

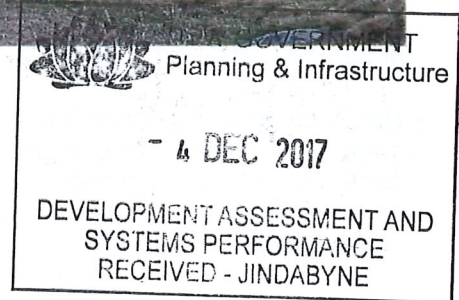
# BUSHFIRE HAZARD ASSESSMENT REPORT

FOR ALTERATIONS AND ADDITIONS TO THE EXISTING MARRITZ HOTEL



**Lot 601 DP1158969  
12 Porcupine Road, Perisher Valley NSW 2624**

**November 2017**



**REPORT No: 031117**

## Executive Summary

This bushfire assessment is for the proposed Alterations and additions to the existing Marritz Hotel at Lot 601 DP1158969, 12 Porcupine Road, Perisher Valley NSW 2624.

The land is located in the Kosciuszko National Park and is zoned tourist accommodation and has been identified as being in bushfire prone land, and hence as outlined in *Planning for Bushfire Protection – PBP 2006* (NSW RFS 2006) is considered Special Fire Protection Purpose (SFPP) and is required to obtain a BFSA from the RFS under section 100B of the RF Act.

Pending compliance with the recommendations outlined in this report. The performance criteria and deemed to satisfy provisions outlined in Section 4.2 of PBP 2006 are found to be satisfied.

### 1. RECOMMENDATIONS

#### 1.1 Asset Protection Zones

The landscaped areas of the allotments shall be maintained as an inner protection area.

Asset protection zones are the most strategically valuable defence against radiant heat and flame, and to lesser extent embers

To allow for emergency service personnel and residents to undertake property protection activities, a defensible space that permits unobstructed pedestrian access is to be provided around the building.

Native landscaping plants are proposed in this area so long as they are selected for their low combustibility, by virtue of high moisture content, low volatile oil content, high leaf minerals, large fleshy leaves, absence of shredding bark. They should be placed so as not to provide either vertical or horizontal connectedness of plant material and avoid overhanging roof lines or contact with the building.

#### 1.2 - Construction

New construction work is to achieve-

- BAL 40 on the Southern Elevation.
- BAL 29 on the North, East and West Elevations.

with the exception that the construction requirements shall be varied to comply with the requirements of Section A3.7 of the NSW Rural Fire Service Addendum to Appendix 3 of *Planning for Bushfire Protection 2006*.

#### 1.3 - Utilities

The intent of measures is to minimise the risk of bush fire attack and provide protection for emergency services personnel, residents and others assisting fire fighting activities. To achieve this, the following conditions shall apply:

### 1.3.1 - Water

All above ground water pipes external to the building are to metal

### 1.3.1 - Gas

If gas is connected to the dwelling on the subject land, must perform as per the following criteria:

- Bottled gas is to be installed and maintained in accordance with AS 1596 and the requirements of relevant authorities. Metal piping is to be used.
- All fixed gas cylinders are kept clear of all flammable materials to a distance of 10 metres and shielded on the hazard side of the installation.
- If gas cylinders need to be kept close to the building, the release valves are directed away from the building and at least 2 metres away from any combustible material, so that they do not act as a catalyst to combustion. Connections to and from gas cylinders are metal.
- Polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used.

### 1.4. - Evacuation and Emergency Management

The intent of measures is to provide suitable emergency and evacuation (and relocation) arrangements for occupants of special fire protection purpose developments.

To achieve this, the following conditions shall apply:

A building evacuation diagram, site layout diagram and Statement of Action are to be provided in each building in accordance with the NSW Rural Fire Service Guidelines for the Preparation of Emergency/Evacuation Plan and with Australian Standard AS 3745 2010 'Planning for Emergencies in Facilities'.

## 1. Introduction

### 1.1 Legislation

This Bush Fire Assessment Report has been compiled for submission to the Department of Planning for the purpose of assessment under Section 100B of the RF Act and is also considered “integrated development” under Section 91 of *Environmental Planning and Assessment Act 1979* (EP&A Act).

A bush fire safety authority must be obtained before developing on bush fire prone land for a special fire protection purpose such as the proposed tourist accommodation building ie Lodge accommodation.

A bush fire safety authority authorises development for a purpose referred to in subsection (1) of 100B to the extent that it complies with standards regarding setbacks, provision of water supply and other matters considered by the Commissioner to be necessary to protect persons, property or the environment from danger that may arise from a bush fire.

PBP 2006 states that the nature of SFPP's the occupants may be more vulnerable to bush fire attack for one or more of the following reasons:

- Less educated in relation to bushfire impacts
- They may have reduced capacity to evaluate risk and respond to the bushfire threat
- They may present organisational difficulties for evacuation and or management
- They may be more vulnerable to stress and anxiety arising from bushfire threat and smoke
- There may be significant communication barriers
- Supervision during a bushfire may be difficult
- Logistical arrangements for the numbers of residents may be complicated in terms of alternate accommodation, transport, healthcare and food supplies.

The detailed information to be contained within a bushfire assessment report submitted to the RFS under clause 46 of the RF Reg is:

- Description of property;
- Classification of vegetation out to 140 m from the development;
- An assessment of the effective slope to a distance of 100 m;
- Identification of any significant environmental features;
- Details of threatened species, populations, endangered communities and critical habitat known to the applicant;
- Details of Aboriginal heritage known to the applicant; and
- A bushfire assessment that complies with the relevant requirements of the PBP (2006) and AS 3959 2009;

This report has been prepared in accordance with the submission requirements of Appendix 4 of *Planning for Bush Fire Protection* (NSW RFS 2006), and identifies the proposal can meet the appropriate objectives and performance criteria of Section 4.2 & 4.3 *Planning for Bush Fire Protection* (NSW RFS 2006).

As outlined in clause 4.2.5 SFPP as infill; the development will comply with the intent and performance criteria of each measure outlined section 4.3.5 of the PBP 2006

## 1.2 Development Proposal



### ***Façade, Cladding & Windows***

The development proposed is for the following:

1. Remove existing structural flooring inside balconies to rooms 202 – 208 and 212. Structural Engineer to certify integrity of existing balcony floor structures. (Replace with new LVL timber floor is the likely outcome)
2. Remove all board and batten cladding.
3. Remove wall cladding to bar area (certify structural integrity) and repair as required (PC sum). Replace cladding with sarking, insulation and trimdeck wall cladding
4. Remove wall framing between glazing levels (fixed to front of balconies)
5. Assess with Structural Engineer, treat and repair damaged concrete surfaces
6. Install new structural steel beam at the front edge of balcony
7. Install new steel columns between beams at the mid span of each balcony (breaking span of glazing in half)
8. Replace structural flooring
9. Replace timber framing at floor levels between glazed units and reclad with trim deck cladding
10. Replace linings internal as required
11. Replace glazing. Check and advise if introduction of weepholes helps the moisture ingress problems
12. Replace aluminium doors and framing to subfloor areas to ensure safety at main switchboard. Suggest steel framed doors and jambs.

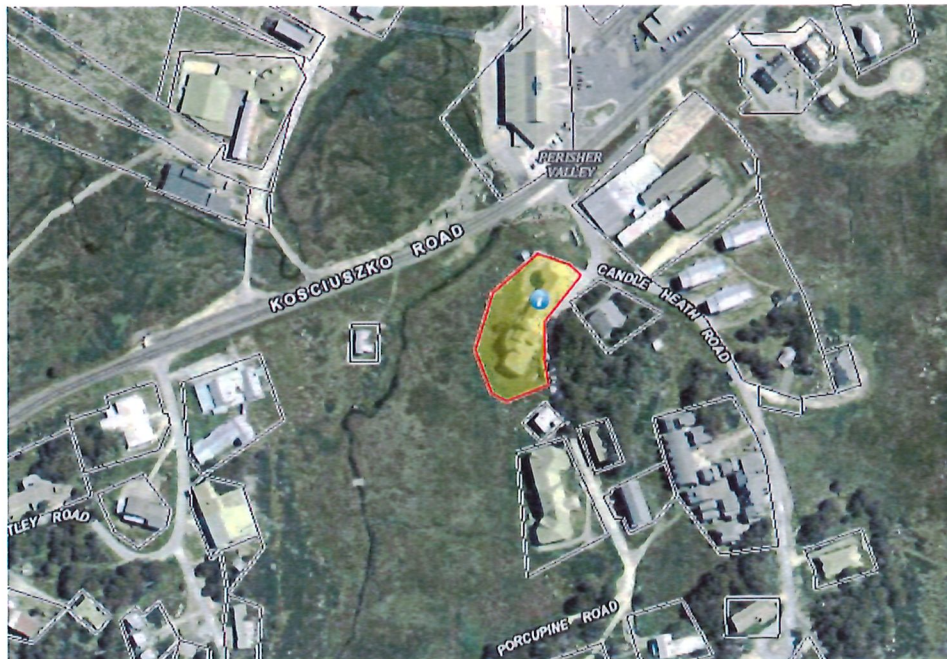
### **General Works**

1. Repair and resurface damaged painted masonry surfaces around the building (mostly to the west facing exposed faces) ensure damaged masonry is cleaned back and treated for potential masonry/concrete cancer caused by moisture ingress. Repaint to match existing
2. Repair or replace aging timber fascia's then encase in colour bond steel flashing
3. Repoint damaged joints in stone façade particularly on all west facing stone walls
4. Check waterproofing issues at window sills throughout and provide solution to moisture ingress – Particularly Rooms 401 and 402.

