

**STRATEGIC BUSHFIRE STUDY  
FOR THE REZONING  
OF  
LOT 190 in DP 756727 & LOT 5 in DP 529579**

**No. 56 HILLDOWNS ROAD**

**KALKITE**

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<b>Report Number</b>	<b>Document</b>	<b>Preparation Date</b>	<b>Issue Date</b>	<b>Directors Approval</b>
B213805 - 4	Final	27.04.2022	28.05.2023	<i>G.L. Swain</i>

## EXECUTIVE SUMMARY

*Australian Bushfire Protection Planners Pty Limited* has been commissioned by *John Sacco Enterprise Ltd* to undertake the Bushfire Consultancy for the Planning Proposal for the rezoning of the land within Lot 190 in DP 756727 and Lot 5 in DP 529579, No. 56 Hilldowns Road, Kalkite.

The Snowy Monaro Bushfire Prone Land Map records the site as containing Category 1 Bushfire Prone Vegetation.

Section 4.1 of *Planning for Bush Fire Protection 2019* introduces a range of strategic planning considerations which are intended to be addressed via the preparation of a Strategic Bush Fire Study.

The broad principles which apply to a Strategic Bushfire Study are:

- Ensuring land is suitable for development in the context of bushfire risk;
- Ensure new development on Bushfire Prone Land will comply with *Planning for Bush Fire Protection 2019*;
- Minimise reliance on performance-based solutions;
- Provide adequate infrastructure associated with emergency evacuation and fire-fighting operations;
- Facilitate appropriate ongoing land management practices.

The relevant Bushfire Protection Measures in Chapters 5 – 8 of *Planning for Bush Fire Protection 2019* are to be considered at the strategic planning stage to ensure that future development can comply with *Planning for Bush Fire Protection 2019*.

This study considers the components of Table 4.2.1 of *Planning for Bushfire Protection 2019* and identifies that the proposal to rezone the land satisfies *Environmental Planning & Assessment Act* s.9.1 Direction 4.4 – ‘Planning for Bushfire Protection’ and ‘*Planning for Bushfire Protection 2019*’.



Graham Swain  
Managing Director,  
***Australian Bushfire Protection Planners Pty Limited.***

26.04.2023

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## SECTION 1

### INTRODUCTION

#### 1.1 Aim of this Assessment.

The aim of this Strategic Bushfire Study is to inform and assist with the consideration of a Planning Proposal for the rezoning of land within Lot 190 in DP 756727 and Lot 5 in DP 529579, No. 56 Hilldowns Road, Kalkite, in the Cooma Monaro Local Government Area (LGA).

The assessment detailed in this study seeks to establish the Planning Proposals compliance with the requirements and specifications of *Planning for Bushfire Protection 2019*.

#### 1.2 Site Inspection.

Graham Swain of Australian Bushfire Protection Planners Pty Limited undertook a detailed inspection of the site and surrounding areas on the 4<sup>th</sup> and 5<sup>th</sup> of February 2022.

The site inspection of the western part of the rezoning precinct (Lot 5 in DP 529579 and the western part Lot 190 in DP 756727) included:

- An assessment of the existing landuse within and external to the rezoning precinct;
- Topography of the land within and external to the rezoning precinct;
- The type and classification of the vegetation on the land within and external to the rezoning precinct;
- Potential fire paths; An assessment of the bushfire risk to the western rezoning precinct;
- Location of the entry road off Kalkite Road;
- Layout and road pattern and location of proposed Community Hub, including the provision of a site for a Community Centre, Oval and a new Rural Fire Service Station;

The site inspection of the eastern portion of the rezoning precinct included a walk-over of the area within the eastern part of Lot 190 in DP 756727.

The walk-over examined:

- The location of the retained woodland vegetation on the site and on adjoining land;
- The location of water courses/overland flow paths within the site;

- The vegetation classification within the site and on adjoining land;
- The topography of the land within and external to the site;
- Restrictions on the location of dwelling sites caused by the slope of the land;
- Potential fire paths;
- Bushfire Risk to the rezoning precinct;
- Identification of building footprints and associated Asset Protection Zones;
- Identification of property access roads to the building envelopes.

An inspection of the existing Kalkite Village was undertaken to determine the type and size of the existing development and the potential bushfire risk.

A broader examination of the bushfire risk to the rezoning proposal was undertaken, including fire paths in the local area and access to and from the Kalkite Village precinct.

Travel distances and travel times to Jindabyne and Berridale were also examined.

## **1.2 Scope of the Assessment.**

Chapter 4.1 of *Planning for Bushfire Protection 2019* identifies the principles and assessment considerations for strategic planning and identifies that bushfire protection measures are to be assessed at the strategic planning stage to determine the suitability of the proposal against the broader bushfire risk.

Chapter 4.2 of *Planning for Bushfire Protection 2019* states that a Strategic Bushfire Study must include the components of Table 4.2.1 of the document (refer to copy of Table 4.2.1 on Page 8).

Once the strategic issues have been addressed, an assessment of compliance with the requirements and specifications of *Planning for Bushfire Protection 2019* should be carried out.

**Table 4.2.1 – Strategic Bushfire Study Requirements**

ISSUE	DETAIL	ASSESSMENT CONSIDERATIONS
<b>Bush fire landscape assessment</b>	A bush fire landscape assessment considers the likelihood of a bush fire, its potential severity and intensity and the potential impact on life and property in the context of the broader surrounding landscape.	<ul style="list-style-type: none"> <li>➤ The bush fire hazard in the surrounding area, including: <ul style="list-style-type: none"> <li>➤ Vegetation</li> <li>➤ Topography</li> <li>➤ Weather</li> </ul> </li> <li>➤ The potential fire behaviour that might be generated based on the above;</li> <li>➤ Any history of bush fire in the area;</li> <li>➤ Potential fire runs into the site and the intensity of such fire runs; and</li> <li>➤ The difficulty in accessing and suppressing a fire, the continuity of bush fire hazards or the fragmentation of landscape fuels and the complexity of the associated terrain.</li> </ul>
<b>Land use assessment</b>	The land use assessment will identify the most appropriate locations within the masterplan area or site layout for the proposed land uses.	<ul style="list-style-type: none"> <li>➤ The risk profile of different areas of the development layout based on the above landscape study;</li> <li>➤ The proposed land use zones and permitted uses;</li> <li>➤ The most appropriate siting of different land uses based on risk profiles within the site (i.e. not locating development on ridge tops, SFPP development to be located in lower risk areas of the site); and</li> <li>➤ The impact of the siting of these uses on APZ provision.</li> </ul>
<b>Access and egress</b>	A study of the existing and proposed road networks both within and external to the masterplan area or site layout.	<ul style="list-style-type: none"> <li>➤ The capacity for the proposed road network to deal with evacuating residents and responding emergency services, based on the existing and proposed community profile;</li> <li>➤ The location of key access routes and direction of travel; and</li> <li>➤ The potential for development to be isolated in the event of a bush fire.</li> </ul>
<b>Emergency services</b>	An assessment of the future impact of new development on emergency services.	<ul style="list-style-type: none"> <li>➤ Consideration of the increase in demand for emergency services responding to a bush fire emergency including the need for new stations/brigades; and</li> <li>➤ Impact on the ability of emergency services to carry out fire suppression in a bush fire emergency.</li> </ul>
<b>Infrastructure</b>	An assessment of the issues associated with infrastructure and utilities.	<ul style="list-style-type: none"> <li>➤ The ability of the reticulated water system to deal with a major bush fire event in terms of pressures, flows, and spacing of hydrants; and</li> <li>➤ Life safety issues associated with fire and proximity to high voltage power lines, natural gas supply lines etc.</li> </ul>
<b>Adjoining land</b>	The impact of new development on adjoining landowners and their ability to undertake bush fire management.	<ul style="list-style-type: none"> <li>➤ Consideration of the implications of a change in land use on adjoining land including increased pressure on BPMs through the implementation of Bush Fire Management Plans.</li> </ul>



### 1.3 Statutory Requirements.

This report has been prepared having regard to the following legislative and planning requirements:

#### 1.3.1 Legislation.

##### (a) ***Environmental Planning and Assessment Act (EPA Act)***

Planning and development within NSW is regulated by the *Environmental Planning & Assessment Act, 1979* (EPA Act). The ACT provides a framework for the overall environmental planning and assessment of development proposals.

Consent Authorities considering the rezoning of bushfire prone land for residential purposes are to have regard to s.9.1 (2) Direction 4.3 of the EP&A Act.

The objectives of Direction 4.3 are:

- (a) *To protect life, property and the environment from bushfire hazards, by discouraging the establishment of incompatible land uses in bushfire prone areas; and*
- (b) *To encourage sound management of bushfire prone areas.*

Direction 4.3(1) instructs the relevant planning authority to:

- Consult with the Commissioner of the NSW Rural Fire Service and take into account any comments so made.

Direction 4.3(2) states that a planning proposal must:

- Have regard to *Planning in Bushfire Protection 2019*;
- Introduce controls that avoid placing inappropriate developments in hazardous areas; and
- Ensure that bushfire hazard reduction is not prohibited within the Asset Protection Zone (APZ).

Direction 4.3(3) states that 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
  - ii. An Outer Protection Area managed for hazard reduction and located on the bushland side of the perimeter road.
- (b) For Infill Development, where an appropriate APZ cannot be achieved, provide for an appropriate performance standard, in consultation with the NSW Rural Fire Service. If the planning proposal permits Special Fire Protection Purposes, 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) Minimise the perimeter of the area of land interfacing the hazard which may be developed;
- (e) Introduce controls on the placement of combustible materials in the Inner Protection Area.

Future development applications for the subdivision of lands and construction of buildings will require further assessment against the requirements and specifications of *Planning for Bushfire Protection 2019*

**(b) Rural Fires Act 1997**

The objectives of the *Rural Fires Act* are to provide:

- The prevention, mitigation and suppression of fires;
- Coordination of bushfire fighting and prevention;
- Protection of people and property from fires; and
- Protection of the environment.

In relation to the management of bushfire fuels on public and private lands within NSW, Sections 63(1) and 63(2) require public authorities and owners / occupiers of land to take all practicable steps to prevent the occurrence of bushfires on, and to minimize the danger of the spread of bushfires.

### **1.3.2 Planning Policies.**

#### ***Planning for Bushfire Protection – 2019 – (Rural Fire Service).***

This document provides guidance on the planning and development control processes in relation to bushfire protection measures for rural residential and residential subdivision and Special Protection Developments in bushfire prone areas.

The Commissioner may determine additional measures that are considered necessary to protect the development against the impact of bushfire.

### **1.4 Documentation Reviewed in this Assessment.**

The following documents were reviewed in the preparation of this report:

- Planning proposal prepared by Gyde Consulting;
- Proposed Landuse Zoning Plans prepared by United Surveyors;
- Proposed Subdivision Plans prepared by United Surveyors;
- Ecological Constraints Report prepared Cumberland Ecology;
- Correspondence from the NSW Rural Fire Service dated 26<sup>th</sup> April 2022;
- *Planning for Bushfire Protection 2019* prepared by the NSW Rural Fire Service;
- Australian Standard AS3959 - 2018 *Construction of Buildings in Bushfire Prone Areas*;
- *Rural Fires Regulation 2022*;
- Snowy Monaro Bushfire Prone Land Map.

### **1.5 Consultation with the NSW Rural Fire Service.**

A Teams Meeting was held with the NSW Rural Fire Service on the 14<sup>th</sup> March 2022.

Representatives of the NSW Rural Fire Service were:

- Martha Dotter
- Darren Marks
- Rein Peet
- Michael Grey

Representatives of the Applicant were:

- Graham Swain – Australian Bushfire Protection Planners P/L
- Carlo Di Giulio – Gyde Consulting

The following is a summary of Key items discussed. A response was received from the RFS (Martha Dotter) on the 28.04.2022 providing comments in red, concluding that:

*'Subject to the comments contained within this response, and a comprehensive bushfire assessment report prepared in accordance with Chapter 3 – Strategic Planning of PBP, the NSW RFS does not object to the proposal as shown on the plans attached to this email'*

- The proposed one road in – one road out arrangement for the subdivision raises emergency access and egress risks. It was suggested that the cul-de-sac proposed at the north eastern corner of the site could be opened into Kalkite Road to provide a secondary access point to address this issue.

*It is noted the site is constrained by one road in, which traverses bush fire prone vegetation and poses potential risk of being cut off in the event of a bush fire. At strategic re-zoning stage, as part of an assessment - suitable mitigative measures should be considered to reduce and manage the level of bush fire risk to future occupants and fire fighters. This should be considered at the early stage of the planning proposal and provide options/suggestions accordingly.*

*In order to comply with PBP 2019, the current subdivision layout shown should provide a second point of access back onto "Hilldowns Rd".*

- The caravan park proposed in the far south eastern corner of the site may not be feasible. This is because it will most likely require extensive APZs given it immediately adjoins unmanaged Crown land. The extensive APZs may not leave sufficient land for actual camping or caravan related activities.

*Special Fire Protection Purpose (SFPP) development is required to provide a 10KW APZ – the location of the caravan park (SFPP) in the south east would need to achieve APZs that demonstrate a 10KW radiant heat level - within the site (or with a suitable legal easement if relying upon land outside the subject site).*

- It was noted that the vast majority of 'Precinct 1' included a perimeter road. This is well received. It was noted that the proposed lots in the south eastern corner of Precinct 1 did not include a perimeter road. These lots should be provided with such a road or a fire trail.

*All interface between residential development and a hazard should provide a perimeter road that complies with PBP 2019. Fire trails are not a substitute for a perimeter road. Any departure from this should be fully justified and outline how the intent of the perimeter road measures in PBP 2019 will be achieved, including management responsibilities.*

- It was outlined that the proposal will include a local centre within which there would be a new fire station to serve both the proposed residents as well as existing residents in Kalkite given the existing fire station is generally inadequate. This was well received. RFS advised that the station should be designed to Category 2b and include 1 x Category 7 and 1 x Category 1 vehicle. Ample space should be provided around the station for parking and vehicle maneuvering.

*The specifications for future emergency response agencies servicing of the development will be subject to future negotiations, including between Area Command South East RFS and the District RFS– however the identification of a block of land of sufficient size to accommodate a future brigade station is welcomed and would likely expedite future processes regarding servicing the site.*

- The local centre would also include a community hall which could also serve as a shelter point in the event of an emergency. The community centre would be fully functional and include bathrooms and a kitchen. This was well received by RFS, but queries were raised in relation to who will manage the centre and who would ensure access to the centre in the event of an actual emergency.

*In recognition of the isolated location of the site, the RFS supports the notion of the proposal including a safer place of refuge/community bush fire refuge that complies with the RFS NSP guidelines for radiant heat exposure and the like – The identification of this should form part of the subject planning proposal given the sites isolation. Further details would be required, as identified in the dot point above.*

- A park would also form part of the local centre, which could provide additional car parking or staging area in the event of an actual emergency. This was well received by RFS.
- A risk management plan for the existing village and the proposed dwellings would be required. A key principal for the management plan shall be a requirement to 'stay and shelter in place'.
- In the past, there have been instances of embers from vegetation on the western side of Lake Jindabyne floating to the subject locality. Vegetation in the proposed subdivision will require ongoing management to minimise the change of embers resulting in bushfires and placing people and housing at risk.



The proponent agreed that the volume of any new vegetation should be limited and will require ongoing management across the entire development (i.e. Precinct 1, 2 and 3). In Precincts 2 and 3, the proponent advised that up to 40m APZs will be required around any new dwellings, whilst they will also be subject to vegetation management plans. Vegetation management will be required as conditions of any consent as well as restrictions on title, 88b instruments, or other similar methods.

- It was recommended that all building be constructed to BAL 12.5.

