

Bushfire Hazard Assessment Report



Project: Repairs, Maintenance, Internal Refurbish,
External Venting, and Accessibility

1/3 Riverview Terrace, Thredbo NSW 2627
Lot 573 DP 1118588

DATE: OCTOBER 2021

REPORT NO: 20102

REVISION: B

PREPARED BY: MARK ALLSOP (Foxy Moon P/L)

Executive Summary

This bushfire assessment is for the proposed alterations to an existing tourist unit known as Snowdrift Unit 1 located at Lot 573 DP1118588, 1/3 Riverview Terrace, Thredbo NSW 2627.

The alterations to the existing commercial lodge are as follows:

- Install walkway and rebuild entry to comply with AS14281
- Replace existing skylights
- Replace existing window
- Replace sliding doors
- Internal alterations
- Add external extraction vents
- Modifications for accessibility
- Replace wood fireplace with gas

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 defendable 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 firefighting 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.

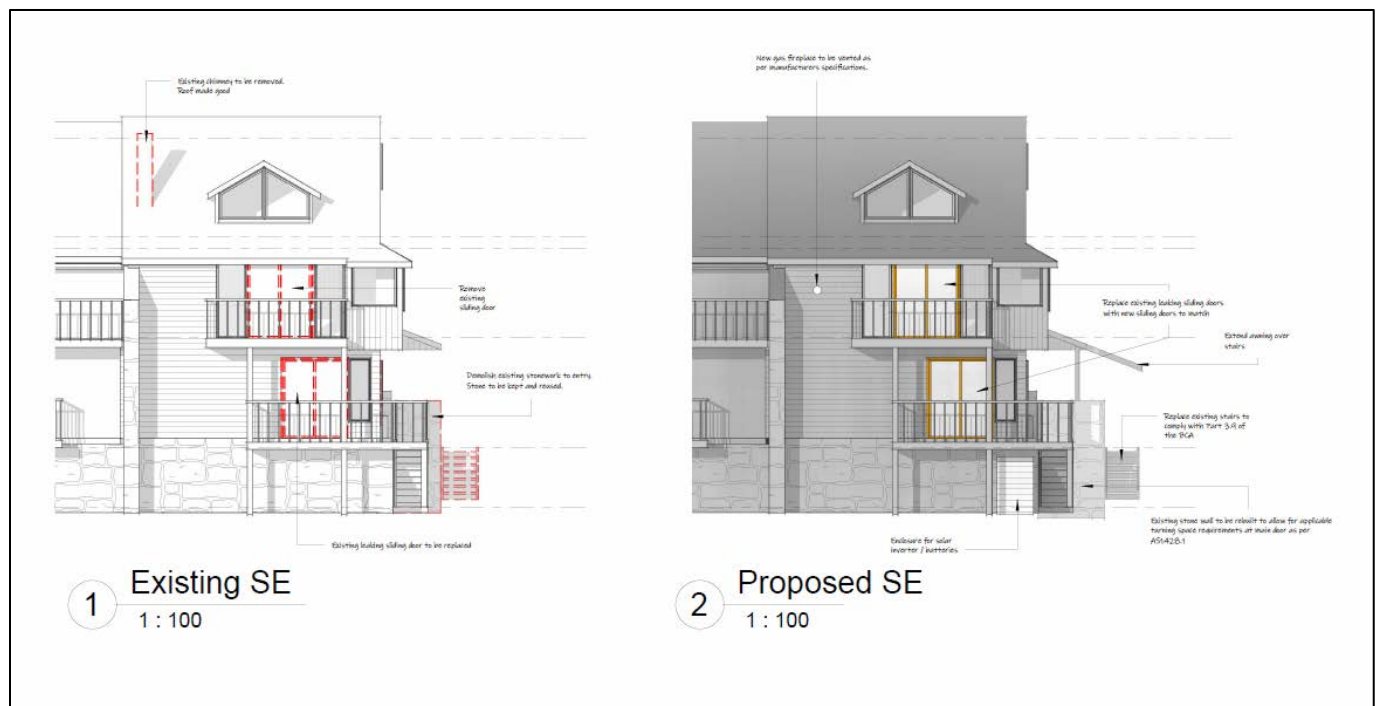
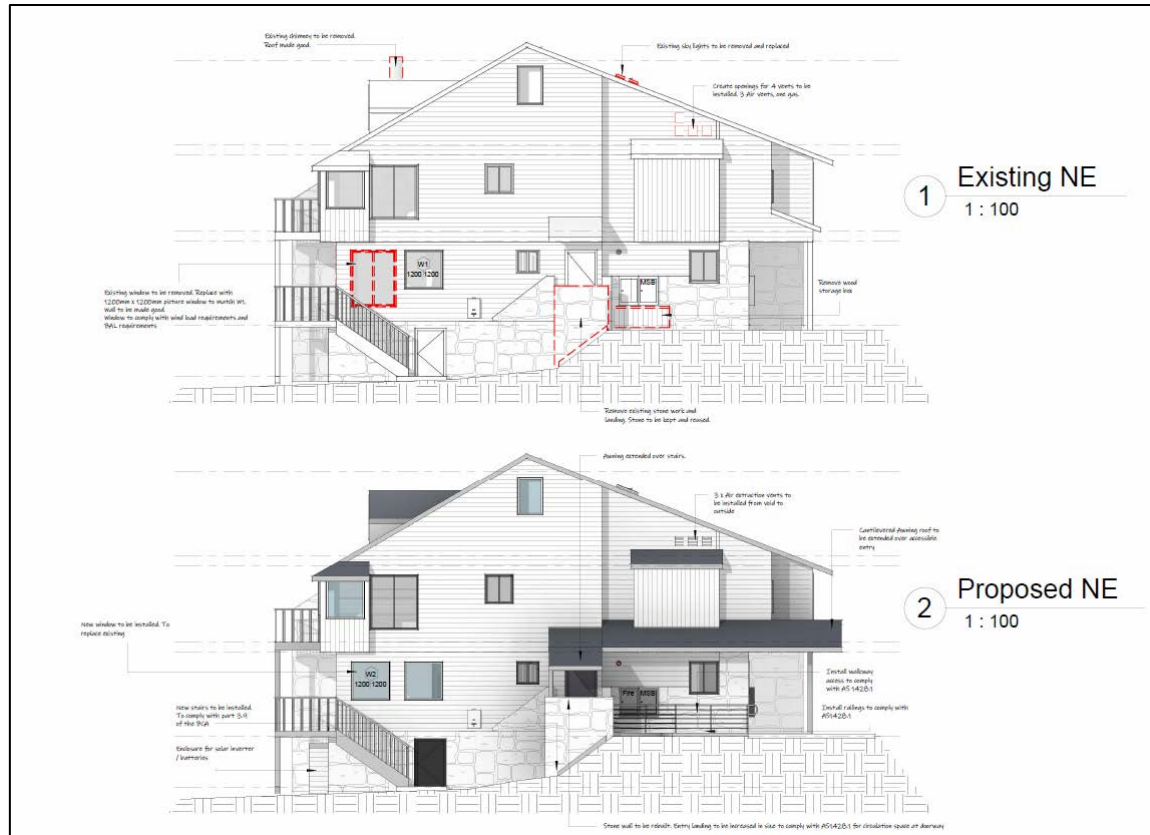
EVACUATION AND EMERGENCY MANAGEMENT

