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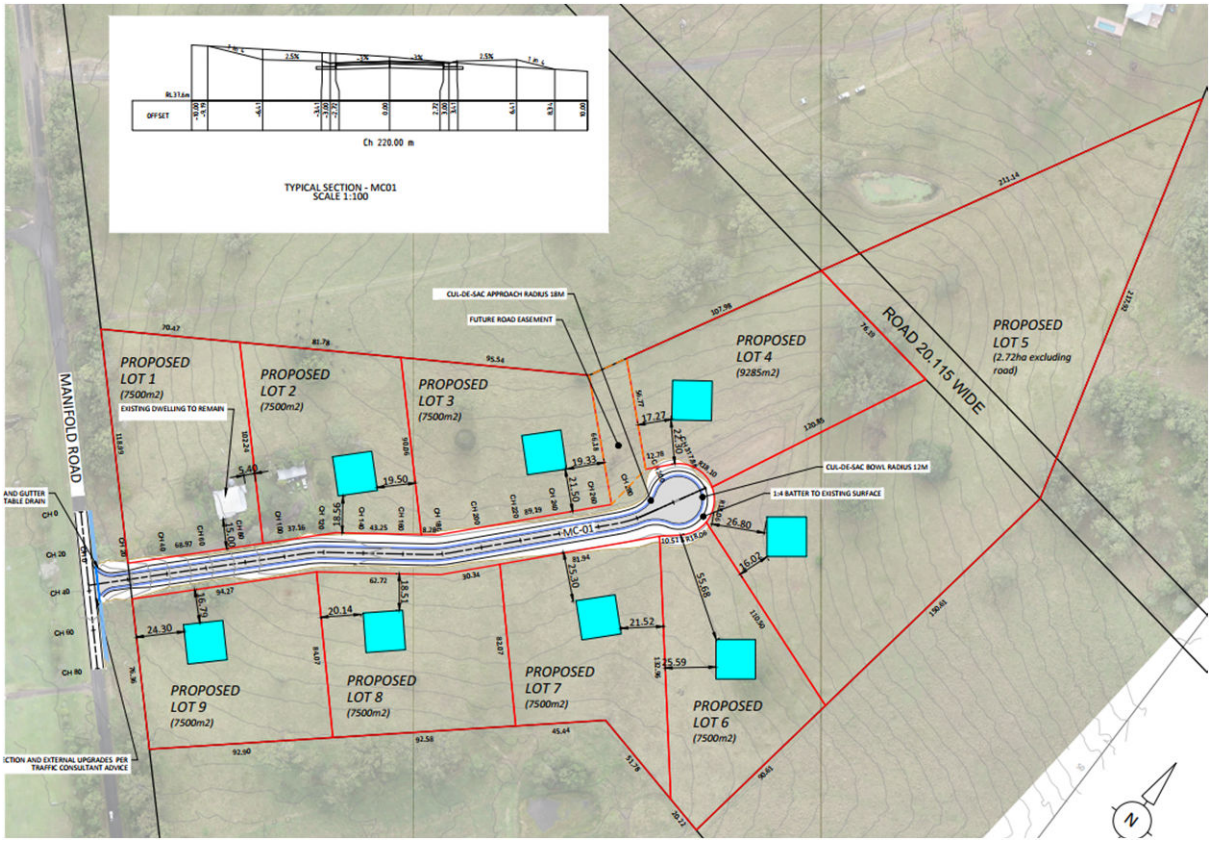
TRAFFIC IMPACT ASSESSMENT REPORT

70 Manifold Road, North Casino

Proposed Residential Subdivision



Our Reference: P070.03R

Your Reference:

Date: 16 August 2024

Version Control

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P070.01R – 70 Manifold Road, North Casino TIA	FINAL	DJ	AB	AB	8 December 2023	lfittock@ndc.com.au
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P070.03R – 70 Manifold Road, North Casino TIA	FINAL	DJ	AB	AB	23 October 2024	lfittock@ndc.com.au

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1 INTRODUCTION

1.1 Preamble

ABTT Consulting has been engaged by Jestermond Pty Ltd to prepare a Traffic Impact Assessment for its proposed large lot residential subdivision located at 70 Manifold Road in North Casino, NSW.

This report forms part of a Rezoning Application to be lodged with Richmond Valley Council (RVC). The following issues have been addressed as part of the study:

- Site access arrangements;
- Traffic impacts on local road network;
- Internal road network design;
- Provision for service vehicle access.

1.2 Scope

The scope of this assessment includes:

- Assessment of development traffic generation and its impact on the local road network;
- Review of the function and capacity of the adjacent road network to accommodate the proposal;
- A review of the proposed access and internal geometry.

1.3 Statutory Requirements

The statutory and regulatory guidelines to be encompassed in the development design to ensure effective, appropriate and safe use by all users will be in accordance with:

- Richmond Valley Council Development Control Plan (DCP) 2021;
- Northern Rivers Local Government Development Design and Construction Manual;
- Austroads Guide to Road Design;
- RMS Guide to Traffic Generating Development;
- Other documents and data as referenced in the report.

2 EXISTING CONDITIONS

2.1 Location of Subject Site

As shown in Figure 2.1, the subject site is located on the eastern side of Manifold Road, approximately 450 metres north of the Manifold Road / Musgraves Road intersection. The site is formally identified as Lot 21 on DP601461 and has an area of approximately 9.7 hectares. Given the site's proximity to the Casino Christian School, Manifold Road is subject to a reduced speed operating limit during school periods. As shown in Figure 2.2, the site is located within the RU1 - Primary Production zone and is currently occupied by a detached dwelling.

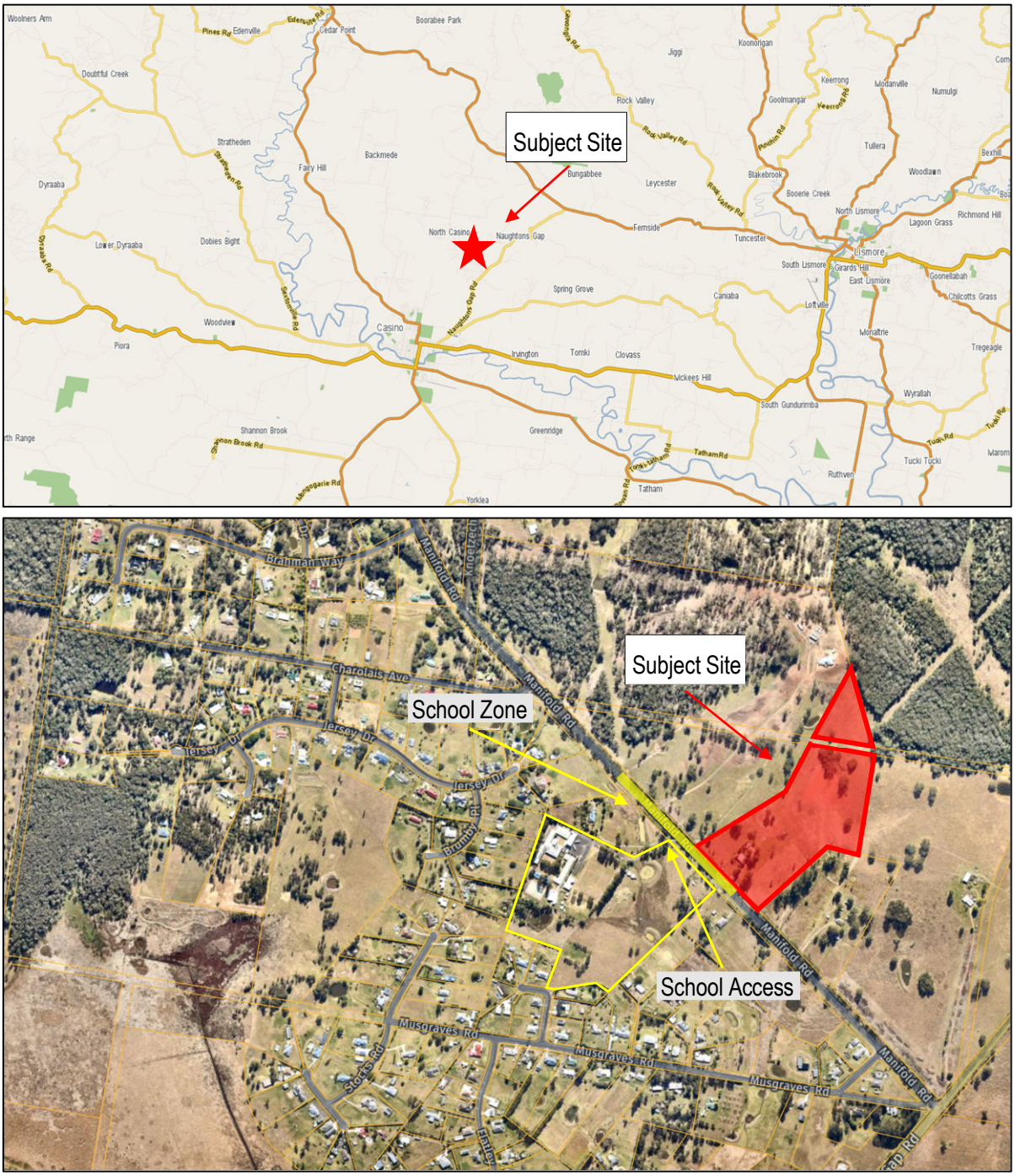


Figure 2.1: Location of Subject Site

[Source: Street Directory & Nearmap]

