

BUSHFIRE ASSESSMENT REPORT

PROPOSED 1 INTO 2 LOT SUBDIVISION

**LOT 1 DP 1224700
20 Heritage Drive, Chisholm**

Date: **07/05/2021**

Prepared for: **Revelop**

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1.0 EXECUTIVE SUMMARY AND COMPLIANCE TABLES

This report has assessed the proposed 1 into 2 lot subdivision against the requirements of Section 100B of the Rural Fires Act 1997, AS3959 (2018) Construction of buildings in bushfire-prone areas and Planning for Bush Fire Protection (2019).

This report establishes that the development is capable of complying with the acceptable solutions of Planning for Bush Fire Protection (2019).

TABLE 1 – PROPERTY DETAILS AND TYPE OF PROPOSAL

Applicant Name	Revelop		
Site Address	20 Heritage Drive, Chisholm	Lot/Sec/DP	Lot 1 DP 1224700
Local Government Area	Maitland	FDI	100
Bushfire Prone Land	Yes, mapped bushfire prone land		
Type of development	New Building	Type of Area	Urban
Special Fire Protection Purpose	No	Flame Temperature	1090K
Application Complies with Acceptable Solution	Yes	Referral to NSW Rural Fire Service (NSW RFS) required	Yes. Bushfire Safety Authority Required

TABLE 2 – BUSHFIRE THREAT ASSESSMENT

	North	East	South	West
Vegetation Structure	Maintained Lands	Forest	Maintained Lands	Maintained Lands
Asset Protection Zone (APZ)	140 metres	32 metres	140 metres	140 metres
Accurate Slope Measure	N/A	4 degrees downslope	N/A	N/A
Slope Range	N/A	1 to 5 degrees downslope	N/A	N/A
Planning for Bush Fire Protection (2019) Table A1.12.2 Minimum Setbacks	N/A	29 metres	N/A	N/A
AS3959 (2018) Bushfire Attack Level (BAL)	BAL-LOW	BAL-29	BAL-LOW	BAL-LOW

TABLE 3 – PLANNING FOR BUSH FIRE PROTECTION (2019) SECTION 5 COMPLIANCE

Performance Criteria	Proposed Development Determinations	Method of Assessment
Asset Protection Zone	<p>Asset Protection Zones have been determined in accordance with Planning for Bush Fire Protection (2019).</p> <p>The Asset Protection Zone will be maintained for the life of development and defensible space is provided onsite.</p> <p>The zoning may allow a special fire protection purpose development on the site with minimum setbacks, provided in the event that a future special fire protection purpose development is proposed.</p>	Acceptable Solution
Landscaping	Landscaping to comply with Planning for Bush Fire Protection (2019) Appendix 4.	Acceptable Solution
Public Road Access	No new public roads are proposed for this development.	Acceptable Solution
Property Access	Property access offers compliance with Planning for Bush Fire Protection (2019) Section 5.	Acceptable Solution
Fire Trail Access	No new fire trails are proposed for this development.	Acceptable Solution
Water and Utility Services	Water, electricity and gas services offer compliance with Planning for Bush Fire Protection (2019) Section 5.	Acceptable Solution
Landscaping	Landscaping to comply with Planning for Bush Fire Protection (2019) Appendix 4.	Acceptable Solution

2.0 INTRODUCTION

2.1 PURPOSE OF REPORT

The purpose of this report is to establish suitable bushfire mitigation measures for the proposed 1 into 2 lot subdivision of land located at Lot 1 DP 1224700, 20 Heritage Drive, Chisholm. The assessment acknowledges the requirements of Section 100B of the Rural Fires Act 1997 and Planning for Bush Fire Protection (2019) to protect persons, property and the environment from dangers that may arise from a bushfire.

Under the provisions of Section 100B of the Rural Fires Act 1997 as amended, a Bushfire Safety Authority (BFSA) is required from the Commissioner of the NSW Rural Fire Service.

This report complies with Rural Fires Regulation 2008 Clause 44 Application for Bushfire Safety Authority. The assessment encompasses the subject site and neighbouring areas.

The recommendations within this report address the aims and objectives of Planning for Bush Fire Protection (2019) to reduce the risk of ignition of the development in a bushfire event.

2.2 PROPOSED DEVELOPMENT

The land is zoned R1 General Residential and B1 Neighbourhood Centre and is comprised of a single allotment being 6.072 hectares in size. The proposed development includes a 2 lot subdivision with no new buildings proposed. Lot sizes are shown in figure 4.