*In recognition of the isolated location of the site and the constrained access, it was discussed that a suitable mitigative measure to increase the redundancy of a 'stay and shelter in place' message may be requiring the whole of the development to identify a minimum BAL 12.5. This should be via a legal instrument such as an s88B instrument or DCP etc.*

- Clarification is required as to whether there was sufficient space between any unmanaged land on adjoining sites and the proposed local shopping centre. Currently, it appeared as though the distance was not sufficient to offset potential heat loads from adjoining unmanaged land. The proponent advised that the separation distance will be reviewed. In the event there was not sufficient separation, the local shopping centre could be relocated to another side of the proposed round-a-bout in order to achieve the required separation.

*Any place of safer refuge/community bush fire refuge identified within the development should comply with the RFS requirements for an NSP.*

- It was suggested that a Development Control Plan (DCP), or similar, be prepared to support any Planning Proposal. The DCP could contain controls which minimise fire risk and require ongoing fire related site management practices.
- It was suggested that consideration should be given now, to the potential location of childcare centres, schools, and the like.

*SFPP development (including childcare schools etc.) require larger APZs, therefore incorporating these into the early design phase can provide for a more streamlined development assessment process at later stages.*

- Overall, RFS does not raise a fundamental objection to the proposal at this stage and will provide further consideration following formal exhibition of the PP.

A copy of the RFS response was forwarded to Susan Fox at Planning NSW.

## SECTION 2

### PROJECT DESCRIPTION

#### 2.1 Planning Proposal

The Planning Proposal is over the land known as Lot 190 in DP 756727 and Lot 5 in DP 529579, No. 56 Kalkite Road Kalkite. The site is located to the south and southeast of the Kalkite Village and is zoned RU1 – Rural.

For clarity, throughout this report the site is identified as:

1. Precinct 1, being the western portion of the site, between Kalkite Road and the foreshore of Lake Jindabyne, within Lot 5 in DP 529579 and part of Lot 190 in DP 756727;
2. Precinct 2, being that portion of Lot 190 in DP 756727 within the central portion of the site, bordered to the west and east by Kalkite Road; and
3. Precinct 3, being that part of Lot 190 in DP 756727 within the eastern portion of the site that extends to the east of Kalkite Road.

The Planning Proposal seeks approval to change the current RU1 Rural landuse zoning within the western portion of the site (Precinct 1), west of Kalkite Road, to RU5 – Village, B1 – Neighbourhood Centre, RE1 – Public Recreation and SP2 – Infrastructure.

The proposal also seeks approval to change the current RU1 Rural landuse zoning, within the central and eastern portions of the site (Precincts 2 & 3), to C2 – Environmental Conservation and C4 – Environmental Living.

The Concept Plan creates 87 lots having an area of 850 – 1000m<sup>2</sup>; 88 lots having an area of 1000m<sup>2</sup> – 1500m<sup>2</sup>; 35 lots having an area of 1501m<sup>2</sup> – 3000m<sup>2</sup>; 4 lots having an area of 3001 – 2ha and 2 lots having an area of more than 2ha with a new primary access from Kalkite Road with a secondary access from Kalkite Road, via the existing Hilddowns Road Crown Road Reserve intersection.

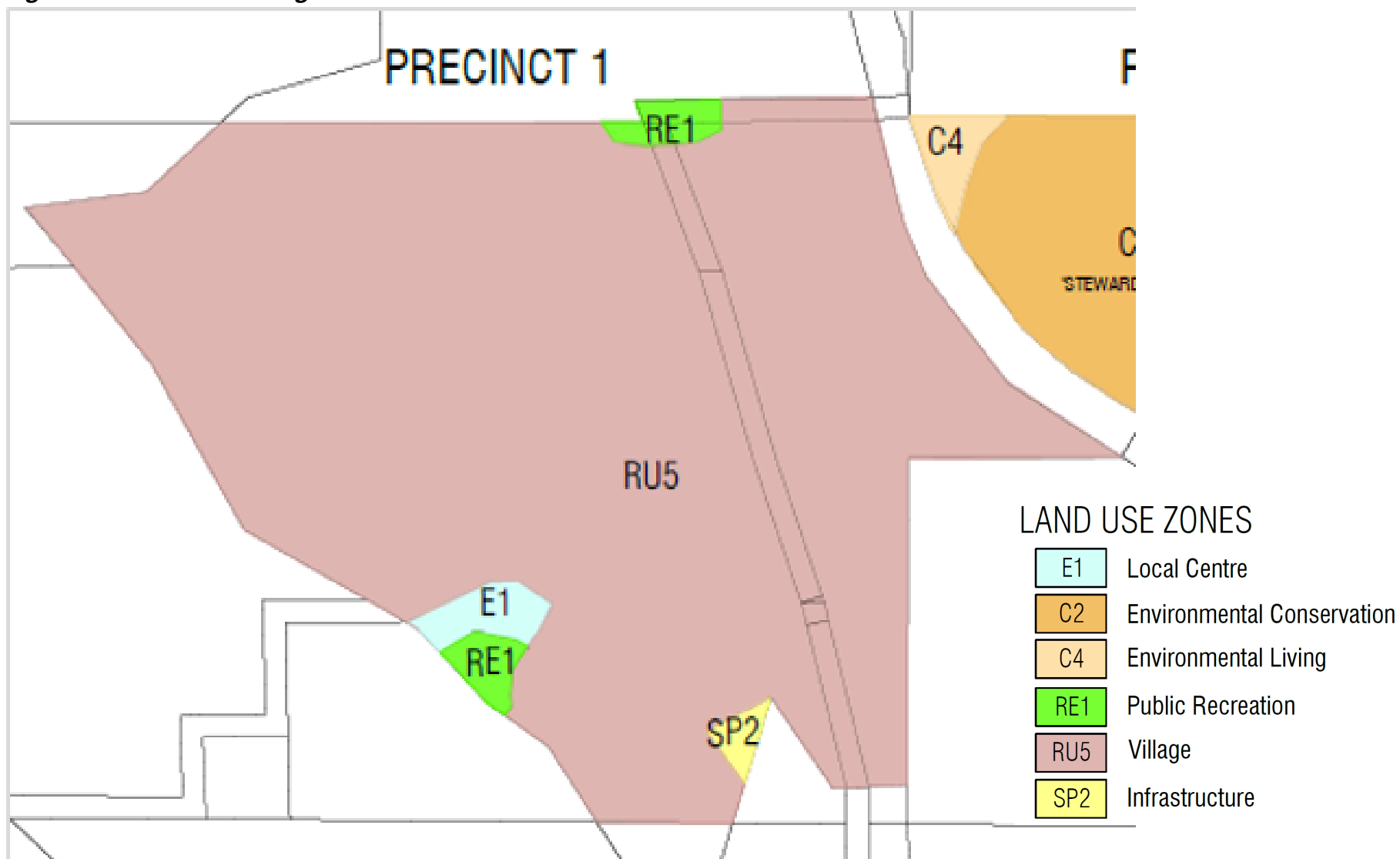
Precinct 1 contains provision for a Community Hub, centrally located within the residential estate. The Community Hub is proposed to contain an Oval, Community Hall, new RFS Fire Station and commercial enterprises (Super Market and Service Station).

Precincts B & C are proposed to contain small lot rural residential development.

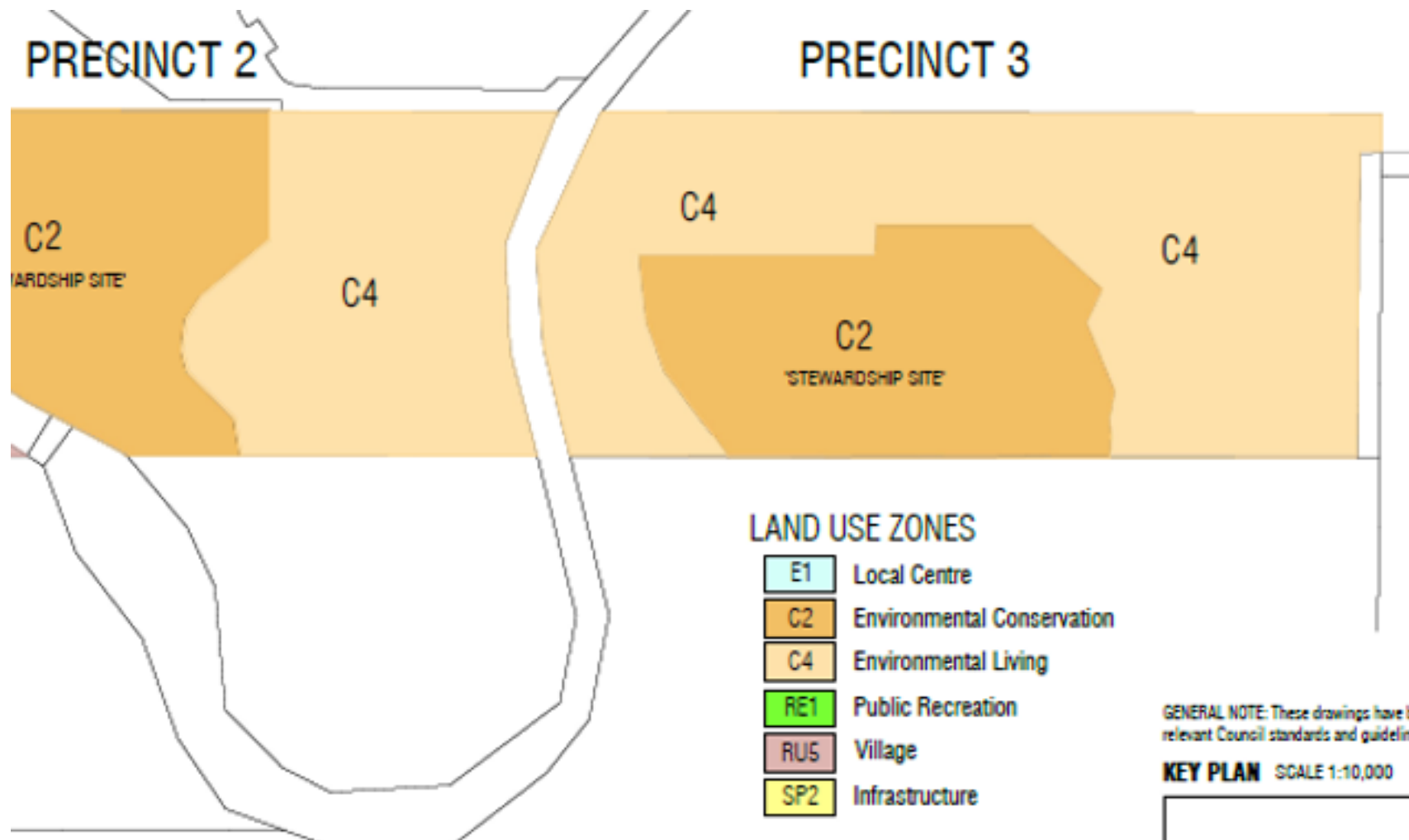
The following figures provide copies of the Landuse Zoning and Concept Plans.

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**Figure 1 – Landuse Zoning Plan – Precinct 1**



