BUSHFIRE ASSESSMENT

IN SUPPORT OF A PLANNING PROPOSAL

PROPOSAL TO AMEND THE ORANGE LOCAL ENVIRONMENTAL PLAN 2011 IN RESPECT OF LAND AT LEEDS PARADE, CLERGATE

PREPARED FOR:

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The preparation of this report has been in accordance with the project brief provided by the client and has relied upon the information, data and results provided or collected from the sources and under the conditions outlined in the report.

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Introduction

1.1 BACKGROUND

Geolyse Pty Ltd has been commissioned by Bob Healy & Company to prepare a Bush Fire Assessment Report as a component of a study to support a planning proposal to amend the *Orange Local Environmental Plan 2011* with respect to approximately 290 hectares of land at Leeds Parade, Clergate.

A small section of the north-west of the subject site is mapped as bush fire prone land.

1.2 SCOPE OF THIS REPORT

A Bush Fire Safety Authority is required to be obtained prior to developing bush fire prone land for the purpose of residential or rural residential subdivision (s100B of the *Rural Fires Act 1997* (RF Act)).

Local planning direction 4.4 (pursuant to section 117(2) of the *Environmental Planning and Assessment Act 1979* (EP&A Act)) relates to planning for bushfire protection. This direction applies *'when a relevant planning authority prepares a planning proposal that will affect, or is in proximity to land mapped as bushfire prone land'*. As part of the land is mapped as bush fire prone, local planning direction 4.4 applies.

This report has been prepared pursuant to the NSW Rural Fire Services' "Submission Requirements" and local planning direction 4.4, and is set out in the following format:

- **Section 2** provides a description of the site subject to the planning proposal;
- **Section 3** provides a Bush Fire Assessment of the proposal in the context of *Planning for Bushfire Protection 2006*; and
- **Section 4** concludes the report.

Development Site

2.1 BACKGROUND

2.1.1 SUBJECT SITE

The subject site is formed of:

- Lot 15 DP6694, 390 Clergate Road, Orange
- Lot 3 DP255983, 440 Clergate Road, Orange
- Lot 2 DP255983, 440 Clergate Road, Orange
- Lot 14 DP6694, 440 Clergate Road, Orange
- Lot 25 DP6694, 440 Clergate Road, Orange

The site is located approximately 5 kilometres north of Orange central business district (CBD) and 1.8 kilometres (3.5 kilometres by road) from the North Orange shopping centre. The site has an area of approximately 290 hectares and is bounded to the north by Pearce Lane, to the west by the Main Western Railway Line and to the south and east by private late. The southern portion of the site (Lot 15) is currently zoned IN1 – General Industrial with the remainder of the currently zoned RU1 – Primary Production.

The site is depicted in **Figure 1**.

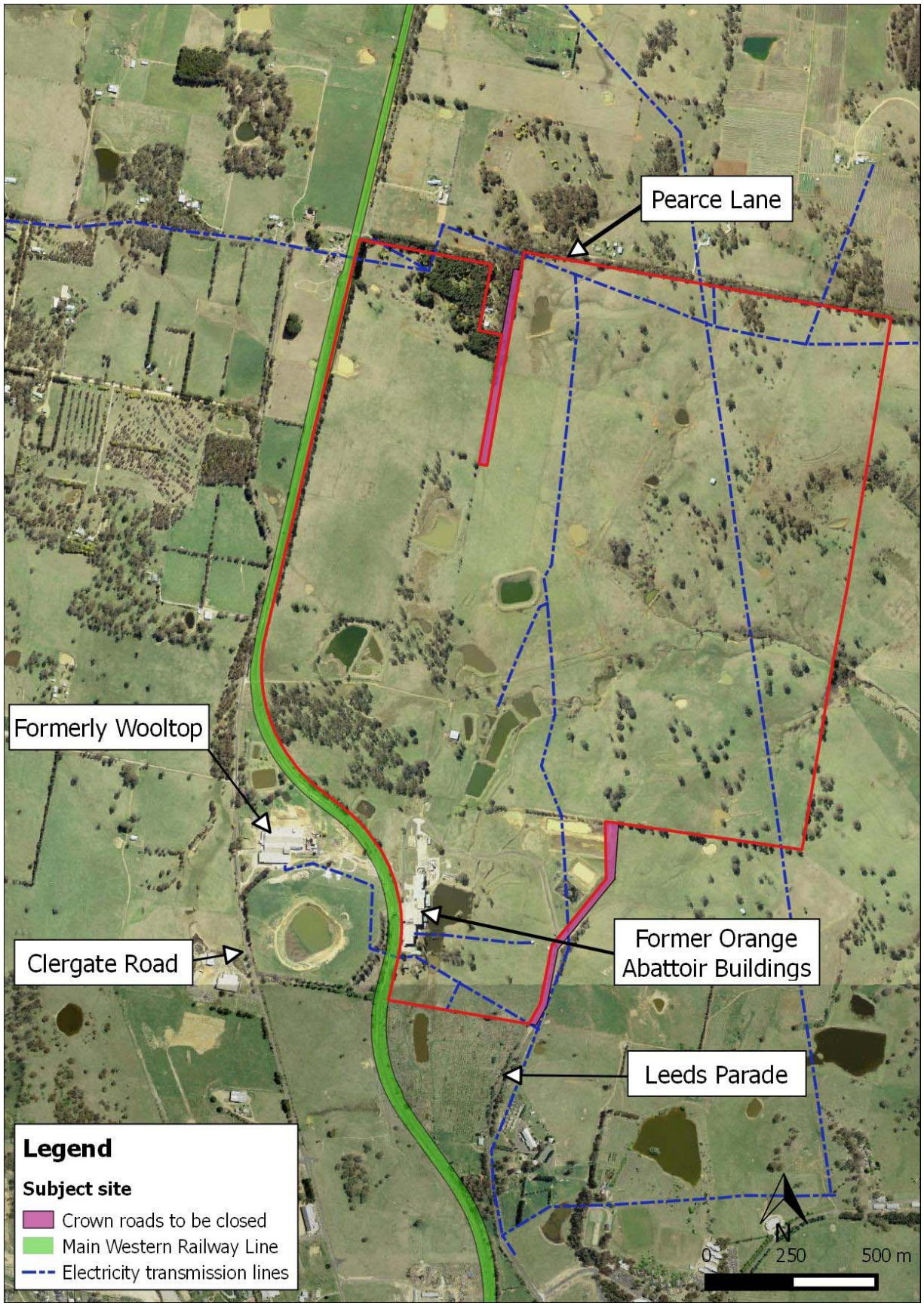

Figure 1: **The subject site (Source: Six Maps)**

2.1.2 PLANNING PROPOSAL

It is proposed to amend the zoning of the subject site from part IN1 – General Industrial and part RU1 – Primary Production (refer **Figure 2**) to R5 – Large Lot Residential.

It is further proposed to amend the minimum lot size map to impose a minimum lot size of 4,000 square metres over the majority of the site. It is proposed that the steeper areas of the site, or those affected by mapped waterways, would feature larger minimum lot sizes to ensure that future development did not lead to unintended or unacceptable impacts to the landscape.

The anticipated lot yield based on the concept master plan is approximately 450 lots. The concept master plan for the site is provided in **Figure 3**.

Specific road and boundary locations and lot sizes would be confirmed at development application stage following amendment of the LEP but would not be expected to be radically different from the concept master plan provided.

