Southern Bushfire Solutions

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Bushfire Assessment Report

Rural-Residential Subdivision

LOT 5 DP 750207, LOT 1 DP130034
299/300 Mt Darragh Rd,
Lochiel NSW.

Executive Summary

The proposal involves zoning change and subdivision of land that has been identified as an opportunity for rural residential development in the Bega Valley Shire Council Rural Residential Strategy (2020). The rezoning and change of lot size are subject to a strategic proposal that is to be undertaken concurrently with the DA for subdivision. Strategic planning principles require the consideration of compliance with Planning for Bushfire Protection and the bushfire assessment will be undertaken to inform both the strategic study and the development compliance with PBP (2019).

The constraints analysis and concept plan reveal that the development site is only accessible via a single existing gazetted road with no capability to provide a through road or alternate access as per acceptable solutions of PBP (2019).

A performance-based solution is proposed with a qualitative assessment based on the access arrangement traversing low risk grassland mapped as category 3 vegetation. The new access is to become a ~600m public road with multiple turning options available and 7.6m wide road (6m sealed surface plus 0.8m rolled shoulders) via 20m wide road reserve. The new public road has straight line of sight and is to be signposted as a dead end to ensure safe operational access is provided for firefighting at the interface while residents are evacuating. Measures are in place to ensure future buildings are exposed to a maximum of 12.5kW/m^2 and property access is less than 100m to provide increased resilience and a balance of bushfire protection measures.

Pre-planning consultation with NSW RFS was undertaken in November 2023 indicating that this was an acceptable path to move forward with formal application with a detailed Bushfire Assessment Report

Recommendations are made to ensure water supply and services will comply with acceptable solutions of PBP.

This assessment finds that the proposal can achieve the required specifications of NSW Planning for Bushfire Protection (2019) through use of performance and acceptable solutions and achieve Bushfire Safety Authority from NSW Rural Fire Service for development consent under S100B of the Rural Fires Act.

Summary of PBP (2019) Compliance

	Performance Criteria	*Compliance*	*Comment*
Asset Protection Zones	• Potential building footprints must not be exposed to radiant heat levels exceeding 29kw/m^2 on each proposed lot • APZs are managed and maintained to prevent the spread of fire towards the building. • APZ is provided in perpetuity. • APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.	exceeds acceptable solutions to increase resilience as part of the performance solution	Building envelopes are placed to ensure future construction to be exposed to <12.5kW/m^2 An 88b condition is to be in place to ensure a 20m APZ is provided for future buildings to manage the grassland hazard within the lots. There are no steep slopes or riparian zones located within the proposal.
Landscaping	• Landscaping is designed and managed to minimise flame contact and radiant heat to buildings and the potential for wind driven embers to cause ignitions.	Meets acceptable solutions	A Bushfire Management Plan is provided for all land within the development site to ensure re-vegetation does not occur to become a fire hazard.

Access – General Requirements	• Firefighters are provided with safe all-weather access to structures • The capacity of access roads is adequate for firefighting vehicles • There is appropriate access to water supply	Performance based solution required	The development site is accessible by existing 210m gazetted road that is a dead end. Alternate access or a through road arrangement is not achievable within the constraints of the lot, the layout requires 385m extension of the existing dead-end arrangement to total 595m. A performance solution is proposed using a qualitative assessment to demonstrate that safe access can be provided based on the road traversing low risk grassland vegetation (mapped as cat.3). APZ's to ensure 12.5kW/m^2 exposure and property access less than 100m are included to increase resilience and ensure an appropriate balance of protection measures. The proposed access will become a council maintained public road ~595m in total length with 7.6m wide trafficable surface (6m sealed plus 0.8m rolled edges) through a 20m wide road reserve that is to be managed vegetation. Turning options are provided at each of the six property access roads and a 12.5m radius turning circle at the end. The road is straight with clear line of sight and is to be signposted as a dead end. There are no wet areas, steep slopes or limiting features on the path of travel and no reticulated water supply or public parking in the area that may inhibit operations.
Access – Perimeter roads	• Access roads are designed to allow safe egress for firefighting vehicles while residents are evacuating as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the interface	Meets acceptable solutions	The proposed access road provides separation between the development site and the forest vegetation area and may be considered a perimeter road. Grassland hazard within the development site is to be managed by provision of APZ's within the new lots.
Access – Non Perimeter roads	• Access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating.	Meets acceptable solutions	There are no non-perimeter public roads in the proposal.

Property Access	• Firefighting vehicles can access the dwelling and exit the property safely	Distance of travel limited to 100m for increased resilience as part of the performance solution	Effluent disposal restrictions prevent residential development within 150m of the river. This restriction ensures the most disadvantaged building location is less than 100m from the new public road. The new property access roads will be less than 100m in length traversing grassland vegetation with no wet areas or steep slopes in the vicinity. Detail design will be completed when the specific building location is known.
Water Supplies	• Adequate water supply is provided for firefighting purposes • Water supply is located at regular intervals • Water supply is accessible and reliable for firefighting operations • Flows and pressures are appropriate • The integrity of the supply is maintained	Meets acceptable solutions	There is no reticulated water supply in the area. A static water supply will be required at DA for construction on the new lots.
Electricity services	• Location of electricity services limits the possibility of ignition of the surrounding bushland or the fabric of buildings	Meets acceptable solutions	Detailed design of new power transmission is not available at this time. Recommendations are made that new power transmission lines are underground where practicable.
Gas Services	• Location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings	Meets acceptable solutions	No reticulated gas supply is involved in this proposal. Bottled gas supply will be addressed at DA for construction if required.

Assessing Officer:

Neil Willis grad dip. Bushfire Protection
FPA Australia BPAD Level 2- NSW BPAD31129
DATE OF ISSUE: 11 December 2023

BPAD Bushfire Planning & Design Accredited Practitioner Level 2

SBS ASSESSMENT REFERENCE: 2024006

Limitations and Disclaimer

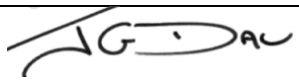
This bushfire assessment report is primarily concerned with assessing the capacity of the proposed development to meet the legislated requirements for development consent. Where necessary, bushfire protection measures will be recommended.

The measures prescribed cannot guarantee that the development will survive a bushfire event on every occasion. This is primarily due to the degree of vegetation management, the unpredictable behavior of fire, extreme weather conditions and the actions of occupants and firefighters. In extreme conditions buildings may be considered un-defendable. Early evacuation is recommended as the safest course of action for life safety. A comprehensive bushfire survival plan is recommended for all occupants on bushfire prone lands.

Southern Bushfire Solutions has prepared this report with all reasonable diligence on behalf of the proponent. The information contained in this report has been gathered from field investigations of the site, plans provided and consultation with the client.

No assessment has been made on other aspects of the proposal outside the scope of this report.

Amendment schedule

Version	Date	Reason for issue		Draft
1	Tuesday 5 December 2023	Initial production		1.1
Prepared by	Neil Willis (BPAD31129)	Verified by	Jeff Dau (BPAD31128 level 3)	
Signature				

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1. Introduction

1.1 Background and brief

The Environmental Planning and Assessment Act (1979) requires the Commissioner of the NSW Rural Fire Service (RFS) in conjunction with local councils, to identify and map bushfire prone land (BFPL) as a trigger for development to meet a range of planning and construction requirements for bushfire protection. BFPL maps are to be maintained and made publicly available by local councils.

Subdivision of bushfire prone land that could be used for residential or rural residential purposes requires the issue of a Bushfire Safety Authority (BFSA) from NSW RFS under Section 100B of the Rural Fires Act (1997). To obtain a BFSA, the development is required to comply with standards regarding setbacks, water supply and other matters considered necessary for the protection of life, property and the environment from the effects of bushfire.

Clause 45 of the Rural Fires Regulation (2022) sets out the information requirements for the issue of Bushfire Safety Authority and requires assessment against the specifications and performance criteria of NSW Planning for Bushfire Protection (PBP) 2019. This report is an assessment of the proposal against the specific objectives and performance criteria for rural-residential subdivision set out in PBP 2019.

1.2 Aims and Objectives of this Bushfire Assessment

The aim of this assessment is to determine the ability of the proposal to achieve an appropriate level of bushfire protection to satisfy the objectives and performance requirements for residential and rural residential subdivision as per section 5 of PBP (2019). The specific objectives for rural residential subdivision of PBP (2019) are:

- Minimise the perimeters of the subdivision exposed to the bushfire hazard
- Minimise vegetated corridors that permit the passage of bushfire towards the buildings
- Provide for the siting of future dwellings away from ridgetops, steep slopes within saddles and narrow ridge crests.
- Ensure that APZ's between the bushfire hazard and future dwellings are effectively designed to address the relevant bushfire attack mechanisms
- Ensure the ongoing maintenance of APZ's
- Provide access from all properties to the wider road network for residents and emergency services
- Provide access to hazard vegetation to facilitate bushfire mitigation work and suppression
- Ensure the provision of an adequate supply of water and other services to facilitate firefighting.

