

Project: Alterations & Additions to Existing Lodge
4 Mowamba Place, Thredbo NSW
Lot 817 DP 1119757

DATE: DECEMBER 2019

REPORT NO: 19124

REVISION: A

PREPARED FOR: BERNTI'S MOUNTAIN INN C/- LLOYD WILLIAMS

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- Preparation of Bushfire Reports for Development in Bushfire Prone Areas
- Bushfire Attack Level (BAL) Certificates
- Bushfire Evacuation Plans
- Construction Solutions & Advice for Bushfire Prone Areas

Executive Summary

This bushfire assessment is for the proposed alterations and additions to an existing lodge known as Bernti's Mountain Inn located at Lot 817 DP1119757, 4 Mowamba Place, Thredbo NSW 2625.

The alterations and additions to the existing commercial lodge are as follows:

- Addition of new carparking area (Level 1)
- Addition of storage areas (Level 1)
- Addition of new bar, brasserie & multi-purpose room (Level 2)
- Addition of new kitchen, servery & bathroom facilities (Level 2)
- Addition of private open space and sun deck (Level 2)
- Extension to existing restaurant
- Addition of new sun deck
- New roof to match existing with installation of solar panels

The land 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.

The required Bushfire Attack Level for the commercial lodge will be;

- **Bushfire Attack Level of BAL 12.5.**

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.

RECOMMENDATIONS

ASSET PROTECTION ZONES

The landscaped areas of the allotment 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.

The landscaping shall maintain the inner protection area effectively free of available fuel. Landscaping plants may be used 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.

CONSTRUCTION

To BAL 12.5 as per AS3959-2009, 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*.

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:

WATER

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

GAS

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

- Bottled gas is 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.

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.

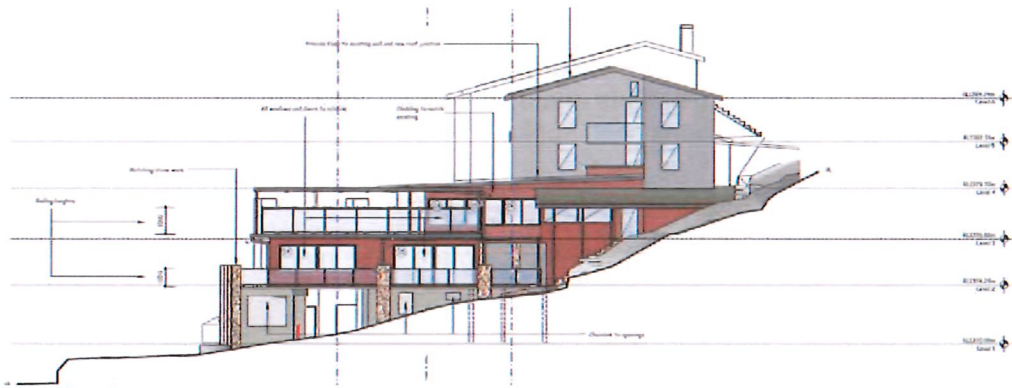
To achieve this, the following conditions shall apply:

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'.