**Figure 1A – Landuse Zoning Plan – Precincts 2 & 3.**

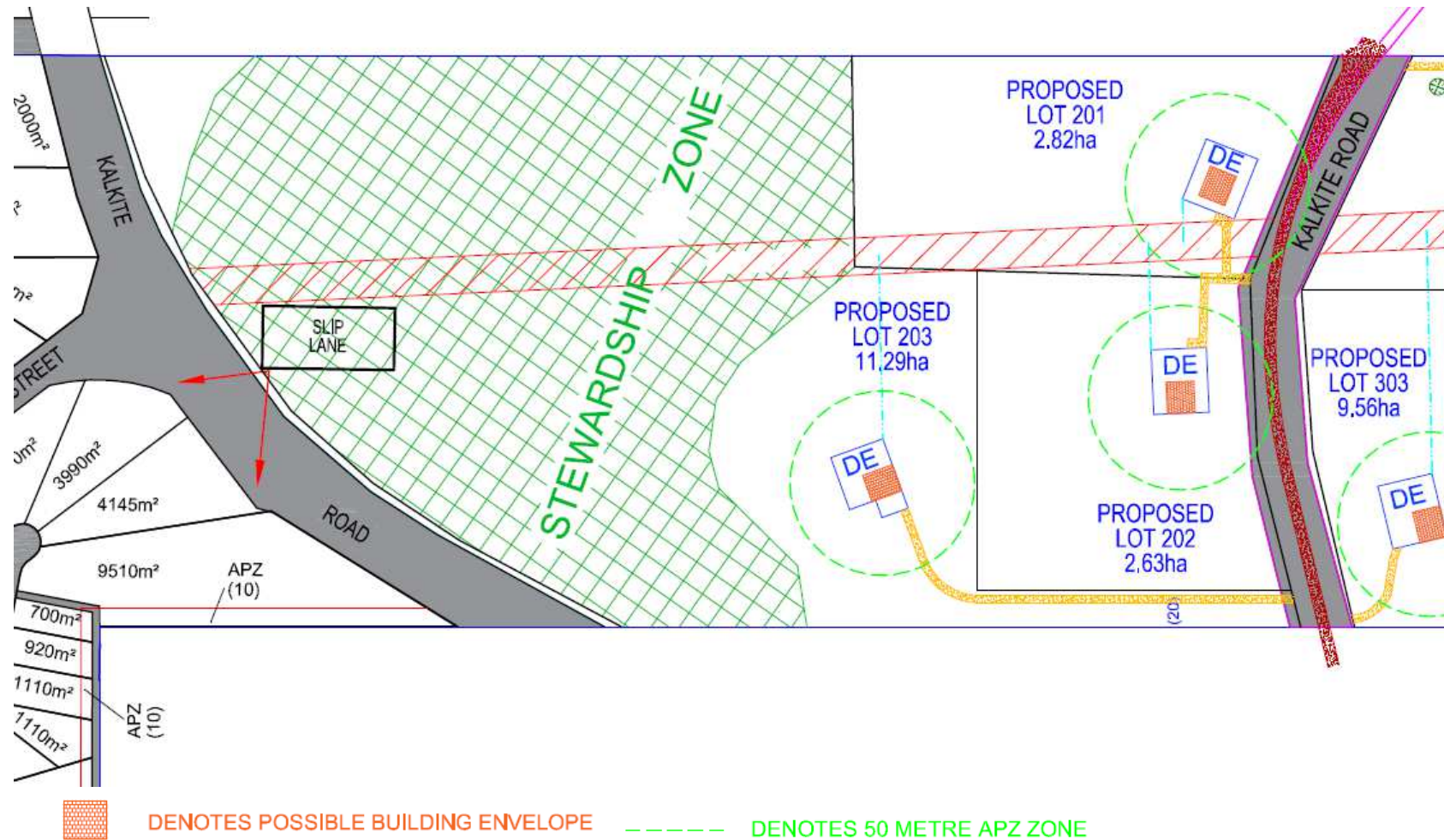


**Figure 2 – Precinct 1 – Concept Plan**

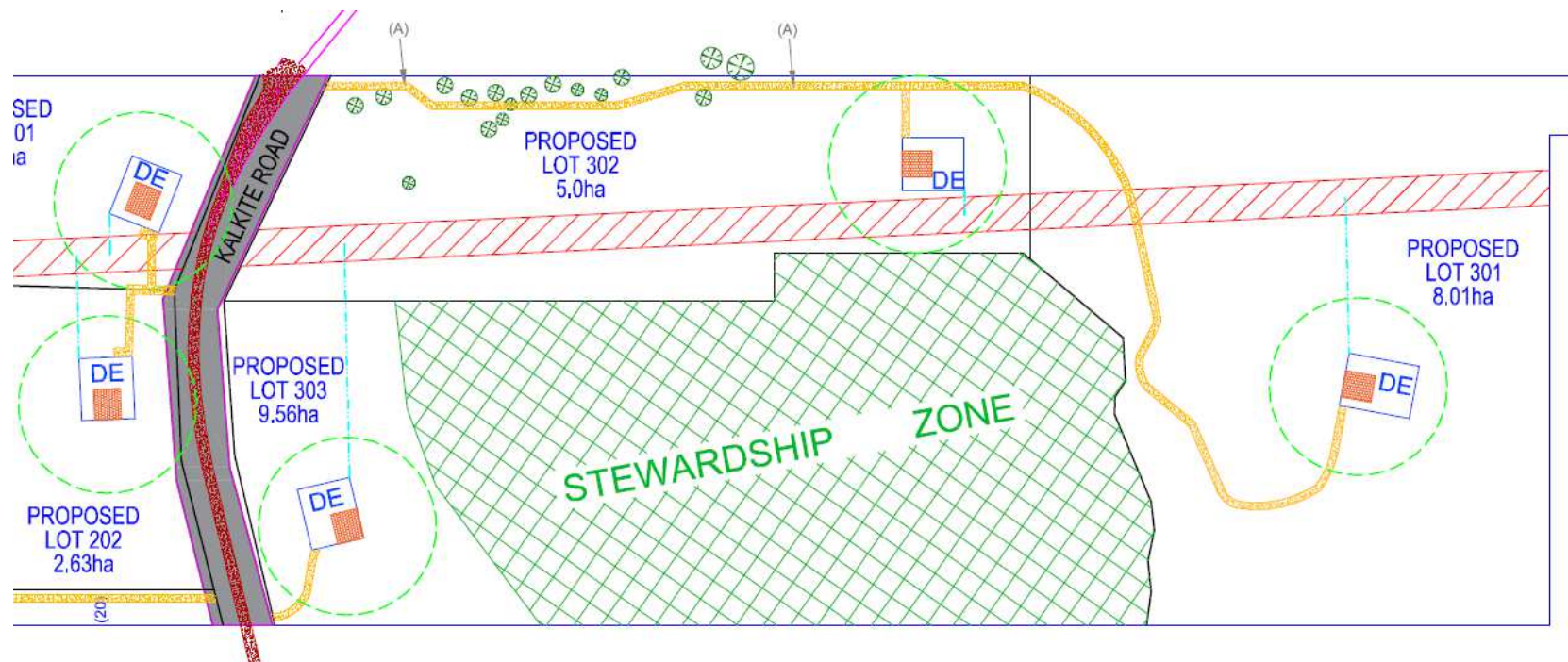




**Figure 3 – Precinct 2 – Concept Plan**



**Figure 4 – Precinct 3 – Concept Plan.**



(A) RIGHT OF CARRIAGWAY OVER POSSIBLE ACCESS DRIVEWAY.



DENOTES POSSIBLE BUILDING ENVELOPE

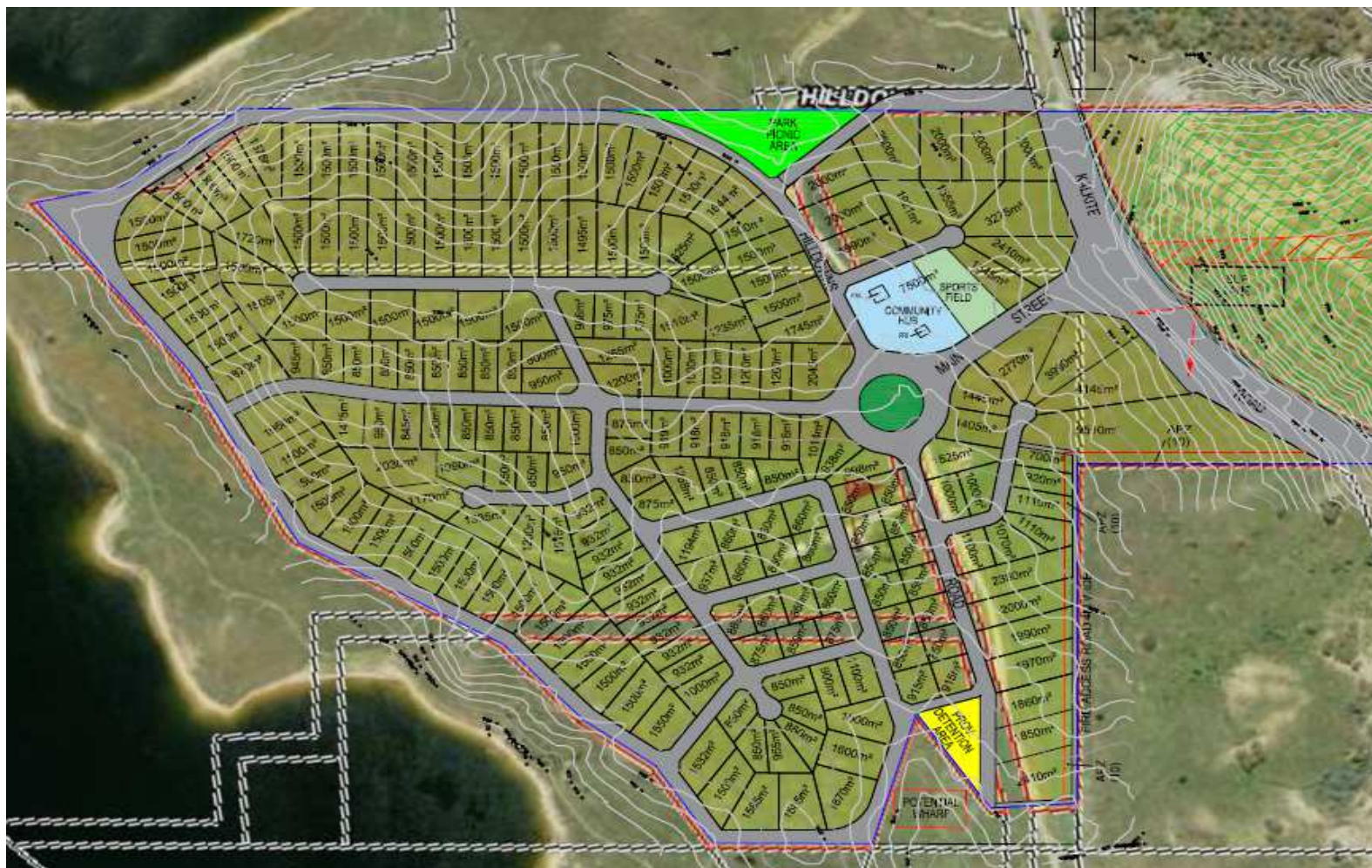


DENOTES INDICATIVE TREE LOCATION

----- DENOTES 50 METRE APZ ZONE

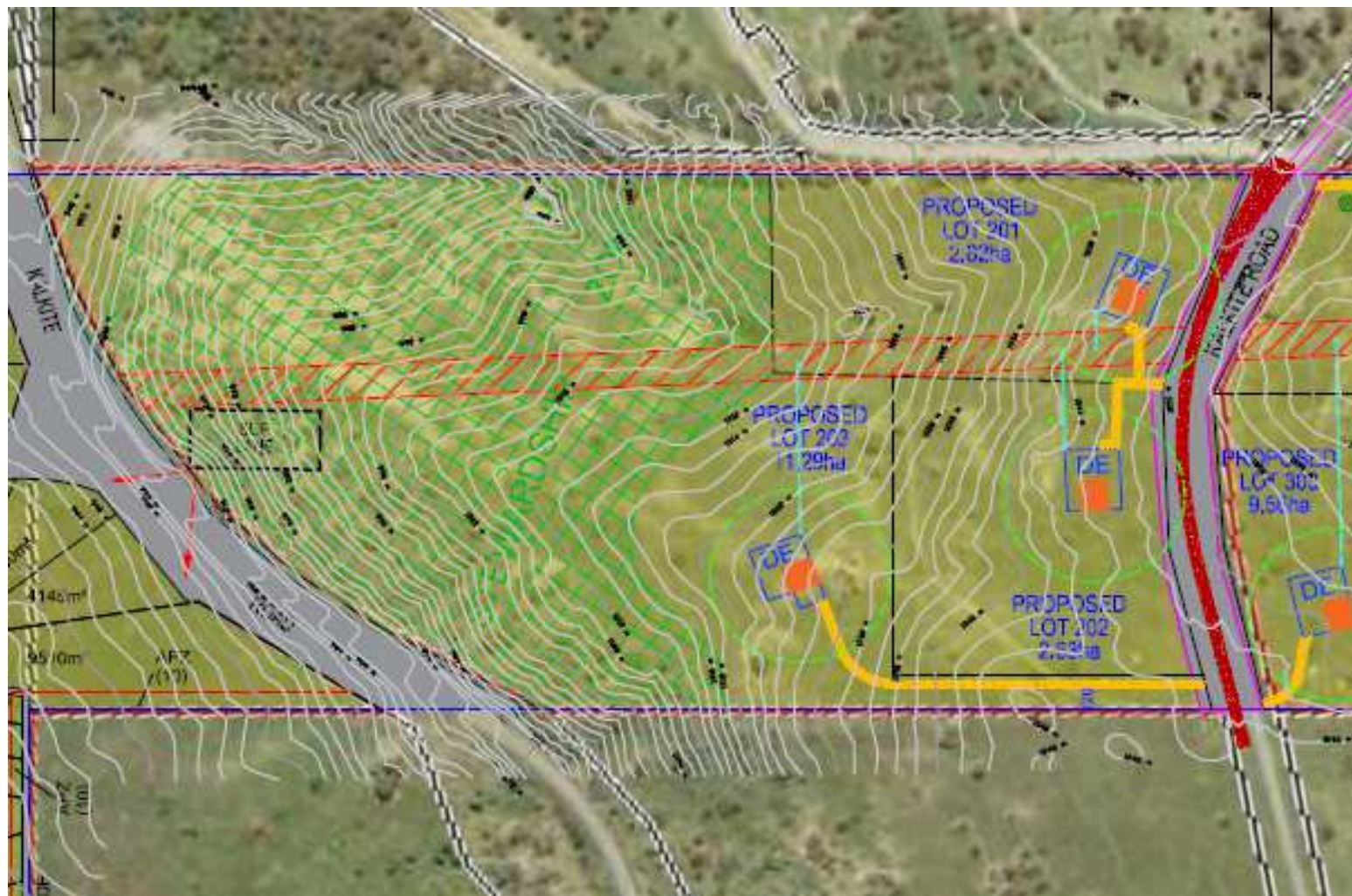


**Figure 5 – Precinct 1 – Aerial Photograph with Concept Plan overlaid.**



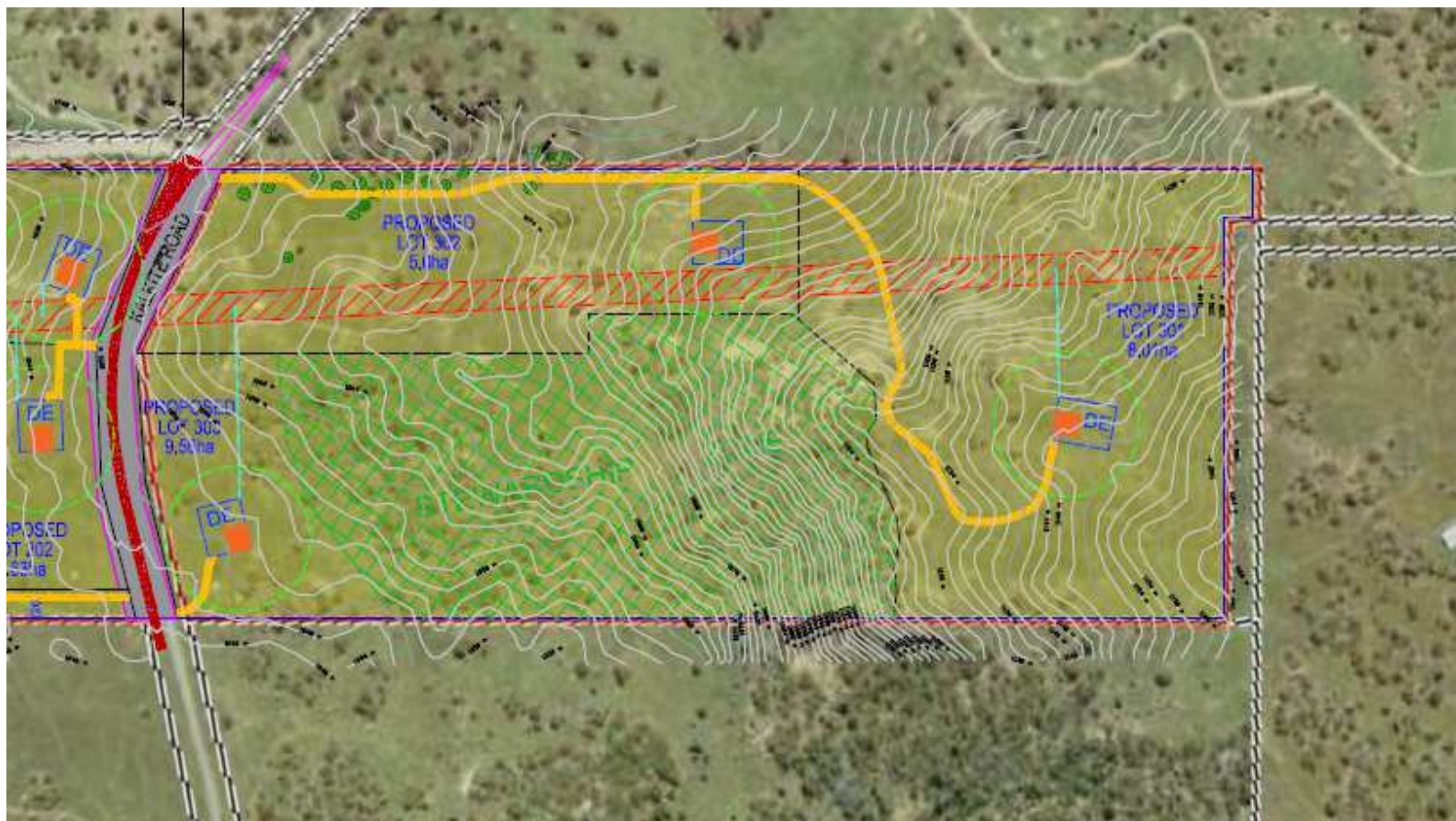


**Figure 6 – Precinct 2 – Aerial Photograph with Concept Plan overlaid.**





**Figure 7 – Precinct 3 – Aerial Photograph with Concept Plan overlaid.**





## **SECTION 3**

### **PROPERTY DESCRIPTION**

#### **3.1 Site Identification and Location.**

The Planning Proposal is over the land known as Lot 190 in DP 756727 and Lot 5 in DP 529579, No. 56 Kalkite Road Kalkite. The site is located to the south and southeast of the Kalkite Village and is zoned RU1 – Rural.

#### **3.2 Existing Land Use.**

Lot 5 in DP 529579 contains an existing rural dwelling, detached Garage and old shearing shed. The land is used for grazing.

Lots 190 in DP 756727 contains vacant land which is used for grazing.

#### **3.3 Surrounding Land Use.**

The land to the north of the eastern portion of the site is Crown Land which is leased and used for grazing.

