

BUSHFIRE ASSESSMENT REPORT

PROPOSED COMMERCIAL DEVELOPMENT AND CHILDCARE CENTRE

**LOT 11 & 12 DP1280255
Previously know as LOT 1 DP 1224700
20 Heritage Drive, Chisholm**

Date: 30/11/2021

Prepared for: Revelop

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1.0 EXECUTIVE SUMMARY AND COMPLIANCE TABLES

This report has assessed the proposed commercial development and childcare centre 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 11 & 12 DP1280255 Previously known as Lot 1 DP 1224700
Local Government Area	Maitland	FDI	100
Bushfire Prone Land	Yes, mapped bushfire prone land		
Type of development	Commercial development and childcare centre	Type of Area	Urban
Special Fire Protection Purpose	Yes. Childcare Centre	Flame Temperature	1090K and 1200K
Application Complies with Acceptable Solution	Yes	Referral to NSW Rural Fire Service (NSW RFS) required	Yes. Bushfire Safety Authority Required

TABLE 2.1 – BUSHFIRE THREAT ASSESSMENT COMMERCIAL DEVELOPMENT

	North	East	South	West
Vegetation Structure	Maintained Lands	Forest	Maintained Lands	Maintained Lands
Asset Protection Zone (APZ)	140 metres	41 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
AS3959 (2018) Bushfire Attack Level (BAL)	BAL-LOW	BAL-19	BAL-LOW	BAL-LOW

TABLE 2.2 – BUSHFIRE THREAT ASSESSMENT CHILDCARE CENTRE DEVELOPMENT

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

TABLE 3.1 – PLANNING FOR BUSH FIRE PROTECTION (2019) SECTION 7 COMMERCIAL DEVELOPMENT

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>	Acceptable Solution
Siting and Design	Buildings have been designed to minimise the risk of bushfire attack.	Acceptable Solution
Construction Standards AS3959 – 2018	<p>Bushfire Attack Levels have been determined in accordance with Planning for Bush Fire Protection (2019).</p> <p>The highest Bushfire Attack Level to the proposed building was determined to be BAL-19.</p> <p>Non-residential Class 5 to 8 buildings that are not special fire protection purpose developments require no specific level of construction in accordance with AS3959 (2018) and National Construction Code 2019 structural fire protection measures deemed adequate if located outside the flame zone.</p>	Acceptable Solution
Private and or Public Road Infrastructure	The public road system is not affected or changed as part of this application.	Acceptable Solution

Property Access	The property access will comply with Planning for Bush Fire Protection (2019) Section 7.	Acceptable Solution
Water and Utility Services	Water, electricity and gas services offer compliance with Planning for Bush Fire Protection (2019) section 7.	Acceptable Solution
Landscaping	Landscaping to comply with Planning for Bush Fire Protection (2019), appendix 4.	Acceptable Solution

TABLE 3.2 – PLANNING FOR BUSH FIRE PROTECTION (2019) SECTION 6 CHILDCARE CENTRE COMPLIANCE

Performance Criteria	Proposed Development Determinations	Method of Assessment
Asset Protection Zone	Minimum setbacks for the childcare centre have been determined in accordance with Planning for Bush Fire Protection (2019) Table A1.12.1. Asset protection zones are able to be achieved within the subject site and adjacent managed land.	Acceptable Solution
Landscaping	Landscaping shall be in accordance with Planning for Bush Fire Protection (2019) Appendix 4.	Acceptable Solution
Construction	The building will be BAL-LOW as the immediate 140 metres surrounding the development is managed land.	Acceptable Solution
Access – Internal Roads	The internal access roads shall comply with Planning for Bush Fire Protection (2019) Section 6 property access provisions.	Acceptable Solution
Water Supply	The water supply complies with Planning for Bush Fire Protection (2019).	Acceptable Solution
Electrical Supply	The existing electrical supply to the local area is via overhead electrical transmission lines. Landscaping onsite should be managed so that no part of a tree is closer to a power line than the distance set out in accordance with the specifications in 'Vegetation Safety Clearances' issued by Energy Australia (NS179, April 2002).	Acceptable Solution
Gas Supply	Any proposed gas supply will be located underground.	Acceptable Solution
Emergency and Evacuation Planning	An emergency management plan shall be prepared with specific consideration for bushfire.	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 commercial development and childcare centre to be built at Lot 11 DP1280255 previously known as 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 4.394 hectares in size. The proposed development includes the construction of a multi-building commercial development including shopping centre and tavern. The development also includes a childcare centre.

