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SURVEYORS • PLANNERS • ECOLOGISTS • BUSHFIRE CONSULTANTS

BUSH FIRE ASSESSMENT REPORT



For the proposed manufactured home estate
at

**303 BLACKHEAD ROAD,
HALLIDAYS POINT, NSW**
(LOT 3 in DP 242332)
July 2020

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DOCUMENT TRACKING

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1.0 INTRODUCTION

Clarke Dowdle & Associates has been engaged to conduct a Bush Fire Assessment Report (BFAR) on the property located at 303 Blackhead Road, Hallidays Point, NSW. The proposal is for the establishment of a manufactured home estate. This assessment was performed in July 2020 and is an amendment to previous versions performed in January 2020 & August 2018. This BFAR was conducted in accordance with the procedures and methods recommended in the NSW Rural Fire Service published document '*Planning for Bushfire Protection, 2019*' (PBP).

The proposed development involves the creation of a Manufactured Home Estate within a designated bushfire prone area. These types of developments are identified under Clause 46(a) - *Rural Fires Regulation 2008* are classed as a *Special Fire Protection Purpose* (SFPP) which are integrated under the *Environmental Planning and Assessment Act*. Also, the proposal will involve the construction of a men's shed and a community centre. Although not captured as an SFPP under the *Rural Fires Regulation Act, 2013*, these developments meet with the definition of an Assembly Building under Section 8.3.11 *Public assembly buildings* of PBP. Section 8.3.11 of PBP, states;

'Buildings used for public assembly with a floor space area of greater than 500m² are required to consider bush fire.'

The proposed men's shed is less than 500m² in area, however, the community centre exceeds this area. Therefore, the community centre will be treated as SFPP as per Section 8.3.11 in PBP and bushfire protection measures in accordance with Section 6 of PBP will be recommended.

This report will form the basis for providing an assessment of the bushfire protection requirements for the development and will provide recommendations on the provision of Asset Protection Zones, accessibility, water supplies and construction standards of future developments within the site.

1.1 Proposed Development

The proposed development will involve the creation of a manufactured home estate providing long term housing. The proposal also includes the construction of an office manager's residence, community centre (assembly building), bowling green, and men's shed on the western portions of the site. Figure 1 provides a site plan of the proposal.

The site will be provided main road access via Coastal View Drive to the north with additional access for emergency vehicles via Blackhead Road to the south.

The proposed development is also subject to a Vegetation Management Plan (VMP) (Conacher Environmental, 2020). The VMP requires areas within the site to be managed, retained and/or revegetated. The VMP requires a fauna corridor to be created along the western boundary of the site of which will include the retention and replanting of vegetation. This process will create a remnant bushfire hazard and bushfire protection measures will be recommended in this report as a result of the hazard creation.

As the development will include long term manufactured homes, Section 6.3.2 *Specific residential-based* of PBP is relevant as it states;

'Where evidence can be provided which confirms that dwellings within the manufactured home estate will be constructed to the appropriate construction standards under AS 3959 or NASH Standard, an APZ can be provided which meets 29kW/m² in line with Tables A1.12.2 - A1.12.3'

On the basis of the above clause, the long term occupancy of the proposed sites and the construction of the manufactured homes the appropriate construction standards under AS 3959 or NASH Standard, the sites will be classed as similar to a residential subdivision rather than a special fire protection development.