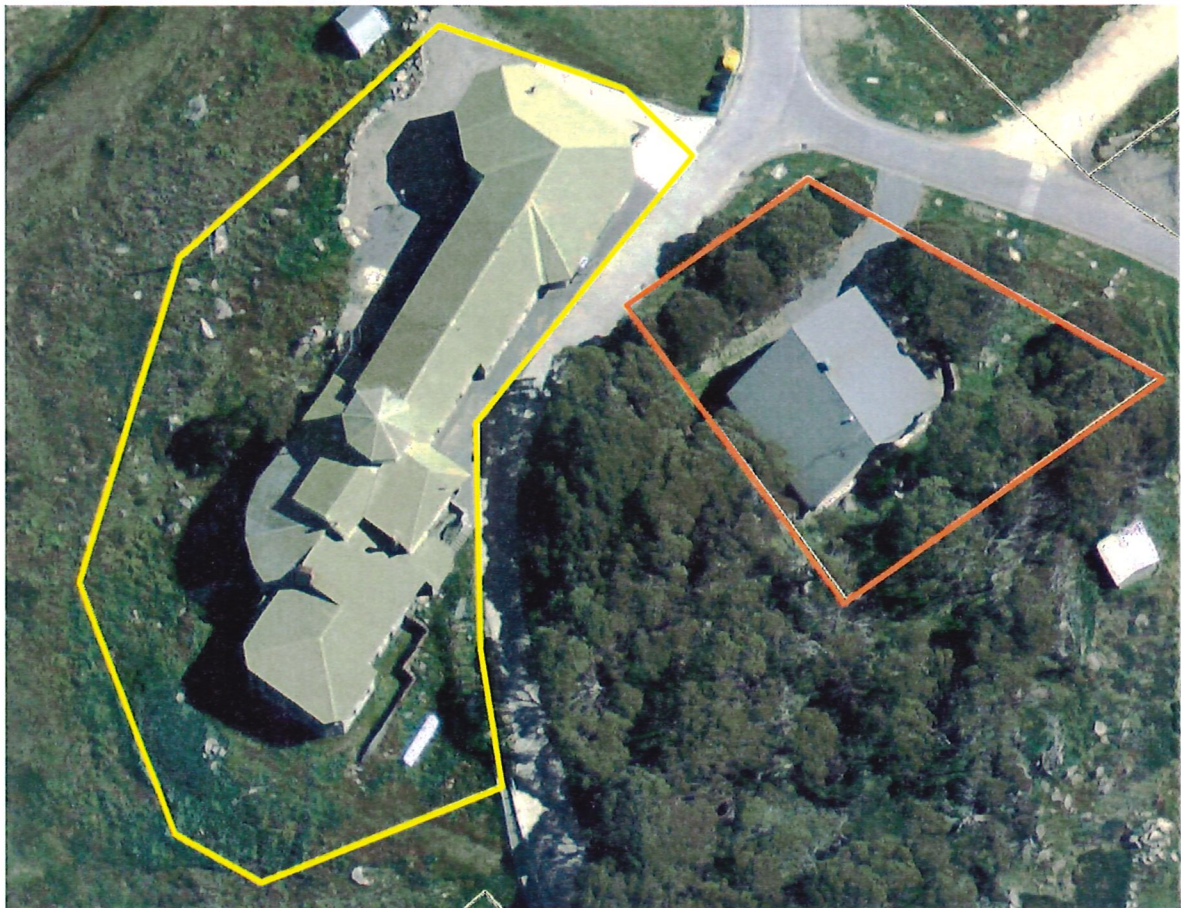
5. Replace restaurant windows with aluminium framed double glazed units to meet the bushfire regulations
6. Stone infill panels at subfloor level – we will propose to replace these with lightweight steel infill frames and trim clad wall cladding (Subject to Separate development application)
7. Replace all board and batten cladding with trim clad wall cladding (classic cream) including upper walls of staff quarters.

Refer to the Statement of Environment Effects and plans prepared by MACO Project Designs for more details.

### 1.3 Site Description



The Existing hotel is known as Marritz.



## 2.0 - Specific Objectives for Special Fire Protection Purpose Developments

The proposed development land is identified as bushfire prone.

For Special Fire Protection Purpose Developments the “measures in combination” remains as a principle, there is more reliance on the space around buildings (as defensible space and APZ’s for fuel load control) and less reliance on construction standards.

The specific objectives for special fire protection purpose developments are to:

- Provide for the special characteristics and needs of occupants. Unlike residential subdivisions, which can be built to a construction standard to withstand the fire event, enabling occupants and firefighters to provide property protection after the passage of fire, occupants of SFPP developments may not be able to assist in property protection. They are more likely to be adversely affected by smoke or heat while being evacuated.
- Provide for safe emergency evacuation procedures. SFPP Developments are highly dependent on suitable emergency evacuation arrangements, which require greater separation from bush fire threats. During emergencies, the risk to firefighters and other emergency services personnel can be high through prolonged exposure, where door-to-door warnings are being given and exposure to the bush fire is imminent.

These objectives have been considered and addressed below and form part of the recommendations provided in this report.

An appropriate combination of bushfire protection measures and compliance with the intent and performance criteria of each measure within section 4.3.5 of PBP is required.

An assessment of the proposal in accordance with the performance criteria and acceptable solutions contained within section 4.3.5 of PBP have been provided below.

### 2.1 SFPPs as Infill

As the proposed lodge is for an existing SFPP Development approved prior to the 1st August 2002, the proposal is considered an ‘infill development’ in accordance with 4.2.5 of PBP.

An appropriate combination of bushfire protection measures and compliance with the intent and performance criteria of each measure within section 4.3.5 of PBP is required.

The following demonstrates how the proposed development complies with the relevant aims and specific objectives of PBP (2006) for a bushfire assessment for

- Asset protection zones;
- Siting and design;
- Capacity of public roads;
- Whether public roads link to fire trails and have two way access;
- Adequacy of access and egress;
- Adequacy of maintenance plans;
- Construction standards to be used;



