	Left In	Right Out	Left Out	Right In	Total	Left In	Right Out	Left Out	Right In	Total	Left In	Right Out	Left Out	Right In	Total	Left In	Right Out	Left Out	Right In	Total
7:30	1	1	0	0	2	1	0	0	1	2	0	1	2	1	4	1	0	0	0	1
7:45	0	2	0	1	3	0	0	0	3	3	1	0	2	0	3	3	2	1	0	6
8:00	0	0	1	0	1	0	1	2	1	4	1	0	1	0	2	1	1	0	0	2
8:15	1	0	0	0	1	2	1	0	1	4	2	2	1	2	7	2	0	0	1	3
8:30	1	1	0	1	3	0	1	1	0	2	0	1	1	3	5	2	1	2	1	6
8:45	2	2	1	0	5	1	0	0	2	3	0	2	2	1	5	1	0	1	1	3
9:00	1	3	1	1	6	3	1	0	0	4	1	1	5	5	12	1	2	0	0	3
9:15	2	4	0	2	8	3	0	1	1	5	1	3	2	1	7	0	0	2	1	3
Total	8	13	3	5	29	10	4	4	9	27	6	10	16	13	45	11	6	6	4	27
15:00	0	3	2	0	5	3	0	1	1	5	0	1	1	2	4	2	1	1	2	6
15:15	1	2	1	1	5	1	0	3	1	5	1	6	2	4	13	3	1	1	2	7
15:30	1	4	4	2	11	8	0	2	2	12	0	1	2	2	5	4	0	4	3	11
15:45	0	4	8	0	12	4	0	0	0	4	2	1	2	1	6	1	2	2	6	11
16:00	1	3	4	0	8	3	0	1	0	4	0	1	3	4	8	2	1	1	2	6
16:15	2	1	1	0	4	2	0	1	2	5	0	1	0	2	3	0	2	2	2	6
16:30	1	5	4	0	10	4	0	0	1	5	0	1	2	2	5	1	1	1	4	7
16:45	1	2	8	1	12	5	0	1	1	7	0	1	2	0	3	5	0	2	2	9
17:00	1	5	1	1	8	1	1	0	1	3	1	0	0	1	2	1	2	0	0	3
17:15	1	1	0	2	4	4	0	2	0	6	2	0	4	0	6	2	0	1	0	3
17:30	1	4	1	0	6	5	0	2	1	8	0	2	1	3	6	5	2	4	4	15
17:45	0	3	0	0	3	0	0	0	2	2	2	0	0	3	5	0	3	2	2	7
Total	10	37	34	7	88	40	1	13	12	66	8	15	19	24	66	26	15	21	29	91

Saturday, 29 July 2017

Time	Driveway 01					Driveway 02					Driveway 03					Driveway 04				
	Left In	Right Out	Left Out	Right In	Total	Left In	Right Out	Left Out	Right In	Total	Left In	Right Out	Left Out	Right In	Total	Left In	Right Out	Left Out	Right In	Total
10:30	0	5	4	0	9	4	0	2	1	7	0	0	1	2	3	3	0	1	2	6
10:45	1	8	6	1	16	1	0	1	2	4	2	1	3	7	13	3	0	1	0	4
11:00	1	2	3	1	7	2	1	2	1	6	1	0	3	3	7	4	1	2	2	9
11:15	1	4	5	0	10	4	0	3	2	9	2	0	1	3	6	4	1	0	0	5
11:30	1	5	5	0	11	5	0	4	1	10	0	0	0	1	1	4	0	1	5	10
11:45	0	2	6	1	9	5	0	2	1	8	0	0	2	0	2	4	0	0	3	7
12:00	0	6	6	1	13	10	1	2	0	13	0	0	1	0	1	3	1	2	3	9
12:15	0	8	1	1	10	7	1	1	1	10	1	0	1	1	3	1	0	1	5	7
Total	4	40	36	5	85	38	3	17	9	67	6	1	12	17	36	26	3	8	20	57

TTM Data



TTM Reference: 17SYD0096
Location: Gwydir Hwy & Tingha Rd
Suburb: Inerell
Date: Thursday, 27 July 2017
Suney Duration: 0730-0930 & 1500-1800
Weather: Fine
Notes:

AM Peak: 0815-0915
PM Peak: 1530-1630



Southern Approach: Tingha Rd										Eastern Approach: Gwydir Hwy										Western Approach: Gwydir Hwy																				
Left					Time					Left					Straight					Right					Left					Straight					Right					
Light	Heavy	Bus	Total	Cycle	15 min time start	Light	Cycle	Light	Peds	Light	Heavy	Bus	Total	Cycle	Light	Heavy	Bus	Total	Cycle	Light	Heavy	Bus	Total	Cycle	Light	Heavy	Bus	Total	Cycle	Light	Heavy	Bus	Total	Cycle	Light	Heavy	Bus	Total	Cycle	Peds
22	2	0	24	0	7:30	5	0	5	0	26	2	0	28	0	0	0	0	0	33	0	1	0	1	0	18	0	7	0	0	7	0	0	26	0	0	26	0	0	0	
38	2	0	40	0	7:45	7	0	7	0	24	0	0	24	0	0	0	0	0	31	0	1	0	1	0	12	0	11	0	0	11	0	0	24	0	0	24	0	0	0	
39	2	0	41	0	8:00	11	4	0	0	34	4	0	38	0	0	0	0	0	53	0	2	2	0	30	0	21	2	1	24	0	0	58	0	0	58	0	0	0		
51	2	1	54	0	8:15	6	4	0	0	67	2	1	70	0	1	0	0	1	81	0	3	0	0	3	0	38	0	19	4	0	23	0	0	64	0	0	64	0	0	0
83	4	0	87	0	8:30	4	3	1	0	75	2	0	77	0	0	0	0	0	85	0	6	0	0	6	0	60	0	1	61	0	8	3	0	11	0	0	78	0	0	0
72	4	1	77	0	8:45	12	1	0	0	68	2	0	70	0	0	0	0	0	83	0	8	0	0	8	0	53	0	20	2	0	22	0	0	83	0	0	83	0	0	0
52	3	2	57	0	9:00	7	1	0	0	54	2	0	56	0	1	0	0	1	65	0	1	0	0	1	0	33	0	27	0	0	27	0	0	61	0	0	61	0	0	0
45	3	0	48	0	9:15	8	0	0	0	44	1	0	45	0	1	0	0	1	54	0	3	0	0	3	0	35	2	0	37	0	22	3	0	25	0	0	65	0	0	0
402	22	4	428	0	TOTAL	60	13	1	74	0	392	15	1	408	0	3	0	0	485	0	25	2	0	27	0	272	9	1	282	0	135	14	1	150	0	0	459	0	0	0
258	13	4	275	0	AM Peak	29	9	1	39	0	264	8	1	273	0	2	0	0	314	0	18	0	0	18	0	180	4	1	185	0	74	9	0	83	0	0	286	0	0	0

37	0	0	37	0	10	2	0	12	0	15:00	15	3	0	18	0	43	2	0	45	0	1	0	0	64	0	0	9	0	0	9	0	59	2	1	62	0	43	1	1	45	0	0	116	0	0
37	1	0	38	0	12	1	0	13	0	15:15	15	1	0	16	0	42	2	0	44	0	1	0	0	61	0	1	9	0	0	9	0	61	3	1	65	0	29	5	0	34	0	0	108	0	0
30	0	0	30	0	9	0	0	9	0	15:30	23	2	0	25	0	60	4	7	71	0	1	0	0	97	0	0	12	0	0	12	0	84	2	2	88	0	47	0	0	47	0	0	147	0	0
40	2	0	42	0	13	0	0	13	0	15:45	24	1	3	28	0	57	1	0	58	0	1	0	0	87	0	0	9	0	0	9	0	60	2	1	63	0	51	3	1	55	0	0	127	0	0
51	0	2	53	0	9	1	1	11	0	16:00	14	2	0	16	0	37	1	0	38	0	0	0	0	54	0	0	2	1	0	3	0	60	2	0	62	0	39	0	0	39	0	0	104	0	0
39	1	0	40	0	14	0	2	16	0	16:15	17	0	0	17	0	44	1	0	45	0	0	0	0	62	0	0	8	0	0	8	0	44	0	0	44	0	47	2	0	49	0	0	101	0	0
30	2	0	32	0	9	0	1	10	0	16:30	18	0	0	18	0	42	1	0	43	0	0	0	0	61	0	0	6	1	0	7	0	50	1	0	51	0	52	0	0	52	0	0	110	0	0
34	2	0	36	0	9	1	3	13	0	16:45	14	0	0	14	0	39	2	0	41	0	0	0	0	55	0	0	3	0	0	3	0	59	2	0	61	0	51	0	0	51	0	0	115	0	0
40	2	1	43	0	11	0	0	11	0	17:00	15	2	0	17	0	34	1	0	35	0	1	0	0	53	0	0	1	0	0	1	0	63	2	1	66	0	51	2	1	54	0	0	121	0	0
28	0	0	28	0	7	1	0	8	0	17:15	18	1	0	19	0	47	0	0	47	0	3	0	0	69	0	0	5	0	0	5	0	61	1	0	62	0	33	1	0	34	0	0	101	0	0
27	1	0	28	0	5	0	0	5	0	17:30	22	1	0	23	0	40	2	0	42	0	1	0	0	66	0	0	10	0	0	10	0	51	1	0	52	0	39	0	0	39	0	0	101	0	0
24	0	0	24	0	8	0	0	8	0	17:45	18	0	0	18	0	41	1	0	42	0	4	0	0	64	0	0	2	0	0	2	0	47	1	0	48	0	36	1	0	37	0	0	87	0	0
417	11	3	431	0	116	6	7	129	0	TOTAL	213	13	3	229	0	526	18	7	551	0	13	0	0	793	0	1	76	2	0	78	0	699	19	6	724	0	518	15	3	536	0	0	1338	0	0
160	3	2	165	0	45	1	3	49	0	PM Peak	78	5	3	86	0	198	7	7	212	0	2	0	0	300	0	0	31	1	0	32	0	248	6	3	257	0	184	5	1	190	0	0	479	0	0

