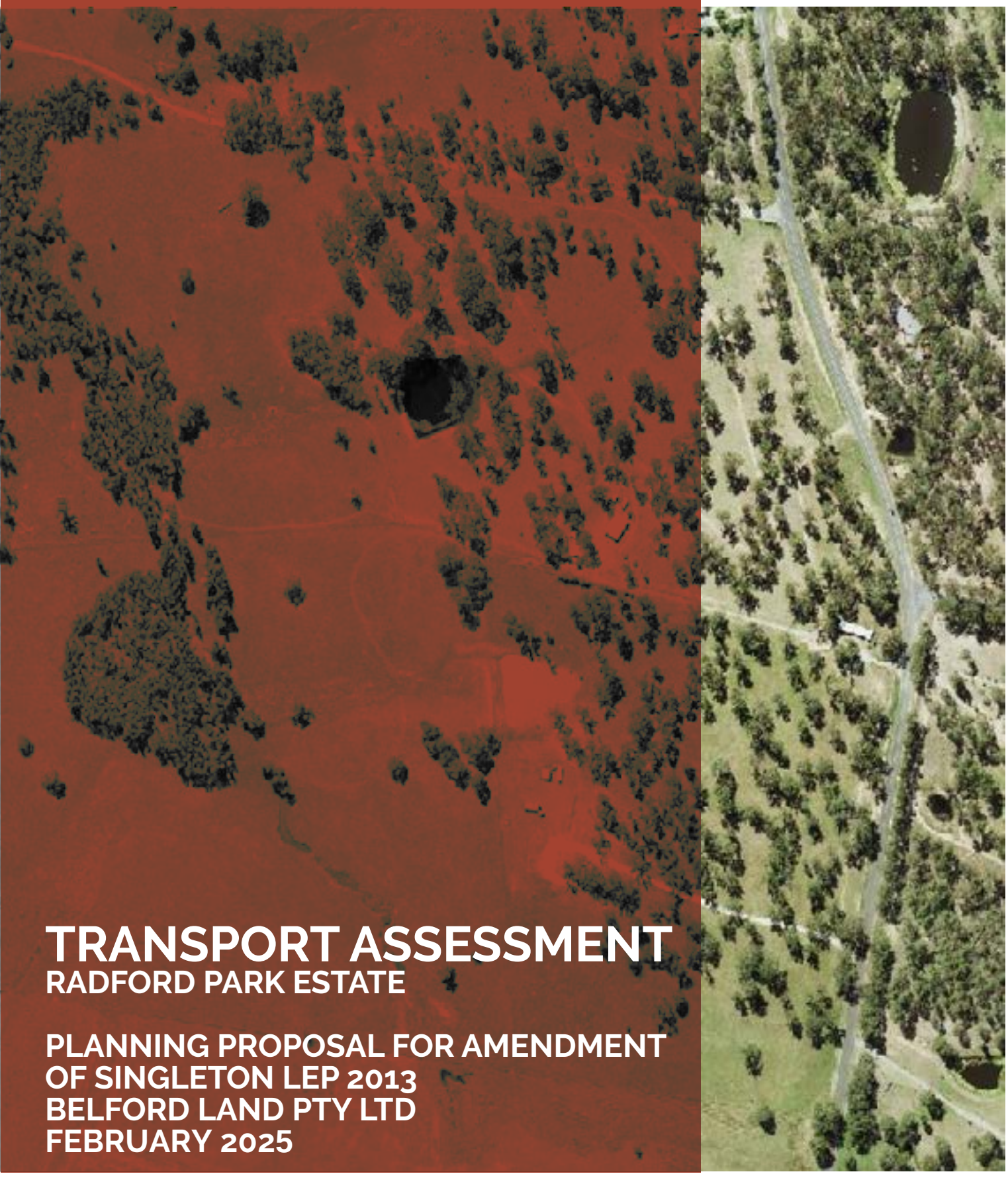

TRANSPORT ASSESSMENT
RADFORD PARK ESTATE

PLANNING PROPOSAL FOR AMENDMENT OF SINGLETON LEP 2013
BELFORD LAND PTY LTD
FEBRUARY 2025

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Document Control Sheet

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1.0 Introduction

1.1 OVERVIEW

ADW Johnson has been engaged by Belford Land Pty Ltd (Belford Land) to undertake a Transport Assessment (TA). This TA will support a Planning Proposal to amend the Singleton LEP 2013 to facilitate the expansion of Radford Park Estate. The Planning Proposal consists of a 162 lot rural residential subdivision over the following lots located on the western side of Elderslie Road:

- Lot 1 DP 1124566;
- Lot 111 DP 850244;
- Lot 122 DP 1165184; and
- Lot 300 DP 1248134.

