

## Appendix 5 –Traffic Impact Assessment

As prepared by O'Brien Traffic dated July 2016



# TRAFFIC IMPACT ASSESSMENT

PROPOSED RESIDENTIAL SUBDIVISION

MILL LANE, ROSEDALE

8 JULY 2016

MILL LANE, ROSEDALE

NBA Group Pty Ltd

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# 1 INTRODUCTION

O'Brien Traffic has been engaged by NBA Group Pty Ltd to undertake a traffic impact assessment of a proposed residential subdivision located on Mill Lane, Rosedale.

In the course of preparing this report:

- The subdivision concept plan by Millar & Merrigan Pty Ltd (Revision 6 dated 31 May 2016) has been examined – refer copy provided in **Appendix A**;
- The subject site has been inspected;
- Liaison has taken place with VicRoads and Council representatives; and
- The design aspects and traffic implications of the proposal have been assessed.

## 2 EXISTING CONDITIONS

### 2.1 LOCATION AND LAND USE

The subject site consists of various land parcels that abut one or more of Mill Lane, Lyons Street (Princes Highway), Rosedale – Longford Road and Nelson Street in Rosedale. The location of the site is indicated in **Figure 1** (Google Street Map) and **Figure 2** (aerial photograph).



IMAGE SOURCE: GOOGLE MAPS

FIGURE 1: LOCATION OF SUBJECT SITE



IMAGE SOURCE: RACV COUNTRY STREET DIRECTORY

FIGURE 2: AERIAL VIEW OF SUBJECT SITE

The subject site is zoned *General Residential Zone 1* under the Wellington Planning Scheme. The land zoning is indicated in **Figure 3**.

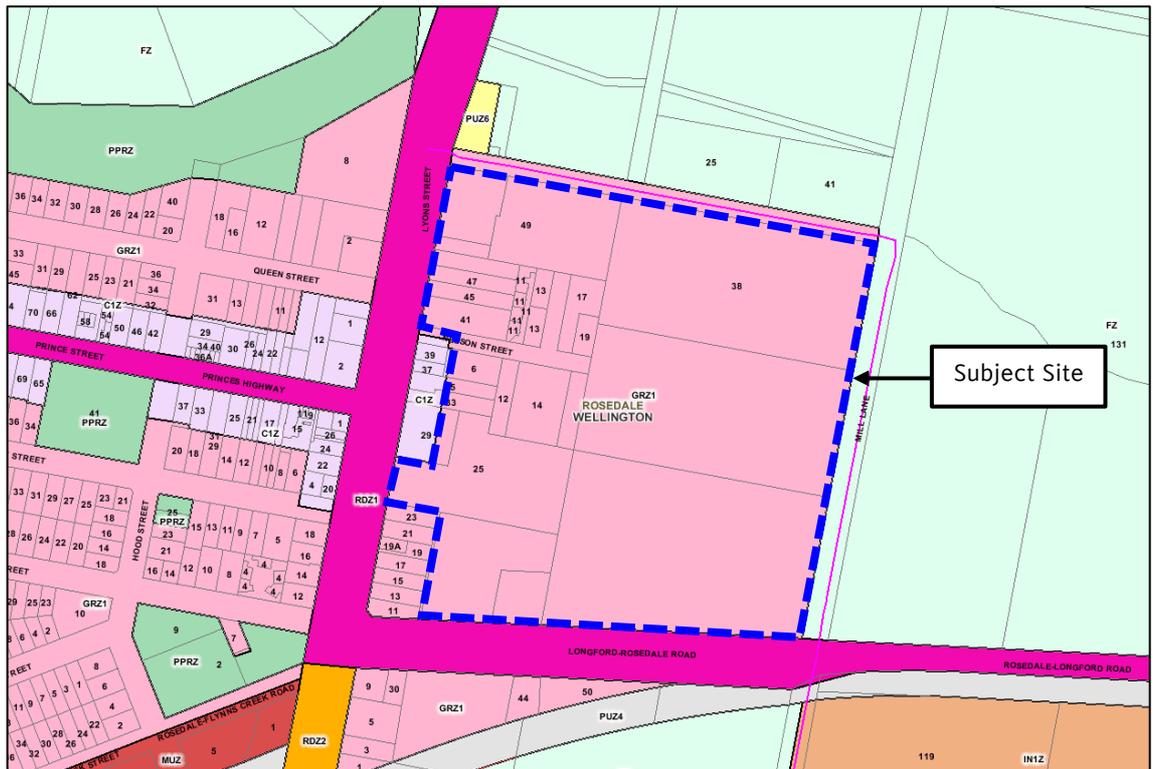


IMAGE SOURCE: RACV COUNTRY STREET DIRECTORY

FIGURE 3: LAND ZONING

The subject site is subject to the following planning overlays (shown in Figure 4):

- Development Plan Overlay – Schedule 1;
- Floodway Overlay;
- Land Subject to Inundation Overlay; and
- Heritage Overlay (this affects the open space at the rear of the *Rosedale Hotel*, which is included within the subject site).

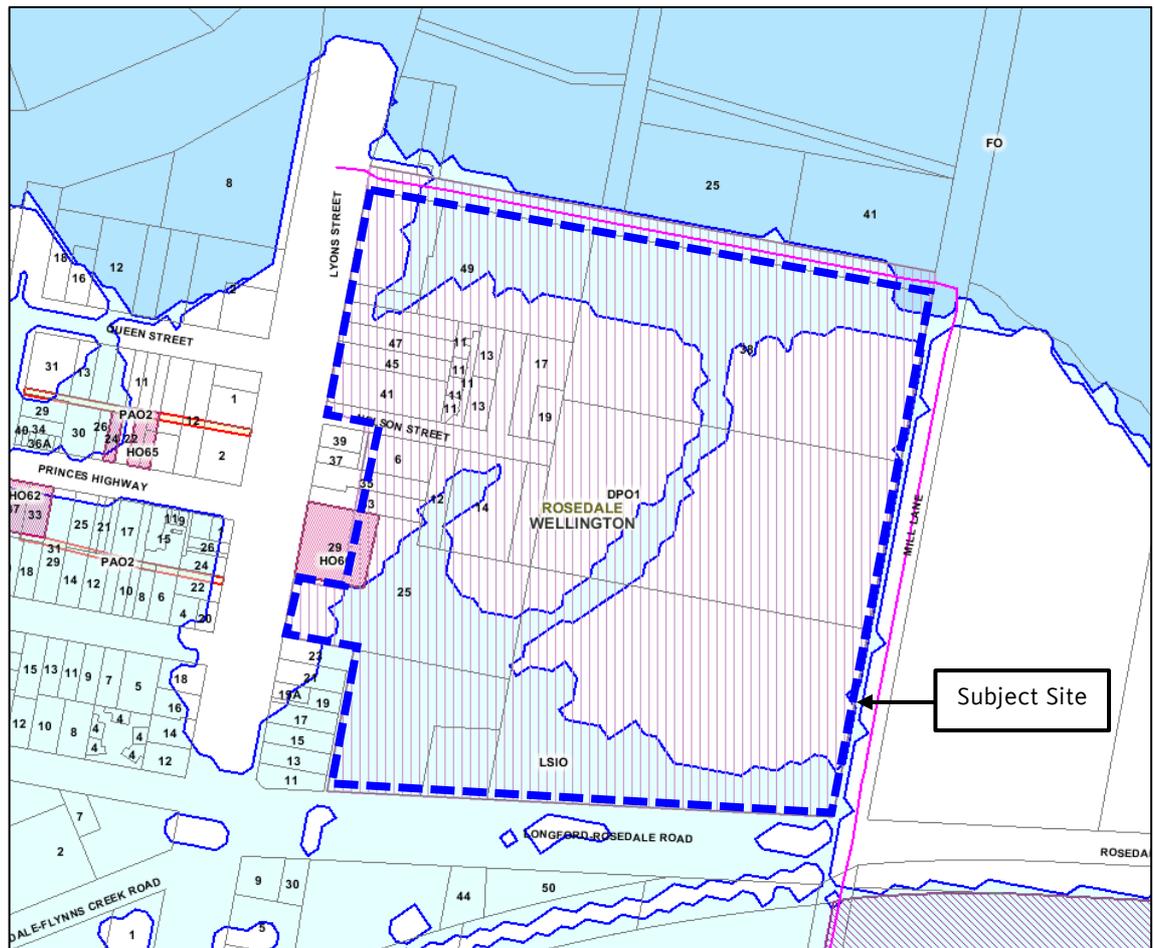


IMAGE SOURCE: RACV COUNTRY STREET DIRECTORY

FIGURE 4: PLANNING OVERLAYS

The overall site is irregular in shape, covering a total land area of 23.9ha. The topography is generally flat. The site is largely unoccupied except for several existing dwellings.

## 2.2 SURROUNDING LAND USE

There are two dwellings on Mill Lane directly north of the site and two dwellings on Rosedale-Longford Road directly south of the site. On the western side of the subject site (on the eastern side of Lyons Street) lie assorted dwellings and the *Rosedale Hotel*. Land to the east of the site is vacant.

The Rosedale shopping strip is located on Prince Street (Princes Highway) approximately 200m west of the subject site.

## 2.3 ROAD NETWORK

**Mill Lane** is a rural residential access road under Council control. It runs in an east-west orientation off Lyons Street (Princes Highway) before turning 90 degrees and running north-south to Huffers Lane. A permanent road closure exists just south of Rosedale-Longford Road at the former railway level crossing.

The road is unsealed and features a carriageway width of approximately 3.5 – 4.0m in the east-west section (within a ~19m reservation) and 3.7 – 5.0m in the north-south section adjacent to the site (within a ~29.9m reservation).

The intersection with Lyons Street features left and right-turn deceleration lanes. The intersection with Rosedale-Longford Road has no special treatment.

The default rural speed limit (outside a built-up area) of 100km/h applies, although this is not a practical speed for the standard of roadway.

It is understood that the developer of the proposed subdivision has reached agreement with Council to permanently close the north-south section of Mill Lane (north of Rosedale-Longford Road) should the subdivision go ahead.

Views of the east-west section of Mill Lane are provided in **Figures 5 – 6**.



FIGURE 5: MILL LANE FACING WEST



FIGURE 6: MILL LANE (INTERSECTION WITH LYONS STREET)

**Lyons Street** consists of two distinct sections. North of Prince Street (which is also known as Princes Highway), Lyons Street forms part of the Princes Highway. South of Prince Street, Lyons Street is a main road but not part of the highway. Lyons Street is a Road Zone Category 1 and is under the care and management of VicRoads.

North of Prince Street, Lyons Street is a divided road featuring two traffic lanes in each direction. The speed limit is 100km/h (beginning approximately 50m north of Mill Lane), reducing to 60km/h south of this point.

South of Prince Street, Lyons Street is also divided but features a single wide traffic lane in each direction. The southbound carriageway (adjacent the subject site) is 15.7m wide, with angle parking on the western side and parallel parking on the eastern side. The northbound carriageway features parallel parking on both sides. The speed limit in this section of Lyons Street is 60km/h.

The roundabout at the intersection of Prince Street and Lyons Street is currently mooted for an upgrade to improve safety for left-turning vehicles from west to north. Based on the concept plans prepared by VicRoads, these works (if they go ahead) will have no bearing on vehicular access to/from the subject site.

Views of Lyons Street in the vicinity of the subject site are provided in **Figures 7 – 9**.



FIGURE 7: LYONS STREET LOOKING NORTH (MILL LANE INTERSECTION IS ON THE RIGHT)



FIGURE 8: LYONS STREET LOOKING SOUTH (NELSON STREET INTERSECTION IS ON THE LEFT)



FIGURE 9: LYONS STREET LOOKING SOUTH (SOUTH OF PRINCE STREET)

*Rosedale-Longford Road* is a rural arterial road and a Road Zone Category 1, being under the care and management of VicRoads.

The road is undivided, and in the vicinity of the subject site features a single 2.9m to 3.3m wide traffic lane in each direction.

The speed limit past the subject site is 60km/h, increasing to 100km/h approximately 140m west of Mill Lane.

A view of Rosedale-Longford Road in the vicinity of the site is provided in **Figure 10**.



FIGURE 10: ROSEDALE-LONGFORD ROAD LOOKING WEST

**Nelson Street** is local access street under Council control. It runs in an east-west direction off Lyons Street (Princes Highway) and terminates as a cul-de-sac.

The road features an unsealed carriageway with a width of approximately 4.2m (within a 20.1m to 20.4m wide reservation).

The intersection with Lyons Street is a standard T-intersection with give way control. Access is limited to left-in and left-out maneuvers only, by virtue of the median in Lyons Street. For northbound vehicles to enter Nelson Street, they must undertake a U-turn at the existing median break approximately 40m to the north,

The default urban speed limit of 50km/h applies.

A view of Nelson Street is provided in **Figure 11**.



FIGURE 11: NELSON STREET LOOKING EAST

## 2.4 CRASH HISTORY

A review of VicRoads CrashStats database has been undertaken for the last 5 years of available data (1 January 2011 – 31 December 2015). This indicates that there have been no reported casualty crashes on any of the roads or intersections bordering the subject site.

Notably, there have been three reported casualty crashes at the intersection of Prince Street / Lyons Street (nearby the subject site). This would be a contributing factor to VicRoads' plans to undertake safety improvement works at this intersection.

## 2.5 EXISTING TRAFFIC VOLUMES

A review has been undertaken of VicRoads traffic volume data for roads surrounding the subject site. The available data is presented in **Table 1**.

ROAD	DATE	NBD AADT <sup>1</sup>	SBD AADT <sup>1</sup>	TWO-WAY AADT <sup>1</sup>
Lyons Street (north of Prince Street – exact location unclear)	2015  (note: VicRoads have applied growth factors to data from 2012)	5,100	5,300	10,400
Lyons Street (btw Prince Street and Rosedale – Longford Road)	2015  (note: VicRoads have applied growth factors to data from 2013)	1,000	1,100	2,100

<sup>1</sup> AADT is the Average Annual Daily Traffic Volume (the sum of all traffic using the road for a year, divided by 365)

TABLE 1: TRAFFIC VOLUME DATA

No data is available for any of the other roads bordering the subject site. However, it is estimated that Mill Lane carries less than 100 vehicles per day, Nelson Street carries less than 150 vehicles per day, and Rosedale – Longford Road carries in the range of 1,000 to 2,000 vehicles per day.

## 2.6 PUBLIC TRANSPORT AVAILABILITY

Rosedale Railway Station is located approximately 400m south-west of the subject site.

Regional bus services operate through Rosedale, stopping at the intersection of Prince Street / Hood Street approximately 400m west of the subject site.

## 3 THE PROPOSAL

It is proposed to develop a residential subdivision containing 208 lots. In addition, several existing lots on Nelson Street would be consolidated (that currently contain 9 dwellings in total). Whether the existing dwellings will be retained in future is unknown at this point in time.