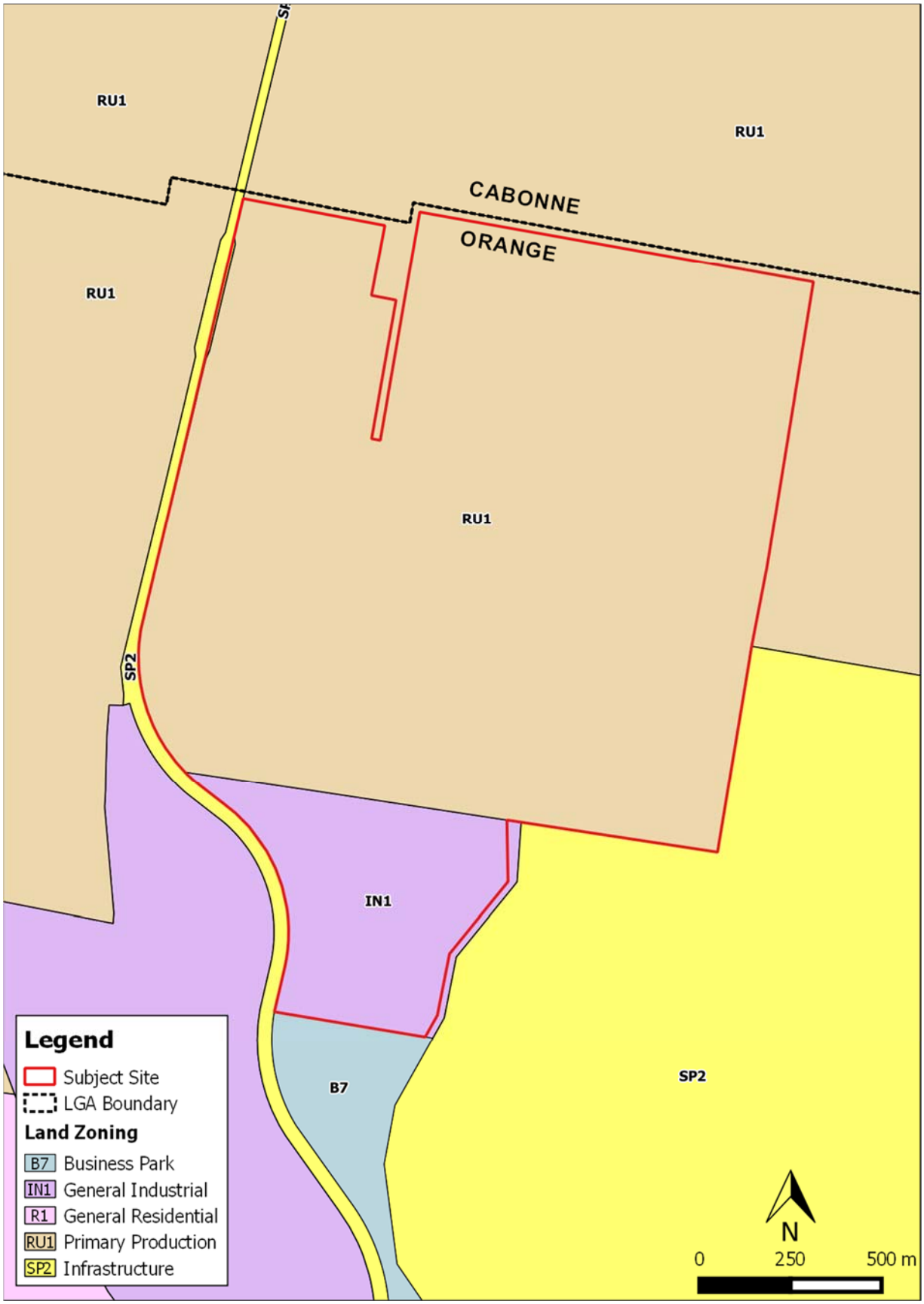

Figure 2: Current land zoning at subject site and adjoining lands

2.2 VEGETATION

Whilst only a very small portion of the northern extent of the site is mapped as bushfire prone, the predominant vegetation types across the whole of the site have been assessed using the process set out in David *Keith's Ocean Shores to Desert Dunes*. It is noted that from ground-truthing the area of the site mapped as bushfire prone that the majority of the substantial timber has been removed in recent years. This was understood to have consisted of radiata pine and it is therefore noted that consent for its removal, regardless of size was not required in accordance with Chapter 0 of the Orange Development Control Plan 2004 (DCP).

The vegetation types across the site identified using Keith have been converted to the Auslig standards using Table A3.5.1 in **Appendix 3** to PBFP (addendum to PBFP issued in 2010). Due to the historical and ongoing use of the site for grazing purposes, large parts of the property are cleared, grazed grassland. Vegetation formations are depicted in **Figure 3.** Vegetation types include woodland (refer - **Plate 1**).

Figure 3: Woodland vegetation formation at the subject site

2.3 SLOPE

The fall of the land is generally from the north-east to the south-west, at an approximate peak elevation of 940 metres Australian Height Datum (mAHD) in the north-east, falling to 860 mAHD in the south-west. To the north of the site is a slightly higher peak, located in the Cabonne LGA, which is the highest point in the immediate locality at approximately 948 mAHD. **Figure 4** provides topographical details and **Figure 5** provides an analysis of slope across the site.