The proposed subdivision will access the local road network via Elderslie Road though the existing Radford Parkway access, as well as a new roundabout proposed at the intersection of Elderslie Road and Rusty Lane. Elderslie Road then provides access to the Hunter Expressway, via Maitland Street, for travel to and from Newcastle to the east, and Muswellbrook to the west.

This report is required to support a Planning Proposal to Department of Planning and Environment (DPIE) and allow DPIE to assess the proposal regarding its impact on the local and state road network. This report has been prepared to address Ministerial Direction 5.1 Integrating Land Use and Transport as relevant to the road network. This report presents the findings of the transport assessment as part of the Technical Studies required by Council, and outlines the following;

- Estate access and internal traffic circulation arrangements;
- Preliminary considerations for traffic modelling or management; and
- Suitable planning and mitigation measures for potential traffic impacts.

2.0 Site Description

The subject site is located on the western side of Elderslie Road, approximately 1.5km north of Branxton. The site is an expansion of the existing Radford Park Estate approved under DA143/2011 (see Figure 1).

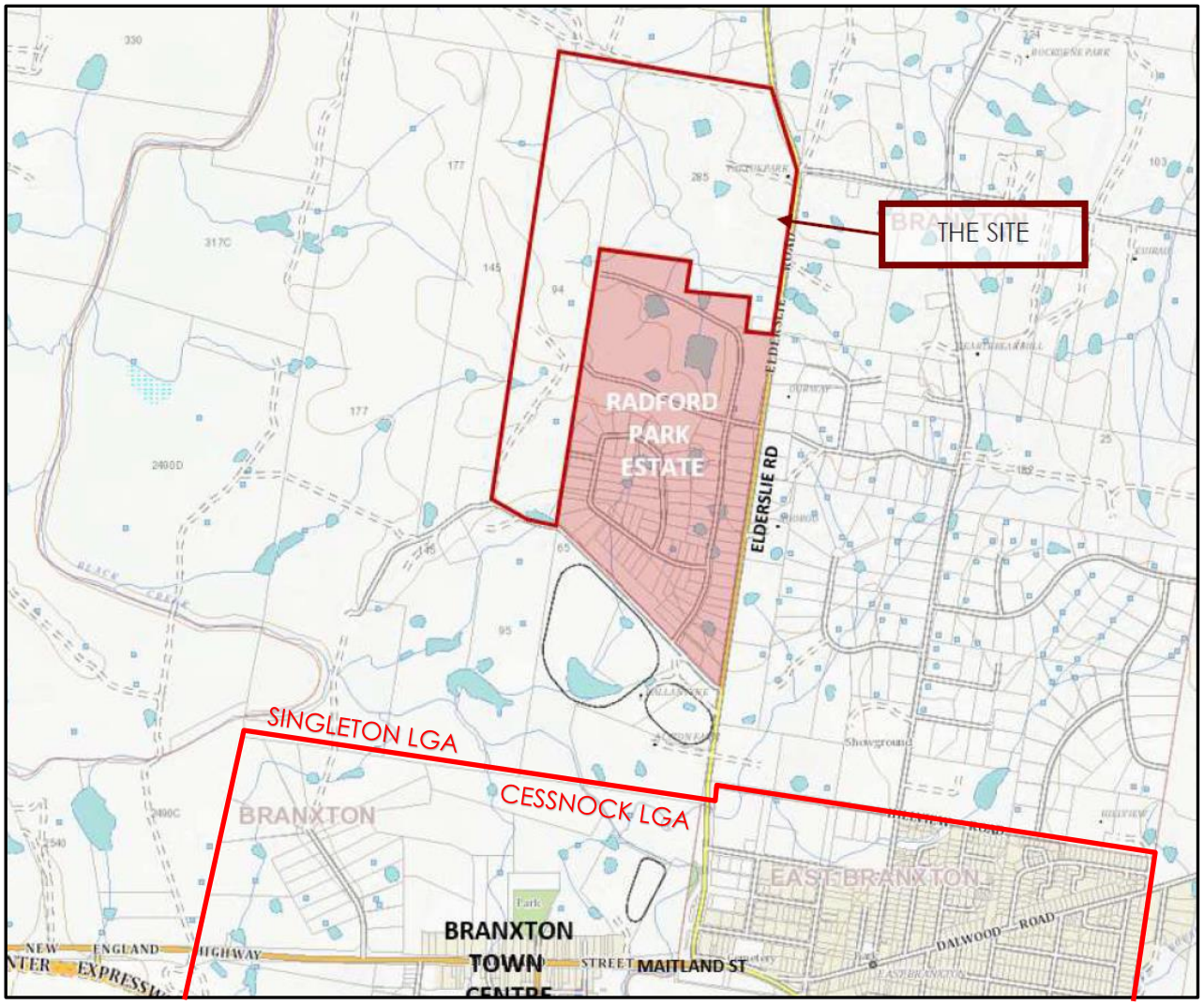


Figure 1: Locality Map Showing Site Context.

The site encompasses the following lots located on the eastern side of Elderslie Road:

- Lot 1 DP 1124566;
- Lot 111 DP 850244;
- Lot 122 DP 1165184; and
- Lot 300 DP 1248134.

3.0 Existing Conditions

3.1 SURROUNDING ROAD NETWORK

The site is accessed from Elderslie Road in Branxton, and is connected to the Hunter Expressway via a series of Local, Regional and State roads:

The existing road network surrounding the Radford Park site, including their administrative classification, consists of the following:

- Elderslie Road (Regional);
- Maitland Street/New England Highway (Regional – east of Elderslie Road);
- Maitland Street/New England Highway (Local – west of Elderslie Road);
- Wine Country Drive (State); and
- Rusty Lane (Local).

3.1.1 Maitland Street (New England Highway)

