

BUSHFIRE ASSESSMENT REPORT

**ADDITIONS AND ALTERATIONS
24 MOUNTAIN DRIVE
LOT 610, WOODRIDGE, THREDBO**



NOVEMBER 2015

Project: 64-15

Dabyne Planning Pty Ltd

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GLOSSARY

| | |
|-------------------------|--|
| APZ | Asset Protection Zone |
| AS 3959-2009 | Australian Standard 3959-2009: Construction of buildings in bushfire prone areas |
| BCA | Building Code of Australia |
| BFSA | Bush Fire Safety Authority |
| CC | Construction Certificate |
| DA | Development Application |
| EP&A Act | Environmental Planning Assessment Act, 1979 |
| IPA | Inner Protection Area |
| KNP | Kosciuszko National Park |
| kW/m² | kilowatts per square metre (being a measure of radiant heat) |
| PBP | Planning for Bushfire Protection |
| RF Act | Rural Fires Act 1997 |
| RFS | NSW Rural Fire Service |
| SFPP | Special Fire Protection Purpose |

1. INTRODUCTION

1.1 Purpose

Dabyne Planning Pty Ltd has been engaged to undertake a Bushfire Assessment Report to accompany a Development Application for additions and alterations to an existing chalet that is used for purposes of tourist accommodation within Thredbo Alpine Village, Kosciuszko National Park.

The report has been prepared in accordance with Section 91A of the Environmental Planning and Assessment Act, 1979 (EP&A Act, 1979), and Section 100B of the NSW Rural Fires Act, 1997 (RF Act, 1997) and based on the published Planning for Bushfire Protection 2006 Guidelines (PBP).

1.2 Site Description & Proposal

The subject site is located at Lot 610, 24 Mountain Drive within the Woodridge area of Thredbo Village.

The subject property is a self-contained chalet being two (2) stories in height and licensed for a maximum of eight (8) beds.

The closest unmanaged native vegetation with a continuous canopy is located to the north-west and west with vegetation around the building comprising of managed lawns and individual or small groups of Eucalypts.

The proposal seeks consent for constructing a two car garage on the southern of the chalet, accessed directly from Mountain Drive.

The proposed additions are located predominantly over managed lawns, however they will require the removal of three (3) Eucalypts.

The subject site is illustrated in context with the locality in figures 1 & 2 below:



Figure 1: Aerial view of the subject site in context of the locality



Figure 2 Aerial view of the subject site

The following photos identify the existing building and surrounding environment:



Figure 3: Photo of the existing chalet and location of the proposed double garage



Figure 4: Photo of the existing chalet and three trees to be removed and location of the proposed double garage



Figure 5: Photo of the existing entry to the chalet



Figure 6: Photo of location for the proposed double garage – looking west



Figure 7: Photo of Mountain Drive, a sealed all weather access road

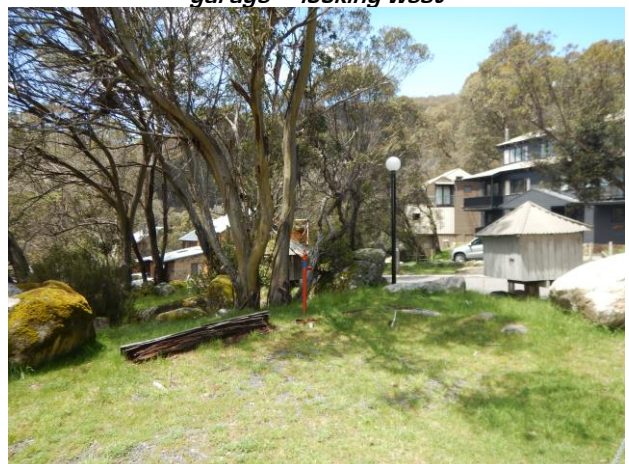


Figure 8: Photo of fire hydrant adjacent to the site

1.3 Bushfire Prone Land

The NSW Department of Planning & Environment has advised that the subject site is located within a designated bushfire prone area and is therefore subject to S.100B of the NSW Rural Fires Act, 1997.