### 3. Bushfire Hazard and Risk Assessment

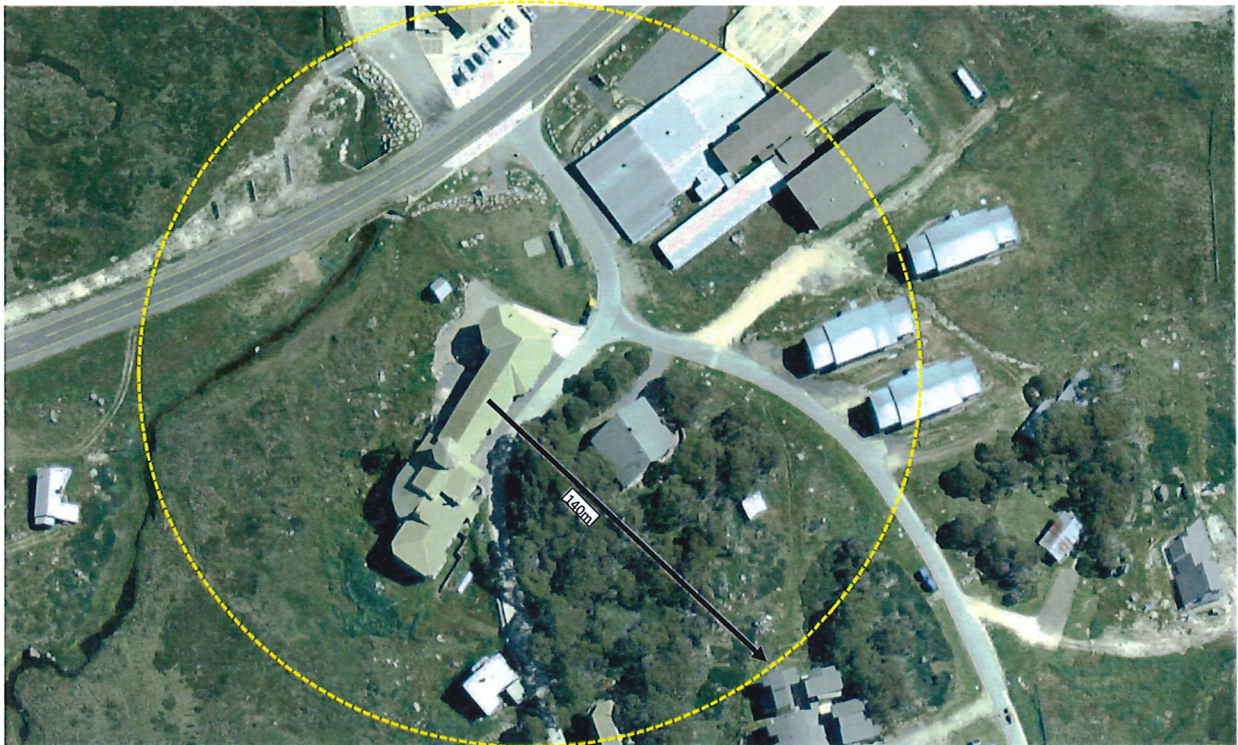
#### 3.1. Vegetation and Slope assessment.

##### 3.1.1 - Classification of Vegetation within 140m

There is currently vegetation adjoining the site on the southern elevation as shown in the photos below.

A separation distance of 10 meters at the closest point is provided to the southern elevation via the adjoining road reserve (Porcupine Road)

The aerial photo illustrates the vegetation formations within 140 m of the subject site.



The slope and vegetation influencing bushfire behavior is on the Southern elevation of the building and has an upslope.



### 3.4 Predominant Vegetation

The predominant vegetation adjoining the site to the southern elevation is Woodland.

Table 2 - Assessment of Vegetation about the proposed building in all Directions

CATEGORY	NORTH	EAST	SOUTH	WEST
Converted Vegetation	<input type="checkbox"/> Forest	<input type="checkbox"/> Forest	<input type="checkbox"/> Forest	<input type="checkbox"/> Forest
	<input type="checkbox"/> Woodland	<input type="checkbox"/> Woodland	<input checked="" type="checkbox"/> Woodland	<input type="checkbox"/> Woodland
	<input type="checkbox"/> Tall Heath	<input type="checkbox"/> Tall Heath	<input type="checkbox"/> Tall Heath	<input type="checkbox"/> Tall Heath
	<input type="checkbox"/> Short Heath	<input type="checkbox"/> Short Heath	<input type="checkbox"/> Short Heath	<input type="checkbox"/> Short Heath
	<input type="checkbox"/> Mallee/Mulga	<input type="checkbox"/> Mallee/Mulga	<input type="checkbox"/> Mallee/Mulga	<input type="checkbox"/> Mallee/Mulga
	<input type="checkbox"/> Rainforest	<input type="checkbox"/> Rainforest	<input type="checkbox"/> Rainforest	<input type="checkbox"/> Rainforest
	<input checked="" type="checkbox"/> Grassland	<input type="checkbox"/> Grassland	<input type="checkbox"/> Grassland	<input checked="" type="checkbox"/> Grassland
	<input type="checkbox"/> Managed Land	<input checked="" type="checkbox"/> Managed Land	<input type="checkbox"/> Managed Land	<input type="checkbox"/> Managed Land

Distance from the building line to the vegetation in each direction.

ASPECT	NORTH	EAST	SOUTH	WEST
Distance	15m	Managed land	10m (closest)	15m

Effective Slope that will influence bushfire behavior in each direction

CATEGORY	NORTH	EAST	SOUTH	WEST
	<input type="checkbox"/> Upslope/flat	<input type="checkbox"/> Upslope/flat	<input checked="" type="checkbox"/> Upslope/flat	<input type="checkbox"/> Upslope/flat
	<input type="checkbox"/> >0 to 5	<input type="checkbox"/> >0 to 5	<input type="checkbox"/> >0 to 5	<input type="checkbox"/> >0 to 5
	<input type="checkbox"/> >5 to 10	<input type="checkbox"/> >5 to 10	<input type="checkbox"/> >5 to 10	<input type="checkbox"/> >5 to 10
	<input checked="" type="checkbox"/> >10 to 15	<input type="checkbox"/> >10 to 15	<input type="checkbox"/> >10 to 15	<input checked="" type="checkbox"/> >10 to 15
	<input type="checkbox"/> >15	<input type="checkbox"/> >15	<input type="checkbox"/> >15	<input type="checkbox"/> >15
	<input type="checkbox"/> Managed Land	<input checked="" type="checkbox"/> Managed Land	<input type="checkbox"/> Managed Land	<input type="checkbox"/> Managed Land

Fire Danger Index applicable to the local Government Area

FIRE DANGER INDEX (FDI)			
	<input type="checkbox"/> 100	<input type="checkbox"/> 80	<input checked="" type="checkbox"/> 50

BUSHFIRE ATTACK LEVEL					
<input type="checkbox"/> Bal-FZ	<input checked="" type="checkbox"/> Bal-40. Southern Elevation	<input checked="" type="checkbox"/> Bal-29 North, East West.	<input type="checkbox"/> Bal-19	<input type="checkbox"/> Bal-12.5	<input type="checkbox"/> No Requirement

### 3.5 - Hazard Assessment

#### 3.5.1 Fire and Ember Attack

Ember attack would be possible from the vegetation present within the subject land.

#### 3.5.2 Bushfire Attack Level

The BAL's as established via Table 2.4.4 AS3959-2009 - indicate BAL 40 due to the shortest distances to the boundary of the allotment to the Southern Elevation.

#### 3.5.3 Asset Protection Zone - APZ

The entire lot shall be maintained as the APZ. Trees are allowed within the IPA, but not too close to the dwelling, or too dense in numbers – eg below.

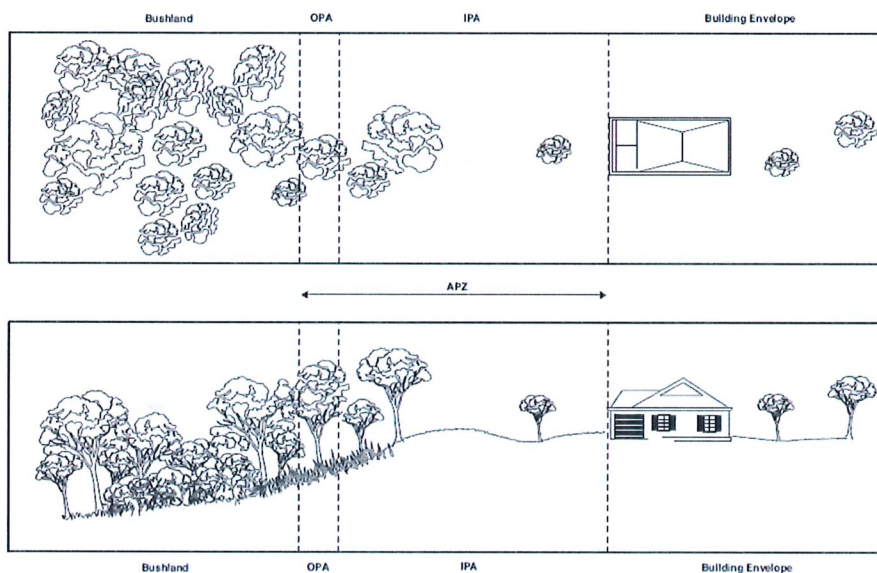


Figure 3.1 shows the APZ, IPA and OPA graphically.

#### 3.5.3.1 Asset Protection Zones (APZ)

The creation the adjoining defensible space is designed to give an effective separation distance between the building and a bushfire hazard and is to be managed progressively to minimise fuel loads. This area is known as an APZ and usually consists of an Inner Protection Area (IPA) and an Outer Protection Area (OPA).

The IPA provides a defensible space and manages heat intensities at the building surface and the OPA provides a reduction in fuel loading which slows the intensity of an approaching fire, by reducing the potential length of flames (PBP 2006).