Maitland Street (New England Highway) is a sub-arterial road based upon the RMS document Functional Classification of Roads. The classification levels are described in **Table 1**. It has a primary function of being the collection and distribution of traffic in the Branxton, East Branxton and Greta area to the arterial road network (Hunter Expressway). East of Elderslie Road it is a Regional classified Road (MR453) under the care and control of Cessnock City Council (CCC). West of Elderslie Road has a Local classification under the care and control of Cessnock City Council (CCC).

Through the study area, Maitland Street is generally a two-lane, two-way high standard sealed urban road with lane widths approx. 3.5m and sealed shoulders approx. 2.0m. A 60km/h speed limit applies to this section of road. An on road cycleway exists on Maitland Street to the east of Elderslie road. This development proposed to connect into this existing cycle infrastructure.

Locally at the Elderslie Road intersection, the Maitland Street pavement is widened, and shoulders reduced to form a BAL/AUR priority-controlled T-intersection.

Locally at the Wine Country Drive intersection Maitland Street eastbound joins as an unrestricted added lane. Wine Country Drive enters Maitland Street via a AUL/CHR priority-controlled T-intersection.

Table 1: Classification of Roads

ROAD CLASSIFICATION	FUNCTIONAL DESCRIPTION
Arterial	Arterial Road is typically a main road carry in excess of 15,000 vehicles per day and over 1,500 vehicles per hour in the peak period. They predominantly carry traffic from one region to another, forming principal avenues of communication for metropolitan traffic movements.
Sub-Arterial	Sub-Arterial Road is typically a secondary road carrying between 5,000 and 20,000 vehicles per day and over 500 and 2,000 vehicles per hour in the peak period. They predominantly carry traffic from one sub-region to another forming secondary inter-regional transport links.
Collector	Collector Road is typically a minor road carrying between 2,000 and 10,000 vehicles per day and over 250 and 1,000 vehicles per hour in the peak period. They provide a link between local areas and regional road carrying low traffic volumes. At volumes greater than 5,000 vehicles per day, residential amenity begins to decline noticeably.
Local	Local Road is typically a local street carrying less than 2,000 vehicles per day and 250 vehicles per hour in the peak period. They provide immediate access to individual houses and carry low traffic volumes.