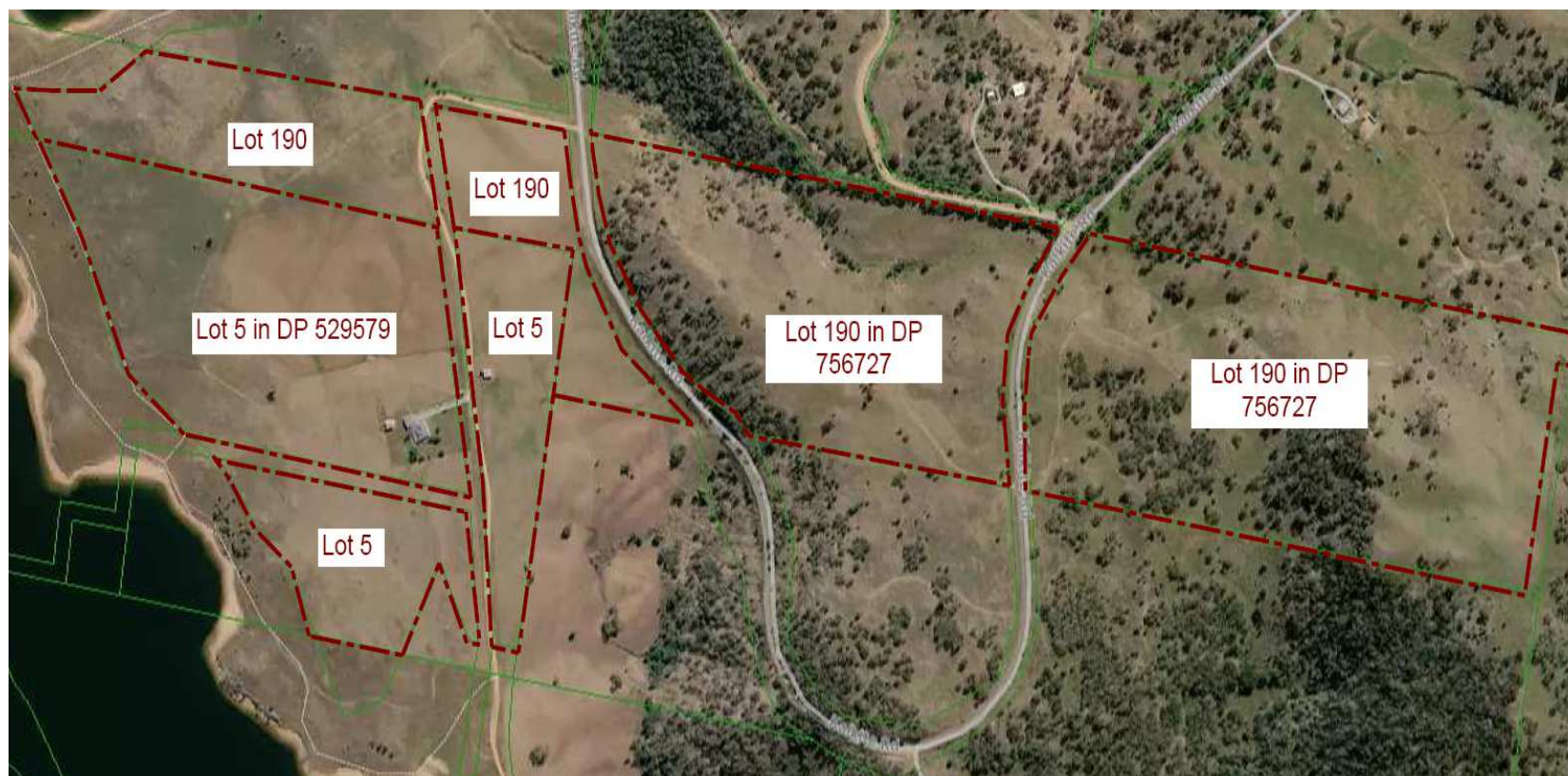
The land to the north of the central portion of the northern boundary contains the approved Three Rivers Rural Tourist Accommodation estate. The land to the north of the eastern portion of northern boundary contains rural land which is grazed.

The land to the southern boundary of Lot 190 in DP 756727 is leased Crown Land used for grazing.

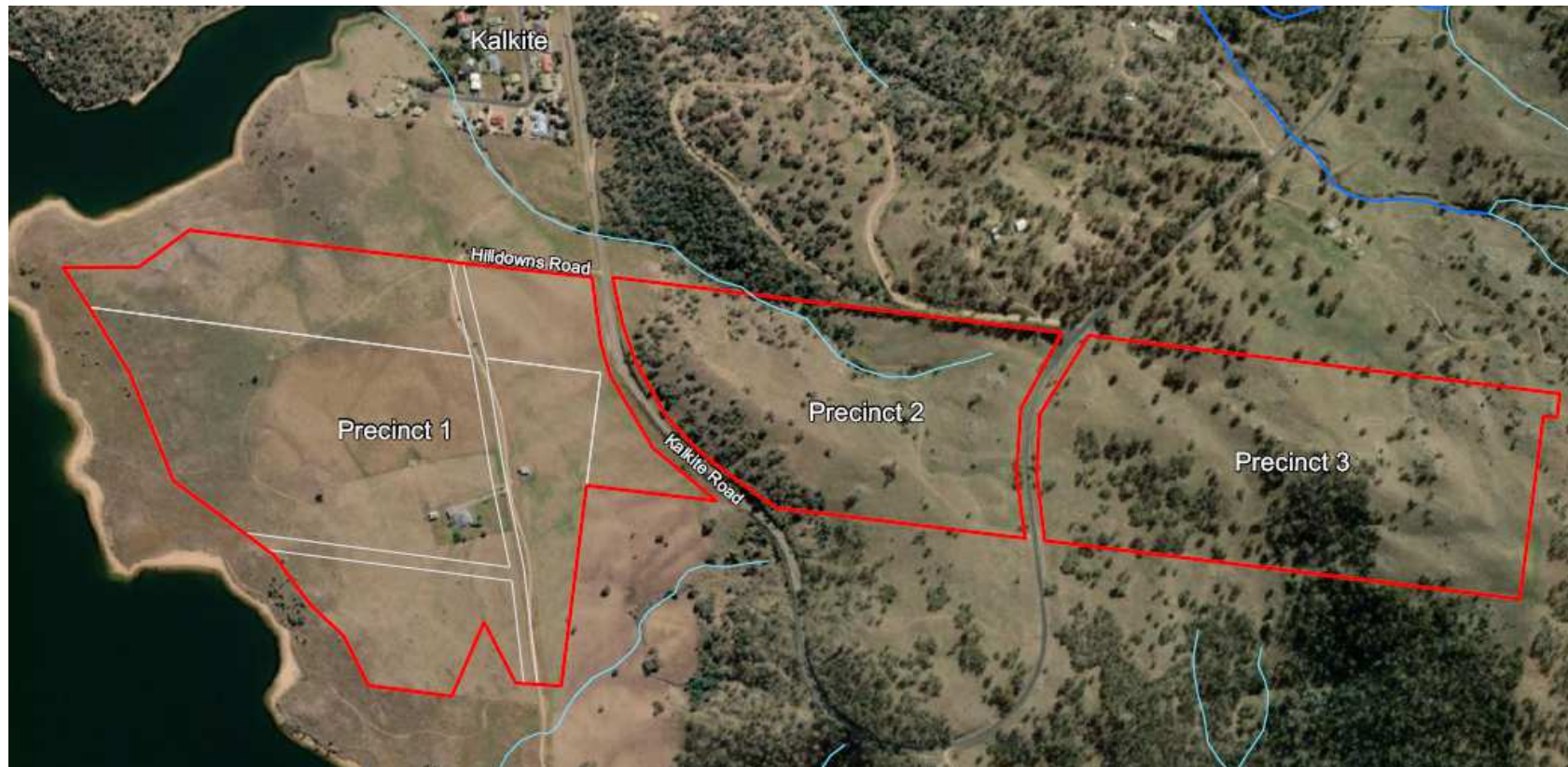
The land to the east of Lot 5 in DP 529579 is leased Crown Land used for grazing.

The land to the south and west of Lot 5 in DP 529579 is zoned SP1 – Special Activities Water Supply Systems/RU1 Primary Production and is vacant land that forms the foreshore of Lake Jindabyne.

**Figure 8 – Aerial Photograph showing the lots within the Planning Proposal Site.**



**Figure 9 – Aerial Photograph showing the Rezoning Precincts.**





### **3.4 Topography.**

Appendix A1.5 of *Planning for Bushfire Protection 2019* establishes the protocols for determining the effective slope of under the classified bushfire prone vegetation.

The topography of the land within the site is characteristic of the undulating hilly landform in the Monaro Region.

The land within Precinct 1 falls 40 metres to the southwest from Kalkite Road with the undulating landform creating a low ridgeline in the northern portion of the precinct that extends to the west from Kalkite Road.

The land to the north of Precinct 1 falls to the north at less than 5 degrees.

The land within the foreshore to Lake Jindabyne falls to the shoreline at less than 5 degrees.

The Crown Land to the east of the southeast corner of Precinct 1 rises to the east at 5 – 10 degrees.

Precinct 2 is located to the east of Kalkite Road, rising at 18 – 20 degrees from the road to form a steep sided ridgeline that runs parallel to the road.

The land within the remainder of Precinct 2 rises to the east at 9 – 10 degrees, increasing to 10 – 15 degrees within the eastern portion of Precinct 2.

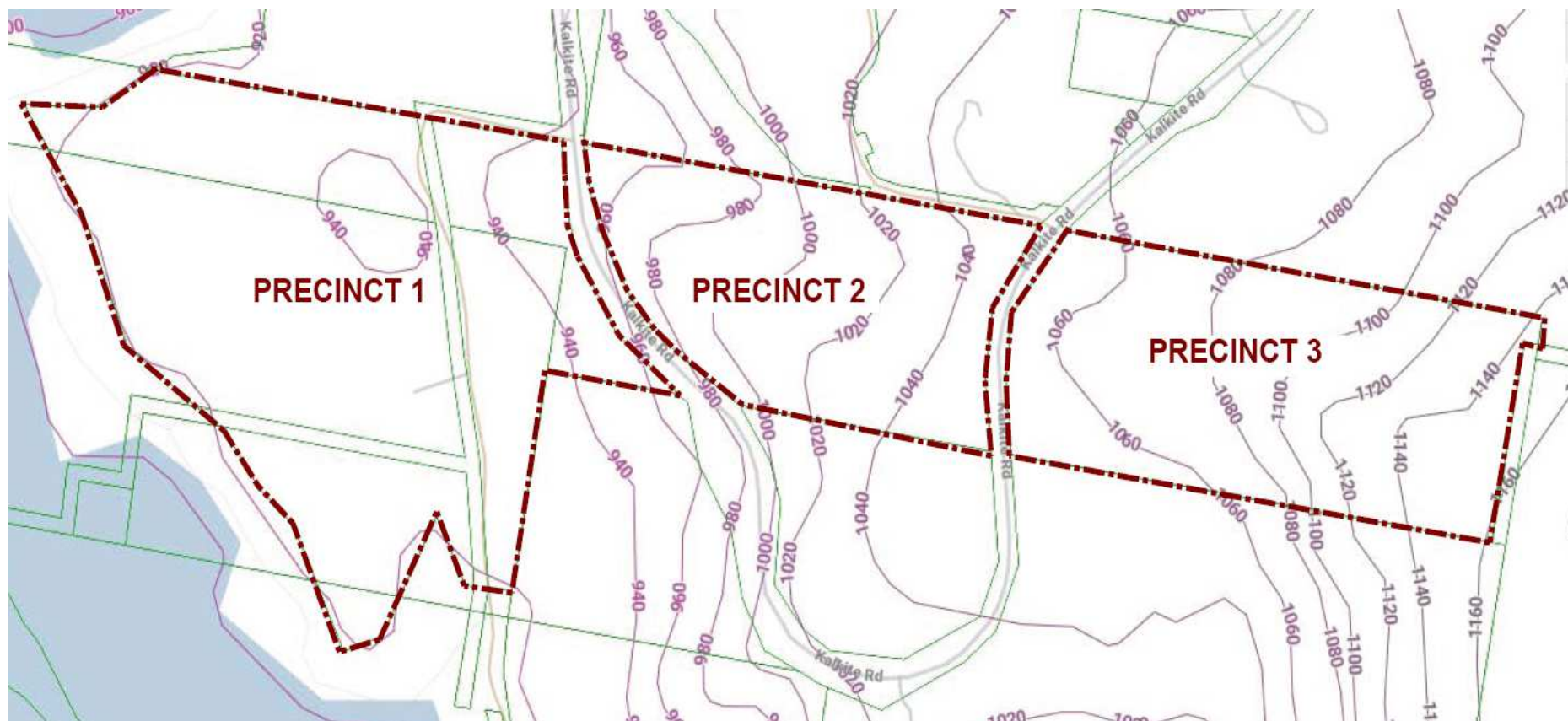
An overland flow path/watercourse forms in the northeastern corner of Precinct 2, initially flowing to the southwest then turning to the northwest and existing the north-western corner of the precinct. This watercourse contains multiple springs and a dam.

The land to the north of Precinct 2 rises to the northeast, beyond the watercourse.

The land to the south of Precinct 2 falls to the southwest across the adjoining Crown Land at 15 – 18 degrees.

The land within Precinct 3 rises to the east from Kalkite Road, forming low ridgelines within the western portion of the precinct. The gradient of the land increases and forms into a single ridgeline that rise to the east at 10 – 15 degrees with side slopes that fall to the northwest and southwest, onto the adjoining properties.

**Figure 10 – Topographic Map.**





### **3.5 Vegetation.**

Appendix A1.2 of *Planning for Bushfire Protection 2019* provides a methodology for determining the predominant bushfire prone vegetation for at least 140 metres in all directions from the future development on the site. Vegetation is classified using Figure A2.1 of *Planning for Bushfire Protection 2019*, which classifies vegetation types into the following groups:

- (a) *Rainforest;*
- (b) *Wet Sclerophyll Forest;*
- (c) *Dry Sclerophyll Forest;*
- (d) *Woodland;*
- (e) *Tall Heath;*
- (f) *Short Heath;*
- (g) *Grassland.*

#### **3.5.1 Vegetation within and on the land adjoining Precinct 1.**

The vegetation within Precinct 1 consists of pasture grass with managed gardens within the curtilage to the existing dwelling.

The Crown Land to the north and east of Precinct 1 is leased and contains pasture grass, which is grazed.

SP1 foreshore land to the west and southwest of Precinct 1 contains grassland vegetation.

#### **3.5.2 Vegetation within and on the land adjoining Precinct 2.**

The predominant vegetation within Precinct 2 consists of copses of Monaro Gourock Frost Hollow Grassy Woodland (PCT 3341) occupying the steep land that extends along the south-western boundary, adjacent to Kalkite Road. The remainder of Precinct 2 contains scattered patches of PCT 3341, grazed PCT 3341 and a small area of Monaro Snow Grass-Kangaroo Grass Grassland.

The Crown Land to the south and southwest of Precinct 2 is leased and contains scattered trees with pasture grass, which is grazed.

The land to the north of the western portion Precinct 2 contains open grassy woodland vegetation. The land to the north of the eastern portion of Precinct 2 contains an approved tourist estate with managed land set amongst remnant woodland vegetation.

#### **3.5.3 Vegetation within and on the land adjoining Precinct 3.**

The predominant vegetation within Precinct 3 consists of a large area of Monaro Gourock Frost Hollow Grassy Woodland (PCT 3341) in the southwest corner of the precinct.

A large area of Monaro Mountains Snow Gum Shrub Forest (PCT 3742) occupies the steeper, southern central portion of Precinct 3.