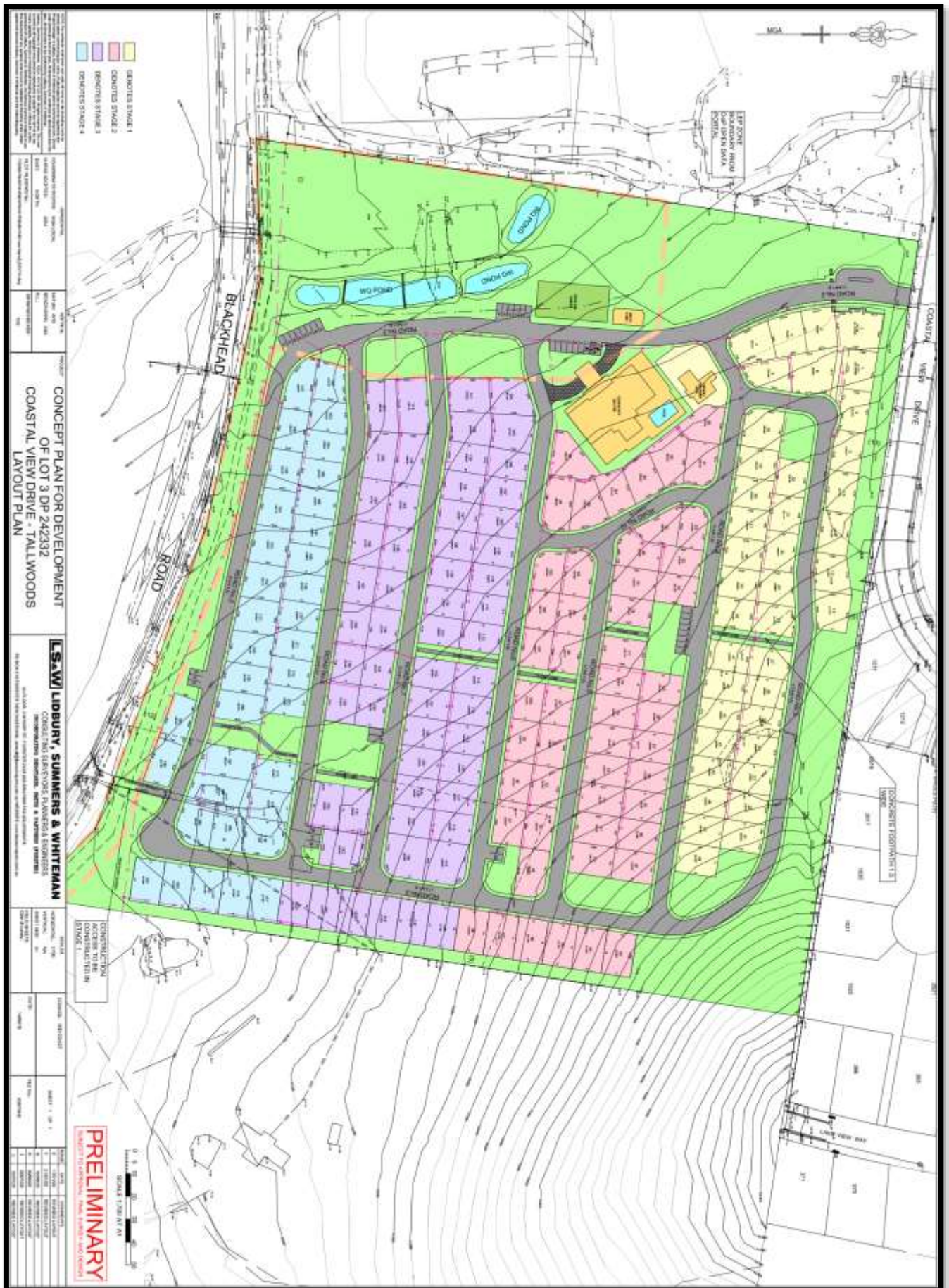


Figure 1: Proposed Development Site Plan

2.0 OBJECTIVES AND SCOPE OF THE ASSESSMENT

The primary objectives of this report are to:

- Outline the degree of bushfire hazard currently affecting the site;
- Outline the degree to which any identified bushfire hazard can be managed;
- Indicate the potential of the site to provide a safe development;
- Provide recommendations for the provision of Asset Protection Areas and Construction standards;
- Review the accessibility of the site; and
- Identify any pre-existing bushfire protective measures such as roads and creeks.

To achieve the above objectives, the following work was conducted:

- Compilation and review of site information including a site detail plan, topographic map, aerial photograph and site photographs;
- Review of appropriate guidelines including Australian Standard AS3959-2018 '*Construction of Buildings in Bushfire Prone Areas*' and PBP;
- Inspection of the proposed development site and surrounding areas to assess the topography, slopes, aspect, drainage vegetation and adjoining land usage;
- Identification of any existing bushfire protection advantages such as roads, creeks and sporting ovals; and
- Visual appraisal of bushfire hazard and risk to the site.

3.0 LEGISLATION

This report has been prepared in accordance with the following legislation and planning requirements:

- *Environmental Planning and Assessment Act, 1979*,
- *Planning for Bushfire Protection, 2019* (NSW Rural Fire Service, 2019).
- *Rural Fires Act, 1997 (Amended)*, Sections 63 (1) and 63 (2) and 100B
- *Rural Fires Regulation Act, 2013*,

4.0 SITE IDENTIFICATION AND DESCRIPTION

4.1 Site Identification and Location

The subject site is located at 303 Blackhead Road, Hallidays Point (Lot 3 in DP 242332). The site is in the Local Government Area (LGA) of Mid-Coast Council (Fire Danger Index-80).

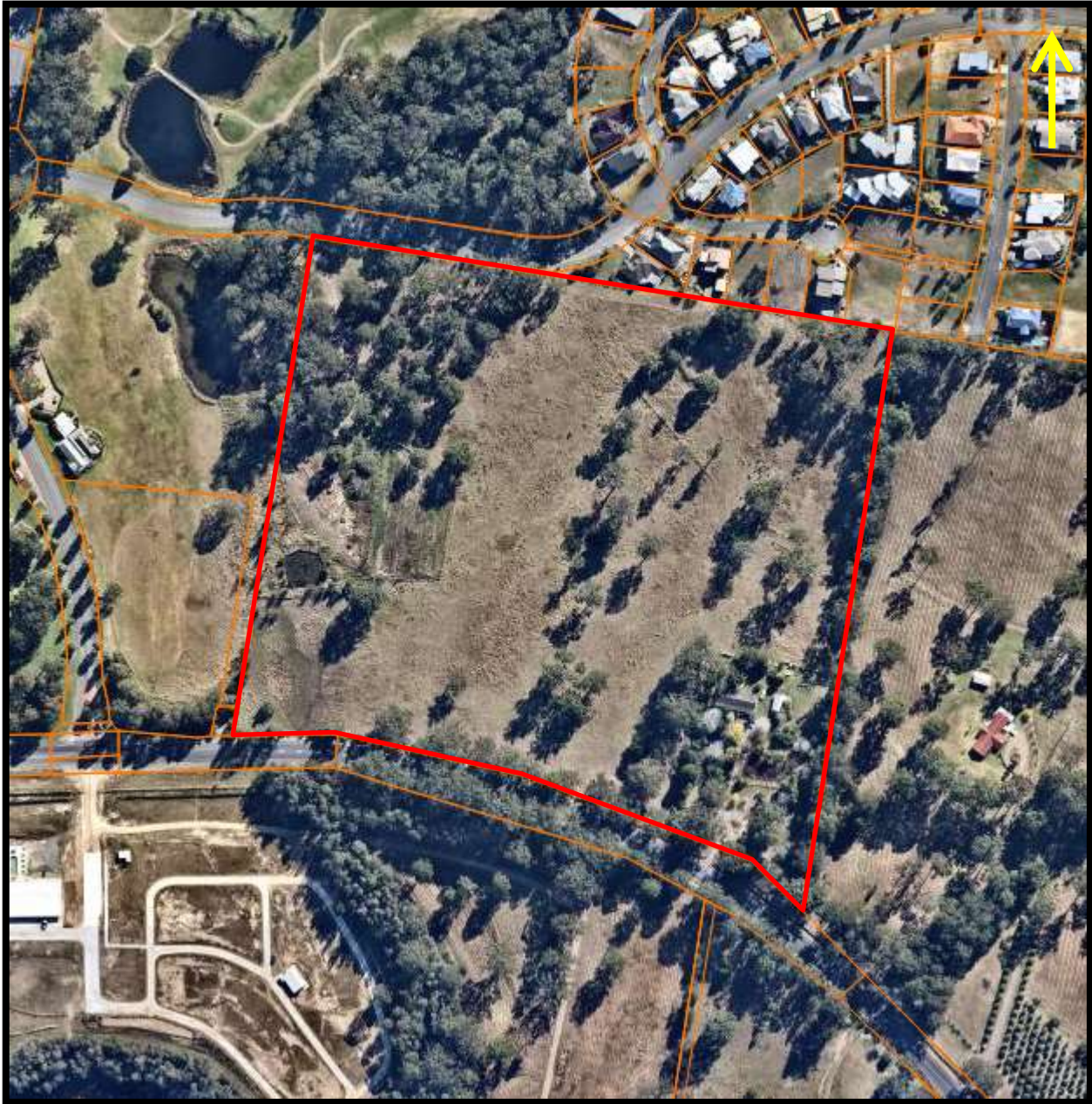


Figure 2: Aerial Photograph of the site (site boundary bordered in red)
Source: Nearmap, 2020