3.1.2 Elderslie Road

Elderslie Road extends north from its intersection with Maitland Street. Under a functional road hierarchy, it is a collector road connecting rural areas of Elderslie, Mitchells Flat and Glendon. It is a continuation of MR453, and therefore is a Regional classified Road under the care and control of Cessnock City Council (CCC) and Singleton Shire Council (SSC) as can be seen in **Figure 1**.

Elderslie Road has a sealed carriageway and provides a single lane of travel in each direction. The road has sealed widths of between 6m and 8m with grassed or gravel sealed shoulders of variable width. Elderslie Road commences with a speed limit of 60km/h, which changes to 80km/h approx. 700m north of the intersection with Maitland Street.

3.1.3 Rusty Lane

Under a functional road hierarchy, Rusty Lane is a local road. Its main function is to provide vehicular access to properties along its length. As well as the functional hierarchy, its administration classification is also a local road, under the care and control of SSC. Rusty Lane is currently a two-way, two-lane narrow sealed rural standard road approx. 5m – 7m wide.

4.0 Development Proposal

4.1 DEVELOPMENT PROPOSAL

The Planning Proposal seeks to rezone land suitable for development from RU1 Primary Production to R5 Large Lot Residential. It is envisaged to be an extension to the existing Radford Park Estate, Torrens Title rural residential lots are proposed with lot sizes averaging around 2,000m2. An estimated yield of between 150-200 additional Torrens Title rural residential lots has been used for assessment purposes in this report, with development staging assumed as below:

- Stage 1: 70 – 80 Torrens Title rural residential lots;
- Stage 2: 50 – 70 Torrens Title rural residential lots; and
- Stage 3: 30 – 50 Torrens Title rural residential lots.

A conceptual development subdivision layout is shown in **Figure 2**.

4.2 TRAFFIC GENERATION

The RMS's Guide to Traffic Generating Developments v2.2 (2002) and the subsequent Technical Direction TDT 2013 / 04a were used to estimate the potential traffic generation for the proposed 200 low-density residential dwellings. A spreadsheet model was then used to distribute and assign the traffic onto the surrounding road network. The traffic generation rates for the specific land use utilised are below in **Table 2**. It is noted that the trip generation rates used for the low-density residential dwellings are the regional rates derived from TDT2013 / 04a.

Table 2: Development Trip Generation

LAND USE	NUMBER OF LOTS	TRIP GENERATION RATE (per dwelling)			TRIP GENERATION (per dwelling)		
		PEAK DAILY	AM PEAK	PM PEAK	PEAK DAILY	AM PEAK	PM PEAK
Low Density Residential	200	7.4	0.71	0.78	1480	142	156

4.3 TRIP DISTRIBUTION

Directional splits were applied to the trip generation in order to estimate the volume of traffic accessing / egressing from the proposed development during each of the AM and PM peak periods. The use of these splits allows for the modelling of the directional nature of peak period traffic.

Based on this assessment the development is expected to increase the traffic moderately by 103 vehicles on Elderslie Road approaching Maitland Street in the AM peak. The development is also expected contribute a minor increase of 62 vehicles to the traffic on Maitland Street approaching Wine Country Drive in the AM peak.

It is proposed that further Assessment of these intersections will be undertaken as outlined in section 5.2.