Vehicle access is proposed via:

- three connections to the east-west section of Mill Lane;
- the existing Lyons Street / Nelson Street intersection;
- one connection to Lyons Street; and
- one connection to Rosedale – Longford Road.

As discussed previously in this report, the north-south section of Mill Lane is proposed to be permanently closed (as agreed with Council). However, allowance has been made for a potential road connection between the subject site and the land east of the subject site (should this land ever be rezoned from *Farming Zone* to allow residential subdivision).

## 4 TRAFFIC GENERATION, DISTRIBUTION & IMPACT

### 4.1 TRAFFIC GENERATION

There are 208 lots in total, of which 2 lots have direct access to Lyons Street (including one existing dwelling). It is estimated that the four consolidated lots on Nelson Street could in future be subdivided into a further 17 individual lots (adopting a minimum lot size of 800m<sup>2</sup>). Therefore, the total number of lots generating traffic to any of the four arterial road intersections totals  $208 - 2 + 17 = 223$  lots.

It is anticipated that each residential allotment would generate in the order of 10 vehicle movements / day. This is in accordance with the recommended rate given within the Infrastructure Design Manual (IDM). Application of this rate equates to 2,230 daily vehicle movements.

Typically, the peak hour volumes equates to 10% of the daily volume. This equates to 223 peak hour vehicle trips.

### 4.2 TRAFFIC DISTRIBUTION

Broadly speaking, it is anticipated that traffic from the development would be generated as follows:

- 65% to/from the west along Prince Street (Princes Highway);
- 20% to/from the north along Princes Highway;
- 10% to/from the east along Rosedale-Longford Road; and
- 5% to/from the south along Willung Road.

Next, taking into account the proposed vehicle access locations and the layout of the surrounding road network (including U-turn opportunities within Lyons Street), the anticipated traffic generation (in percentage terms) at each access point is as shown in **Figure 12**.

This analysis includes the following general assumptions:

- Of the traffic heading to/from the north along Princes Highway, half will travel via Mill Lane and the other half via Nelson Street and the proposed southern access point to Lyons Street (some exiting vehicles will undertake U-turns on Lyons Street to head north);
- All traffic heading to/from the east on Rosedale – Longford Road will travel via the proposed Rosedale – Longford Road access point;
- Trips to/from the south along Willung Road will largely travel via the proposed Rosedale – Longford Road access point;
- Most trips to the site from the west (Princes Highway) will turn right at the roundabout and left into the proposed southern access point to Lyons Street (as this route is the most direct and avoids U-turns); and
- Most trips away from the site to the west (Princes Highway) will turn left out of Nelson Street and right at the roundabout (as this route is the most direct and avoids U-turns).

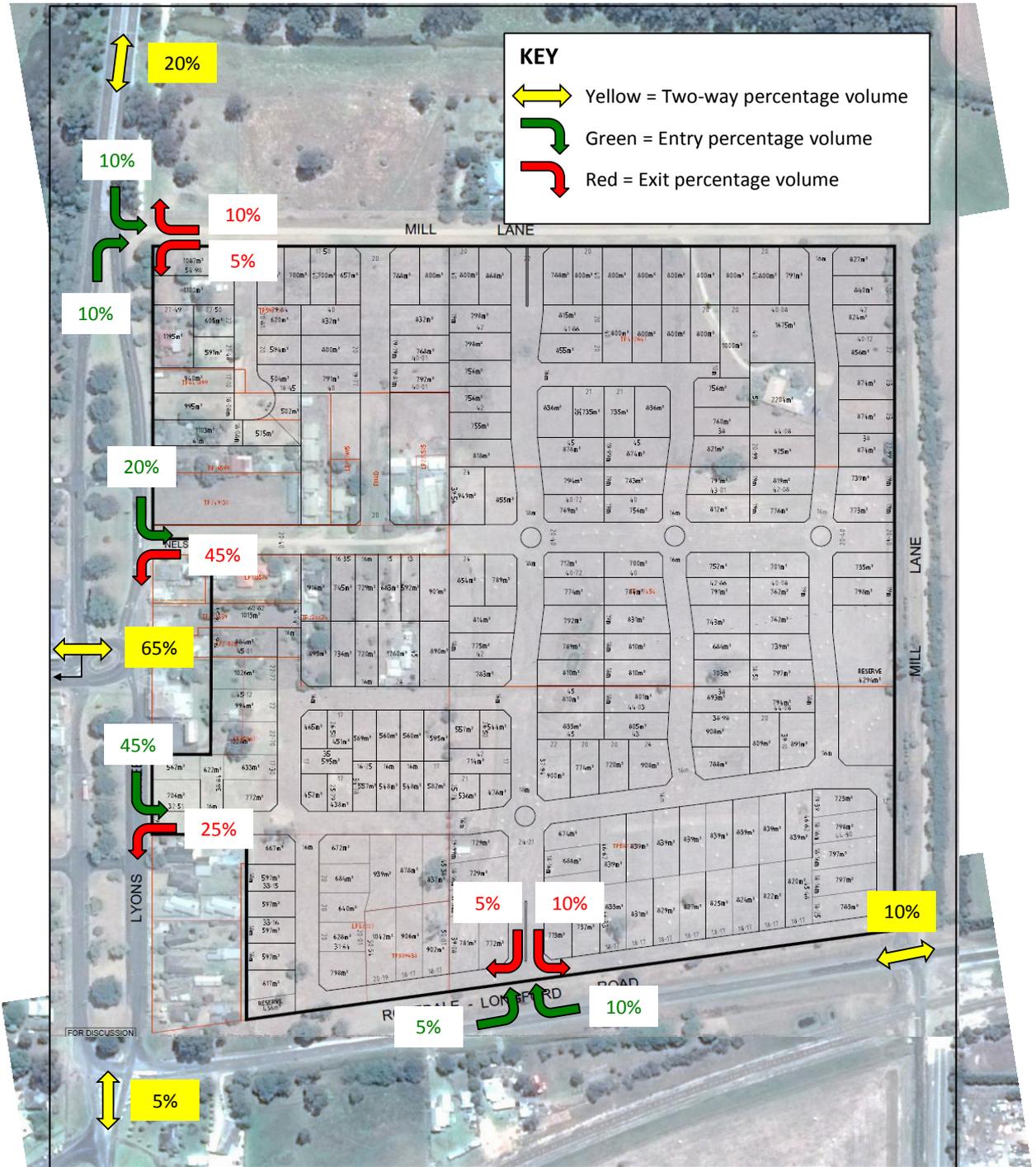


FIGURE 12: ESTIMATED TRAFFIC DISTRIBUTION IN PERCENTAGE TERMS

To determine peak hour volumes at each external intersection, the typical splits between entry and exit movements (for residential development) have been adopted, as follows:

- AM Peak Hour: 20% IN, 80% OUT
- PM Peak Hour: 60% IN, 40% OUT

Based on this, the estimated peak hour volumes are as shown in Figure 13.



### 4.3 TRAFFIC IMPACT

The traffic that would be generated by the proposed subdivision is not anticipated to have any significant adverse impact on the operation of the surrounding road network, for the following reasons:

- The subdivision features a variety of vehicle access points and as such, traffic would be well dispersed to the surrounding road network;
- Traffic generated at the intersection of Lyons Street / Mill Lane would be accommodated by the existing left and right-turn deceleration lanes, with provision for vehicle storage within the median break. The volume of *existing* traffic at this intersection (in addition to the proposed volumes) would clearly be negligible given there are only two other properties on Mill Lane;
- Movements at the Lyons Street / Nelson Street intersection, and the proposed intersection to Lyons Street, are restricted to left-in and left-out only. This arrangement ensures minimal delay and conflict;
- The volume of traffic generated to Rosedale – Longford Road is very low, as is the volume on Rosedale – Longford Road (which is likely to be less than 2,000 vehicles per day, having regard to the traffic data available for Lyons Street); and
- The Prince Street / Lyons Street roundabout would clearly have sufficient spare capacity given the provision of dual left-turn lanes (W→E) and dual right-turn lanes (N→S), and taking into account the AADT volumes available for Princes Highway and Lyons Street.

It is evident that capacity-based analysis (e.g. SIDRA) is not at all warranted for this development.

However, there are safety-based improvements that should be made to facilitate vehicle access. These improvements are discussed in the following section.

## 5 DESIGN MATTERS

### 5.1 EXTERNAL INTERSECTIONS

#### 5.1.1 LYONS STREET / MILL LANE

No changes are considered necessary to the existing vehicle turn lanes at this location. It should also be noted that extending the length of the left-turn lane is impractical given the turn lane begins immediately after a bridge.

#### 5.1.2 LYONS STREET / NELSON STREET

It is recommended that the existing kerb outstand at this intersection be trimmed back in order to facilitate a left-turn deceleration lane into Nelson Street, taking into account the volume of traffic that Lyons street (i.e. Princes Highway) carries – refer **Figure 14**.

This ensures compliance with the warrants for turn treatments set out in Figure 4.9 of AustRoads Guide to Road Design Part 4A: Unsignalised in Signalised Intersections.



FIGURE 14: RECOMMENDED LEFT-TURN MODIFICATION AT LYONS STREET / NELSON STREET

### 5.1.3 LYONS STREET / PROPOSED ACCESS STREET

Having regard to the warrants in AustRoads Part 4A, no special treatment is required for this intersection other than a standard urban BAL (Basic Left Turn) treatment – refer Figure 15.

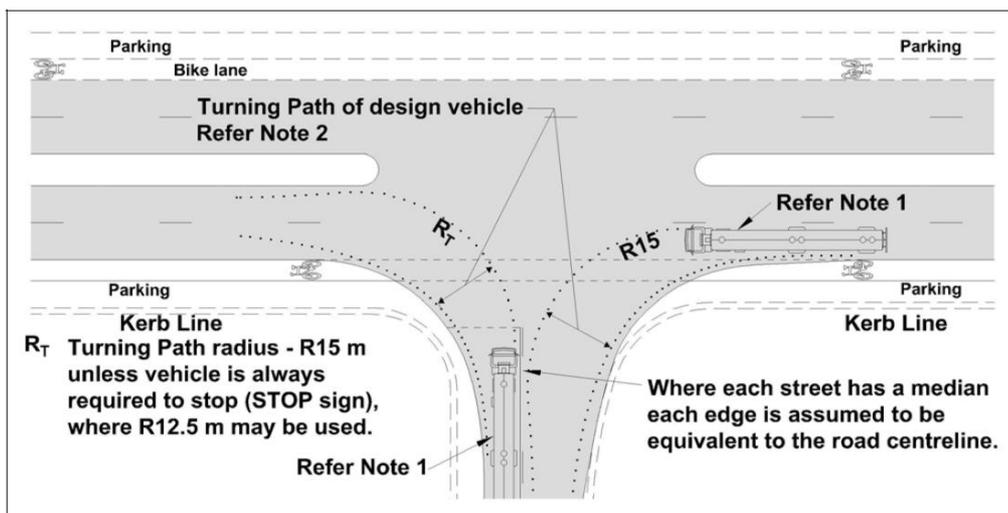


FIGURE 15: AUSTRADS URBAN BASIC LEFT TURN (BAL) TREATMENT

This can be ascertained from the southbound AADT volume for Lyons Street (1,100vpd). Increasing this by 5% (to convert from AADT to weekday), and then assuming the peak hour volume is 10% of the daily volume, this equates to a southbound peak hour volume of 116 vehicles. Together with the maximum anticipated left-turn volume of 59 vehicles, this stipulates use of a BAL treatment in Figure 4.9 of AustRoads Part 4A.

#### 5.1.4 ROSEDALE – LONGFORD ROAD / PROPOSED ACCESS STREET

Whilst there is no traffic volume data available for Rosedale – Longford Road, the *maximum* volume it carries can be readily ascertained from the existing data available for Lyons Street. This is because Lyons Street provides the main connection between Prince Street (Princes Highway) and Rosedale – Longford Road, and so the volume of traffic on Rosedale – Longford Road will certainly be less than on Lyons Street.

The two-way AADT on Lyons Street is 2,100 vpd, and increasing this by 5% (to convert from AADT to weekday) gives a volume of 2,205vpd. Assuming the peak hour volume is 10% of the daily volume, this equates to approximately 220 peak hour vehicle trips (two-way). This is the *maximum* expected volume for Rosedale – Longford Road (although the actual volume would likely be less, as some Lyons Street traffic would head south down Willung Road).

Based on this volume and the expected turn volumes at the proposed intersection with Rosedale – Longford Road, BAL (Basic Left Turn) and BAR (Basic Right Turn) treatments are warranted. Note that a rural standard BAL treatment is not considered appropriate as the AustRoads guide states this is for a high-speed rural environment, whereas the speed limit in this case is 60km/h.

Urban/rural BAR treatments are, for most intents and purposes, the same. A type BAR treatment is shown in **Figure 16**. It is recommended that the dimension “C” be 6.5m in this case, as recommended in the AustRoads guide to accommodate passing semi-trailers and B-doubles.

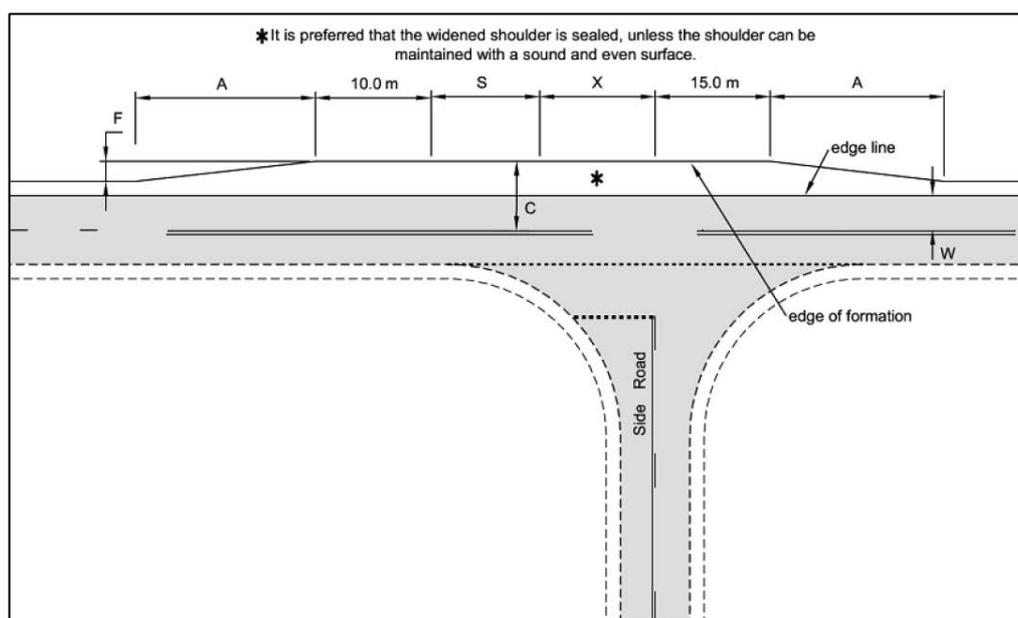


FIGURE 15: AUSTRROADS RURAL BASIC RIGHT TURN (BAR) TREATMENT

It is also recommended that the existing change of speed limit adjacent to the subject site (from 100km/h to 60km/h) be moved east of Mill Lane given that residential development is proposed. This would improve safety for turning vehicles.

