



# Traffic Engineering

Proposed Development Plan for Residential Subdivision

Twist Creek Road, Yackandandah

Traffic Impacts Assessment and Traffic Management Assessment



# 1 Introduction and Scope

Alpine Valley Developments is seeking a town planning permit to allow subdivision of land at Twist Creek Road, Yackandandah.

The responsible authority for planning is the Indigo Shire Council. Indigo Shire has adopted the “Infrastructure Design Manual” (IDM) for assessment of planning proposals and engineering. IDM sets out requirements for planning applications to be accompanied by a Traffic Impact Assessment and a Traffic Management Assessment, which this report references.

# 2 The Subject Land

The subject land is located as shown in Figure 1, which provides a context for the site in relation to existing development of the Yackandandah Township.

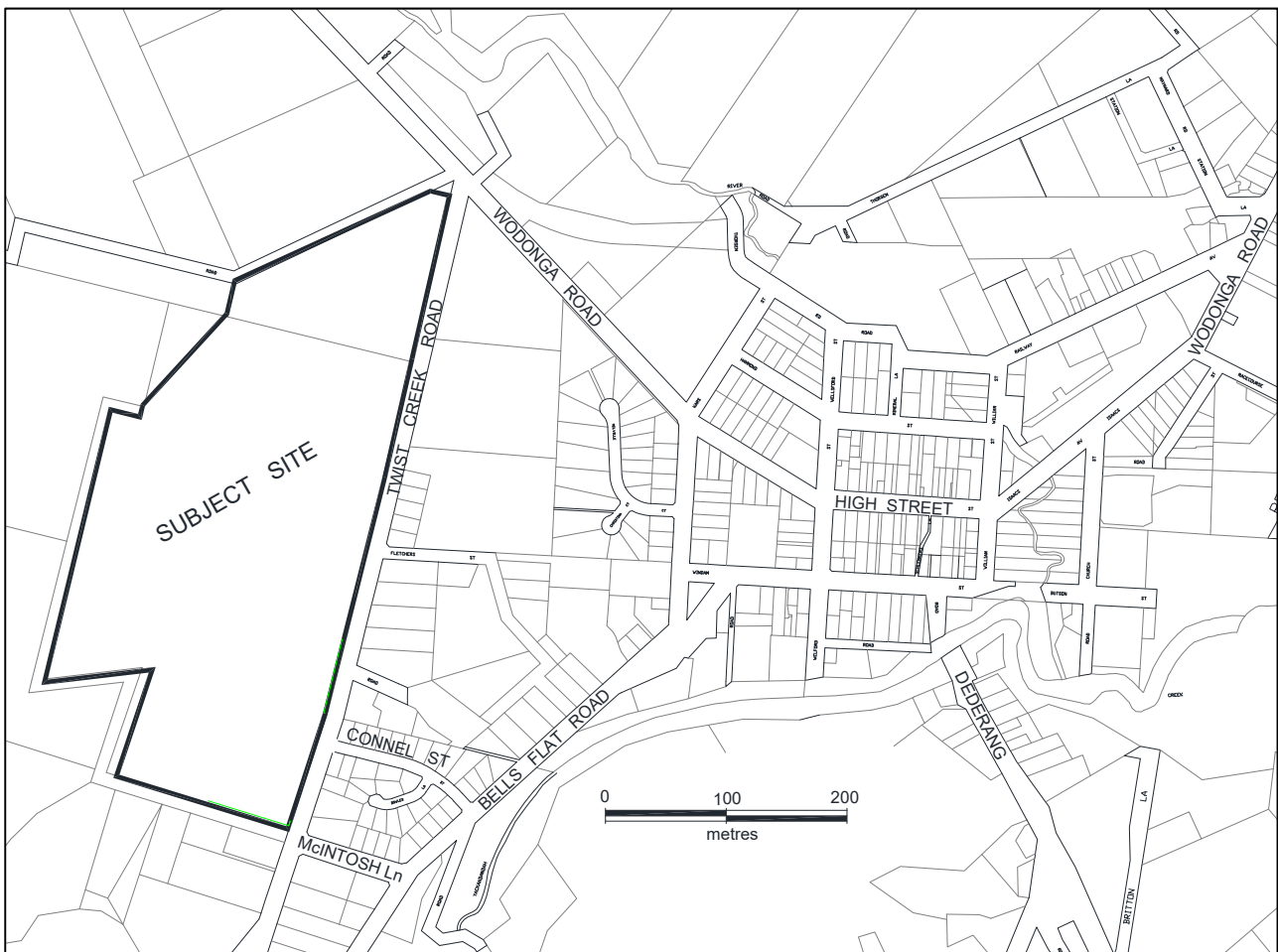


FIGURE 1 : SITE LOCATION

The land is zoned General Residential Schedule 1 in the Indigo Planning Scheme, and is subject to Development Plan Overlay Schedule 1. Figure 2 shows the zoning.

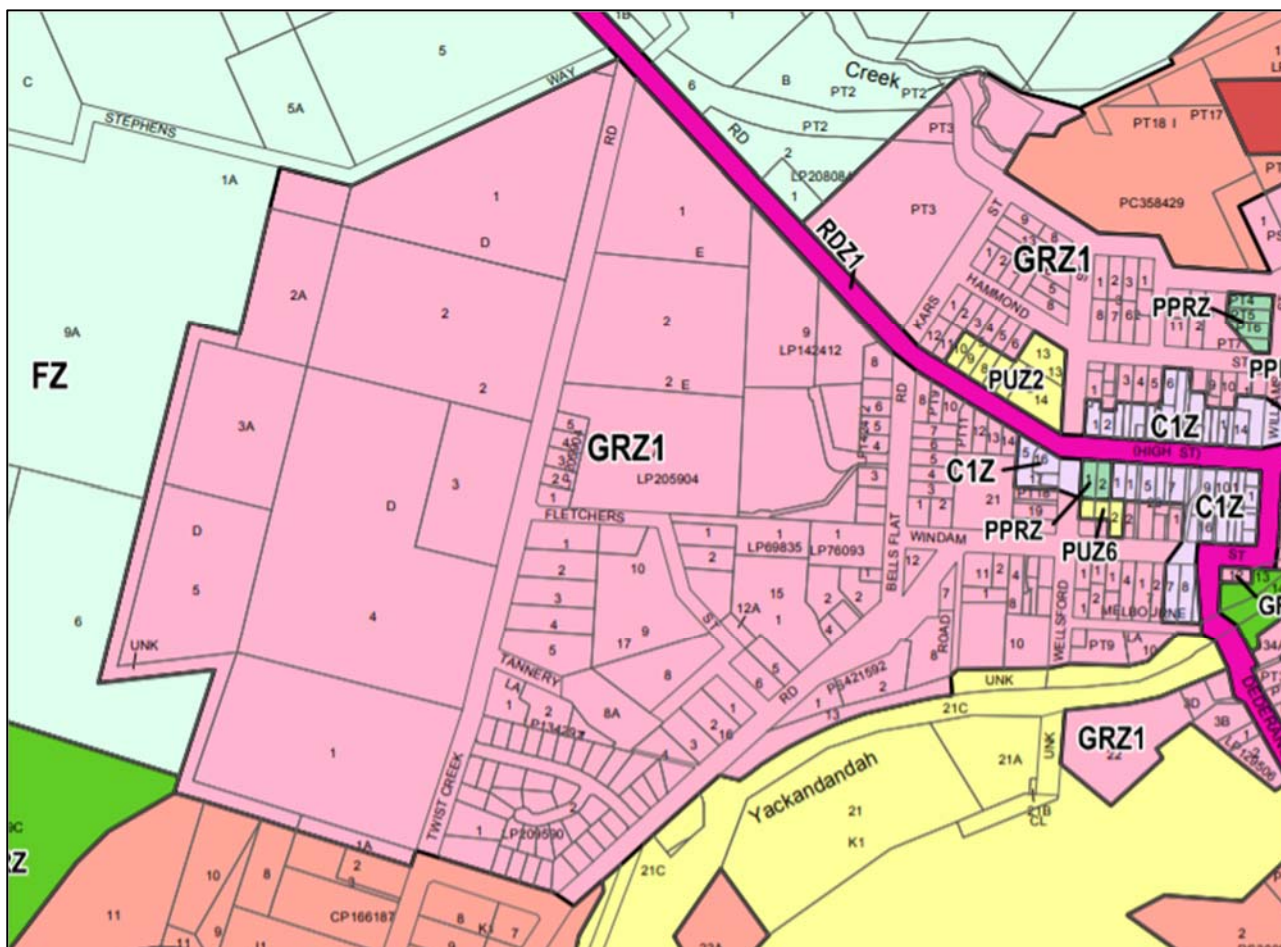


FIGURE 2 : EXTRACT OF ZONES FROM INDIGO PLANNING SCHEME

Generally the land is primarily used for grazing, and there are several houses on the land with driveways to Twist Creek Road.