The site is a large rural/residential parcel of land and land conditions within the site consists of the following:

- An existing dwelling on the south-eastern portions
- Predominantly cleared and managed lands/grasslands throughout the site
- Several trees scattered throughout the property with grasslands existing beneath.

The site will be connected to the town-reticulated supply of water and the mains electrical grid. The proposal will be provided access via Coastal View Drive to the north and an additional emergency access road to Blackhead Road to the south.

4.2 Bushfire Prone Mapping

The site has been mapped by Mid-Coast Council as being bushfire prone. The site has been mapped as being partially within the bushfire buffer (yellow) and partially containing Category 1 (red) vegetation. Figure 3 outlines this.

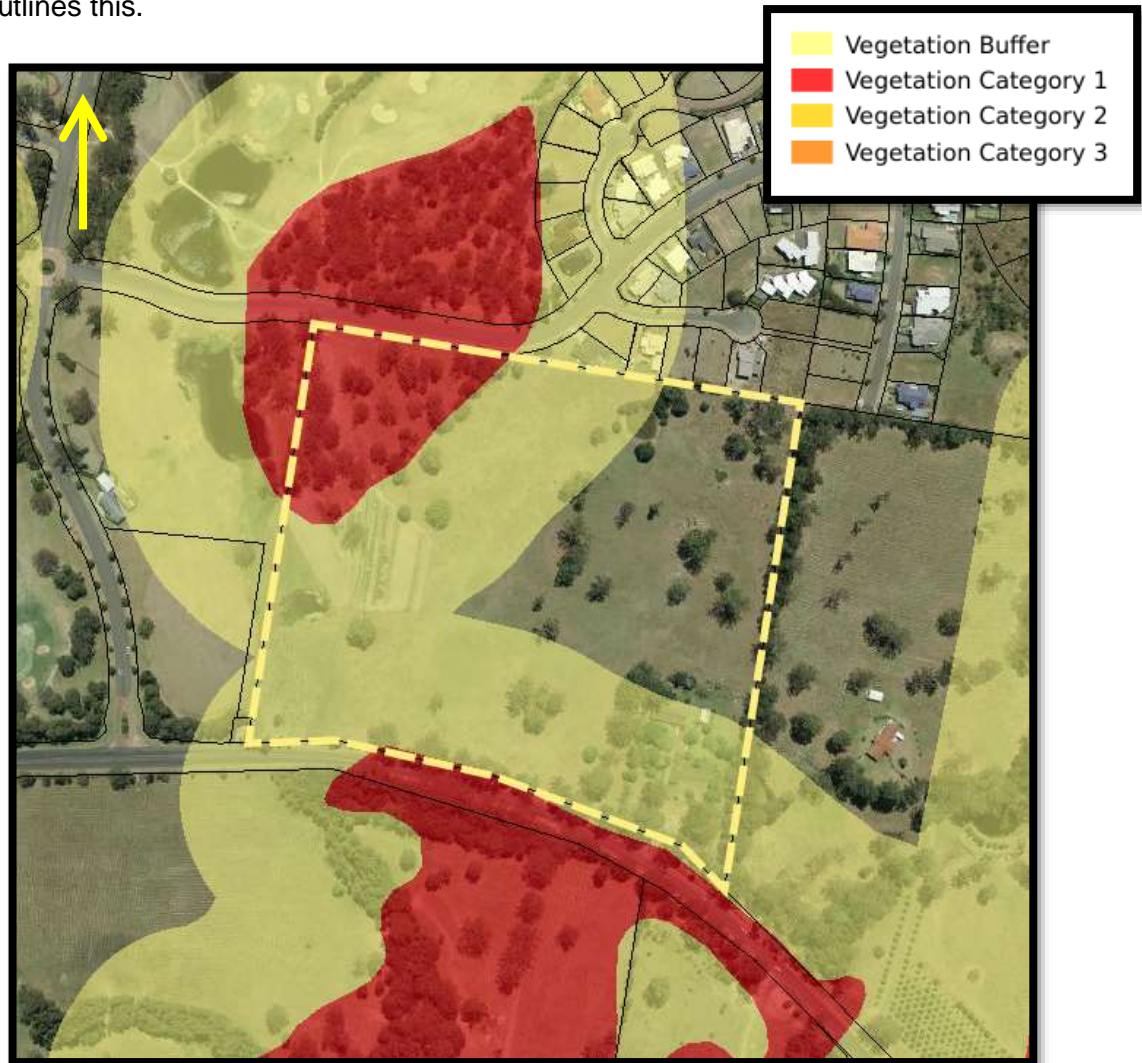


Figure 3: Bushfire Mapping (site bordered in yellow)
Source: Department of Planning, 2020

4.3 Surrounding Vegetation

A site inspection was conducted in June, 2018 and the surrounding land and vegetation found within 140m of the site. It is noted that a further inspection via Nearmap aerial photograph (date of photo 29/04/2020) to observe if the surrounding site conditions had been altered since the time of inspection. From this comparison, the findings from the June, 2018 inspection are still relevant and are detailed below (See Figure 4).

4.3.1 Non-Hazard Facing Aspects

North-East

The surrounding land on this aspect is occupied by developed residential allotments containing managed curtilage throughout. Therefore, this aspect is deemed not to contain a bushfire hazard.