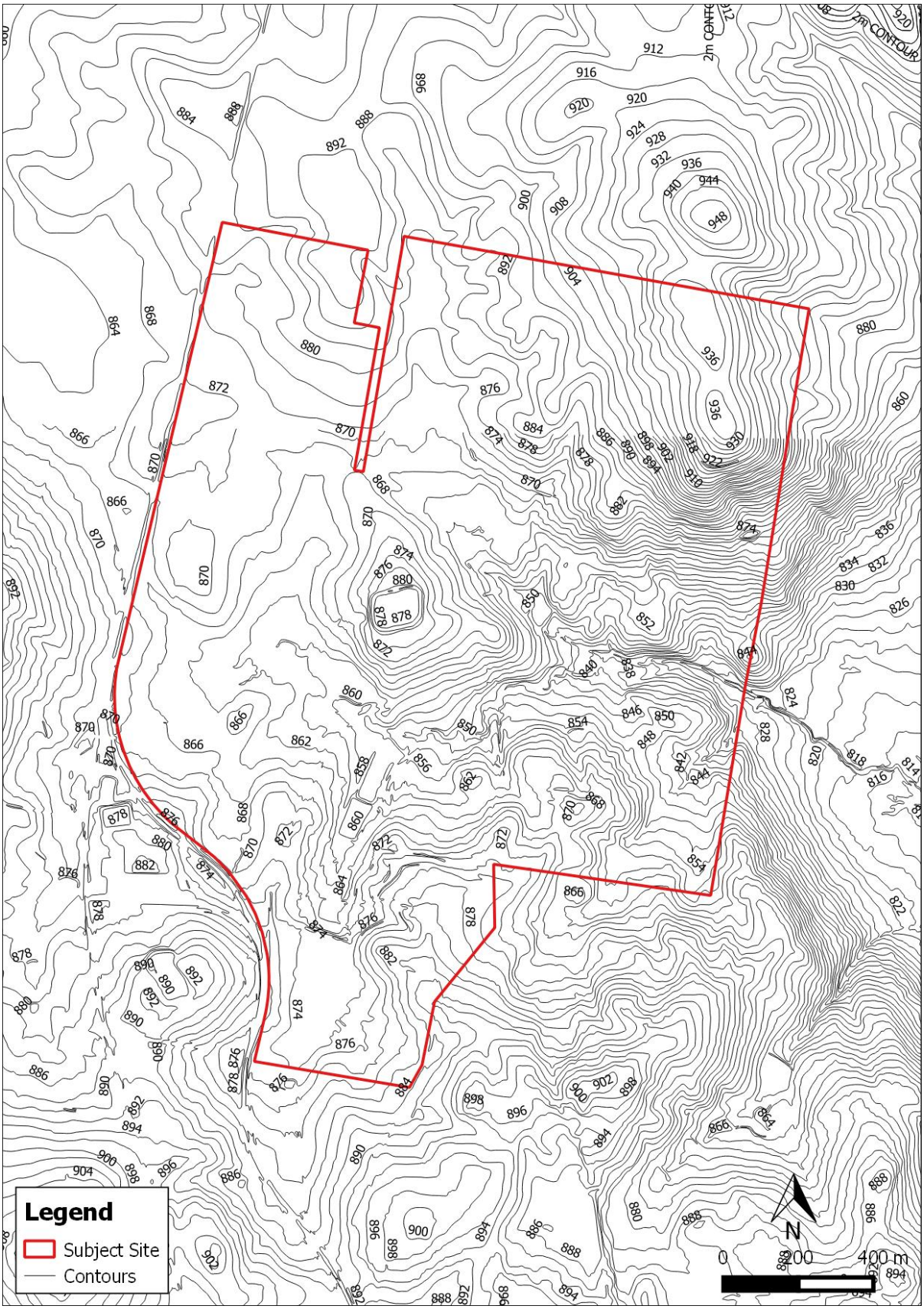

Figure 4: Topography

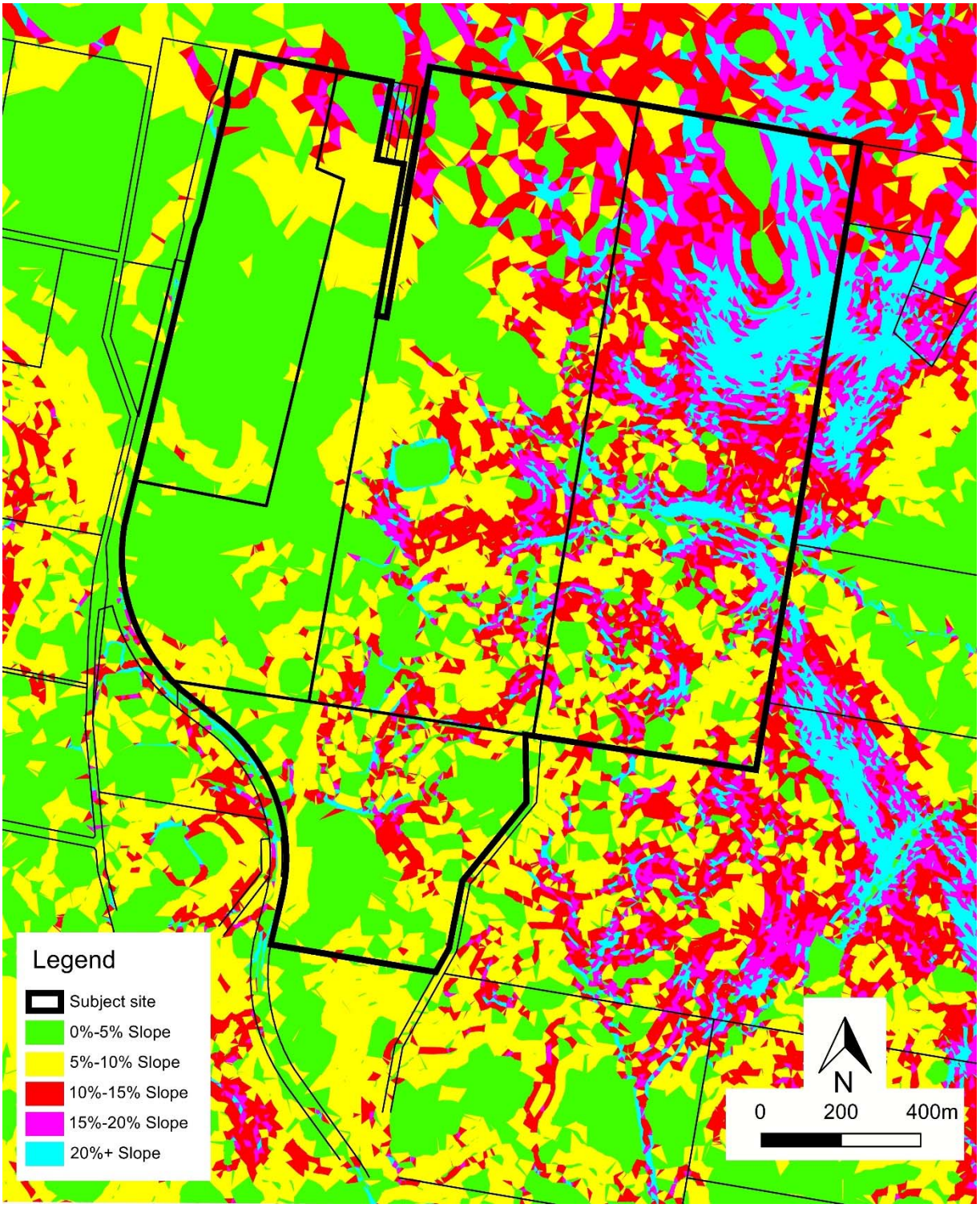

Figure 5: Slope at the subject site

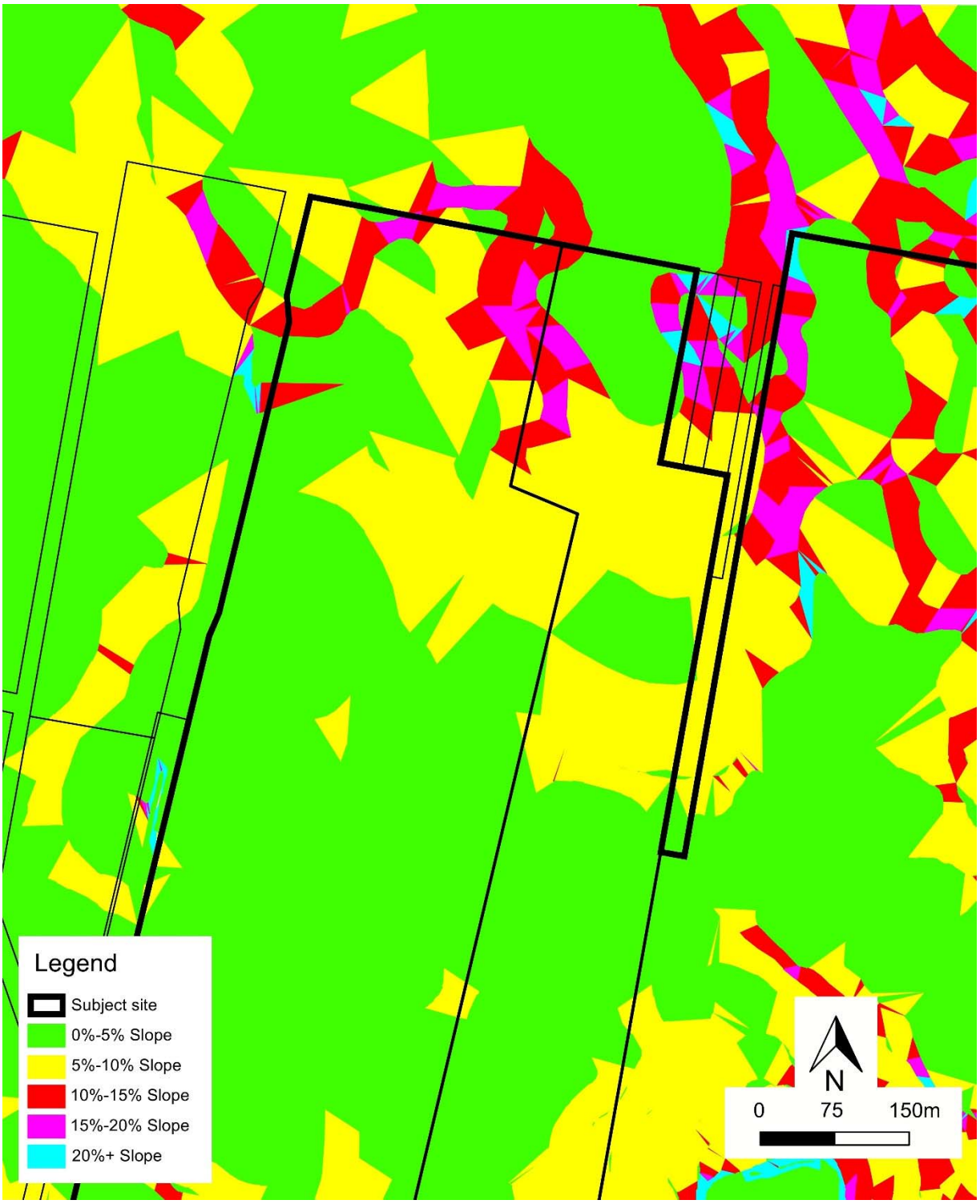

Figure 6: Slope within the bushfire prone mapped portion of the subject site

2.4 BUSH FIRE PRONE LAND

Bushfire prone land is predominantly located in areas of more dense and connective woodland vegetation. Wider cleared areas provide minor fire barriers between bushfire prone areas. Bushfire prone land are depicted in **Figure 7**.

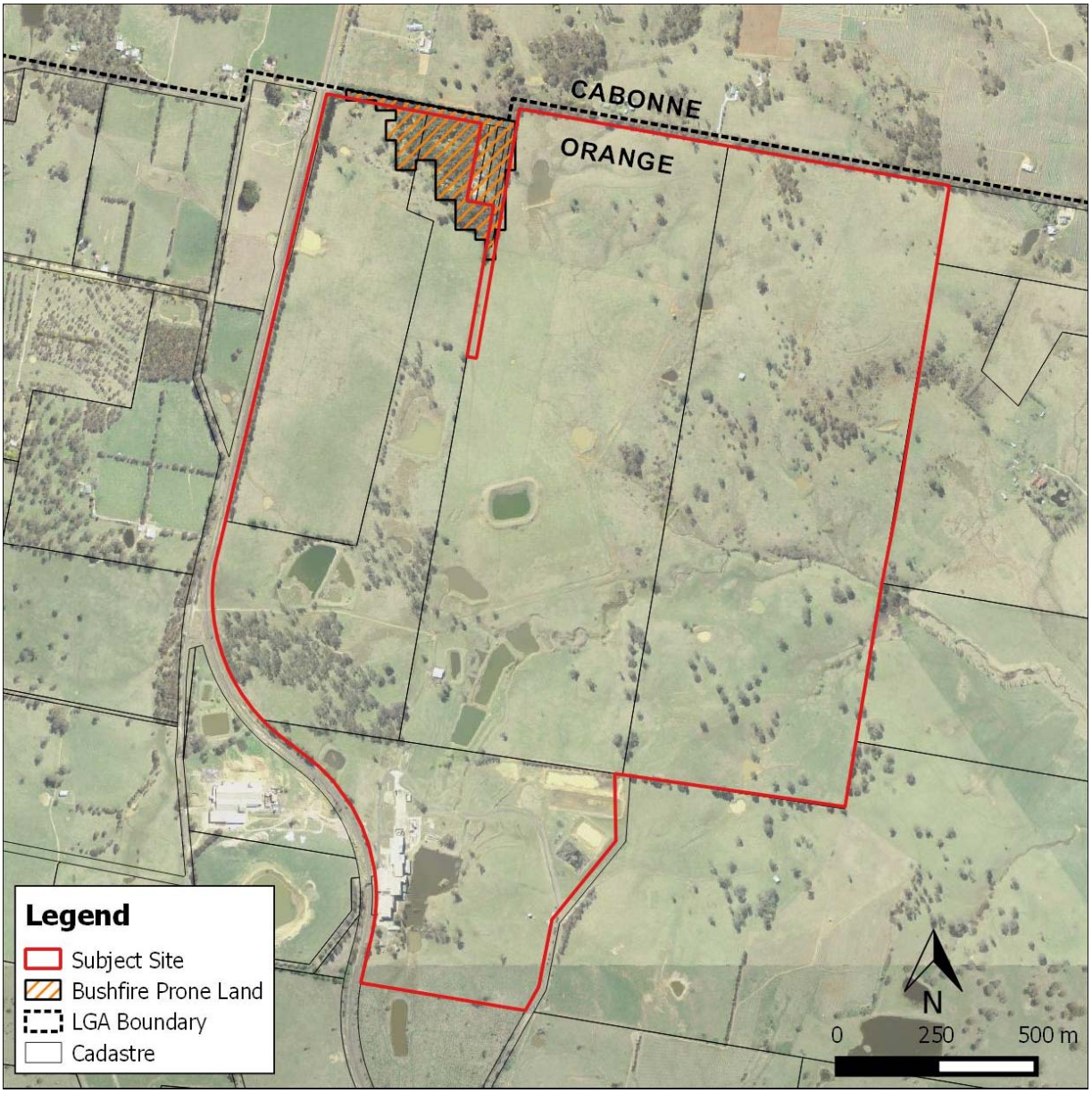

Figure 7: Bushfire Prone Land and existing site layout (Source: Orange City Council)

Significant Environmental Features

3.1 ECOLOGY

An ecological assessment of the site has been completed by Dr Colin Bower of FloraSearch of which the following was noted:

> *A preliminary inspection of the Project area was undertaken on 17 December 2015.*
>
> *All patches of remnant native trees on the project area were identified to species in order to determine the original native vegetation communities that formerly occurred there. This approach is feasible because native forest and woodland communities are defined and named by the dominant trees in the uppermost vegetation stratum.*
>
> *Most of the project area is cleared land. The ground cover flora was inspected across the whole site to determine whether it is in 'good' or 'low' condition as defined by the BioMetric methodology (Gibbons et al. 1995). Ground vegetation is considered to be in 'low' condition if more than 50 percent of cover comprises introduced species, or in 'good' condition if more than 50 percent of cover is native species.*
>
> *Opportunistic observations were made of native fauna while moving around the project area to record any threatened species that may be present.*

This report confirms that, based on the species noted, two areas of the site retain remnants of two plant communities that are noted to be endangered ecological communities, being the;

- The Box-Gum Woodland EEC/CEEC, and
- The Tablelands Snow Gum Grassy Woodland EEC.