**Twist Creek Road** has a reservation width of about 30 metres with an approximately central sealed carriageway about 5.5 metres wide. We estimate daily traffic (AADT) at under 500 vehicles movements near the subject land.

**Connel Street** has a reservation width of about 19 metres with a sealed and kerbed carriageway about 8.5 metres wide. Connel Street has about 20 house lots (including those in Bowles Lane) and we estimate maximum AADT at under 300 daily vehicle movements.

**McIntosh Lane** has a reservation width of about 32 metres and sealed carriageway about 6 metres wide. We estimate AADT on McIntosh Lane at fewer than 300 daily vehicle movements.

**Wodonga- Yackandandah Road** west of Twist Creek Road carries around 1,800 daily vehicle trips (extrapolated from VicRoads data).

### 3 The Proposal

The proposed Development Plan has been prepared by Tomkinson Group. A copy is appended to this report. In summary the proposal comprises:

- 113 lots of varying sizes between 485 square metres and 7.24 hectares.
- Street network connections to Twist Creek Road at 4 locations, as follows:
  - Just north of the intersection with McIntosh Lane,
  - Just north of the intersection with Connel Street,
  - About 110 metres south of the intersection with Fletcher Street, and
  - About 130 metres north of the intersection with Fletchers Street.
- 11 lots are proposed with driveways directly to Twist Creek Road.
- All drainage facilities are proposed with substantial street frontages.

There is a clear density gradient such that the northern part of the land has the largest lots, and the western part also has large lots. Only in the central southern part of the land are the proposed lots such that they would be regarded as typically suburban in size.

## 4 Traffic Generation and Distribution

IDM wants 10 vehicle trips per day per dwelling to be used for impact assessments. That is 1,260 daily vehicles generated from the overall proposal.

We estimate that 85% of generated vehicle trips will have origin or destination somewhere around the Yackandandah Town centre, noting the locations of primary school, shopping, work places, community and sporting facilities. We are allowing for 15% of generated traffic to use Wodonga Road north-west of Twist Creek Road. Our estimates of traffic generation and distribution are provided at Figure 3.



FIGURE 3 : ESTIMATED SITE TRAFFIC GENERATION VEHICLE MOVEMENTS PER DAY



## 5 Appropriate Street Form

There is no internal street with estimated AADT at more than 350 vehicle movements per day, and almost all will be under 300 daily vehicle movements. IDM at Table 2 in Section 12 indicates “Access Place” with carriageway at 6 metres width in minimum 14 metres reservation width for up to 300 daily vehicle movements.

The Indigo Planning Scheme at Clause 56.06-6 includes Design Standard C21 with Table C1, setting out for “Access Place” a 5.5 metres carriageway width, minimum reservation width of 13 meters and AADT 300-1,000. A carriageway width of 5.5 metres allows a truck to pass a parked car (or well parked truck with adequate care) and so therefore providing the same traffic facility as a 6 metres carriageway. However the slightly narrower carriageway provides some deterrent to unnecessarily high vehicle speeds, particularly when there will be little or no on-street parking as will be the case where lots are large and/or the street is “one-sided” in respect of housing. To save argument and despite the Planning Scheme design being marginally better we propose that the IDM version of Access Place with carriageway width of 6 metres be adopted in the locations shown in Figure 4.