2.3 SIGNIFICANT ENVIRONMENTAL FEATURES

There are no known significant environmental features located on the site.

2.4 ENVIRONMENTAL ASSETS

There are no known environmental assets on the subject site.

2.5 ABORIGINAL HERITAGE

Searches of NSW National Parks and Wildlife Service's database identify no known aboriginal relics or aboriginal places as defined by National Parks and Wildlife Act 1974 to exist on the site.



PHOTOGRAPH 1 – SITE PHOTO LOOKING NORTH

View of the subject site looking north. The site is predominantly unmanaged grass exceeding 50 centimetres in length. The neighbouring school can be seen in the distance.



PHOTOGRAPH 2 – EASTERN FOREST

View of dry sclerophyll forest located east of the site. The forest is dominated by eucalypts with a low density, grassy understorey.

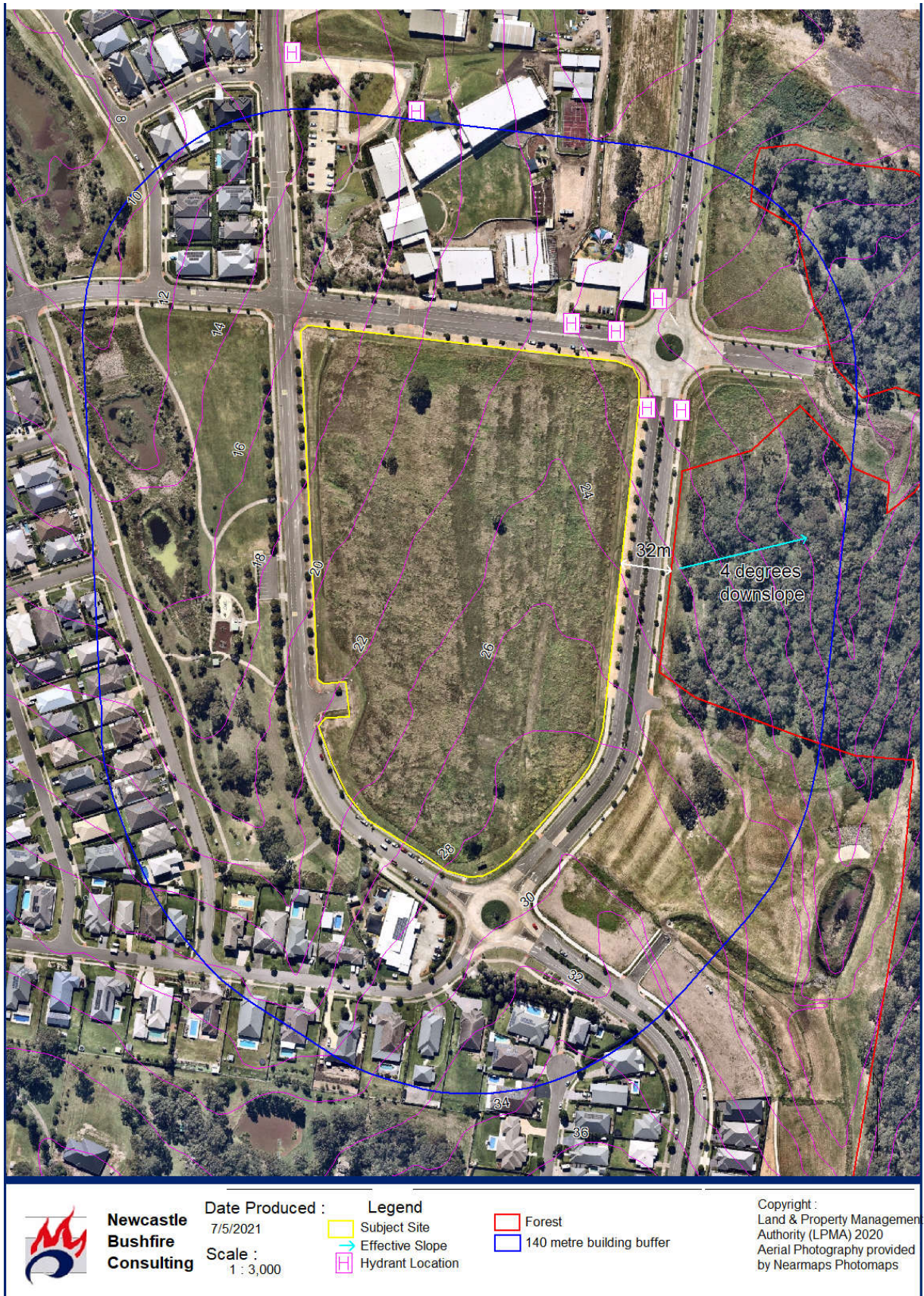


FIGURE 1 – SITE CONSTRAINTS MAP

3.0 BUSHFIRE ATTACK ASSESSMENT

3.1 VEGETATION CLASSIFICATION

Potential bushfire hazards were identified from Maitland Council bushfire prone mapping as occurring within the investigation area. Aerial mapping and inspection of the site reveals that the bushfire prone land map is somewhat inaccurate in respect to the current bushfire hazard.

The major vegetative threats have been determined using Keith (2004) to derive vegetation structures listed in Planning for Bush Fire Protection (2019).

Primary Vegetation Structures have been identified in Figure 1 – Site Constraints Map and separation distances shown in Table 2 – Bushfire Attack Assessment.

3.2 EFFECTIVE SLOPE

Effective slope was measured using 2-metre contour data obtained from The Department of Lands and verified by a laser hypsometer on site. The laser hypsometer verified slope within the vegetation, calculating effective fire run slope from 5 separate measurements in each dominant direction.

Effective slopes have been identified in Figure 1 – Site Constraints Map and slope ranges are shown in Table 2 – Bushfire Threat Assessment.

3.3 MINIMUM SETBACKS AND ASSET PROTECTION ZONES