Recommendations are made where appropriate for compliance and to ensure adequate bushfire protection measures for the development.

1.3 Bushfire Assessment Methodology

This bushfire assessment follows the methodology summarized in the following table:

Methodology	Task	Considerations
Desktop analysis to ascertain scope and requirements of the development.	Collate and review available mapping resources, relevant policy documents and development plans.	• NSW SIX Mapping, Google maps. • Development plans provided by client. • NSW Planning for Bushfire Protection (2019) • AS3959-Construction of Buildings in Bushfire Prone Areas (2009)
Site inspection and consultation with the proponent	View the site and bushfire hazard; classify dominant vegetation and measure slope and distances. Detailed discussion with the proponent to establish objectives and limitations of the proposal.	The site inspection enables verification of mapping data and classification of the surrounding vegetation, slope, Asset Protection Zones and environmental constraints. Photographing of relevant features for presentation.
Detailed assessment	Perform assessment of the development proposal against performance requirements of PBP and AS3959.	Assess the ability of the proposal to meet the intent and performance criteria of the relevant sections of PBP and make recommendations to address identified shortfalls.
Report	Preparation of Bushfire Assessment Report.	Produce necessary documentation to demonstrate the proposals ability to achieve the aims and objectives of PBP to accompany the development application.

1.4 Identification of Stakeholders

Company	Position	Name	Contact
Cobandrah Pty Ltd	Proponent	Bruce Cohen	**PH:** 0417313007 **E:** bruce.cohen@bigpond.com
Caddey Searl & Jarman	Surveyor	David Bothamley	**PH:** (02) 6495 1044 **E:** david@taprojects.com.au
Bega Valley Shire Council	Approval Authority		**PH:** 02 6499 2222 **E:** council@begavalley.nsw.gov.au
NSW Rural Fire Service	Approval Authority		**PH:** 02 8741 5555 **E:** records@rfs.nsw.gov.au
Southern Bushfire Solutions	BPAD Consultant	Neil Willis	**PH:** 0402 604000 **E:** info@southernbushfiresolutions.com.au

2. Scope of the Proposal

The proposal is located in an area identified in the Bega Valley Shire Council - Rural Residential Strategy (2020) as suitable for rural residential development. Approval has previously been granted for a single dwelling in this location in 2018, however the opportunity is now being sought to subdivide to create six new rural residential lots for development consistent with the BVSC strategy. In order for this to proceed, a zoning change is required from RU2 to C4 and minimum lot size reduced from 120Ha to 1Ha. This is to be considered concurrently with the DA for subdivision.

Zoning and lot size changes require consideration of the Strategic Planning Principles in section 4 of NSW Planning for Bushfire Protection (2019) to ensure the land is suitable for development in the context of bushfire risk and ensuring new development will comply with PBP and minimise the reliance on performance-based solutions.

This proposal is for the rural residential subdivision of a lot that is constrained for access due to the river and limited frontage to the main through road. The situation is unable to provide through road access, resulting in a dead end that exceeds 200m as per acceptable solutions and requires consideration of a performance-based solution to meet the intent of measures. The development is in an area of grassland hazard mapped as vegetation category 3 and considered lower risk of bushfire. A qualitative, merit-based assessment is proposed to address the access arrangement with additional resilience provided by an increased standard of other protection measures to ensure the performance requirements of PBP are met.

2.1 Site Location and Description.

The development is located in a rural area at lot 5 DP 750207 and lot 1 DP 130034 – 299/300 Mt Darragh Rd, approximately 5.5Km West of South Pambula Village. This is around 6 minutes normal travel time via Mt Darragh Rd which is classified as a regional Main Road (Gazzetted road number 91) in the NSW Transport schedule of classified roads with capacity to manage the additional traffic load of six new residential lots. The general area within 2km of the development is made up of similar rural residential developments that break up the bushfire risk and provide infrastructure to support firefighting and evacuation. Egress is available in two directions along Mt Darragh Rd to the townships of Wyndham or Pambula and the location is unlikely to become isolated during a bushfire event. The low hazard nature of the location may provide suitable shelter in place options if late evacuation becomes unsafe.

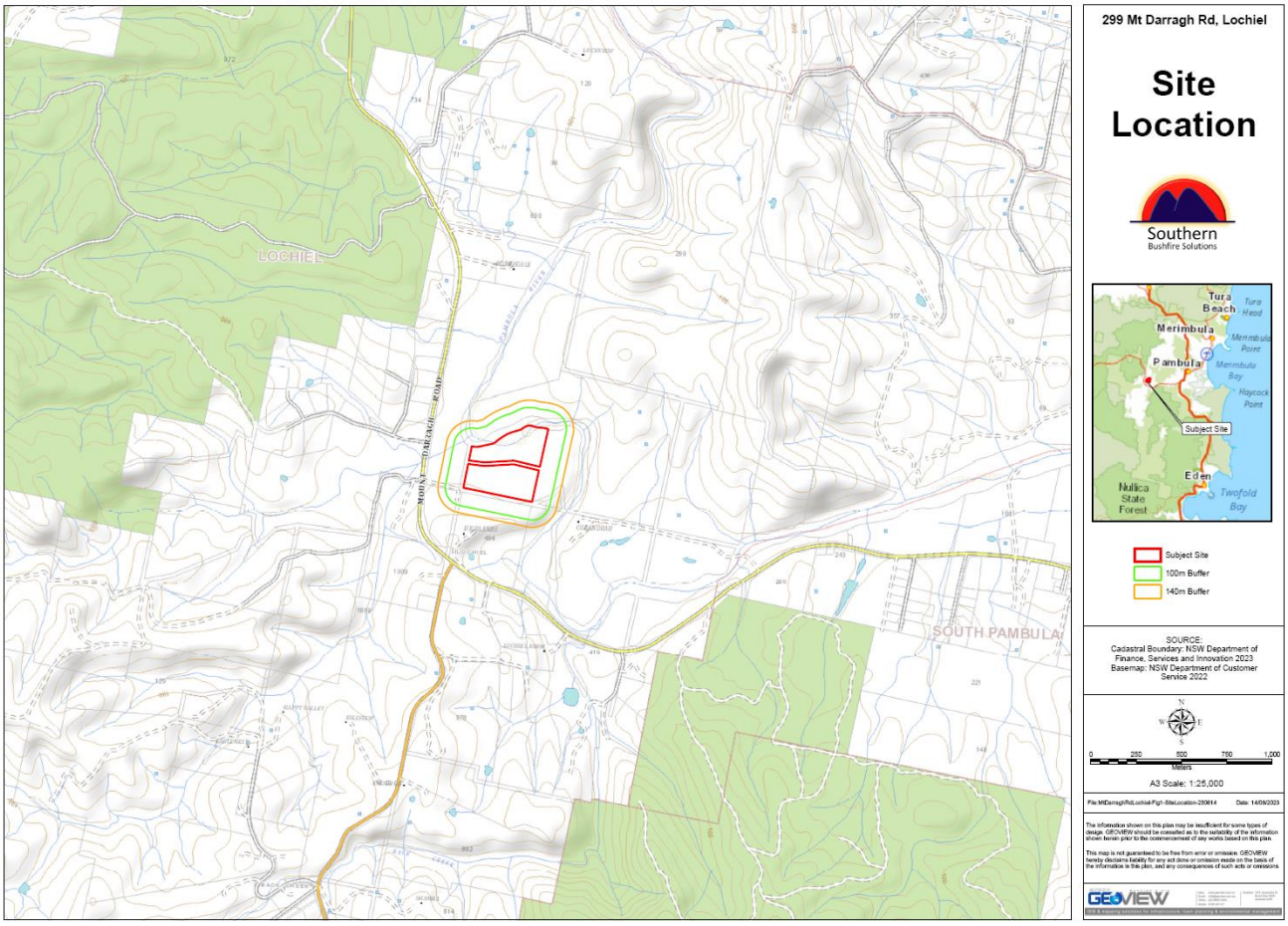

Figure 1: General Location of Proposed Development

Bushfire prone land mapping shows the development site is positioned in an area of vegetation category 3 which is considered to be medium bush fire risk vegetation represented as dark orange on a Bush Fire Prone Land map and will be given a 30-metre buffer. This category consists of, Grasslands, freshwater wetlands, semi-arid woodlands, alpine complex and arid shrublands. (NSW Rural Fire Service, 2015)

An isolated area of category 1 vegetation exists upslope on the hill to the south of the proposal and extends within the 140m assessment area. This is considered to be the highest risk for bush fire. This vegetation category has the highest combustibility and likelihood of forming fully developed fires including heavy ember production. Vegetation Category 1 consists of forest, woodlands, heaths (tall and short), forested wetlands and timber plantations. (NSW Rural Fire Service, 2015).