As well as these communities there was noted to be a number of planted native and introduced species that are not endemic to the area. The overall vegetation condition was identified as:

> *Visual inspection of the project area showed that the native vegetation has been grossly modified following over 150 years of farming and grazing. The health of the native trees within most remnants is good and there are signs of tree regeneration in the large patch in the south west corner. Some native shrub cover survives on the steep slopes of Lot 25, mainly Silver Wattle (Acacia dealbata), but is absent elsewhere. Significant numbers of mature, old growth trees are present, some with hollow trunks and limbs that would provide nesting opportunities for birds, possums, gliders, microbats and reptiles. These are an important wildlife resource to maintain in the environment.*
>
> *The ground cover was observed to be in poor or 'low' condition over most of the project area. The ground cover has been almost entirely replaced by a range of introduced pasture grasses including Phalaris (Phalaris aquatica), Cocksfoot (Dactylis glomerata), Perennial Ryegrass (Lolium perenne) and Fescues (Vulpia spp.). Paterson's Curse (Echium plantagineum) is also present. Few areas dominated by native grasses were observed and included Wallaby Grasses (Rytidosperma spp.) and Weeping Grass (Microlaena stipoides).*
>
> *Overall, the remnant trees are the most important natural elements remaining on the site. The original shrub and ground layer vegetation has been almost completely lost. Except in a few limited areas there is little capacity for natural recovery of the native vegetation to close to its original condition.*

Additionally, four broad habitat types were noted:

- Exotic grassland/forbland.
- Native woodlands
- Permanent water storages
- Ephemeral creeks and wetlands

One threatened fauna species, the Superb Parrot, was noted on site.

In the context of Koala and their habitat, it was noted that:

The flora survey detected one koala food tree listed under Schedule 2 of SEPP 44, the Ribbon Gum (Eucalyptus viminalis). However, there is no evidence of a breeding koala population on the project area and none has been recorded in the surrounds. Consequently, the project area is not core koala habitat and a SEPP 44 Plan of Management is not required.

A results of a search of the Bionet for threatened and vulnerable species within 2km of the subject site is provided in **Table 3.1** and **Figure 8**.

Table 3.1 – Threatened and Vulnerable Species occurring within 2km of the subject site

Common Name	Scientific Name	TSC Act Status	EPBC Status
Diamond Firetail	*Stagonopleura guttata*	Vulnerable	Not Listed
Scarlet Robin	*Petroica boodang*	Vulnerable	Not Listed
Brown Treecreeper (eastern subspecies)	*Climacteris picumnus victoriae*	Vulnerable	Not Listed
Super Parrot	*Polytelis swainsonii*	Vulnerable	Vulnerable
Varied Sittella	*Daphoenositta chrysoptera*	Vulnerable	Not Listed

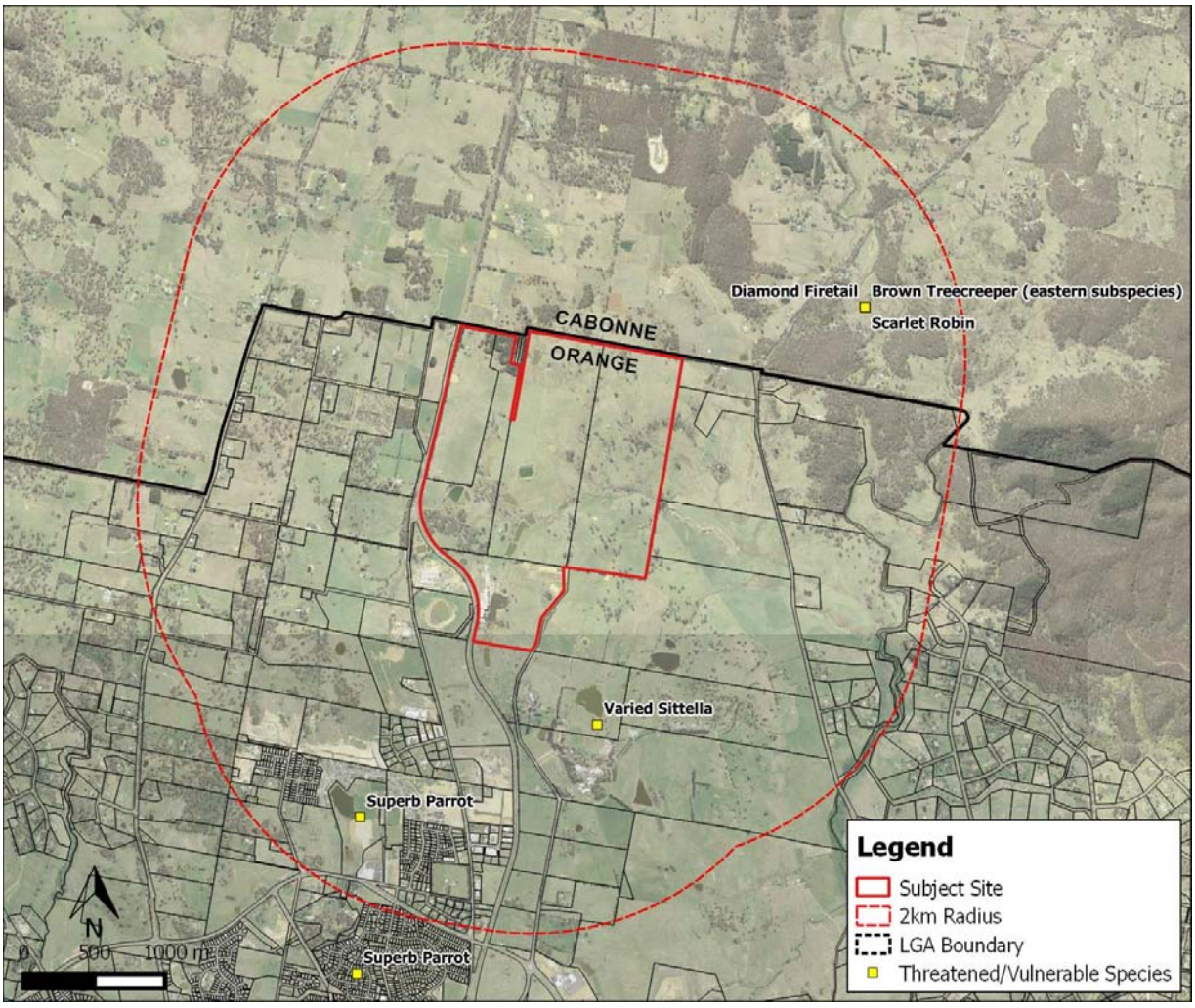

Figure 8: Threatened/Vulnerable species sighting locations (Source: BioNet)

3.2 INDIGENOUS HERITAGE

An assessment of the site has been conducted by Biosis in accordance with the Department Environment, Climate Change and Water (DECC) *Due Diligence Code of Practise for the Protection of Aboriginal Objects in New South Wales*.

