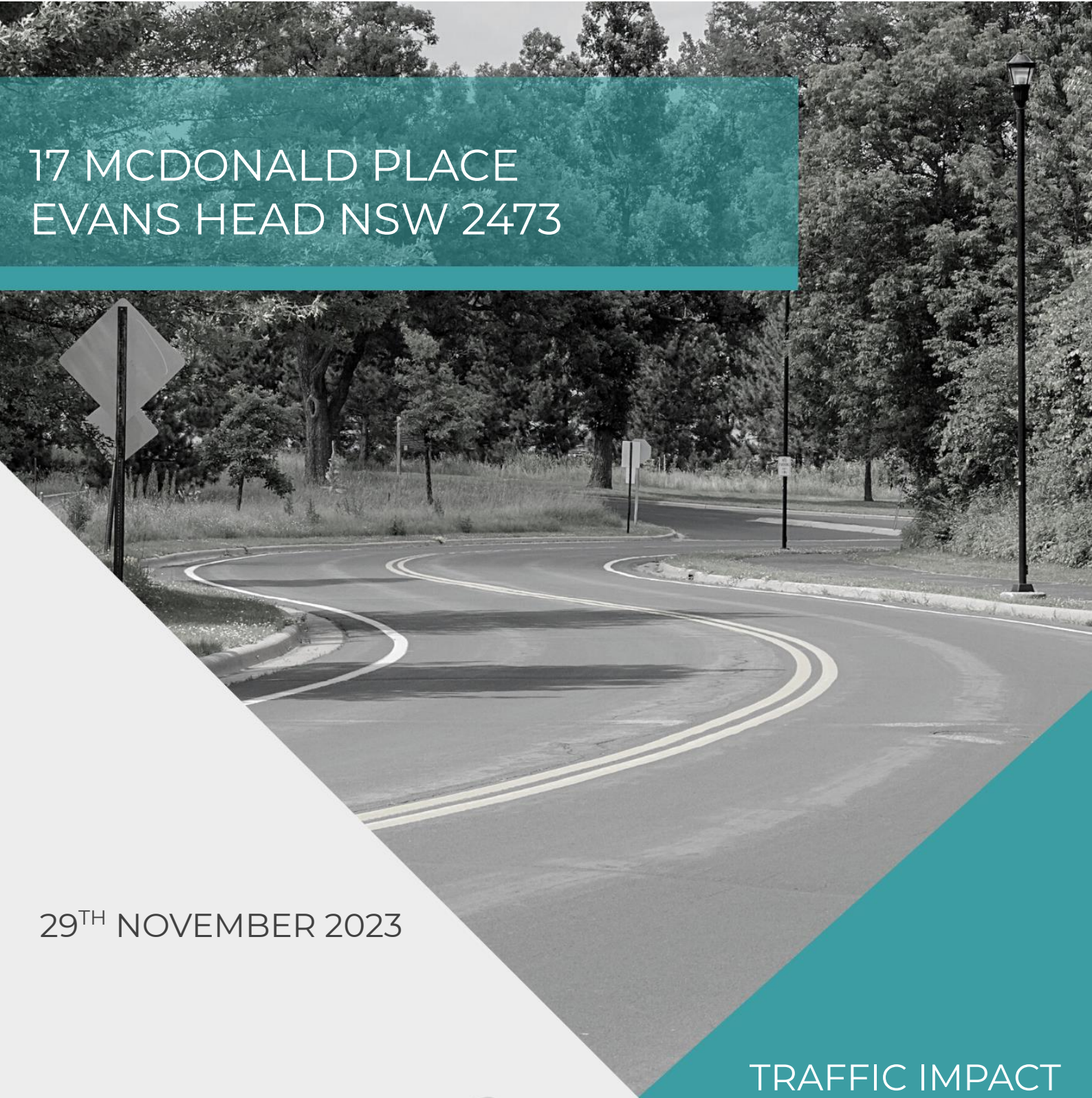


17 MCDONALD PLACE EVANS HEAD NSW 2473

29TH NOVEMBER 2023

TRAFFIC IMPACT ASSESSMENT

INGEN CONSULTING

ENGINEERED WITH PURPOSE

DOCUMENT CONTROL

Revision number	Description	Prepared	Reviewed	Issued	Issue date
A	Client Review	JN	MK	MK	22/9/23
B	Development Application	JN	MK	MK	29/11/23

Document title: Traffic Impact Assessment

Document number: J1279_TIS

Author: Jordy Nasario, BEng (Civil), *Dip. Proj. Mng.*

Client name: 17 The Evans Trust

Client's representative: Lewis Barakat

Approved for use by:

Name: Michiel Kamphorst **Signature:** **Date:** 29th November 2023

MSc, BSc, RPEng, RPEQ, NER, PRE, MAAS

Ingen Consulting information

Ingen Consulting Pty Ltd, ABN 18 623 948 112

Alstonville NSW 2477

+61 4 1726 4987

michiel@ingenconsulting.com.au

www.ingenconsulting.com.au

CONTENTS

TABLE OF FIGURES

TABLE OF TABLES

1. INTRODUCTION

Ingen Consulting P/L has been engaged by 17 The Evans Trust Pty to prepare a Traffic Impact Assessment (TIA) for a proposed mixed use development at 17 McDonald Place, Evans Head NSW 2473.

1.1. Scope

The purpose of this report is to quantify the traffic impact of this development on the surrounding road network. In particular, this report seeks to:

- Demonstrate compliance with relevant chapters requirements of the Richmond Valley Council Development Control Plans
- Demonstrate compliance with the safety components of the Austroads Guide to Road Design series.
- Address relevant items recommended for a Traffic Impact Study in the 2002 RTA Guide to Traffic Generating Developments (GTTGD)
- Analyse the impact of the through traffic on the surrounding road network.

1.2. Standards, policies and guidelines

This TIA has been prepared in accordance with the following standards, guidelines and policies:

- Richmond Valley Council DCP 2015 Part I
- Guide to Traffic Generating Developments (RTA, 2002)
- Guide to Traffic Generating Developments, Updated Surveys (RMS 2013)
- Austroads Guide to Traffic Management
- Austroads Guide to Road Design
- Australian/New Zealand Standard 2890 series

1.3. Site description

The subject site is located on the corner of McDonald Place and Elm Street, Evans Head. Its address is 17 McDonalds Place, Evans Head NSW 2473, with Lot/Plan number registered as Lot 7 DP 14089 within the R1- General Residential zone. The site has an area of 822.02m^2.

According to the survey drawing by Newton Denny Chapelle (refer to Appendix A), there is a single-storey weatherboard building located on site, which would be demolished.