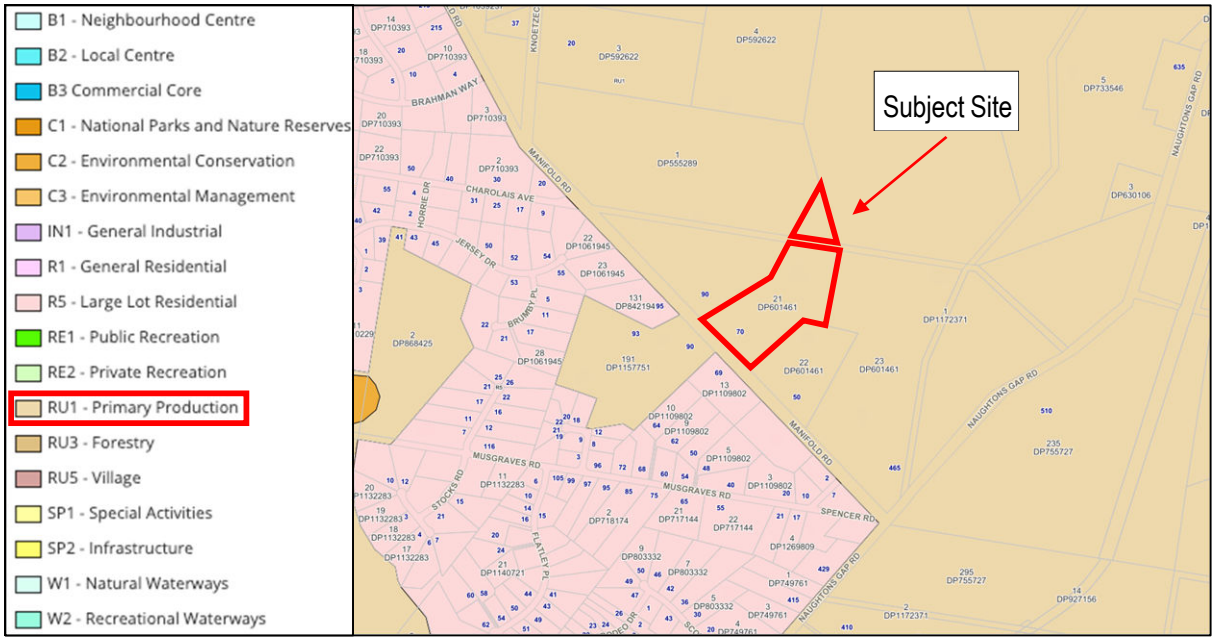


Figure 2.2: Zoning Map

[Source: Richmond Valley DCP]

2.2 Road Network

As shown in Figure 2.3, the site gains access off Manifold Road which is classed as rural sealed Council road. Adjacent to the site, Manifold Road is subject to a posted speed limit of 80 km/h, with school zone speed limit of 40 km/h enforced 8:00 am – 9:30 am and 2:30 pm – 4:00 pm on school days (Figure 2.4). Manifold Road comprises of an approximately 6.5 metres wide undivided carriageway with one traffic lane in each direction.

Manifold Road intersects with Musgraves Road approximately 450 metres south of the site via a priority controlled T-intersection. Manifold Road forms the primary approach of the intersection with only basic turning provisions to Musgraves Road.

Image of Manifold Road along frontage of the site is provided in Figure 2.5 and aerial image of the Manifold Road / Musgraves Road intersection in Figure 2.6.

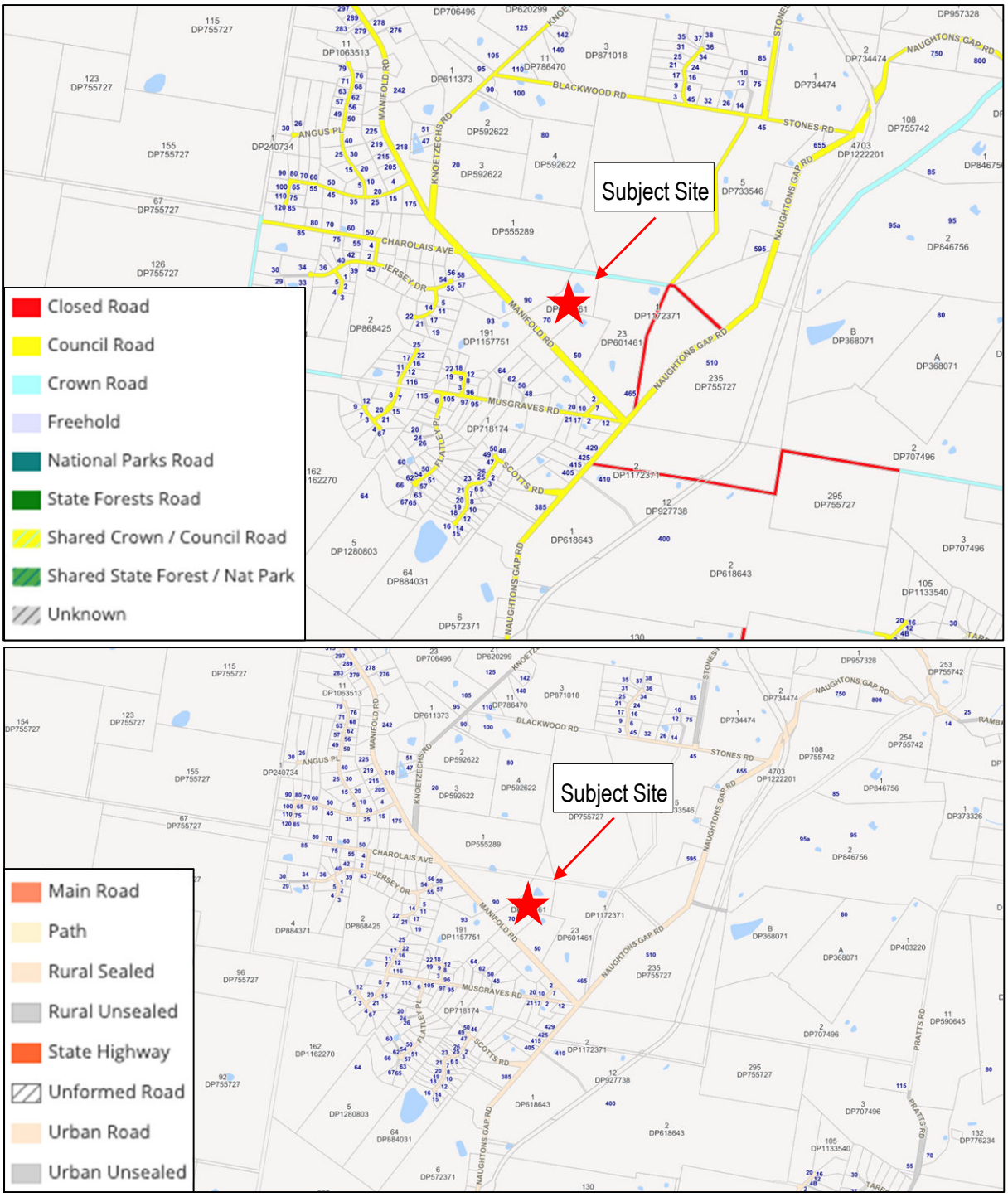


Figure 2.3: Adjacent Road Network Hierarchy and Characteristics

[Source: Richmond Valley DCP]

Figure 2.4: School Zone Signage and Linemarking Along Manifold Road

Figure 2.5: Image of Manifold Road Along the Frontage

Figure 2.6: Aerial Image of Manifold Road / Musgraves Road Intersection

[Source: Nearmap]

2.3 Surveyed Traffic Volumes

Peak hour traffic survey has been carried out at the Manifold Road / Musgraves Road intersection on 26 October 2023. A summary of the surveyed peak hour periods is shown in Figure 2.7, with the full survey results provided as Appendix A.