This report concludes that:

> *The archaeological assessment located and recorded 20 Aboriginal sites within the Project Area. If these sites can not be avoided by the proposed development, then an AHIP must be sort under Part 6 of the Parks and Wildlife Act 1974. The Project Area is suitable for rezoning once all conditions under the relevant legislation have been meet.*

3.3 EXTRACTIVE RESOURCES

The MinView DIGS database identifies that two exploration licences (EL8412 and EL5583) include part of the subject site as depicted in **Figure 9**. Details of these licences are provided below:

- EL8412 - Granted to Gold and Copper Resources Pty Ltd on 2 December 2015 and expires 2 December 2018.
- EL5583 - Granted to Triausmin Limited on 25 June 1999 and expires 24 June 2017.

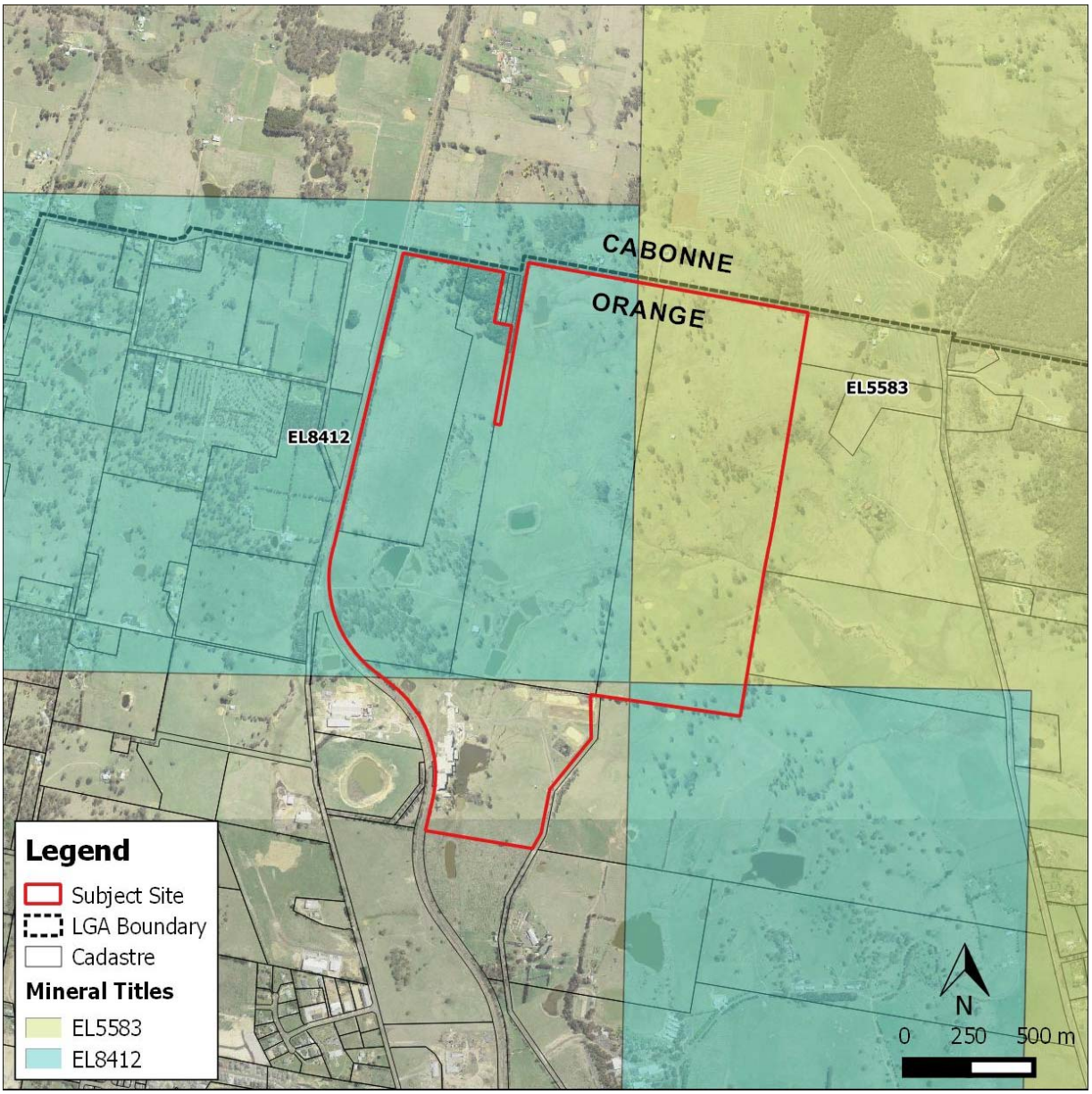

Figure 9: Applicable exploration licences or mining leases (Source: MinView)

3.4 VULNERABLE LAND – STEEP OR HIGHLY ERODIBLE

The Office of Environment and Heritage (OEH) GIS dataset for Vulnerable Land – Steep or Highly Erodible identifies land at the subject site with a gradient of 18 degrees or more (refer – **Figure 10**).

Figure 10: Vulnerable Lands – Steep/Highly Erodible

Bushfire Assessment

4.1 INTRODUCTION

The site is currently devoid of traditional residential development however several unused cottages relating to the former abattoir use are noted to exist in the southern extent of the site (within the IN1 zoned portion). There are no dwellings currently located within the RU1 portion of the site.

The vacant abattoir buildings and the former caretaker's dwellings would be demolished as an element of this application and this land, only with the remainder, subdivided to form lots within an average size of approximately 4,000 square metres. All lots would feature full town services.

4.2 SECTION 117 DIRECTION – DIRECTION 4.4

The objectives of this direction are:

(a) to protect life, property and the environment from bush fire hazards, by discouraging the establishment of incompatible land uses in bush fire prone areas, and

(b) to encourage sound management of bush fire prone areas.

In the event this direction applies the relevant planning authority must:

This direction is applicable to the subject site on the basis that parts of the site are mapped as bush fire prone land by reference to the Orange Bush Fire Prone land map.

(1) In the preparation of a planning proposal the relevant planning authority must consult with the Commissioner of the NSW Rural Fire Service following receipt of a gateway determination under section 56 of the Act, and prior to undertaking community consultation in satisfaction of section 57 of the Act, and take into account any comments so made,

(2) A planning proposal must:

- *(a) have regard to Planning for Bushfire Protection 2006,*
- *(b) introduce controls that avoid placing inappropriate developments in hazardous areas, and*
- *(c) ensure that bushfire hazard reduction is not prohibited within the APZ.*

(3) A planning proposal must, where development is proposed, comply with the following provisions, as appropriate:

- *(a) provide an Asset Protection Zone (APZ) incorporating at a minimum:*
  - *(i) an Inner Protection Area bounded by a perimeter road or reserve which circumscribes the hazard side of the land intended for development and has a building line consistent with the incorporation of an APZ, within the property, and*
  - *(ii) an Outer Protection Area managed for hazard reduction and located on the bushland side of the perimeter road,*
- *(b) for infill development (that is development within an already subdivided area), where an appropriate APZ cannot be achieved, provide for an appropriate performance standard, in consultation with the NSW Rural Fire Service. If the provisions of the planning proposal permit Special Fire Protection Purposes (as defined under section 100B of the Rural Fires Act 1997), the APZ provisions must be complied with,*
- *(c) contain provisions for two-way access roads which links to perimeter roads and/or to fire trail networks,*
- *(d) contain provisions for adequate water supply for firefighting purposes,*

(e) minimise the perimeter of the area of land interfacing the hazard which may be developed,

(f) introduce controls on the placement of combustible materials in the Inner Protection Area.