TTM Data



TTM Reference: 17SYD0096
Location: Gwydir Hwy & Tingha Rd
Suburb: Inerell

AM Peak: 1100-1200

Date: Saturday, 29 July 2017
Suney Duration: 1030-1230

Weather: Fine

Notes:

Southern Approach: Tingha Rd										Eastern Approach: Gwydir Hwy										Western Approach: Gwydir Hwy																			
Left					Straight					Right					Left					Straight					Right														
Light	Heavy	Bus	Total	Cycle	Light	Heavy	Bus	Total	Cycle	Light	Heavy	Bus	Total	Cycle	Light	Heavy	Bus	Total	Cycle	Light	Heavy	Bus	Total	Cycle	Light	Heavy	Bus	Total	Cycle	Light	Heavy	Bus	Total	Cycle	Peds				
41	0	0	41	0	9	3	0	12	0	4	0	0	4	0	0	57	0	1	58	0	2	1	0	3	0	90	0	0	8	0	36	0	30	2	0	76	0	0	
64	0	0	64	0	12	1	0	13	0	13	0	0	13	0	0	90	0	0	90	0	0	0	0	0	58	0	0	6	1	0	45	0	45	2	0	99	0	0	
62	1	0	63	0	10	1	0	11	0	12	1	0	13	0	0	87	0	0	87	0	1	0	0	1	0	62	0	0	9	0	41	0	30	1	0	81	0	0	
66	0	0	66	0	11	3	0	14	0	10	2	0	12	0	0	92	0	0	92	0	1	0	0	1	0	56	0	0	2	0	39	0	50	1	0	92	0	0	
60	0	0	60	0	15	0	0	15	0	14	1	0	15	0	0	90	0	0	90	0	0	0	0	0	60	0	0	2	1	0	3	0	39	0	0	39	0	0	
54	0	0	54	0	8	0	0	8	0	16	1	0	17	0	0	79	0	0	79	0	1	0	0	1	0	68	0	0	4	0	52	0	41	1	0	98	0	0	
60	1	0	61	0	9	1	0	10	0	20	0	0	20	0	0	91	0	1	91	0	1	0	0	1	0	58	0	0	9	1	0	40	0	43	3	0	96	0	0
50	0	0	50	0	11	1	0	12	0	15	0	0	15	0	0	77	0	1	77	0	2	0	0	2	0	48	0	0	6	0	48	0	23	0	0	77	0	0	
457	2	0	459	0	85	10	0	95	0	102	7	0	109	0	0	663	0	3	663	0	8	1	0	9	0	500	0	0	46	3	0	49	0	351	1	0	311	0	0
242	1	0	243	0	44	4	0	48	0	52	5	0	57	0	0	348	0	0	348	0	3	0	0	3	0	246	0	0	17	1	0	18	0	182	1	0	183	0	0