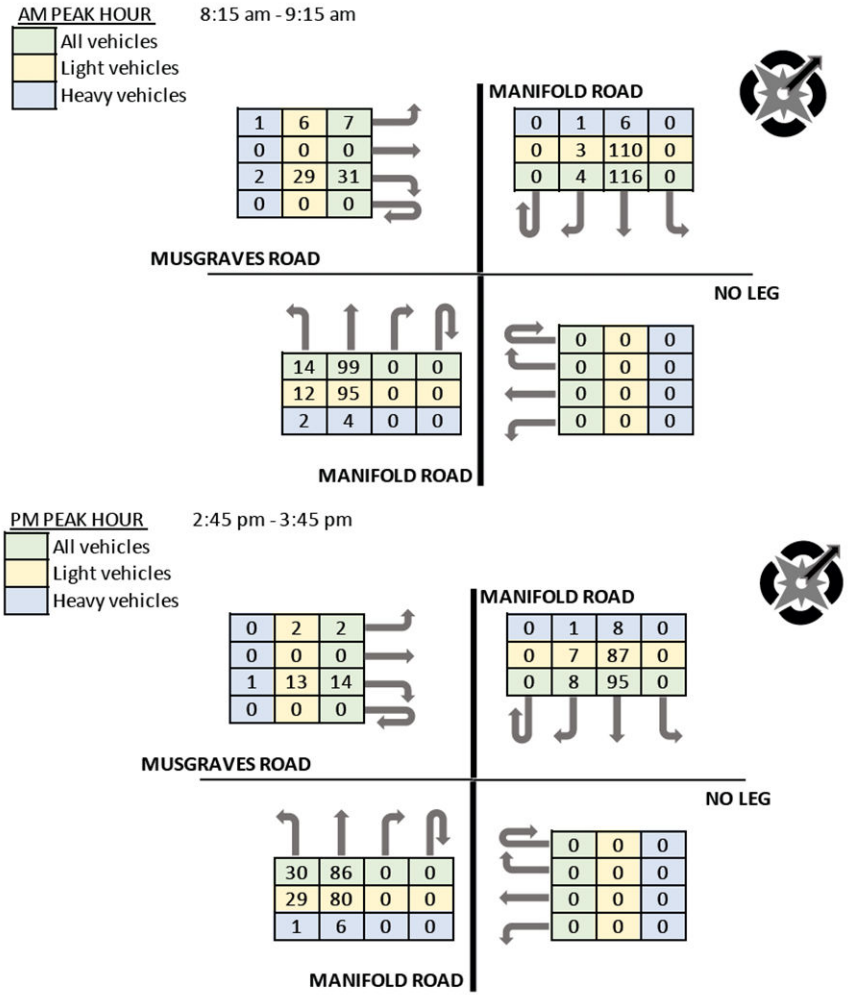


Figure 2.7: Surveyed Peak Hour Traffic Volumes

(Manifold Road / Musgraves Road Intersection)

2.4 Alternative Transport Facilities

Public Transport

There are no bus stops or other public transport facilities located within comfortable walking distance of the site.

Active Transport

Given the location of the subject side, being in a rural area, there is no dedicated pedestrian or cyclist facilities.

3 DESCRIPTION OF PROPOSED DEVELOPMENT

3.1 Development Proposal

The proposed plan of development is for a large lot residential subdivision consisting of 9 lots. The lots have been designed with a minimum area of 7,500m^2, with the largest lot providing an area of 26,840 m^2, as follows:

Lot 1: 7,500m^2

Lot 2: 7,500m^2

Lot 3: 7,500m^2

Lot 4: 9,285m^2

Lot 5: 26,840 m^2

Lot 6: 7,500m^2

Lot 7: 7,500m^2

Lot 8: 7,500m^2

Lot 9: 7,500m^2

The proposed plan of development is shown in Figure 3.1.

3.2 Vehicle Access

It is proposed that access to the subdivision will be gained via a new intersection off Manifold Road, at an approximate location of the current access. The access will be designed as a public road in accordance with the New South Wales Development Design Specifications – D1: Geometric Road Design.

3.3 Car Parking

Appropriate number of car parking spaces will be provided within each lot to satisfy Council's DCP.

3.4 Pedestrian and Cyclist Facilities

Given the location of the subject site, there is no pedestrian or cyclist facilities proposed to be established.

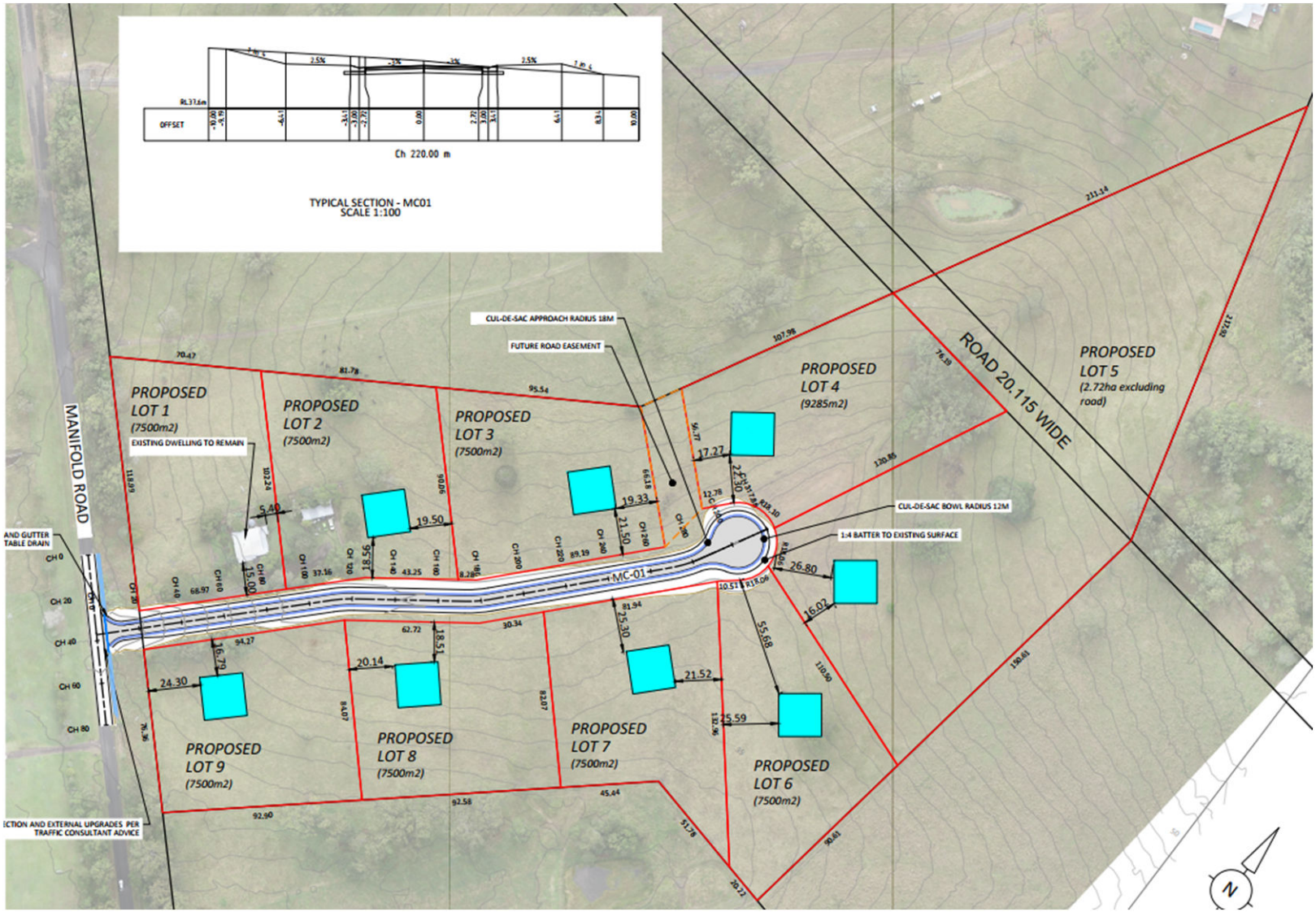


Figure 3.1: Proposed Site Plan

4 ROAD NETWORK IMPACT

4.1 Traffic Generation

Traffic generation of the proposed plan of development has been estimated by adopting the regional average trip rates for Low Density Residential Dwellings specified in the TfNSW Technical Direction 4a – Updated Traffic Surveys. The below traffic generation estimates are applicable for proposed use:

Morning Peak: 0.71 trips / dwelling

Afternoon Peak: 0.78 trips / dwelling

Daily Vehicle Trips: 7.4 trips / dwelling

Based on the above, it is estimated that the proposal will generate the following trips:

Table 4.1: Development Traffic Estimate

Component	AM Peak Hour			PM Peak Hour			Daily Rate
	IN	OUT	TOTAL	IN	OUT	TOTAL	TOTAL
Dwellings (9)	2	5	**7**	5	3	**8**	**67 trips**

*Peak hour distribution – AM: 20/80, PM: 60/40

4.2 Traffic Distribution

Based on the location of the site in the context of the surrounding road network, residential and commercial catchment areas, it is expected that traffic to and from the development will distribute as follows:

To / from the site from the north: 20%

To / from the site from the south: 80%

Based on the above, peak hour traffic distribution to the south is estimated to be in the order of 6 vehicle trips. The resultant traffic generation estimate is considered to be low in the context of the adjacent road network and does not trigger the need for a detailed assessment of impacts on the wider road network. Development traffic distribution is diagrammatically presented in Figure 4.1, with design traffic conditions at opening year (2024) and 10-year design horizon shown in Figure 4.2.