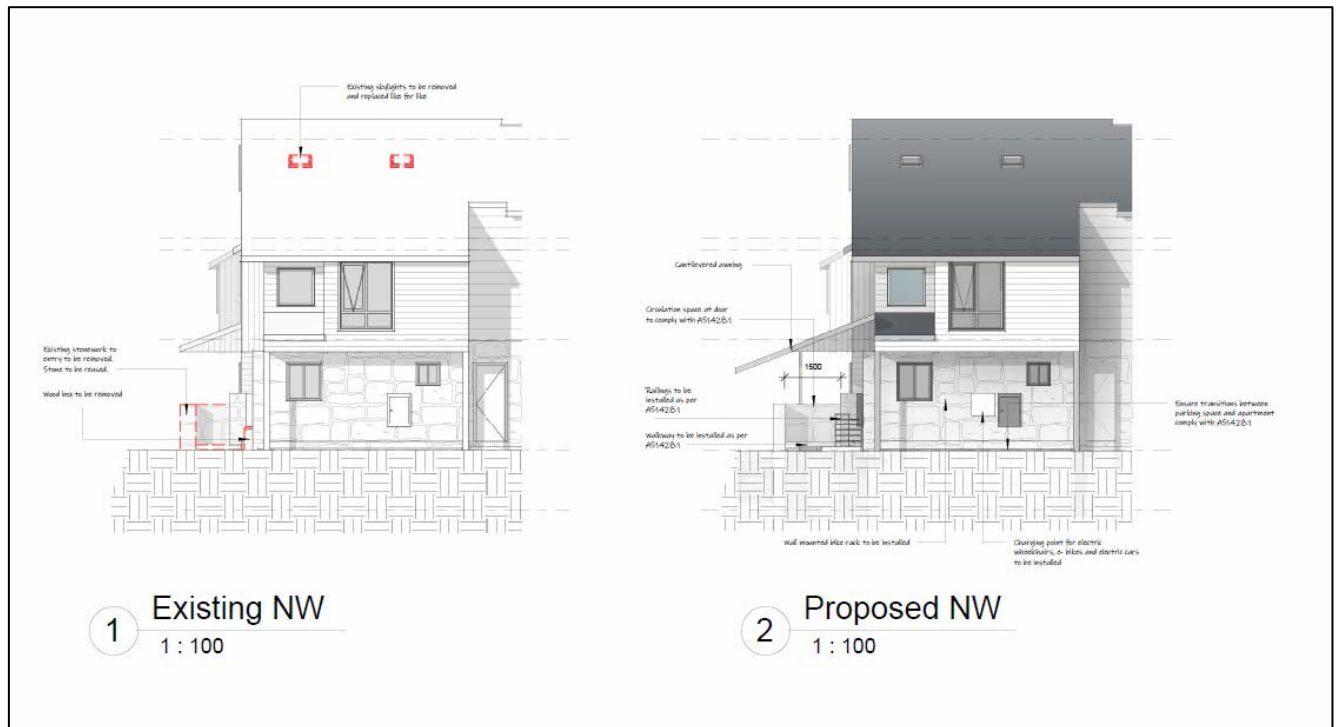
The intent of measures is to provide suitable emergency and evacuation (and relocation) arrangements for occupants of special fire protection purpose developments.