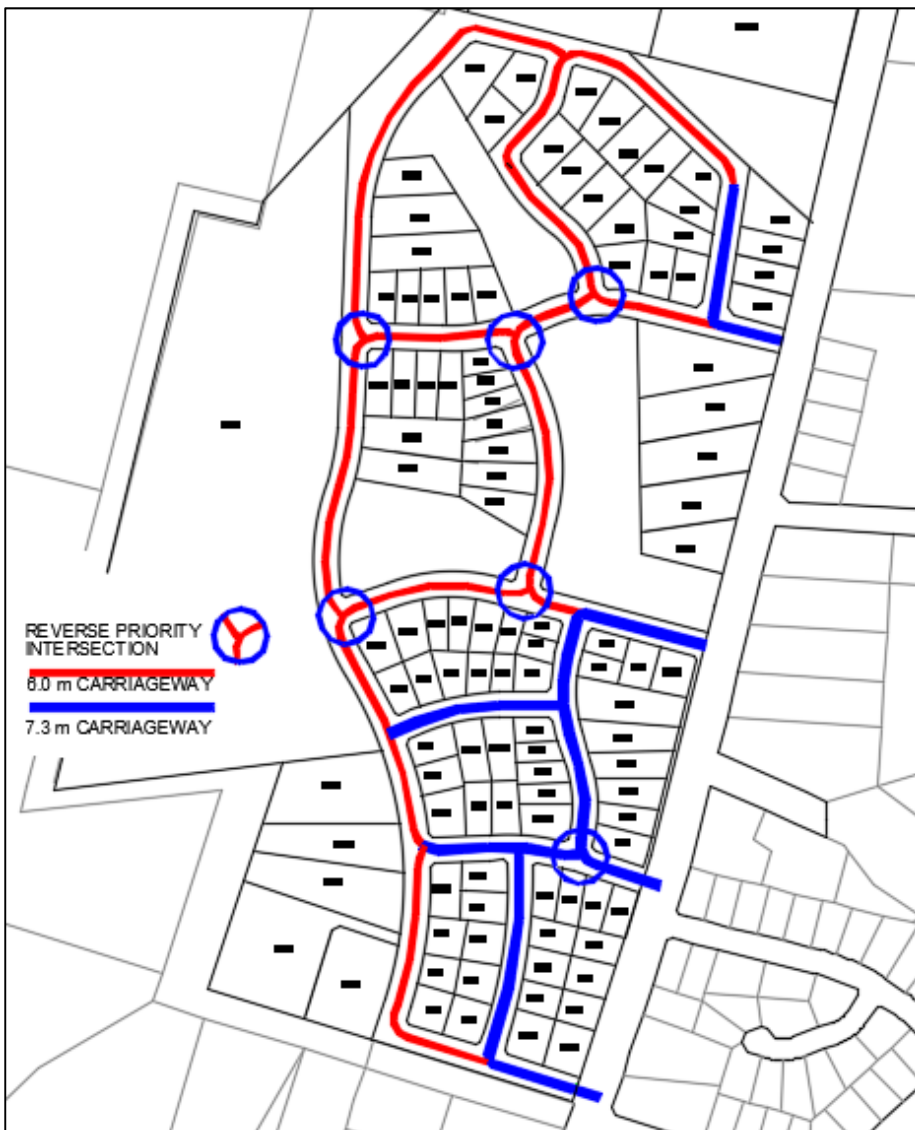


FIGURE 4 : PROPOSED STREET TYPES

Whilst “Access Place” meets IDM Table 2 and Clause 56.06-6 for low traffic volumes we prefer to recommend 7.3 metre carriageway widths where standard urban density lots are located on both sides and without “need” for consideration of special controls to maintain clear passage and/or parking only on the carriageway. Our recommended locations for the 7.3 metre carriageway widths are provided in Figure 4.

All reservations for internal streets are drawn at 20 metres in the proposed Development Plan. Subject to drainage and services requirements, and also footpaths, some of those reservation widths could be reduced. In particular where a street is contiguous with a drainage or open space facility there is no need for footpath on the non-housing side, and a reservation width of 14 metres may be adequate.

Footpath should be provided at 1.5 metres width in front of all house lots. No separate cycling facilities are warranted given the very low traffic volumes that will result from the development.

## 6 Traffic Management

IDM wants “slowing points” generally at 100-150 metres separation, to keep street “leg-length” down to distances that do not allow traffic speeds to get too high.

Figure 4 shows “Reverse Priority” intersection recommendations for the subdivision, with leg-length of street segments mostly around 150 metres.