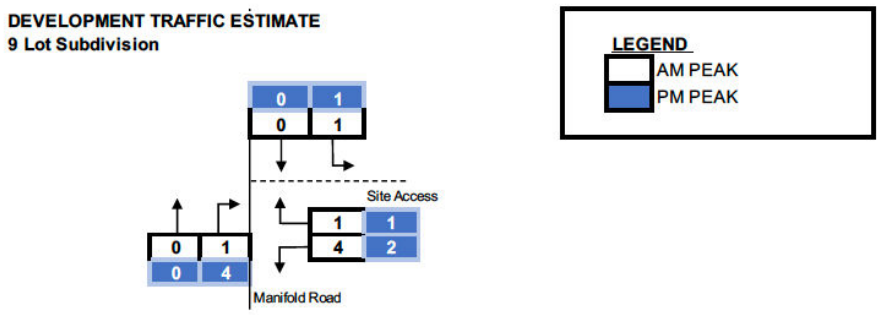


Figure 4.1 – Development Traffic

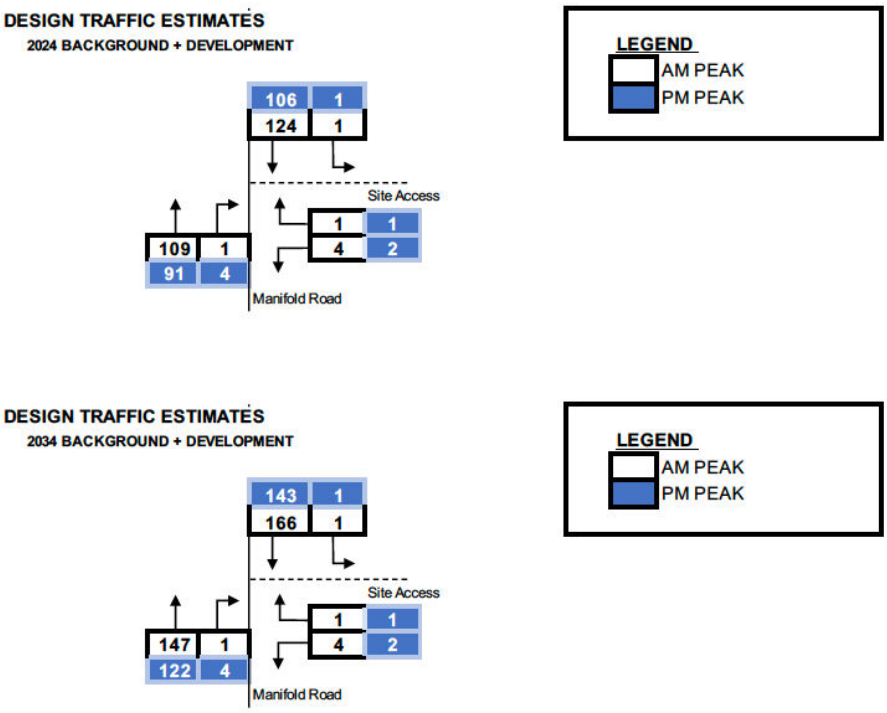


Figure 4.2 – Design Traffic Estimates in Year 2024 and Year 2034

4.3 Traffic Impact

The capacity of the existing roadway has been assessed against the surveyed background traffic volumes summarised in Section 2. In accordance with the RMS Guide to Traffic Generating Developments, peak hour traffic estimates generally consist of 10% of daily traffic demand. Application of this, Manifold Road is estimated to be subject to an Annual Average Daily Traffic (AADT) of 2,000 – 2,300 vehicles.

As shown in Figure 4.3, an extract from the Northern Rivers Local Development Guidelines (Table T1.27), the standard for major roads accommodating an Annual Average Daily Traffic (AADT) exceeding 1,000 vehicles necessitates a pavement width of 7.5 metres. Additionally, a 1.5 metre wide shoulder is also required on each side of the roadway to ensure adequate safety and operational efficiency.

As shown in Figure 4.4, the current formation of Manifold Road along the frontage provides a sealed width of approximately 6.5 metres.

It is noted that the proposed development is estimated to result in an added daily traffic demand of 67 trips resulting in an AADT of up to 2,367 vehicles. In the context of the existing background traffic demand the proposal equates of an increase of approximately 2.9%.

Whilst the proposed increase in background traffic demand is considered to be low, it is expected that minor modification of the frontage will be required to be carried out to a ‘major road’ formation comprising of a 7.5 metre wide seal and 1.5 metre verge on each side, and basic turn treatments (BAR and BAL) suitable for the design traffic speed in accordance with Austroads part 4A. It is noted that a development of a similar scale is proposed (as part of a separate application) over the adjacent property over 90 Manifold Road. It is proposed that the work associated with the site will extend to the frontage of the subject lot, with the design suitable to tie into the existing or planned formation of the road to the north if developed.

It should be noted that these requirements would be expected to be attributed to any new development application and not this rezoning application.

Local Government Area	Minor no through road up to 150 AADT	Minor road up to 1000 AADT	Major road over 1000 AADT	Rural Residential
Ballina **Byron** **Kyogle** **Richmond Valley** **Clarence Valley**	6m seal 0.5m shoulders	150 – 500 AADT 6m seal 1m shoulders 500 – 1000 AADT 7m seal 1.0m shoulders	7.5m seal 1.5m shoulders	6m seal 1m shoulders
Lismore	See City of Lismore Development Control Plan No. 28 - Subdivision			

2. Carriageway width to existing road shall generally be in accordance with Table T1.27 but shall be assessed on merit for individual applications for a reduced standard at the discretion of the Director of Engineering Services or delegated officer

Figure 4.3 – Carriageway and Seal Width for Rural Roads

(Source: Development and Subdivision of Land – Development Design Specifications)

Figure 4.4 – Existing Geometry

(Source: Site Measurement)

5 ACCESS ARRANGEMENTS

5.1 Access Location

Access to the site is proposed to be provided at the approximate location of the existing driveway. The design of the access is intended to be in the form of an intersection. Given the lower order road function of the internal roadway, it is considered appropriate that the intersection be designed with 13 metre kerb returns. Such will generally accommodate the turning radius for a waste collection vehicle, and allows occasional access by larger service truck which will occupy the full with of the roadway when entering.

5.2 Access Design

A turn warrants analysis has been carried out at the proposed access intersection at the anticipated completion of the project in year 2024 as well as at the 10 year design horizon (year 2034).

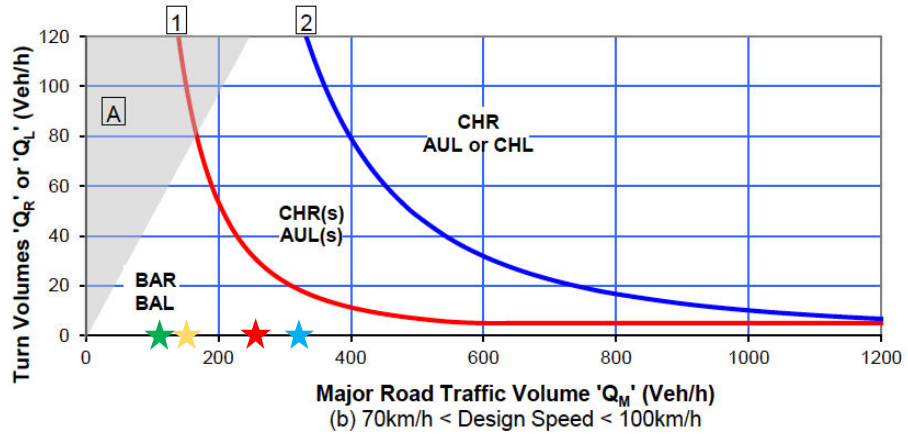
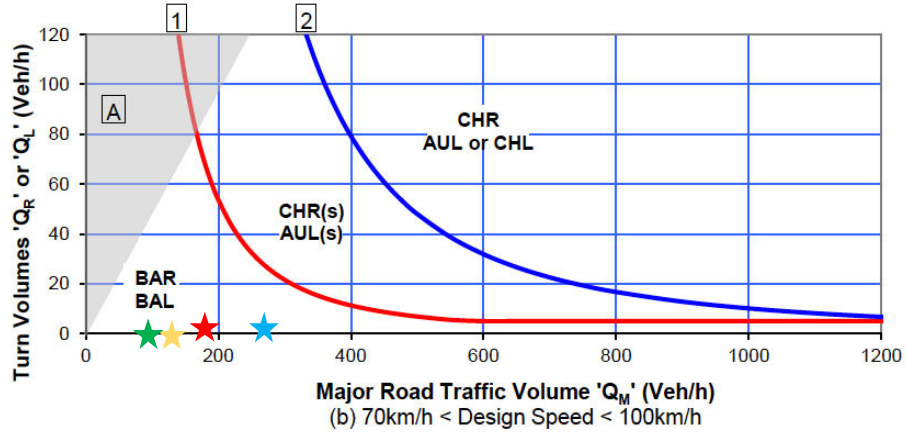
The analysis has been carried out in accordance with the Austroads Guide to Traffic Management Part 6 for a posted speed limit of 80 km/h and the design traffic volumes shown in Figure 4.2. As shown in Table 5.1, the following turn treatments are warranted at the proposed access intersection:

Left turn:	Basic left turn (BAL) treatment
Right turn:	Basic right turn (BAR) treatment

Functional layout of the proposed access is shown in Figure 5.1. It is noted that the proposed arrangements overlap the existing speed reduction treatment associated with the upstream school. The road authorities may need to consider extending the school zone so that it resides outside the area of influence of the developments access intersection.

For constructability purposes an alternative may be to widen to a standard formation width as shown in Figure 5.2.