A bushfire assessment of the site has been prepared which demonstrates that the site can be developed in accordance with this direction. In addition, the following specific comments are provided:

(a) The area of the site mapped as bush fire prone has been recently cleared and is no longer a bush fire threat
(b) Those lots which are within 140 metres of the mapped vegetation on site (notwithstanding that it is not itself mapped as bush fire prone) would be required to provide and maintain asset protection zones;
(c) Proposal does not relate to infill development;
(d) A two way access road is proposed that provides a connection to Leeds Parade. No fire trails are proposed;
(e) Individual properties within 140 metres of mapped vegetation would be required to provide a minimum of 20,000 litres of dedicated water supply for fire-fighting purposes; to be addressed via a specific bush fire assessment in relation to a future subdivision development application
(f) Development density is proposed that is commensurate to the bush fire threat applying to the land (ie, low);
(g) Controls would be imposed over the land in relation to a future development application via a section 88b instrument attached to the future land titles.

The planning proposal is considered to be consistent with the direction on this basis.

4.3 ASSET PROTECTION ZONES

4.3.1 DEFINITIONS

An Asset Protection Zone (APZ) is:

> *An APZ is a buffer zone between a bush fire hazard and buildings, which is managed progressively to minimise fuel loads and reduce potential radiant heat levels, flame, ember and smoke attack. The appropriate APZ is based on vegetation type, slope and levels of construction (NSW RFS 2006:10)*.

APZs consist of:

- Inner Protection Area (IPA): extends from the edge of the OPA to the development, incorporating the defendable space and for managing heat intensities at the building surface.
- Outer Protection Area (OPA): located between the hazard and the IPA, for reducing the potential length of flames by slowing the rate of spread, filtering embers and suppressing the crown fire.
- A defendable space, a subset of the APZ, is required as a workable area in which fire fighters, emergency services personnel, residents and others can undertake property protection after the passage of a bush fire (NSW RFS 2006:10).

4.3.2 REQUIRED SETBACKS

A review of slopes and vegetation types on the site necessitates the setting of APZ's on certain lots within the south-western portion of the site, which is the only area of mapped vegetation that is categorised in such a way that APZ's become necessary. The current grazing use of the site has controlled the understorey in this, and other areas, of the site and due to this these areas satisfy the definition of an APZ. Continued management by the current and future owners will ensure that these areas can be safely developed for dwellings provided that such development occur within the nominated building envelopes.

Where any future building (Class 1 and 2 under the BCA) is to be developed within 140 metres of woodland vegetation formations identified in **Figure 11**, an APZ is required and must be determined by the effective slope. Effective slope is the slope between the development site(s) towards the vegetation formation communities constituting the hazard.

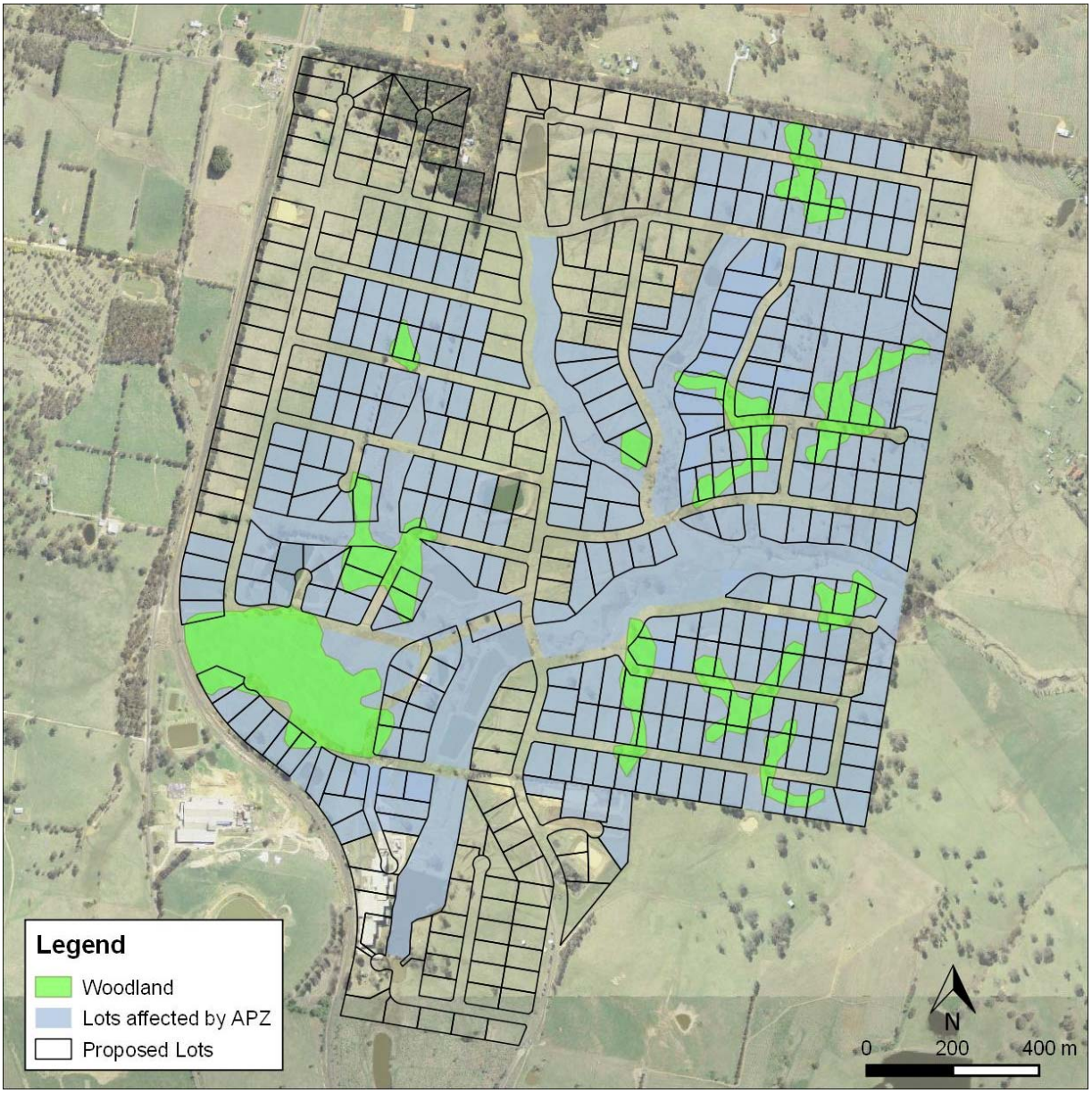

Figure 11: Woodland vegetation formations and affected lots

Table 4.1 provides a summary of the APZ's required for each effective slope.

Table 4.1 – APZ for Woodland vegetation formations in FDI 80 Fire Area

Effective Slope	APZ (m)
Upslope or Flat	10
<0-5°	15
>5°-10°	15
>10°-15°	20
>15°-18°	25

Source: Planning for Bushfire Protection (NSW RFS, 2006)

For the remaining lots on the site (ie, those not highlighted in **Figure 11**) no minimum APZ is required.

4.4 ACCESS

The following table outlines the performance criteria and acceptable solutions for access. The table also outlines how the proposed development achieves the requirements.