## 7 Traffic Impacts

### 7.1 Twist Creek Road

The current construction of Twist Creek Road is more or less the same as a “Rural Living Access Road” per Table 6 in IDM. Indicative maximum traffic volume is provided at AADT 1,000, a level that will not be likely to be exceeded post the development indicated in the subject Development Plan.

### 7.2 Connel Street and McIntosh Lane

Connel Street has been constructed to a standard similar to “Access Street” at Table 2 IDM. Indicative maximum traffic volume for “Access Street” is AADT 2,500, with 7.3 metres carriageway width and 16 metres reservation width. So whilst the increase in traffic that will use Connel Street is proportionally significant, the resultant volumes will still be under about AADT 1,000.

Connel Street would have been recognised at the street that will take a large proportion of traffic from the area to the west of Twist Creek Road when that area was zoned General Residential and the level of construction has responded to that. Accordingly the impacts of the additional traffic on Connel Street, whilst more than doubling, will still be acceptable by the planning authority and well within relevant standards.

## 8 Intersection Treatments

### 8.1 Development Plan South Intersection near McIntosh Lane

AustRoads Guide to Road Design Part 4 at Section A.10.4 generally recommends staggered T's rather than cross junctions. For "Right-Left" staggers of the minor road AustRoads states that stagger distance should be:

- Small enough to enable an efficient crossing manoeuvre in a single movement (i.e. not staged).
- Great enough to cut off the possibility of high speed crossing movements from the minor roads.

In our view the proposal as presented allows compliance with the principles set out by AustRoads.

### 8.2 Development Plan Central Intersection near Connel Street

As above the intersection shows a "Right-Left" stagger with appropriate separation to allow compliance with the relevant AustRoads recommendations.

### 8.3 Development Plan Intersections North and South of Fletcher Street

These simple T-junctions requires no more than BAR/BAL treatments on Twist Creek Rd, as set out at Section 8.5.

### 8.5 Works Warrants at Intersections

Figure 5 provides estimated peak hourly traffic volumes at full development for the intersection near Connel Street.