Table 5.1: Turn Warrants Analysis

Warrants Analysis Diagram	2024 Design Traffic	2034 Design Traffic
Morning Peak Hour 	★ Left turn warrant (2024): Q_M – 124 trips Q_L – 1 trip ★ Right turn warrant (2024): Q_M – 234 trips Q_R – 1 trip	★ Left turn warrant (2034): Q_M – 166trips Q_L – 1 trip ★ Right turn warrant (2034): Q_M – 314 trips Q_R – 1 trip
Afternoon Peak Hour 	★ Left turn warrant (2024): Q_M – 106 trips Q_L – 1 trip ★ Right turn warrant (2024): Q_M – 198 trips Q_R – 4 trips	★ Left turn warrant (2034): Q_M – 143 trips Q_L – 1 trip ★ Right turn warrant (2034): Q_M – 266 trips Q_R – 4 trips

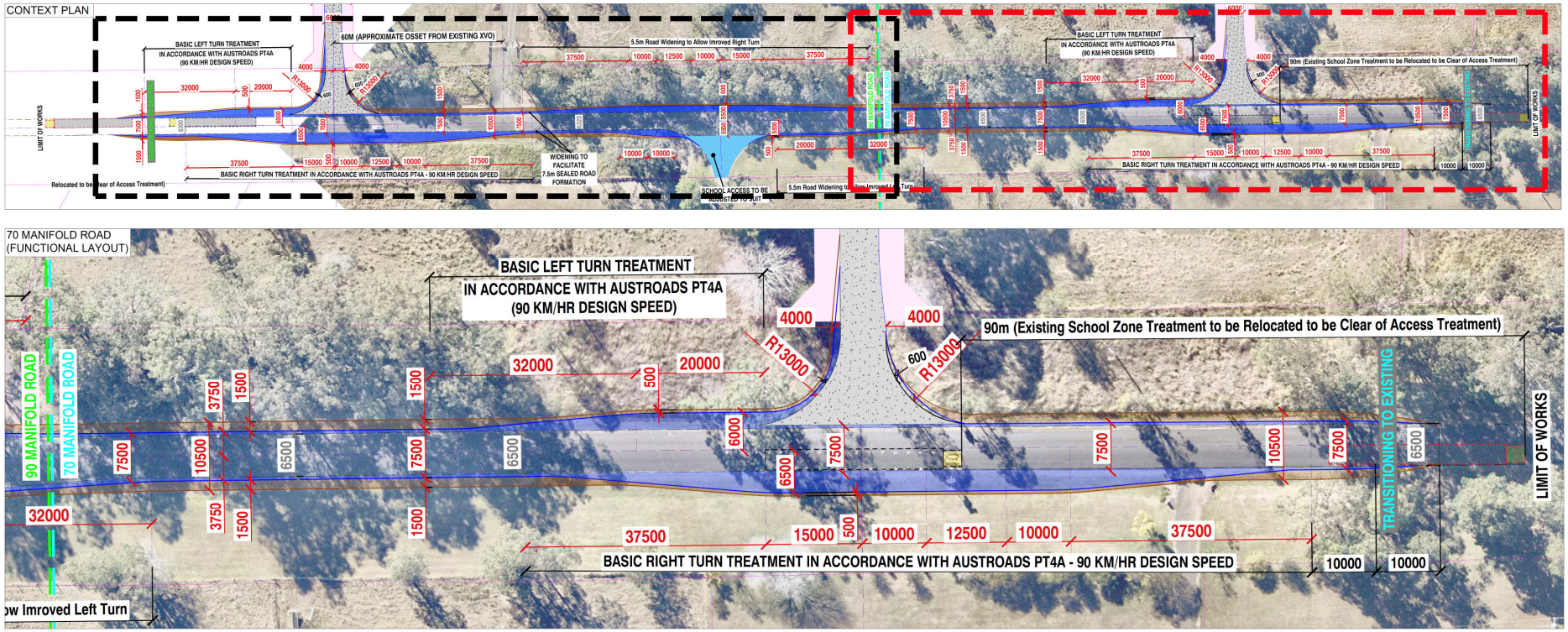


Figure 5.1 – Access Design

(70 Manifold Road)

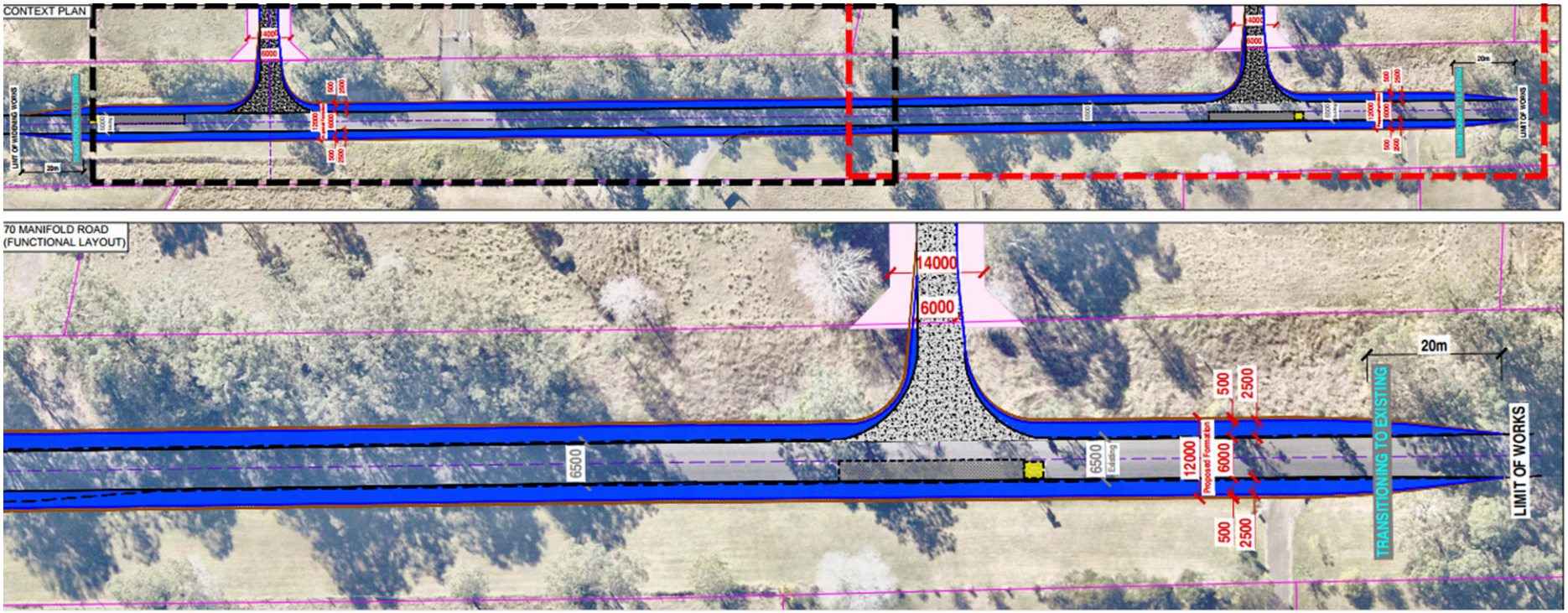


Figure 5.2 – Access Design (Alternate Option)

(70 Manifold Road)

6 INTERNAL ROAD CONFIGURATION

6.1 Design Vehicle

The design vehicles anticipated for the subject development consists of waste collection vehicles, service / furniture delivery vehicles and commuter vehicles, as follows:

Regular Servicing: Waste Collection – 9.6m Side Loading Truck (EPA Guide)

Occasional Servicing: 12.5m Heavy Rigid Vehicle (HRV) (AS2890.2:2018)

Commuter Traffic: 99th Percentile Vehicle (AS2890.1:2004)

It is intended that the internal road network will accommodate the above design traffic. Swept path analysis of critical turns within the subdivision will be prepared in due course upon completion of the civil design of the internal road.

If required, 'No Stopping' parking restrictions will be introduced to ensure that turning areas are free of parked vehicles.

6.2 Internal Road Layout

It is proposed that the internal road network will be designed in accordance with the Northern Rivers Local Government (NRLG) Guideline for Developments and Subdivision of Land, 2006.

An extract from the document (Table D.15) is reproduced below in Figure 6.1.