The access and evacuation route for the development is directed away from the area of category 1 and does not require residents evacuating to traverse heavy vegetation when evacuating to a safer place.

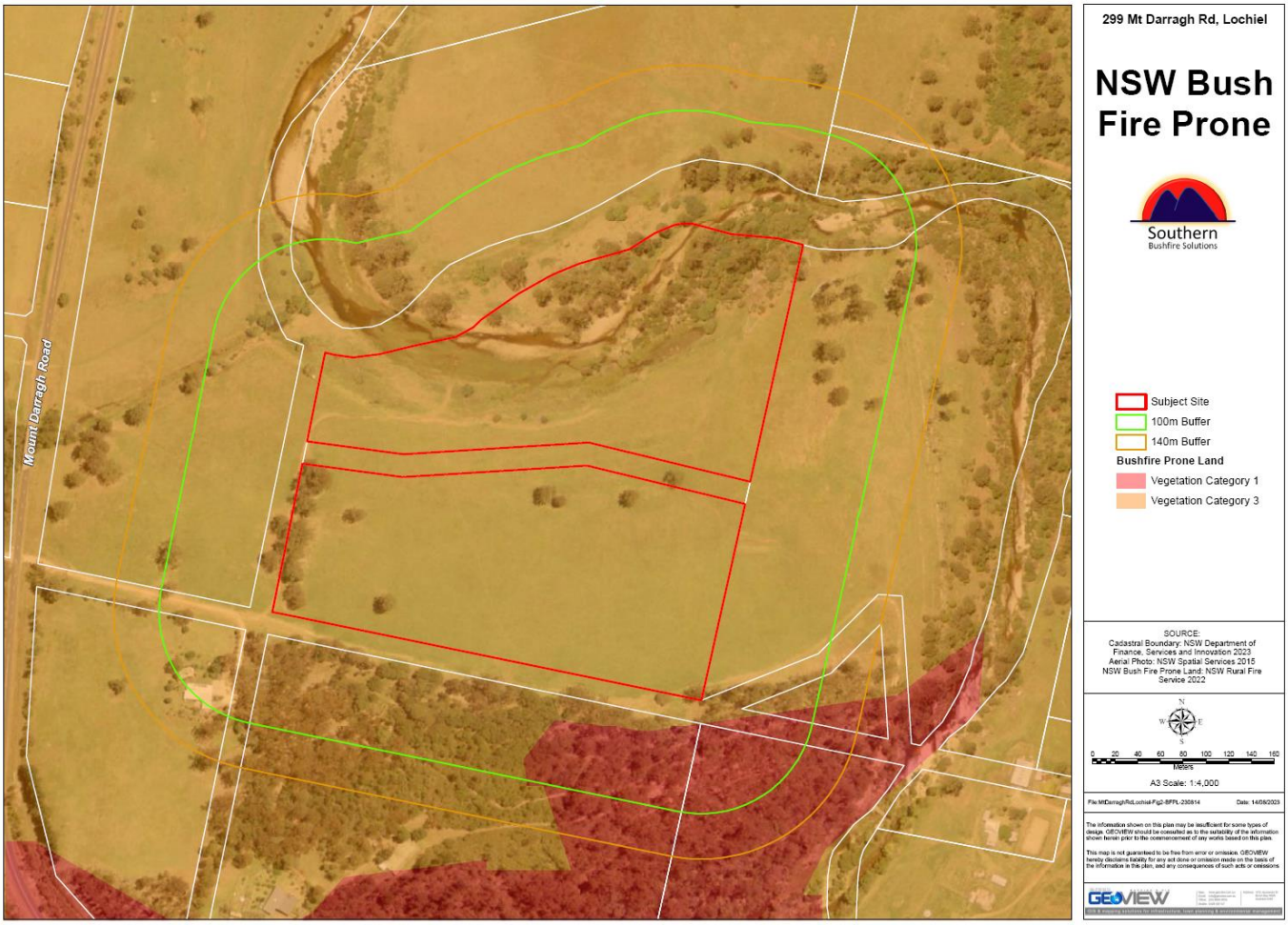

Figure 2: Bushfire Prone Land Map

2.2 Characteristics and Description of the Proposal

The concept is to amalgamate the existing two lots and subdivide into six new rural-residential lots ranging from 0.56Ha to 3Ha with independent asset protection zones. Access is to be provided by extending the existing 210m council owned access arrangement along the crown road reserve to become ~595m total length and will become council owned public road.

All the residential lots are in grassland hazard with space to provide individual APZ's within the boundary. The public road reserve provides separation from the primary hazard vegetation to the south of the site. An alternative access or through road arrangement is not able to be provided due to the limited road frontage and the topographic constraints of the site. Effluent disposal conditions will prevent residential development within 150m of the river and ensure residences are less than 100m from the new road for property access.

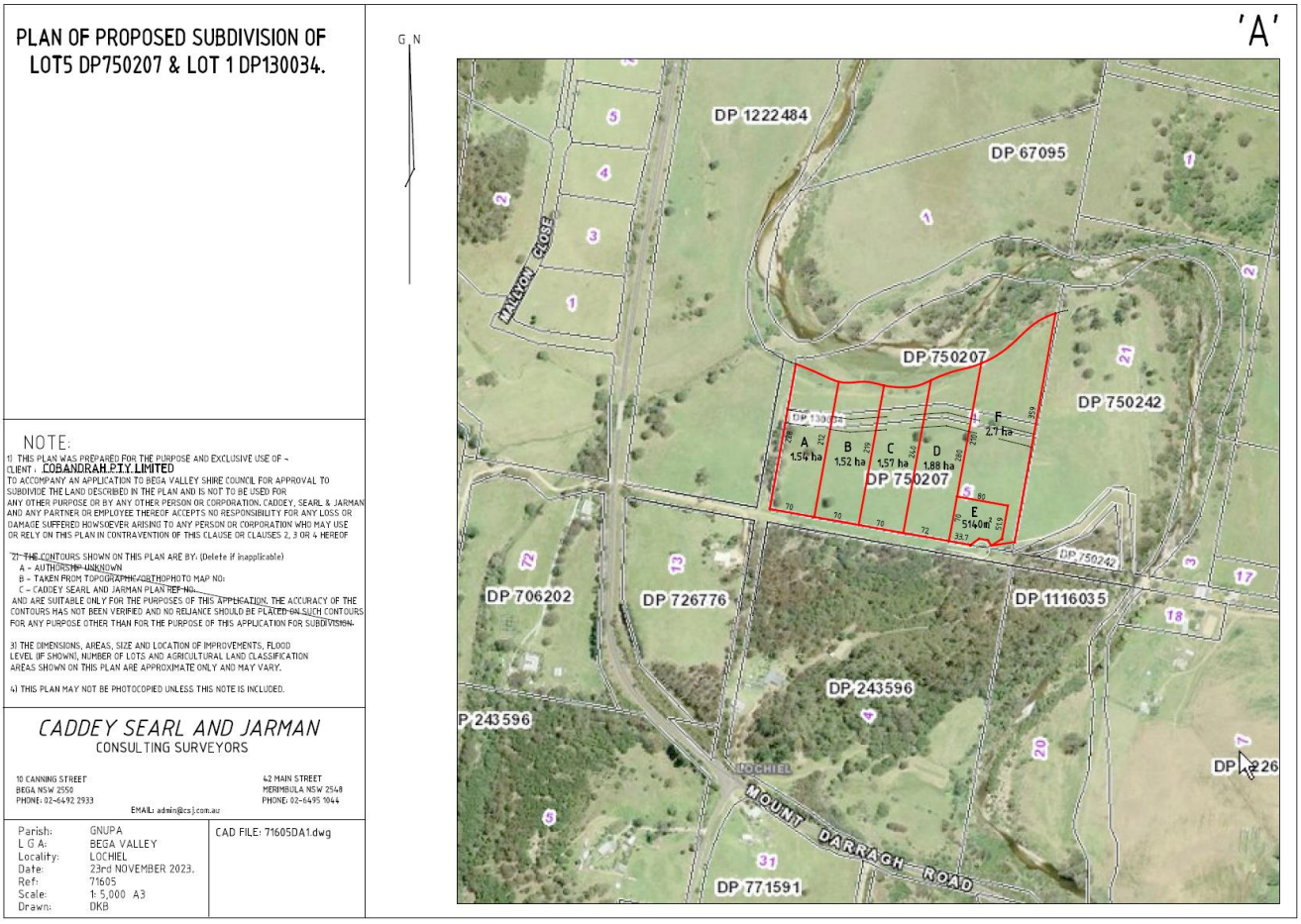

Figure 3: Concept plan of the Subdivision.