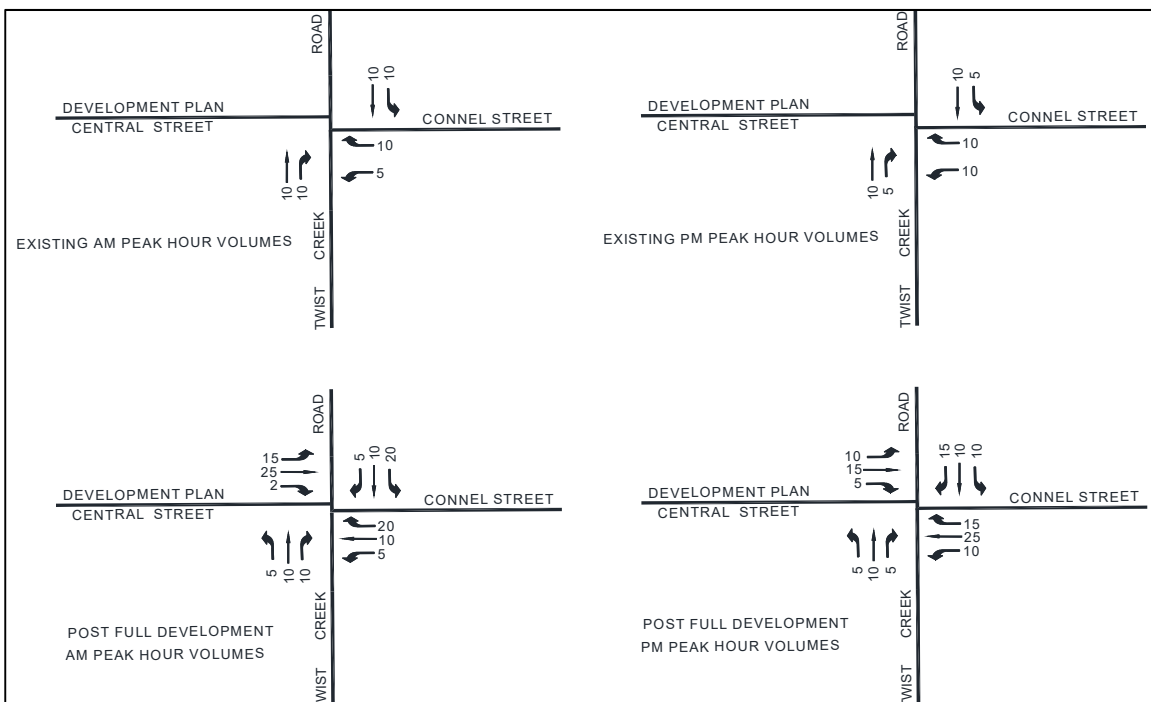


FIGURE 5 : PEAK HOUR TURNING VOLUMES DEVELOPMENT PLAN CENTRAL INTERSECTION



None of these volumes create warrants for anything more than BAR/BAL treatments when assessed against Figure A.10 from AustRoads, copied below.