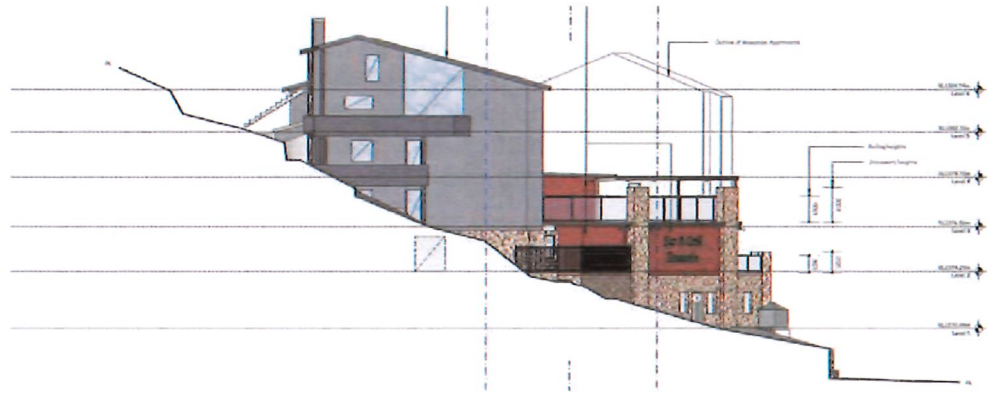
ELEVATIONS



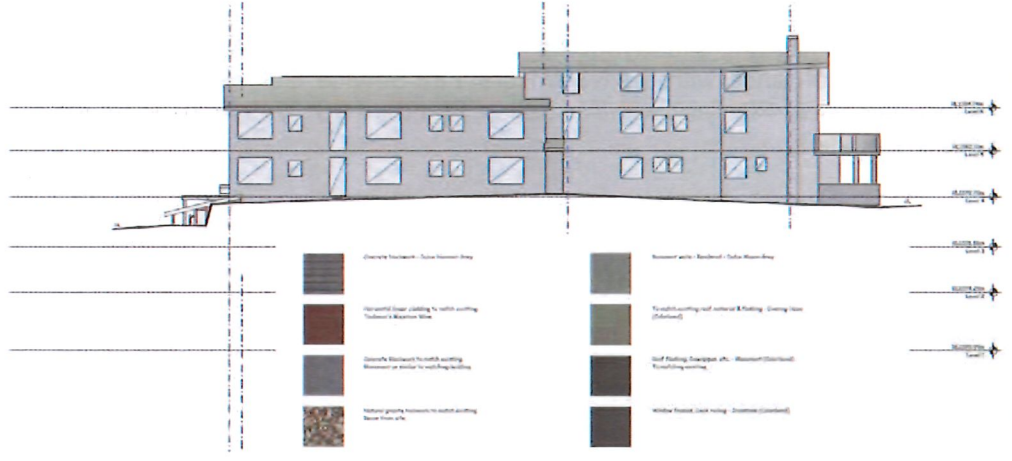
North Elevation



West Elevation



East Elevation



South Elevation

Bushfire Hazard and Risk Assessment

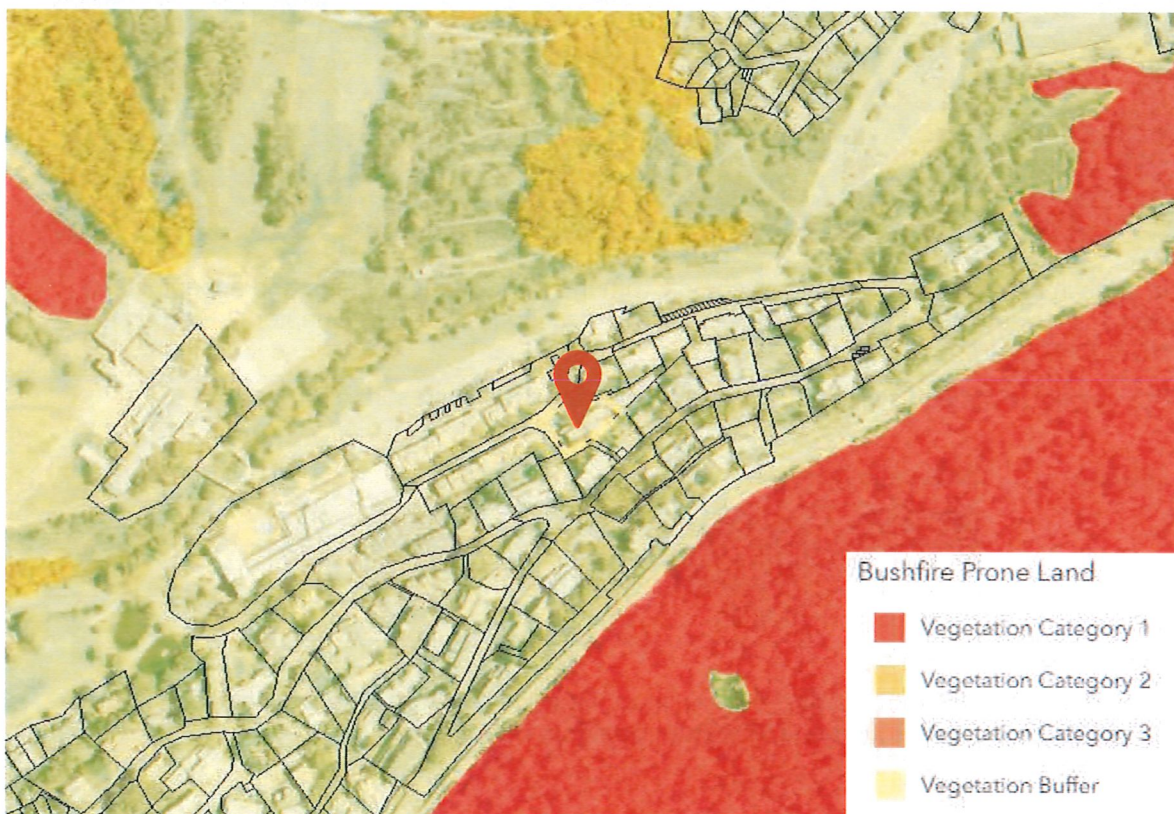
This Bush Fire Assessment Report has been compiled for submission to the Department of Planning for the purpose of assessment under Section 100B of the RF Act and is also considered "integrated development" under Section 91 of *Environmental Planning and Assessment Act 1979* (EP&A Act).