Figure 4: Proposed access arrangement and building locations with boundary setbacks

Figure 5: Panoramic view of the development site looking east from the access point

Figure 6: Panoramic view of the development site looking west from the end of the new access

Figure 7: View of the site form the north east corner with River on the right and hazard vegetation to the left

Figure 8: The Existing gazetted road access from Mt Darragh Rd

Figure 9: Location of the new access road looking east into the development site with residential lots proposed to the left side

3. Bushfire Hazard Assessment

3.1 Context

The site is located in a rural residential area currently zoned RU2 with a minimum lot size of 120Ha. The landscape is broken up with large areas of forest, isolated residential developments and primary production activity. The primary bushfire hazard for the site is the area of forest vegetation to the south mapped as category 1 vegetation, with grassland throughout the development site mapped as category 3 vegetation.

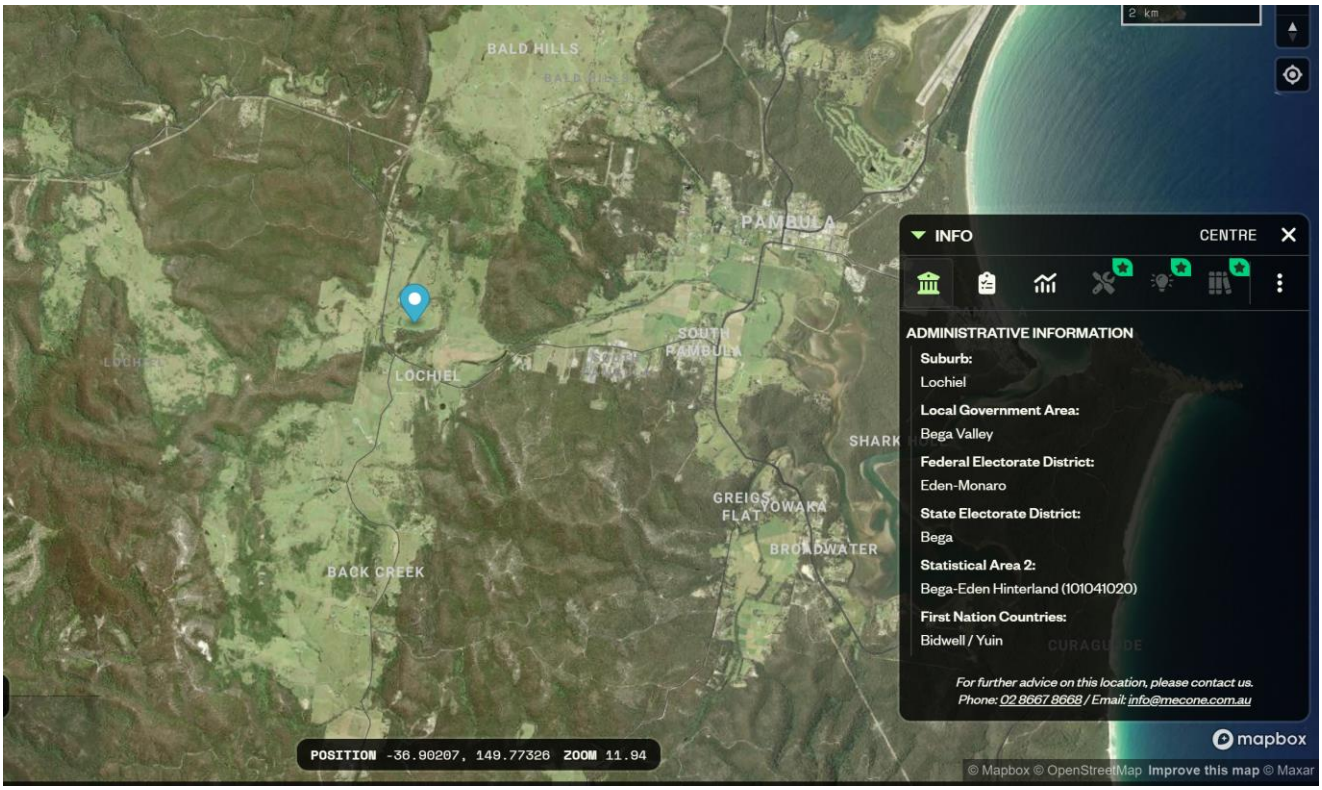

Figure 10: Satellite image for context and broad scale fire risk consideration

3.2 Vegetation Classification

PBP (2019) requires identification of the vegetation surrounding the proposed development to a distance of 140 metres.

Upon site inspection the vegetation formations were assessed and classified in accordance with Ocean Shores to Desert Dunes (Keith, 2004) and table A1 of PBP (2019). The hazard vegetation type for the bushfire assessment found in the subject area is:

> *"Dry Sclerophyll Forests"*
> *"Open tree canopy dominated by Eucalypt species (typically 10-30m in height) with the crowns that touch and overlap. Canopy allows most sunlight to penetrate supporting growth of a prominent understorey layer varying between hard leaved shrubs to luxurious soft leaved shrubs, ferns and herbs."* (NSW Rural Fire Service, 2019)

As rural-residential development, grassland hazard remains within the boundary of the proposed lots, with 20m boundary setbacks space to manage Asset Protection Zones individually within the boundary. The riparian area is not able to be managed as an APZ and is treated as hazard vegetation to the north of the development site.

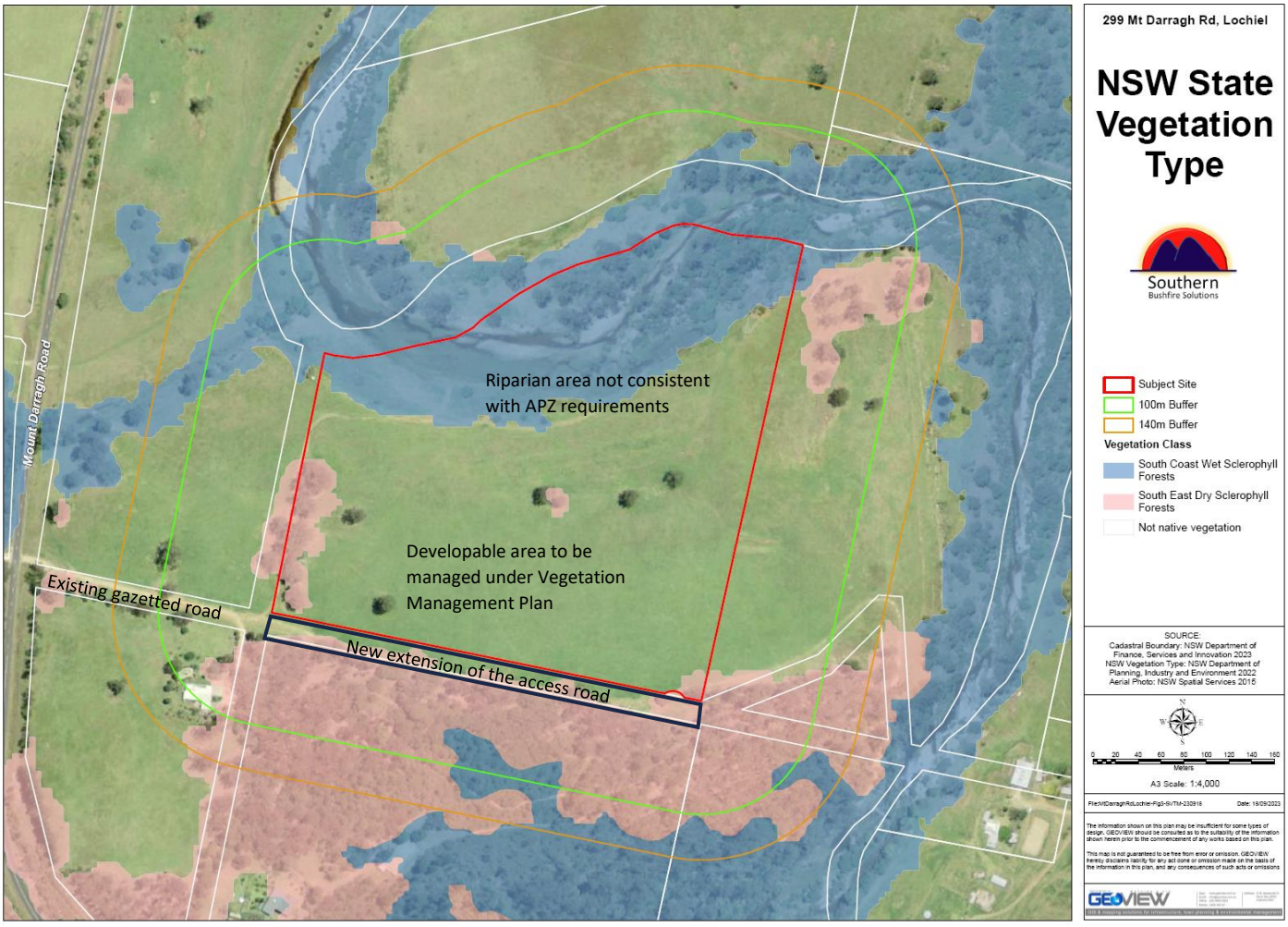

Figure 11: NSW State Vegetation Types

3.3 Slope Influencing Bushfire Behaviour

The “effective slope” for the bushfire assessment is the slope under the vegetation that directly influences bushfire behavior. PBP (2019) requires the effective slope to be determined under the dominant vegetation type for a distance of 100m.