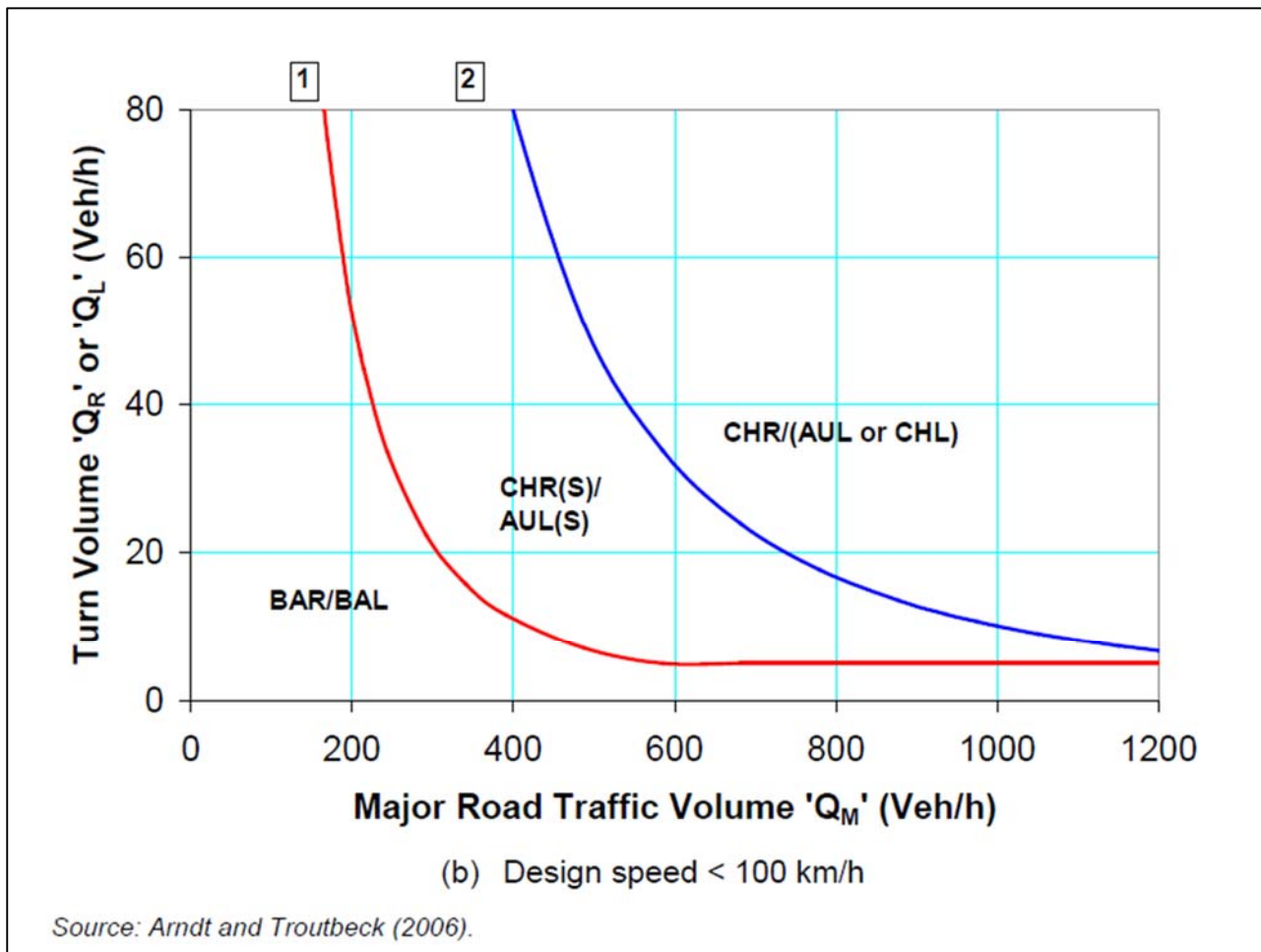


FIGURE 6 : FIGURE A.10 AUSTRoadS PART 4

## 9 Summary and Conclusions

Subject to the recommendations within this report, we see no traffic engineering impact or traffic management issues that should preclude the approval of the Development Plan.

The recommended actions are:

- Consider reduction of street reservation widths in the context of spatial needs for services and footpaths.
- Provide 6 metres or 7.3 metres carriageway width streets as recommended.
- Provide traffic management at internal intersections by way of reversed priorities at the corners nominated.
- Provide BAR/Bal treatments on Twist Creek Road at the 4 proposed access points to the land in the development Plan.