It is recommended the entire property and the defensible space be maintained as an inner protection area in accordance PBP Appendix Five and the NSW Rural Fire Service's document *Standards for Asset Protection Zones*.

Vegetation within the APZ should be managed in accordance with APZ specifications for the purposes of limiting the travel of a fire, reducing the likelihood of direct flame contact and removing additional hazards or ignition sources.

The following outlines some general vegetation management principles for APZs:

- 1) Tree canopy separation (by at least 2 metres where possible);
- 2) Discontinuous shrub layer (clumps or islands of shrubs not rows);
- 3) Vertical separation between vegetation strata;
- 4) Tree canopies not overhanging structures;
- 5) Maintain low ground covers by mowing / whipper snipper / slashing; and Non combustible mulch e.g. stones and removing stores of combustible materials;
- 6) Vegetation to be planted should consist of fire retardant/ less flammable species strategically located to reduce attack from embers (i.e. as ember traps when in small clumps and short wind breaks).

#### 4.0 - Adequate Water and Utility Services

Perisher resort is serviced by reticulated water. A hydrant system is located along Porcupine Road. The location and distance to the hydrants will be consistent with the requirements of the PBP 2006.



#### 5.0 - Property Access Roads and Public Road System Capacity

The PBP (2006) requires the provision of safe operational access to structures and water supply for emergency services, while residents are seeking to evacuate from an area.

- Porcupine Road is a sealed public road. It is a two-wheel drive, all weather road. The widths and design would allow safe access for firefighters while residents are evacuating an area. The capacity of road surfaces is sufficient to carry fully loaded firefighting vehicles.

The access road and turning bay will allow tankers to travel in a forward direction from the allotments.

## 6.0 - Emergency Management

The intent of measures is to provide suitable emergency and evacuation (and relocation) arrangements for occupants of special fire protection purpose developments.

To achieve this, the following conditions shall apply:

*A building evacuation diagram, site layout diagram and Statement of Action are to be provided for the proposed development in accordance with Building Emergency Procedures and Bush Fire Evacuation Plan, the NSW Rural Fire Service Guidelines for the Preparation of Emergency/Evacuation Plan and with Australian Standard AS 3745 2010 'Planning for Emergencies in Facilities'.*

## 7.0- Landscaping

Appendix 5 (PBP) provides guidelines for landscaping and Bushfire Provisions within the APZ. To incorporate bushfire protection measures into future development, the owners are advised to consider the following:

To incorporate bushfire protection measures into future development, the owner is advised to consider the following:

- Maintain a clear area of low cut lawn or pavement adjacent to the house;
- Ensure any pastures within APZ are regularly slashed;
- Avoid planting trees species with rough fibrous bark, or which retain/shed bark in long strips or retain dead material in their canopy;
- Avoid planting deciduous species that may increase fuel at surface/ground level by the fall of leaves.
- Avoid climbing species to walls and pergolas.
- Locate combustible materials such as woodchips/mulch, flammable fuel stores (LPG gas bottles) away from the building.
- Locate combustible structures such as garden sheds, pergolas and materials such as timber furniture away from the building.
- Ensure any vegetation planted around the house is a suitable distance away so these plants do not come into physical contact with the house as they mature.
- The property should be developed to incorporate suitable impervious area surrounding the house, including courtyards, paths and driveways.

## 8.0 - SPECIFIC OBJECTIVES FOR SPECIAL FIRE PROTECTION PURPOSE DEVELOPMENTS

8.1 - Asset Protection Zones		
Performance Criteria	Acceptable solutions	Compliance
The intent may be achieved where:		
<ul style="list-style-type: none"> <li>radiant heat levels of greater than 10kW/m<sup>2</sup> will not be experienced by occupants or emergency services workers entering or exiting a building.</li> </ul>	<ul style="list-style-type: none"> <li>an APZ is provided in accordance with the relevant tables and figures in Appendix 2 of this document.</li> <li>exits are located away from the hazard side of the building.</li> <li>the APZ is wholly within the boundaries of the development site.</li> </ul>	<p>Complies</p> <p>A 10m defendable space is provide to the southern elevation of the building and 15m to the north and west.</p>
<ul style="list-style-type: none"> <li>applicants demonstrate that issues relating to slope are addressed: maintenance is practical, soil stability is not compromised and the potential for crown fires is negated.</li> </ul>	<ul style="list-style-type: none"> <li>mechanisms are in place to provide for the maintenance of the APZ over the life of the development.</li> <li>the APZ is not located on lands with a slope exceeding 18 degrees.</li> </ul>	<p>Complies</p> <p>DA to be conditioned with recommendations outlined in this report.</p>
<ul style="list-style-type: none"> <li>APZs are managed and maintained to prevent the spread of a fire towards the building.</li> </ul>	<ul style="list-style-type: none"> <li>in accordance with the requirements of 'Standards for Asset Protection Zones (RFS 2005).</li> </ul> <p><i>Note - a Monitoring and Fuel Management Program should be required as a condition of development consent.</i></p>	<p>DA to be conditioned with recommendations outlined in this report.</p>
<ul style="list-style-type: none"> <li>vegetation is managed to prevent flame contact and reduce radiant heat to buildings, minimise the potential for wind driven embers to cause ignition and reduce the effect of smoke on residents and fire-fighters.</li> </ul>	<ul style="list-style-type: none"> <li>compliance with Appendix 5.</li> </ul>	<p>DA to be conditioned with recommendations outlined in this report.</p>

## 8.2 - Access

Performance Criteria	Acceptable solutions	Compliance
The intent may be achieved where:		
<ul style="list-style-type: none"> <li>internal road widths and design enable safe access for emergency services and allow crews to work with equipment about the vehicle.</li> </ul>	<ul style="list-style-type: none"> <li>A minimum vertical clearance of four metres to any overhanging obstructions, including tree branches, is provided.</li> <li>Curves have a minimum inner radius of six metres and are minimal in number to allow for rapid access and egress.</li> <li>The minimum distance between inner and outer curves is six metres.</li> <li>Maximum grades do not exceed 15 degrees and average grades are not more than 10 degrees.</li> <li>Crossfall of the pavement is not more than 10 degrees.</li> <li>The internal road surfaces have a capacity to carry fully-loaded firefighting vehicles (15 tonnes).</li> </ul>	DA to be conditioned with recommendations outlined in this report.

## 8.3 - Services – Water, gas and electricity

Performance Criteria	Acceptable solutions	Compliance
The intent may be achieved where:		
<b>Non-reticulated water supply area.</b> <ul style="list-style-type: none"> <li>a water supply reserve dedicated to firefighting purposes is installed and maintained. The supply of water can be an amalgam of minimum quantities for each lot in the development and be reticulated within dedicated firefighting lines.</li> </ul>	<ul style="list-style-type: none"> <li>10,000 litres is the minimum dedicated water supply required for firefighting purposes for each occupied building, excluding drenching systems.</li> <li>the provision for suitable connection for RFS and/or NSW Fire Brigades purposes in section 4.1.3 in relation to water supplies is made available.</li> </ul>	N/A A reticulated water supply is available.
<b>Electricity</b> <ul style="list-style-type: none"> <li>location of electricity services will not lead to ignition of surrounding bushland or the fabric of buildings or risk to life from damaged electrical infrastructure.</li> </ul>	<ul style="list-style-type: none"> <li>electrical transmission lines are underground.</li> </ul>	<input checked="" type="checkbox"/>



<p><b>Gas</b></p> <ul style="list-style-type: none"> <li>location of gas services will not lead to ignition of surrounding bush land or the fabric of buildings.</li> </ul>	<ul style="list-style-type: none"> <li>reticulated or bottled gas is installed and maintained in accordance with AS 1596 - 2002 and the requirements of relevant authorities. metal piping is to be used.</li> <li>all fixed LPG tanks are kept clear of all flammable materials and located on the non hazard side of the development.</li> <li>If gas cylinders need to be kept close to the building, the release valves must be directed away from the building and away from any combustible material, so that they do not act as catalysts to combustion.</li> </ul>	<p>To form part of the recommendations of this report.</p>
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#### 8.4 - Emergency & Evacuation Planning

Performance Criteria	Acceptable solutions	Compliance
The intent may be achieved where:		
An Emergency and Evacuation management Plan is approved by the relevant fire authority for the area.	<ul style="list-style-type: none"> <li>An emergency/evacuation plan is to be prepared consistent with the RFS guidelines for the <i>Preparation of Emergency/Evacuation Plan</i>.</li> </ul>	DA to be conditioned with recommendations outlined in this report.