The 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).

Description

The subject site is located in Thredbo Village within Kosciuszko National Park and is identified as Lot 817 DP 1119757, 4 Mowamba Place, Thredbo NSW 2625.

The site is located within land that has been identified as Vegetation Buffer within Bushfire Prone Land.



Slope Assessment



As such in regard to bushfire, it will comply with the performance criteria and acceptable solutions as outlined in *Planning for Bushfire Protection* (PBP 2006) Chapter 4, Section 4.3 (NSW RFS 2006).

The subject allotment is within the grounds of a managed ski resort.

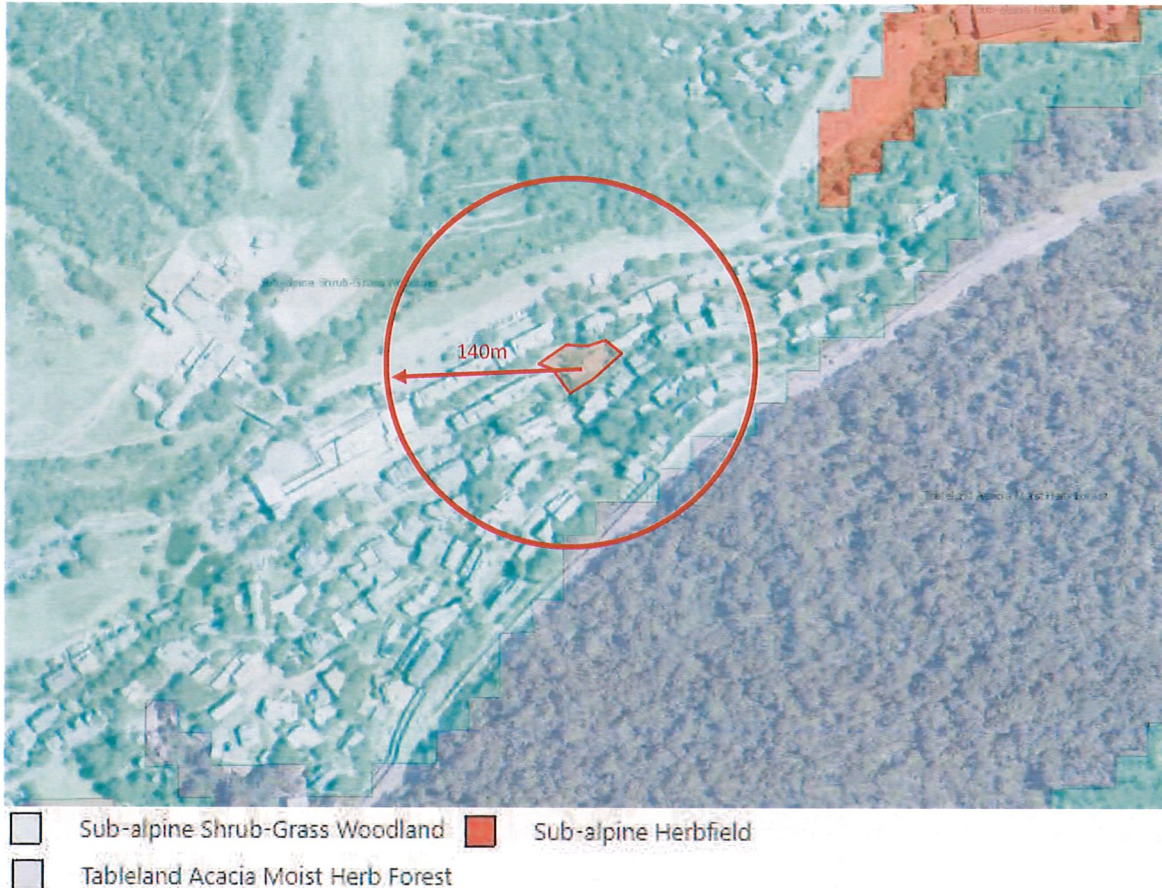
Table 1 Slope and direction

NORTH	SOUTH	EAST	WEST
Managed Land	Managed Land	Managed Land	Managed Land

The slope influencing bushfire behavior is on the south eastern side and to the north of the development falls into the PBP (2006) category of "upslope".

Vegetation Assessment

Thredbo Village is comprised of managed land at the base of the valley with upslope to the North and South. Within 140m of the site, the area is managed land within a ski resort with the majority comprised of other existing lodges. The vegetation of this area is characterised as sub-alpine shrub-grass woodland. Outside of the 140m, there is a small area of developed sub-alpine herb field as well as tableland acacia moist herb forest over 100m upslope from the site as shown below.



Above the village, on the Southern slope a large area of Tableland Acacia Moist Herb Forest which is comparable to the *Forest* classification of *Keith* as it is comprised of an open tree canopy which is dominated by eucalypt species over 10m in height. Below the canopy there is a prominent understory varying between species from hard-leaved shrubs to soft-leaved shrubs ferns and herbs.

The majority of the Northern slope is comprised of managed land as cleared and maintained for ski runs during winter and a mountain bike park during the summer months. This land is managed by Kosciuszko Thredbo. There are pockets of Sub-Alpine Shrub-Grass Woodland which is also similar to the *Forest* classification of *Keith*.

Predominant Vegetation Category

The predominant vegetation is classified as Forest.

Closest threat of Bushfire

Closest threats of bushfire is the Forest vegetation 90m to upslope vegetation to the North of the site and 100m upslope to the South-East Forest vegetation.

Construction

Bushfire Attack Level will be provided as per AS3959-2009,

- Bushfire Attack Level of **BAL 12.5**

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*.

Hazard Assessment

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

CATEGORY	NORTH	EAST	SOUTH	WEST
Converted Vegetation	<input checked="" type="checkbox"/> Forest	<input type="checkbox"/> Forest	<input checked="" type="checkbox"/> Forest	<input type="checkbox"/> Forest
	<input type="checkbox"/> Woodland	<input type="checkbox"/> Woodland	<input 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 type="checkbox"/> Grassland	<input type="checkbox"/> Grassland	<input type="checkbox"/> Grassland	<input type="checkbox"/> Grassland
	<input type="checkbox"/> Managed Land	<input checked="" type="checkbox"/> Managed Land	<input type="checkbox"/> Managed Land	<input checked="" type="checkbox"/> Managed Land