4.3.2 Hazard Aspects

North/North-west

To the north/north-west of the site, beyond Coastal View Drive, is a small area of vegetation that meets with the Keith (2004) description of '*dry sclerophyll forest*'. This vegetation will be assessed as **Forest** as per PBP.

It is noted that this portion of land is subject to an approved subdivision (330/2015/DA) of which, when constructed, will remove the bushfire hazard.

West

To the west adjoining the site, is a small remnant portion of vegetation which borders a dam. Located within the property, is a proposed vegetation/fauna corridor running along the western boundary of the site. This corridor will be subject to a Vegetation Management Plan (VMP) and will involve revegetation works. The area will be established/vegetated to a degree whereby a bushfire hazard will be created and therefore will be assessed under PBP. The corridor will be created and not exceed a width of greater than 50m.

Once established under the VMP, the revegetated areas will provide a vegetated width and potential fire run of <50m toward the site. As a result, the newly created vegetation would meet with *Section A1.11.1 Simplified Approach for assessing remnant bushland and narrow vegetation* in PBP. Therefore, this area will be assessed as equivalent to a **Rainforest**.

South

To the south of the site beyond Blackhead Road is a narrow strip of vegetation. As can be seen in figure 4 this narrow strip provides a fire run of less than 50m directly towards the site from this aspect. *Section A1.11.1 Simplified Approach for assessing remnant bushland and narrow vegetation* in PBP. Therefore, this area will be assessed as equivalent to a **Rainforest**.

East

To the east and directly adjoining the site are unmanaged areas of grasslands. In accordance with conversion Appendix 1 in PBP, the vegetation will be assessed as a **Grassland**.

It is noted the adjoining land parcel of land is subject to an approved subdivision (567/2011/DA) of which, when constructed, will remove the bushfire hazard.



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Note: See figure 4 for photograph location and direction.

4.4 Effective Slope

PBP states in A1.5 that effective slope is;

'The slope of the land under the classified vegetation has a direct influence on the rate of fire spread, the intensity of the fire and the ultimate level of radiant heat flux.'

The effective slope is the slope of the ground under the hazard (vegetation). It is not the slope between the vegetation and the building (slope located between the asset and vegetation is the site slope).'

In regards to the site, the effective slopes for each hazard facing were inspected and calculated through topographic mapping as sourced by NSW Spatial Services (1m contours). This data has a stated accuracy of 0.3m (95% Confidence Interval) vertical and 0.8m (95% Confidence Interval) horizontal. The effective slope measured 100m from the proposed development for the hazard facing aspects are;

North: Flat/Up Slope
North-West: 0-5° Down Slope
South: 0-5° Down Slope
East: Flat/Cross Slope

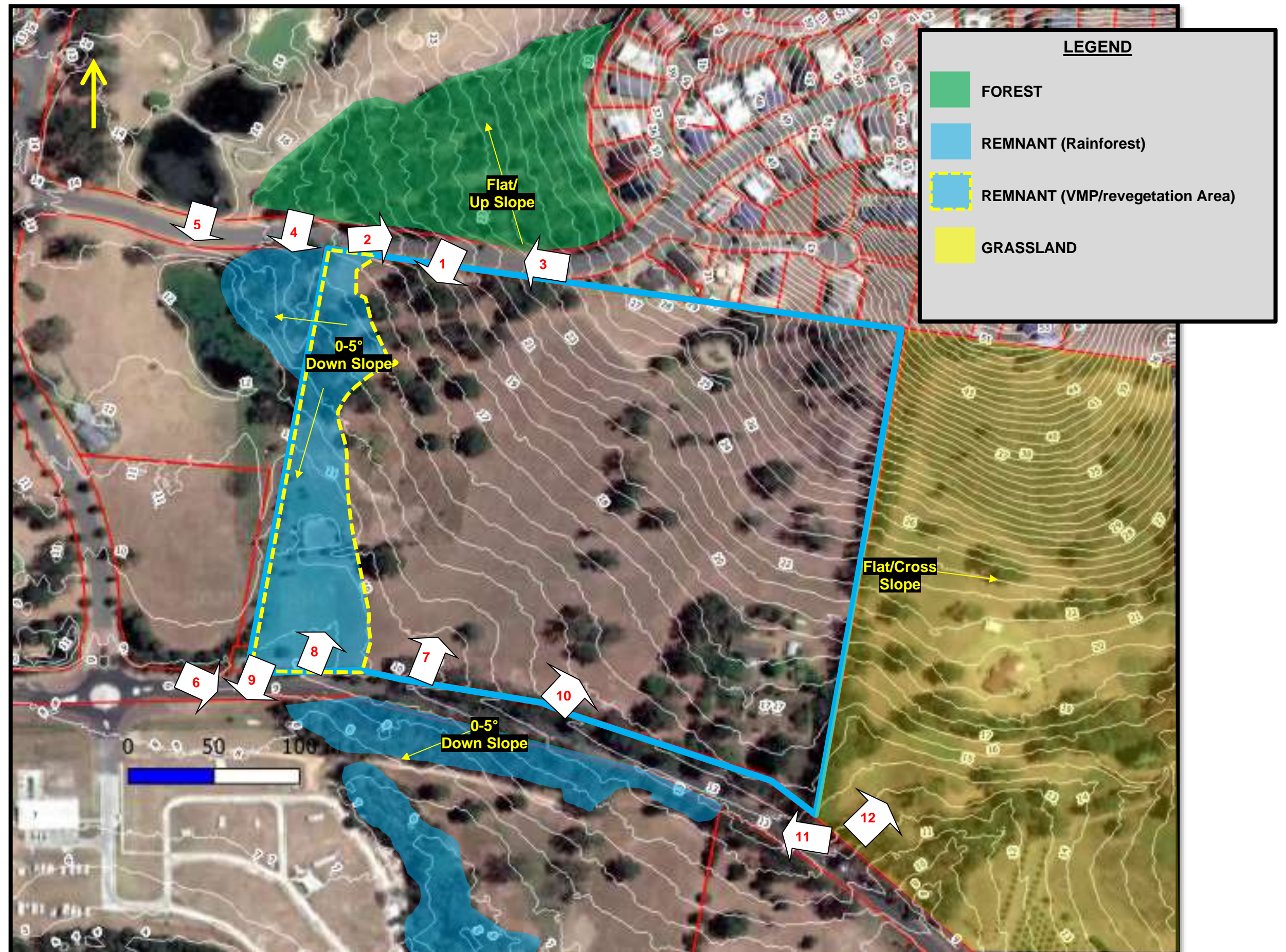


Figure 4: Bushfire Site Plan & photograph location/direction (site bordered in blue)
 Source: Google Earth Pro/ NSW Spatial Services, 2020