#### 8.5 - Bushfire protection measures for infill development

Performance Criteria	Comply	Acceptable solutions
The intent may be achieved where:		
<p>in relation to Asset Protection Zones:</p> <ul style="list-style-type: none"> <li>a defensible space is provided onsite.</li> <li>an asset protection zone is provided and maintained for the life of the development.</li> </ul>	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>A 10m defensible space is provide to the southern elevation of the building and 15m to the north and west.</li> </ul>
<p>in relation to siting and design:</p> <ul style="list-style-type: none"> <li>buildings are sited and designed to minimise the risk of bush fire attack.</li> </ul>	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>building to be constructed as per the recommendations of this report</li> </ul>
<p>in relation to construction standards:</p> <ul style="list-style-type: none"> <li>it is demonstrated that the proposed building can withstand bush fire attack in the form of wind, smoke, embers, radiant heat and flame contact</li> </ul>	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>Any new work to comply to BAL 40 on the southern elevation.</li> <li>Any new work on the north, east, west to achieve BAL29.</li> </ul>

<p>in relation to access requirements:</p> <ul style="list-style-type: none"> <li>safe, operational access is provided (and maintained) for emergency services personnel in suppressing a bush fire while residents are seeking to relocate, in advance of a bush fire, (satisfying the intent and performance criteria for access roads in sections 4.1.3 and 4.2.7).</li> </ul>	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>Reduce/remove any overhanging vegetation on the access way to be compliant with Figure 4.5 PBP 2006</li> </ul>
<p>in relation to water and utility services:</p> <ul style="list-style-type: none"> <li>adequate water and electricity services are provided for firefighting operations</li> <li>gas and electricity services are located so as not to contribute to the risk of fire to a building.</li> </ul>	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>Regular checks of firefighting equipment to ensure it is in good working condition;</li> <li>Check water, taps and hoses are in good working order.</li> </ul>
<p>in relation to landscaping:</p> <ul style="list-style-type: none"> <li>it is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind driven embers to cause ignitions.</li> </ul>	<input checked="" type="checkbox"/>	<p>Compliance with Appendix 5 required.</p>

## 9.0 Environmental Considerations

Maintenance of the APZ is the main proposed bushfire protection measure, and hence should not have any environmental impact greater than previously expected on the lot.

The proposed lodge to be constructed in the existing lease boundary is not expected to have any detrimental environmental impact.

## 10.0 Overall Assessment

The level of bushfire hazard risk identified in relation to the subject land and the proposed development is not considered to be such that the proposal should be denied due to bushfire considerations.

## 11.0 CONCLUSION

Pending the satisfaction of recommendations outlined in this report, the level of bushfire hazard risk identified in relation to the subject land and the proposed development is not considered to be such that the proposal should be denied due to bushfire considerations.

- Having considered the proposed development on land identified as bushfire prone a bushfire risk and assessment has been undertaken and this report finds that the proposed development has a Bushfire Attack Level of
  - New work to achieve BAL 40 on the Southern Elevation.
  - New work on the North, East and West Elevations to achieve BAL29.
- This report does not find that the proposal should be rejected due to bushfire considerations provided the recommendations are undertaken as proposed

10/11/2017

For Mulpha Norwest

APPENDIX ONE – AS3959-2009 CONSTRUCTION REQUIREMENTS FOR BAL 29 & 40

	BAL 29	BAL 40
<b>SUBFLOOR SUPPORTS</b>	<p><b>7.2 SUBFLOOR SUPPORTS</b>                      This Standard does not provide construction requirements for subfloor supports where the subfloor space is enclosed with—                      (a) a wall that complies with Clause 7.4; or                      (b) a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion resistant steel, bronze or aluminium; or                      (c) a combination of Items (a) and (b) above.                      Where the subfloor space is unenclosed, the support posts, columns, stumps, piers and poles shall be—                      (i) of non-combustible material; or                      (ii) of bushfire-resisting timber (see Appendix F); or                      (iii) a combination of Items (i) and (ii) above.</p> <p>NOTE: This requirement applies to the principal building only and not to verandas, decks, steps, ramps and landings (see Clause 7.7).</p>	<p><b>8.2 SUBFLOOR SUPPORTS</b>                      This Standard does not provide construction requirements for subfloor supports where the subfloor space is enclosed with a wall that complies with Clause 8.4.</p> <p>Where the subfloor space is unenclosed, the support posts, columns, stumps, piers and poles shall be—                      (a) of non-combustible material; or                      (b) a system complying with AS 1530.8.1; or                      (c) a combination of Items (a) and (b) above.</p> <p>NOTE: This requirement applies to the principal building only and not to verandas, decks, steps, ramps and landings (see Clause 8.7).</p>
<b>FLOORING SYSTEMS</b>	<p><b>7.3 FLOORS</b>  <b>7.3.1 Concrete slabs on ground</b>                      This Standard does not provide construction requirements for concrete slabs on ground.</p> <p><b>7.3.2 Elevated floors</b>  <b>7.3.2.1 Enclosed subfloor space</b>                      This Standard does not provide construction requirements for elevated floors, including bearers, joists and flooring, where the subfloor space is enclosed with—                      (a) a wall that complies with Clause 7.4; or                      (b) a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion resistant steel, bronze or aluminium; or                      (c) a combination of Items (a) and (b) above.</p> <p><b>7.3.2.2 Unenclosed subfloor space</b>                      Where the subfloor space is unenclosed, flooring material, including bearers, joists and flooring less than 400 mm above finished ground level, shall be—                      (a) non-combustible (e.g., concrete, steel); or                      (b) of bushfire-resisting timber (see Appendix F); or (c) particleboard or plywood flooring where the underside is lined with sarking-type material or mineral wool insulation; or                      (d) a system complying with AS 1530.8.1; or                      (e) a combination of any of Items (a), (b), (c) or (d) above.</p> <p>This Standard does not provide construction requirements for elements of elevated floors, including bearers, joists and flooring, if the underside of the element is 400 mm or more above finished ground level.</p>	<p><b>8.3 FLOORS</b>  <b>8.3.1 Concrete slabs on ground</b>                      This Standard does not provide construction requirements for concrete slabs on ground.</p> <p><b>8.3.2 Elevated floors</b>  <b>8.3.2.1 Enclosed subfloor spaces</b>                      This Standard does not provide construction requirements for elevated floors, including bearers, joists and flooring, where the subfloor space is enclosed with a wall that complies with Clause 8.4.</p> <p><b>8.3.2.2 Unenclosed subfloor spaces</b>                      Where the subfloor space is unenclosed, the flooring material, including bearers, joists and flooring, shall—                      (a) be non-combustible (e.g., concrete, steel); or                      (b) have the underside of the combustible elements of the floor system protected with a non-combustible material (e.g., fibre-cement sheet or metal sheet); or                      (c) comply with AS 1530.8.1; or                      (d) be a combination of any of Items (a), (b) or (c) above.</p>