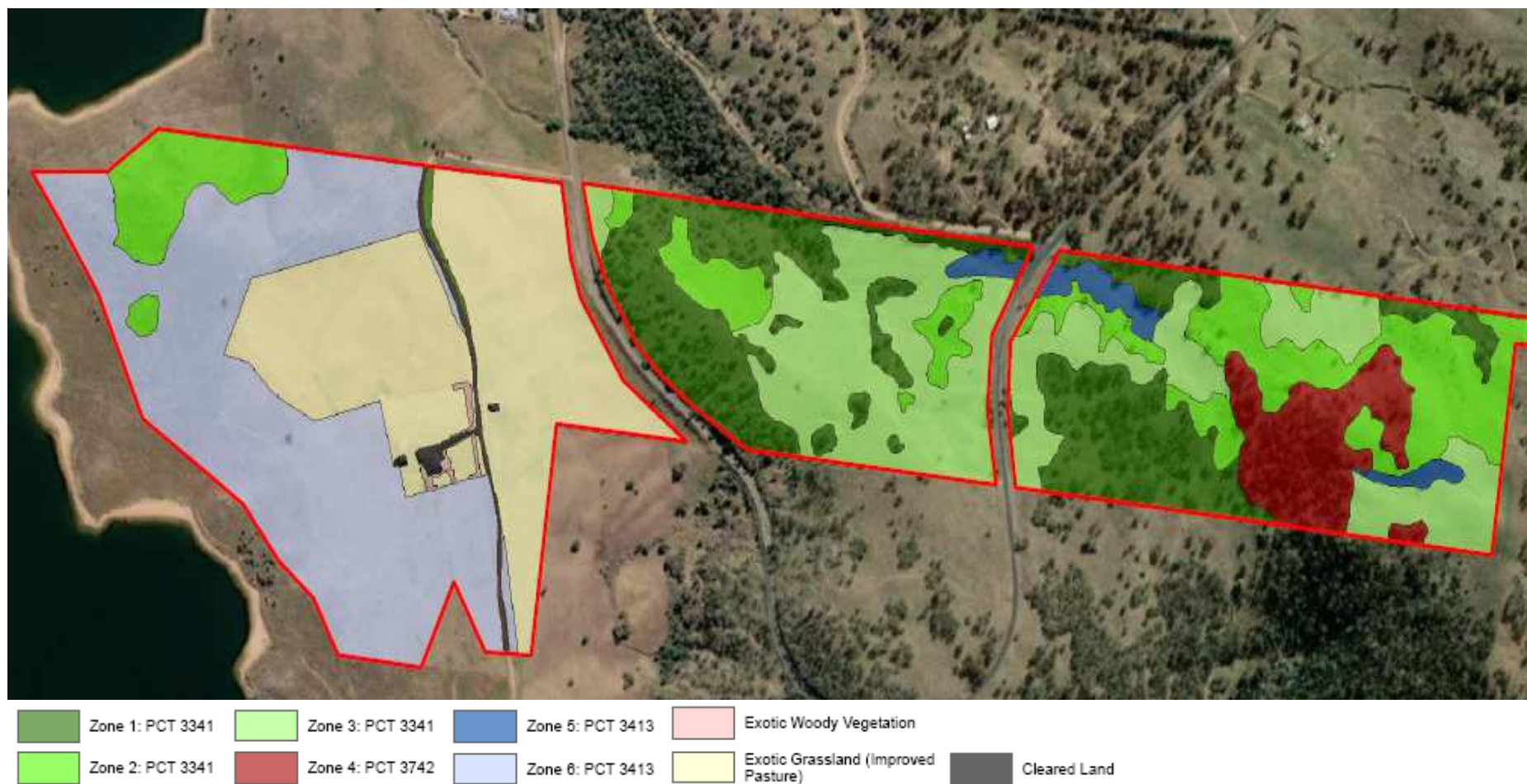
The remainder of Precinct 3 contains scattered patches of PCT 3341, grazed PCT 3341 and a small area of Monaro Snow Grass-Kangaroo Grass Grassland located in the northwest corner of the precinct.

The Crown Land to the south and south of Precinct 3 is leased and contains woodland vegetation with a grassy understorey, which is grazed.

The land to the north of Precinct 3 contains open grassy woodland which is grazed.

The land to the east of Precinct 3 contains open grassy woodland which is grazed.

**Figure 11 – Vegetation Communities Plan.**



Source: Cumberland Ecology

## SECTION 4

### PRECINCT LEVEL ASSESSMENT

#### 4.1 Precinct Level Assessment of Bushfire Prone Vegetation.

Section 10.3 of the *Environmental Planning & Assessment Act 2017* requires councils, where a Bushfire Risk Management Plan applies, request the Commissioner of the NSW Rural Fire Service to designate land within the area that the Commissioner considers, having regard to the bushfire risk management plan, to be bushfire prone land and must record any land so designated on a map.

Figure 12 below provides an extract from the Snowy Monaro Regional Council Bushfire Prone Land Map which shows the Category 3 Bushfire Prone Vegetation on the land within and adjoining the site.

**Figure 12 – Extract from the Snowy Monaro Bushfire Prone Land Map.**



## SECTION 5

### BUSHFIRE STRATEGIC STUDY

#### 5.1 Introduction.

Chapter 4.2 of *Planning for Bushfire Protection 2019* establishes the framework for preparing a Strategic Bushfire Study.

The following sections of this assessment examine the components identified in Table 4.2.1 of *Planning for Bushfire Protection 2019* in order to establish the strategic implications of future development for bushfire mitigation and management.

#### 5.2 Bushfire Landscape Assessment.

A bushfire landscape assessment considers the likelihood of a bushfire, its potential severity and intensity and the potential impact on life and property in the context of the broader surrounding landscape.

##### 5.2.1 Bushfire Hazard in the Surrounding Area.

###### (a) Vegetation

The vegetation within and adjoining site is described in Section 3.5 and establishes that the predominant vegetation consists of grassland, open grassy woodland and grassy woodland.

The hazard to development within Precinct 1 will be from the grassland vegetation on the adjoining land;

The hazard to development within Precincts B & C will be from the grassland and grassy woodland vegetation within the precincts and on the adjoining land.

###### (b) Topography

The topography of the land has been described in Section 3.6 and establishes that Precinct 1 will be exposed to upslope fires from the southwest, west and northwest and downslope fires from the southeast.

Precinct 2 will be exposed to upslope fires from the northwest, west, southwest and southeast.

Precinct 3 will be exposed to upslope fires from the southwest and northwest and downslope fires from the northeast, east and southeast.

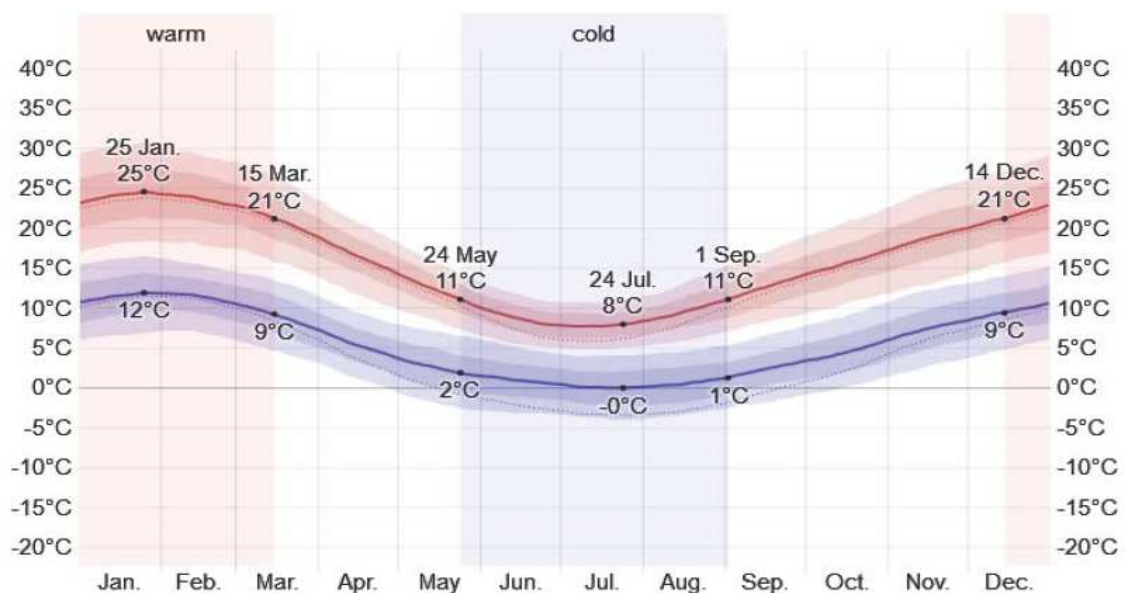


### (c) Weather

The Fire Danger Index (FDI) for the region is 80. Over the course of the year the temperature varies from  $-0^{\circ}\text{C}$  to  $25^{\circ}\text{C}$  and is rarely below  $-4^{\circ}\text{C}$  and above  $31^{\circ}\text{C}$ .

The warm season lasts for 3 months, from December to March, with average daily high temperature above  $21^{\circ}\text{C}$ . The hottest month of the year is January, with an average high of  $24^{\circ}\text{C}$  and low of  $11^{\circ}\text{C}$ .

The cold season lasts for 3-4 months, from May to September, with an average daily high temperature below  $11^{\circ}\text{C}$ . The coldest month is July with an average low of  $0^{\circ}\text{C}$  and high of  $8^{\circ}\text{C}$ .

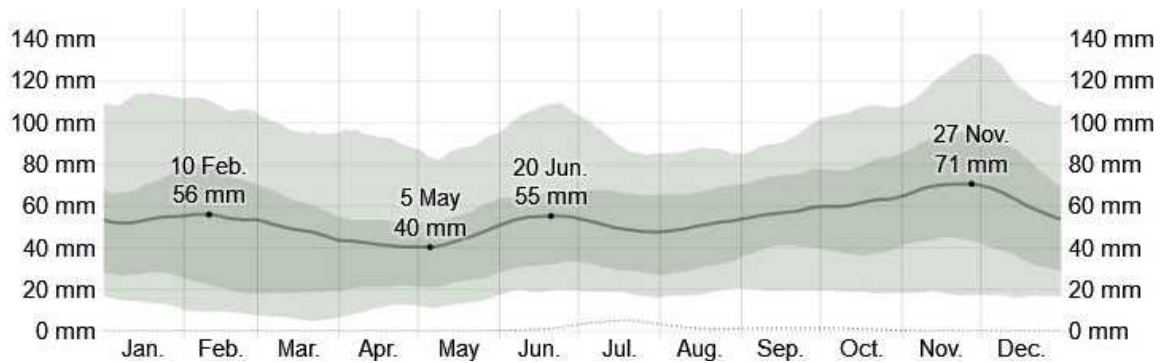


The wet season lasts 6-7 months, from June to December, with a greater than 23% chance of a given day being a wet day. The month with the most wet days in Jindabyne is November, with an average of 8-9 days with at least 1 millimetre of precipitation.

The dry season lasts 5 - 6 months, from December to June. The month with the fewest wet days in Jindabyne is April, with an average of 5 - 6 days with at least 1 millimetre of precipitation.

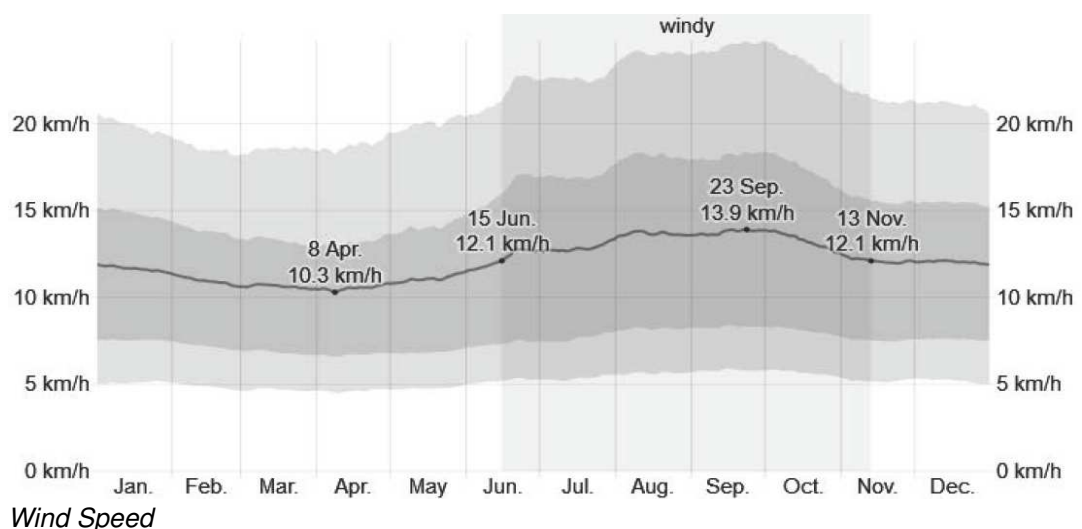
The month with the most days of rain in Jindabyne is November, with an average of 8 days.



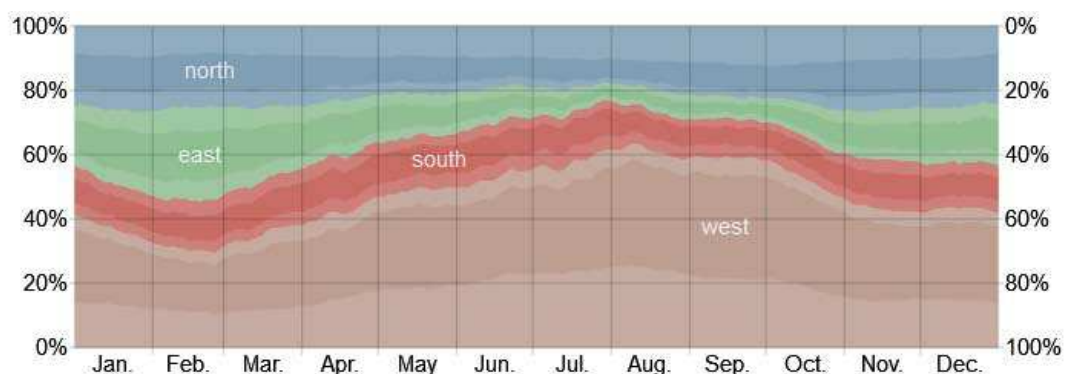


The humidity levels in Jindabyne does not vary significantly over the course of the summer period (62% - 68% October – March) increasing to 82% during the remainder of the year.

The windier part of the year lasts for 5 months, from June to November, with average wind speeds of more than 12 kilometres per hour. The windiest month of the year in Jindabyne is September, with an average hourly wind speed of 14 kilometres per hour.



Wind Speed



Wind Direction

Source: Weather Spark

### **5.2.2 Potential Fire Behavior.**

Three key factors influence fire behaviour. These are fuel, topography and weather.

The unmanaged grassland vegetation within and external to the site provides surface and near surface fuels that will ignite and spread rapidly across the landscape.

The availability of the fuels will depend on the amount of rainfall during the winter and spring months, the spring and early summer growth and whether the grassland fuels have been reduced by grazing.

Unmanaged near surface fuels that cover more than 60% of an area, at 50% dry (cured) have an extreme fuel hazard rating and will contribute significantly to fire spread without consuming the surface fuels.

The steep land within and external to Precinct 2 and Precinct 3 will significantly increase the fire behaviour within the grassland fuels, particularly under northwest, west and southwest wind influences.

The behaviour of the fire within the local area will depend on the weather conditions at the time and the topography of the land across which the fire spreads.

The weather patterns in the Jindabyne Region produce mild to warm summer temperatures with an average high of 24°C. Humidity typically remains high during the summer months, increasing moisture content in the fuels and lessening fire spread and reducing the behaviour of fires.

The windier part of the year lasts for 5 months, from June to November, with average wind speeds of more than 12 kilometres per hour. The windiest month of the year in Jindabyne is September, with an average hourly wind speed of 14 kilometres per hour.