5.0 BUSHFIRE RISK ASSESSMENT

5.1 Background Information

This bushfire assessment follows the methods and procedures recommended in PBP. This document provides concepts for (via an NSW State variation to the NCC) Class 1, 2, 3 buildings, Class 4 parts of buildings, some Class 10 structures and Class 9 buildings that are Special Fire Protection Purposes (SFPP) in bushfire prone areas and gives guidance on planning and development control processes in relation to bushfire protection measures. The document also provides a methodology for determining setback distance and Bushfire Attack Levels (BAL) required in development for residential purposes that are found to fall in areas designated as bushfire-prone.

5.2 Asset Protection Zones

Appendix 1 of PBP provides a methodology for determining the Asset Protection Zone (APZ) required for any given proposed development. APZ describes the distance between the proposed development (the asset) and the hazard (the bushland) and vary according to topography and vegetation type. PBP states that the primary purpose of an APZ is to ensure that a progressive reduction of bushfire fuels occurs between the bushfire hazard and any habitable structures within the development.

Concerning the proposal, the following developments will be assessed separately;

- Proposed Manufactured Homes sites (Table 1.12.6 – residential development);
- Community Centre (Table 1.12.1- SFPP Development)

6.3 Bushfire Attack Level (BAL)

The bushfire risk to property depends on the vegetation type, slope and proximity of vegetation to the proposed development, and can be classified as BAL-LOW, BAL-12.5, BAL-19, BAL-29, BAL-40 and BAL FZ as outlined in AS3959-2018 and PBP. The categories of bushfire attack were determined for the vegetation conditions currently existing on the site and adjacent areas. Following the identification of the bushfire attack category for each aspect, the site will be assessed according to vegetation that presents the highest level of bushfire attack risk. Appendix 1 outlines Bushfire Attack Levels, based upon the development type and location.

The level of bushfire attack determines the construction standards necessary for the proposed development. These protective construction measures are outlined in Australian Standard AS3959-2018.

The APZs and BALs required for each of the sites of the proposed development are summarised in Table 1.

It is noted that upon the construction of the approved developments upon the adjoining lots to the north and west of the site (330/2015/DA & 567/2011/DA), the existing bushfire hazard/s will be removed and therefore the BAL ratings outlined would not be applicable.

Table 1: Asset Protection Zone/BAL Summary

Aspect	Vegetation ¹ within 140m of development	Effective Slope of Land	APZ required in accordance with PBP ²	BAL Rating based on setback ⁴
North/North-West	Forest	Flat/Up Slope	20m	29m-<40m =BAL 19 40m-<100m= BAL 12.5 >100m = BAL LOW
North-East	Managed Lands	-	-	BAL LOW
West	Rainforest (Remnant)	0-5° Down Slope	12m	12m-<17m - BAL 29 17m-<25m - BAL 19 25m-<100m - BAL 12.5 >100m = BAL LOW
			47m ³ (Community Centre)	25m-<100m - BAL 12.5
South	Rainforest (Remnant)	0-5° Down Slope	12m	17m-<25m - BAL 19 25m-<100m - BAL 12.5 >100m = BAL LOW
East	Grasslands	Flat/Cross Slope	10m	10m-<14m - BAL 29 14m-<20m - BAL 19 20m-<50m - BAL 12.5 >50m = BAL LOW

Notes for Table 1:

- (1) Refer to Keith (2004) and Appendix 1 in *PBP*
- (2) Refer to Table A1.12.3 in *PBP* for residential developments
- (3) Refer to Table A1.12.2 in *PBP* for SFPP developments
- (4) Refer to Table A1.12.6 in *PBP*

As detailed in Table 1, the following APZ's are required for the proposed manufactured home sites;

- A 20m APZ is required to the north/north-west of the proposal ;
- A 10m APZ to the east of the proposal;
- A 12m APZ to the west of the proposal; and
- A 12m APZ to the south of the proposal

These APZ's can be accommodated within the site and with the inclusion of the adjoining roads to the north and south.

In relation to the community centre, the following APZ's are required;

- A 47m APZ to the west of the proposal

To appease environmental impact and retain the fauna corridor along the western boundary, in accordance with Table 1.12.4 in *PBP*, the APZ will form a 37m Inner Protection Area (IPA) and a 10m Outer Protection Area (Area).

Figure 5 below outlines the required APZ's along with the applicable BAL ratings for each site.