The development is sited low in the valley on a north facing slope below the bushfire hazard with the Pambula River at the northern boundary. The slopes within the lots are generally in the 5-10^{o} range with some areas 10-15^{o} upslope on the hill to the south. Steep slopes exist in the river corridor beyond the 100m range from the development site, however these areas are not considered to influence the fire at the development site due to the nature of the topography.

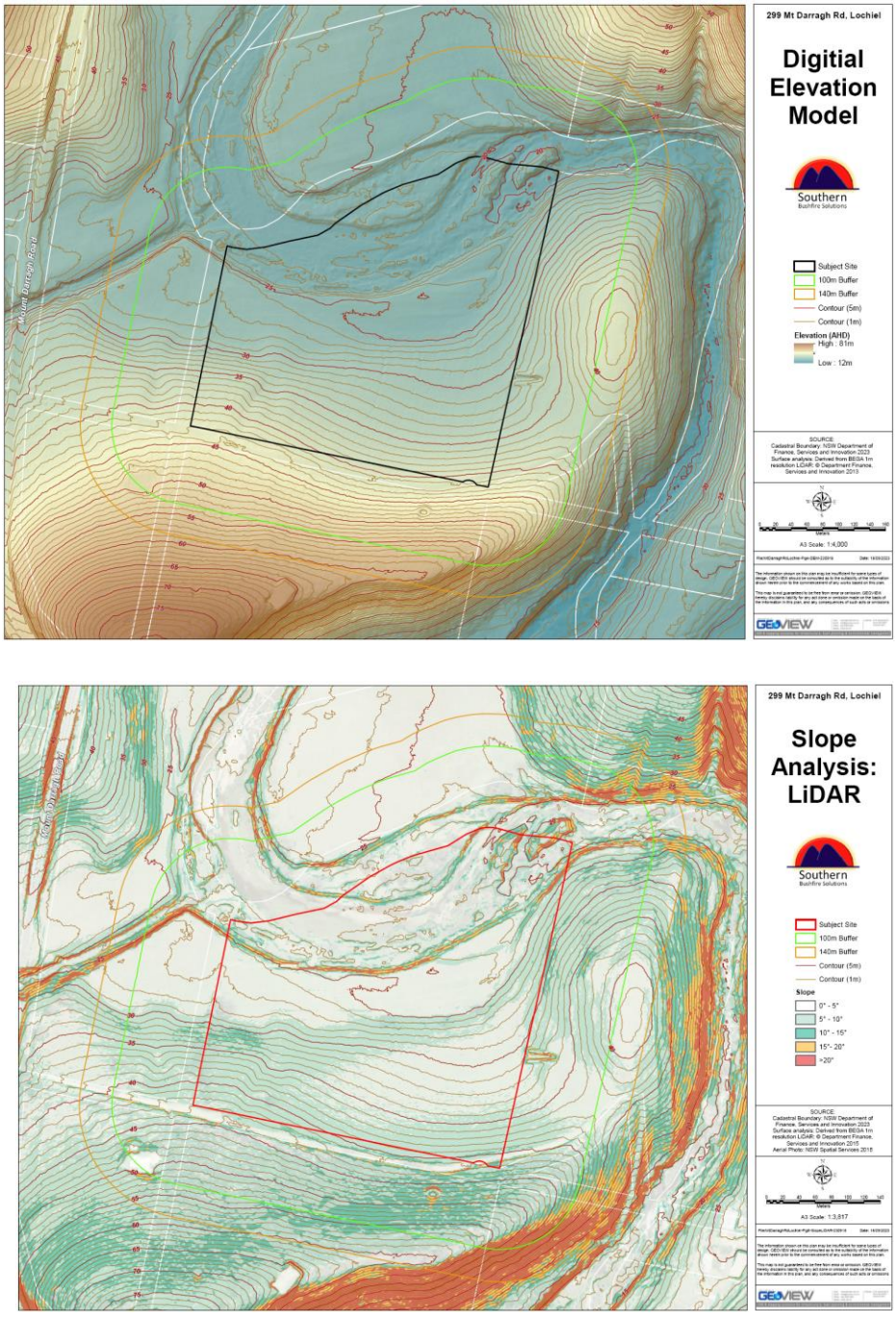

Figure 12: digital elevation and LiDAR slope analysis

The riparian area of the river is not consistent with bushfire management standards and must be treated as hazard vegetation. Effluent disposal is not permitted within 150m of the river and this also limits residential development at the northern end of the lots. All remaining land in the developable area is to be managed under a Vegetation Management Plan to prevent revegetation.

Six transects have been taken at strategic locations around the site for consideration of bushfire impacting the development site as detailed in the Slope and Vegetation Assessment diagram below.

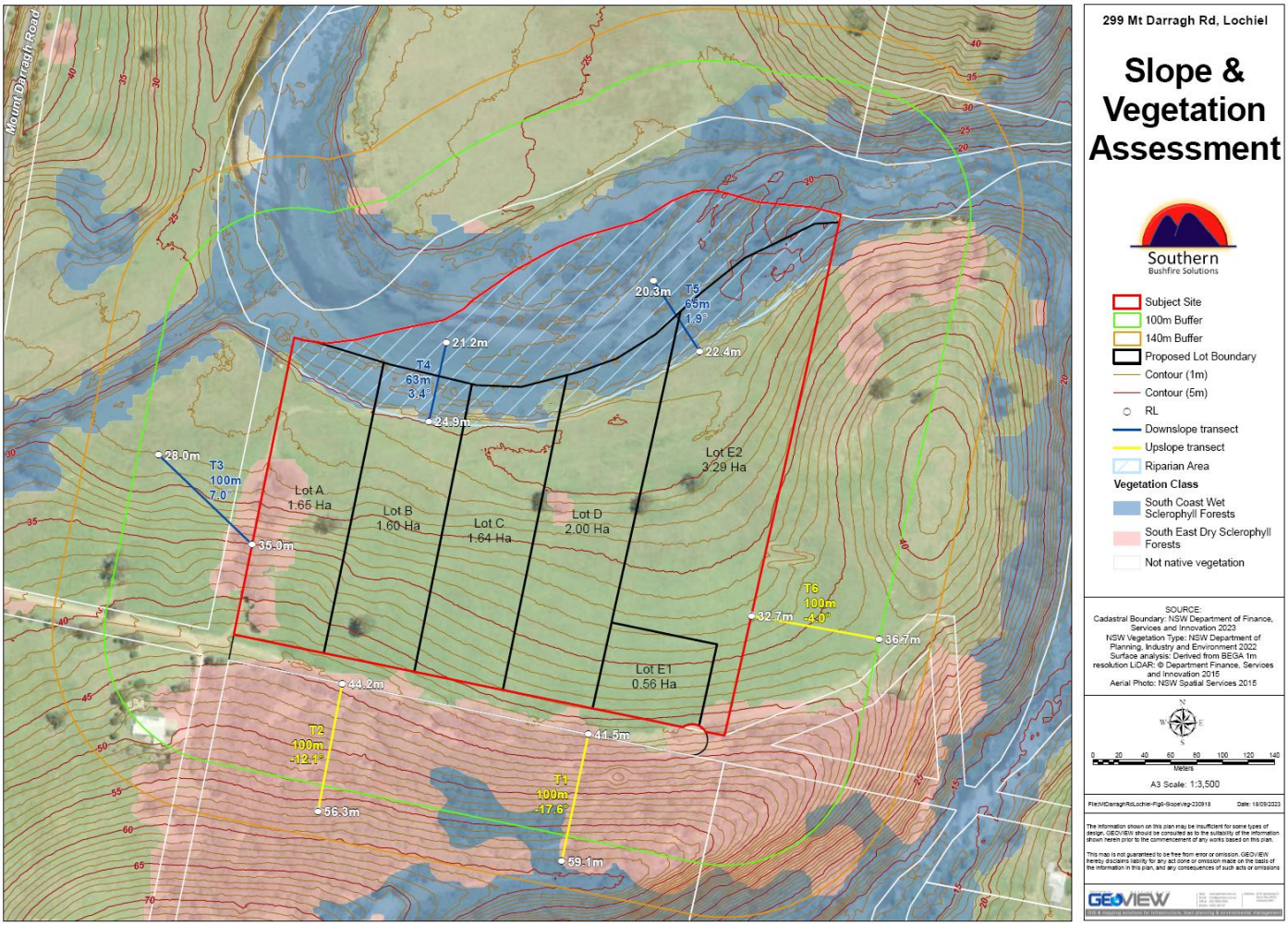

Figure 12: Slope and Vegetation Assessment with Transect Identification for Assessment

3.4 Local Fire and Weather Conditions

The fire season for the Far South Coast fire district is typically from October through to March, with hot summer temperatures above 30 degrees and low relative humidity. The wind can be strong and gusty, typically coming from the North to North-West and the potential for rapid changes.