The location of this access point (as well as all other access points) is acceptable in terms of vertical and horizontal sight distances, based on inspection.

### 5.1.5 MILL LANE INTERSECTIONS

Each of the four Mill Lane intersections will carry low traffic volumes and function acceptably as standard T-intersections, without special treatment other than a standard AustRoads urban BAL (basic left turn) treatment. A BAR treatment is unnecessary for a local street / local street intersection.

### 5.2 STREET DESIGN CRITERIA

The Infrastructure Design Manual (IDM) has been adopted by Wellington Shire Council, and this is the relevant resource when it comes to the design of new roads within residential subdivisions.

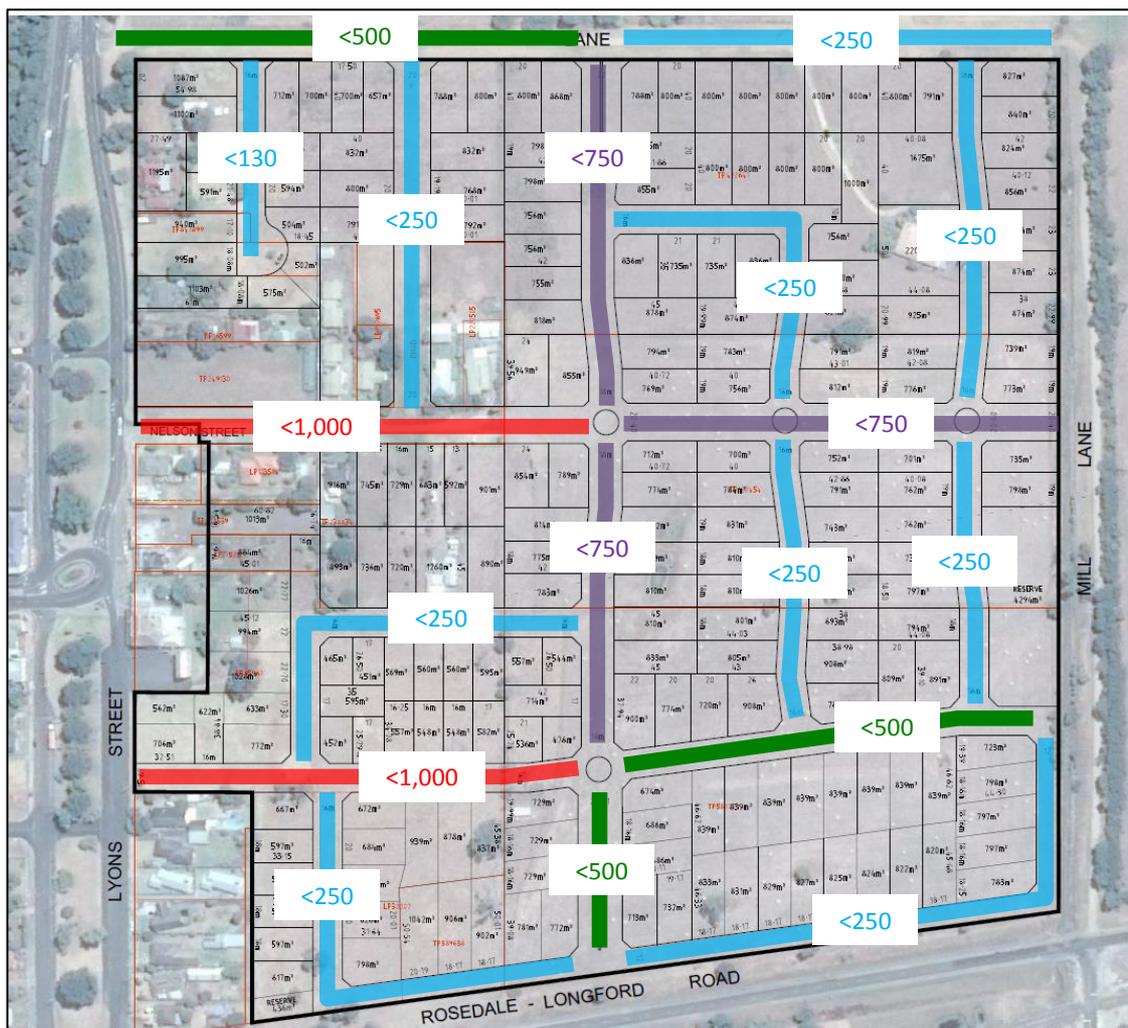
Table 2 in the IDM sets out urban road / street design characteristics. An extract of this table featuring the relevant street types for a residential subdivision is provided in Figure 15.

Street Type	Indicative Maximum Traffic Volume (vehicles/day)	Carriageway Width	Minimum Reserve Width See Note 5 & 6	Minimum Verge Width	Parking Provision within Carriageway	Pedestrian / Cycle Provision within Road Reserve See Note 7	Kerbing
Access Lane (second road frontage where permitted under Council Policy)	300	5.5m See Note 6.	As determined by turning movements		Yes one side	No footpath	Nil if concrete road with central drain or SM2 or modified SM2. See Note 3.
Access Place (where permitted under Council policy)	300	6.0m See Note 6.	14.0m	3.5m See Note 2.	Yes (one side)	Footpath both sides. No separate cycle provision	B2, SM2 or modified SM2. See Note 3.
Access Street	1000 - 2500	7.3m	16.0m	3.5m See Note 2.	Yes (both sides)	Footpath both sides. No separate cycle provision	B2, SM2 or modified SM2. See Note 3.
Collector/ Connector Street Level 1	2500 - 6000	11.6m	24.0m	6.0m	Yes (both sides)	Shared path both sides	Barrier B2 Kerb outstands or splitters required at intersections and pedestrian crossing points
Collector/ Connector Street Level 2 (alternatively called trunk collector)	6000-12000	2 x 7.0m + 6.0m median	34.0m	6.0m	Yes (both sides)	Footpath both sides. Shared path both sides.	Barrier B2
Residential Court Bowl	n/a	10.0m radius	28.0m	3.5m See Note 2	n/a	Footpath both sides. No separate cycle provision	SM2 or modified SM2. See Note 3.

FIGURE 15: EXTRACT FROM TABLE 2 IN THE INFRASTRUCTURE DESIGN MANUAL (VERSION 4.4.2)

Each street type in the IDM is given an indicative maximum traffic volume. Having regard to the expected traffic generation of the subdivision (2,230 vpd in total) and the expected traffic distribution, it is evident that no single street would carry more than the volume range specified for an Access Street (1,000 – 2,500 vpd).

Expected maximum daily traffic volumes for each street are provided in **Figure 15**.



**FIGURE 15: ANTICIPATED MAXIMUM INTERNAL TRAFFIC VOLUMES**

Based on the above traffic volumes, it would be acceptable that each road be designed as an Access Street with a 7.3m carriageway (including Mill Lane, which should be upgraded in the same way). It is further noted that it is Council’s internal policy to not allow a carriageway width of less than this amount.

However, two additional factors must be considered before nominating the road cross-sections:

- If in future the land to the east of the subject site is rezoned and developed as a residential subdivision, then this would generate through traffic within the subject site (principally along Nelson Street); and
- As discussed in **Section 5.3** it is necessary to ensure that a potential future bus route can be accommodated (which requires 2 x 3.5m wide clear traffic lanes).

It is possible (although unlikely) that the volume of traffic on Nelson Street would one day exceed the specified maximum of 2,500 vpd for an Access Street when factoring in through traffic from the east. However, that aside, it is necessary to ensure that a potential future bus route can be accommodated (and Nelson Street would be ideal for this as it runs through the middle of the subdivision).

Based on this, it is recommended that Nelson Street feature a cross-section that incorporates:

- 2 x 3.5m wide traffic lanes;
- 2.3m wide indented parking bays (minimum 1 per 2 lots) on both sides;
- 1.5m wide footpath on the northern side; and
- 2.5m wide shared path on the southern side.

This can all be accommodated within the proposed 20.4m wide road reserve.

Aside from Nelson Street, the proposed road reserves generally vary between 16m and 24.2m in width, and can hence facilitate design of an Access Street (which is specified with a minimum reserve of 16m in the IDM). Exceptions to the 16m requirement are discussed as follows:

- The western end of the street connecting with Lyons Street has a reserve width of 15.67m. This should be increased to 16m. It is also noted that some adjustment of the road alignment and/or the reserve may be necessary at the Lyons Street intersection in order to avoid a power pole that is offset approximately 4.1m from the southern edge of the reserve;
- The single-frontage street to Rosedale – Longford Road (and the north-south section of Mill Lane) have a reserve width of 14m and 12m respectively. As these streets are single-sided, there is hence no need to construct a footpath on the southern/eastern sides, and so a reserve width of 14m/12m is acceptable (note: we are advised that services can be accommodated); and
- Two (or potentially three) lots are accessed off a very short section of road that features a 10m reserve. Access would be satisfactorily provided by a common driveway in this case.

We note that it is not strictly necessary that each road feature a 7.3m wide carriageway. For example, the main north-south access street could be provided with split lanes at the Mill Lane and Rosedale – Longford Road intersections before merging into a 7.3m carriageway (as the current plan suggests).

It is expected that the final design of the roads (including reserve widths) would be undertaken as part of detailed design post-permit, prior to Council endorsement.

Other design matters to be considered during detailed design include:

- The proposed court bowl will require a 10m radius within a 28m reserve, in accordance with the IDM;
- Footpaths should be provided on both sides of each street in accordance with the IDM (with the exception of the single-frontage streets, for which one side is acceptable); and

- The internal roundabouts will need to be designed appropriately (e.g. ensuring adequate deflection and catering to buses on Nelson Street). Given the anticipated traffic volumes, each roundabout would operate satisfactorily with single lanes.

No special provision for bicycles is required by the IDM (although a shared path is nonetheless recommended for Nelson Street). It is considered that the street network would allow for cyclists to share the carriageway with vehicles in relative safety.

### 5.3 PUBLIC TRANSPORT

The IDM requires that bus routes be considered in accordance with the Department of Infrastructure publication entitled *Public Transport Guidelines for Land Use Development*.

These guidelines require that neighbourhoods be designed for bus routes to be located on strategically located connector roads such that dwellings will be within 400m of a potential future bus route. The guidelines further state that a clear trafficable road width of at least 7.0m is required (i.e. 2 x 3.5m wide traffic lanes).

As discussed in **Section 5.2**, Nelson Street is well-placed to become a future bus route and it would also service future residential development to the east (if this occurs in future). All dwellings would be located less than 400m from Nelson Street.

### 5.4 LOCAL AREA TRAFFIC MANAGEMENT

The street lengths do not exceed 240m (which is a requirement specified in Clause 56.06 of the Wellington Planning Scheme in order to control vehicle speeds). Hence, provision of local area traffic management devices (such as speed humps) is not considered necessary.

### 5.5 EMERGENCY & SERVICE VEHICLE ACCESS

CFA requirements for fire truck access are specified in the document *Requirements for Water Supplies and Access for Subdivisions in Residential 1 and 2 and Township Zones*. The requirements outlined in this guide would be met subject to adoption of the recommended street design characteristics (i.e. as per the IDM). This also ensures appropriate access for service vehicles.

## 6 SUBDIVISION STAGING

The initial subdivision stages would be constructed in the western half of the site, with access via Mill Lane and/or Nelson Street.

The intersection treatments recommended in **Section 5.1** should be constructed at the same time as each road is constructed (or upgraded in the case of Mill Lane).

Mill Lane should be upgraded from a single lane unsealed road to a sealed road no later than when it starts to carry 150 vehicles per day (as specified in Section 4.26 of AustRoads Guide to Road Design Part 3: Geometric Design). This equates to 15 developed lots (including the existing two lots on the north side of Mill Lane).

## 7 SUMMARY

Based on the investigations undertaken as part of this project:

- The development is anticipated to generate (ultimately) up to 2,230 daily vehicle trips and 223 peak hour vehicle trips;
- This volume of traffic would have an acceptable level impact on the safety and operation of the surrounding road network, subject to adoption of the following intersection treatments:
  - Removal of the existing kerb outstand at Lyons Street / Nelson Street intersection;
  - Construction of Type BAL/BAR turn treatments at the proposed Rosedale – Longford Road intersection (in accordance with AustRoads Part 4A);
  - Construction of Type BAL turn treatments at the proposed Lyon Street intersection and Mill Lane intersections.

These intersection treatments should occur as each road is constructed or upgraded (in the case of Mill Lane);

- Mill Lane should be upgraded from a single lane unsealed road to a sealed road no later than when it starts to carry 150 vehicles per day (equivalent to 15 lots);
- The proposed internal street network is appropriately laid out should feature the design criteria discussed in **Section 5.1** (to be confirmed in the detailed design stage);
- Nelson Street can (subject to the recommendations in **Section 5.1**) accommodate a potential future bus route;
- No local area traffic management is required, as the street lengths do not exceed 240m which serves to control vehicle speeds; and
- The proposed road network can satisfactorily accommodate emergency and service vehicle access.

We therefore see no traffic-related grounds to prevent the proposed residential subdivision from proceeding.

# APPENDIX A

## SUBDIVISION CONCEPT PLAN

# OVERALL CONCEPT PLAN

**Millar & Morgan Pty Ltd** ACN 005 054 168  
 Mails 2126 Lakeside Drive, Croydon 3136  
 Regional 156 Commercial Road, Morwell 3840  
 Metro Level 11, Queens Road, Melbourne, 3004  
**Millar & Morgan Pty Ltd** ACN 005 054 168  
 Mails 156 Commercial Road, Morwell 3840  
 Regional 382 Raymond Street, Sale, 3850  
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LAND BUDGET	
SITE AREA	24,800ha
ENCUMBERED LAND	1400ha
ROADS	2,670ha
SEWERAGE	2,670ha
TOTAL	0,470ha
NET DEVELOPABLE AREA	28,330ha
LAND USES	
LOCAL ROADS	8,600ha
RESIDENTIAL LOTS	17,730ha
TOTAL AREA	26,330ha
MINIMUM ROAD RESERVE	0,800ha
200 STANDARD RESIDENTIAL LOTS	10,000ha
% SITE	1,9%
% ROAD	10,8%
% LOCAL ROADS	33,4%
% RESIDENTIAL LOTS	65,8%

No.	Revision Description	Drawn	App'd	Date
1	Issue for Public Comment			21/07/16
2	Issue for Public Comment			21/07/16
3	Issue for Public Comment			21/07/16
4	Issue for Public Comment			21/07/16
5	Issue for Public Comment			21/07/16
6	Issue for Public Comment			21/07/16
7	Issue for Public Comment			21/07/16
8	Issue for Public Comment			21/07/16
9	Issue for Public Comment			21/07/16
10	Issue for Public Comment			21/07/16



## Appendix 6 –Ecological Assessment Report

As prepared by Millar Merrigan dated July 2016

# Millar | Merrigan

Land Development Consultants



Mill Lane, Rosedale

## **Ecological Assessment Report**

**Wellington Shire Council**

*Rosedale East Development Plan (REDP)*

July 2015

Prepared by Millar Merrigan on behalf of:  
NBA Group

Reference: 19414/12.1 Version 1

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## Document Status

Version	Date	Description	Prepared By	Revised By
1	July 2016	Preliminary	Shay Chandrakaran	Simon Merrigan

## Executive Summary

Millar Merrigan have been engaged by NBA Group to provide an Ecological Assessment as part of the preparation of the Rosedale East Development Plan (REDP). This report seeks to identify significant flora and fauna in the vicinity or within the subject land that may limit the opportunity for future residential development.