Minimum setbacks have been determined in accordance with Planning for Bush Fire Protection (2019) Table A1.12.2. The minimum Asset Protection Zone for subdivision has been demonstrated in Section 1.0 Executive Summary and Compliance Tables.

The required Asset Protection Zone is available within the subject site and neighbouring managed lands. All dwellings will be exposed to less than 29 kw/m² of radiant heat.

Minimum setbacks have also been provided for a special fire protection purpose development in accordance with Planning for Bush Fire Protection (2019) Table A1.12.1.

3.4 BUSHFIRE ATTACK LEVELS

BALs and relevant construction levels in accordance with Planning for Bush Fire Protection (2019) have been demonstrated in Section 1.0 Executive Summary and Compliance Tables, Table 2 Bushfire Threat Assessment.

BALs and relevant construction levels in accordance with AS3959 (2018) have been demonstrated in Table 4 BALs Individual Allotments. The below assessments are based on the present vegetation with a more updated assessment required if future clearing occurs.

TABLE 4 – BUSHFIRE ATTACK LEVELS INDIVIDUAL ALLOTMENTS

Vegetation and Direction from the lot	Separation Distance	Recommended Construction Standards
Forest east of lots 11 and 12.	> 100 metres from Forest	BAL-LOW
	54 to 100 metres from Forest	BAL-12.5 (Sections 3 and 5 of AS3959 (2018) and Planning for Bush Fire Protection (2019) Section 7.5.2)
	40 – 54 metres from Forest	BAL-19 (Sections 3 and 6 of AS3959 (2018) and Planning for Bush Fire Protection (2019) Section 7.5.2)
	29 - 40 metres from Forest	BAL-29 (Sections 3 and 7 of AS3959 (2018) and Planning for Bush Fire Protection (2019) Section 7.5.2)

The above distances have been illustrated in Figure 5 Bushfire Attack Level Map.



PHOTOGRAPH 3 – DELINEATION OF MANAGED LAND AND FOREST

View of the interface of Settlers Drive road reserve and the forest. Despite vegetation management occurring east of the road reserve, the asset protection zone has been measured to the road reserve boundary, due to the lack of a known perpetual management agreement.