To achieve this, the following conditions shall apply:

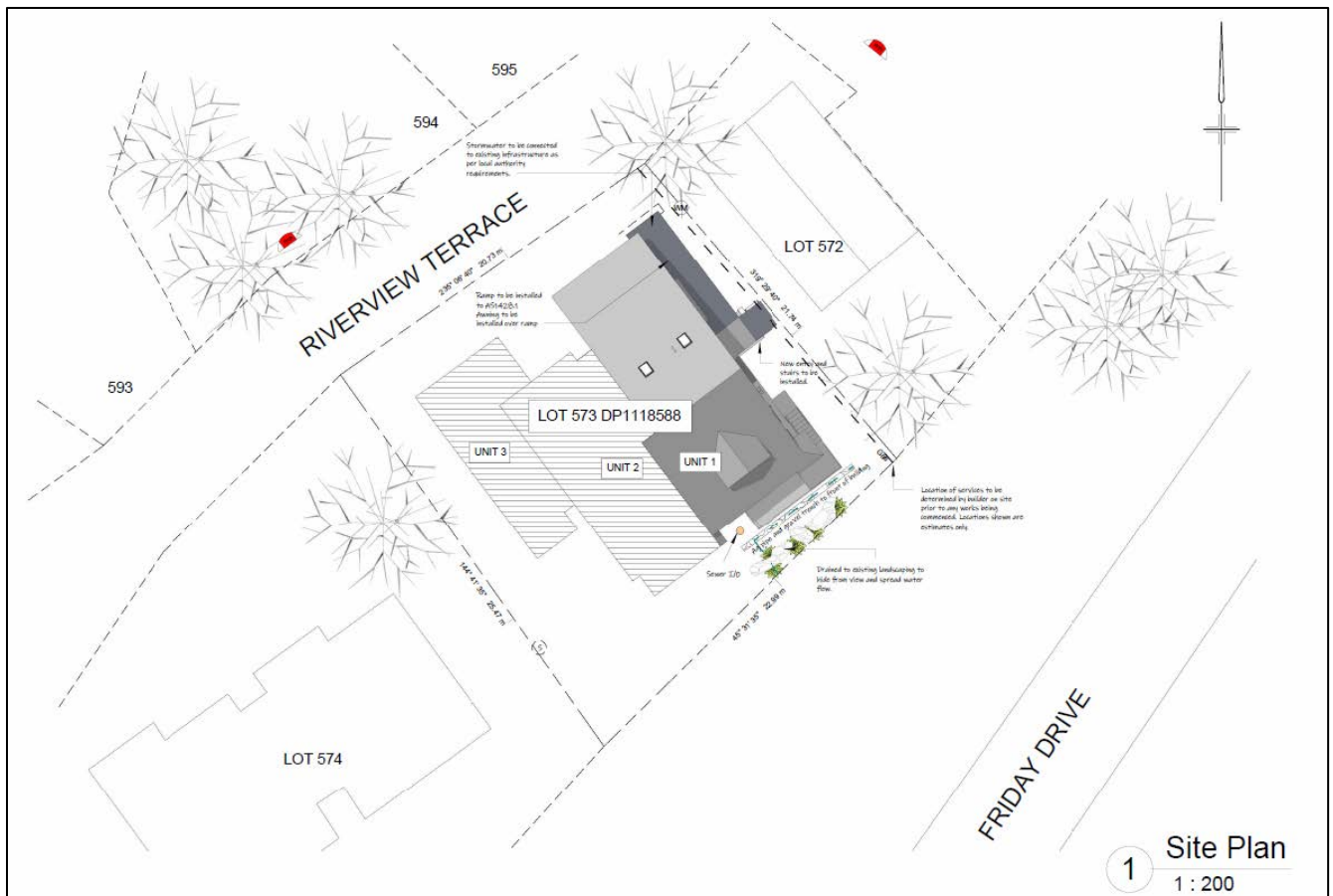
A building evacuation diagram, site layout diagram and Statement of Action are to be provided in each building in accordance with the NSW Rural Fire Service Guidelines for the Preparation of Emergency/Evacuation Plan and with Australian Standard AS 3745 2010 'Planning for Emergencies in Facilities'.