Historically, vegetation on site formed part of the Plains Grassy Woodland (EVC 55); however, due to past land practices and extensive clearing, the site is predominantly covered with exotic pasture grass along with a few native trees scattered within. It should also be noted that the Latrobe River is situated 500m approximately north of the site.

The Latrobe River together with its riparian zone, is recognised as a valuable landscape feature that supports a range of flora and fauna communities. As such, it is critical that future development of the subject site adequately manages stormwater runoff and controls sediment to ensure there is no impact on potential habitat.

The Matted Flax-lily and Growling Grass Frog has been identified as endangered species that could potentially be found on site; however, a combination of a desktop assessment and site assessment has determined that the site does not contain, or provide suitable habitat for either of these species.

It is submitted that the subject land is suitable for development due to the fact that the land is highly degraded and does not hold vegetation of high ecological value. Although there are a few native trees scattered throughout the site, consideration should be given to the retention or removal of these trees at the subdivision stage. It is also considered that future development could potentially improve the ecological characteristics of the site, by introducing a range of indigenous vegetation.

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**Appendix 1.** Ecological Vegetation Classes (EVC)

**Appendix 2.** Fauna and Flora Search – Viridans Biological Database (relevant species only)

## 1 Site Context

### Site description

The boundary of the subject site has been determined by the *Rosedale Structure Plan* (which was adopted by Wellington Shire Council in 2012) and the area covered by the *Development Plan Overlay*. The structure plan identifies the subject land as 'Undeveloped Residential Land' and encourages full utilisation of this land for future development.

The site is irregular in shape, approximately 24.85 hectares in size and comprises of 29 parcels of land that contain a mix of buildings and uses. The lot sizes vary from standard and medium sized allotments located toward Lyons Street and larger landholdings available toward Mill Lane.

**Figure 1 | Aerial photo of the subject site**



Source: <http://au.nearmap.com/>

### Natural Features

The land contains predominantly pasture grass along with a few native scattered trees located within. It is considered that the vegetation on site is not of high ecological value, as past land practices such as extensive clearing and grazing activities have significantly degraded the landscape.

The most notable landscape feature is the Latrobe River floodplain which is situated to the north of the site. The river is located approximately 0.5km north of the site and has been identified as the longest waterway in the West Gippsland Catchment. The Latrobe River is known to flood on a regular basis and does so in pulses due to the number of tributaries

that flow into it. The Latrobe River supports a range of fauna and largely contains intact riparian vegetation; however, the water authority alongside landholders have helped with the revegetation along parts of the waterway, to maintain its health.

**Image 1** | Looking west from Mill Lane



**Image 2** | Looking north from Longford Road



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## 2 Report purpose

The Rosedale East Development Plan (REDP) has been prepared to administer an integrated and cohesive development of the site, as required by the applicable Development Plan Overlay. This Ecological Assessment has been prepared to support the REDP and cover off on the applicable requirements under the Wellington Shire Planning Scheme. The purpose of the preliminary assessment was to gain an understanding of the type and

variability of vegetation and habitats contained within the site, which could potentially limit the opportunity for future development. The report will identify the impacts of the proposal on ecological and physical characteristics of the area including the Latrobe River which is located within close proximity.

---

### 3 Applicable Legislation and other planning considerations

The Wellington Planning Scheme is the principle subordinate legislation (created under the *Planning and Environment Act 1987*) for which land-use and development policies, such as those pertaining to permitted vegetation removal, are implemented within the Shire.

In accordance with the Wellington Planning Scheme, the land is located within the General Residential Zone, Schedule 1 (GRZ1). The land is covered by the Development Plan Overlay (DPO) and as such the REDP has been prepared in accordance with this overlay. The Heritage Overlay (HO) affects parts of the land, along with the Land Subject to Inundation Overlay (LSIO) and Flood Overlay (FO).

#### **Environmental Protection and Biodiversity Conservation (EPBC) Act (1999)**

The EPBC Act provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places—defined in the EPBC Act as matters of national environmental significance.

#### **Flora and Fauna Guarantee Act (FFG) (1988)**

The FFG Act provides a legal framework to enable and promote the conservation of Victoria's native flora and fauna and to provide for a choice of procedures which can be used for the conservation, management or control of flora and fauna and the management of potentially threatening processes.

#### **Planning and Environment (PE) Act (1987)**

As detailed under the PE Act, every municipality has a planning scheme which sets out the objectives, policies and controls for use, development and protection of land. The subject site falls under the control of the Wellington Planning Scheme. The following planning provisions are relevant to biodiversity and thus are applicable to the proposed REDP and potential development of land.

#### **State Planning Policy Framework**

##### Clause 12.01-1 Biodiversity

The objective of this clause is:

*To assist the protection and conservation of Victoria's biodiversity, including important habitat for Victoria's flora and fauna and other strategically valuable biodiversity sites.*

Strategies for achieving this include (relevant points only):

*Use statewide biodiversity information to identify high value biodiversity and consider the impact of land use and development on these values.*

*Ensure strategic planning:*

- *Avoids and minimises significant impacts, including cumulative impacts, of land use and development on Victoria's biodiversity; and*
- *Assists in the re-establishment of links between isolated habitat remnants that contain high value biodiversity.*

*Ensure that decision making takes into account the impacts of land use and development on Victoria's high value biodiversity.*

Clause 52.17 Native Vegetation of the Wellington Planning Scheme detail considerations pertaining to permitted vegetation removal.

The relevant purposes of the clause are:

*To ensure permitted clearing of native vegetation results in no net loss in the contribution made by native vegetation to Victoria's biodiversity. This is achieved through the following approach:*

- *Avoid the removal of native vegetation that makes a significant contribution to Victoria's biodiversity;*
- *Minimise impacts on Victoria's biodiversity from the removal of native vegetation; and*
- *Where native vegetation is permitted to be removed, ensure that an offset is provided in a manner that makes a contribution to Victoria's Biodiversity that is equivalent to the contribution made by the native vegetation to be removed.*

### **Municipal Strategic Statement**

#### Clause 21.13-2 Biodiversity

Objectives to be achieved as part of this Clause:

- *To protect biodiversity, including important natural landscapes, endangered flora and fauna species and indigenous vegetation on public and private land; and*
- *To retain native vegetation on private land, Crown land, declared water stream-side reserves and roadsides.*

The relevant strategies of this Clause are:

- *Recognise and protect native flora and fauna and maintain biological diversity within the Shire, particularly in alpine, coastal, and wetland systems;*
- *Encourage revegetation programs to use indigenous species;*
- *Encourage the retention of appropriate vegetation and fauna habitat in new development; and*
- *Ensure the need for removal of native vegetation is minimised through the appropriate siting of dwellings in rural areas.*

## 4 Scope of the assessment

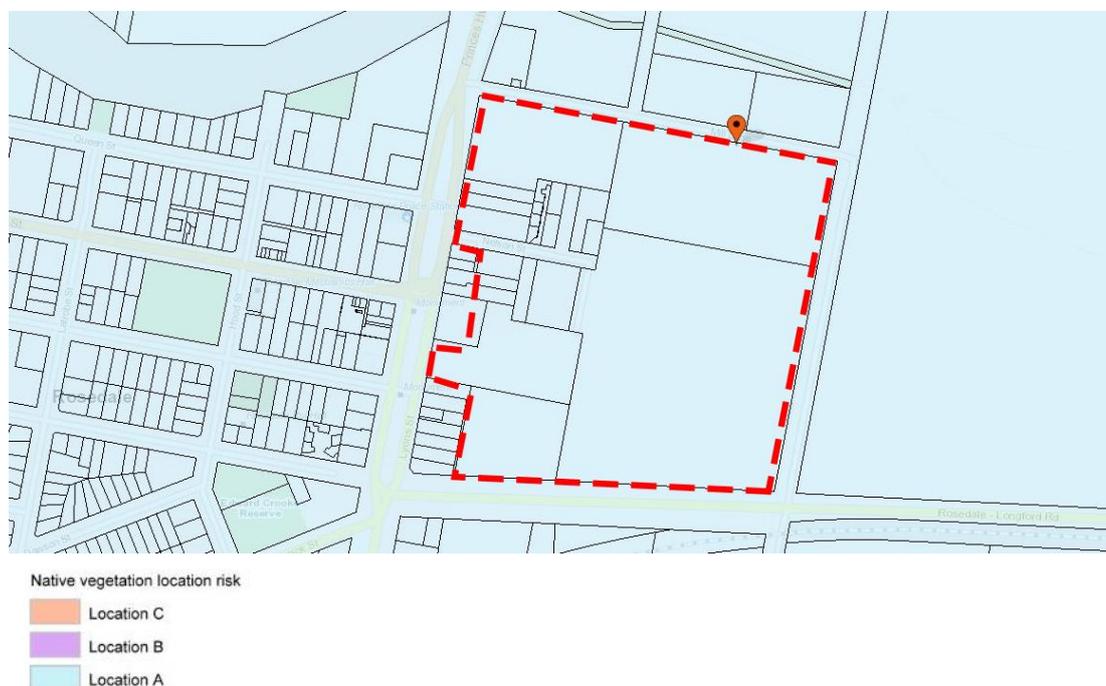
To assist with the development of this report, a desktop assessment has been undertaken using the Viridans Biological Database (Gullan, 2014). A site inspection was also undertaken in May 2016 to assess the ecological characteristics of the subject site. The results of these assessments were used to predict the potential impact of the proposed development on important ecological characteristics identified within the area.

## 5 Desktop assessment

### 5.1 Classification of vegetation (NVIM tool)

Location risk is determined from the native vegetation 'location risk mapping' as prepared by DELWP. All locations in Victoria have been assigned with a 'location risk' category of either; A (lowest risk), B or C (highest risk). The Native Vegetation Information Management System (NVIM) (DEPI) identifies that the subject site resides within 'Location A' which shows that there is little risk of impact upon rare or threatened species within and around the site if vegetation is to be removed (refer to Figure 2).

**Figure 2 |** Image of the 'Native Vegetation Location Risk Mapping' of the subject site.



## 5.2 Ecological Vegetation Class (EVC)

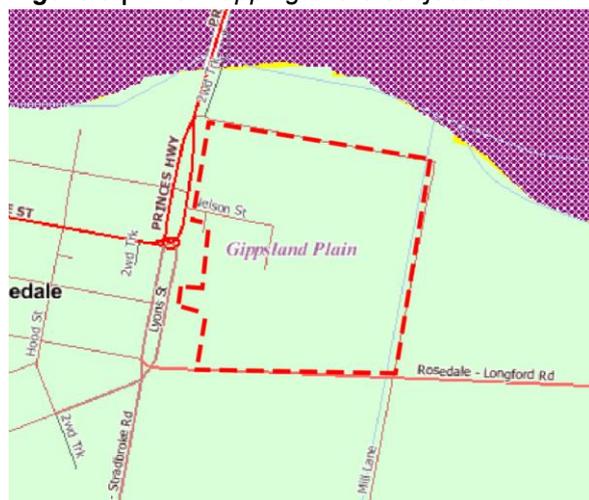
### Bioregion: Gippsland Plain

The study area historically formed part of the Plains Grassy Woodland (EVC 55) which is described as:

*An open, eucalypt woodland to 15 m tall occurring on a number of geologies and soil types. Occupies poorly drained, fertile soils on flat or gently undulating plains at low elevations. The understorey consists of a few sparse shrubs over a species-rich grassy and herbaceous ground layer.*

Much of Rosedale was developed in the 1850s and is typical of land settled in that time, it was significantly modified by land practices such as extensive clearing and grazing. The land is now characterised by pasture grass with few trees scattered within that could be classified as native remnant trees. The 2005 mapping of EVCs illustrates that there is no vegetation on site that reflect the ecological characteristics of the original EVCs (refer to Figure 3). See Appendix 1 for further details.

**Figure 3 | EVC mapping of the subject site**



*Pre-European settlement mapping  
Site covered by EVC 55 – Grassy Woodland*



*2005 Mapping  
Site devoid of any EVC*

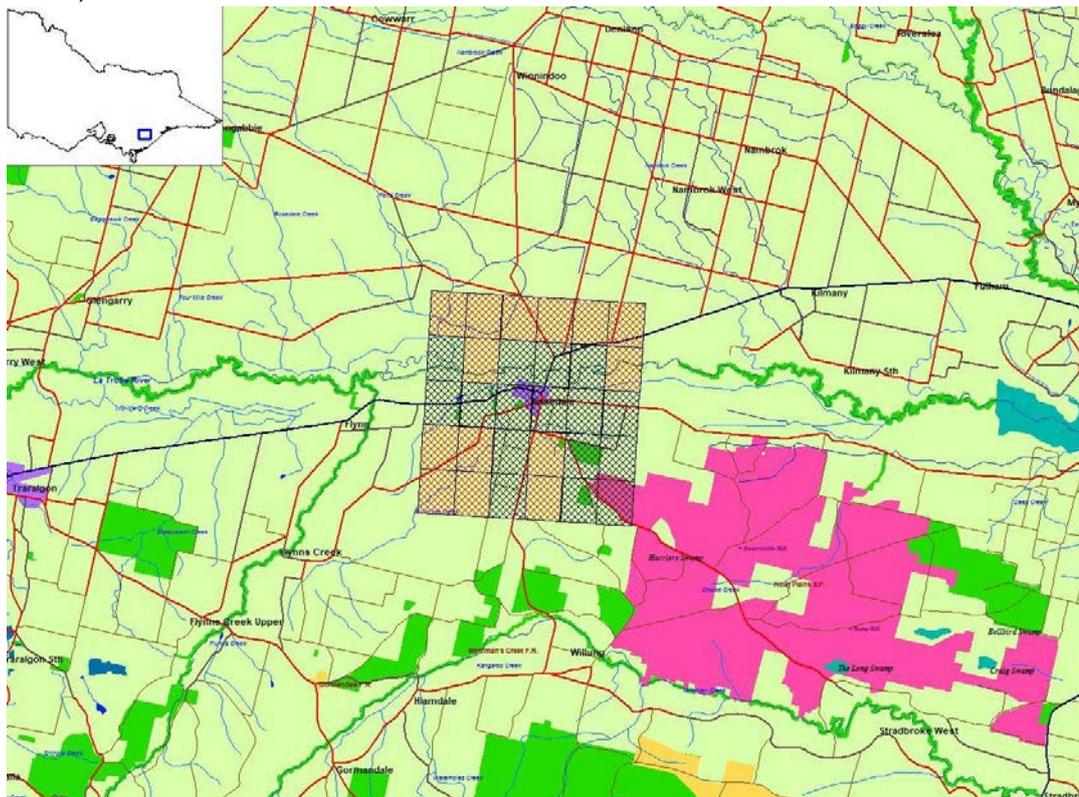
Source: <http://www.dse.vic.gov.au/about-dse/interactive-maps>

## 5.3 Rare/threatened species search

A desktop assessment was undertaken to determine whether any regionally or nationally significant flora and/or fauna species have previously been identified within close proximity to the subject site. The investigation was undertaken utilising the Viridans Flora and Fauna database (Gullan, 2014) (refer to Figure 4).