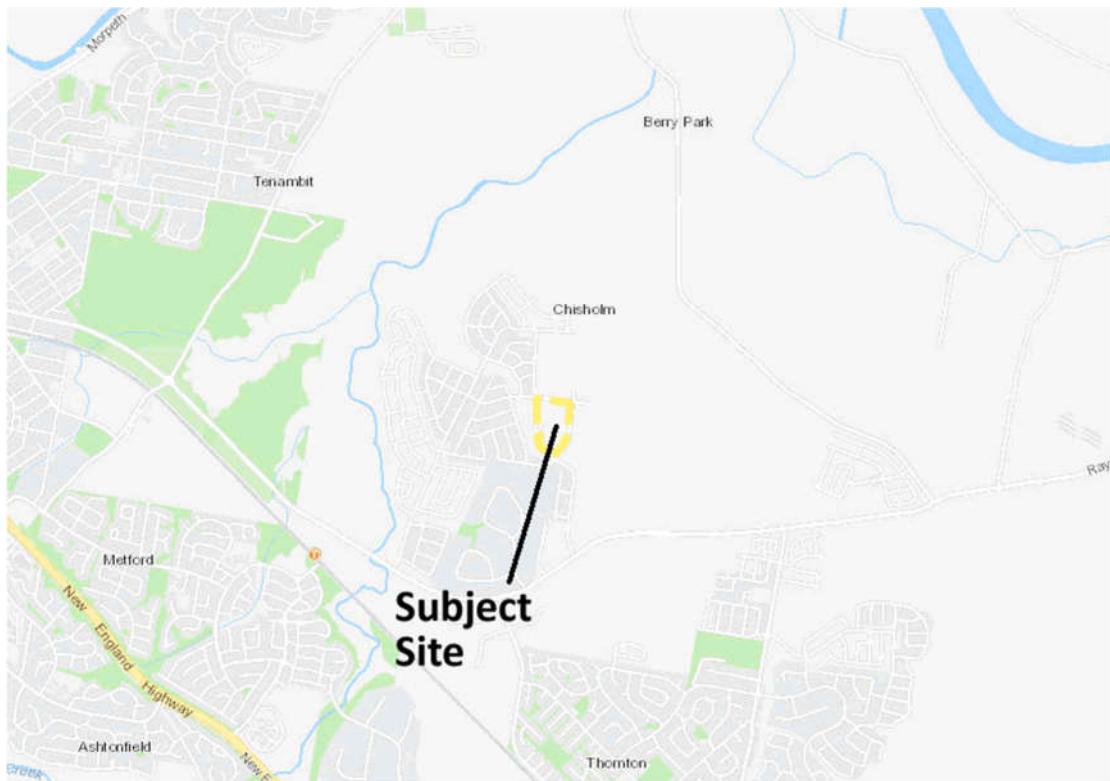


FIGURE 2 – LOCALITY MAP
Courtesy of OpenStreetMap

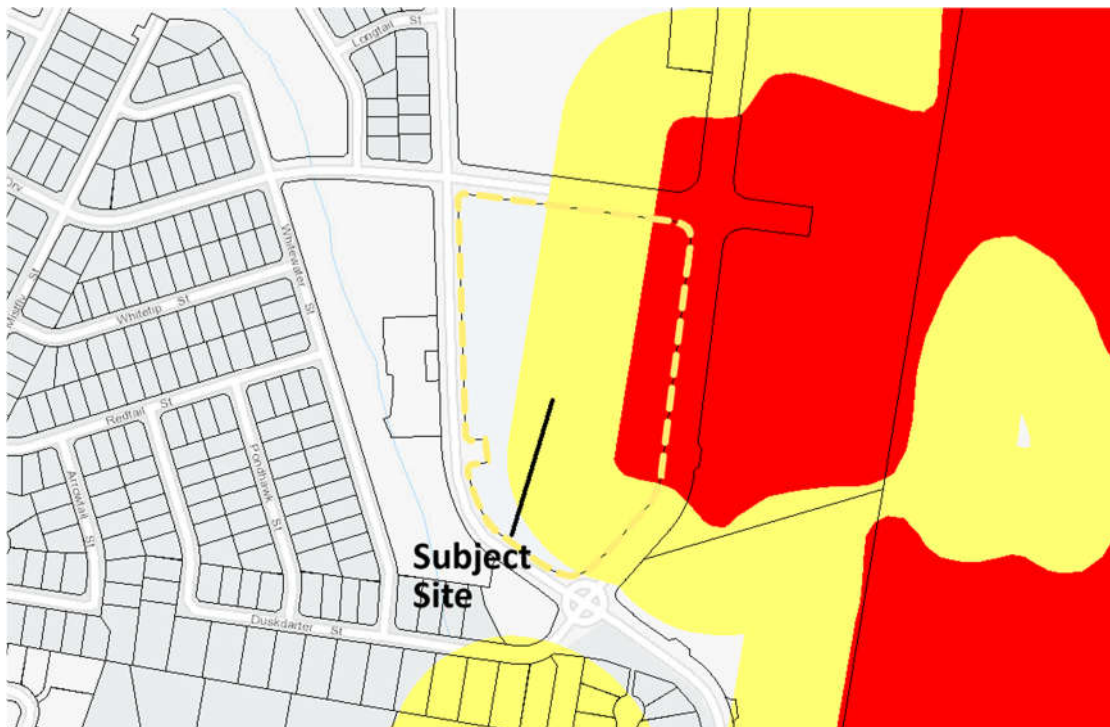


FIGURE 3 – COUNCIL'S BUSHFIRE PRONE LAND MAP

4.0 UTILITY SERVICES AND INFRASTRUCTURE

4.1 WATER SERVICES

A reticulated water supply and street hydrant access is available, providing coverage of the development in accordance with AS 2419.1 – 2005. It is noted that hydrant pressures have not been tested as part of this report.

4.2 ELECTRICITY SERVICES

The existing electrical transmission lines are located underground and require no additional protection measures.

4.3 GAS SERVICES

- Reticulated or bottled gas installed and maintained in accordance with AS/NZ1596 (2002) and the requirements of the relevant authorities. Metal piping is to be used.
- Fixed gas cylinders to be kept clear of flammable material by a distance of 10 metres and shielded on the hazard side of the installation.
- Gas cylinders close to the dwelling are to have the release valves directed away from the building and at least 2 metres from flammable material with connections to and from the gas cylinder being of metal.
- Polymer-sheathed, flexible gas supply lines to gas meters adjacent to the buildings are not to be used.

5.0 PROPERTY ACCESS

Public Road Access

The subject site is bounded by Heritage Drive, Settlers Boulevard and Tigerhawk Drive. All roads are dual carriageway roads interconnecting into the local road network. Emergency Services are expected to have good access to the area at most times.

The existing public road network is deemed adequate to handle increased volumes of traffic in the event of a bushfire emergency. No new public road access is proposed for the site, with future development stages to consider property access. A full perimeter road is presently available around the site.

Fire Trails

Fire trails do not intersect the vegetation in the local area. No new fire trails are proposed for this development.