ELEVATIONS





SITE PLAN



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).

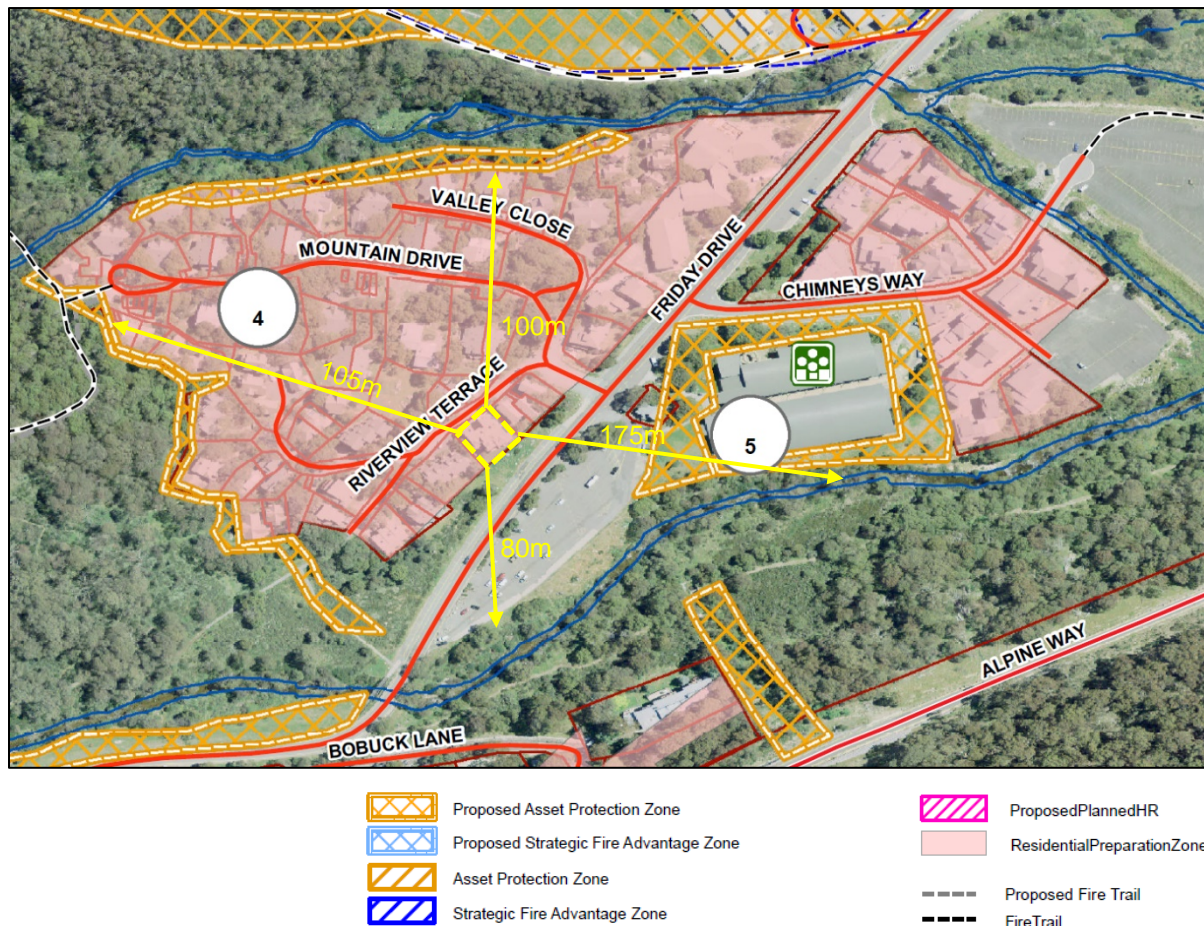
Description

The subject site is located in Thredbo Village within Kosciuszko National Park and is identified as Lot 5730 DP 1118588, 1/3 Riverview Terrace, Thredbo NSW 2627.

The site is located within land that has been identified as Vegetation Category 1 within Bushfire Prone Land.



Slope Assessment



3.1. Vegetation formation within 140 m of existing lodge

Thredbo Village is comprised of managed land at the base of the valley. Within 140m of the site, the area is managed land within a ski resort with the majority comprised of other existing lodges as well as Forest vegetation outside of the Thredbo Asset Protection Zone and Residential Preparation Zone.

Forest vegetation is located 100 metres to the north, 80 metres to the south and 175 metres to the east and 105m to the west.

As seen in Figure 7, within 140m of 1 Valley Close, Thredbo there are two types of vegetations:

- Sub-alpine Shrub-Grass Woodland
- Sub-alpine Herbfield

Above the lodge, to the north is a dense path of Sub-Alpine Shrub-Grass Woodland, which is comparable to the *Forests* 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 remaining area is comprised of managed land as cleared and maintained for ski runs during winter and a mountain bike park during the summer months as well as each allotment maintained as inner protection areas. Common land within the resort is managed by Kosciuszko Thredbo.

TABLE 2 APZ AND BAL DETERMINATION

| | NORTH | EAST | SOUTH | WEST |
|--|---|---|--|---|
| Gradient | Upslope | Downslope 0-5° | Downslope 0-5° | Upslope |
| Vegetation | Managed Land (Forest) | Managed Land | Managed Land (Forest) | Managed Land |
| Proposed distance to be provided between edge of building and vegetation | 100 m Entire Lot to be Managed as IPA | 175 m Entire Lot to be Managed as IPA | 80 m Entire Lot to be Managed as IPA | 105 m Entire Lot to be Managed as IPA |
| APZ required by PBP 2019 for BAL 12.5 under Table A1.12.7 | 30-<100 m | 36-<100 m | 36-<100 m | 30-<100 m |
| BAL Proposed | BAL 12.5 | BAL 12.5 | BAL 12.5 | BAL 12.5 |

4.1. Asset Protection Zones (APZ)

PBP 2019 Table A1.12.7 has been used to determine the width of the required APZ for the proposed development using the vegetation and slope data identified. An FFDI of 50 was used for this location. An APZ should be maintained from the commencement of building works and maintained for perpetuity.