Filters applied during the desktop assessment include species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC), the *Flora and Fauna Guarantee Act 1988* (FFG), and species listed within the *Advisory List of Rare or Threatened Species in Victoria*. A summary of the results from the filtered search is provided within Table 1 and Table 2 below.

**Figure 4 | Search area investigated using the Viridans flora and fauna database (Gullan, 2014).**



### Flora search

*Table 1. Rare or threatened flora species identified within the search area (Gullan, 2014).*

Scientific Name	Common Name	Status
<i>Dianella amoena</i>	Matted Flax-lily	FFG (listed) & VROT (endangered)

### Fauna search

*Table 2. Rare or threatened fauna species identified within search area (Gullan, 2014).*

Scientific Name	Common Name	Status
<b>Frogs</b>		
<i>Litoria raniformis</i>	Growing Grass Frog	FFG listed & VROT (endangered).

EPBC – Environment Protection and Biodiversity Conservation Act 1999;

FFG – Flora and Fauna Guarantee Act;

VROT – Victorian Rare or Threatened Species.

Given the lack of suitable habitat, it is highly unlikely that the subject site contains critical habitat for any of the species identified above. See Appendix 2 for further details.

---

## **6 Impact of the proposed rezoning of land and potential development**

### **6.1 Threatened species discussion**

The likelihood of future development having a significant impact on important roosting or foraging habitat for any of the above mentioned fauna species' is best assessed with reference to the nesting and environmental characteristics important to each species'.

A habitat inspection and, where appropriate, fauna salvage prior to tree removal would help to limit the impact of the development on native fauna, and will work to eliminate the potential for adverse impacts on any rare or threatened fauna species.

However, in this context, it is considered highly unlikely that the site accommodates important habitat requirements for the following species as identified within the desktop assessment for threatened species (Gullan 2014):

- The Growling Grass Frog is an aquatic species that occupies a variety of swamps and ponds in lowland woodlands, grasslands and open forests. Although the site is subject to inundation, it is highly degraded, and not considered to provide suitable habitat for the Growling Grass Frog. The Latrobe River provides habitat to numerous fauna species, potentially including the Growling Grass Frog. As such, consideration must be given to the management of stormwater runoff of future development to ensure the health of the waterway is maintained.

#### Assessment against PE Act:

The proposal is consistent with the key aims and objectives relating to the SPPF for Biodiversity (Clause 12.01-1) as detailed under the Wellington Shire Planning Scheme. The main threat of potential development from an ecological perspective stems from potential impact on the nearby waterway system to the north (Latrobe River). However, if adequate infrastructure to manage sewer and stormwater runoff is implemented during development, it will reduce any likelihood of the waterway being impacted upon.

### **6.2 Minimising impact of vegetation removal on biodiversity**

It is acknowledged that opportunities to retain vegetation onsite are very limited as a consequence of the location of the trees and the difficulties associated with retaining these trees on future residential allotments.

We make the following recommendations with regard to the future development of the site:

- *Native Vegetation to be retained where possible within future development;*
- *A Stormwater Management Plan be developed looking at measures to ensure that runoff from future allotments is managed appropriately;*
- *That future allotments are connected to reticulated sewer; and*
- *That an Erosion and Sediment Control Plan is developed and implemented (if deemed necessary) prior to any works on the site.*

These measures will minimise the risk of future development on ecological characteristics identified within the surrounding area. Furthermore, future development can include the introduction of various indigenous vegetation to improve the quality and amenity of the site.

---

## **7 Additional considerations**

Latrobe River lies north of the subject site. Additional matters that need to be considered is whether future development will affect water quality of the river; and/or riparian vegetation; and the role vegetation plays in relation to land degradation such as soil erosion and salinity. Provided that future allotments are connected to reticulated sewer, stormwater runoff is adequately managed and that sediment controls are implemented during any development, it is submitted that the future development should not have a significant impact on the River.

---

## **8 Conclusion**

The site visit established that there are only a few scattered native trees that may require removal to accommodate the future development. In terms of rare and threatened species, a combination of a desktop assessment and a site assessment has determined that it is highly unlikely that the future development will have an adverse impact on habitat deemed to be important for any rare or threatened species within the site. By implementing appropriate design measures aimed at minimising the impacts to surrounding areas in particular the Latrobe River, the future development should not have detrimental impact to the surrounding ecological characteristics of the area. The introduction of indigenous vegetation as part of future development will ensure that the quality and amenity of the site is enhanced.

## **References**

DEPI, 2013a. Biodiversity Interactive Map <http://www.dse.vic.gov.au/about-dse/interactive-maps> [Online]. Department of Environment and Primary Industries, Melbourne. [Accessed July 2016].

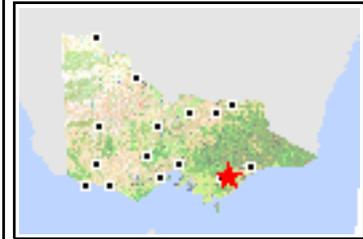
GULLAN, P. 2014. Just-a-minute Victorian Plants and Animals. Viridans Biological Database, Bentleigh East, Victoria.

Environment, Land, Water and Planning, <https://nvim.delwp.vic.gov.au/Biodiversity/RiskPathway>, [Accessed July 2016].

West Gippsland Catchment Management Authority, Latrobe River, <http://www.wgcma.vic.gov.au/our-region/waterways/introducing-our-waterways/latrobe-river> [Accessed July 2016]

**Appendix 1 - Ecological Vegetation Classes (EVC 55)**

- *Pre-European Mapping*
- *2005 Mapping*



\* Refer to page 2 for legend details

**ROADS**

-  Freeway
-  Highway
-  Main Road
-  Secondary Road
-  Local Road
-  2WD (Unsealed)
-  4WD Only
-  Walking or Cycle Track

**WATERCOURSES**

**UNNAMED DRAINAGE LINES**

**1750 EVCs**

-  56 Floodplain Riparian Woodland
-  334 Billabong Wetland Aggregate
-  132 Plains Grassland
-  55 Plains Grassy Woodland

**WATERBODIES**

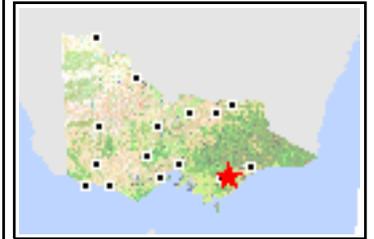
-  Watercourse Area
-  Permanent Waterbody
-  Wetland Area
-  Inundation Area

**BUILT UP AREAS**

**BIOREGIONS**

-  1.1 Lowan Mallee (LoM)
  -  1.2 Murray Mallee (MuM)
  -  1.3 Wimmera (Wim)
- (cont)

-  2.1 Glenelg Plain (GleP)
-  2.2 Bridgewater (Brid)
-  3.1 Victorian Volcanic Plain (VVP)
-  4.1 Victorian Riverina (VRiv)
-  4.2 Murray Scroll Belt (MSB)
-  4.3 Robinvale Plains (RobP)
-  4.4 Murray Fans (MuF)
-  5.1 Gippsland Plain (GipP)
-  5.2 Otway Plain (OTP)
-  5.3 Warrnambool Plain (WaP)
-  6.1 Goldfields (Gold)
-  6.2 Central Victorian Uplands (CVU)
-  6.3 Greater Grampians (GGr)
-  6.4 Dundas Tablelands (DunT)
-  7.1 Northern Inland Slopes (NIS)
-  8.1 East Gippsland Lowlands (EGL)
-  8.2 East Gippsland Uplands (EGU)
-  9.1 Wilsons Promontory (WPro)
-  10.1 Highlands - Southern Fall (HSF)
-  10.2 Highlands - Northern Fall (HNF)
-  10.3 Otway Ranges (ORR)
-  10.4 Strzelecki Ranges (Strz)
-  10.5 Monaro Tablelands (MonT)
-  10.6 Highlands - Far East (HFE)
-  11.1 Victorian Alps (VAIp)



**ROADS**

- Freeway
- Highway
- Main Road
- Secondary Road
- Local Road
- 2WD (Unsealed)
- 4WD Only
- Walking or Cycle Track

**WATERCOURSES**

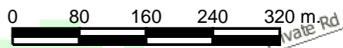
**UNNAMED DRAINAGE LINES**

**ECOLOGICAL VEGETATION CLASSES**

- 56 Floodplain Riparian Woodland
- 334 Billabong Wetland Aggregate
- 132 Plains Grassland
- 55 Plains Grassy Woodland

**WATERBODIES**

- Watercourse Area
- Permanent Waterbody
- Wetland Area
- Inundation Area
- BUILT UP AREAS



Disclaimer: This map is a snapshot generated from Victorian Government data. This material may be of assistance to you but the State of Victoria does not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for error, loss or damage which may arise from reliance upon it. All persons accessing this information should make appropriate enquiries to assess the currency of the data.

Map Scale 1:9,033

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**Appendix 2 – Flora and Fauna Search – Viridans Biological Database**

- *Matted Flax-lily*
- *Growling Grass Frog*

## f Ve Growling Grass Frog - *Litoria raniformis*

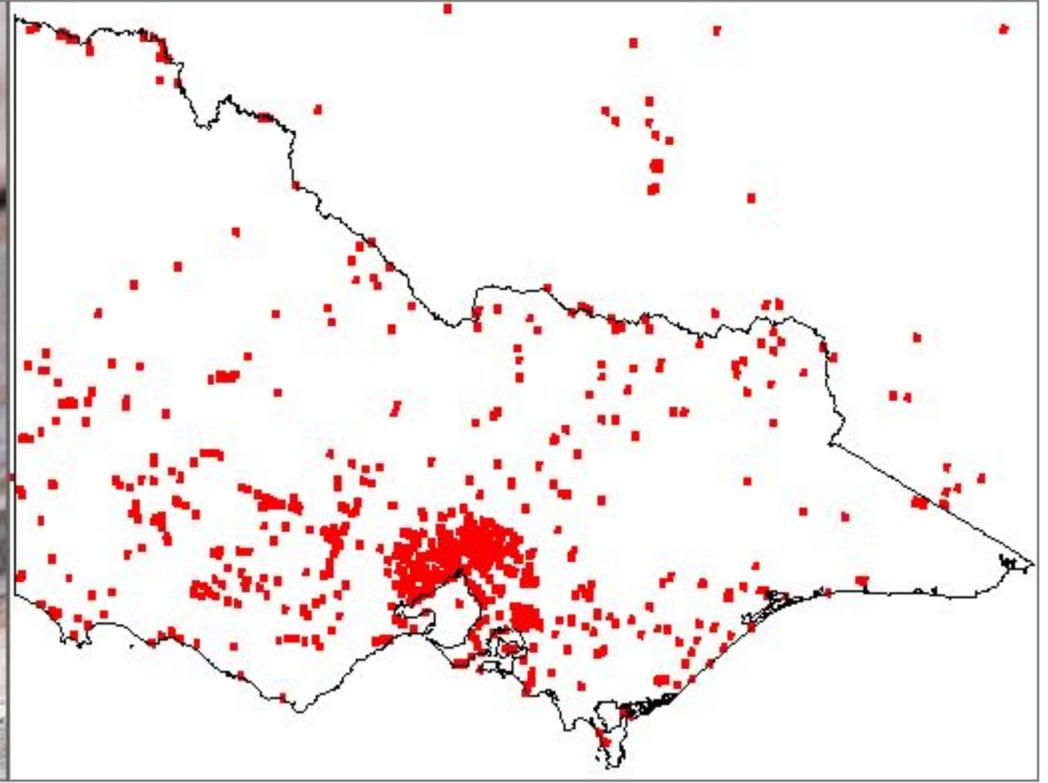


Photo by: Nick Clemann/Viridans Images

**General Appearance:** A large green or green and brown frog. Predominantly bright green, olive green or olive brown, often with variable brown or dull orange blotches and stripes. Sides with distinct, usually pale cream, fold from eye to groin. Head with a black line running from nostril to eye and then behind eye, over the distinct eardrum, to shoulder. Pupil horizontal. Skin on back warty; skin on belly warty. Front feet unwebbed, hind feet partially webbed, toes with small pads, slightly wider than digits.

**Head-body Length:** to 80 mm.

**Breeding:** Oct-Jan, eggs laid in water.

**Diet:** Smaller frogs.

**Environment:** Swamps and ponds in lowland woodlands, grasslands and open forests.

**Call:** A short, repeated growl described as 'crawark-crawark crok crok'.

**Notes:** One of the few frog species that is active by day and night. Similar to *Litoria aurea* but differs in having a warty back. Despite its wide distribution, this species is seldom abundant and many of the records are in disturbed or alienated country.

**History:** First described by German zoologist, Wilhelm Moritz Kerferstein, in 1867, as *Chirodryas raniformis*, based on specimens from an undetermined location in Australia.

**Conservation:** [f] Listed under the Victorian Flora and Fauna Guarantee. [V] Vulnerable in Australia. [e] Endangered in Victoria.