These weather conditions are not conducive to producing significant bushfire events.

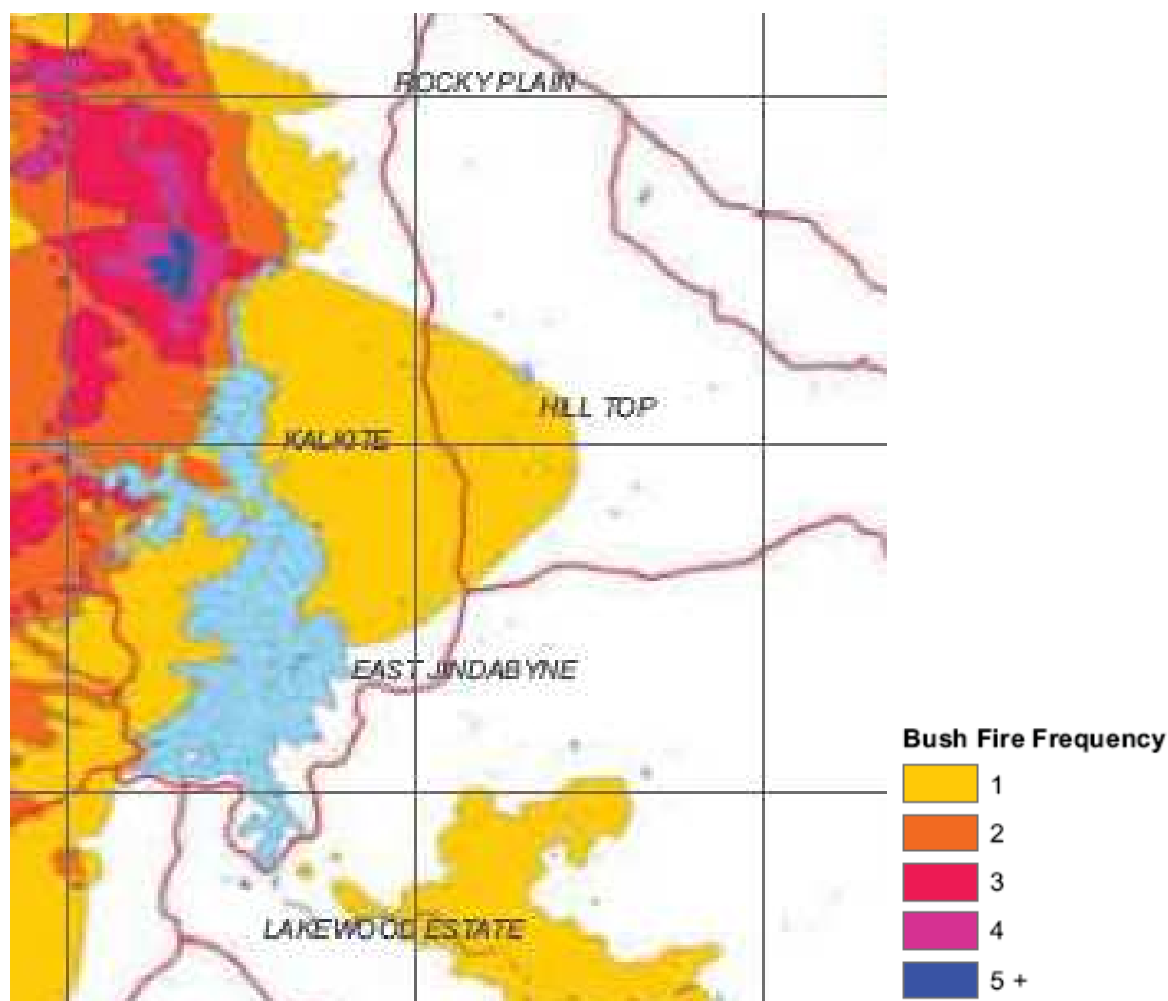
However, periods of drought will increase temperatures, lower the rate of humidity and lessen moisture content in the fuels, increasing the fire behaviour across the landscape.

### **5.2.3 Bushfire History.**

The Snowy Monaro Bushfire Risk Management Plan (2009) identifies that the area averages 54 bushfire per year of which 2 on average can be considered too be major fires.

The Snowy Monaro Bushfire Risk Management Plan (2009) identifies that the Kalkite village and surrounding area has experienced one (1) fire event since 1920.

**Figure 13 – Extract from the Snowy Monaro Bushfire Risk Management Plan showing the number of fires during the period 1920 - 2009.**



The Kalkite Village and surrounds were not directly impacted by the bushfires which occurred in 2003 and 2019 - 2020

#### **5.2.4 Potential Fire Paths.**

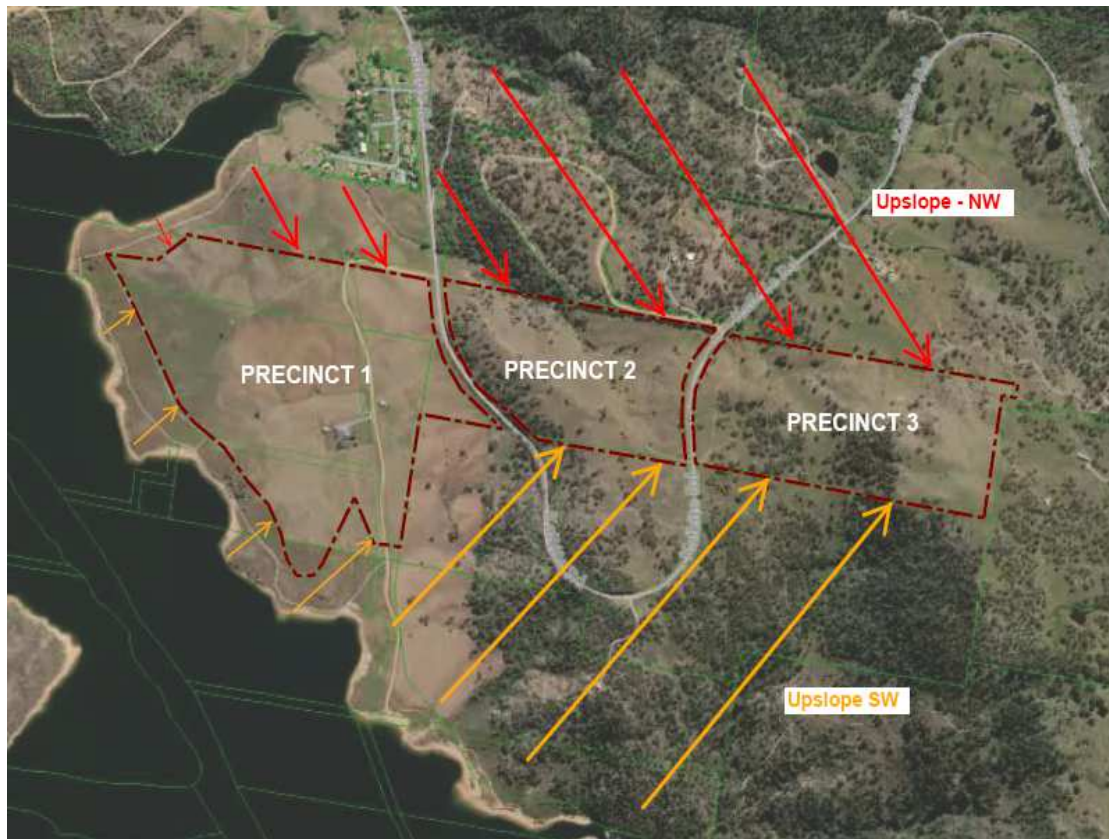
Precinct 1 occupies the land to the west of Kalkite Road, extending to the foreshore of Lake Jindabyne. This precinct is not likely to be impacted by significant fire events from the west and southwest due to the short width of vegetation between the lake and site.

The northeast edge of Precinct 1 may be exposed to a short fire run fire from the northwest, across the adjoining Crown Land. Precinct 1 may be exposed to a fire path from the southeast.

Precinct 2 occupies the ridgeline to the east of Kalkite Road and may be impacted by an upslope fire from the northwest, west, southwest and southeast.

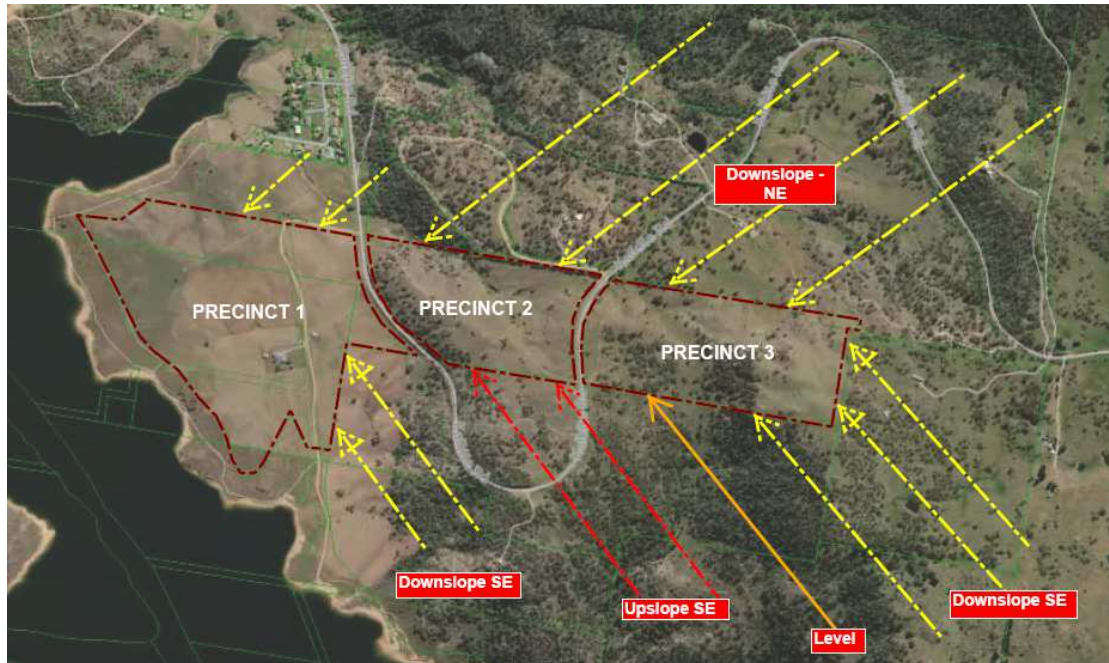
Precinct 3 occupies the ridgeline to the east of Kalkite Road, within the eastern portion of the site. This precinct may be impacted by upslope fires from the northwest, southwest and downslope fires from the northeast, east and southeast - Refer to Figures 14, 15 & 16

**Figure 14 – Plan of potential fire paths – Upslope Northwest & Southwest.**





**Figure 15 – Plan of potential fire paths – Downslope Northeast & Southeast & Upslope to the Southeast.**



### **5.2.5 Fire Management Operations.**

This section examines the difficulty in accessing and suppressing a fire, the continuity of bushfire hazards and the fragmentation of landscape fuels and the complexity of the associated terrain.

Fire-fighting access/egress to Precinct 1 is available from the proposed perimeter road network. Access/egress is also available to the Crown Land to the southeast and to the foreshore land to Lake Jindabyne.

The subdivision of Precinct 1 removes the bushfire hazard from within this precinct.

Fire-fighting access is available across Precinct 2 & C, except for the steeper land within the western portion of Precinct 2. Access/egress is available to the approved tourist complex to the north of Precinct 2 and across the Crown Land to the south of Precinct 2.

Access to the adjoining land to the northwest of Precinct 2 is available off Kalkite Road.

Fire-fighting access is available to the north of Precinct 3, across the adjoining farming land. Fire-fighting access/egress to the south of Precinct 3 is available across the adjoining Crown Land via farms track accessed from Kalkite Road.

Except for the steep land within the western portion of Precinct 2, there is no difficulty accessing the land within the site on the adjoining land. A fire that occurs on the steep land can be suppressed from Kalkite Road or from the top of the ridgeline within Precinct 2.

Access for fire suppression/fire mitigation operations can be easily achieved both within the site and on the adjoining land, except for the steeper land within the Crown Land to the south of the eastern portion of Precinct 3.

High hazard fuels exist on the higher land to the east of the Kalkite Village, 500 metre to northeast of Precinct 2 and Precinct 3. This hazard is fragmented by lower hazard open woodland vegetation on the grazing land to the north of Precinct 2 and Precinct 3.

High fuel hazard exists within the woodland vegetation on the land to the south of Kalkite Road (this hazard is fragmented by the grazed Crown Land to the south of Precinct 2). High hazard fuels exist on the Crown Land to the south of Precinct 3.

### **5.3 Landuse Assessment.**

The landuse assessment determines the most appropriate locations within the Master Plan for the proposed land uses.

The higher density landuse is located within Precinct 1. This precinct provides the best location for high density residential development as the bushfire risk is low.

The Master Plan proposes low density rural residential development within Precinct 2 and Precinct 3. This is the most appropriate type of landuse for these precincts as the low density of development permits the establishment of Asset Protection Zones to a width which minimises the bushfire risk to the dwellings and occupants.

The establishment of the location of the dwellings has been based on the provision of Asset Protection Zones to property access roads, either through the Asset Protection Zones to adjoining dwelling/s or along the property access road to the individual dwellings.

#### **5.3.1 Determine the Risk Profile for the Development:**

The Master Plan locates high density residential development on land that has a low level of risk from significant bushfire events in the local area.

Precinct 2 and Precinct 3 are exposed to northwest and southwest upslope fire paths, resulting in a moderate to high level of risk from bushfire.



The provision of Asset Protection Zones to a width which lowers the radiant heat exposure on the buildings to less than 12.5kW/m<sup>2</sup> reduces the risk to low/moderate.

#### **5.4 Access and Egress.**

The access and egress assessment examines the existing and proposed road network within and external to the Master Plan.

##### **5.4.1 Examine the capacity of the road network to deal with emergencies, based on the existing and future community profile:**

The primary access to Precinct 1 will be via a new road of Kalkite Road with the existing Hilldowns Road retained as a secondary connection to Kalkite Road.

The road network within Precinct 1 provides for the establishment of perimeter roads to the hazard side of the estate. The perimeter road will be eight metre wide (kerb to kerb) with parking provided in parking bays located clear of the carriageway width.

Internal roads have a trafficable width of 6.5 metres kerb to kerb with parking provided in parking bays located clear of the carriageway width.

Access to the dwelling sites within Precinct 2 and Precinct 3 is directly off Kalkite Road. The property access roads to the dwelling sites will comply with Table 5.3b of *Planning for Bushfire Protection 2019* and have a trafficable width of 4 metres and passing bays every 200 metres.

The property access roads will be protected by the provision of an Asset Protection Zone to both sides of the road.