<p><b>EXTERNAL WALLS</b></p>	<p><b>7.4 EXTERNAL WALLS</b></p> <p><b>7.4.1 Walls</b> Walls shall be one of the following:</p> <ul style="list-style-type: none"> <li>(a) Made of non-combustible material (e.g., full masonry, brick veneer, mud brick, concrete, aerated concrete).</li> <li>or</li> <li>(b) Made of timber-framed or steel-framed walls that are sarked on the outside of the frame and clad with— <ul style="list-style-type: none"> <li>(i) fibre-cement external cladding, a minimum of 6 mm in thickness; or</li> <li>(ii) steel sheet; or</li> <li>(iii) bushfire-resisting timber (see Appendix F); or (iv) a combination of any of Items (i), (ii) or (iii) above.</li> </ul> </li> <li>or</li> <li>(c) A combination of Items (a) and (b) above.</li> </ul> <p><b>7.4.2 Joints</b> All joints in the external surface material of walls shall be covered, sealed, overlapped, backed or butt-jointed to prevent gaps greater than 3 mm. Alternatively, sarking-type material can be applied over the frame prior to fixing any external cladding.</p>	<p><b>8.4 EXTERNAL WALLS</b></p> <p><b>8.4.1 Walls</b> Walls shall be one of the following:</p> <ul style="list-style-type: none"> <li>(a) Walls made from non-combustible material (e.g., full masonry, brick veneer, mud brick, concrete, aerated concrete).</li> <li>or</li> <li>(b) Timber-framed or steel-framed walls that are sarked on the outside of the frame and clad with— <ul style="list-style-type: none"> <li>(i) fibre-cement external cladding, a minimum of 9 mm in thickness; or</li> <li>(ii) steel sheeting; or</li> <li>(iii) a combination of Items (i) and (ii) above.</li> </ul> </li> <li>or</li> <li>(c) A system complying with AS 1530.8.1.</li> <li>or</li> <li>(d) A combination of any of Items (a), (b) or (c) above.</li> </ul> <p><b>8.4.2 Joints</b> All joints in the external surface material of walls shall be covered, sealed, overlapped, backed or butt-jointed to prevent gaps greater than 3 mm. Alternatively, sarking-type material may be applied over the frame prior to fixing any external cladding.</p>
<p><b>VENTS &amp; WEEPHOLES</b></p>	<p><b>7.4.3 Vents and weepholes</b> Vents and weepholes in external walls shall be screened with a mesh with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium, except where they are less than 3 mm (see Clause 3.6).</p>	<p><b>8.4.3 Vents and weepholes</b> Vents and weepholes in external walls shall be screened with a mesh with a maximum aperture of 2 mm, made of corrosion-resistant steel or bronze except where they are less than 3 mm (see Clause 3.6).</p>
<p><b>BUSHFIRE SHUTTERS</b></p>	<p><b>7.5.1 Bushfire shutters</b> Where fitted, bushfire shutters shall comply with Clause 3.7 and be made from—</p> <ul style="list-style-type: none"> <li>(a) non-combustible material; or</li> <li>(b) bushfire-resisting timber (see Appendix F); or</li> <li>(c) a combination of Items (a) and (b) above.</li> </ul>	<p><b>8.5.1 Bushfire shutters</b> Where fitted, bushfire shutters shall comply with Clause 3.7 and be made from non-combustible material.</p>
<p><b>WINDOWS</b></p>	<p><b>7.5.2 Windows</b> Windows shall comply with one of the following: (a) They shall be completely protected by a bushfire shutter that complies with Clause 7.5.1.</p> <p>or</p> <p>(b) They shall comply with the following:</p> <ul style="list-style-type: none"> <li>(i) Window frames and window joinery and shall be made from one of the following: <ul style="list-style-type: none"> <li>(A) Bushfire-resisting timber (see Appendix F).</li> <li>or</li> <li>(B) Metal. or</li> <li>(C) Metal-reinforced PVC-U.</li> </ul> </li> </ul> <p>The reinforcing members shall be made from aluminium, stainless steel, or corrosion-resistant steel, and the frame and the sash shall satisfy the design load, performance and structural strength of the member.</p> <p>(ii) Externally fitted hardware that supports the sash in its functions of opening and closing shall be metal.</p> <p>(iii) Glazing shall be toughened glass minimum 5 mm. (iv) Where glazing is less than 400 mm from the ground or less than 400 mm above decks, carport roofs, awnings and similar elements or fittings having an angle less than 18 degrees to the horizontal and extending more than 110 mm in width from the window frame (see Figure D3, Appendix D) that portion shall be screened with a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium.</p> <p>(v) The openable portions of windows shall be screened with a mesh with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium.</p>	<p><b>8.5.2 Windows</b> Window assemblies shall comply with one of the following:</p> <ul style="list-style-type: none"> <li>(a) They shall be completely protected by a bushfire shutter that complies with Clause 8.5.1.</li> <li>or</li> <li>(b) They shall comply with the following: <ul style="list-style-type: none"> <li>(i) Window frames and hardware shall be metal.</li> <li>(ii) Glazing shall be toughened glass, minimum 5 mm.</li> <li>(iii) Both the openable and the fixed portions of the window shall be screened with a mesh with a maximum aperture of 2 mm, made of corrosion-resistant steel or bronze.</li> <li>(iv) Seals to stiles, head and sills or thresholds shall be manufactured from materials having a flammability index no greater than 5.</li> </ul> </li> </ul>