Property Access

Property access is provided by way of Heritage Drive, Settlers Boulevard and Tigerhawk Drive providing access from the public road system directly to the private land, giving firefighters access to the site.

Property access roads shall comply with Planning for Bush Fire Protection (2019) Section 7.

No new property access is proposed for the site with future development stages to consider property access.

6.0 LANDSCAPING MAINTENANCE

It is recommended that landscaping is undertaken in accordance with Planning for Bush Fire Protection (2019) Appendix 4 and maintained for the life of the development.

Trees should be located greater than 2 metres from any part of the roofline of a building. Garden beds of flammable shrubs are not to be located under trees and should be no closer than 10 metres from an exposed window or door. Trees should have lower limbs removed up to a height of 2 metres above the ground.

The landscaped area should be maintained free of leaf litter and debris. The gutter and roof should be maintained free of leaf litter and debris. Landscaping should be managed so that flammable vegetation is not located directly under windows.

Ground fuels such as fallen leaves, twigs (less than 6 millimetres in diameter) and branches should be removed on a regular basis, and grass needs to be kept closely mown and, where possible, green.

7.0 EMERGENCY AND MAINTENANCE PLANS

7.1 BUSHFIRE MAINTENANCE PLANS

There is no known Bushfire Maintenance Plan for the site. A condition of development is to maintain the entire site as an Inner Protection Area which should be monitored by the property owner.

7.2 FIRE EMERGENCY PROCEDURES

It is recommended the future property owners or building occupants prepare a bushfire survival plan for each residence and emergency management plan for other development, when they occupy the building.