Road Type	Maximum Traffic Volume (vpd) [1]	Maximum Speed [2] (km/h)	Carriageway Width (m)[3][10] Min	Parking Provisions Within Road Reserve	Kerbing [4]	Footpath Requirement [15] minimum	Bicycle path Requirement	Verge Width (m) minimum (each side)	Minimum Road Reserve Width (m)
Access Street	100	40	6	Carriageway	Mountable	No	No	3	14
Local Street	2000	50	7-9	Carriageway	Mountable	Network Dependent	Network Dependent	3.5	15-17
Collector Street	3000	50	11	Carriageway	Mountable	One side [16]	Network Dependent	3.5	18
Distributor Road	3000+	60	13	Carriageway	Upright	One Side	Network Dependent	3.5	20

NOTES:

1. For single dwelling allotments apply traffic generation rate of 10 vehicles per day (vpd)/allotment (equivalent to approximately one vehicle per hour (vph) in the peak hour) unless a lower rate can be demonstrated. Lower rates can be applied to multi-unit dwellings based on locally derived rates.
2. See Clauses D1.09 and D1.11 on designing for specific operating speeds.
3. Widening required at bends to allow for wider vehicle paths (using AUSTROADS Turning Templates).
4. Where kerbing is not required a flush pavement edge treatment can be used. Maximum carriageway widths required if barrier kerbing used.
5. Requires:
   (i) Provision for widening to 5.0m if necessary in the future.
   (ii) Verge parking as noted with scope for additional spaces.
6. Minimum width required to provide for pedestrians, services, drainage, landscape and preservation of existing trees. Add additional width on one side for future widening of carriageway to 5.0m if required. For two lane carriageway design, no provision for widening required.
7. A minimum of one footpath on one side of the street to be constructed initially with provision to construct a second footpath if required by residents in the future.
8. Reduced speeds are required at designated pedestrian/bicycle crossing. A speed of 20 km/h is desirable, achieved by the road design principles outlined in this Specification.
9. Barrier kerbing may be used if required for drainage purposes without reducing the carriageway width.
10. On bus routes, 7.0m travelled way with 2.0m wide indented parking and bus bays defined by kerbed protuberances. Where bicycle way can be anticipated, a bicycle lane is required along the kerb.
11. Speed on Distributor road not to exceed legal limit.
12. If required, to be provided in parking areas which can be exited in a forward direction.
13. Required only if part of a pedestrian/bicycle network.
14. Provide adequate road reserve width for widening of carriageway for future bus route if required.
15. Minimum widths required are in Table D9.1

Figure 6.1 – Geometric Road Design

(Source: Development and Subdivision of Land – Development Design Specifications D1)

As discussed in Section 4.1, the proposal is estimated to generate a demand for 67 vehicles per day (VPD). Based on this, the internal road network formation is proposed to be designed to an 'Access Street' standard, providing a minimum carriageway width of 6 metres and a reserve of 14 metres. Vertical and horizontal geometry of the proposed access road will be carried out as part of detailed civil design, addressing sight distance, grades and environmental impacts.

Cross section of a typical road formation expected to be included as part of any future Development Application is shown in Figure 6.2.

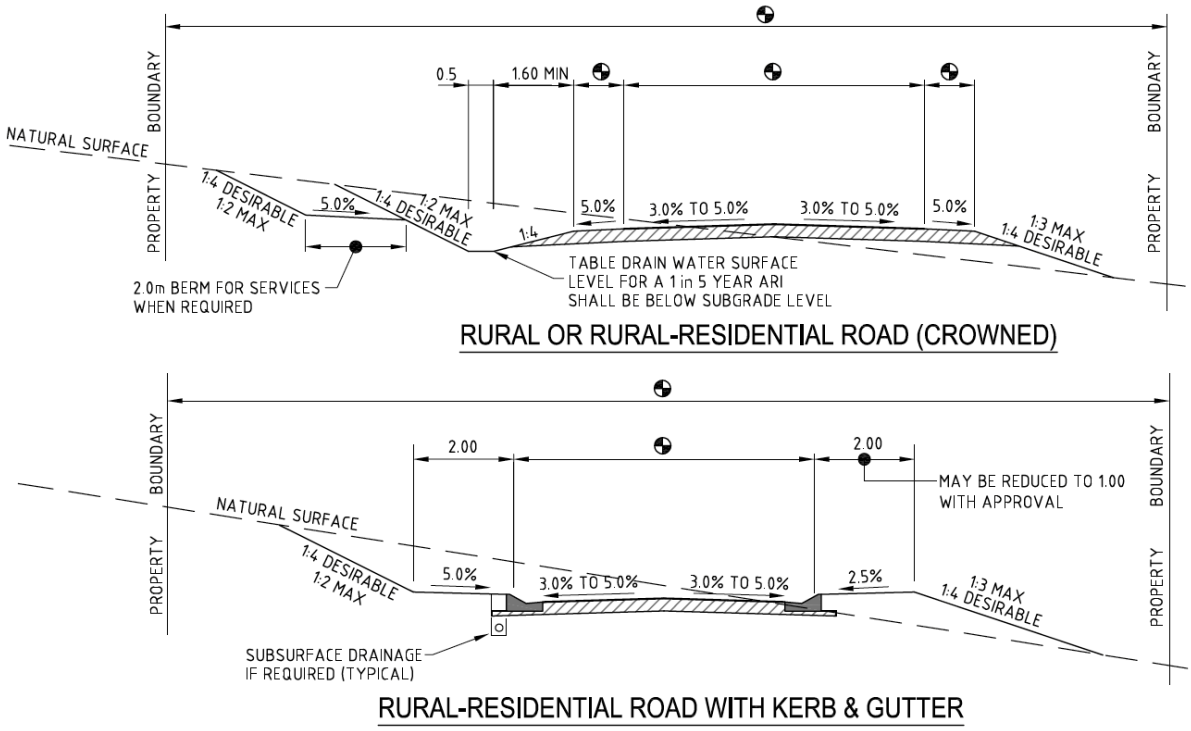


Figure 6.2 – Typical Cross Section: Rural Residential Road Formation

(Source: Northern Rivers Local Government Standard Drawing R-13)

6.3 Turning Provision

Given the scale of the proposed development, and relatively small volume of traffic generated along the internal network, a hammerhead turning arrangement is considered appropriate to facilitate the design vehicle turning at the end of the internal roadway. In accordance with the NRLG Guideline for Development and Subdivision of Land, a Type A facility as depicted in Figure 6.3 is proposed to be provided along the frontage of the rear lots.

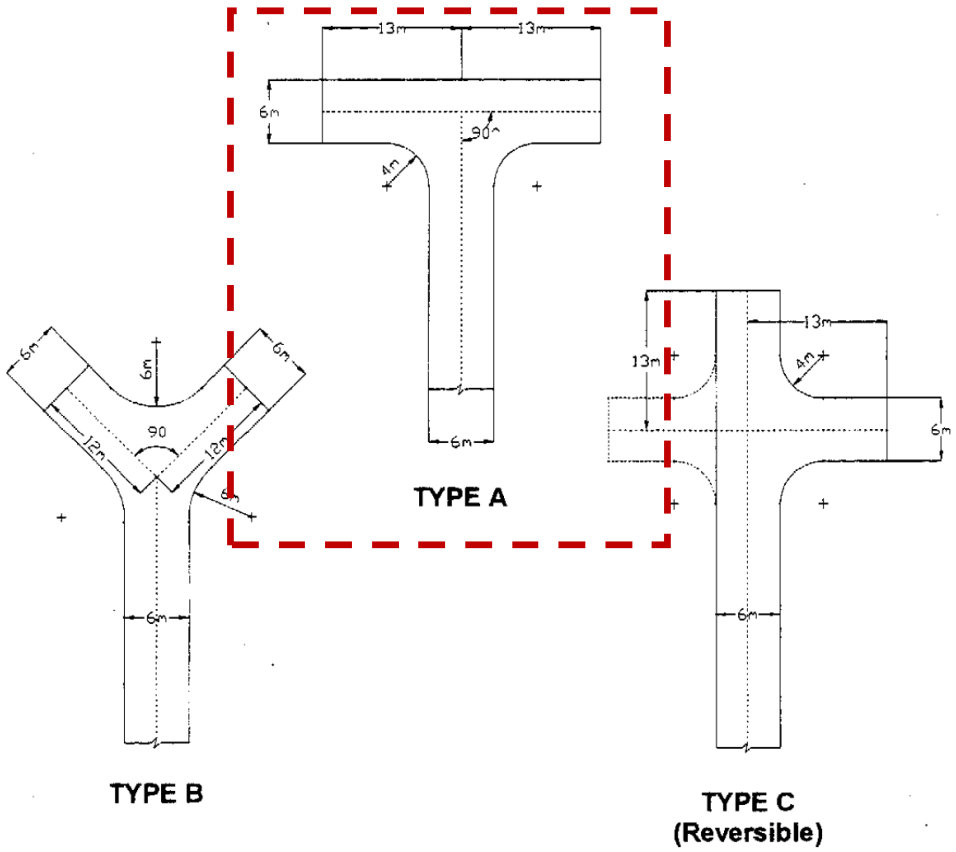


Figure 6.3 – Hammerhead Turn Area Treatment

(Source: Development and Subdivision of Land – Development Design Specifications D1)

7 SAFETY ASSESSMENT

7.1 Crash Data Evaluation

Crash data evaluation for the past five years (2018-2022) has been carried out along Manifold Road. Based on the information available from the TfNSW for Road Safety web-site and Open Data Portal, accident rates in the proximity of site are relatively low, with only two incidents recorded; one resulting in minor injury and the other in serious and moderate injury. Whilst these incidents occurred along Manifold Road, they are not within 200m of the proposed access. It is therefore considered that there are no safety concerns with regard to the alignment of the frontage road.

A summary of the recorded incidents is provided in Table 7.1, with the locations of the incidents relative to the subject site shown indicatively in Figure 7.1.