A further description of the existing road network is provided in Chapter 2.

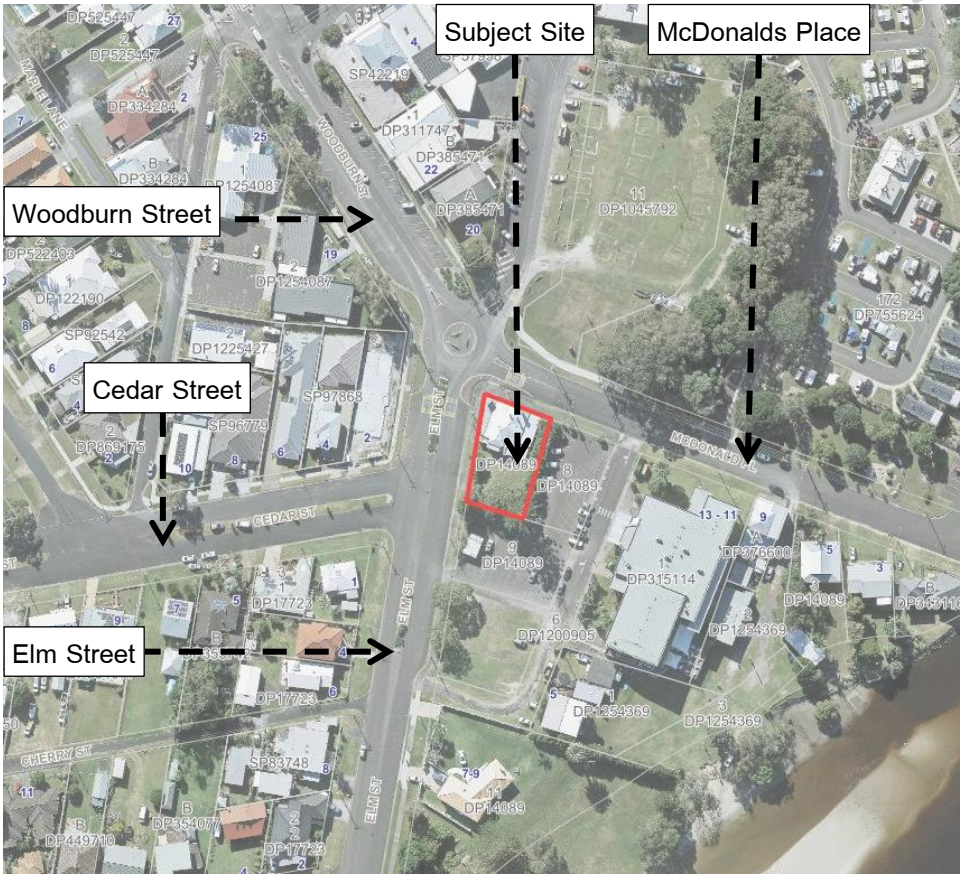


Figure 1 | Site location, *Source of map: Richmond Valley Council intramap 2023*

1.4. Proposed development

The proposed development involves a shop top house development. The proposed layout features a ground floor café and undercover parking with access off Elm Street and exit onto McDonald Place, and ten (10) dwellings with 1 to 3 bedrooms on 1st and 2nd floors. More information on the proposed layout can be found in the DA drawings by Barker Architects. For a general overview of the proposed layout, please refer to Figure 2, Figure 3 and Figure 4.

The proposed development commercial space (café) hours of operation will be from 6am to 10pm.