## f Ee *Dianella amoena* - Matted Flax-lily

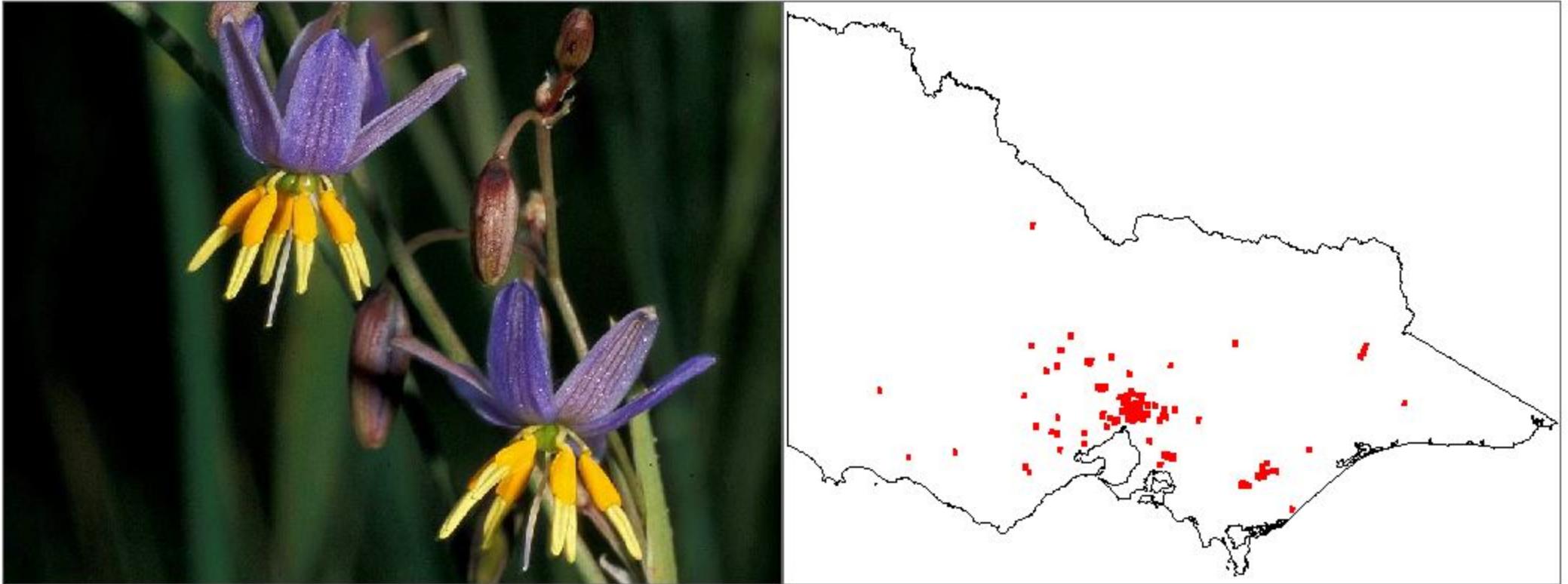


Photo by: John Eichler/Viridans Images

**General Appearance:** A robust, tufted lily, to 90 cm tall, with large, coarse, narrow leaves and an erect panicle of purple flowers.

**Leaves:** Linear, to 40 cm x 12 mm, hairless, thick-textured, dark green; midrib raised. Both midrib and margins with sharp, peg-like teeth to .5 mm long.

**Flowers:** Purple, star-shaped, to 20 mm wide. Sepals and petals similar, 3 of each. Stamens 6, with deep yellow, swollen filaments and pale yellow anthers. (Jan Feb Oct Nov Dec)

**Fruit:** A purple, ovoid, fleshy berry, to 7 mm long.

**Environment:** Lowland grasslands and grassy woodlands.

**Notes:** Probably assigned to either *Dianella longifolia* or *Dianella caerulea* in the past.

**Conservation:** [f] Listed under the Victorian Flora and Fauna Guarantee. [E] Endangered in Australia. [e] Endangered in Victoria.

**Other States:** TAS

**Annual Rainfall:** 621 to 923 mm

**Warmest Temperatures:** 25 to 27 °C

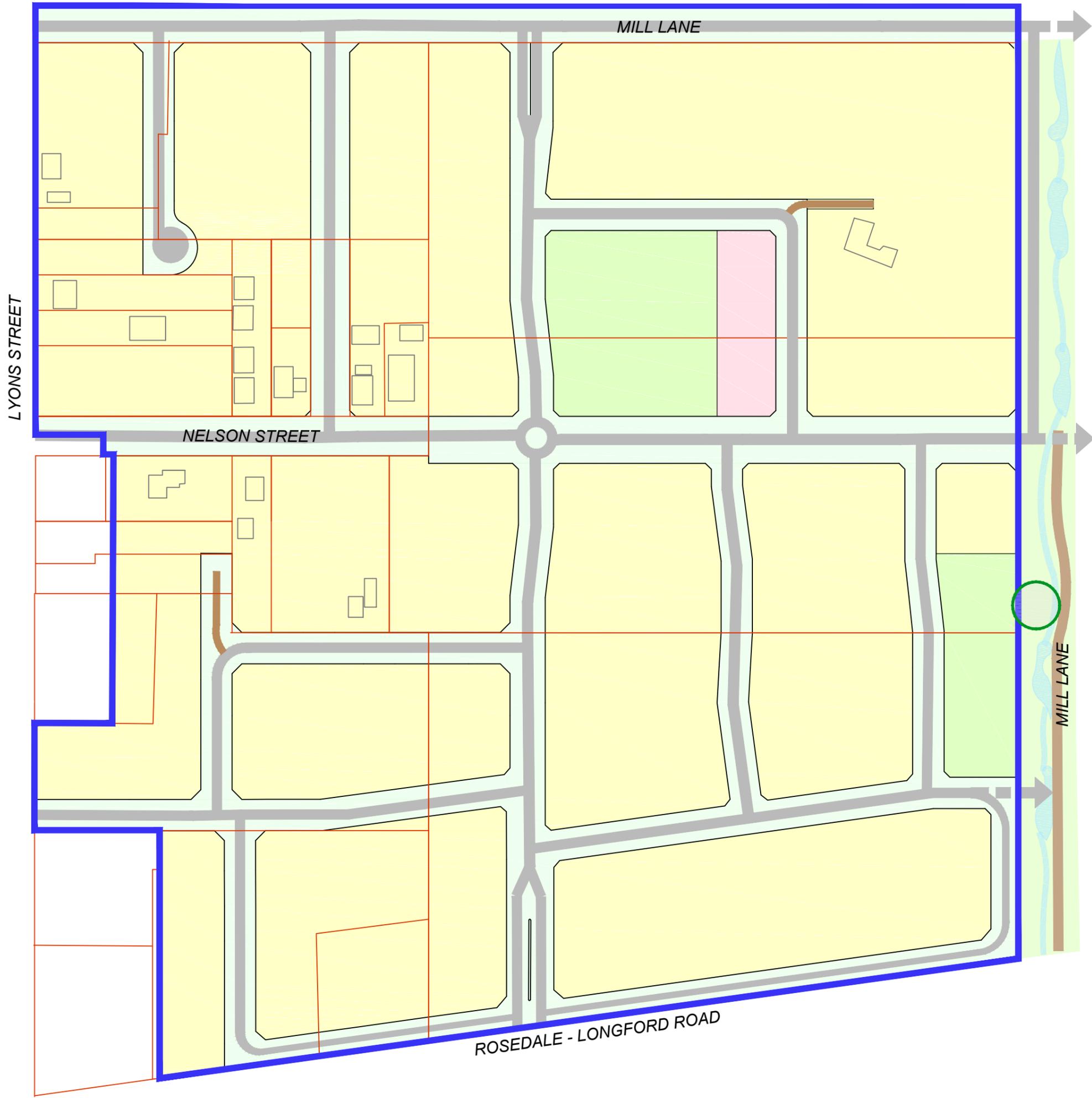
**Coolest Temperatures:** 3 to 5 °C

**Altitude:** 16 to 316 m ASL

## Appendix 7 –Rosedale East Development Plan

As prepared by NBA Group & Millar Merrigan 19414DP2

LAND BUDGET		
<b>SITE AREA</b>	24.85ha	
	AREA	% SITE
OPEN SPACE	01.26ha	5.1%
<b>TOTAL</b>	1.26ha	5.1%
<b>NET DEVELOPABLE AREA</b>	23.59ha	
<b>LAND USES</b>	AREA	% NET DEV. AREA
LOCAL ROADS	6.48ha	27.47%
RESIDENTIAL LOTS	16.83ha	71.32%
MEDIUM DENSITY LOTS	0.28ha	1.20%
<b>TOTAL AREA</b>	23.59ha	100%
Mill Lane Road Reserve	1.32ha	
Expected Lot Yield: 204 standard lots, 5 MD lots Net housing density 8.5 dwellings per hectare		



Legend	
	Extent of DPO
	Existing buildings
	Standard residential
	Medium density residential
	Reserve
	WSUD
	Existing title boundary
	Road
	Possible future road link
	Roundabout
	Minor lot access
	Mill Lane (gravel seal)
	Consider retention of tree

To Be Approved Millar & Merrigan and the NBA Group authorise the use of this drawing only for the purpose described by the status stamp shown hereon. This drawing should be read in conjunction with all relevant contracts, specifications, reports and drawings. © Millar & Merrigan Pty. Ltd. and NBA Group

# DEVELOPMENT PLAN

Rosedale East Development Plan  
Rosedale, Victoria  
Wellington Shire Council

19414 DP2  
Version 5: Oct 2017

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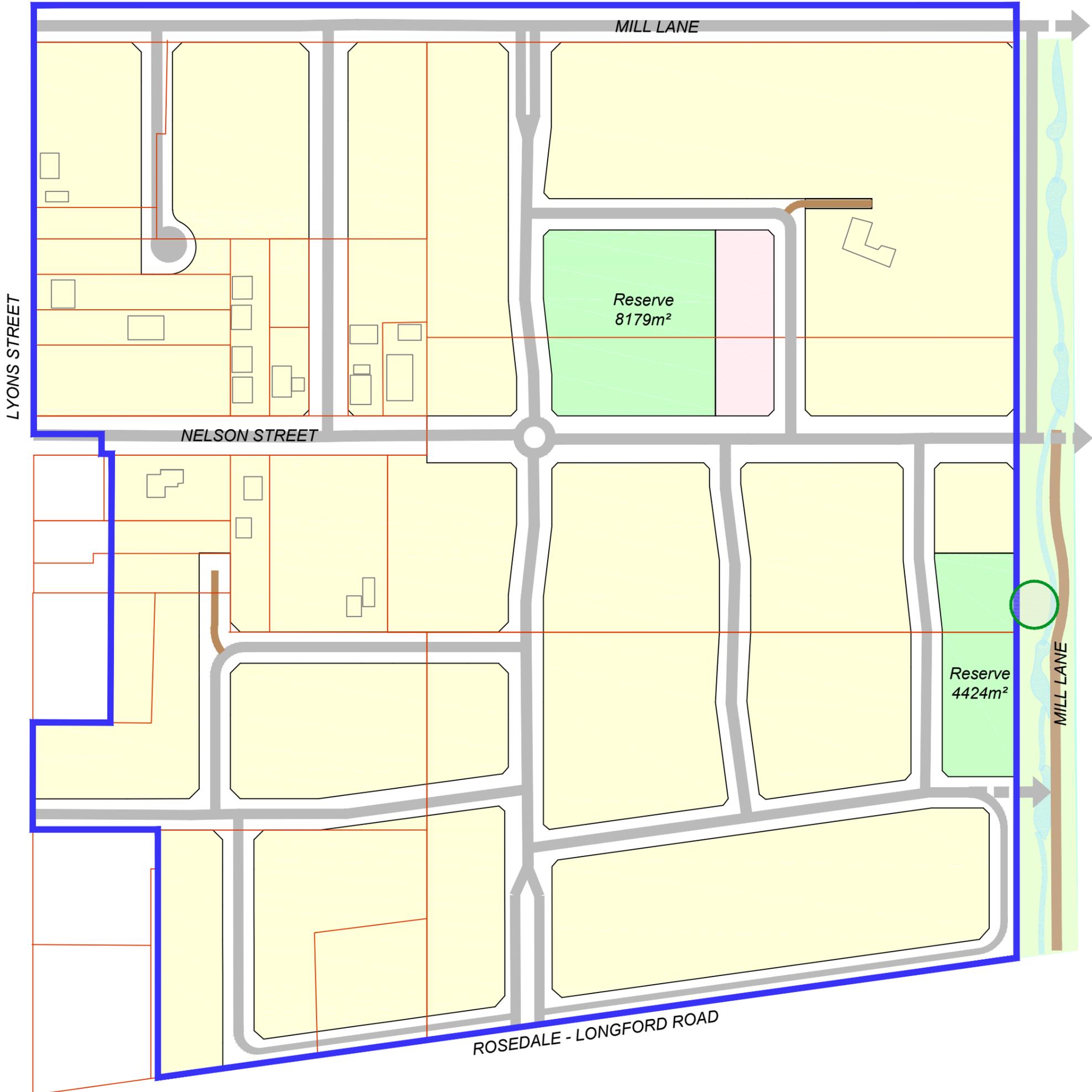
## Appendix 8 –Open Space Plan

As prepared by NBA Group & Millar Merrigan 19414DP4

PUBLIC OPEN SPACE		
DEVELOPMENT PLAN AREA	24.85ha	
UN-ENCUMBERED	1.26ha	
OPEN SPACE	1.26ha	5.1%

**Legend**

- Extent of DPO
- Unencumbered open space
- Mill Lane Road Reserve (Half the width of road reserve to be landscaped and form part of the open space network)
- Existing title boundary



To Be Approved

# OPEN SPACE PLAN

Rosedale East Development Plan  
 Rosedale, Victoria  
 Wellington City Council  
 19414 DP4  
 Version 5, Oct 2017

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## Appendix 9 – Mobility Plan