Subject to the above the traffic impacts of the development will all be well within limits acceptable to the responsible authority.

TTM Consulting (Vic) Pty Ltd



J. D. Higgs

### Record

No.	Author	Description	Date
1.	J. Higgs	Proposed Development Plan for Residential Subdivision	07/11/2019
2.	J. Higgs	Revised plan	13/05/2020

# DEVELOPMENT PLAN - MASTERPLAN

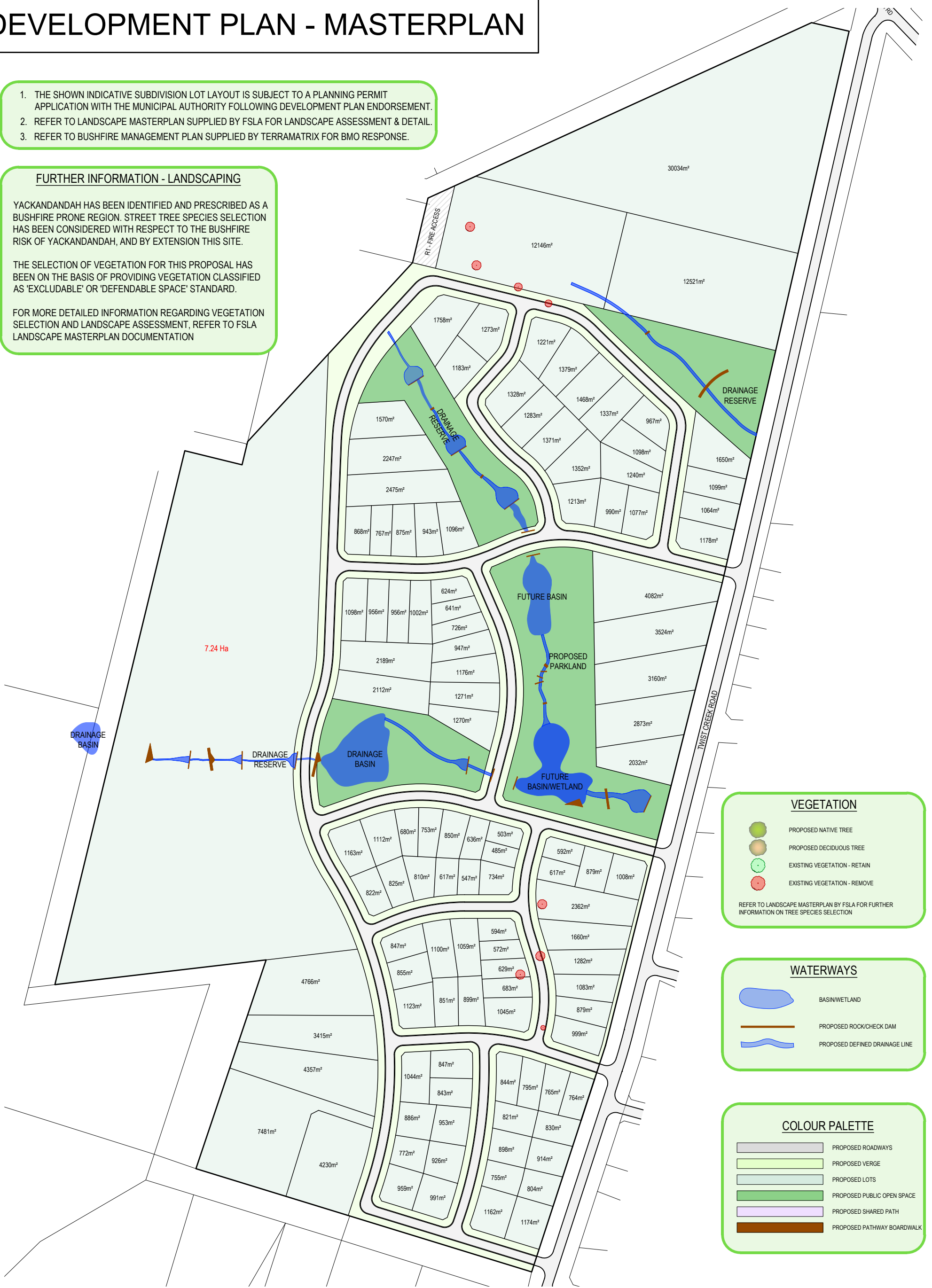
1. THE SHOWN INDICATIVE SUBDIVISION LOT LAYOUT IS SUBJECT TO A PLANNING PERMIT APPLICATION WITH THE MUNICIPAL AUTHORITY FOLLOWING DEVELOPMENT PLAN ENDORSEMENT.
2. REFER TO LANDSCAPE MASTERPLAN SUPPLIED BY FSLA FOR LANDSCAPE ASSESSMENT & DETAIL.
3. REFER TO BUSHFIRE MANAGEMENT PLAN SUPPLIED BY TERRAMATRIX FOR BMO RESPONSE.