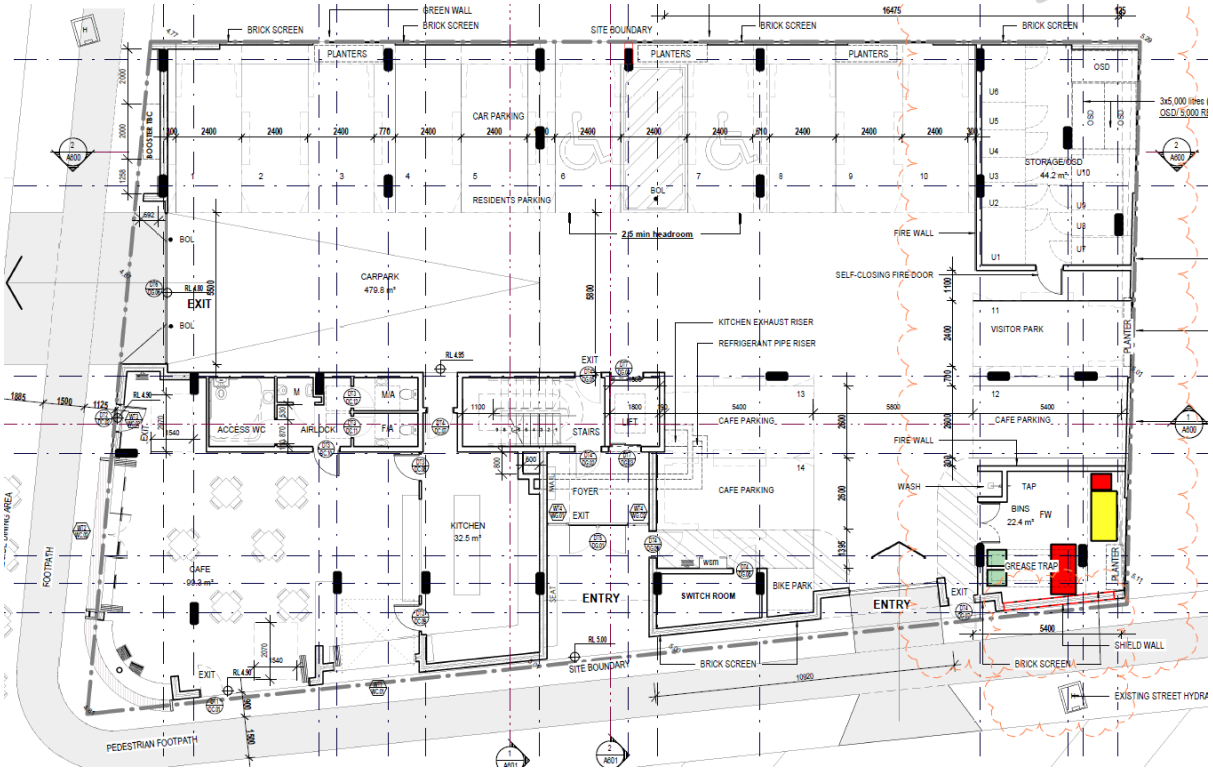


Figure 2 | Proposed layout plan ground floor, *Source: Barker Architects*

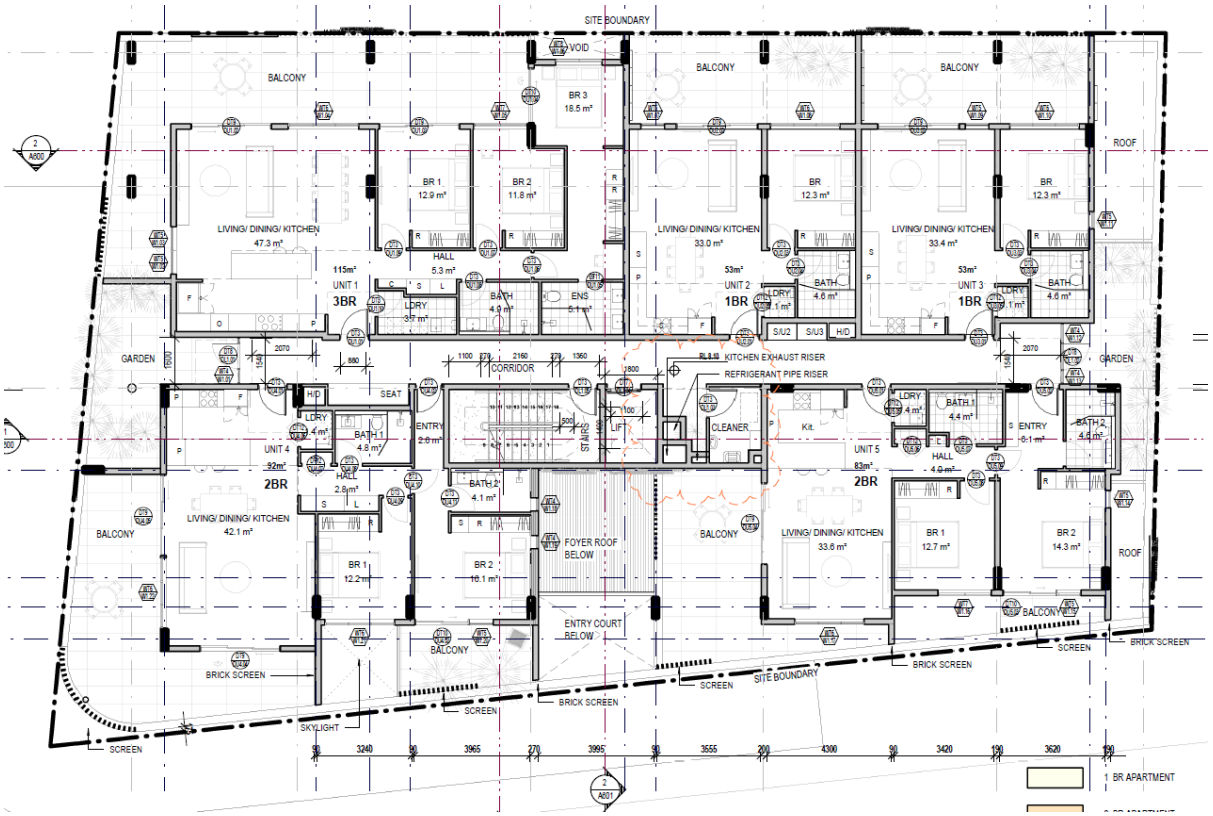


Figure 3 | Proposed layout plan 1st floor, *Source: Barker Architects*

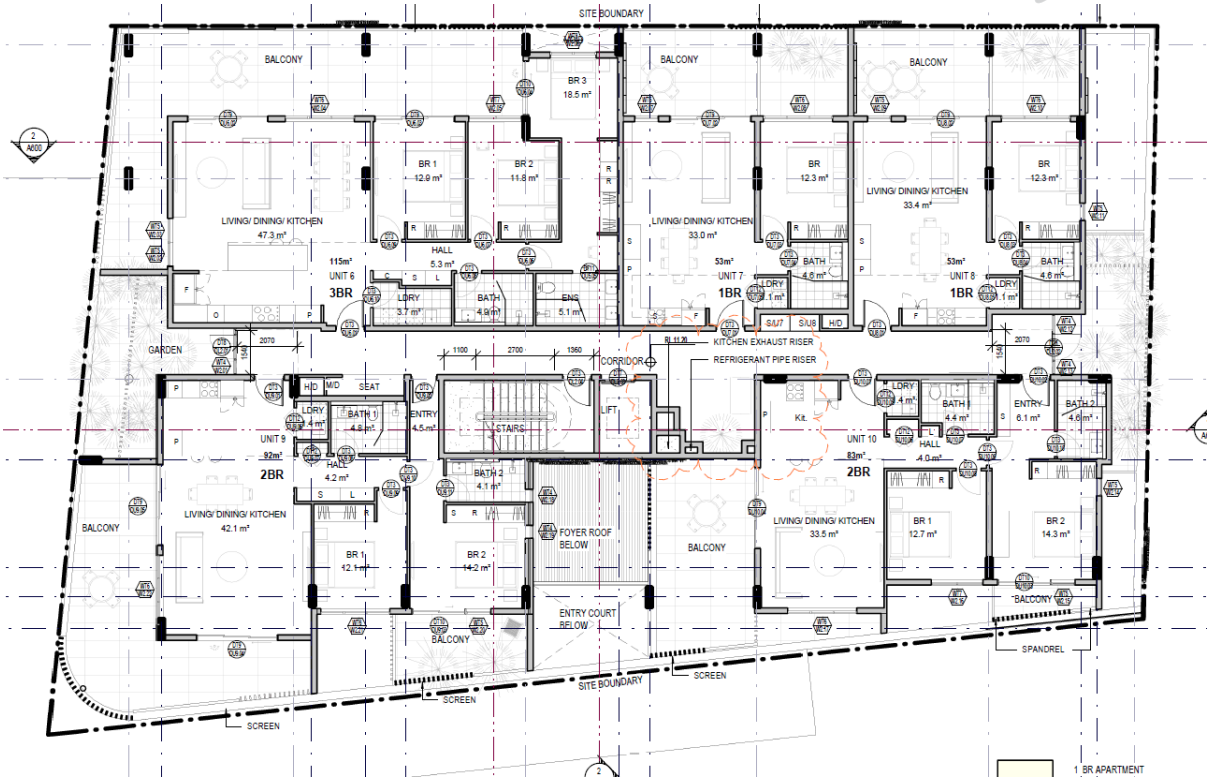


Figure 4 | Proposed layout plan 2nd floor, *Source: Barker Architects*

2. EXISTING CONDITIONS

2.1. Elm Street

Elm Street is a 2 lane, 2-way asphalt un-delineated sealed road. Parallel off-street car parking and footpaths are available on both sides of the street. The road carriageway is approx. 21.5m wide, measuring between invert of the kerbs adjacent to the subject site, divided with landscaping medians (approx. 2.8m wide). There is no travel lane delineation, but based on aerial photography both travel lanes are estimated to be more than 4 metres wide. Elm Street pavement is in good condition, and the street is subject to the built-up area speed limit of 50km/hr.