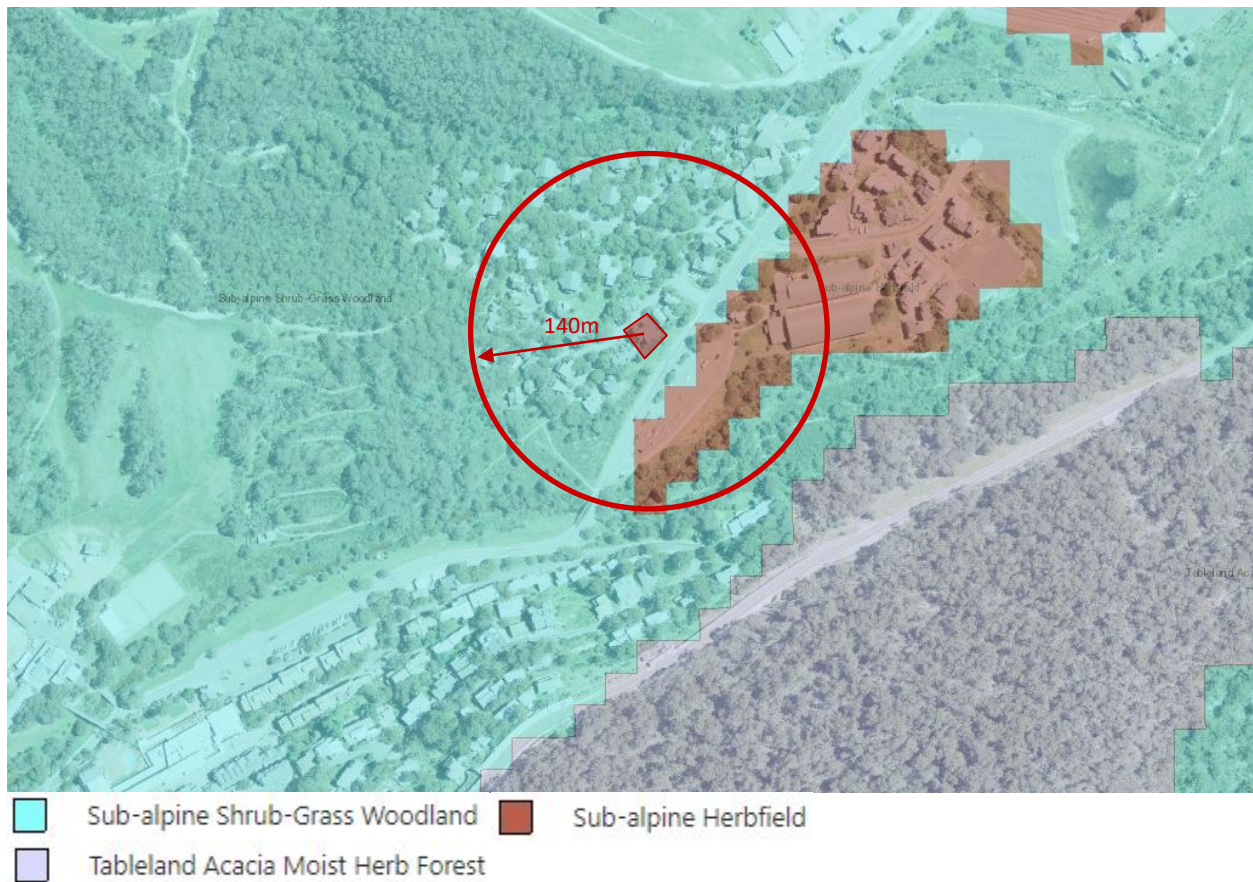
The vegetation classification for bushfire purposes for this site is "Forest". Forest vegetation can be managed as an Inner Protection Area (IPA) and Outer Protection Area (OPA). The IPA is critical for providing a defensible space and managing heat intensities at the building surface. The OPA serves to reduce the potential length of flames, filtering embers and reducing the likelihood of crown fires.

The IPA should provide a tree canopy cover less than 15% and any tree canopies must be located greater than 2 metre from any part of the proposed dwelling roofline. Garden beds of flammable shrubs should not be located under trees and should be no greater than 10m from an exposed window or door. Trees should have lower limbs removed up to a height of 2 metres above ground.

An OPA should provide a tree canopy cover of less than 30% and should have understory managed (mowed) to treat all shrubs and grasses on an annual basis in advance of the fire season (September).

Vegetation Assessment

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 the area surrounding Snowdrift is characterised as sub-alpine shrub-grass woodland and sub-alpine herb field. Outside of the 140m, there is a tableland acacia moist herb forest upslope to the East.