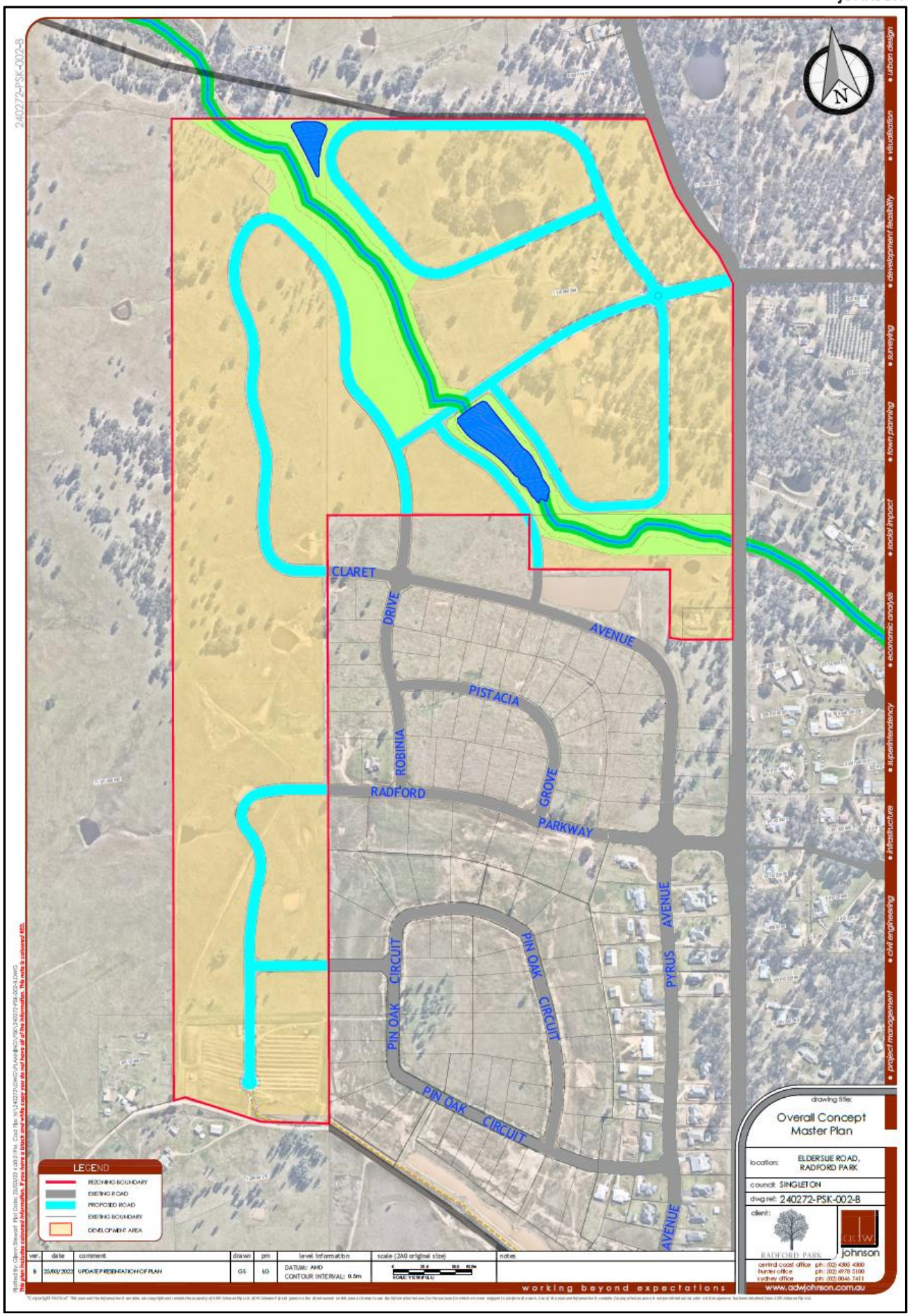


Figure 2: Conceptual Subdivision Layout.

5.0 Transport Assessment

5.1 ESTATE ACCESS AND INTERNAL TRAFFIC

The Planning Proposal area allows for connectivity to the existing internal road network of Radford Park Estate in five (5) separate locations. These connections are well located for access and have been considered to facilitate traffic movements throughout the subdivision to the external road network, commencing on Elderslie Road.

The conceptual subdivision layout plans for the proposed Radford Park Planning Proposal shown in **Figure 2** provides two (2) access points connecting the proposed subdivision to the external road network, Elderslie Road. These access points are located at:

- Radford Parkway; and
- Rusty Lane.