According to NRLG Development Specification D1 Geometric Road Design (Urban and Rural), Elm Street is of similar functionality to a distributor road with a maximum traffic volume of 3000+ vpd (although this road has mountable kerb in some parts).

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

Figure 5 | Characteristics of roads in residential areas, *Source: NRLG Development Specification D1*

Figure 6 | Dalley Street looking north, *Source: Google Street View.*

2.2. McDonald Place

McDonald Place is a 2 lane, 2-way asphalt un-delineated sealed road. The road is approximately 11 metres wide, measuring between invert of the kerbs adjacent to the subject site, with off-street parallel car parking available on both sides of the street. Adjacent to the subject site, pedestrian footpaths are available on both sides of the street. There is no travel lane delineation, but based on aerial photography both travel lanes are estimated to be approx. 3 metres wide. McDonald Place pavement is in good condition, and the street is subject to the built-up area speed limit of 50km/hr.

Following the characteristics shown in Figure 5, McDonald Place is of similar functionality to a collector road with a maximum traffic volume of 3000 vpd (although this road has upright kerb on one side instead of mountable kerb).

Figure 7 | McDonald Place looking west, *Source: Google Street View.*

2.3. Elm Street / Woodburn Street / McDonald Place roundabout

The roundabout of Elm Street / Woodburn Street / McDonald Place is a signed, delineated, and paved intersection situated in the northwest corner of the subject site. All approaches are relatively flat controlled by “roundabout give-way” signs and concrete splitter islands. Central island is approx. 12 meters, and circulatory roadway is approx. 7.5 metres. Existing pedestrian crossing is located on the northern Elm Street approach. Overall, the existing intersection is in good condition.

Figure 8 | Elm Street / Woodburn Street / McDonald place roundabout plan view, *Source: RVC intramap 2023.*

Figure 9 | Elm Street / Woodburn Street / McDonald place roundabout looking south, *Source: Google Street View.*

2.4. Woodburn Street

Woodburn Street is a 2 lane, 2-way asphalt delineated sealed road. The road is approximately 22 metres wide, measuring between invert of the kerbs adjacent to the community health centre, with off-street angle car parking available on both sides of the street. Pedestrian footpath is available on both sides of the street. According to existing delineation, both travel lanes are estimated to be approx. 3.5 metres wide. Woodburn Street has an existing bus stop zone adjacent to the community health centre. The pavement is in good condition, and the street is subject to the built-up area speed limit of 50km/hr.

Following the characteristics shown in Figure 5, Woodburn Street is of similar functionality to a distributor road with a maximum traffic volume of 3000+ vpd.

Figure 10 | Woodburn Street looking northwest, *Source: Google Street View*

3. DEVELOPMENT IMPACT

3.1. Trip generation

Traffic generation is estimated using the October 2002 *Guide to Traffic Generating Developments from RTA* (today named TfNSW). The following generation rates were used to estimate this proposed development trip generation. Note that GTGD does not state any trip generation rates for shop top housing.

- Restaurant:
  - Daily vehicle trips: 60 per 100m^2 gross floor area (GFA).
  - Evening peak hour vehicle trips: 5 per 100m^2 gross floor area (GFA).
- Medium density residential flat building (up to 2 bedrooms):
  - Daily vehicle trips: 4-5 per dwelling.
  - Peak hour vehicle trips: 0.4-0.5 per dwelling.
- Medium density residential flat building (up to 3 bedrooms):
  - Daily vehicle trips: 5-6.5 per dwelling.
  - Peak hour vehicle trips: 0.5-0.65 per dwelling.

Based on the rates above, the proposed trip generation could be estimated as demonstrated in Table 1.

Table 1 | Proposed net trip generation

Land use	Description	Daily trips rate	Peak trips rate	Calculated daily trips	Calculated evening peak trips
Restaurant	Café and amenities GFA - 151.2sqm	60/100m2 GFA	5/100m2 GFA	90.72	7.56
Medium density residential flat building (up to 2 bedrooms)	8 units with 1-2 bedrooms	5 per dwellings	0.5 per dwellings	40.00	4.00
Medium density residential flat building (up to 3 bedrooms)	2 units with 3 bedrooms	6.5 per dwellings	0.65 per dwellings	13.00	1.30
Total				**144**	**13**

3.2. Car parking requirements

Off-street car parking demand for this development is estimated as per Part I of the Richmond Valley Council DCP 2015 Table I.4.1. As per the proponent's town planner's instructions, the following car park requirements for the type of land use were adopted.

- Pub/Hotel premises restaurants or cafés function centre:
  - 1 space per 30m^2 of ground floor area (GFA).
- Shop top housing:
  - 1 space per dwelling
  - 1 visitor space per 10 dwellings.

Based on the rates above, the calculated number of car park spaces for this development is 16, refer to Table 2. The proposed off-street undercover car park on the ground floor features 10 spaces for residents (2 PWD spaces), 1 space for visitors, and 3 spaces for the café users, thus totalling 14. This leaves a shortfall of 2 parking spaces for the development.

Table 2 | Car parking demand

Land use	Description	Parking rate	Required number of car parks
Pub/Hotel premises restaurants or cafés function centre	Café and amenities GFA - 151.2sqm	1 space per 30m2	5.04
Shop top housing	10 dwellings	1 space per dwelling	10.00
		1 visitor space per 10 dwelings	1.00
Total			**16**

Note that this proposed development includes a formalisation of 45° on-street parking adjacent to the subject site in Elm Street, which will give more parking spaces for the community since cars are currently parking in parallel. It is recommended that this line marking formalisation be used to offset the shortfall in parking spaces. Refer to section 3.10 for details on the proposed Elm Street line marking.

If RVC does accept this line marking formalisation as an offset, a Voluntary Planning Agreement (VPA) is also an option to offset the number of shortfall car parks in accordance with RVC DCP Part I.

3.3. PWD parking.

Two car spaces for a Person with Disability (PWD) are proposed on-site. AS/NZS 2890.6 defines that each PWD car park bay must have a combination of a dedicated non-shared space and a shared area on one side of the dedicated space. Both areas must have minimum dimensions of 2.4 metres wide and 5.4 metres long. Also, a shared area of 2.4x2.4m must be provided at one end of the dedicated non-shared space, which can be at the front or at the rear.