2. LEGISLATION

2.1 NSW Environmental Planning and Assessment Act 1979 and Rural Fires Act 1997

As identified above, the subject site is located within a designated bushfire-prone area and as the development is for the purpose of 'tourist accommodation', the development is classed as being for a 'Special Fire Protection Purpose'.

The development application is therefore categorised as an Integrated Development under S.91 of the EP&A Act, 1979 and therefore requires a Bushfire Safety Authority from the NSW Rural Fire Service under S.100B of the RF Act, 1997.

Clause 46 of the Rural Fires Regulation 2002 sets out the matters that must be assessed in an application for a Bush Fire Safety Authority including a description of the property, classification of the vegetation, slope assessment, identification of significant environmental features, and details of threatened species and Aboriginal relic or place.

Clause 46(1)(g) of the Rural Fires Regulation 2002 specifies that a bushfire assessment for a proposed development must address the following matters:

- (i) the extent to which the development is to provide for setbacks, including asset protection zones,*
- (ii) the siting and adequacy of water supplies for fire fighting,*
- (iii) the capacity of public roads in the vicinity to handle increased volumes of traffic in the event of a bush fire emergency,*
- (iv) whether or not public roads in the vicinity that link with the fire trail network have two-way access,*
- (v) the adequacy of arrangements for access to and egress from the development site for the purposes of an emergency response,*
- (vi) the adequacy of bush fire maintenance plans and fire emergency procedures for the development site,*
- (vii) the construction standards to be used for building elements in the development, and*
- (viii) the adequacy of sprinkler systems and other fire protection measures to be incorporated into the development.'*

This Bushfire Assessment Report has been undertaken in accordance with the requirements stipulated above, where considered relevant in context of the proposed development.

2.2 Planning for Bushfire Protection 2006

The NSW Rural Fire Service 'Planning for Bushfire Protection, 2006: A Guide for Councils, Planners, Fire Authorities and Developers' applies to the proposed development including the recently adopted Appendix 3 Addendum.

The subject site is located within Thredbo Alpine Resort, which is located within the NSW Alpine Resorts as discussed on page 31 of PBP.

Under PBP, a different 1:50 fire weather scenario has been determined for the Alpine Resorts, being FDI 50.

3. METHODOLOGY

3.1 Site Inspection

A site inspection was undertaken by Dabyne Planning Pty Ltd in November 2015, to determine the potential bushfire risks associated with the site. The guidelines for bushfire risk assessment as set out in PBP were used to determine these potential bushfire risks.

3.2 Vegetation Communities

The vegetation and plant communities within 140m of the site were determined by undertaking a site inspection and consulting PBP and the vegetation types identified in *'Ocean Shores to Desert Dunes'*, by Kieth (2004).

The classification under David Keith's *'Ocean Shores to Desert Dunes'* (used in PBP) were then converted to the 'Sprect' classifications using Table A3.5.1 in the Appendix 3 Addendum.

3.3 Slope

The slope assessment has been based on the topographical contour lines sourced from the Department of Lands mapping and on-site assessment.

Slope over a distance of at least 100m from the building footprint on the development site towards the vegetation communities that constitute the predominant hazard has been considered.

The gradient that will most significantly influence the fire behaviour will be used for the bush fire attack assessment.

4. VEGETATION CLASSIFICATION & SLOPE ASSESSMENT

4.1 Vegetation Classification

The predominant vegetation formation in all directions around this area of the resort and within the wider locality is Woodland, particularly Montane Woodland which has been confirmed in the Ecology Australia 'Kosciuszko Resorts Vegetation Assessment' mapping undertaken in 2002 as well as more recent fauna and flora assessments, including those undertaken for the Thredbo Stage 1A Mountain Bike Trail project.