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.

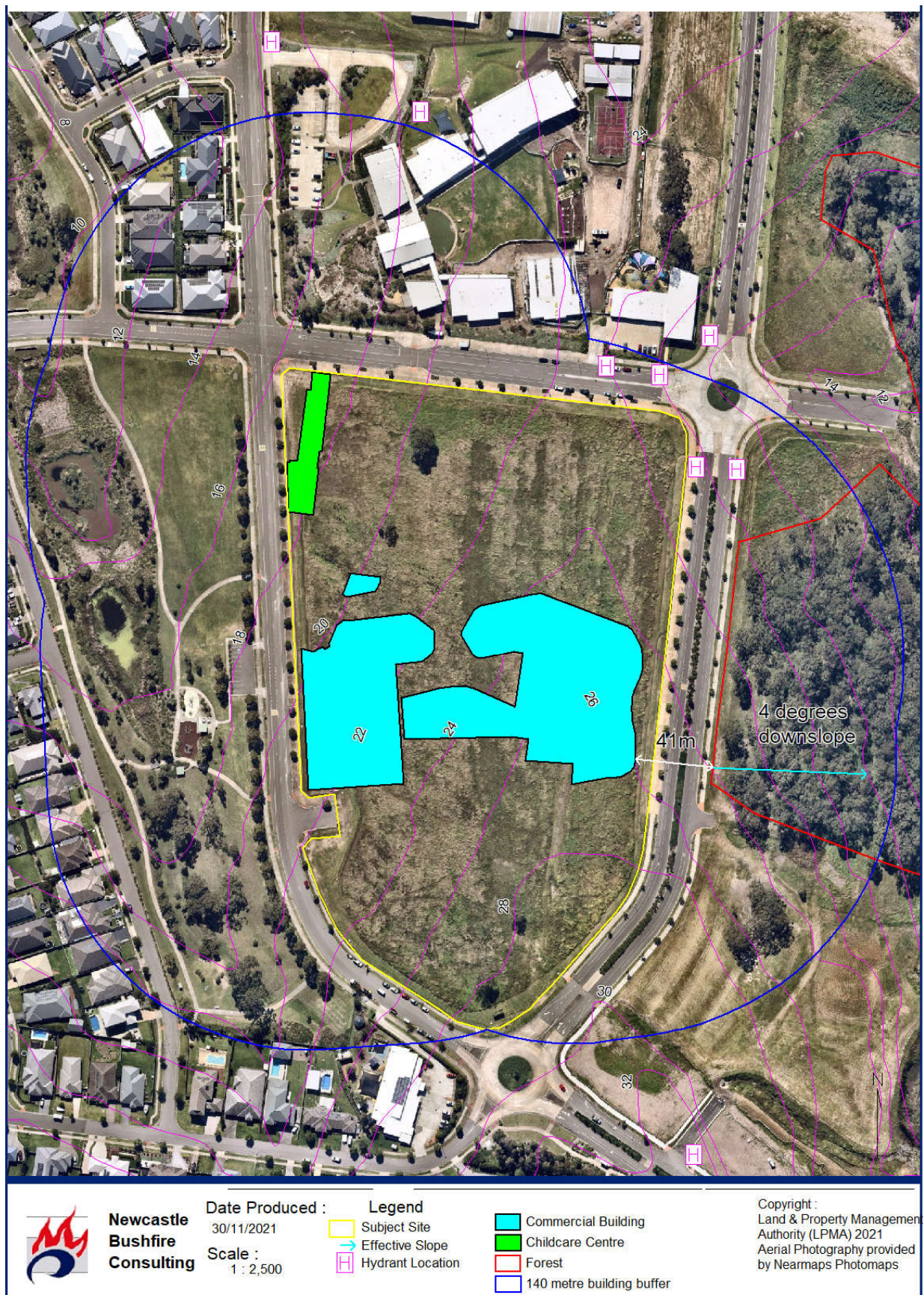


FIGURE 1 – SITE CONSTRAINTS MAP

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 also been provided for the childcare centre (Special fire protection purpose development) in accordance with Planning for Bush Fire Protection (2019) Table A1.12.1. Refer to Section 1.0 Executive Summary and Compliance Tables.