8.0 RECOMMENDATIONS

There are presently no buildings located onsite and no building is proposed as part of this development application. Any future building will be assessed separately under section 4.1.4 of the Environmental Planning and Assessment Act 1979 and AS3959 (2018) and Planning for Bush Fire Protection (2019) or other applicable legislation. The below recommendations provide an indication of recommended measures for a future building, however specific consideration should be made with the development approval process chosen:

1. The proposed building works shall comply with bushfire legislation relevant to the approval pathway chosen. Table 4 and Figure 5 represent potential acceptable solutions for the site.
2. At the commencement of building works and in perpetuity, the entire property shall be managed as an inner protection area (IPA) as outlined within Appendix 4 of Planning for Bush Fire Protection 2019 and the NSW Rural Fire Service's document Standards for Asset Protection Zones.
3. Water, electricity and gas are to comply with Planning for Bush Fire Protection (2019) Section 7.
4. Landscaping is to be undertaken in accordance with Planning for Bush Fire Protection (2019) Appendix 4 and managed and maintained in perpetuity.
5. It is recommended that the property owner and occupants familiarise themselves with the relevant bushfire preparation and survival information provided by the NSW RFS.

9.0 CONCLUSION

The final recommendation is that the proposed development offers compliance with Planning for Bush Fire Protection (2019). There is potential for bushfire attack at this site and a list of recommendations has been included in the above assessment to reduce that risk.

10.0 APPENDIX 1.0 – ASSET PROTECTION ZONES SUMMARY

Below is a summary of Asset Protection Zones outlined in Planning for Bush Fire Protection (2019) Appendix 4 and the NSW RFS' Standards for Asset Protection Zones. The property owner(s) should obtain these two documents and familiarise themselves with their content.

Generally

Asset Protection Zones refer to the area between the bushfire threat and the asset (i.e. building). The Asset Protection Zone may contain two areas; the Inner Protection Area (IPA) and the Outer Protection Area (OPA). Some areas should be managed entirely as an IPA. Refer to the plans for locations of Asset Protection Zone and distances from assets.

IPA

The IPA is located adjacent to the asset and is identified as a fuel-free zone.

A. Shrubs (consisting of plants that are not considered to be trees)

1. Shrubs must be located away from a building's glazing and vent openings.
2. Avoid planting around entryways if the vegetation is flammable.
3. A maximum 20% of the IPA may contain shrubs.
4. A minimum 1.5 metre separation of shrubby vegetation from the building shall be maintained.
5. Shrubs must not have a connection with the tree canopy layer; remove/trim shrubs or underprune trees.
6. Ensure turf is suitably mown and/or grasslands are continually slashed to restrict to max 100 millimetres high.

B. Trees: Maintain a minimum 2-5 metre canopy separation.

1. Trees are allowed in the IPA however they should not touch or overhang buildings. No tree should be within 2 metres of the roofline.
2. Underprune branches between the shrub layer and the canopy layer.
3. Ensure branches do not overhang buildings.
4. Ensure all trees in the IPA within 3 metres of buildings do not provide a serious fire threat.
5. Trees should have lower limbs removed up to a height of 2 metres above the ground.

OPA

The OPA is located adjoining the vegetation. The OPA should be maintained as a fuel-reduced area. This assumes trees may remain but with a significantly reduced shrub, grass, and leaf litter layer. In many situations leaf litter and the shrub layer may not require maintenance at all.

A. Shrubs:

1. Reduce or trim large stands of shrubs.

B. Trees:

1. Existing trees can be retained.
2. Ensure a separation is available between shrubs and tree canopy.
3. Reduce tree canopy so there is no interlocking canopy.

11.0 REFERENCES AND DISCLAIMER

References

Standards Australia AS3959 (2018) Construction of buildings in bushfire-prone areas.

Keith D. "Ocean Shores to Desert Dunes", Department of Environment and Conservation, Sydney, 2004.

Environmental Planning and Assessment Act 1979.

New South Wales Rural Fire Service, Planning for Bush Fire Protection (2019).

Rural Fires Act 1997.

Rural Fires Regulation 2008.

Disclaimer

Despite the recommendations in this report, it is impossible to remove the risk of fire damage to the building entirely. This report assesses and provides recommendations to reduce that risk to a manageable level. It is of paramount importance that the recommendations are adhered to for the life of the structure and that all maintenance is performed to ensure a level of protection is provided to the building, occupants and firefighters.

Planning for Bush Fire Protection (2019) states that notwithstanding the precautions adopted, it should always be remembered that bushfires burn under a wide range of conditions and an element of risk, no matter how small, always remains.

AS3959 (2018) Building in bushfire-prone areas states that the standard is designed to lessen the risk of damage to buildings occurring in the event of the onslaught of bushfire. There can be no guarantee, because of the variable nature of bushfires, that any one building will withstand bushfire attack on every occasion.