Radford Parkway provides the only current access point into the existing Radford Park Estate. This access intersection is currently constructed as a CHL(S)/CHR type intersection. It is located approximately 1.9km north of the intersection of Elderslie Road and Maitland Street.

As shown on the conceptual subdivision layout, an additional connection to Elderslie Road is proposed at Rusty Lane. This existing T-Intersection is proposed to be upgraded to a 4-way single lane roundabout. This proposed roundabout is located an additional 900m north of the Radford Parkway access intersection.

It is considered that the two (2) access points to the external road network will provide sufficient capacity to service the existing Radford Park Estate and the Planning Proposal area.

5.2 PRELIMINARY TRAFFIC MODELLING CONSIDERATIONS

It is anticipated that the majority of the vehicle movements from the proposed subdivision, both outbound and inbound, will be to and from either New England Highway or the Hunter Expressway. Both of these roads provide access to the Maitland/Newcastle CBD to the east, and Singleton/Muswellbrook to the west.

To access the Hunter Expressway, vehicles from the Planning Proposal area will travel southbound along Elderslie Road. From the intersection of Elderslie Road and Maitland Street, the distribution of traffic will consist of eastbound or westbound, subject to the origin-destination.

Based on these expected traffic movements from the Planning Proposal area, it is considered that a total of four (4) intersections would require assessment as part of any future Development Application. These intersections to be assessed as part of a Traffic Impact Assessment and are presented in **Figure 3**, with their respective control mechanisms documented in **Table 3**.

Table 3: Surrounding Intersections Assessed

INTERSECTION ID	INTERSECTION NAME	INTERSECTION CONTROL
INT-1	Maitland Street / Elderslie Road	T-Intersection – Priority Controlled
INT-2	Elderslie Road / Radford Parkway	T-Intersection – Priority Controlled
INT-3	Elderslie Road / Rusty Lane	Future 4-way Roundabout
INT-4	Maitland Street / Wine Country Dr	T-Intersection – Priority Controlled

Figure 3: Proposed Intersections for Assessment.

As the Planning Proposal area connects to a classified road, and includes greater than 50 proposed allotments, it is expected that any future Development Application will be referred to Transport for NSW (TfNSW) in accordance with Schedule 3 of the SEPP (Transport and Infrastructure) 2021.

5.3 PLANNING AND MITIGATION MEASURES

5.3.1 Mid-Block Requirements

The typical capacity of rural lanes is provided in **Table 4** for each LOS category, as defined in the RMS Guide to Traffic Generating Developments. These capacities are the adjusted values for a design speed of 80km/h (85% of 100km/h values).

Table 4: Peak Hour Flow on Two-Lane Rural Roads (veh/hr)

TERRAIN	LEVEL OF SERVICE	PERCENT HEAVY VEHCILES			
		0	5	10	15
Rolling	B	425	357	306	264
	C	782	646	553	485
	D	1165	969	825	595
	E	2057	1700	1462	1284

It is suggested that ideally major and minor rural roads should not exceed service volumes at Level of Service C. **Table 5** is presented as a guide to when two (2) traffic lanes per direction are required, based on the projected peak hour traffic flows and on the appropriate level of service as shown above.

Analysis shows that for road mid-blocks to operate satisfactorily at LOS C or better both of the AM and PM peak periods, a capacity of 825-969 veh/hr would be considered acceptable, subject to confirmation on the percentage of heavy vehicles. An assessment of existing and future mid-block performance should be undertaken as part of a Traffic Impact Assessment to support a Development Application for the proposed subdivision.

5.3.2 Intersection Requirements

The key indicator of intersection performance is Level of Service, where results are placed on a scale from 'A' to 'F', as outlined in **Table 5**.

The Average Vehicle Delay (AVD) provides a measure of the operational performance of an intersection as indicated below, which relates AVD to LOS. The AVD's should be taken as a guide only as longer delays could be tolerated in some locations (i.e. inner city conditions) and on some roads (i.e. minor side street intersecting with a major arterial route). For roundabouts and priority control intersections (sign control) the critical movement for assessing LOS should be the movement with the highest average delay.