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 2.1 and 2.2 Bushfire Threat Assessment.

3.4 COMPLIANCE WITH AIMS AND OBJECTIVES OF PLANNING FOR BUSH FIRE PROTECTION

The aims and objectives of Planning for Bush Fire Protection are addressed below for the proposed development.

Afford occupants of any building adequate protection from exposure to a bushfire

Building exits are available, located away from the nearest bushland threat offering significant shielding for site users. Evacuation planning in the event of bushfire should clearly indicate to building users to evacuate in a direction away from the fire.

Provide for a defensible space to be located around buildings

Defensible space is available around all buildings. In the event of bush fire, firefighters will have direct access to the bushland which will support firefighting efforts. The entire site shall be maintained as an inner protection area.

Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition

The commercial development is outside the flame zone and shall be built to the National Construction Code (2019) structural fire safety regulations.

Ensure that safe operational access and egress for emergency service personnel and residents is available

The property access to the facility offers compliance with Planning for Bush Fire Protection access requirements.

Provide for ongoing management and maintenance of bush fire protection measures, including fuel loads in the asset protection zone (APZ)

The site manager shall maintain landscaping and fuel management in accordance with Appendix 4 of Planning for Bush Fire Protection 2019 and the NSW Rural Fire Service's document Standards for Asset Protection Zones.

Ensure that utility services are adequate to meet the needs of firefighters (and others assisting in bushfire fighting)

Hydrant spans shall be installed in accordance with AS2419.1. Electrical supplies to the local area are to be located underground.

4.0 UTILITY SERVICES AND INFRASTRUCTURE

4.1 WATER SERVICES

A reticulated water supply and street hydrant access is available. The hydrant network shall be expanded to comply with AS 2419.1.

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.



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.