<p><b>DOORS</b></p>	<p><b>7.5.3 Doors—Side-hung external doors (including French doors, panel fold and bi-fold doors).</b> Side-hung external doors, including French doors, panel fold and bi-fold doors, shall comply with one of the following:</p> <p>(a) They shall be protected by a bushfire shutter that complies with Clause 7.5.1.</p> <p>or</p> <p>(b) They shall be completely protected externally by screens with a mesh with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium or</p> <p>(c) They shall comply with the following:</p> <p>(i) Doors shall be— (A) non-combustible; or</p> <p>(B) a solid timber door, having a minimum thickness of 35 mm for the first 400 mm above the threshold; or (C) a door, including a hollow core door, protected on the outside by a screen door or a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium; or (D) a fully framed glazed door, where the framing is made from non-combustible materials or from bushfire resisting timber (see Appendix F).</p> <p>(ii) Externally fitted hardware that supports the panel in its functions of opening and closing shall be metal. (iii) Where doors incorporate glazing, the glazing shall be toughened glass, minimum 5 mm.</p> <p>(iv) Where glazing is less than 400 mm from the ground or less than 400 mm above decks, carport roofs, awnings and similar elements or fittings having an angle less than 18 degrees to the horizontal and extending more than 110 mm in width from the door (see Figure D3, Appendix D), that portion shall be screened with a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium.</p> <p>(v) Doorframes shall be made from one of the following:</p> <p>(A) Bushfire-resisting timber (see Appendix F).</p> <p>or</p> <p>(B) Metal.</p> <p>or</p> <p>(C) Metal-reinforced PVC-U. The reinforcing members shall be made from aluminium, stainless steel, or corrosion-resistant steel and the door assembly shall satisfy the design load, performance and structural strength of the member.</p> <p>(vi) Doors shall be tight-fitting to the doorframe and to an abutting door, if applicable.</p> <p>(vii) Weather strips, draught excluders or draught seals shall be installed at the base of side-hung external doors.</p> <p><b>7.5.4 Doors—Sliding doors</b> Sliding doors shall comply with one of the following: (a) They shall be protected by a bushfire shutter that complies with Clause 7.5.1.</p> <p>or</p> <p>(b) They shall be completely protected externally by screens with a mesh with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium.</p> <p>or</p> <p>(c) They shall comply with the following:</p> <p>(i) Doorframes shall be of bushfire-resisting timber (see Appendix F) or aluminium or steel.</p> <p>(ii) Externally fitted hardware that supports the panel in its functions of opening and closing shall be metal. (iii) Where sliding doors incorporate glazing, the glazed assembly shall be toughened glass minimum 6 mm except where both the fixed and openable portions of doors are screened by a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion resistant steel, bronze or aluminium.</p>	<p><b>8.5.3 Doors—Side-hung external doors (including French doors, panel fold and bi-fold doors)</b> Side-hung external doors, including French doors, panel fold and bi-fold doors, shall comply with one of the following:</p> <p>(a) They shall be protected by a bushfire shutter that complies with Clause 8.5.1.</p> <p>or</p> <p>(b) They shall comply with the following:</p> <p>(i) Doors shall be— (A) non-combustible; or</p> <p>(B) a solid timber door, having a minimum thickness of 35 mm for the first 400 mm above the threshold and protected on the outside by a metalframed screen door with a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel or bronze; or</p> <p>(C) a fully framed glazed door where the framing is made from non-combustible material.</p> <p>(ii) Externally fitted hardware that supports the panel in its functions of opening and closing shall be made of materials that have an FRL of at least –/30/–.</p> <p>(iii) Where doors incorporate glazing, the glazing shall be toughened glass minimum 6 mm.</p> <p>(iv) Where glazing is less than 400 mm from the ground or less than 400 mm above decks, carport roofs, awnings and similar elements or fittings having an angle less than 18 degrees to the horizontal and extending more than 110 mm in width from the door (see Figure D3, Appendix D) that portion of the glazing shall be screened with a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel or bronze.</p> <p>(v) Seals to stiles, head and sills or thresholds shall be manufactured from silicone. (vi) Doorframes shall be metal.</p> <p>(vii) Doors shall be tight-fitting to the doorframe and to an abutting door, if applicable.</p> <p>(viii) Weather strips, draught excluders or draught seals shall be installed at the base of side-hung external doors.</p> <p><b>8.5.4 Doors—Sliding doors</b> Sliding doors shall comply with one of the following: (a) They shall be protected by a bushfire shutter that complies with Clause 8.5.1.</p> <p>or</p> <p>(b) They shall comply with the following:</p> <p>(i) Doorframes shall be of metal.</p> <p>(ii) Externally fitted hardware that supports the panel in its functions of opening and closing shall be metal. (iii) Where sliding doors incorporate glazing, the glazing shall have an FRL of at least –/30/– except where both the fixed and openable portions of doors are screened by a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel or bronze. (iv) Seals to stiles, head and sills or thresholds shall be manufactured from silicone.</p> <p>(v) Sliding doors shall be tight-fitting in the frames.</p>
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<p><b>GARAGE/ VEHICLE ACCESS DOORS</b></p>	<p><b>7.5.5 Doors—Vehicle access doors (garage doors)</b> The following apply to vehicle access doors: (a) Vehicle access doors shall be made from— (i) non-combustible material; or (ii) bushfire-resisting timber (see Appendix F); or (iii) fibre-cement sheet, a minimum of 6 mm in thickness; or (iv) a combination of any of Items (i), (ii) or (iii) above. (b) Panel lift, tilt doors or side-hung doors shall be fitted with suitable weather strips, draught excluders, draught seals or guide tracks, as appropriate to the door type, with a maximum gap no greater than 3 mm. (c) Roller doors shall have guide tracks with a maximum gap no greater than 3 mm and shall be fitted with a nylon brush that is in contact with the door (see Figure D4, Appendix D). (d) Vehicle access doors shall not include ventilation slots.</p>	<p><b>8.5.5 Doors—Vehicle access doors (garage doors)</b> The following apply to vehicle access doors: (a) Vehicle access doors shall be non-combustible. (b) Panel lift, tilt doors or side-hung doors shall be fitted with suitable weather strips, draught excluders, draught seals or guide tracks, as appropriate to the door type, with a maximum gap no greater than 3 mm. (c) Roller doors shall have guide tracks with a maximum gap no greater than 3 mm and shall be fitted with a nylon brush that is in contact with the door (see Figure D4, Appendix D). (d) Vehicle access doors shall not include ventilation slots.</p>
<p><b>ROOFS</b></p>	<p><b>7.6 ROOFS (INCLUDING VERANDA AND ATTACHED CARPORT ROOFS, PENETRATIONS, EAVES, FASCIAS, GABLES, GUTTERS AND DOWNPIPES)</b> <b>7.6.1 General</b> The following apply to all types of roofs and roofing systems: (a) Roof tiles, roof sheets and roof-covering accessories shall be non-combustible. (b) The roof/wall junction shall be sealed, to prevent openings greater than 3 mm, either by the use of fascia and eaves linings or by sealing between the top of the wall and the underside of the roof and between the rafters at the line of the wall. (c) Roof ventilation openings, such as gable and roof vents, shall be fitted with ember guards made of noncombustible material or a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosionresistant steel, bronze or aluminium. (d) A pipe or conduit that penetrates the roof covering shall be non-combustible.</p> <p><b>7.6.2 Tiled roofs</b> Tiled roofs shall be fully sarked. The sarking shall— (a) have a flammability index of not more than 5, when tested to AS 1530.2; (b) be located directly below the roof battens; (c) cover the entire roof area including the ridge; and (d) extend into gutters and valleys.</p> <p><b>7.6.3 Sheet roofs</b> Sheet roofs shall— (a) be fully sarked in accordance with Clause 7.6.2, except that foil-backed insulation blankets may be installed over the battens; or (b) have any gaps greater than 3 mm under corrugations or ribs of sheet roofing and between roof components sealed at the fascia or wall line and at valleys, hips and ridges by— (i) a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium; or (ii) mineral wool; or (iii) other non-combustible material; or (iv) a combination of any of Items (i), (ii) or (iii) above.</p> <p><b>7.6.4 Veranda, carport and awning roofs</b> The following apply to veranda, carport and awning roofs: (a) A veranda, carport or awning roof forming part of the main roof space [see Figure D1(a), Appendix D] shall meet all the requirements for the main roof, as specified in Clauses 7.6.1, 7.6.2, 7.6.3, 7.6.5 and 7.6.6. (b) A veranda, carport or awning roof separated from the main roof space by an external wall [see Figures D1(b) and D1(c), Appendix D] complying with Clause 7.4 shall have a non-combustible roof covering and the support structure shall be— (i) of non-combustible material; or (ii) bushfire-resisting timber (see Appendix F); or</p>	<p><b>8.6 ROOFS (INCLUDING VERANDA AND ATTACHED CARPORT ROOFS, PENETRATIONS, EAVES, FASCIAS, GABLES, GUTTERS AND DOWNPIPES)</b> <b>8.6.1 General</b> The following provisions apply to all types of roofs and roofing systems: (a) Roof tiles, roof sheets and roof-covering accessories shall be non-combustible. (b) The roof/wall junction shall be sealed, to prevent openings greater than 3 mm, either by the use of fascia and eaves linings or by sealing between the top of the wall and the underside of the roof and between the rafters at the line of the wall. (c) Roof ventilation openings, such as gable and roof vents, shall be fitted with ember guards made of noncombustible material or a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosionresistant steel or bronze. (d) A pipe or conduit that penetrates the roof covering shall be non-combustible. Roof-mounted evaporative coolers are excluded from this level (i.e., BAL—40).</p> <p><b>8.6.2 Tiled roofs</b> Tiled roofs shall be fully sarked. The sarking shall— (a) have a flammability index of not more than 5, when tested to AS 1530.2; (b) be located directly below the roof battens; (c) cover the entire roof area including the ridge; and (d) extend into gutters and valleys.</p> <p><b>8.6.3 Sheet roofs</b> Sheet roofs shall— (a) be fully sarked in accordance with Clause 8.6.2, except that foil-backed insulation blankets may be installed over the battens; (b) have any gaps greater than 3 mm under corrugations or ribs of sheet roofing and between roof components sealed at the fascia or wall line and at valleys, hips and ridges by— (i) a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel or bronze; or (ii) mineral wool; or (iii) other non-combustible material; or (iv) a combination of any of Items (i), (ii) or (iii) above.</p> <p><b>8.6.4 Veranda, carport and awning roofs</b> The following apply to veranda, carport and awning roofs: (a) A veranda, carport or awning roof forming part of the main roof space [see Figure D1(a), Appendix D] shall meet all the requirements for the main roof, as specified in Clauses 8.6.1, 8.6.2, 8.6.3, 8.6.5 and 8.6.6. (b) A veranda, carport or awning roof separated from the main roof space by an external wall</p>

	<p>(iii) timber rafters lined on the underside with fibrecement sheeting a minimum of 6 mm in thickness, or with material complying with AS 1530.8.1; or</p> <p>(iv) a combination of any of Items (i), (ii) or (iii) above.</p> <p><b>7.6.5 Roof penetrations</b> The following apply to roof penetrations:</p> <p>(a) Roof penetrations, including roof lights, roof ventilators, roof-mounted evaporative cooling units, aerials, vent pipes and supports for solar collectors, shall be adequately sealed at the roof to prevent gaps greater than 3 mm. The material used to flash the penetration shall be non-combustible.</p> <p>(b) Openings in vented roof lights, roof ventilators or vent pipes shall be fitted with ember guards made from a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium.</p> <p>(c) All overhead glazing shall be Grade A laminated safety glass complying with AS 1288.</p> <p>(d) Glazed elements in roof lights and skylights may be of polymer provided a Grade A safety glass diffuser, complying with AS 1288, is installed under the glazing. Where glazing is an insulating glazing unit (IGU), Grade A toughened safety glass, minimum 4 mm, shall be used in the outer pane of the IGU.</p> <p>(e) Where roof lights are installed in roofs having a pitch of less than 18 degrees to the horizontal, the glazing shall be protected with ember guards made from a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium.</p> <p>(f) Evaporative cooling units shall be fitted with butterfly closers at or near the ceiling level, or the unit shall be fitted with non-combustible covers with a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium.</p>	<p>[see Figures D1(b) and D1(c), Appendix D] complying with Clause 8.4 shall have a non-combustible roof covering and the support structure shall be—</p> <p>(i) of non-combustible material; or</p> <p>(ii) timber rafters lined on the underside with fibrecement sheeting a minimum of 6 mm in thickness, or with material complying with AS 1530.8.1; or (iii) a system complying with AS 1530.8.1; or</p> <p>(iv) a combination of any of Items (i), (ii) or (iii) above.</p> <p><b>8.6.5 Roof penetrations</b> The following apply to roof penetrations:</p> <p>(a) Roof penetrations, including roof lights, roof ventilators, aerials, vent pipes and supports for solar collectors, shall be adequately sealed at the roof to prevent gaps greater than 3 mm. The material used to flash the penetration shall be noncombustible.</p> <p>(b) Glazed assemblies for roof lights and skylights shall have an FRL of -/30/-.</p> <p>(c) Where roof lights are installed in roofs having a pitch of less than 18 degrees to the horizontal, the glazing shall be protected with ember guards made from a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel or bronze.</p>
<p><b>EAVES LININGS, FASCIAS AND GABLES</b></p>	<p><b>7.6.6 Eaves linings, fascias and gables</b> The following apply to eaves linings, fascias and gables:</p> <p>(a) Joints in eaves linings, fascias and gables may be sealed with plastic joining strips or timber storm moulds.</p> <p>(b) Gables shall comply with Clause 7.4.</p> <p>(c) Fascias and bargeboards shall—</p> <p>(i) where timber is used, be made from bushfire resisting timber (see Appendix F); or</p> <p>(ii) where made from metal, be fixed at 450 mm centres; or</p> <p>(iii) be a combination of Items (i) and (ii) above.</p> <p>(d) Eaves linings shall be—</p> <p>(i) fibre-cement sheet, a minimum 4.5 mm in thickness; or</p> <p>(ii) bushfire-resisting timber (see Appendix F); or (iii) a combination of Items (i) and (ii) above.</p> <p>(e) Eaves penetrations shall be protected the same as for roof penetrations (see Clause 7.6.5).</p> <p>(f) Eaves ventilation openings greater than 3 mm shall be fitted with ember guards made of non-combustible material or a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium.</p>	<p><b>8.6.6 Eaves linings, fascias and gables</b> The following apply to eaves linings, fascias and gables: (a) Joints in eaves linings, fascias and gables may be sealed with plastic joining strips or timber storm moulds.</p> <p>(b) Gables shall comply with Clause 8.4.</p> <p>(c) Fascias and bargeboards shall comply with AS 1530.8.1.</p> <p>(d) Eaves linings shall be—</p> <p>(i) fibre-cement sheet, a minimum of 6 mm in thickness; or</p> <p>(ii) calcium silicate sheet, a minimum of 6 mm in thickness; or</p> <p>(iii) a combination of Items (i) and (ii) above.</p> <p>(e) Eaves penetrations shall be protected the same as for roof penetrations as specified in Clause 8.6.5. (f) Eaves ventilation openings greater than 3 mm shall be fitted with ember guards made of non-combustible material, or a mesh, or perforated sheet with a maximum aperture of 2 mm, made of corrosion resistant steel or bronze.</p>