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

ASPECT	NORTH	EAST	SOUTH	WEST
Distance	90m	Managed Land	100m upslope	Managed land

Effective Slope that will influence bushfire behavior in each direction

CATEGORY	NORTH	EAST	SOUTH	WEST
	<input checked="" 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 type="checkbox"/> >10 to 15	<input type="checkbox"/> >10 to 15	<input type="checkbox"/> >10 to 15	<input 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 checked="" 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 type="checkbox"/> Bal-40	<input type="checkbox"/> Bal-29	<input type="checkbox"/> Bal-19	<input checked="" type="checkbox"/> Bal-12.5	<input type="checkbox"/> No Requirement

Fire and Ember Attack

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

Bushfire Attack Level

The BAL's as established in the Table above - indicate BAL 12.5 due to the shortest distances to the boundary of the allotment to the North. (90m upslope).

TABLE 2.4.4

A1
A2

DETERMINATION OF BUSHFIRE ATTACK LEVEL (BAL)—FDI 50 (1090 K)					
Vegetation classification	Bushfire Attack Levels (BALs)				
	BAL—FZ	BAL—40	BAL—29	BAL—19	BAL—12.5
	Distance (m) of the site from the predominant vegetation class				
All upslopes and flat land (0 degrees)					
A. Forest	<12	12-<16	16-<23	23-<32	32-<100
B. Woodland	<7	7-<10	10-<15	15-<22	22-<100
C. Shrubland	<7	7-<9	9-<13	13-<19	19-<100
D. Scrub	<10	10-<13	13-<19	19-<27	27-<100
E. Mallee/Mulga	<6	6-<8	8-<12	12-<17	17-<100
F. Rainforest	<5	5-<6	6-<9	9-<14	14-<100
G(i). Grassland	<5	5-<6	6-<10	10-<14	14-<50
G(ii). Tussock Moorland	<7	7-<9	9-<14	14-<20	20-<100

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 lodge, or too dense in numbers – e.g. below.

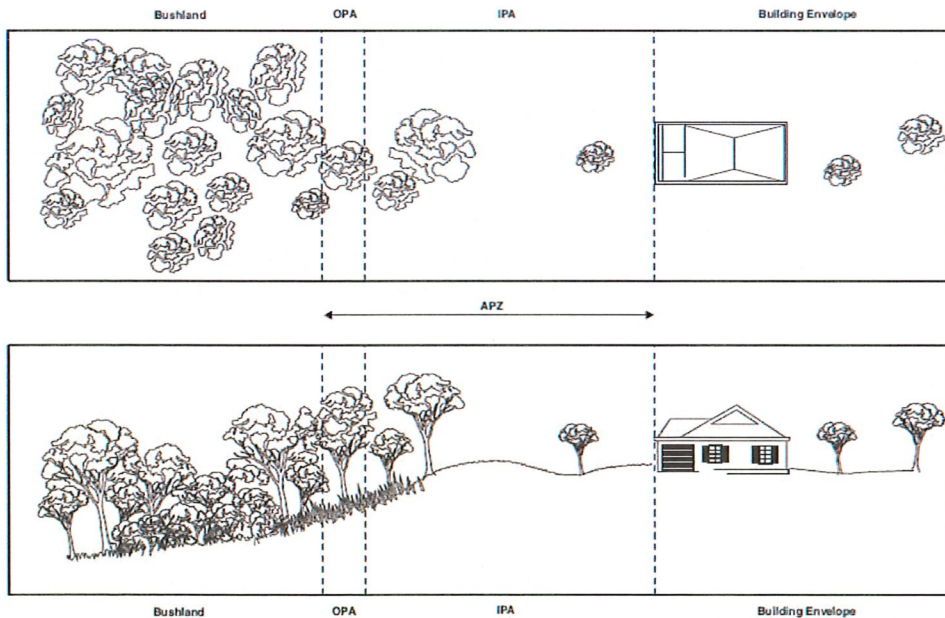


Figure 3.1 shows the APZ, IPA and OPA graphically.

The 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 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).