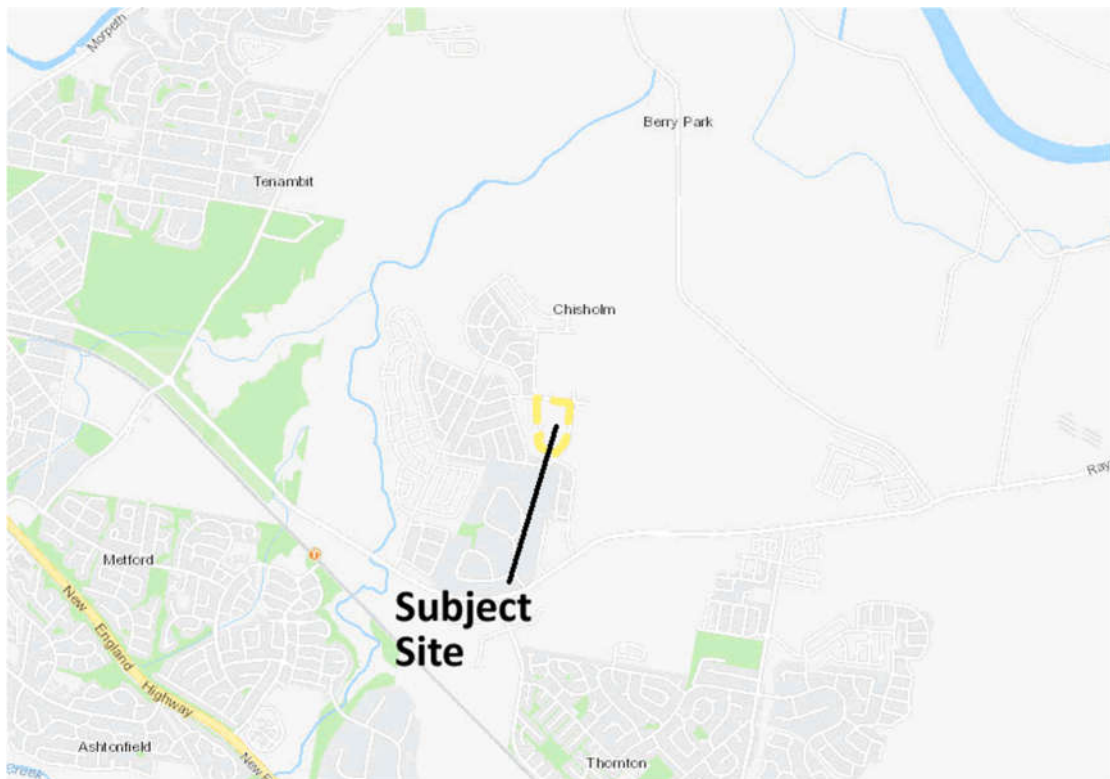


FIGURE 2 – LOCALITY MAP
Courtesy of OpenStreetMap

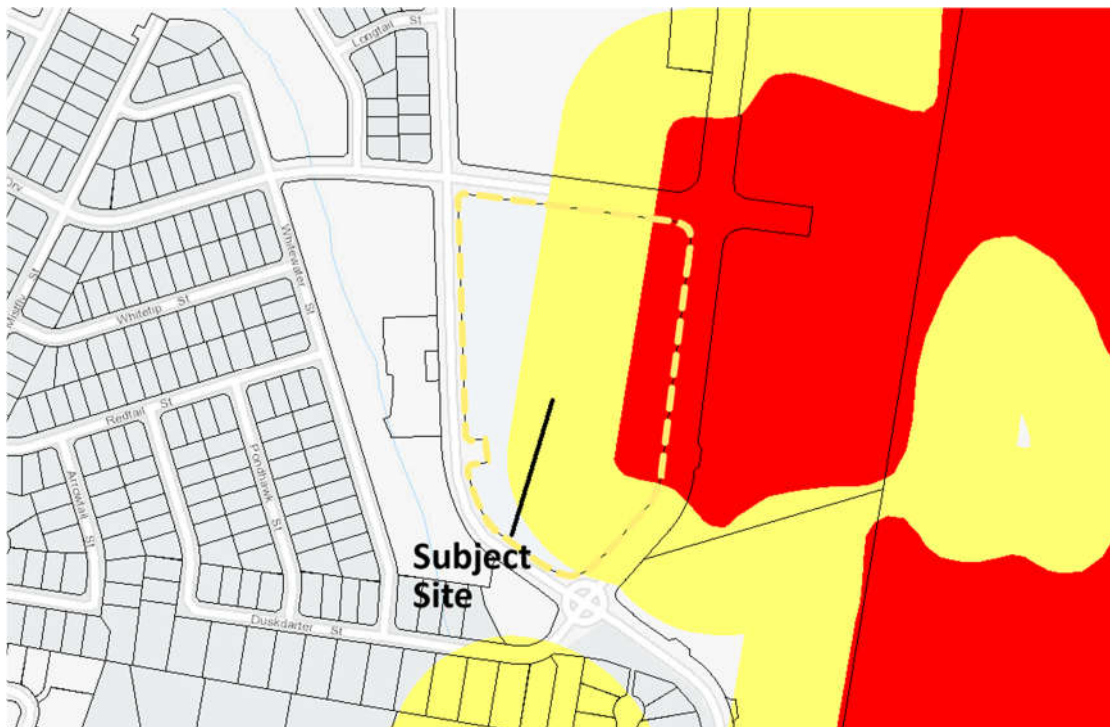
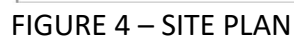


FIGURE 3 – COUNCIL'S BUSHFIRE PRONE LAND MAP



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 6.

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

An Emergency/Evacuation Plan is to be prepared consistent with the NSW Rural Fire Service document Guidelines for the Preparation of Emergency/Evacuation Plan.

8.0 RECOMMENDATIONS

Based upon an assessment of the plans and information received for the proposal, it is recommended that development consent be granted subject to the following conditions:

1. The proposed building works shall comply with National Construction Code 2019 Structural Fire Safety requirements.
2. At the commencement of building works and in perpetuity, the site 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. The hydrant network shall be expanded to comply with AS 2419.1.
4. Landscaping is to be undertaken in accordance with Planning for Bush Fire Protection (2019) Appendix 4 and managed and maintained in perpetuity.
5. An Emergency/Evacuation Plan is to be prepared consistent with the NSW Rural Fire Service document Guidelines for the Preparation of Emergency/Evacuation Plan, with the new buildings incorporated in the plan.

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.