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Traffic Impact Assessment

Client: Leeroy Patsky

Site Address: 17 Marshfield Lane, Mudgee, NSW 2850

8 May 2023

Our Reference : 40081-TIA_040081-TIA_0

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abn. 43 088 342 625

to.
Leeroy Patsky
17 Marshfield Lane
Mudgee NSW 2850

date.
8.05.2023

reference.
40081-TIA_0

Dear **Leeroy Patsky**,

17 Marshfield Lane, Mudgee, NSW 2850

Traffic Impact Assessment

With reference to the above, please find the following Traffic Impact Assessment report regarding the proposed residential subdivision.

If you have any further enquiries regarding this matter, please contact the undersigned.

Yours faithfully
BARNSON PTY LTD

Eden Gliksman
B.Eng (Hons)
Civil Engineer

DISCLAIMER

This report has been prepared solely for **Leeroy Patsky** in accordance with the scope provided by the client and for the purpose(s) as outlined throughout this report.

Barnson Pty Ltd accepts no liability or responsibility for or in respect of any use or reliance upon this report and its supporting material by anyone other than the client.

Project Name:	Traffic Impact Assessment for 17 Marshfield Lane, Mudgee, NSW 2850
Client:	**Leeroy Patsky**
Project Number:	40081
Report Reference:	40081-TIA_0
Date:	8 May 2023

Prepared by:	**Reviewed by:**
[redacted]	[redacted]
Eden Gliksman B.Eng (Hons) Civil Engineer	Luke Morris B.E. MIEAust CPEng (NPER) Director

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EXECUTIVE SUMMARY

Barnson has been engaged by Leeroy Patsky to prepare a Traffic Impact assessment in support of a Development Application for a residential subdivision at Lot 2 DP 874808, also known as 17 Marshfield Lane, Mudgee, NSW 2850.

The subject site is located on the eastern side of Marshfield Lane, and the southern side Bellevue Road and has an approximate area of 1.016ha. The site currently consists of an existing dwelling and associated structures. It is bounded by residential land.

The application seeks consent for a 7-lot subdivision to support the existing dwelling, and 6 vacant lots for future residential uses.

The following conclusions have been drawn as a result of this assessment:

- Traffic generated by the proposed development contributes to approximately 1% increase from existing Bellevue Road traffic
- Marshfield Lane and Bellevue Road currently operate at an acceptable level of service and will continue to do so with the traffic generated by the proposed development. No upgrade works are required to either road
- The intersection of Marshfield Lane and Bellevue Road warrants basic left / basic right turn treatments, which are satisfied by the arrangement
- There is a new 24-lot subdivision being constructed at 18 Marshfield Lane at the time of this report. The road and intersection infrastructure has been assessed as having adequate capacity to accommodate this as well as the proposed development, and is unlikely to have any significant impacts on the traffic operations of the existing road network.

1. INTRODUCTION

1.1. Project Outline

The development is a seven lot subdivision including installation of associated services, to support the existing dwelling with six additional vacant lots for future residential use.

1.2. Purpose and Scope

This Traffic Impact Assessment (TIA) has been commissioned by the applicant as part of the DA for the subject site and provides an assessment of the traffic implications of the proposed expansion on surrounding traffic, transport and local road infrastructure.

This TIA has been prepared in accordance with the relevant Australian Standards, the RTA Guide to Traffic Generating Developments (2002) and Mid-Western Regional Council's policies and plans.

2. EXISTING CONDITIONS

2.1. Location and Site

The subject site is Lot 2 DP 874808, commonly known as 17 Marshfield Lane, Mudgee. It is located on the eastern side of Marshfield Lane and the southern side of Bellevue Road, around 1.5km west of the Mudgee town centre. The site has an overall area of 1.016ha and is improved with an existing dwelling and associated structures.