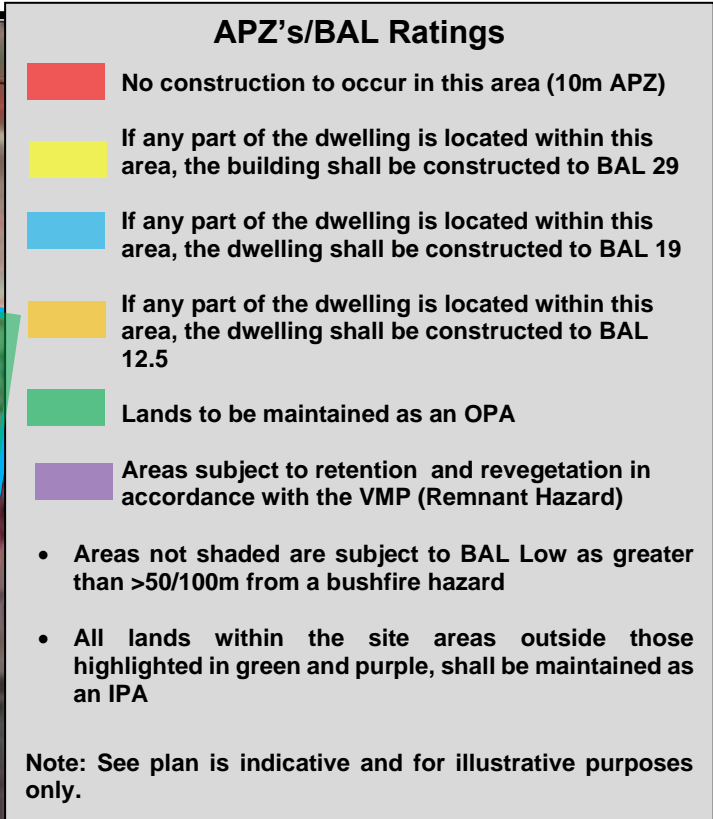


Figure 5: APZ & BAL Rating Site Plan (site bordered in red)
Source: Nearmap, 2020

6.0 PERFORMANCE CRITERIA COMPLIANCE

The following table outlines the performance criteria and acceptable solutions for SFPP developments as outlined in Section 6.8 of PBP.

6.1 APZs and building construction

Intent of measures: to provide suitable building design, construction and sufficient space to ensure that radiant heat levels do not exceed critical limits for firefighters and other emergency services personnel undertaking operations, including supporting or evacuating occupants.

	PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	COMMENTS
ASSET PROTECTION ZONES	radiant heat levels of greater than 10kW/m ² (calculated at 1200K) will not be experienced on any part of the building.	the building is provided with an APZ in accordance with Table A1.12.1 in Appendix 1.	The community centre will be provided with APZs meeting with Table A1.12.1 in Appendix 1. Complies
	APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.	APZs are located on lands with a slope less than 18 degrees.	No lands with the site are greater than 18 degrees. Complies
	APZs are managed and maintained to prevent the spread of fire to the building.	the APZ is managed in accordance with the requirements of Appendix 4 of this document, and is wholly within the boundaries of the development site;	The APZ's will be managed within the site's boundaries. Complies
	the APZ is provided in perpetuity	APZ are wholly within the boundaries of the development site; and other structures located within the APZ need to be located further than 6m from the refuge building.	The APZ's will be managed within the site's boundaries. Complies
	VARIATIONS Manufactured home estates: APZs achieve radiant heat levels that are commensurate with the construction standard for the proposed dwellings.	an APZ in accordance with Table A1.12.1 in Appendix 1 of this document is provided to all new dwellings; or an APZ in accordance with Table A1.12.2 or A1.12.3 in Appendix 1 of this document is provided where it is demonstrated that all new dwellings will be constructed in accordance with BAL-29.	The manufactured home sites will be provided with APZs meeting with Table A1.12.3 in Appendix 1. Complies
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.	landscaping is in accordance with Appendix 4; and fencing is constructed in accordance with section 7.6.	Can be made a condition of consent.

CONSTRUCTION STANDARDS	PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	COMMENTS
	the proposed building can withstand bush fire attack in the form of wind, embers, radiant heat and flame contact.	a construction level of BAL-12.5 under AS 3959 or NASH Standard and section 7.5 of PBP is applied.	The community centre will be provided with an APZ equating to BAL 12.5. Complies.
	VARIATIONS Manufactured home estates: the proposed manufactured home can withstand bush fire attack in the form of wind, embers, radiant heat and flame contact.	Where an APZ is provided in accordance with Table A1.12.1 in Appendix 1 of this document the construction standards for BAL-12.5 shall apply; or Where an APZ is provided in accordance with Table A1.12.2 or A1.12.3 in Appendix 1 of this document the construction standards for BAL-29 shall apply.	The manufactured home sites will be provided with APZs equating to no site exceeding BAL 29. Complies.

6.2 Access

Intent of measures: to provide safe operational access for emergency services personnel in suppressing a bush fire, while residents are accessing or egressing an area.

ACCESS	PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	COMMENTS
	firefighting vehicles are provided with safe, all-weather access to structures and hazard vegetation.	<ul style="list-style-type: none"> • SFPP access roads are two-wheel drive, all-weather roads; • access is provided to all structures; • traffic management devices are constructed to not prohibit access by emergency services vehicles; • access roads must provide suitable turning areas in accordance with Appendix 3; and • one way only public access roads are no less than 3.5 metres wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression. 	Can comply (See comments below)
	the capacity of access roads is adequate for firefighting vehicles.	<ul style="list-style-type: none"> • the capacity of road surfaces and any bridges/ causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges and causeways are to clearly indicate load rating. 	Can comply and be made a condition of consent.
	there is appropriate access to water supply.	<ul style="list-style-type: none"> • hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression; • hydrants are provided in accordance with the relevant clauses of AS 2419.1:2005; and • there is suitable access for a Category 1 fire appliances to within 4m of the static water supply where no reticulated supply is available. 	Can comply and be made a condition of consent.

PERIMETER ROAD	<p>perimeter access roads are designed to allow safe access and egress for firefighting vehicles while occupants are evacuating as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the interface.</p>	<ul style="list-style-type: none"> • there are two-way sealed roads; • minimum 8m carriageway width kerb to kerb; • parking is provided outside of the carriageway width; • hydrants are to be located clear of parking areas; there are through roads, and these are linked to the internal road system at an interval of no greater than 500m; • curves of roads have a minimum inner radius of 6m; • the maximum grade road is 15 degrees and average grade of not more than 10 degrees; • the road crossfall does not exceed 3 degrees; and • a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided. 	<p>Can comply (See comments below)</p>
NON-PERIMETER ROAD	<p>non-perimeter access roads are designed to allow safe access and egress for firefighting vehicles while occupants are evacuating.</p>	<ul style="list-style-type: none"> • minimum 5.5m carriageway width kerb to kerb; • parking is provided outside of the carriageway width; • hydrants are located clear of parking areas; • there are through roads, and these are linked to the internal road system at an interval of no greater than 500m; • curves of roads have a minimum inner radius of 6m; • the maximum grade road is 15 degrees and average grade of not more than 10 degrees; • the road crossfall does not exceed 3 degrees; and • a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided. 	<p>Can comply (See comments below)</p>

The development will contain internal roads which will be provided with a 6m wide trafficable width, however, there will be 1.0m clear on either side which would allow for a trafficable width of 8m. These widths and road designs are deemed to comply with PBP.