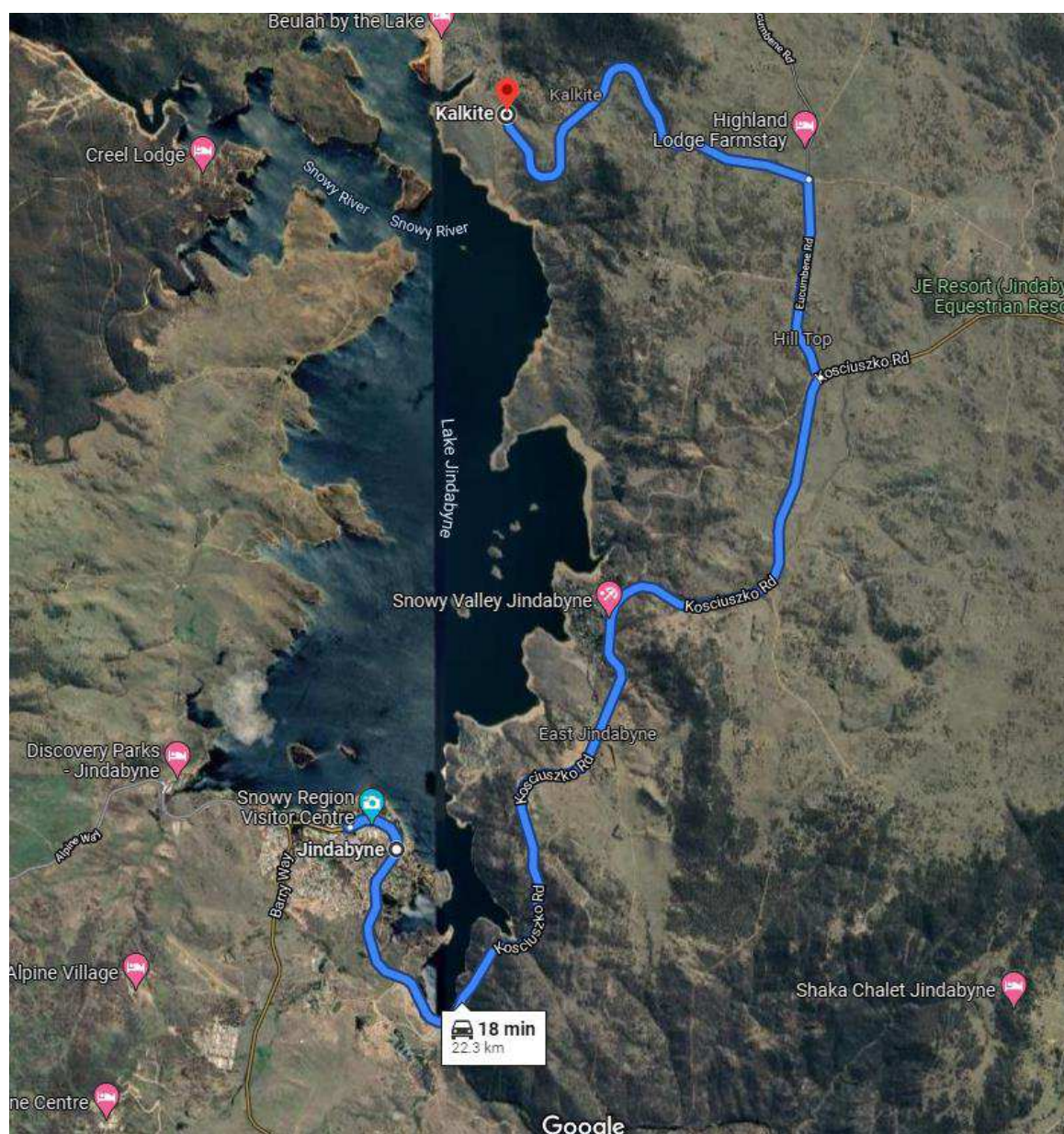
##### **5.4.2 Examine the location of the key access routes and direction of travel capacity of the road network to deal with emergencies, based on the existing and future community profile:**

Access to the existing Kalkite Village and the site is provided via Kalkite Road, which is a public road managed by the Snowy Monaro Regional Council.

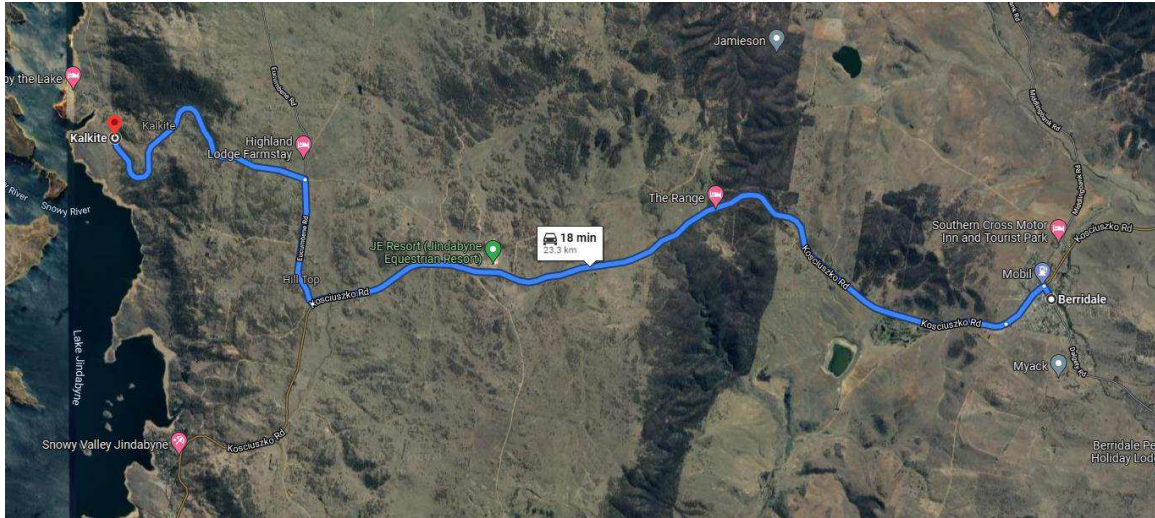
The road is sealed and provides two-way all-weather access from the intersection of Kosciuszko Road.

From the intersection with Kosciuszko Road as available west to Jindabyne and east to Berridale and Cooma.

**Figure 16 – Plan of road access to Jindabyne.**



**Figure 17 – Plan of road access to Berridale.**



Whilst historical evidence suggests that Kalkite area has only been directly impacted by one bushfire event in the period 1920 – 2009, the location is remote and should the area be subject to a major bushfire event the main access road from Berridale and Jindabyne will be exposed to a high risk of fire over-run through the heavily wooded woodland and forest vegetation.

This will make Kalkite Road unsafe for residents and emergency service personnel.

This has been recognised by the NSW Rural Fire Service and the Master Plan provides for the establishment of a Community Hub within central part of Precinct 1. The Community Hub will contain an Oval, Community Centre and land for the establishment of a new RFS Brigade Station for the Kalkite Brigade.

The Community Hub will act as a safer refuge/community bushfire refuge for the new estate and the existing Kalkite Village – removing the need for the use of Kalkite Road during bushfire emergencies.

The Community Centre will comply with the Rural Fire Services requirements for a Neighbourhood Safer Place (NSP).



### **5.5 Emergency Services.**

An assessment of the future impact of new development on emergency services identified the need to provide updated accommodation for the existing NSW Rural Fire Service Kalkite Brigade.

The Master Plan provides land for the establishment of a new Brigade Station in the new estate. This will allow for the construction of a larger station capable of providing parking for appliances and amenities for the fire-fighters.

The site will be large enough to accommodate carparking for fire-fighters.

The centrally located fire station and the increased population in the new estate will promote an increase in brigade numbers, providing a greater ability of the brigade to carry out fire suppression in a bushfire emergency.

### **5.6 Infrastructure.**

The Master Plan allows for extension of the existing Kalkite reticulated water supply to service the residential development in Precinct 1.

The reticulated water supply will provide hydrants that meet the pressure, flows and spacing specifications of A.S. 2419.1.2005.

The rural residential lots will not be connected to the reticulated supply and shall have a static water supply for fire-fighting operations

### **5.7 Adjoining Land.**

The establishment of residential development on the site will provide better bushfire management of the vegetation than currently exists.

The development will not impact on the ability of adjoining landowners to undertake bushfire management on their land.

### **5.8 Determination of Asset Protection Zones.**

Appendix 1 of *Planning for Bushfire Protection 2019* provides a site assessment methodology to determine the widths of Asset Protection Zones and Bushfire Attack Levels for residential and rural residential development which is deemed to be bushfire prone. This includes the following assessment process:

(a) *Determine vegetation formations as follows:*

- Identify all vegetation in all directions from the site for a distance of 140 metres;
- Consult Table A1.2 to determine the predominant vegetation type.



- (b) *Determine the effective slope of the land under the predominant vegetation Class.*
- (c) *Determine the appropriate fire [weather] areas.*
- (d) *Consult Table A1.12.5 and determine the appropriate setback [Asset Protection Zone] for the assessed land use, vegetation formation and slope range.*

#### **5.8.1 Determination of Asset Protection Zones to Precinct 1.**

Master Plan for Precinct 1 contains residential development.

The predominant vegetation on the land to the north, west and southwest of Precinct 1 consists of grassland within the Crown Land to the north and on the SP1 zoned land on the foreshore to Lake Jindabyne.

The effective slope is 0 – 5 degrees downslope. The FDI for the region is 80.

Table A.1.12.6 of *Planning for Bushfire Protection 2019* identifies that for grassland vegetation with an effective slope under the vegetation of 0 - 5 degrees downslope the width of Asset Protection Zone is 11 metres.

The predominant vegetation on the Crown Land to the southeast of Precinct 1 consists of grassland. The effective slope is upslope to the east and southeast.

Table A.1.12.6 of *Planning for Bushfire Protection 2019* identifies that, for grassland vegetation with an upslope under the vegetation, the width of Asset Protection Zone is 10 metres.

The provision of a perimeter road to the north, west and southwest of Precinct 1 provides for an Asset Protection Zone that exceeds the width required by Table A.12.6 of *Planning for Bushfire Protection 2019*.

The Asset Protection Zone to the dwellings on the lots in the south-eastern corner of Precinct, adjoining the Crown Land, will exceed the width required by Table A.12.6 of *Planning for Bushfire Protection 2019* and comprise the wide of the fire trail and building setback within each lot.

Refer to Figure 18 – Plan of Asset Protection Zones for Precinct 1

## 5.8.2 Determination of Asset Protection Zones to the Neighbourhood Safe Place (NSP).

The Neighbourhood Safer Precinct (Community Hub) is to be sited in the central portion of Precinct 1.

The aim of a NSP is to provide a greater chance of survival for human life during the onset and passage of a bushfire. The assessment criteria for a Neighbourhood Safer Place is defined in Section 7.1 of the NSW Rural Fire Service's *Guideline for Identification and Inspection of Neighbourhood Safer Places in NSW* – refer to copy below

### 7.1 Assessment Criteria for a Neighbourhood Safer Place:

	Performance Criteria	Acceptable Solution
Radiant Heat	Building is located and constructed to enhance the chance for survival for humans in attendance from the radiant heat of a bush fire	Building is situated to prevent direct flame contact, material ignition and radiant heat levels of 10kW/m <sup>2</sup> ; or Provide 139 metres separation distance from a bush fire hazard
	Open Space is located to enhance the chance for survival for humans in attendance from the radiant heat of a bush fire	Open Space is situated and maintained to prevent direct flame contact, material ignition and radiant heat levels of 2kW/m <sup>2</sup> ; or Provide 310 metres separation distance from a bush fire hazard
Maintenance of the Site and the Land Adjacent	Area between bush fire hazard and the site is maintained to a level that ensures the radiant heat levels at the Building/Open Space meet the Performance Criteria for Radiant Heat.	The site and land adjacent to the site between the Building/Open Space and the bush fire hazard is managed land or maintained in accordance with NSW RFS document <i>Standards for Asset Protection Zones</i>

The Community Centre (NSP) building is located more than 155 metres from the grassland vegetation on the Crown Land to the north of Precinct 1 and more than 200 metres from the grassland vegetation on the Crown Land to the southeast of Precinct 1.

The separation distance to woodland vegetation to the east of Kalkite Road is more than 150 metres.

The surrounding landuse to all aspects of the NSP consists of residential development with managed Asset Protection Zones – maintained to prevent direct flame contact, material ignition and radiant heat levels of less than 2kW/m<sup>2</sup>.

The NSP building is located within a larger Community Hub including a RFS Brigade Station, Sports Field and Commercial Centre. The radiant heat exposure will be less than 2kW/m<sup>2</sup>

This precinct will be maintained to the specifications of an Inner Protection Area (IPA).

The NSP will provide a safe refuge for the proposed estate and the existing Kalkite Village.

Section 7.2 of the Guideline provides the principles for Site Identification - refer to copy below.

## 7.2 Principles for Site Identification

Consideration	Principles
Site Selection	<ul style="list-style-type: none"> <li>&gt; An NSP should provide a safer place for the community.</li> </ul>
	<ul style="list-style-type: none"> <li>&gt; The community should be moving away from the bush fire hazard to access the NSP over short distances where possible.</li> </ul>
	<ul style="list-style-type: none"> <li>&gt; NSP locations should reflect community need and bush fire risk.</li> </ul>
Moving to a NSP	<ul style="list-style-type: none"> <li>&gt; An NSP should not be isolated from the community.</li> </ul>
	<ul style="list-style-type: none"> <li>&gt; The community should not be impeded from reaching the NSP area in a bush fire situation.</li> </ul>
Capacity	<ul style="list-style-type: none"> <li>&gt; Additional NSPs should be sought where it is likely current or potential NSPs cannot accommodate those likely to use it.</li> </ul>
	<ul style="list-style-type: none"> <li>&gt; Demand for use of an NSP reflects a community's level of bush fire preparedness.</li> </ul>

The location of the NSP addresses the site identification principles outlined in Section 7.2 of the Guideline.

Refer to Figure 18 – Plan of Asset Protection Zones for Precinct 1





### **5.8.3 Determination of Asset Protection Zones to Precinct 2.**

The Master Plan for Precinct 2 contains large lot rural residential development.

The predominant vegetation on the land within the Precinct 3 consists of grassland with scattered woodland shade trees. The western portion of Precinct 2 contains grassy woodland vegetation.

The Crown Land to the south of the Precinct 3 contains open grassy woodland which is grazed. The land to the north of the western portion of Precinct 2 contains grassy woodland whilst the land to the north of the eastern portion of Precinct 2 contains open woodland within the approved Tourist facility.

The topography of the land falls to the east from Kalkite Road at 10 degrees with a side slope to the north and south/southwest. The western portion of Precinct 2 falls to Kalkite Road at 18 – 20 degrees.

The Crown Land to the south of Precinct 2 falls to the southwest at 15- 18 degrees. The land to the north of Precinct 2 rises to the northeast with an eight (8) degree upslope fire path from the northwest.

Precinct 2 is proposed to be subdivided into five lots with three lots running along Kalkite Road. The fourth lot occupies the land to the west of the road frontage lots and the fifth lot occupies the western, remaining portion of the precinct.

The road frontage lots will be managed as an Inner Protection Area (IPA) with the property access road to the fourth lot accessing, via a handle off Kalkite Road, through the Asset Protection Zone to the road frontage lots.