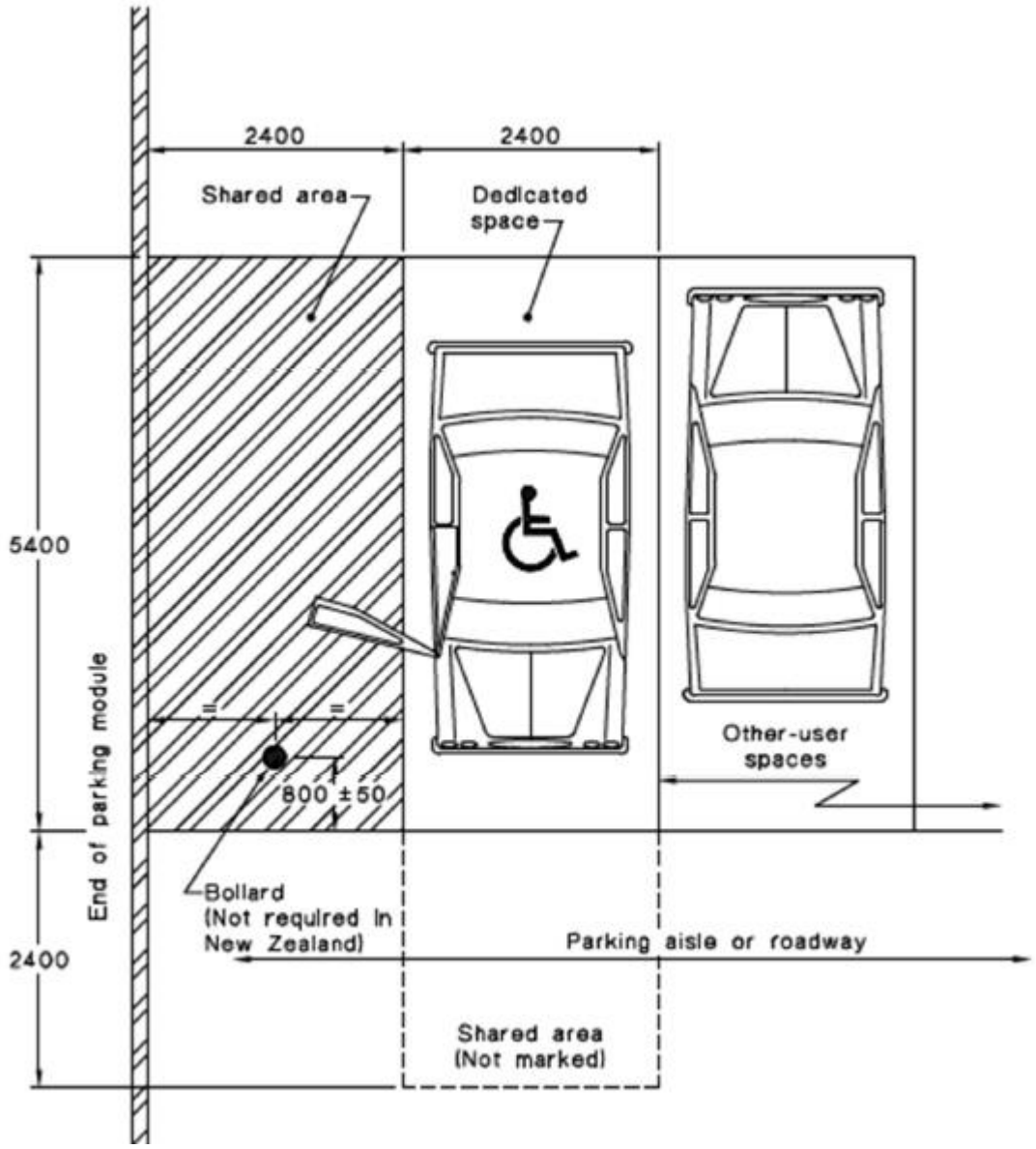


Figure 11 | Example of PWD angle parking bay, *Source: AS/NZS 2890.6*

3.4. Loading bay requirements

Loading on-site is not possible due to impractical service bay height clearance requirements for a ground-floor level car park within a multi-storey building. For this reason, an on-street loading within the new 45° Elm Street line marking is proposed. SRV swept path was undertaken and the results are satisfactory, refer to Appendix B.

In e-mail correspondence dated 19th of September 2023, Council's development engineer provided the following advice regarding the loading bay location:

> *"Loading bays are generally required on-property, There is potential for loading/unloading on-street (for example - there are loading bays in the Casino CBD) however I could not confirm if this location is acceptable as it is required to go through our assets section and the Local Traffic Committee (LTC) for approval. If applied for in the future application, it will be forwarded to Assets and the LTC for approval through the assessment process."*

It is anticipated that the proposed loading bay location will be reviewed by Council staff in context of the overall merits of the proposal.

3.5. Bicycle space requirements

Neither the 2002 GTTGD nor Richmond Valley Council DCP state a requirement for bicycle parking for a medium-density residential flat building, top housing, or similar development. Therefore, no specific bicycle parking spaces are required for this development. However, the proposed development features bicycle parking spaces within the undercover car parking, and the design must be in accordance with AS2890.3

3.6. Vehicle access location and width

The proposed development features one undercover off-street car park with access off Elm Street and exit onto McDonald Place, refer to Figure 2. This access/exit should comply with the minimum width, location, and sight distance in accordance with AS/NZS 2890.1:2004. Minimum widths and the location will be discussed below, and the minimum sight distance will be discussed in section 3.7.

The minimum driveway width should comply with AS/NZS 2890.1:2004 Clause 3.2.1. This clause specified that any car parking class 3 with less than 25 parking spaces fronting a local street should have a minimum entry width of 3 – 5.5m, and if separate, both entry and exit widths should be 3m min. We recommend the exit opening is constructed as a 6m wide door, however with bollards and linemarking to force exiting vehicle to drive out in the middle of that door to create additional sight lines to pedestrians using the McDonald Place footpath.

AS/NZS 2890.1:2004 Section 3.2.3 requires that access driveways should be 6m away from the tangent point of an intersection. The roundabout intersection tangent point is approx. 12 metres west of the proposed development exit point, and approx. 25m north from the access. Therefore, the proposed location complies.

3.7. Vehicle exit sight distance

According to AS/NZS 2890.1:2004 Section 3.2.4, a min. 45m or desirably 69m vehicle sight distance from the driver's perspective should be provided to vehicles leaving the subject site onto a 50 km/h posted speed limit frontage road.