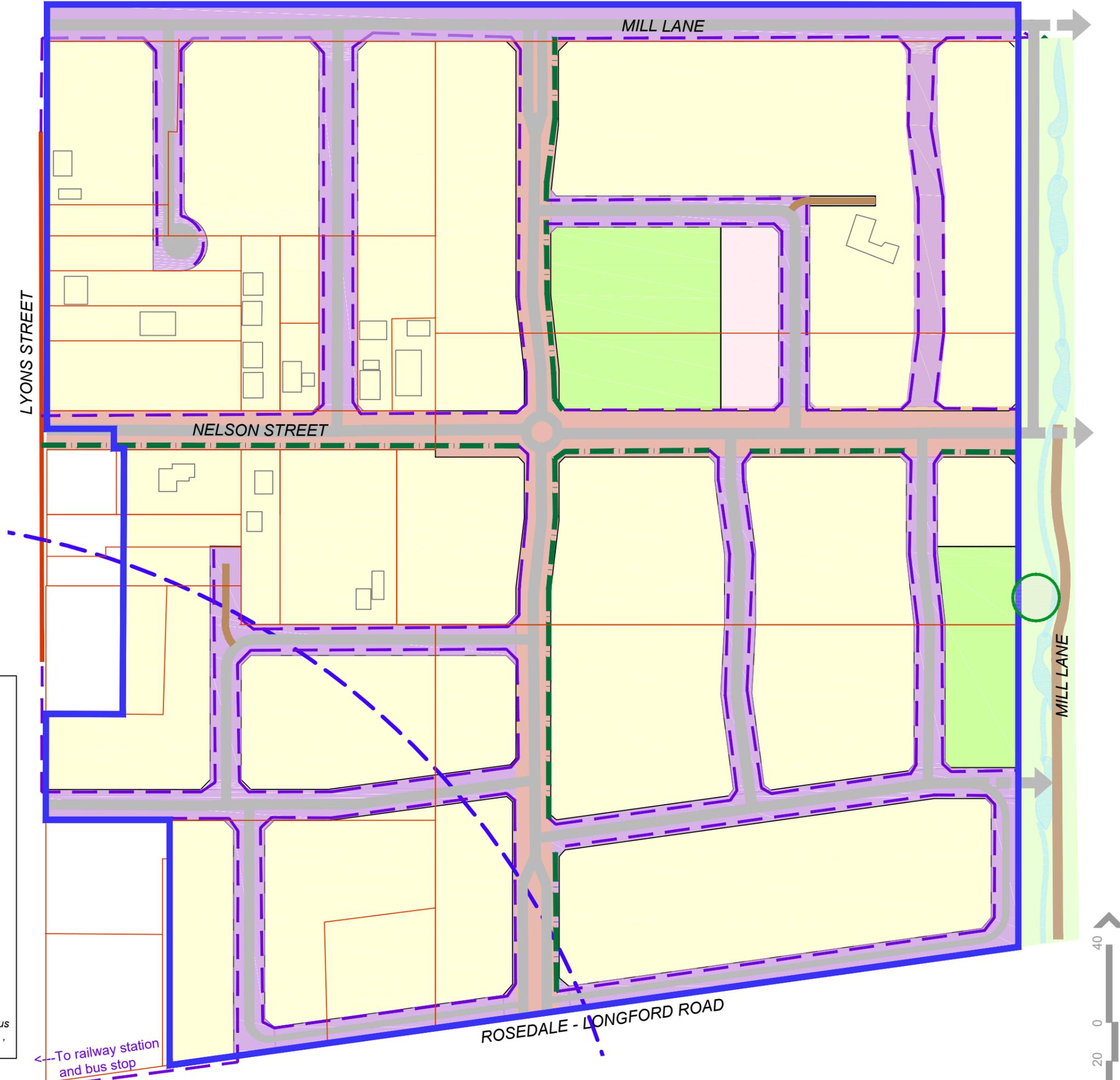
As prepared by NBA Group & Millar Merrigan 19414DP3

**Legend**

-  Extent of DPO
-  Road
-  Possible future road link
-  Roundabout
-  Minor lot access
-  Mill Lane (gravel seal - shared pedestrian/cyclist and vehicle environment)
-  Collector road (width varies)
-  Access street (up to 2500vpd)
-  Existing footpath
-  Proposed pedestrian path
-  Proposed 2.5m wide shared path
-  400m radius from railway station and bus stop. Bus stop is a regional bus service, no local bus service is available.

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# MOBILITY PLAN

Rosedale East Development Plan  
 Rosedale, Victoria  
 Wellington Shire Council  
 19414 DP3  
 Version 5: Oct 2017

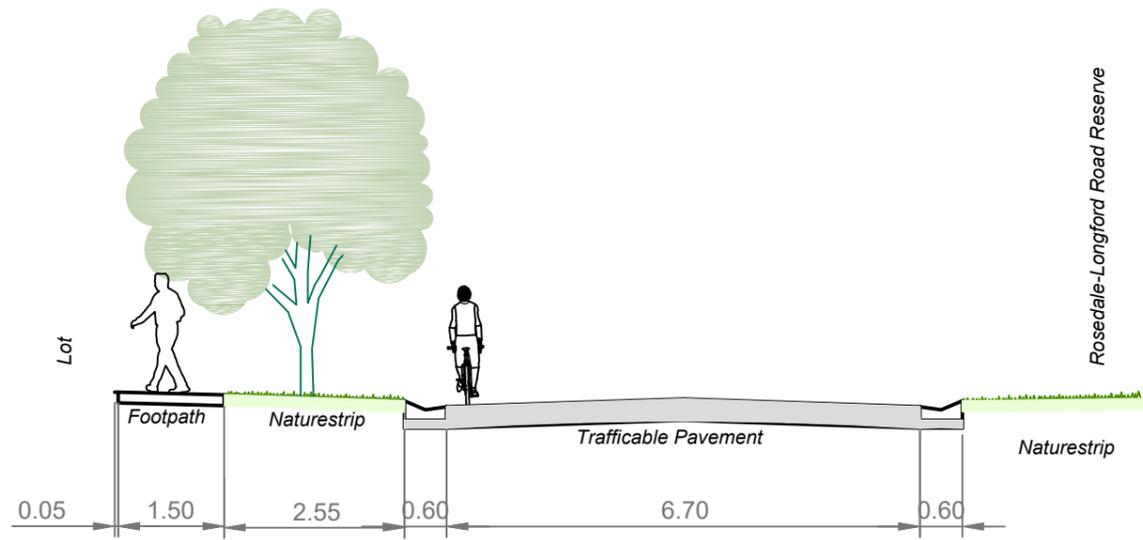


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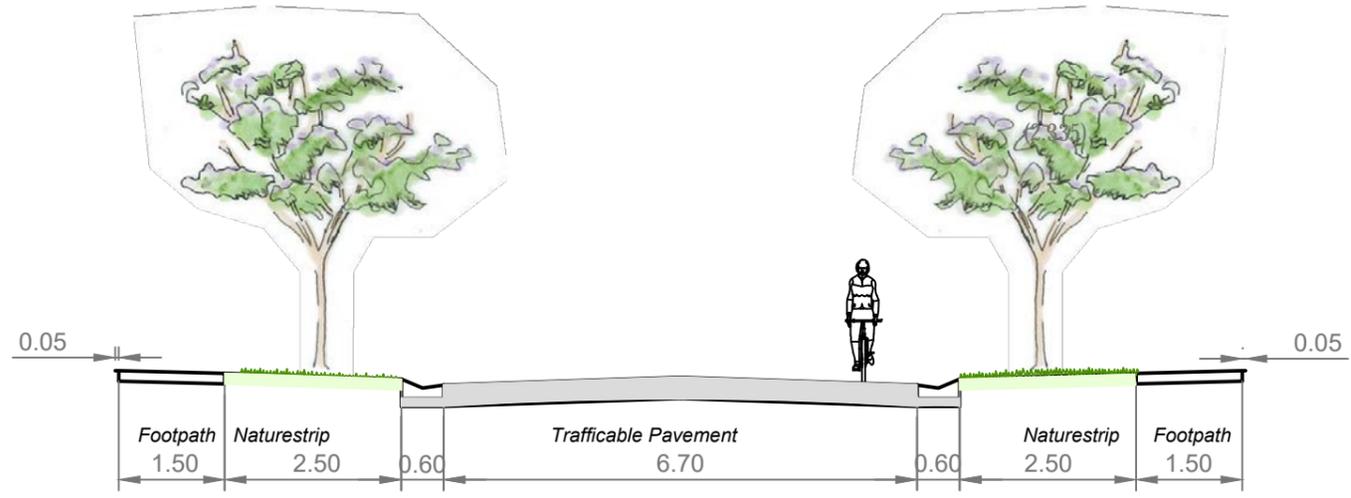
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## Appendix 10 – Cross Sections Plan

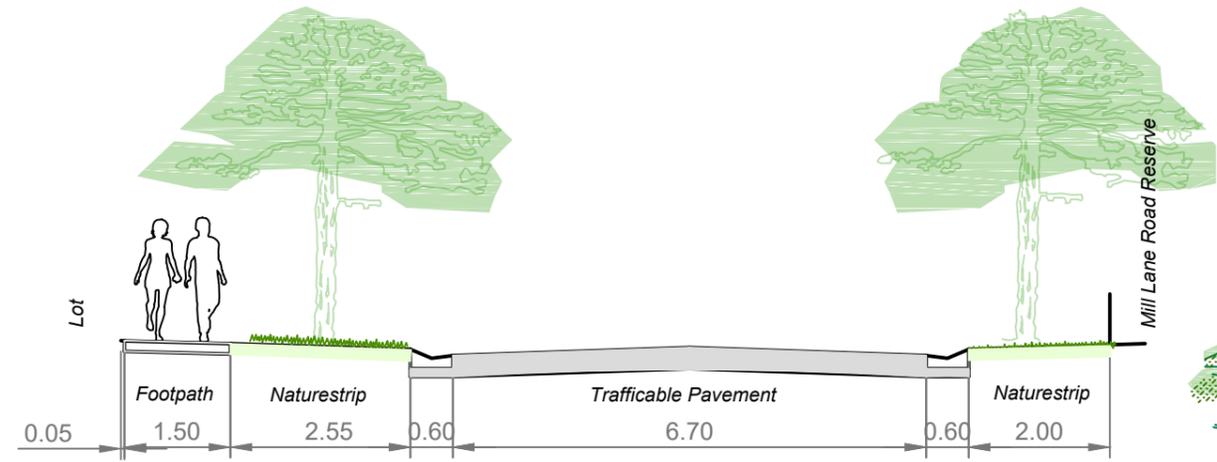
As prepared by NBA Group & Millar Merrigan 19414DP6



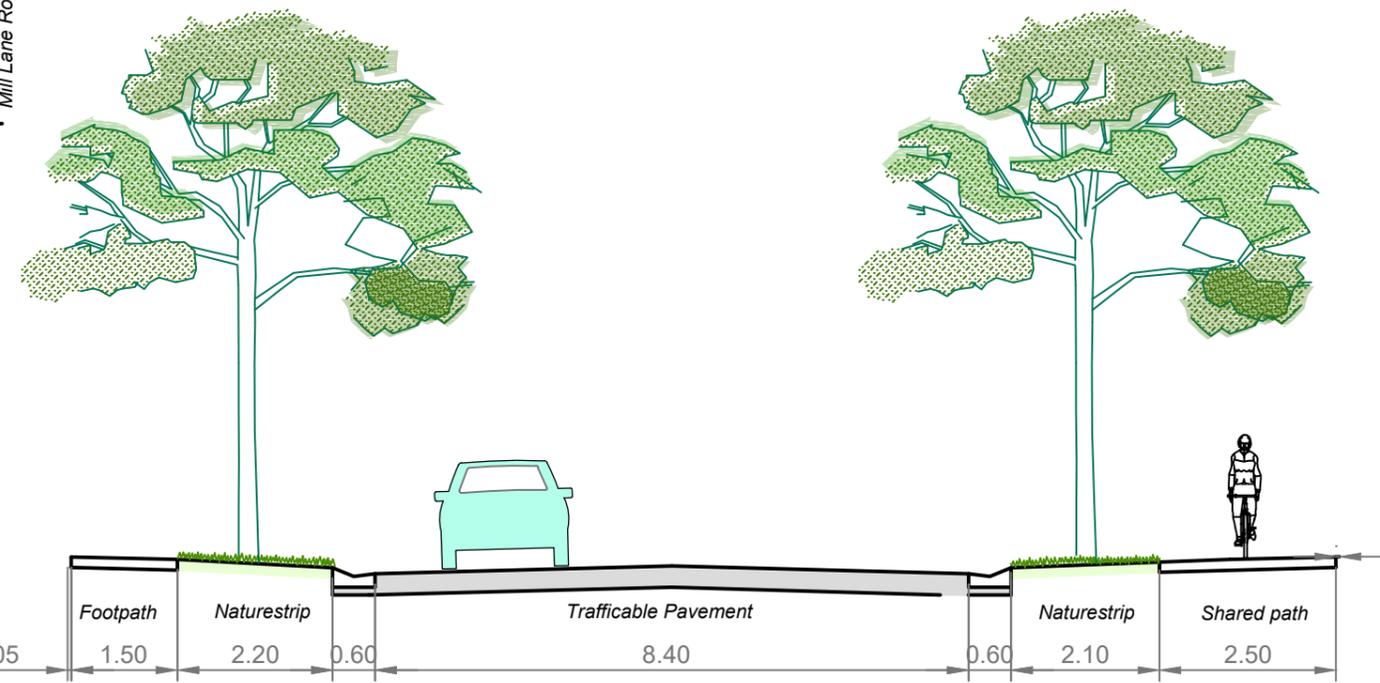
12m ROAD RESERVE



16m ROAD RESERVE  
(INCLUDES 15.67m ROAD RESERVE)



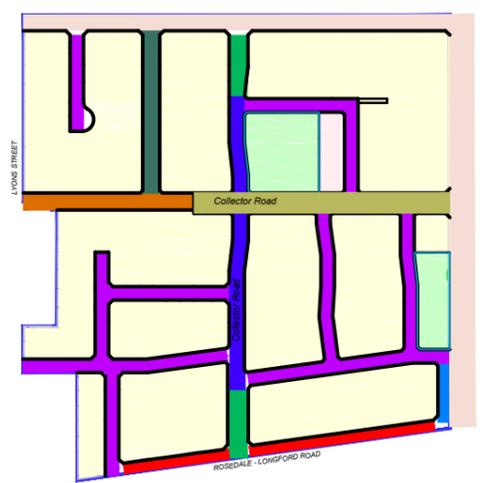
14m ROAD RESERVE



18m ROAD RESERVE  
(COLLECTOR)

**Legend**

- Extent of DPO
- 12m wide road reserve
- 14m wide road reserve
- 16m wide road reserve
- 18m wide road reserve
- 20m wide road reserve
- 20.4m wide road reserve
- 22m wide road reserve
- 24m wide road reserve
- Mill Lane (various widths)