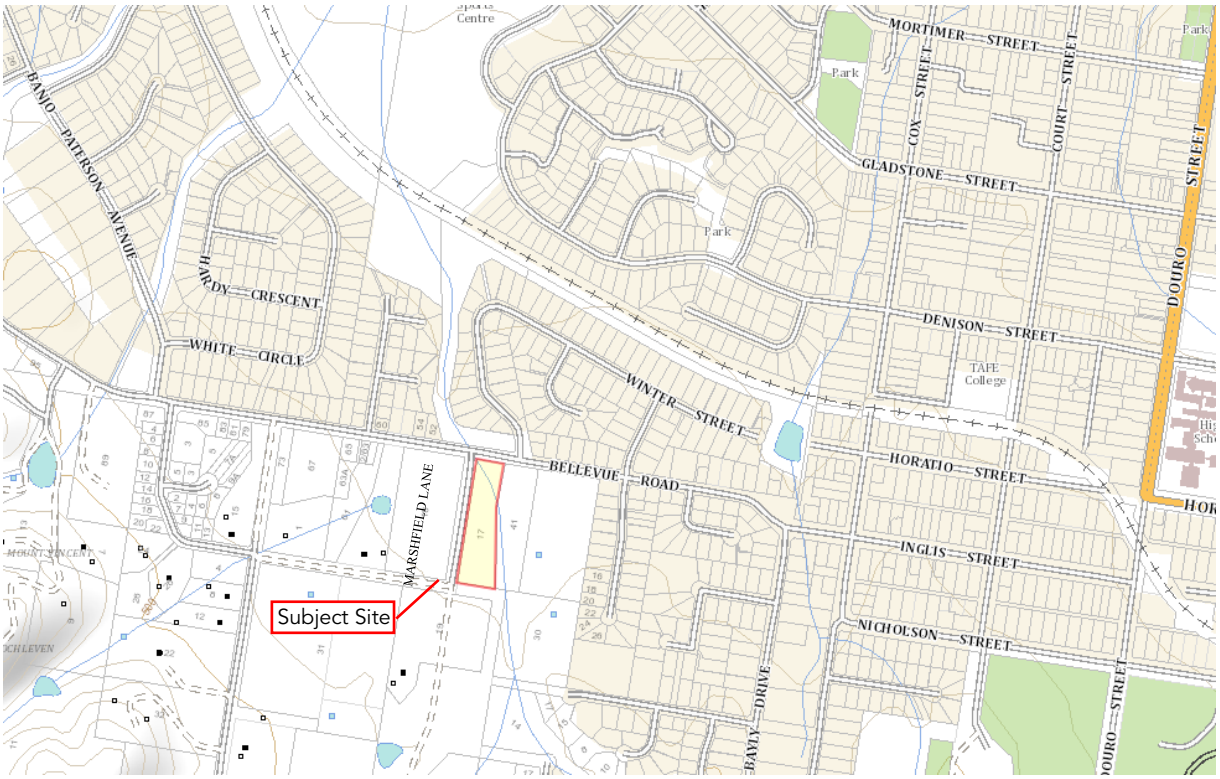
Source: SIX Maps e-Topo, NSW Spatial Information Exchange, 2021

Figure 1 – Site aerial photograph

2.2. Existing Traffic Hierarchy

The subject site has direct access to Marshfield Lane, a low-volume local access road. Marshfield Lane ends leads to Bellevue Road, a major collector road which runs east towards Douro Street and the Mudgee town Centre, and west toward Banjo Patterson Ave and eventually the Castlereagh Highway (B55).

The speed limit on Marshfield Lane and Bellevue Road is 50km/h.



Source: SIX Maps e-Topo, NSW Spatial Information Exchange, 2021

Figure 2 – Existing road hierarchy

2.3. Traffic Volumes

Traffic counts for Bellevue Road have been obtained from the Mudgee Township Traffic Management Study. The study provides daily traffic volumes for the existing case as at 2014, as well as a future projection for 2032. From these, the volumes for 2023 have been extrapolated.