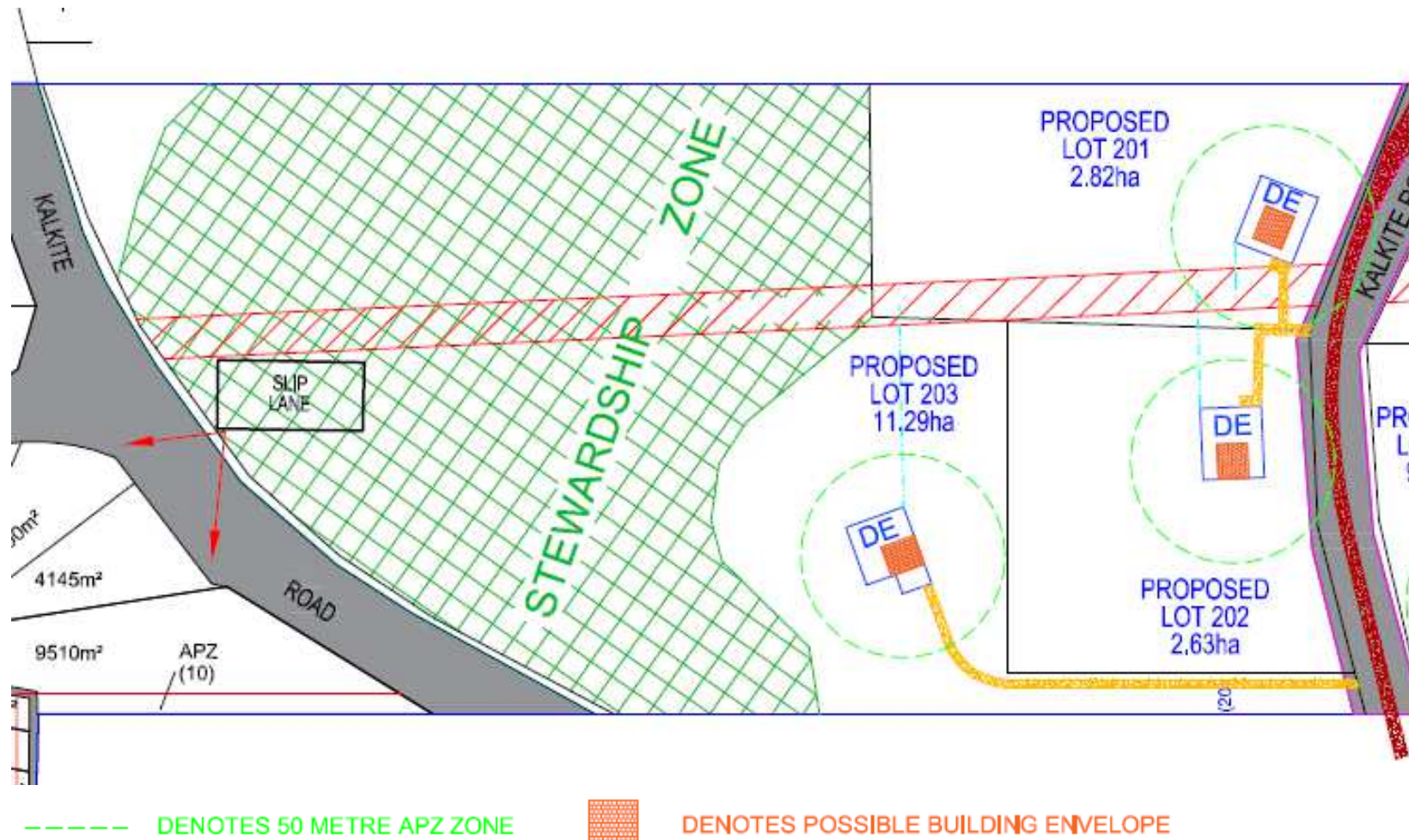
The Asset Protection Zone to the dwelling on the fourth lot will have a minimum width of 30 metres to the south and 40 metres to the west and north and managed as an Inner Protection Area.

The dwelling on the fifth lot will have a minimum 30 metre wide Asset Protection Zone to all aspects, managed as an Inner Protection Zone. The property access road to the dwelling will have a 10 metre wide corridor (to both sides) managed as an Inner Protection Area.

The balance of lot four and lot five will be managed as an Outer Protection Area (OPA)

Refer to Figure 19 – Plan of Precinct 2 Asset Protection Zones.

**Figure 19 – Plan of Asset Protection Zones for Precinct 2**



#### **5.8.4 Determination of Asset Protection Zones to Precinct 3.**

Master Plan for Precinct 3 contains large lot rural residential development.

The predominant vegetation on the land within the Precinct 3 consists of grassland with scattered woodland shade trees. The south-western corner of Precinct 3 contains grassy woodland vegetation.

The Crown Land to the south of the Precinct 3 contains grassy woodland which is grazed. The land to the north of Precinct 3 contains open grassy woodland within the adjoining farmland, which is grazed. The land to the east of Precinct 3 contains open grassy woodland within the adjoining farmland, which is grazed.

The topography of the land rises to the east from Kalkite Road, initially at 5 degrees, increasing to 10 degrees across the eastern half of the precinct.

The land to the north of Precinct 3 rises to the northeast and falls to the northwest initially at 5 degrees, increasing to 12 degrees along the eastern portion of the northern boundary. The land to the east of Precinct 3 continues to rise to the east.

The Crown Land to the south of the western portion of Precinct 3 falls to the south at 5 degrees. The land to the south of the eastern portion of Precinct 3 falls to the southwest at 18 – 20 degrees.

Precinct 3 is proposed to be subdivided into four lots with two lots running along Kalkite Road. The third lot occupies the land to the east of the two road frontage lots with the fourth lot occupying the eastern portion of the precinct.

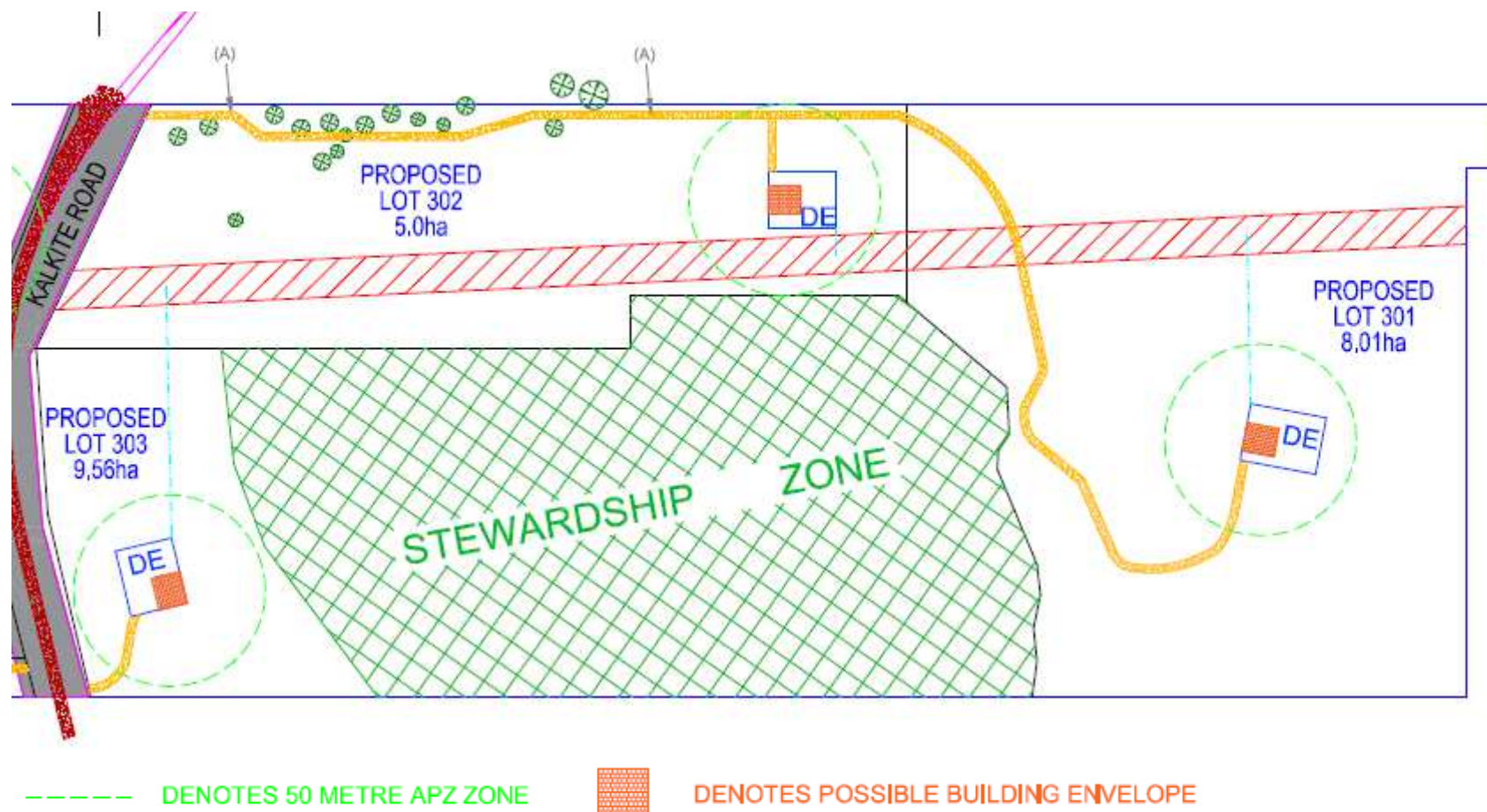
The Asset Protection Zones to each dwelling is shown on Figure 20 with a minimum width of 40 metres to each aspect to the building.

The dwelling on the fourth lot will have a minimum 50 metre wide Asset Protection Zone to all aspects, managed as an Inner Protection Zone. The property access road to this dwelling will have a 10 metre wide corridor (to both sides) managed as an Inner Protection Area.

The balance of the four lots within Precinct 3 will be managed as an Outer Protection Area (OPA)

Refer to Figure 20 – Plan of Precinct 3 Asset Protection Zones.

**Figure 20 – Plan of Asset Protection Zones for Precinct 3.**





### **5.8.5 Assessment of Bushfire Attack (Construction Standards).**

Part 2.3.4 of the Building Code of Australia states that a Class 1 building that is constructed in a *designated bushfire prone area* must be designed and constructed to reduce the risk of ignition from a bushfire while the fire front passes.

The Asset Protection Zones provided to the future dwellings, as shown on Figures 10 & 11 [based on forest being the predominant vegetation classification], have been determined to mitigate the impact of bushfires to the extent that radiant heat levels will be less than 29 kW/m<sup>2</sup>.

The future dwellings and ancillary buildings directly exposed to the bushfire hazard shall be constructed to comply with Section 3 and Section 7 [BAL 29] specifications, pursuant to A.S. 3959 – 2018 – '*Construction of Buildings in Bushfire Prone Areas*'.

All remaining dwellings not directly exposed to the bushfire hazard shall be constructed to comply with Section 3 and Section 5 [BAL 12.5] specifications pursuant to A.S. 3959 – 2018 – '*Construction of Buildings in Bushfire Prone Areas*'.

In addition, roof gutters and valleys shall have fitted a non-combustible protection device which minimises the accumulation of combustible materials in the gutter/valley.

### **8.5.6 Bushfire Hazard Management.**

The intention of bushfire hazard management is to prevent flame contact with a structure, reduce radiant heat to below the ignition thresholds for various elements of a building, to minimize the potential for wind driven embers to cause ignition and to reduce the effects of smoke on residents and fire-fighters.

Careful attention shall be given to species selection of landscaping near the future dwellings, their location relative to their flammability, avoidance of continuity of vegetation [separation horizontally and vertically] and ongoing maintenance to remove flammable fuels. Methods of bushfire hazard management include mowing of lawns within the immediate curtilage to the dwelling, slashing within the road reserves.

A Bushfire Management Plan shall be prepared for Precinct 2 and Precinct 3.

A Positive Covenant, pursuant to Section 88B of the Conveyancing Act 1909, shall be established for the maintenance of the Asset Protection Zones on the lots containing the prescribed Asset Protection Zone/s

### **8.5.7 Bushfire Maintenance Plans and Fire Emergency Procedures.**

There shall be prepared for the Kalkite Village – including the proposed residential estate – an Emergency Management Plan (EMP).

The EMP will provide protocols for the safe relocation of residents and visitors within the broader Kalkite Village to the Neighbourhood Safer Place.

It is recommended that an Emergency Management Committee (EMC) be created in the Village to drive the establishment and management of the EMP, in consultation with the NSW Rural Fire Service and Snowy Monaro Regional Council.

The EMP should be included in the Local Disaster Plan and Snowy-Monaro Bush Fire Risk Management Plan (BFRMP).

It is recommended that the future owners of the lots within Precinct 2 and Precinct 3 prepare an *Emergency Fire Plan* that identifies those emergencies that are likely to impact upon their land and identify appropriate responses to those emergencies.

This may include protocols for the early removal of non-active/young/sick and frail members of the family to SNP prior to the arrival of any potential major fire event.

## SECTION 6

### CONCLUSION

This Strategic Bushfire Study has been prepared for the Planning Proposal for the rezoning of land within Lot 190 in DP 756727 and Lot 5 in DP 529579, Kalkite Road, Kalkite

The vegetation within the site has been mapped as Bushfire Prone Vegetation, therefore Sections 4.46 & 4.47 of the *Environmental Planning & Assessment Act* applies to the residential subdivision of the land and a *Bushfire Safety Authority* is required under Section 100B of the *Rural Fires Act*.

The recommendations contained within this report address the requirements of Section 45(2) of the *Rural Fires Regulation 2022* as a prerequisite for the issue of a *Bushfire Safety Authority* under Section 100B (4) of the *Rural Fires Act* for the future subdivision application.

The report also examines and addresses to matters raised in the NSW Rural Fire Service's response provided on the 28<sup>th</sup> April 2022.

The following table summarises the extent to which the development proposal conforms with [or deviates from] the requirements of Section 45(2) of the *Rural Fires Regulation 2022* and the deemed-to-satisfy provisions of *Planning for Bushfire Protection 2019* relating to the provision of:

- Asset Protection Zones to the future dwellings in the estate;
- The provision of a Neighbourhood Safer Place (NSP that addresses to emergency access provisions and avoids the use of Kalkite Road during bushfire emergencies);
- The provision of water supplies for fire-fighting operations;
- Construction standards to the future buildings; and
- The management of bushfire fuels.

**Table 1. Compliance with the deemed-to-satisfy provisions of *Planning for Bushfire Protection 2019*.**

<b>Bushfire Protection Measure</b>	<b>Compliance with deemed-to-satisfy provisions of <i>Planning for Bushfire Protection 2019</i>.</b>
Asset Protection Zone setbacks	The widths of the Asset Protection Zones comply with Table A1.12.6 of <i>Planning for Bushfire Protection 2019</i> .
Siting & adequacy of water supplies for firefighting operations	Reticulated water supply provided complete with hydrants installed to satisfy the specifications of A.S. 2419.1 – 2021.
Capacity of public roads to handle increased volumes of traffic in the event of a bushfire emergency	The proposed and existing public roads provide for increased volumes of traffic in the event of the bushfire emergency.
Fire trail network	No. Fire Trails are provided or required.
Adequacy of emergency response access and egress	Complying emergency access is provided to each lot directly from the existing and proposed road network. An alternate access link to Kalkite Road is provided using the Hilldowns Road reserve
Adequacy of Bushfire Maintenance Plans and fire emergency procedures	A Bushfire Management Plan is required. A Bushfire Emergency Management Plan is to be prepared for the broader Kalkite Village. A ' <i>Bushfire Survival Plan</i> ' shall be prepared by each property owner within Precinct 2 and Precinct 3.
Building construction standards	Asset Protection Zones recommended reduce the expected level of radiant heat on the future dwellings to less than 29kW/m <sup>2</sup> .
Adequacy of sprinkler systems & other fire protection measures	Not applicable

The proposed Master Plan and subdivision layout, as represented by the subdivision layout prepared by *United Surveyors* achieves compliance with the Strategic Planning provisions of Chapter 4.1 and Chapter 4.2 *Planning for Bushfire Protection 2019* and the aim and objectives of *Planning for Bushfire Protection 2019* and the recommendations of the NSW Rural Fire Service contained in the letter dated 28<sup>th</sup> April 2022.



Graham Swain,  
Managing Director,  
***Australian Bushfire Protection Planners Pty Ltd***

26.04.2023



## REFERENCES:

- N.S.W Rural Fire Service – *Planning for Bushfire Protection 2019*;
- *Environmental Planning & Assessment Act – 1979*;
- *Rural Fires Act – 1997*;
- *Rural Fires Regulation 2022*;
- *Biodiversity Conservation Act 2016*;
- *Snowy Monaro Bushfire Prone Land Map*;
- Building Code of Australia;
- Australian Standard A.S 3959-2018 “*Construction of Buildings in Bushfire Prone Areas*”.