Above Snowdrift, on the other side of the Thredbo River to the east, is a large area of Tableland Acacia Moist Herb Forest which is comparable to the *Forests* 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 remaining area of Thredbo 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 *Forests* classification of *Keith* upslope and over 140m away from the subject property.

Predominant Vegetation Category

The predominant vegetation is classified as Managed Land and Forests.

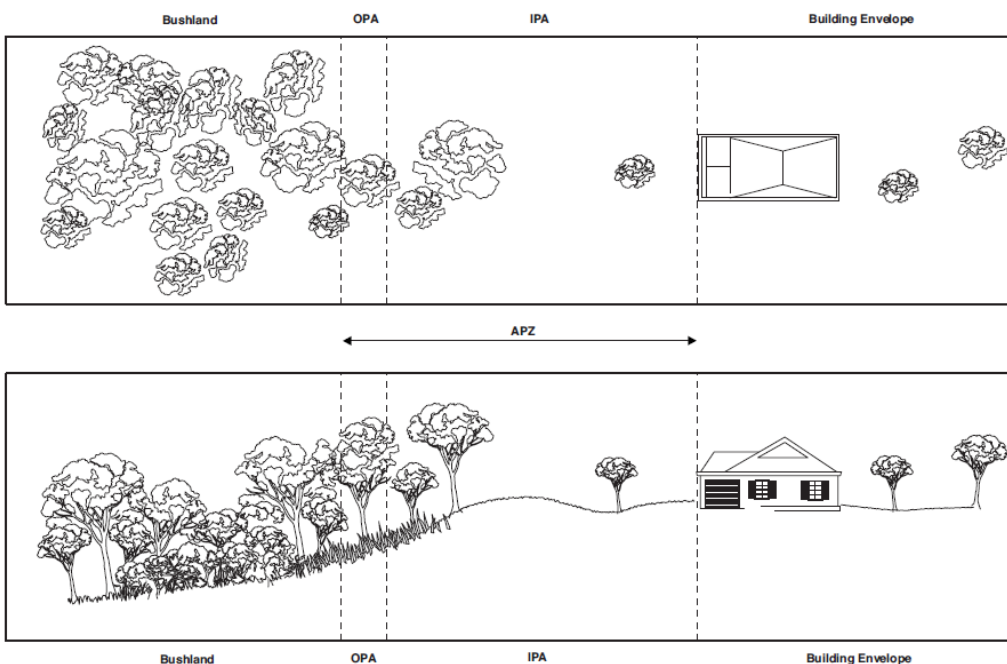


Figure 3.1 shows the APZ, IPA and OPA graphically.

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 Riverview Terrace with a hydrant directly across from the subject property. 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.

- Riverview Terrace 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:

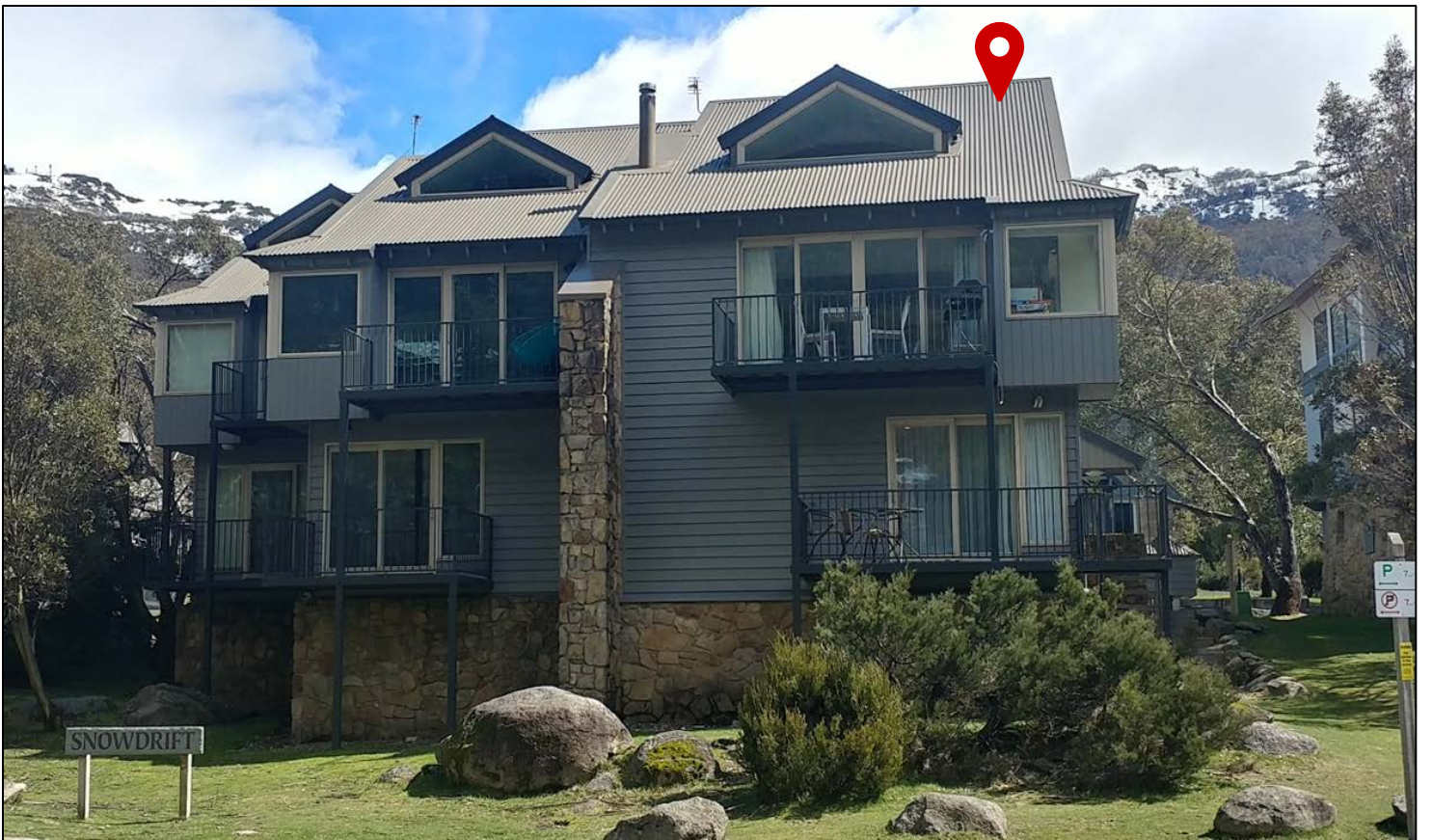
A building evacuation diagram, site layout diagram and Statement of Action are to be provided for the proposed development in accordance with Building Emergency Procedures and Bush Fire Evacuation Plan, the NSW Rural Fire Service Guidelines for the Preparation of Emergency/Evacuation Plan and with Australian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



BUSHFIRE HAZARD ASSESSMENT FOR UNIT 1/3 RIVERVIEW TERRACE THREDBO NSW 2627

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). <i>Note - a Monitoring and Fuel Management Program should be required as a condition of development consent.</i> | 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. | ☑ |

| | | |
|--|--|---|
| Gas <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. | To form part of the recommendations of this report. |
|--|--|---|

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"> An emergency/evacuation plan is to be prepared consistent with the RFS guidelines for the <i>Preparation of Emergency/Evacuation Plan</i>. | DA to be conditioned with recommendations outlined in this report. |

Bushfire protection measures for infill development

| Performance Criteria | Comply | Acceptable solutions |
|---|--------|--|
| The intent may be achieved where: | | |
| in relation to Asset Protection Zones: a defendable space is provided onsite. an asset protection zone is provided and maintained for the life of the development. | ☑ | Entire allotment to be maintained as APZ. |
| in relation to siting and design: buildings are sited and designed to minimise the risk of bush fire attack. | ☑ | Building to be constructed as per the recommendations of this report. |
| in relation to construction standards: <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. | ☑ | <ul style="list-style-type: none"> The new work to comply to. <ul style="list-style-type: none"> BAL 12.5 |

| | | |
|---|---|---|
| in relation to access requirements: <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). | ☑ | <ul style="list-style-type: none"> Reduce/remove any overhanging vegetation on the access way to be compliant with Figure 4.5 PBP 2006 |
| in relation to water and utility services: <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. | ☑ | <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. |
| in relation to landscaping: <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. | ☑ | Compliance with Appendix 5 required. |

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 are 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 BAL 12.5.**
- This report does not find that the proposal should be rejected due to bushfire considerations provided the recommendations are undertaken as proposed