The Rural Fire Service however have advised otherwise, mapping the area to the west of Woodridge as 'Forest', contrary to the ecological mapping and fieldwork undertaken.

The vegetation to the north-west and west is considered to have the most influence in the event of a bushfire, due to the topography, wind direction and existing built environment around the village, as illustrated in figure 9 below.

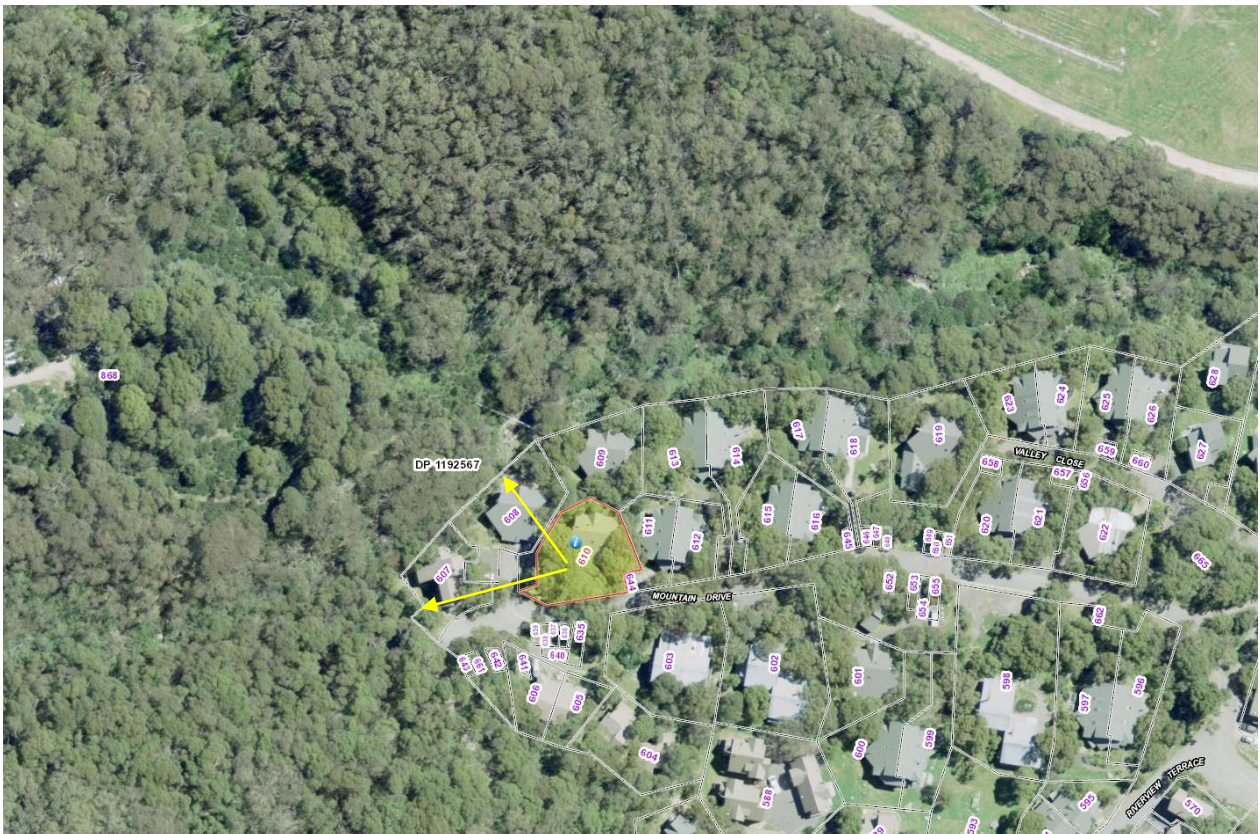


Figure 9: Aerial view demonstrating the location of the vegetation that would have the most influence in the event of a bushfire

The closest unmanaged vegetation (with a continuous canopy), shown by the red arrow in figure 10 below, is located within 30m (at its closest point) to the proposed additions.