Based on our site investigations, McDonald Place and Woodburn Street are relatively flat and both provide more than the minimum and desirable sight distance outlined in AS/NZS 2890.1:2004.

Figure 12 | Vehicle exit sight line to the left

Figure 13 | Vehicle exit sight line to the right

Note that, the existing light pole relocation by Essential Energy is part of the proposed road works on McDonald Street.

3.8. Pedestrian sight distances

AS/NZS 2890.1:2004 Section 3.2.4 states that clear sight lines should be provided at the property boundary as shown in Figure 14. The proposed building does not provide a 2.5m setback from the boundary. However, the pre-lodgement meeting held on 25th of October 2022 advised that appropriate signage should be installed for access points and pedestrian approaches to access point. This will be combined with bollards and linemarking to force cars to exit in the middle of the 6m wide exit door to assist with mitigation this issue.

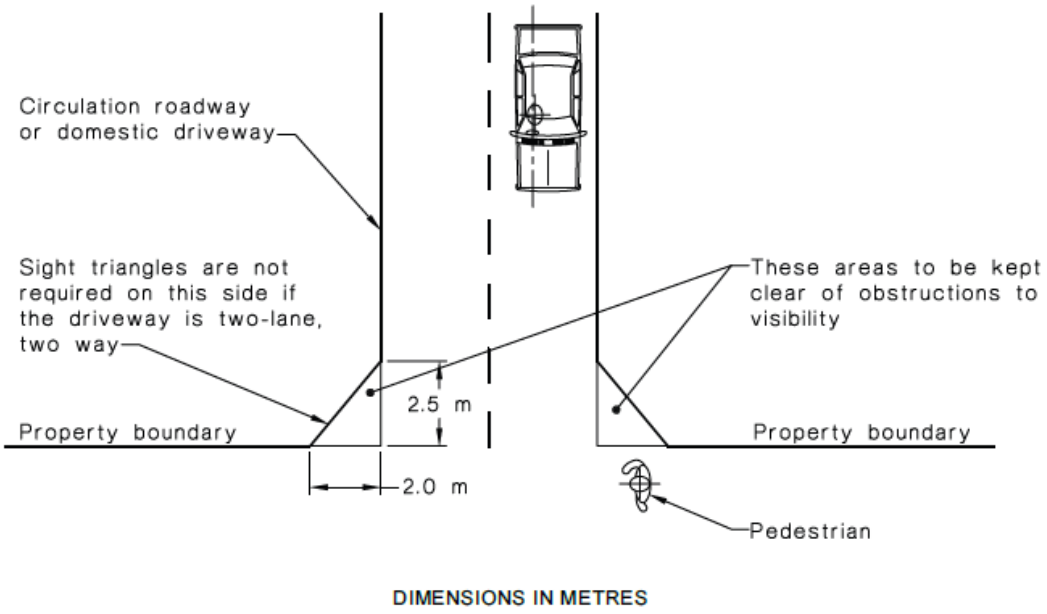


Figure 14 | Minimum sight lines for pedestrian safety, *Source: AS/NZS 2890.1:2004*

3.9. Parking modules and circulation roadway

In accordance with AS 2890.1, the dimensions of internal circulation and car park modules must align with the specific requirements for each classification of off-street car parking facilities. The proposed development off-street car park can be classified as user 1A (e.g. residential, domestic and employee parking) for the dwellings and user 3 (short-term city and town centre parking, parking stations, hospital and medical centres) for the commercial premise.

According to the required number of car parks, refer to section 3.2, the proposed development will need 11 spaces for user class 1A and 5 spaces for user class 3.

AS/NZS 2890.1:2004 states min. width and length of 2.4x5.4m user class 1A, and 2.6x5.4m for user class 3. Minimum aisle width must be 5.8m for both classes.

3.10. Elm Street line marking

The pre-lodgement meeting held on the 25th of October 2022 advised that formalisation of line marking will be required as part of this development application. The proposed development will install 45° angle parking along the frontage of the site in Elm Street in accordance with AS 2890.5.

Adjacent to the subject line, Elm Street currently is about 9.8m wide from kerb to median. AS 2890.5 states a minimum overall width required from kerb to separation line for a 45° angle parking must be

10.2m. If the existing central island is reduced to a normal roundabout splitter island, with the same layout as McDonald Place approach, enough space for a 45° angle parking would be available.

The proposed line marking will be long enough to accommodate the SRV loading bay and eight car park spaces. Currently, the existing non-line marked parking in the same area accommodates about six vehicles, indicating that the proposal is likely to create an additional of two car park spaces, offsetting the shortfall explained in section 3.2.

Proposed Elm Street 45° angle parking layout plan is shown in Appendix A. B-99, where the increase of car parking is demonstrated. SRV swept path analysis are shown in Appendix B, and the results are satisfactory.

Note that, if RVC does not consent with the existing median island reduction to accommodate the proposed 45° angle parking. Instead, 30° angle parking can be considered and no median island reduction will be needed, but this likely reduces the car parking yield.

4. CONCLUSIONS AND RECOMMENDATIONS

The purpose of this report is to quantify the impact of the operations of the proposed development on the surrounding road network, in particular with respect to traffic generation and parking demand.

We provide the following conclusions and recommendations:

- Due to its existing conditions, the road network surrounding the subject site can handle a significant volume of traffic as explained in chapter 2.
- The net traffic increase as a result of the development is demonstrated in chapter 3.1.
- The required number of car park will can be achieved as explained in section 3.2.
  The Proposed off-street PWD car parking spaces must have share zone complying with AS 2890.6.
- Off-street SRV is proposed as explained in section 3.4.
- The proposed bicycle spaces must comply with AS2890.3.
- The vehicle access/exit location and width comply with AS2890.1 as explained in section 3.6.
- Enough sight distance is available for the proposed exit point in McDonald Place, refer to section 3.7.
- Pedestrian safety can be achieved with appropriate signage as explained in 3.8.
- Adequate internal circulation is provided in accordance with AS 2890.1 as explained in section 3.9.
- Formalisation of line marking in Elm Street is part of this proposed development and can be used to offset the shortfall number of off-street parking. Either 45° or 30° angle parking can be used, preferable 45° angle parking. Refer to section 3.10.

Based on this assessment we recommend that the proposed development be approved from a traffic engineering perspective.

REFERENCES

Guide to Traffic Generating Developments, Roads and Traffic Authority, Version 2.2, October 2002.

AS/NZS 2890.1:2004 Parking Facilities Part 1: Off-Street Car Parking, Australian Standard, 2004.