## FURTHER INFORMATION - LANDSCAPING

YACKANDANDAH HAS BEEN IDENTIFIED AND PRESCRIBED AS A BUSHFIRE PRONE REGION. STREET TREE SPECIES SELECTION HAS BEEN CONSIDERED WITH RESPECT TO THE BUSHFIRE RISK OF YACKANDANDAH, AND BY EXTENSION THIS SITE.

THE SELECTION OF VEGETATION FOR THIS PROPOSAL HAS BEEN ON THE BASIS OF PROVIDING VEGETATION CLASSIFIED AS 'EXCLUDABLE' OR 'DEFENDABLE SPACE' STANDARD.

FOR MORE DETAILED INFORMATION REGARDING VEGETATION SELECTION AND LANDSCAPE ASSESSMENT, REFER TO FSLA LANDSCAPE MASTERPLAN DOCUMENTATION



### VEGETATION

- PROPOSED NATIVE TREE
- PROPOSED DECIDUOUS TREE
- EXISTING VEGETATION - RETAIN
- EXISTING VEGETATION - REMOVE

REFER TO LANDSCAPE MASTERPLAN BY FSLA FOR FURTHER INFORMATION ON TREE SPECIES SELECTION

### WATERWAYS

- BASIN/WETLAND
- PROPOSED ROCK/CHECK DAM
- PROPOSED DEFINED DRAINAGE LINE

### COLOUR PALETTE

- PROPOSED ROADWAYS
- PROPOSED VERGE
- PROPOSED LOTS
- PROPOSED PUBLIC OPEN SPACE
- PROPOSED SHARED PATH
- PROPOSED PATHWAY BOARDWALK

E AMENDMENTS FOLLOWING CFA REVIEW/COMMENT M.F. M.F. X 30/03/20

REV REVISION DES DWG CHK DATE

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**TWIST CREEK DEVELOPMENT PLAN**  
**TWIST CREEK ROAD, YACKANDANDAH**  
**OVERALL DEVELOPMENT PLAN**  
INDIGO SHIRE COUNCIL  
ALPINE VALLEY DEVELOPMENTS

DWG STATUS: **WORK IN PROGRESS** PROJECT & DWG No: W1010-DP01 / XX

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PLOT DATE: 30/03/2020 FILE: C:\12\DATA\TOMKINSON\ALPINE VALLEY DEVELOPMENTS\_YACKANDANDAH\_ENGINEERING\CHILD CURRENT DESIGN\W1010\_DP REV.DWG