Table 1 Summary of existing traffic volumes on Bellevue Road

Average Daily Traffic (vpd)			Peak Hourly Traffic (vph)
2014[1]	2032[1]	2023[2]	2023[3]
3,010	5,900	4,455	446

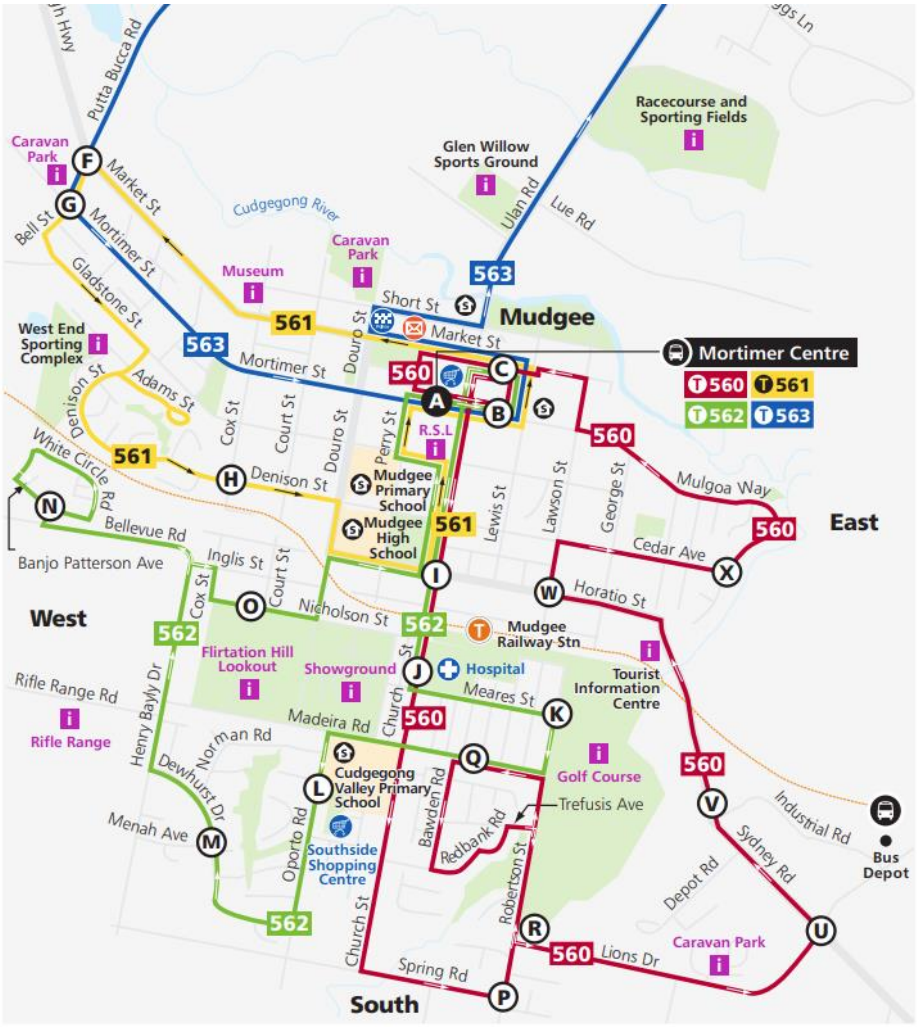
1. Volumes from Mudgee Township Traffic Management Study, Gennaoui Consulting on behalf of Mid-Western Regional Council, 2014
2. Extrapolated volume
3. Estimate based on 10% of daily traffic

All vehicle rates shown are for movements in both directions.

Unfortunately, traffic counts for Marshfield Lane were not available at this time. The Lane services three residential properties, and traffic volumes can be conservatively estimated as 10 vpd per dwelling and 30vpd overall, with an hourly peak of 3vph.

2.4. Public Transport

Two regular bus routes utilise Bellevue Road, being the Mudgee Town Service South Loop (route 562 – four times per day) and the Mudgee South school bus route (MA01 – twice per day).