<p><b>GUTTERS AND DOWNPIPES</b></p>	<p><b>7.6.7 Gutters and downpipes</b>  This Standard does not provide construction-specific material requirements for downpipes.  If installed, gutter and valley leaf guards shall be noncombustible.  With the exception of box gutters, gutters shall be metal or PVC-U.  Box gutters shall be non-combustible and flashed at the junction with the roof, with non-combustible materials.</p>	<p><b>8.6.7 Gutters and downpipes</b>  This Standard does not provide construction-specific material requirements for downpipes.  If installed, gutter and valley leaf guards shall be noncombustible.  Gutters shall be non-combustible.  Box gutters shall be non-combustible and flashed at the junction with the roof with non-combustible materials.</p>
<p><b>VERANDAS, DECKS, STEPS, RAMPS &amp; LANDINGS</b></p>	<p><b>7.7 VERANDAS, DECKS, STEPS, RAMPS AND LANDINGS</b></p> <p><b>7.7.1 General</b>  Decking shall be either spaced or continuous (i.e., without spacing).  There is no requirement to enclose the subfloor spaces of verandas, decks, steps, ramps or landings.</p> <p><b>7.7.2 Enclosed subfloor spaces of verandas, decks, steps, ramps and landings</b></p> <p><b>7.7.2.1 Materials to enclose a subfloor space</b> The subfloor spaces of verandas, decks, steps, ramps and landings are considered to be 'enclosed' when— (a) the material used to enclose the subfloor space is— (i) non-combustible; or (ii) bushfire-resisting timber (see Appendix F); or (iii) a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium; or (iv) a combination of any of Items (i), (ii) or (iii) above; and (b) all openings greater than 3 mm are screened with a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium.</p> <p><b>7.7.2.2 Supports</b>  This Standard does not provide construction requirements for support posts, columns, stumps, stringers, piers and poles.</p> <p><b>7.7.2.3 Framing</b>  This Standard does not provide construction requirements for the framing of verandas, decks, ramps or landings (i.e., bearers and joists).</p> <p><b>7.7.2.4 Decking</b>  Decking shall be—  (a) of non-combustible material; or  (b) of bushfire-resisting timber (see Appendix F); or (c) a combination of Items (a) and (b) above.</p> <p><b>7.7.3 Unenclosed subfloor spaces of verandas, decks, steps, ramps and landings</b></p> <p><b>7.7.3.1 Supports</b>  Support posts, columns, stumps, stringers, piers and poles shall be—  (a) of non-combustible material; or  (b) of bushfire-resisting timber (see Appendix F); or (c) a combination of Items (a) and (b) above.  (c)</p> <p><b>7.7.3.2 Framing</b>  Framing of verandas, decks, ramps or landings (i.e., bearers and joists) shall be— (a) of non-combustible material; or  (c) of bushfire-resisting timber (see Appendix F); or (c) a combination of Items (a) and (b) above.  (d)</p> <p><b>7.7.3.3 Decking</b>  Decking shall be—  (a) of non-combustible material; or  (b) of bushfire-resisting timber (see Appendix F); or (c) a combination of Items (a) and (b) above.</p>	<p><b>8.7 VERANDAS, DECKS, STEPS, RAMPS AND LANDINGS</b></p> <p><b>8.7.1 General</b>  Decking shall be either spaced or continuous (i.e., without spacing).  There is no requirement to enclose the subfloor spaces of verandas, decks, steps, ramps or landings.</p> <p><b>8.7.2 Enclosed subfloor spaces of verandas, decks, steps, ramps and landings</b></p> <p><b>8.7.2.1 Materials to enclose a subfloor space</b> The subfloor spaces of verandas, decks, steps, ramps and landings are deemed to be 'enclosed' when— (a) the material used to enclose the subfloor space complies with Clause 8.4; and (b) all openings greater than 3 mm are screened with a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel or bronze.</p> <p><b>8.7.2.2 Supports</b>  This Standard does not provide construction requirements for support posts, columns, stumps, stringers, piers and poles.</p> <p><b>8.7.2.3 Framing</b>  This Standard does not provide construction requirements for the framing of verandas, decks, ramps or landings (i.e., bearers and joists).</p> <p><b>8.7.2.4 Decking</b>  Decking shall be—  (a) of non-combustible material; or  (b) a system complying with AS 1530.8.1, or (c) a combination of Items (a) and (b) above.</p> <p><b>8.7.3 Unenclosed subfloor spaces of verandas, decks, steps, ramps and landings</b></p> <p><b>8.7.3.1 Supports</b>  Support posts, columns, stumps, stringers, piers and poles shall be—  (a) of non-combustible material; or  (b) a system complying with AS 1530.8.1; or (c) a combination of Items (a) and (b) above.</p> <p><b>8.7.3.2 Framing</b>  Framing of verandas, decks, ramps or landings (i.e., bearers and joists) shall be— (a) of non-combustible material; or  (c) a system complying with AS 1530.8.1; or (c) a combination of Items (a) and (b) above.  (d)</p> <p><b>8.7.3.3 Decking</b>  Decking shall be—  (a) of non-combustible material; or  (b) a system complying with AS 1530.8.1; or (c) a combination of Items (a) and (b) above.</p> <p><b>8.7.4 Balustrades, handrails or other barriers</b>  Those parts of the handrails and balustrades less than 125 mm from any glazing or any combustible wall shall be of non-combustible material.  Those parts of the handrails and balustrades that are</p>

	<p><b>7.7.4 Balustrades, handrails or other barriers</b>  Those parts of the handrails and balustrades less than 125 mm from any glazing or any combustible wall shall be—  (a) of non-combustible material; or  (b) bushfire-resisting timber (see Appendix F); or (c) a combination of Items (i) and (ii) above.  Those parts of the handrails and balustrades that are 125 mm or more from the building have no requirements.</p>	<p>125 mm or more from the building have no requirements.</p>
<p><b>SERVICE PIPES (WATER AND GAS)</b></p>	<p><b>7.8 WATER AND GAS SUPPLY PIPES</b>  Above-ground, exposed water and gas supply pipes shall be metal.</p>	<p><b>8.8 WATER AND GAS SUPPLY PIPES</b>  Above-ground, exposed water and gas supply pipes shall be metal</p>