It is also noted that the proposed development will create an emergency access and egress road which will be located on the south-eastern boundary connecting to Blackhead Road (See Figure 1).

6.3 Services - Water, electricity and gas

Intent of measures: to provide adequate services of water for the protection of buildings during and after the passage of a bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building.

	PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	COMMENTS
WATER SUPPLY	an adequate water supply for firefighting purposes is installed and maintained.	<ul style="list-style-type: none"> reticulated water is to be provided to the development, where available; or a 10,000 litres minimum static water supply for firefighting purposes is provided for each occupied building where no reticulated water is available. 	A reticulated supply of what will be provided to the proposal. Complies
	water supplies are located at regular intervals.	<ul style="list-style-type: none"> fire hydrant spacing, design and sizing comply with the relevant clauses of AS 2419.1:2005; hydrants are not located within any road carriageway; and reticulated water supply to SFPPs uses a ring main system for areas with perimeter roads. 	Can comply and be made a condition of consent.
	the water supply is accessible and reliable for firefighting operations.		
	flows and pressure are appropriate.	<ul style="list-style-type: none"> fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2005. 	Can comply and be made a condition of consent.
	the integrity of the water supply is maintained.	<ul style="list-style-type: none"> all above-ground water service pipes external to the building are metal, including and up to any taps. 	Can comply and be made a condition of consent.
ELECTRICAL SERVICES	location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings.	<ul style="list-style-type: none"> where practicable, electrical transmission lines are underground; where overhead, electrical transmission lines are proposed as follow: <ul style="list-style-type: none"> lines are installed with short pole spacing (30m), unless crossing gullies, gorges or riparian areas; and no part of a tree is closer to a power line than the distance set out in accordance with the specifications in ISSC3 <i>Guideline for Managing Vegetation Near Power Lines</i>. 	Can comply and be made a condition of consent.
GAS SERVICES	location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.	<ul style="list-style-type: none"> reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 and the requirements of relevant authorities, and metal piping is used; all fixed gas cylinders are kept clear of all flammable materials to a distance of 10m and shielded on the hazard side; connections to and from gas cylinders are metal; if gas cylinders need to be kept close to the building, safety valves are directed away from the building and at least 2m away from any combustible material, so they do not act as a catalyst to combustion; polymer-sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used; and above-ground gas service pipes external to the building are metal, including and up to any outlets. 	Can comply and be made a condition of consent.

6.4 Emergency management planning

Intent of measures: to provide suitable emergency and evacuation arrangements for occupants of SFPP developments.

EMERGENCY MANAGEMENT	PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	COMMENTS
	a Bush Fire Emergency Management and Evacuation Plan is prepared.	<ul style="list-style-type: none"> Bush Fire Emergency Management and Evacuation Plan is prepared consistent with the: <ul style="list-style-type: none"> The NSW RFS document: <i>A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan</i>; NSW RFS Schools Program Guide; Australian Standard AS 3745:2010 <i>Planning for emergencies in facilities</i>; and Australian Standard AS 4083:2010 <i>Planning for emergencies – Health care facilities</i> (where applicable). the Bush Fire Emergency Management and Evacuation Plan should include planning for the early relocation of occupants. <p>Note: A copy of the Bush Fire Emergency Management and Evacuation Plan should be provided to the Local Emergency Management Committee for its information prior to occupation of the development.</p>	Can comply and be made a condition of consent.
	appropriate and adequate management arrangements are established for consultation and implementation of the Bush Fire Emergency Management and Evacuation Plan.	<ul style="list-style-type: none"> an Emergency Planning Committee is established to consult with residents (and their families in the case of aged care accommodation and schools) and staff in developing and implementing an Emergency Procedures Manual; and detailed plans of all emergency assembly areas including on site and off-site arrangements as stated in AS 3745:2010 are clearly displayed, and an annually emergency evacuation is conducted. 	Can comply and be made a condition of consent.

7.0 RECOMMENDATIONS

The subject site falls within a bushfire prone area as deemed by Mid-Coast Council therefore the requirements of PBP apply. This bushfire assessment has followed the methodology and procedures recommended in the PBP document.

This Bush Fire Assessment Report: concluded that the proposed development may comply with the performance criteria for PBP if the proposed acceptable solutions and recommendations are implemented. These items are outlined below.

7.1 Asset Protection Zones

The following APZ's have been determined for the manufactured home sites;

- A 20m APZ is required to the north/north-west (existing within the adjoining Coastal View Drive road reserve);
- A 10m APZ to the east of the proposal (provided within the site);
- A 12m APZ to the west of the proposal (provided within the site); and
- A 12m APZ to the south of the proposal (existing within the adjoining Blackhead Road road

In relation to the community centre, the following APZ's are required;

- A 47m APZ to the west of the proposal
- The APZ will form a 37m Inner Protection Area (IPA) and a 10m Outer Protection Area (Area).
- Fuel management within the entire site, **excluding those areas highlighted in green and purple in figure 5 of this report and the 10m OPA area for the Community Centre,** shall be maintained as an Inner Protection Zone (IPA) as outlined within Appendix 4 in PBP and meet with the following criteria;

Inner Protection Area (IPA)

Trees:

- *canopy cover should be less than 15% (at maturity)*
- *trees (at maturity) should not touch or overhang the building*
- *lower limbs should be removed up to a height of 2m above ground*
- *preference should be given to smooth barked and evergreen trees.*

Shrubs:

- *create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings*
- *shrubs should not be located under trees*
- *shrubs should not form more than 10% ground cover*
- *clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.*

Grass:

- *should be kept mown (as a guide grass should be kept to no more than 100mm in height)*
- *leaves and vegetation debris should be removed*
- Fuel management within **those areas highlighted in green in figure 5 of this report and the 10m OPA area for the Community Centre,** shall be maintained as an Outer Protection Zone (OPA) and RFS guidelines: *Standards for Asset Protection Zones* (NSW RFS, 2005) and meet with the following criteria;

Outer Protection Area (OPA)

Trees:

- *tree canopy cover should be less than 30%*
- *trees should have canopy separation*

Shrubs:

- *shrubs should not form a continuous canopy*
- *shrubs should form no more than 20% of ground cover*

Grass:

- *should be kept mown (as a guide grass should be kept to no more than 100mm in height)*
- *leaf and other debris should be mown, slashed or mulched.*

7.2 Construction Standards

- Building construction standards for the proposed manufactured home estate are to be applied under *Australian Standard AS3959-2018-Construction of buildings in bushfire-prone areas* with additional construction requirements listed within Section 7.5 in PBP as outlined and depicted in Table 1 & Figure 5 of this report.
- As stated, upon the construction of the approved developments on the adjoining lots to the north and west of the site (330/2015/DA & 567/2011/DA), the existing bushfire hazard/s will be removed and therefore the BAL ratings outlined in Figure 5 & Table 1 would not be applicable.

7.3 Property Access and Evacuation Safety

- All internal roads shall be constructed and design in accordance with Table 6.8b in PBP and Appendix 3 of PBP.
- All turning areas are to comply with Appendix 3 of PBP (Figure A3.3).

7.4 Emergency and Evacuation Management Plan

A Bushfire Evacuation Plan should be established for the Manufactured Home Estate, Community Centre and Men's Shed. This emergency/evacuation plan is to be prepared consistent with the *RFS Guidelines for the Preparation of Emergency/Evacuation Plan* and outline compliance with AS 3745-2010. This plan should address all buildings within the site and include information on, but not limited to, the following;

- Under what conditions and circumstances should the complex be evacuated (e.g. Large bushfire event);
- Where occupants will be evacuated to;
- Roles and responsibilities of persons coordinating the evacuation;
- Roles and responsibilities of persons remaining on site after the evacuation; and
- The procedure to contact emergency services (e.g. NSW Rural Fire Service) and inform them of the evacuation and where they will be evacuated to.

In addition, the following is recommended to the occupants of the manufactured home estate;

- It is recommended that the building occupants prepare a bushfire survival plan which addresses the option to leave early before bushfire impacting the site. Details on how to prepare this plan are provided by the NSW RFS website (http://www.rfs.nsw.gov.au/file_system/attachments/Attachment_BushFireSurvivalPlan.pdf)

- The landowner/manager are to be made aware of their liability to manage the development lands for the ongoing protection of themselves and their neighbours (refer to *Section 63(2) Rural Fires Act*).

7.5 Water and Utility Services Supply

- Water, electricity and gas supply for the entire development is to comply with Table 6.8c of PBP.
- Fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2005

7.6 Landscape and Property Management

- The APZ's and site is recommended to be maintained to comply with Appendix 4 and NSW RFS document *Standards for Asset Protection Zones*.

8.0 CONCLUSION

Clarke Dowdle & Associates were engaged to conduct a Bush Fire Assessment on the property located at 303 Blackhead Road, Hallidays Point. The original assessment was performed in July 2018 and this amended version was completed in July 2020 and was conducted in accordance with the procedures and methods recommended in 'Planning for Bushfire Protection, 2019. This report provides an updated version of a previous report based upon the altered conditions.

This report has outlined and provided recommendations as to how the proposal may comply with the objectives of PBP as summarised below;

'minimise levels of radiant heat, localised smoke and ember attack through increased APZ, building design and siting;

Manufactured Home Sites

APZs have been provided which comply with and/or exceed the minimum requirements of Table A1.12.3 of PBP. The future buildings will be constructed in accordance with AS3959-2018.

Community Centre

APZs have been provided which comply with the minimum requirements of Table A1.12.1 of PBP. The future building will be constructed to BAL 12.5 in accordance with AS3959-2018.

'provide an appropriate operational environment for emergency service personnel during firefighting and emergency management;

Compliant APZ's, access/roads, water and utility supplies have been recommended in accordance with Section 6 of PBP. The combination of these bushfire protection measures enforced under the conditions of consent will provide an appropriate operational environment for emergency service personnel

'ensure the capacity of existing infrastructure (such as roads and utilities) can accommodate the increase in demand during emergencies as a result of the development; and

The existing utility network is deemed to be able to accommodate the proposal. It is noted that no water pressure/flow tests were conducted under this assessment and testing should be undertaken under the relevant clauses of AS 2419.1:2005.

'ensure emergency evacuation procedures and management which provides for the special characteristics and needs of occupants

The proposal has been recommended to provide a Bushfire Evacuation Plan addressing the multiple land uses within the site (manufactured home sites/community centre etc.).

The determining authorities and Rural Fire Service may suggest additional measures to be implemented with any planning and construction upon the subject site.

We would be pleased to provide further information on any aspects of this report.

For and on behalf of

Clarke Dowdle and Associates



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Disclaimer

PBP States;

Due to a range of limitations, the measures contained in this document do not guarantee that loss of life, injury and/or property damage will not occur during a bush fire event.

AS 3959-2018 states;

Although this Standard is designed to improve the performance of buildings when subjected to bushfire attack in designated bushfire-prone areas there can be no guarantee that a building will survive a bushfire event on every occasion.

This Bush Fire Assessment Report provides the required information to assist Local Council and the Rural Fire Service in determining compliance in accordance with PBP and AS 3959-2018 and as stated above, this report does not guarantee that the proposal will withstand bushfire attack on every occasion.

REFERENCES

- Keith, D. (2004), *Ocean Shores to Desert Dunes*. Department of Environment and Conservation, Sydney
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http://www.rfs.nsw.gov.au/file_system/attachments/State/Attachment_20060130_7DE0A145.pdf
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- Schauble, J. (2004). *The Australian Bushfire Safety Guide*. Harper Collins Publishers, Sydney, Australia.
- Standards Australia, (2018), *AS3959 Construction of Buildings in Bushfire-prone Areas*. Standards Australia International