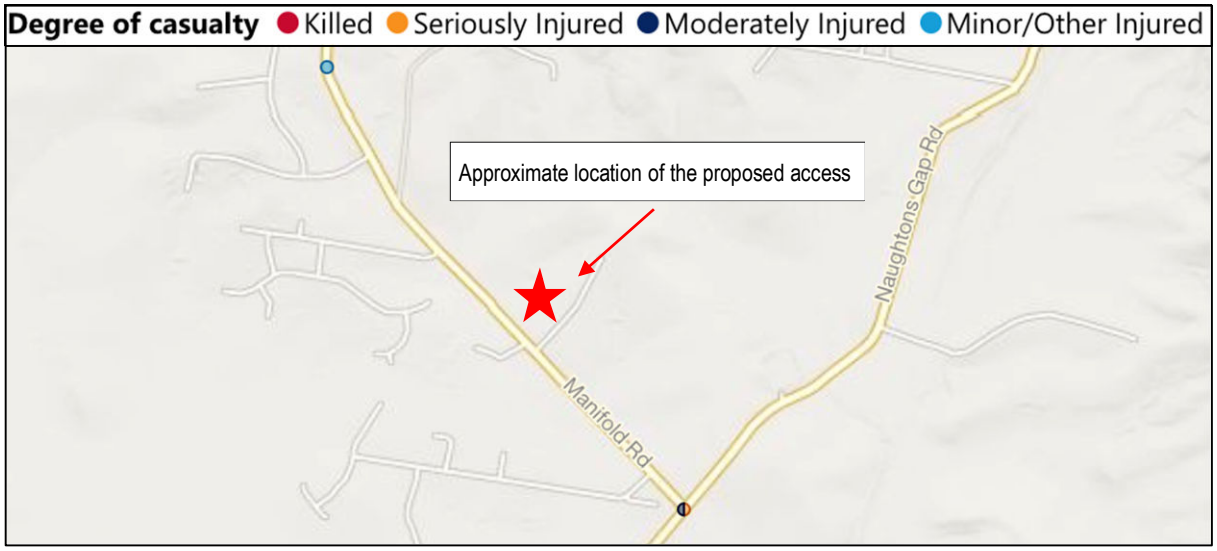


Figure 7.1: Crash Location Map

[Source: Transport for NSW]

Table 7.1: Crash Summary

Year	Crash ID	Degree of crash	Description	Type of location	Natural lighting	Number Injured
2018	1162177	Serious Injury and Moderate Injury	Adj – left -thru from right	T-junction	Daylight - Fine	2
2022	1305268	Minor / Other Injury	Off cway right bend	2-way undivided	Daylight - Raining	1

7.2 Sight Distance Assessment

A desktop sight distance assessment has been prepared at the existing access in accordance with Austroads Part 4A. The analysis adopts a sight distance of 214 metres based on a design speed limit of 90 km/ hr. As shown in Figure 7.2, whilst horizontal sight lines are achievable with partial vegetation clearing / trimming, the vertical geometry when facing to the north will be reviewed upon completion of the civil plan. As shown, view line to the south of the driveway is generally unobstructed with straight and level alignment of Manifold Road.

Figure 7.2 – Sight Distance Assessment (Desktop Review)

8 CONCLUSIONS

ABTT Consulting has been engaged by Jestermond Pty Ltd to prepare a Traffic Impact Assessment for its proposed large lot residential subdivision in North Casino. Key conclusions from the assessment were as follows:

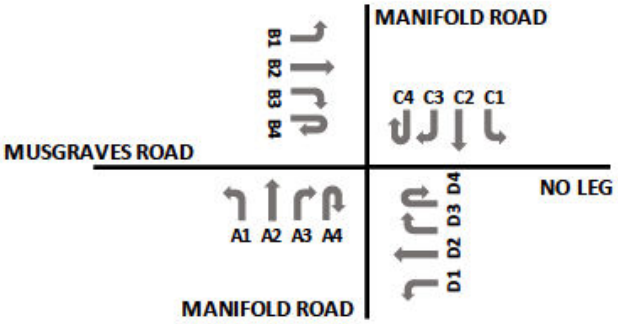
- The subject site is located on the eastern side of Manifold Road, approximately 450 metres north of the Manifold Road / Musgraves Road intersection. The site is formally identified as Lot 21 on DP601461 and has an area of approximately 9.7 hectares. The site is located within the RU1 - Primary Production zone and is currently occupied by a detached dwelling.
- The proposed plan of development is for a large lot residential subdivision consisting of 9 lots. The lots will have been designed with minimum area of 7,500m^2, with the largest lot providing an area of 26,840 m^2.
- It is proposed that access to the subdivision will be gained via a new intersection off Manifold Road, at an approximate location of the current access. The access will be designed as a public road in accordance with the New South Wales Development Design Specifications – D1: Geometric Road Design.
- Peak hour traffic distribution to the south of the subject site is estimated to be in the order of 6 vehicle trips. The resultant traffic generation estimate is considered to be low in the context of the adjacent road network and does not trigger the need for a detailed assessment of impacts on the wider road network.
- Manifold Road is estimated to be subject to an Annual Average Daily Traffic (AADT) of 2,000 – 2,300 vehicles. The geometric configuration of Manifold Road, particularly along the site's frontage, comprises of a seal width of approximately 6.5 metres, with minimal shoulders.
- Based on the anticipated increase in traffic demand, it is proposed that Manifold Road along the frontage of the site be upgraded to provide the formation of a ‘major road’ comprising of a 7.5 metre wide seal with 1.5 metre wide shoulders on each side. As discussed in Section 5, it is proposed that the intersection with the site access will be designed to provide basic turn treatments on each approach in accordance with Austroads Part 4A.
- It is proposed that the internal road network will be designed in accordance with the Northern Rivers Local Government (NRLG) Guideline for Developments and Subdivision of Land, 2006. The internal road network will accommodate the design traffic mentioned in Section 6. Swept path analysis of critical turns within the subdivision will be prepared in due course upon completion of the civil design of the internal road.
- Crash data evaluation for the past five years (2018-2022) has been carried out along Manifold Road The analysis concludes that there are no safety concerns with regard to the alignment of the frontage road.
- A sight distance assessment at the proposed access location has been prepared in accordance with Austroads Part 4A. As discussed in Section 7, it is estimated that satisfactory view lines are achievable with minor vegetation clearing / trimming. However, a detailed assessment is to be carried out upon completion of the civil design of the proposed access.

APPENDIX A – TRAFFIC SURVEY DATA

INTERSECTION REFERENCE

SITE DETAIL

Method: TRAFFIC CAM SURVEY
Location: Manifold Rd / Musgraves Rd Intersection, North Casino NSW 2470
Survey Date: 26-Oct-23



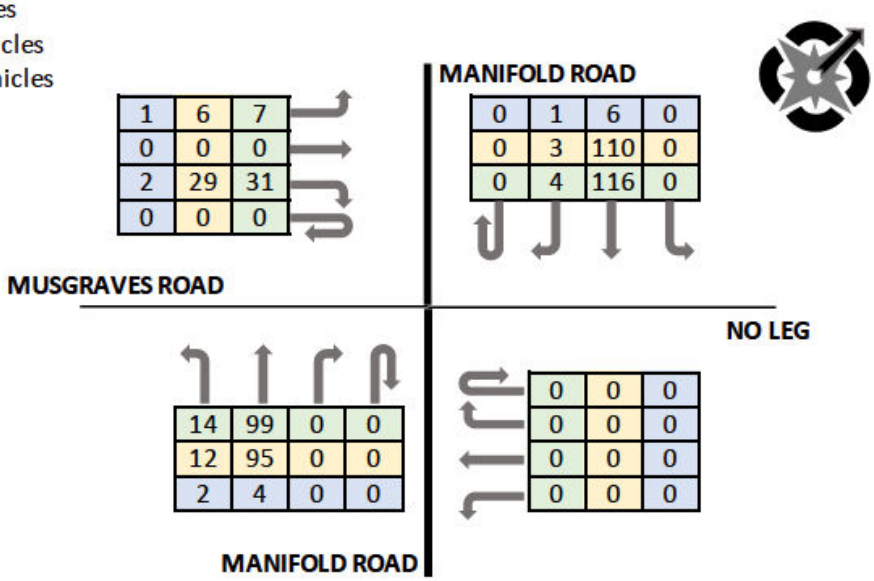
PEAK HOUR VOLUME SUMMARY

SITE DETAIL

SURVEY DATE: 26-Oct-23

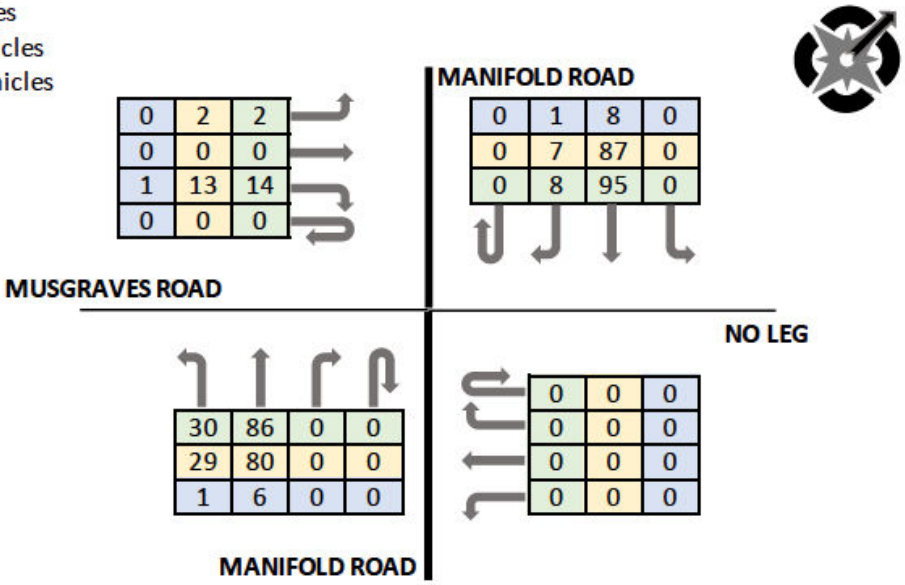
AM PEAK HOUR 8:15 am - 9:15 am

All vehicles
Light vehicles
Heavy vehicles



PM PEAK HOUR 2:45 pm - 3:45 pm

All vehicles
Light vehicles
Heavy vehicles



TRAFFIC SURVEY FORM

ZEKACORP

Method: TRAFFIC CAM SURVEY
Location: Manifold Rd / Musgraves Rd Intersection, North Casino NSW 2470