Located between the subject site and this vegetation is a combination of managed lawns and individual or small groups of Eucalypts that do not form a continuous canopy.



Figure 10: Aerial view demonstrating the distance between the closest unmanged vegetation with a continuous canopy to the proposed additions and external alterations

4.2 Slope Assessment

The effective slope, being the slope that will have the greatest influence on the bushfire behaviour (where the vegetation is located as depicted in figure 10 above) is upslope.

5. SIGNIFICANT ENVIRONMENTAL FEATURES

The proposed works include additions and alterations with the additions requiring the removal of three Eucalypts. Other than this, impacts on native vegetation will be minimal as the ground comprises of managed lawns. Given the abundance of these trees in the locality, resort and wider National Park, an assessment in respect to threatened species, populations, endangered ecological communities or critical habitat is not required to be undertaken. Furthermore an assessment of Aboriginal heritage is also not warranted.

6. BUSHFIRE ASSESSMENT

6.1 Special Fire Protection Purpose Developments

As stated above, the proposed development consists of additions and alterations to an existing chalet to be used for the purposes of tourist accommodation.

6.1.1 Specific Objectives for Special Fire Protection Purpose Developments

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.

6.1.2 SFPPs as infill (Alpine Resorts)

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.

| Performance Criteria | Acceptable Solutions | Comply | Comments |
|--|---|--------|--|
| The intent may be achieved where: | | | |
| in relation to Asset Protection Zones: <ul style="list-style-type: none"> • a defensible space is provided onsite. • an asset protection zone is provided and maintained for the life of the development. | <ul style="list-style-type: none"> • APZ determined in accordance with Appendix 2. | ✓ | <i>See discussion below.</i> |
| in relation to siting and design: <ul style="list-style-type: none"> • buildings are sited and designed to minimise the risk of bush fire attack. | <ul style="list-style-type: none"> • buildings are designed and sited in accordance with the siting and design principles in this section (see also figure 4.7). | ✓ | <i>The proposed additions and alterations will not significantly alter the siting or design of the building.</i> |

| | | | |
|--|--|----------|---|
| <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. | <ul style="list-style-type: none"> • construction determined in accordance with Appendix 3 and the Requirements for attached garages and others structures in this section. <p><i>Note: provisions in relation to Class 10a buildings may also apply.</i></p> | <p>✓</p> | <p><i>The proposed additions and external alterations are required to be constructed in accordance with BAL-19 construction under AS3959-2009.</i></p> |
| <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). | <ul style="list-style-type: none"> • compliance with section 4.1.3 for property access roads. • compliance with section 4.2.7 for access standards for internal roads. | <p>✓</p> | <p><i>The existing access comprises of a sealed, two-way all-weather road that is easily accessible for two-wheel drive vehicles (refer to figure 7 above).</i></p> |
| <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. | <ul style="list-style-type: none"> • compliance with section 4.1.3 for services - water, electricity and gas. | <p>✓</p> | <p><i>Reticulated water supply with fire hydrants are provided throughout Thredbo Village.</i></p> <p><i>Electricity and gas supply is provided underground throughout Thredbo Village.</i></p> |
| <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. | <ul style="list-style-type: none"> • compliance with Appendix 5. | <p>✓</p> | <p><i>The proposed works do not warrant any significant changes to the existing landscaping on the site, with three (3) trees being removed and not recommended in being replaced.</i></p> |

Asset Protection Zones (APZs)

An Asset Protection Zone (APZ) is to be provided in accordance with the relevant tables provided in Appendix 2 of PBP.

The minimum specifications for APZs for Special Fire Protection Purposes in bushfire prone areas are set out in Table A2.6 in Appendix 2 of PBP. The table specifies that the Alpine Resorts does not contain any minimum specifications and refers to Table A3.5. As Appendix

3 within PBP has been replaced by the new Appendix 3 (2010 Addendum) the new Appendix 3 refers to Table A2.4.4 in AS3959-2009.