Adequate Water and Utility Services

Thredbo Resort is serviced by reticulated water. A hydrant system is located along Mowamba Place. The location and distance to the hydrants will be consistent with the requirements of the PBP 2006.

Property Access Roads and Public Road Systems 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.

- Mowamba Place 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.

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'.

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 building;
- 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.

Specific Objectives for Special Fire Protection Purpose Developments

Asset Protection Zones		
Performance Criteria	Acceptable solutions	Compliance
The intent may be achieved where:		
<ul style="list-style-type: none"> radiant heat levels of greater than 10kW/m² will not be experienced by occupants or emergency services workers entering or exiting a building. 	<ul style="list-style-type: none"> an APZ is provided in accordance with the relevant tables and figures in Appendix 2 of this document. exits are located away from the hazard side of the building. the APZ is wholly within the boundaries of the development site. 	Complies
<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> mechanisms are in place to provide for the maintenance of the APZ over the life of the development. the APZ is not located on lands with a slope exceeding 18 degrees. 	Complies DA to be conditioned with recommendations outlined in this report.
<ul style="list-style-type: none"> APZs are managed and maintained to prevent the spread of a fire towards the building. 	<ul style="list-style-type: none"> in accordance with the requirements of 'Standards for Asset Protection Zones (RFS 2005). <p style="text-align: center;"><i>Note - a Monitoring and Fuel Management Program should be required as a condition of development consent.</i></p>	DA to be conditioned with recommendations outlined in this report.
<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> compliance with Appendix 5. 	DA to be conditioned with recommendations outlined in this report.

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

Services – Water, gas and electricity		
Performance Criteria	Acceptable solutions	Compliance
The intent may be achieved where:		
<p>Non-reticulated water supply area.</p> <p>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.</p>	<ul style="list-style-type: none"> 10,000 litres is the minimum dedicated water supply required for firefighting purposes for each occupied building, excluding drenching systems. 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. 	N/A A reticulated water supply is available.
<p>Electricity</p> <p>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.</p>	<ul style="list-style-type: none"> electrical transmission lines are underground. 	<input checked="" type="checkbox"/>

<p>Gas</p> <ul style="list-style-type: none"> location of gas services will not lead to ignition of surrounding bush land or the fabric of buildings. 	<ul style="list-style-type: none"> 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. all fixed LPG tanks are kept clear of all flammable materials and located on the non hazard side of the development. 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. 	<p>To form part of the recommendations of this report.</p>
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Emergency & Evacuation Planning		
Performance Criteria	Acceptable solutions	Compliance
<p>The intent may be achieved where:</p>		
<p>An Emergency and Evacuation management Plan is approved by the relevant fire authority for the area.</p>	<ul style="list-style-type: none"> An emergency/evacuation plan is to be prepared consistent with the RFS guidelines for the <i>Preparation of Emergency/Evacuation Plan</i>. 	<p>DA to be conditioned with recommendations outlined in this report.</p>

Bushfire protection measures for infill development		
Performance Criteria	Comply	Acceptable solutions
<p>The intent may be achieved where:</p>		
<p>in relation to Asset Protection Zones:</p> <p>a defensible space is provided onsite. an asset protection zone is provided and maintained for the life of the development.</p>	<input checked="" type="checkbox"/>	<p>Entire allotment to be maintained as APZ.</p>
<p>in relation to siting and design:</p> <p>buildings are sited and designed to minimise the risk of bush fire attack.</p>	<input checked="" type="checkbox"/>	<p>Building to be constructed as per the recommendations of this report.</p>
<p>in relation to construction standards:</p> <ul style="list-style-type: none"> it is demonstrated that the proposed building can withstand bush fire attack in the form of wind, smoke, embers, radiant heat and flame contact. 	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> The new work to comply to. <ul style="list-style-type: none"> BAL 12.5

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

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

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.

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;
- **Construction to achieve BAL12.5.**
- This report does not find that the proposal should be rejected due to bushfire considerations provided the recommendations are undertaken as proposed