Table 4.2 - Property Access

Performance Criteria	Acceptable Solutions	Comments	Compliance
Access to properties is provided in recognition of the risk to fire fighters and/ or evacuating occupants.	At least one alternative property access road is provided for individual dwellings (or groups of dwellings) that are located more than 200 metres from a public through road	The mapped fire source (although as per the ground-truthing it does not qualify as bushfire prone land) is located in the extreme north of the subdivision. The primary access to the site for the purposes of this planning proposal is via Leeds Parade in the south. All lots located in the vicinity of the mapped bush fire prone land have a number of internal egress routes in the event of fire.	✓
The capacity of road surfaces and bridges is sufficient to carry fully loaded fire fighting vehicles.	Bridges clearly indicate load rating and pavements and bridges are capable of carrying a load of 15 tonnes	This would be achieved.	✓
All weather access is provided.	Roads do not traverse a wetland or other land potentially subject to periodic inundation (other than a flood or storm surge).	This would be achieved.	✓
Road widths and design enable safe access for vehicles	A minimum carriageway width of four metres for rural residential areas, rural landholdings or urban areas with a distance of greater than 70 metres from the nearest hydrant point to the most external part of a proposed building (or footprint). Note: No specific access requirements apply in a urban area where a 70 metres unobstructed path can be demonstrated between the most distant external part of the proposed dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70kph) that supports the operational use of emergency fire fighting vehicles (i.e. a hydrant or water supply).	This would be achieved.	✓
	In forest, woodland and heath situations, rural property access roads have passing bays every 200 metres that are 20 metres long by two metres wide, making a minimum trafficable width of six metres at the passing bay.	This would be achieved	✓

Table 4.2 - Property Access

Performance Criteria	Acceptable Solutions	Comments	Compliance
	A minimum vertical clearance of four metres to any overhanging obstructions, including tree branches.	This is achievable for all lots.	✓
	Internal roads for rural properties provide a loop road around any dwelling or incorporate a turning circle with a minimum 12 metre outer radius.	This is achievable for all lots.	✓
	Curves have a minimum inner radius of six metres and are minimal in number to allow for rapid access and egress.	This is achievable for all lots.	✓
	The minimum distance between inner and outer curves is six metres	This is achievable for all lots.	✓
	The cross fall is not more than 10 degrees.	This is achievable for all lots.	✓
	Maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads. Note: Some short constrictions in the access may be accepted where they are not less than the minimum (3.5m), extend for no more than 30m and where the obstruction cannot be reasonably avoided or removed. The gradients applicable to public roads also apply to community style development property access roads in addition to the above.	This is achievable for all lots.	✓
	Access to a development comprising more than three dwellings have formalised access by dedication of a road and not by right of way	This is achieved.	✓

4.5 SERVICES

The intent of the measures for services, including water, electricity and gas is:

> to provide adequate services of water for the protection of buildings during and after the passage of a bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building *(NSW RFS 2006:26).*

The following table outlines the performance criteria and acceptable solutions for services. The table also outlines how the proposed development achieves the requirements.

Table 4.3 - Services

Performance Criteria	Acceptable Solutions	Comments	Compliance
Non-reticulated water supply area			
For rural-residential and rural developments (or settlements) in bush fire prone areas, a water supply reserve dedicated to fire fighting purposes is installed and maintained. The supply of water can be an amalgam of minimum quantities for each lot in the subdivision (community titled subdivisions), or held individually on each lot	The minimum dedicated water supply required for fire fighting purposes for each occupied building excluding drenching systems, is provided in accordance with Table 4.2. For lots >10,000m² Table 4.2 requires the dedicated water supply of 20,000L/lot.	No occupied building proposed. Future dwelling DA's would address this requirement. .	N/A
	A suitable connection for fire fighting purposes is made available and located within the IPA and away from the structure. A 65mm Storz outlet with a Gate or Ball valve is provided.	To be dealt with via future DA's for individual dwellings.	N/A
	Gate or Ball valve and pipes are adequate for water flow and are metal rather than plastic.	To be dealt with via future DA's for individual dwellings.	N/A
	Underground tanks have an access hole of 200mm to allow tankers to refill direct from the tank. A hardened ground surface for truck access is supplied within 4 metres of the access hole.	To be dealt with via future DA's for individual dwellings.	N/A
	Above ground tanks are manufactured of concrete or metal and raised tanks have their stands protected. Plastic tanks are not used. Tanks on the hazard side of a building are provided with adequate shielding for the protection of fire fighters.	To be dealt with via future DA's for individual dwellings..	N/A
	All above ground water pipes external to the building are metal including and up to any taps. Pumps are shielded.	To be dealt with via future DA's for individual dwellings.	N/A
Electricity Services			
Location of electricity services limits the possibility of ignition of surrounding bushland or the fabric of buildings	Where practicable, electrical transmission lines are underground.	All proposed electrical services within the subdivision would be underground. Existing aboveground services (excepting the existing 132KV high voltage ETL) would be replaced with underground services. This ETL is well	✓

Table 4.3 - Services

Performance Criteria	Acceptable Solutions	Comments	Compliance
		separate from the mapped bushfire prone land.	
Regular inspection of lines is undertaken to ensure they are not fouled by branches	Where overhead electrical transmission lines are proposed: • lines are installed with short pole spacing (30 metres), unless crossing gullies, gorges or riparian areas; and • no part of a tree is closer to a power line than the distance set out in accordance with the specifications in 'Vegetation Safety Clearances' issued by Energy Australia (NS179, April 2002).	As above, all proposed services to be underground.	N/A
Gas services			
Location of gas services will not lead to ignition of surrounding bushland or the fabric of buildings	Reticulated or bottled gas is installed and maintained in accordance with AS1596 and the requirements of relevant authorities. Metal piping is to be used.	To be dealt with via future DA's for individual dwellings.	N/A
	All fixed gas cylinders are kept clear of all flammable materials to a distance of 10 metres and shielded on the hazard side of the installation.	To be dealt with via future DA's for individual dwellings.	N/A
	If gas cylinders need to be kept close to the building, the release valves are directed away from the building and at least 2 metres away from any combustible material, so that they do not act as a catalyst to combustion. Connections to and from gas cylinders are metal.	To be dealt with via future DA's for individual dwellings.	N/A
	Polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not used.	To be dealt with via future DA's for individual dwellings.	N/A

4.6 ON-GOING MANAGEMENT

On-going maintenance of the APZs is required to ensure that regrowth and fuel load replacement does not occur. This will be the responsibility of the property owners and would be required as a condition of consent for any future dwellings on the allotments.

Conclusion

As part of the subject site has been identified as being bushfire prone, an assessment of the site has been undertaken in accordance with PBFP (NSW RFS 2006). The results of this assessment are outlined in this report along with recommendations to enable the proposed development to comply with relevant legislative requirements. In summary these recommendations include:

- Implementation of APZs for all lots identified in **Figure 11** in accordance with **Table 4.1** ;
- Undertake DA and bushfire assessment for any future dwellings on lots identified within **Figure 11** (ie, with 140 metres of mapped vegetation).
- A dedicated static water supply of a minimum of 20,000L per allotment to be provided with any future dwellings as identified in **Figure 11**.
- Roads and future property access roads to be constructed to the PBFP standards.

References

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Plates

Plate 1: Representative photograph of Woodland vegetation formation

Plate 2: Representative photograph of Woodland vegetation formation