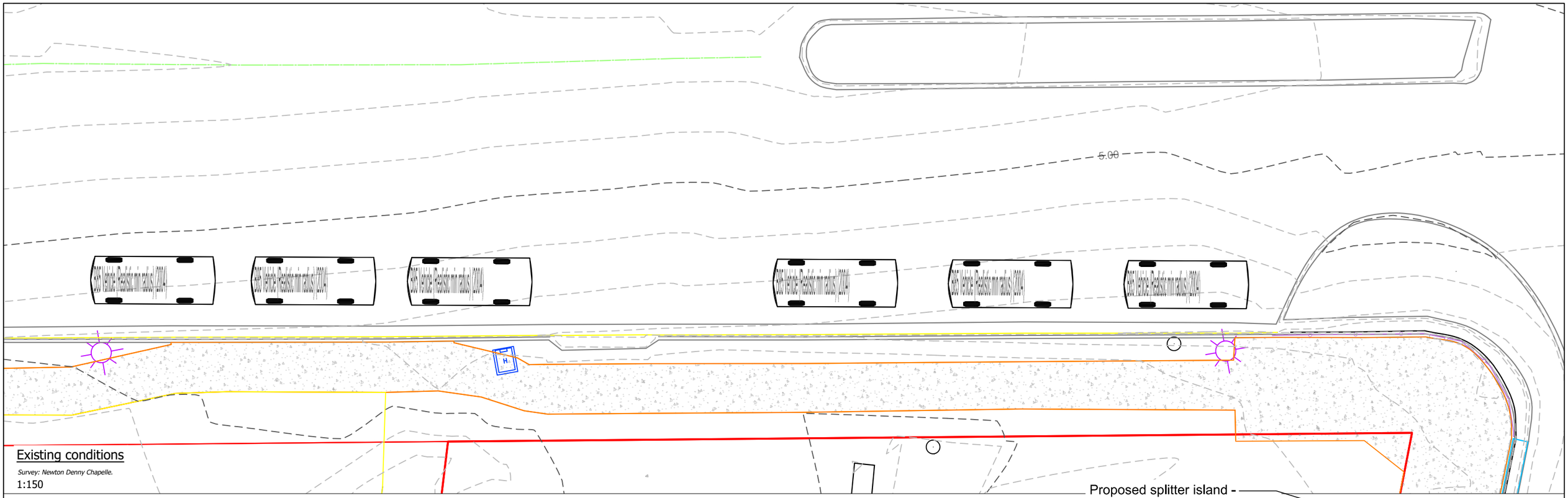
AS/NZS 2890.2:2002 Parking Facilities Part 2: Off-Street Commercial Vehicle Facilities, Australian Standards, 2002.

AS/NZS 2890.5:1993 Parking Facilities Part 5: On-Street Parking, Australian Standard, 1993.

Richmond Valley Development Control Plan 2015 Part I Other Considerations, Richmond Valley Council, Casino, December 2015.

APPENDIX A – ELM STREET LINE MARKING PLAN

.



REV:	DESCRIPTION:	DATE:	DRAWN:	REVIEWED:	APPROVED:
A	**Draft For Review**	**31/10/23**	**JN**	**MK**	**MK**

APPROVED BY:
Michiel Kamphorst,
MSc, BSc, RPEng, RPEQ, NER

Signed: Date: **31/10/23**

INGEN CONSULTING
ENGINEERED WITH PURPOSE

Ingen Consulting Pty Ltd
ACN: 623 948 112
a: Alstonville, NSW
p: +614 1726 4987
e: michiel@ingenconsulting.com.au
w: www.ingenconsulting.com.au

CLIENT:
Lewis Barakat
c/- Lewis Barakat
PO Box 810
Double Bay, NSW

PROJECT:
DA drawings for shop top mixed used development at 17 McDonald Place in Evans Head, NSW