Survey Date: 26-Oct-23
Weather: Overcast / Rain

Class: Heavy Vehicle
Light Vehicle
All Vehicle Class

SURVEY PERIOD		
PEAK HOUR	AM	6:30 am - 9:30 am
	PM	2:30 pm - 5:30 pm
	AM	8:15 am - 9:15 am
	PM	2:45 pm - 3:45 pm

TIME (PERIOD END)	NORTHBOUND LEFT (A1)	NORTHBOUND THROUGH (A2)	NORTHBOUND RIGHT (A3)	NORTHBOUND U-TURN (A4)	EASTBOUND LEFT (B1)	EASTBOUND THROUGH (B2)	EASTBOUND RIGHT (B3)	EASTBOUND U-TURN (B4)	SOUTHBOUND LEFT (C1)	SOUTHBOUND THROUGH (C2)	SOUTHBOUND RIGHT (C3)	SOUTHBOUND U-TURN (C4)	WESTBOUND LEFT (D1)	WESTBOUND THROUGH (D2)	WESTBOUND RIGHT (D3)	WESTBOUND U-TURN (D4)	TOTAL	TOTAL HOUR
6:45	0	5			4		3			6	0						18	
7:00	2	8			0		1			9	0						20	
7:15	5	12			2		4			8	1						32	
7:30	0	2			6		1			14	1						24	94
7:45	3	8			3		10			18	2						44	120
8:00	4	6			2		5			20	1						38	138
8:15	1	13			5		6			17	1						43	149
8:30	5	27			1		12			37	1						83	208
8:45	1	22			1		8			22	2						56	220
9:00	6	34			3		6			37	0						86	268
9:15	2	16			2		5			20	1						46	271
9:30	4	15			0		7			10	1						37	225
14:45	5	21			2		6			12	0						46	
15:00	4	32			0		3			21	0						60	
15:15	6	15			0		6			37	2						66	
15:30	6	18			1		5			18	0						48	220
15:45	14	21			1		0			19	6						61	235
16:00	8	20			3		3			9	0						43	218
16:15	10	15			2		5			10	3						45	197
16:30	3	16			1		8			8	2						38	187
16:45	6	18			1		4			14	4						47	173
17:00	5	10			0		4			15	1						35	165
17:15	2	22			1		2			14	0						41	161
17:30	4	12			1		1			11	5						34	157
AM PEAK HR	14	99	0	0	7	0	31	0	0	116	4	0	0	0	0	0	271	
PM PEAK HR	30	86	0	0	2	0	14	0	0	95	8	0	0	0	0	0	235	

TRAFFIC SURVEY FORM

ZEKACORP

Method: TRAFFIC CAM SURVEY
Location: Manifold Rd / Musgraves Rd Intersection, North Casino NSW 2470

Survey Date: 26-Oct-23
Weather: Overcast / Rain

Class: Heavy Vehicle
Light Vehicle
All Vehicle Class

TIME (PERIOD END)	NORTHBOUND LEFT (A1)	NORTHBOUND THROUGH (A2)	NORTHBOUND RIGHT (A3)	NORTHBOUND U-TURN (A4)	EASTBOUND LEFT (B1)	EASTBOUND THROUGH (B2)	EASTBOUND RIGHT (B3)	EASTBOUND U-TURN (B4)	SOUTHBOUND LEFT (C1)	SOUTHBOUND THROUGH (C2)	SOUTHBOUND RIGHT (C3)	SOUTHBOUND U-TURN (C4)	WESTBOUND LEFT (D1)	WESTBOUND THROUGH (D2)	WESTBOUND RIGHT (D3)	WESTBOUND U-TURN (D4)	TOTAL	TOTAL HOUR
6:45	0	4			4		2			6	0						16	
7:00	2	8			0		1			9	0						20	
7:15	4	12			2		4			7	1						30	
7:30	0	2			6		1			13	1						23	89
7:45	2	8			2		10			17	2						41	114
8:00	4	6			2		5			19	1						37	131
8:15	1	12			5		6			16	1						41	142
8:30	4	27			1		11			35	0						78	197
8:45	1	21			1		8			21	2						54	210
9:00	5	33			2		6			36	0						82	255
9:15	2	14			2		4			18	1						41	255
9:30	3	15			0		7			10	1						36	213
14:45	4	18			2		5			11	0						40	
15:00	4	28			0		3			19	0						54	
15:15	6	15			0		5			31	1						58	
15:30	6	17			1		5			18	0						47	199
15:45	13	20			1		0			19	6						59	218
16:00	7	20			2		2			9	0						40	204
16:15	10	14			2		3			10	2						41	187
16:30	3	16			1		7			7	2						36	176
16:45	6	16			1		3			14	4						44	161
17:00	4	10			0		4			15	1						34	155
17:15	2	22			1		2			14	0						41	155
17:30	3	11			1		1			11	5						32	151
AM PEAK HR	12	95	0	0	6	0	29	0	0	110	3	0	0	0	0	0	255	
PM PEAK HR	29	80	0	0	2	0	13	0	0	87	7	0	0	0	0	0	218	

TRAFFIC SURVEY FORM

ZEKACORP

Method: TRAFFIC CAM SURVEY
Location: Manifold Rd / Musgraves Rd Intersection, North Casino NSW 2470

Survey Date: 26-Oct-23
Weather: Overcast / Rain

Class: Heavy Vehicle
Light Vehicle
All Vehicle Class

TIME (PERIOD END)	NORTHBOUND LEFT (A1)	NORTHBOUND THROUGH (A2)	NORTHBOUND RIGHT (A3)	NORTHBOUND U-TURN (A4)	EASTBOUND LEFT (B1)	EASTBOUND THROUGH (B2)	EASTBOUND RIGHT (B3)	EASTBOUND U-TURN (B4)	SOUTHBOUND LEFT (C1)	SOUTHBOUND THROUGH (C2)	SOUTHBOUND RIGHT (C3)	SOUTHBOUND U-TURN (C4)	WESTBOUND LEFT (D1)	WESTBOUND THROUGH (D2)	WESTBOUND RIGHT (D3)	WESTBOUND U-TURN (D4)	TOTAL	TOTAL HOUR
6:45	0	1			0		1			0	0						2	
7:00	0	0			0		0			0	0						0	
7:15	1	0			0		0			1	0						2	
7:30	0	0			0		0			1	0						1	5
7:45	1	0			1		0			1	0						3	6
8:00	0	0			0		0			1	0						1	7
8:15	0	1			0		0			1	0						2	7
8:30	1	0			0		1			2	1						5	11
8:45	0	1			0		0			1	0						2	10
9:00	1	1			1		0			1	0						4	13
9:15	0	2			0		1			2	0						5	16
9:30	1	0			0		0			0	0						1	12
14:45	1	3			0		1			1	0						6	
15:00	0	4			0		0			2	0						6	
15:15	0	0			0		1			6	1						8	
15:30	0	1			0		0			0	0						1	21
15:45	1	1			0		0			0	0						2	17
16:00	1	0			1		1			0	0						3	14
16:15	0	1			0		2			0	1						4	10
16:30	0	0			0		1			1	0						2	11
16:45	0	2			0		1			0	0						3	12
17:00	1	0			0		0			0	0						1	10
17:15	0	0			0		0			0	0						0	6
17:30	1	1			0		0			0	0						2	6
AM PEAK HR	2	4	0	0	1	0	2	0	0	6	1	0	0	0	0	0	16	
PM PEAK HR	1	6	0	0	0	0	1	0	0	8	1	0	0	0	0	0	17	
AM PEAK HR %	14.29%	4.04%	0.00%	0.00%	14.29%	0.00%	6.45%	0.00%	0.00%	5.17%	25.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.90%	
PM PEAK HR %	3.33%	6.98%	0.00%	0.00%	0.00%	0.00%	7.14%	0.00%	0.00%	8.42%	12.50%	0.00%	0.00%	0.00%	0.00%	0.00%	7.23%	