Table 5: Intersection Level of Service

LEVEL OF SERVICE	AVERAGE DELAY PER VEHICLE (SECS/VEH)	TRAFFIC SIGNALS, ROUNDABOUT	GIVE WAY & STOP SIGNS
A	<14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode	At capacity, requires other control mode

An assessment of existing and future intersection performance should be undertaken as part of a Traffic Impact Assessment to support a Development Application for the proposed subdivision.

6.0 Conclusion

This Transport Assessment has been prepared to support a Planning Proposal to amend the Singleton LEP 2013 to facilitate the expansion of Radford Park Estate. This report presents the findings of the TA as part of the Technical Studies required by Council, and outlines the following;

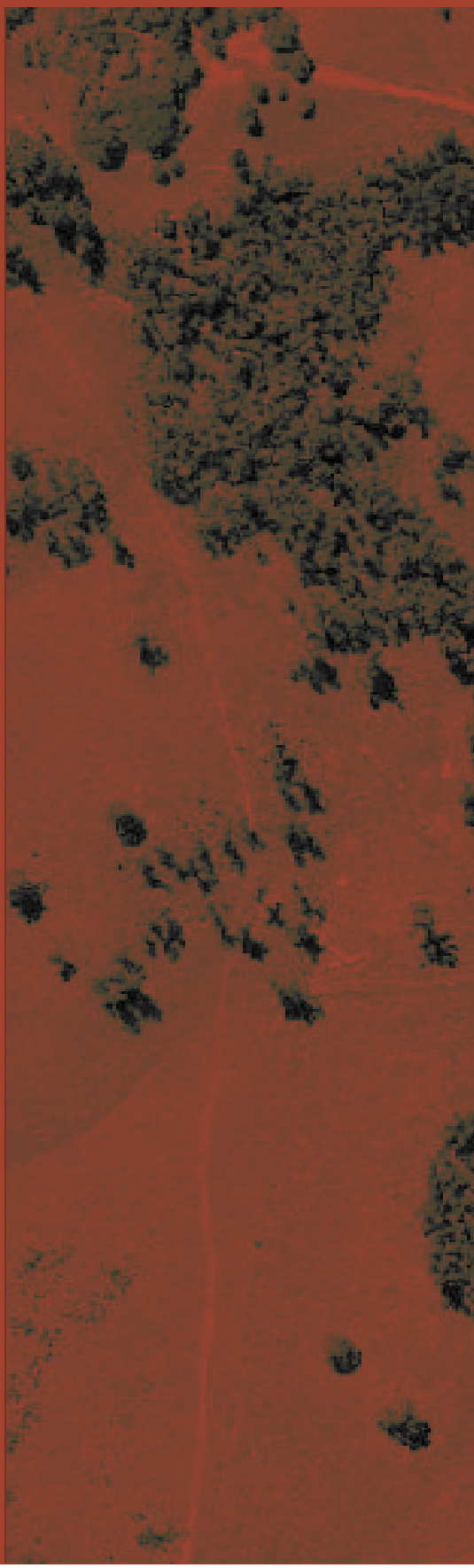
- Estate access and internal traffic circulation arrangements;
- Preliminary considerations for traffic modelling or management; and
- Suitable planning and mitigation measures for potential traffic impacts.

The Planning Proposal has two (2) access points connecting the proposed subdivision to the external road network, Elderslie Road. These access points are located at Radford Parkway and Rusty Lane. Five (5) internal road connection points to the existing subdivision will facilitate traffic movements to either of the access points to the external road network.

It is considered that a total of four (4) intersections would require assessment as part of any future Development Application, being the following:

- Maitland Street / Elderslie Road;
- Elderslie Road / Radford Parkway;
- Elderslie Road / Rusty Lane; and
- Maitland Street / Wine Country Dr

This report outlines the assessment requirements of mid-block and intersection performance to be incorporated into a future Traffic Impact Assessment to support a Development Application for the Planning Proposal area. Any future Development Application will be referred to Transport for NSW (TfNSW) in accordance with Schedule 3 of the SEPP (Transport and Infrastructure) 2021.



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