DRAWING TITLE:
On-site Parking

PROJECT NUMBER: **J1279**

ORIGINAL SIZE: **A3**

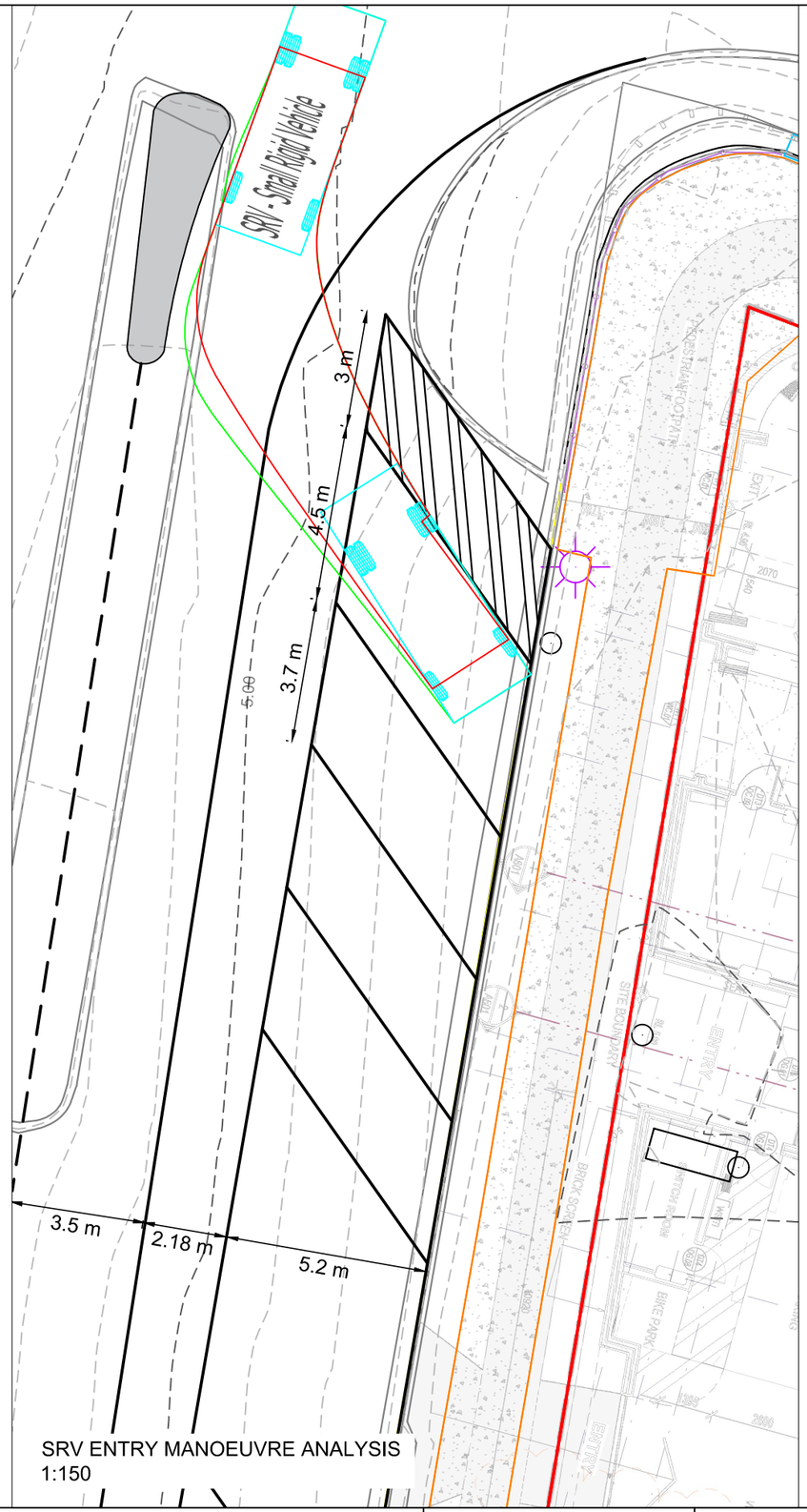
DRAWING NUMBER: **J1279_C301**

REVISION: **A**

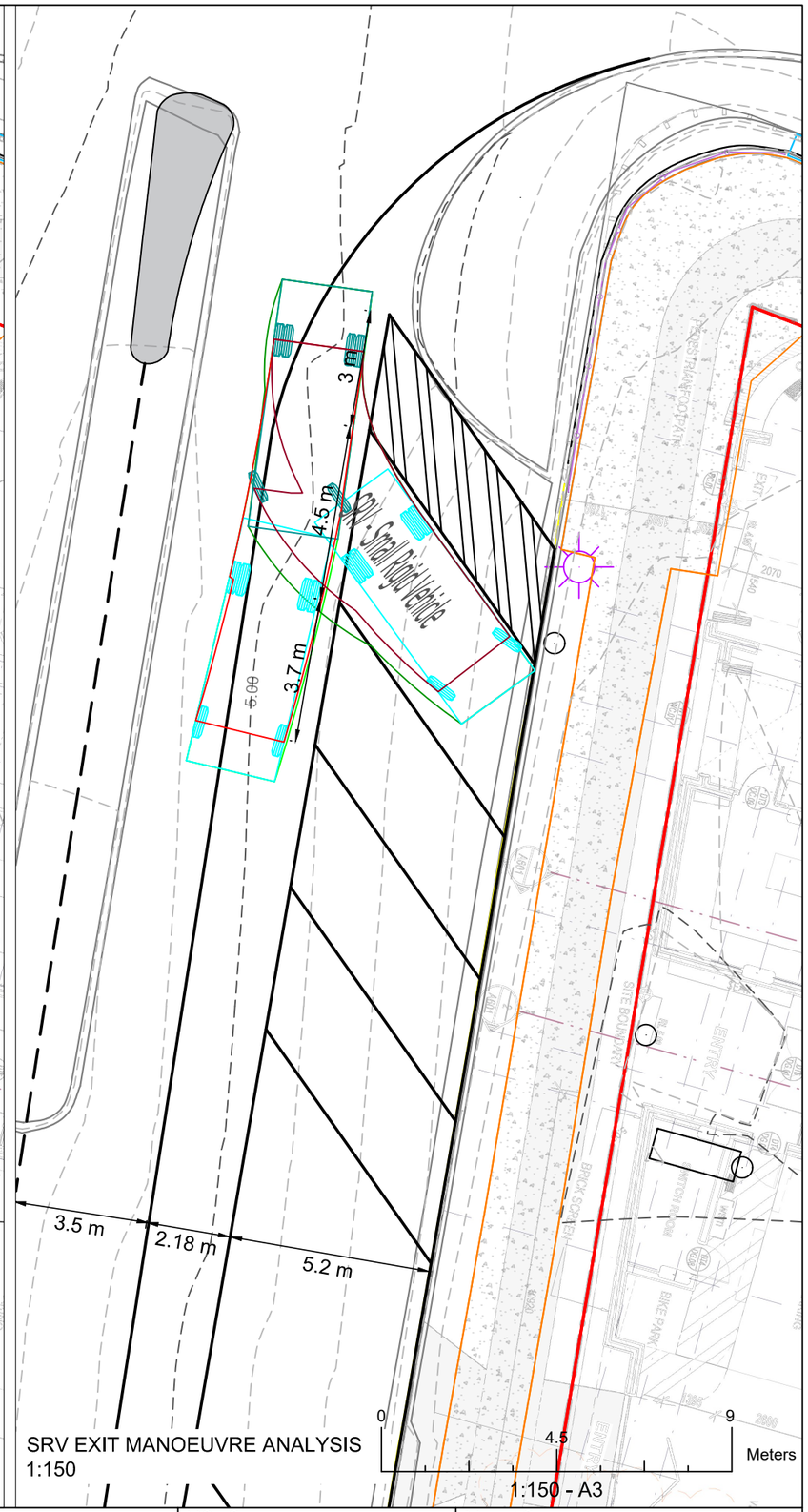
APPENDIX B – ELM STREET SWEPT PATH ANALYSIS

.

B-99 SWEPT PATH ANALYSIS
1:150



SRV ENTRY MANOEUVRE ANALYSIS
1:150



SRV EXIT MANOEUVRE ANALYSIS
1:150

1:150 - A3

REV:	DESCRIPTION:	DATE:	DRAWN:	REVIEWED:	APPROVED:
A	**Draft For Review**	**31/10/23**	**JN**	**MK**	**MK**

APPROVED BY:
Michiel Kamphorst,
MSc, BSc, RPEng, RPEQ, NER

Signed: Date: **31/10/23**

INGEN CONSULTING
ENGINEERED WITH PURPOSE

Ingen Consulting Pty Ltd
ACN: 623 948 112
a: Alstonville, NSW
p: +614 1726 4987
e: michiel@ingenconsulting.com.au
w: www.ingenconsulting.com.au

CLIENT:
Lewis Barakat
c/- Lewis Barakat
PO Box 810
Double Bay, NSW

PROJECT:
DA drawings for shop top mixed used development at 17 McDonald Place in Evans Head, NSW

DRAWING TITLE:
Swept-Path analysis

PROJECT NUMBER: **J1279**

ORIGINAL SIZE: **A3**

DRAWING NUMBER: **J1279_C302**

REVISION: **A**