At landscape level, bushfires typically come from the North to West due to the dominant wind direction. However, localised influences can dramatically alter the fire behavior and result in bushfire travelling in any direction.

These weather patterns coupled with the potential for dry lightning storms and incidental ignitions from surrounding properties are a significant factor in the overall fire risk for the area.

For bushfire assessment purposes, Bega Valley Shire Council LGA is in the Far South Coast Fire Area and has a Fire Danger Index (FDI) of 100 assumed as a 1:50 year event according to NSW RFS.

4. Environmental Features and Considerations

The proposal involves subdivision to create six new lots in a grassland paddock that has been intensely managed as grazing pasture. A Bushfire Management Plan will be created to ensure grassland within the lots will not become bushfire hazard and revegetation does not to occur in the developable footprint.

No impact occurs on vegetation in the riparian corridor and effluent disposal requirements prohibit development within 150m of the river. Some vegetation may require removal to create the access road and may be subject to detailed environmental assessment.

5. Development Assessment

The following sections are a detailed assessment of the proposal against the standards required for bushfire protection measures for residential and rural residential subdivisions:

5.1 Asset Protection Zones (APZ)

The APZ is a fuel reduced area surrounding a building or structure. The intent of the APZ detailed in PBP (2019) is:

> *"To provide sufficient space and maintain reduced fuel loads to ensure radiant heat levels at buildings are below critical limits, and prevent direct flame contact"* (NSW Rural Fire Service, 2019)

An APZ in forest vegetation can be divided into an "Inner Protection Area" and "Outer Protection Area". They can be defined as follows:

- Inner Protection Area: closest to buildings incorporating the defendable space and for managing heat intensities at the building surface;
- Outer Protection Area: for reducing the potential length of flames by slowing the rate of spread, filtering embers and suppressing the crown fire.

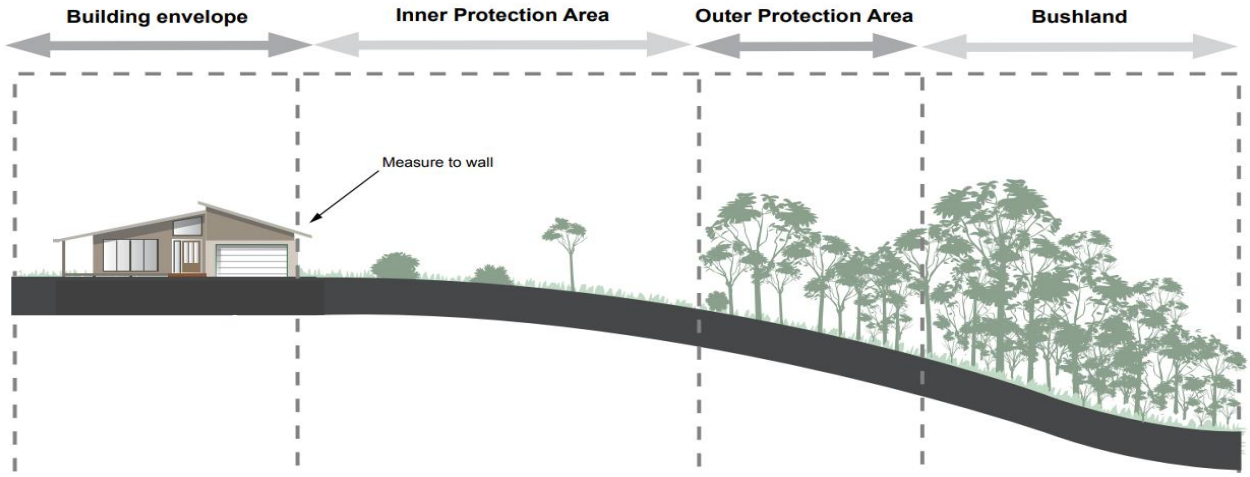

Figure 9: Components of a typical APZ
(NSW Rural Fire Service, 2019)

Asset Protection Zone	
	PERFORMANCE CRITERIA TO BE ACHIEVED:
	Section 5.3.1 of PBP states that the intent of measures may be achieved where: ● Potential building footprints must not be exposed to radiant heat levels exceeding 29kw/m^2 on each proposed lot ● APZs are managed and maintained to prevent the spread of fire towards the building. ● APZ is provided in perpetuity. ● APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.
	METHOD OF MEETING THE PERFORMANCE CRITERIA:
	Exceeds the acceptable solutions of table 5.3a of PBP (2019) Elevated level of protection as part of the performance solution

A Bushfire Management Plan will ensure all land within the developable footprint is managed in a low hazard state and revegetation of the new lots does not occur.
The Riparian zone of the river is not consistent with APZ requirements and requires building setbacks. Flood and effluent disposal requirements also prevent residential development within 150m of the river.
An increased level of resilience is provided for residents sheltering in place by ensuring the building envelopes are exposed to <12.5kW/m^2 and a S88B condition is to be established to ensure that all future buildings are provided with a 20m APZ to manage the grassland within the lots.

All land within the parent lot is currently managed as grazed grassland and a Vegetation Management Plan is established to prevent revegetation of the grassland.

Radiant Heat and APZ calculations

Area FDI 100 – Bega Valley Shire Council – Assessment in accordance with table A1.12.5 of PBP							
Transect	Effective Slope	Vegetation type	BAL-FZ	BAL-40	BAL-29	BAL-19	BAL12.5
T1/T2	12/17° upslope	Forest	0-18m	18-24m	24-33m	33-45m	45-100m
T3	7° downslope	Grassland	0-10m	10-13m	13-20m	20-28m	28-50m
T4/T5	3/2° downslope	Grassland	0-9m	9-12m	12-17m	17-25m	25-50m
T6	4° upslope	Grassland	0-8m	8-10m	10-15m	15-22m	22-50m