TABLE 2.4.4
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. Tussock Moorland | <7 | 7—<9 | 9—<14 | 14—<20 | 20—<100 |
| | Downslope >0 to 5 degrees | | | | |
| A. Forest | <14 | 14—<19 | 19—<27 | 27—<38 | 38—<100 |
| B. Woodland | <9 | 9—<12 | 12—<18 | 18—<26 | 26—<100 |
| C. Shrubland | <7 | 7—<10 | 10—<15 | 15—<22 | 22—<100 |
| D. Scrub | <11 | 11—<15 | 15—<22 | 22—<31 | 31—<100 |
| E. Mallee/Mulga | <7 | 7—<9 | 9—<13 | 13—<20 | 20—<100 |
| F. Rainforest | <6 | 6—<8 | 8—<12 | 12—<17 | 17—<100 |
| G. Tussock Moorland | <8 | 8—<10 | 10—<16 | 16—<23 | 23—<100 |
| | Downslope >5 to 10 degrees | | | | |
| A. Forest | <18 | 18—<24 | 24—<34 | 34—<46 | 46—<100 |
| B. Woodland | <11 | 11—<15 | 15—<23 | 23—<32 | 32—<100 |
| C. Shrubland | <8 | 8—<11 | 11—<17 | 17—<25 | 25—<100 |
| D. Scrub | <12 | 12—<17 | 17—<24 | 24—<35 | 35—<100 |
| E. Mallee/Mulga | <7 | 7—<10 | 10—<15 | 15—<23 | 23—<100 |
| F. Rainforest | <7 | 7—<10 | 10—<15 | 15—<22 | 22—<100 |
| G. Tussock Moorland | <9 | 9—<12 | 12—<18 | 18—<26 | 26—<100 |
| | Downslope >10 to 15 degrees | | | | |
| A. Forest | <22 | 22—<30 | 30—<41 | 41—<56 | 56—<100 |
| B. Woodland | <14 | 14—<19 | 19—<28 | 28—<40 | 40—<100 |
| C. Shrubland | <9 | 9—<13 | 13—<19 | 19—<28 | 28—<100 |
| D. Scrub | <14 | 14—<19 | 19—<28 | 28—<39 | 39—<100 |
| E. Mallee/Mulga | <8 | 8—<11 | 11—<18 | 18—<26 | 26—<100 |
| F. Rainforest | <9 | 9—<13 | 13—<19 | 19—<28 | 28—<100 |
| G. Tussock Moorland | <10 | 10—<13 | 13—<20 | 20—<29 | 29—<100 |
| | Downslope >15 to 20 degrees | | | | |
| A. Forest | <28 | 28—<37 | 37—<51 | 51—<67 | 67—<100 |
| B. Woodland | <18 | 18—<25 | 25—<36 | 36—<48 | 48—<100 |
| C. Shrubland | <10 | 10—<15 | 15—<22 | 22—<31 | 31—<100 |
| D. Scrub | <15 | 15—<21 | 21—<31 | 31—<43 | 43—<100 |
| E. Mallee/Mulga | <9 | 9—<13 | 13—<20 | 20—<29 | 29—<100 |
| F. Rainforest | <12 | 12—<17 | 17—<25 | 25—<35 | 35—<100 |
| G. Tussock Moorland | <11 | 11—<15 | 15—<23 | 23—<33 | 33—<100 |

This is provided below:

Based on the slope, distance of the site to the predominant vegetation class, being approximately 30m to Forest to the west (with a continuous canopy), located upslope; the category of Bushfire Attack in accordance with Table A2.4.4 in AS3959-2009 would be 'BAL-19'.

7. CONCLUSION

As identified above, the proposed development can achieve compliance with all of the performance criteria standards set out in PBP for a special fire protection purpose 'infill' development located within the Alpine Resorts.

Given the distance of the proposed additions and alterations to the Forest vegetation located upslope, the level of construction for the proposed works is required to be BAL-19 under AS 3959-2009.

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