**CROSS SECTIONS**

Rosedale East Development Plan  
Rosedale, Victoria  
Wellington Shire Council

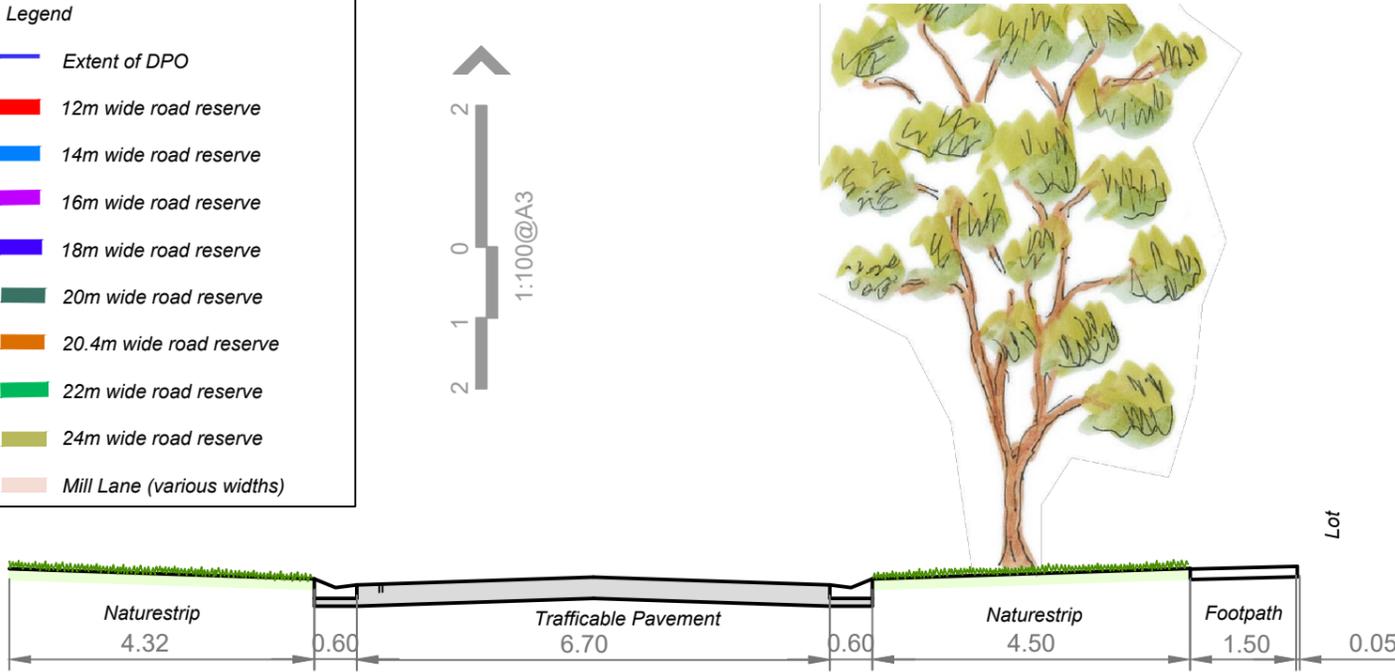
19414 DP6 Sheet 1 of 3  
Version 5: Oct 2017

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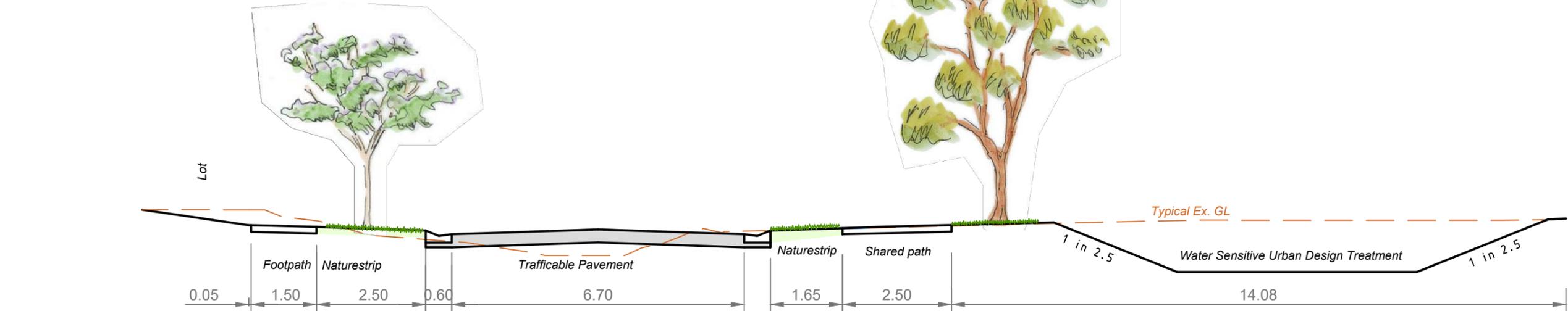
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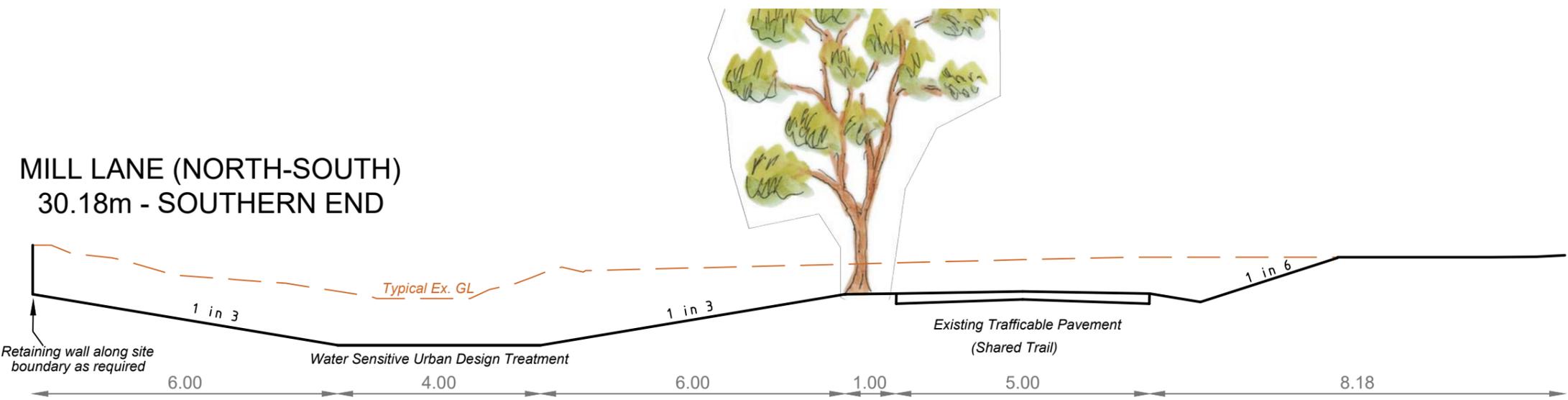
- Legend**
- Extent of DPO
  - 12m wide road reserve
  - 14m wide road reserve
  - 16m wide road reserve
  - 18m wide road reserve
  - 20m wide road reserve
  - 20.4m wide road reserve
  - 22m wide road reserve
  - 24m wide road reserve
  - Mill Lane (various widths)



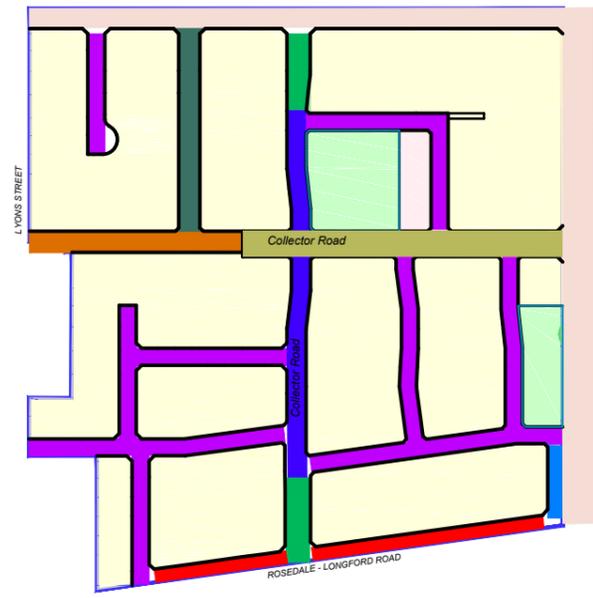
**MILL LANE (EAST-WEST)  
18.23m ROAD RESERVE**



**MILL LANE (NORTH-SOUTH)  
30.18m - NORTHERN END**



**MILL LANE (NORTH-SOUTH)  
30.18m - SOUTHERN END**



**CROSS SECTIONS**

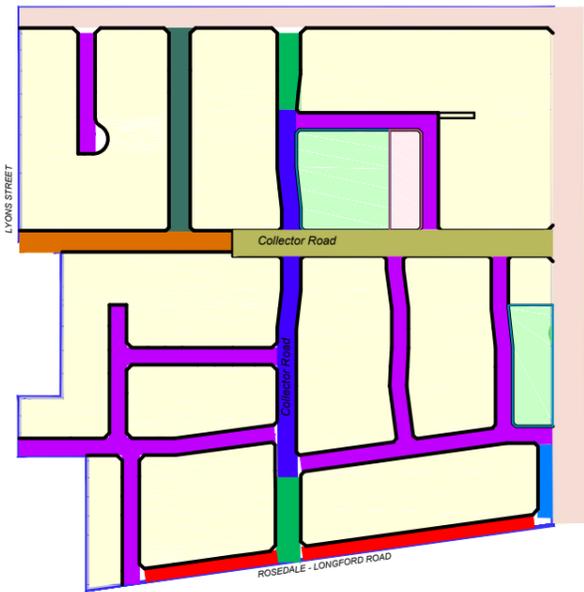
Rosedale East Development Plan  
Rosedale, Victoria  
Wellington Shire Council

19414 DP6, sheet 2 of 3  
Version 5: Oct 2017

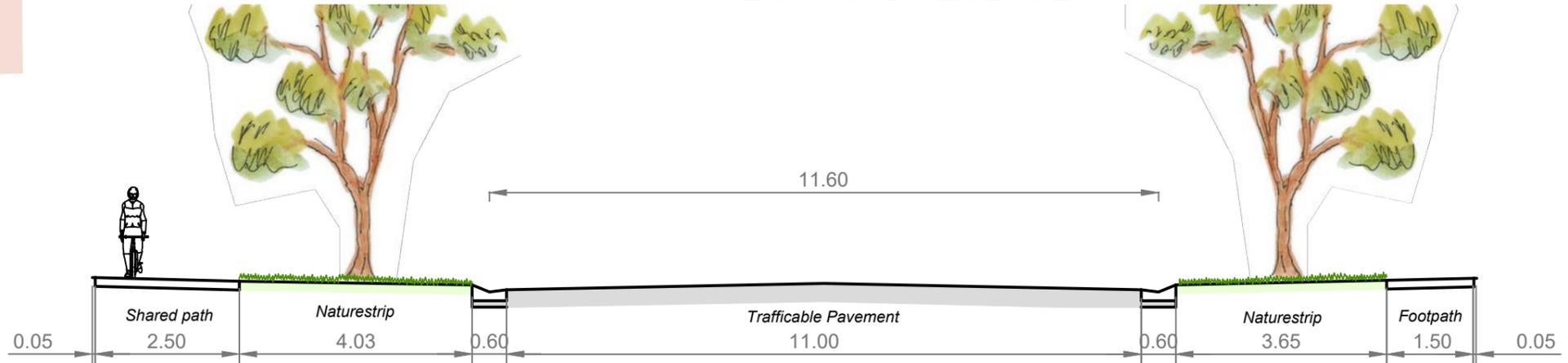
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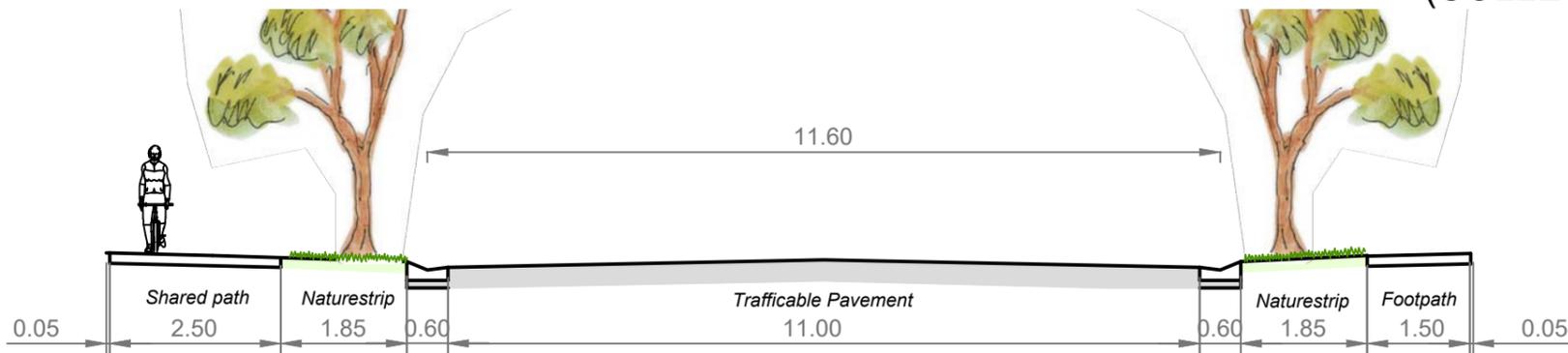




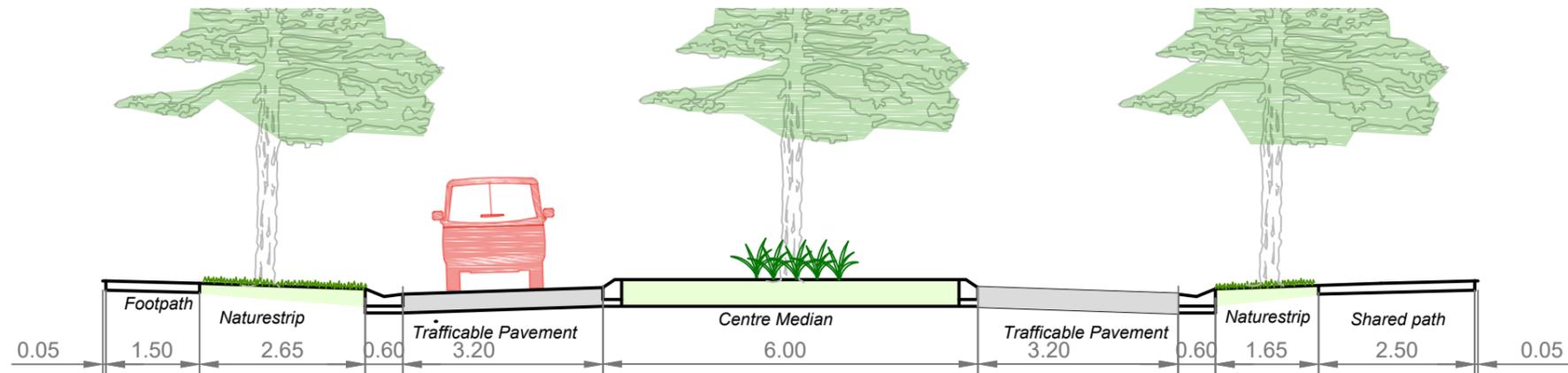
20m ROAD RESERVE



24m ROAD RESERVE - NELSON STREET EXTENSION (COLLECTOR)



20.4m ROAD RESERVE - EXISTING NELSON STREET (COLLECTOR)



22m ROAD RESERVE

**Legend**

- Extent of DPO
- 12m wide road reserve
- 14m wide road reserve
- 16m wide road reserve
- 18m wide road reserve
- 20m wide road reserve
- 20.4m wide road reserve
- 22m wide road reserve
- 24m wide road reserve
- Mill Lane (various widths)



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**CROSS SECTIONS**

Rosedale East Development Plan  
Rosedale, Victoria  
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19414 DP6 sheet 3 of 3  
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