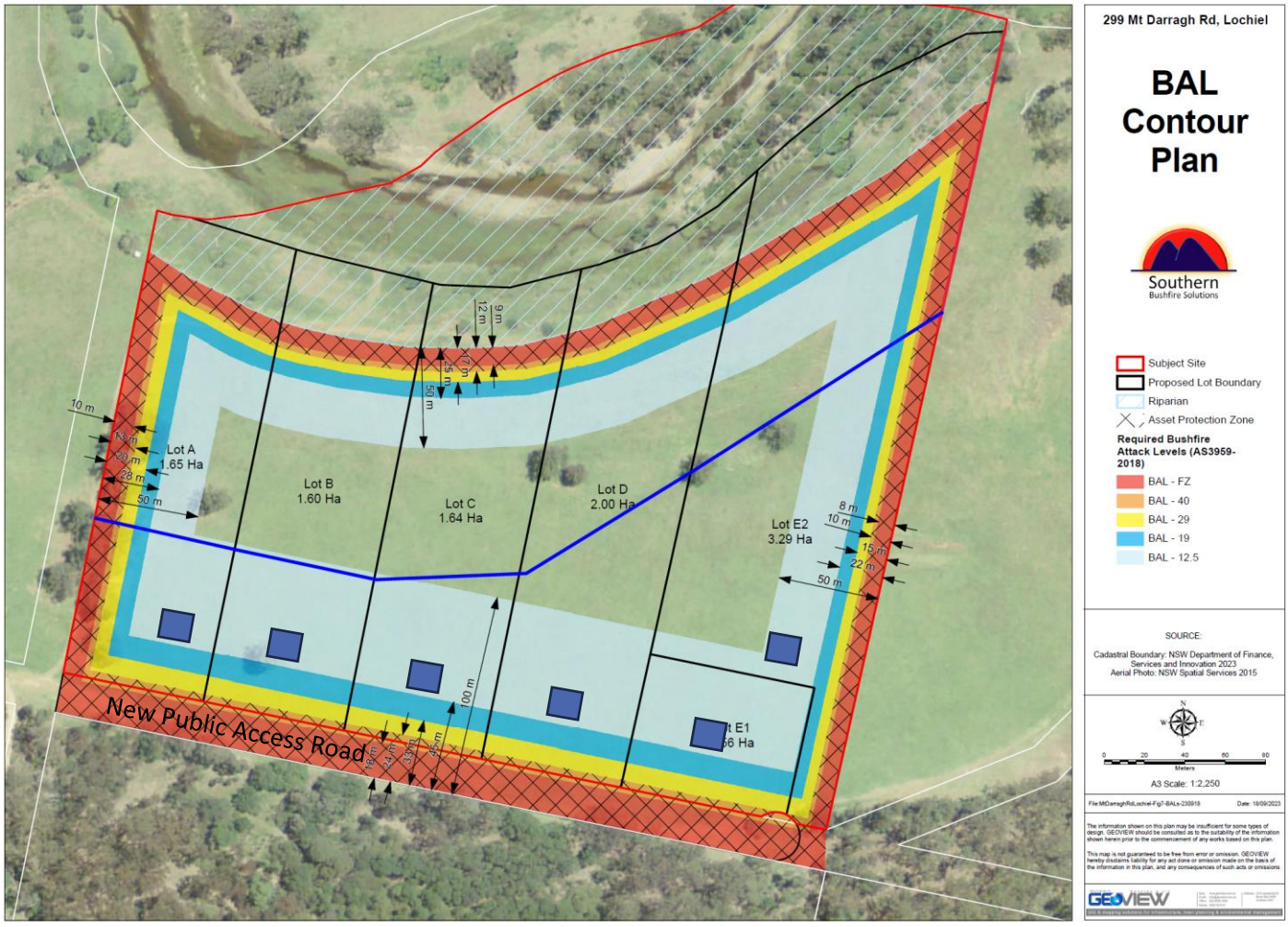

Figure 13: BAL contour plan with indicative building envelopes

Landscaping	
	PERFORMANCE CRITERIA TO BE ACHIEVED:
	Section 5.3.1 of PBP states that the intent of measures may be achieved where: • Landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and potential for wind driven embers to cause ignitions
	METHOD OF MEETING THE PERFORMANCE CRITERIA:
	Landscaping of the existing residence is considered to comply with the NSW Standards for Asset Protection Zones. Landscaping and fencing for the new lots is not part of this proposal. It is expected that landscaping works will be addressed at DA for construction of any new building and will be required to be in accordance with section 7.6 of PBP (2019). The current vegetative state of the lots is to be maintained as per the vegetation maintenance plan to ensure the land does not become a bushfire hazard.

Vegetation Management Plan

The vegetative state in the cleared portions of the lots is to be maintained so as not to become a fire hazard to adjacent lots. The following guidelines are to be consistent with Outer Asset Protection Zones in A4 of PBP

- Tree canopy is not to exceed 30% and should be separated by 2-5m
- Shrubs should not form continuous canopy and should form no more than 20% of ground cover
- Grass should be kept to less than 200mm.

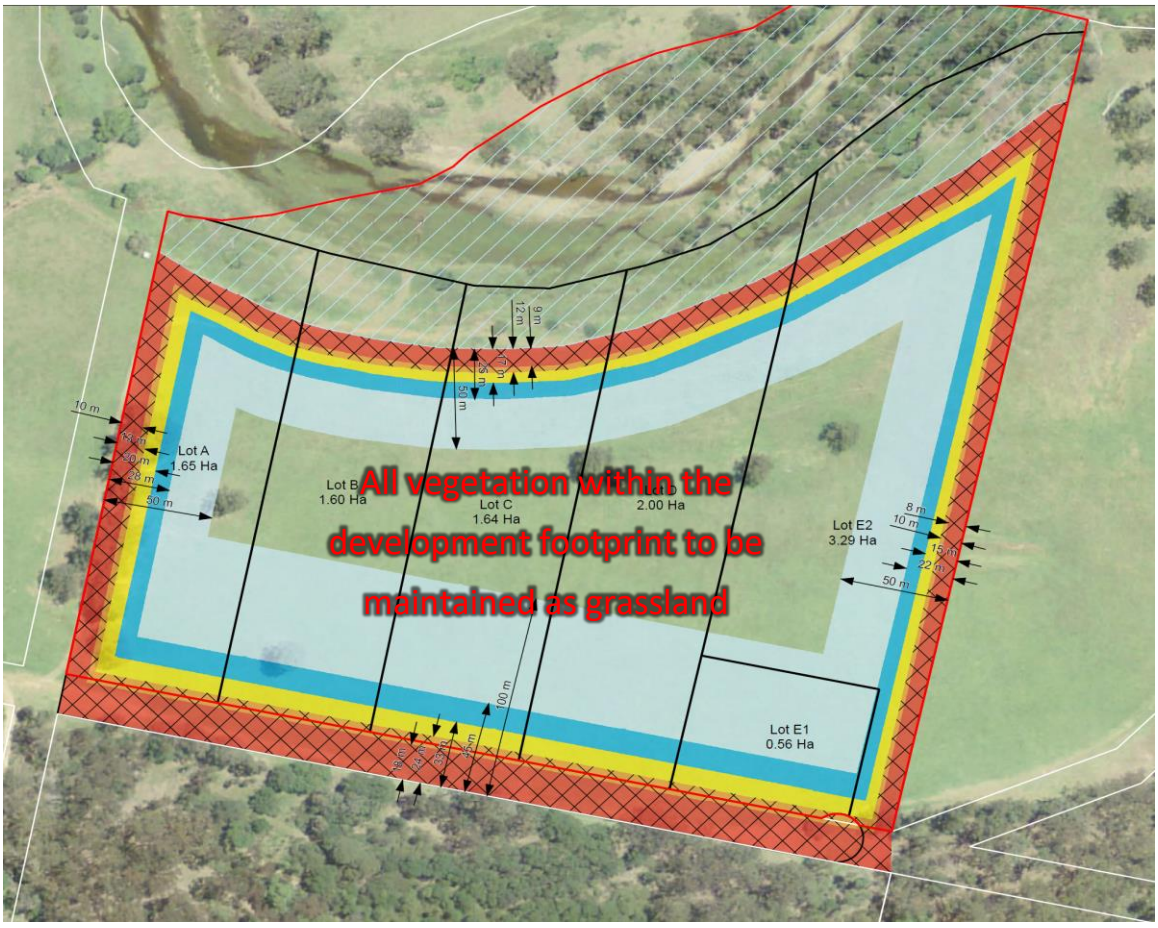

Figure 14: Vegetation Management Plan

5.2 Access Requirements

The intent of measures for Access detailed in PBP (2019) is:

> *"To provide safe operational access to structures and water supply for emergency services while residents are seeking to evacuate from an area"* (NSW Rural Fire Service, 2019)

The purpose of the public road system is to provide firefighters with access to properties, provide a safe retreat for firefighters and firefighting appliances, and provide a clear control line from which to conduct hazard reduction or back burning operations. Roads should provide sufficient width for firefighters to work with equipment around the vehicle without impeding residents that are seeking to evacuate the area.

Access - General	***PERFORMANCE CRITERIA TO BE ACHIEVED:***
	Section Table 5.3b of PBP states that the intent may be achieved where: • Firefighters are provided with safe all-weather access to structures • The capacity of access roads is adequate for firefighting vehicles • There is appropriate access to water supply
Perimeter Roads	• Access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the interface
Non-Perimeter roads	• Access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating
Property	• Firefighting vehicles can access the dwelling and exit the property safely
	METHOD OF MEETING THE PERFORMANCE CRITERIA:
	The constraints analysis identified that the situation limits the ability to comply with the acceptable solutions of PBP (2019). Consideration of a performance solution is required to meet the intent of measures.

The development site is an isolated lot with limited road frontage and is bounded by the Pambula River. The lot is only accessible by a 210m gazetted road that is currently a dead end. The subdivision layout requires 385m extension of the existing dead-end arrangement to total 595m. Alternate access or a through road arrangement to comply with acceptable solutions is not achievable within the constraints of the lot.

A performance solution is proposed using a qualitative assessment to demonstrate that safe access and egress can be provided based on the road traversing low risk grassland vegetation (mapped as cat.3). Increased resilience is provided with conditions in place to ensure future buildings are exposed to a maximum of 12.5kW/m^2 with property access limited to 100m travel by placement of the building envelopes to ensure a balance of bushfire protection measures is provided.

The proposed access will become a council maintained public road 595m in total length with 7.6m wide trafficable surface (6m sealed surface plus 0.8m rolled edges) through a 20m wide road reserve that is to be managed vegetation. Turning options are provided at each of the six property access roads and a 12.5m radius turning circle at the end. The road is straight with clear line of sight and is to be signposted as a dead end.
There are no wet areas, steep slopes or limiting features on the path of travel and no reticulated water supply or public parking in the area that may inhibit operations.

The proposed access road provides separation between the development site and the forest vegetation area and may be considered a perimeter road. Grassland hazard within the development site is to be managed by provision of 20m minimum APZ's within the new lots set in place under a section 88b condition.