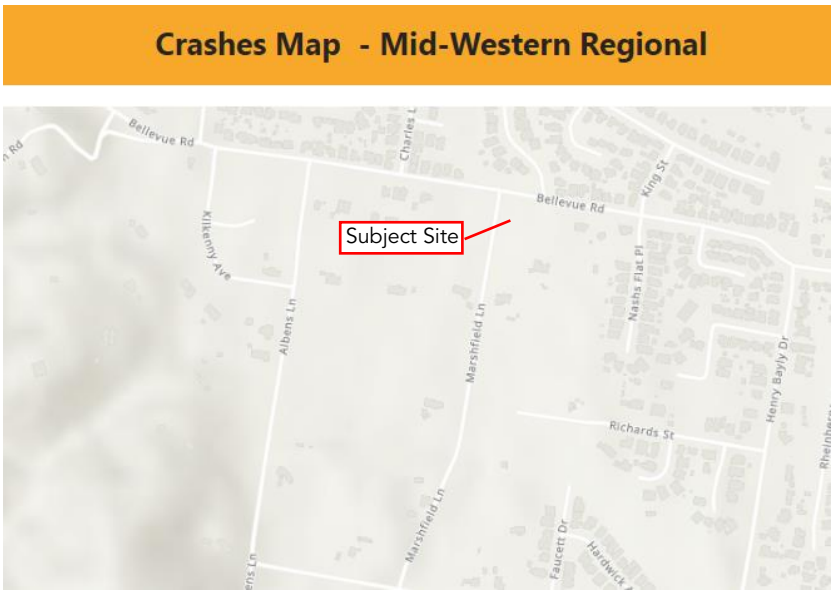


Source: Mudgee Interlink, Ogdens Coaches, 2021

Figure 3 – Mudgee bus routes

2.5. Traffic Safety

Traffic accident history of the area has been obtained from the TfNSW Centre for Road Safety. In the five years between 2017 and 2021, no crashes were recorded in the vicinity of the subject site.



Source: Crash and Casualty Statistics, Centre for Road Safety, Transport for NSW, 2021

Figure 4 – Map of traffic accident history

3. PROPOSED DEVELOPMENT

The proposed development is a seven lot subdivision, comprising of the existing dwelling and six additional vacant lots for future residential development. Physical works will involve providing services to the proposed vacant lots.

3.1. Traffic Generation

Traffic generation rates for the six additional lots have been obtained from the Roads and Traffic Authority Guide to Traffic Generating Developments (2002).

Table 2 Traffic generation from proposed subdivision

Daily vehicle trips per dwelling[1] (vpd)	9.0
Peak hour vehicle trips per dwelling[1] (vph)	0.85
Number of new dwellings	6
Total daily vehicle trips (vpd)	54
Total peak hour vehicle trips (vph)	5
Existing Bellevue Road daily traffic (vpd)	4,455
Proposed Bellevue Road daily traffic (vpd)	4,509
Increase in daily traffic	1.2%
Existing Bellevue Road peak hour traffic (vph)	446
Proposed Bellevue Road peak hour traffic (vph)	451
Increase in peak hour traffic	1.1%

1. Guide to Traffic Generating Developments, Roads & Traffic Authority, 2002

3.2. Mid-Block Level of Service

The peak hourly flows for a mid-block road at various Levels of Service (LoS) are set out in Table 3 below.

Table 3 Urban road peak hour flows per direction

Level of Service	One Lane (vph)
A	200

B	380
C	600
D	900
E	1400

Source: Guide to Traffic Generating Developments, Roads & Traffic Authority, 2002

Marshfield Lane experiences minimal traffic flows, currently operates comfortably at a LoS A and will continue to do so following development.

Since a directional split of traffic on Bellevue Road is not available, it is conservatively assumed that 100% of peak hour traffic is travelling in the same direction. On this basis, Bellevue Road currently operates at an acceptable LoS C and will continue to do so following development.

No upgrades are required to Marshfield Lane or Bellevue Road.

3.3. Intersection Analysis

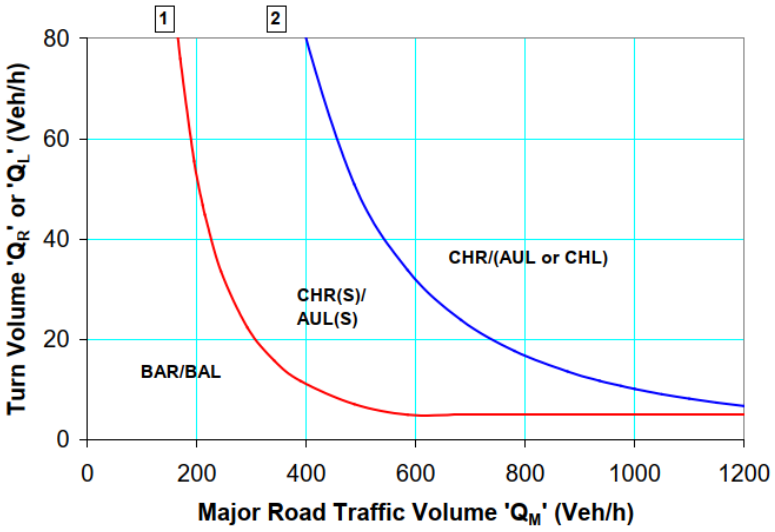
Turn warrants have been determined from the peak traffic flows summarised below:

Table 4 Proposed peak hour turning volumes

Intersection	Existing traffic eastbound[2]	Existing traffic westbound[2]	Proposed left turning traffic[3] (max)	Traffic volume parameter Q_{ML}[4]	Proposed right turning traffic[3] (max)	Traffic volume parameter Q_{MR}[4]
Marshfield Lane and Bellevue Road	223	223	7	223	1	450

1. **All figures given in vehicles per hour (vph)**
2. **The case shown assumes existing traffic is split evenly in both directions, however the same recommendation applies to different traffic splits**
3. **Assumes 90% of traffic generated by the development is approaching from the east towards town**
4. **Traffic volume parameters Q_{ML} and Q_{MR} have been calculated as prescribed by the Guide to Road Design Part 4: Intersections and Crossings, Austroads, 2017, Figure A 11**

From these volumes and the warrants illustrated in Figure 5 below, the appropriate turn treatment for the intersection is a Basic Right (BAR) / Basic Left (BAL) arrangement, which is satisfied by the existing intersection configuration.



(b) Design speed < 100 km/h

Source: Figure A 10, Guide to Road Design Part 4, Austroads, 2017

Figure 5 – Warrants for turn treatments at unsignalised intersections

With an estimated maximum of 8 vehicle movements per hour from the site, this equates to approximately one movement every 7.5 minutes. These turns will be easily accommodated within the gaps in traffic flow on Bellevue Road.

3.4. Cumulative Impacts

At the time of preparing this report, the opposite property 18 Marshfield Lane is in the process of being developed. It is understood that the works include a 24-lot subdivision, a new cul-de-sac perpendicular to Marshfield Lane and upgrades to the sections of Marshfield Lane and Bellevue Road abutting the lot.

Being that the subdivision consists of 24 lots including one existing dwelling, traffic generation associated with the development is estimated to be 20vph, giving:

Table 5 Cumulative peak hour traffic flows

Road	Existing peak hour traffic (vph)	Traffic generated by 18 Marshfield Lane (vph)	Traffic generated by this proposal (vph)	Total projected peak hour traffic (vph)	Level of Service
Marshfield Lane	3	20	5	28	A
Bellevue Road	446	20	5	471	C

Therefore, Marshfield Lane and Bellevue Road will continue to operate at their existing LoS without requirement for road upgrades.

Furthermore, the effects on the intersection of Marshfield Lane and Bellevue Road are as follows:

Table 6 Cumulative peak hour turning volumes

Intersection	Existing traffic eastbound	Existing traffic westbound	Proposed left turning traffic[1] (max)	Traffic volume parameter Q_{ML}	Proposed right turning traffic[1] (max)	Traffic volume parameter Q_{MR}
Marshfield Lane and Bellevue Road	223	223	22	223	3	450

1. **Assumes 90% of traffic generated by both developments is approaching from the east towards town**

From Figure 5, the appropriate turn treatment for the intersection remains a Basic Right (BAR) / Basic Left (BAL) arrangement, and is satisfied by the existing intersection configuration.

It can be concluded that the existing road infrastructure on Marshfield Lane, Bellevue Road and their intersection has sufficient capacity to accommodate the growth associated with both developments without detrimental impact to the traffic environment.

4. CONCLUSION

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Should you require any further information or clarification regarding this matter, please do not hesitate to contact the undersigned.

Yours faithfully

BARNSON PTY LTD

[redacted]

Eden Gliksman
B.Eng (Hons)
Civil Engineer