Effluent disposal restrictions prevent residential development within 150m of the river. This restriction ensures the most disadvantaged building location for property access is less than 100m from the new public road, traversing grassland vegetation with no wet areas or steep slopes in the vicinity. Detailed design of property access will be completed when the specific building location is known at DA for construction.

Figure 15: Location of the new subdivision demonstrating access provision via extension of the existing road to total 595m

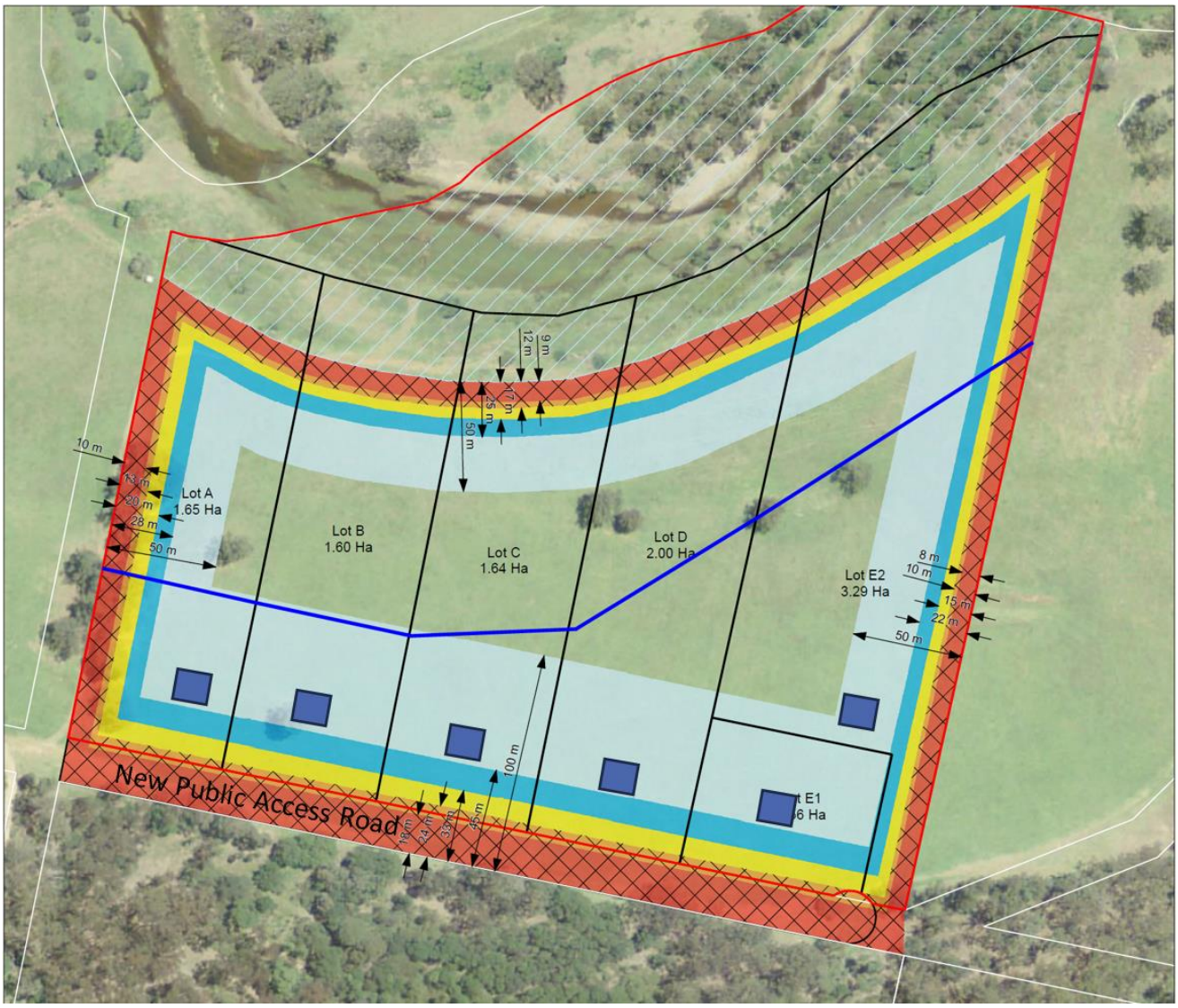

Figure 16: Building envelopes exposed to <12.5kW/m² in grassland hazard with property access <100m to increase resilience

5.3 Services – Water, Electricity and Gas

The intent of measures for services detailed in PBP (2019) is:

"To provide adequate services of water for the protection of buildings during and after the passage of a bushfire, and to locate gas and electricity so as not to contribute to the risk of fire to the buildings" (NSW Rural Fire Service, 2019)

An adequate supply of water is essential for firefighting. A reticulated supply is to be provided where possible, and a static water supply to be made available for non-reticulated development

Water Supply	***PERFORMANCE CRITERIA TO BE ACHIEVED:***
	Table 5.3c of PBP states that the intent may be achieved where: ● Adequate water supply is provided for firefighting purposes ● Water supply is located at regular intervals ● Water supply is accessible and reliable for firefighting operations ● Flows and pressures are appropriate ● The integrity of the supply is maintained
	METHOD OF MEETING THE PERFORMANCE CRITERIA:
	Compliance with Acceptable solutions of PBP (2019.

There is no reticulated water supply in the area. A static water supply will be required at DA for construction on the new lots.

Electricity Supply	***PERFORMANCE CRITERIA TO BE ACHIEVED:***
	Table 5.3c of PBP states that the intent may be achieved where: ● Location of electricity services limits the possibility of ignition of the surrounding bushland or the fabric of buildings
	METHOD OF MEETING THE PERFORMANCE CRITERIA:
	Compliance with the acceptable solutions of PBP (2019) Detail of power transmission to the new lots is not available at this time. The following recommendations are made for power supply to comply: 1. All new power transmission lines are to be underground where possible.
Gas Supply	***PERFORMANCE CRITERIA TO BE ACHIEVED:***
	Section 5.3.3 of PBP states that the intent may be achieved where: ● Location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.
	METHOD OF MEETING THE PERFORMANCE CRITERIA:
	Compliance with the acceptable solutions of PBP (2019) There is no reticulated gas supply in the area. If a bottled gas supply is installed it will be adressed at DA for construction.

6. Conclusion

The proposal involves zoning changes and subdivision of land that has been identified as an opportunity for rural residential development in the Bega Valley Shire Council Rural Residential Strategy (2020). The rezoning and change of lot size are subject to a strategic proposal that is to be undertaken concurrently with the DA for subdivision. Strategic Principles require the consideration of compliance with Planning for Bushfire Protection and the bushfire assessment will be undertaken to inform both the strategic study and the development compliance with PBP (2019).

The constraints analysis and concept plan reveal that the development is only accessible via the crown road reserve with no capability to provide a through road or alternate access as per acceptable solutions of PBP (2019). A performance-based solution is proposed with a qualitative assessment based on the access arrangement traversing low risk grassland mapped as category 3 vegetation. The access is achieved by extending the existing 210m road to become a 595m public road with 7.6m wide trafficable surface via the 20m wide road reserve. The new public road has straight line of sight with multiple turning options at property entrances and 12m radius dead end to ensure safe operational access is provided for firefighting at the interface while residents are evacuating. Building envelopes are placed in locations exposed to 12.5kW/m^2, with a 20m APZ in category 3 vegetation and property access <100m to provide increased resilience and improved chance of success for residents defending or sheltering in place.
All remaining aspects can comply with acceptable solutions of NSW Planning for Bushfire Protection (2019).

The development as a whole meets the intent of measures and performance requirements of NSW Planning for Bushfire Protection and pre DA consultation with NSW RFS indicated that this layout would be suitable for formal application with a detailed Bushfire Assessment Report and DA submission.

7. Recommendations

The following recommendations are made to ensure that the proposal complies with the intent and performance requirements of Planning for Bushfire Protection (2019).

7.1. With Regard to Asset Protection Zones and Landscaping

The following reccomendations are made for Asset Protection Zones to comply with the acceptable solutions of Planning for Bushfire protection:

1. An 88b condition is to be in place to ensure future buildings are provided with a 20m APZ in the grassland vegetation within the lot.
2. The vegetative state within the development site is to be maintained as per the vegetation management plan so as not to become a fire hazard to adjacent lots. The following guidelines are to be consistent with Outer Asset Protection Zones in A4 of Planning for Bushfire Protection:
    a. Tree canopy is not to exceed 30% and should be separated by 2-5m
    b. Shrubs should not form continuous canopy and should form no more than 20% of ground cover
    c. Grass should be kept to less than 100mm and leaves and debris regularly removed.

7.2. With Regard to Water Supply and Services

The following recommendations are made for water supply and services to comply with the acceptable solutions of Planning for Bushfire protection:

1. All new power transmission lines are to be underground where possible.

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