



BUSHFIRE ASSESSMENT REPORT

ADDITIONS & ALTERATIONS
20 MOUNTAIN DRIVE, WOODRIDGE, THREDBO



Project: 40-10
OCTOBER 2010

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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 a self contained chalet used for 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 application relates to a property known as Lot 612, 20 Mountain Drive within the Woodridge area of Thredbo Village.

Lot 612 is located adjacent to Lot 611 and shares a common wall with the adjoining chalet, being located on the eastern side.

The chalet is accessed via Mountain Drive and includes two parking spaces. The building is surrounded by other similar buildings with a similar design and layout all built around the same time. Vegetation around the building is scattered with the nearest continuous canopy vegetation being located to the north and west.

The subject site is illustrated in context with the locality in Figures 1, 2, & 3 below:

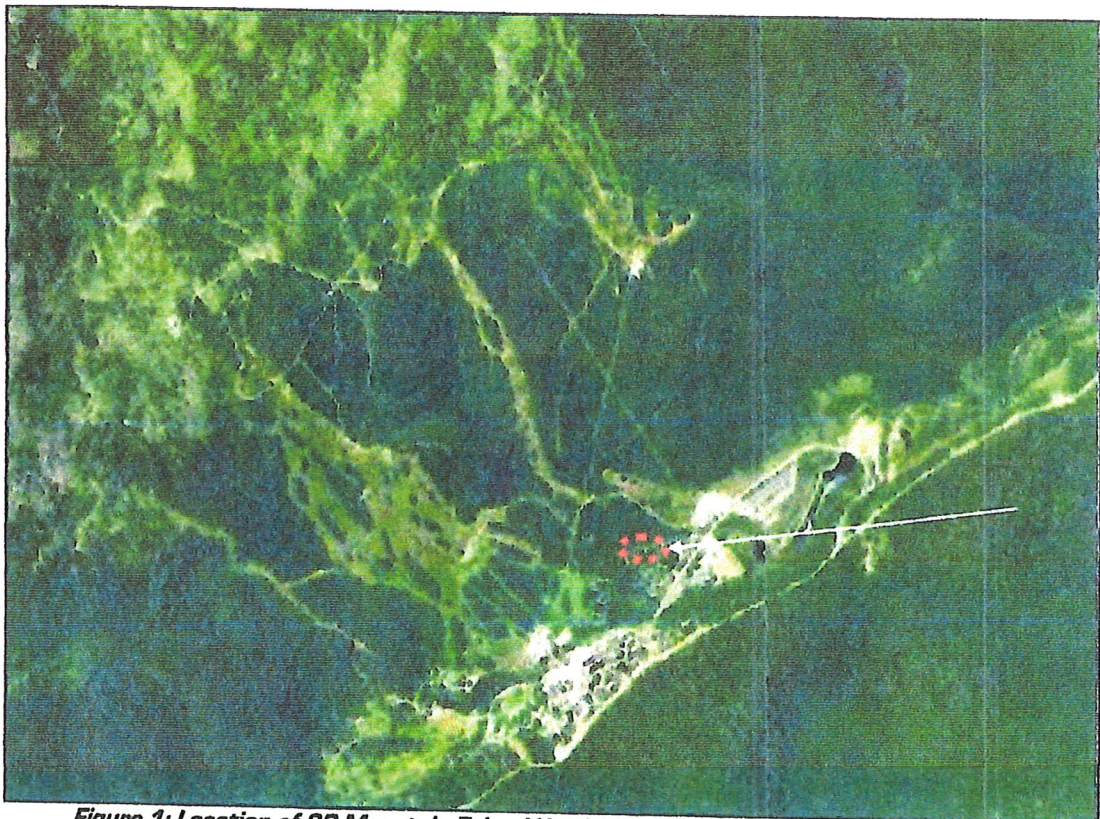


Figure 1: Location of 20 Mountain Drive, Woodridge in context with the broader locality

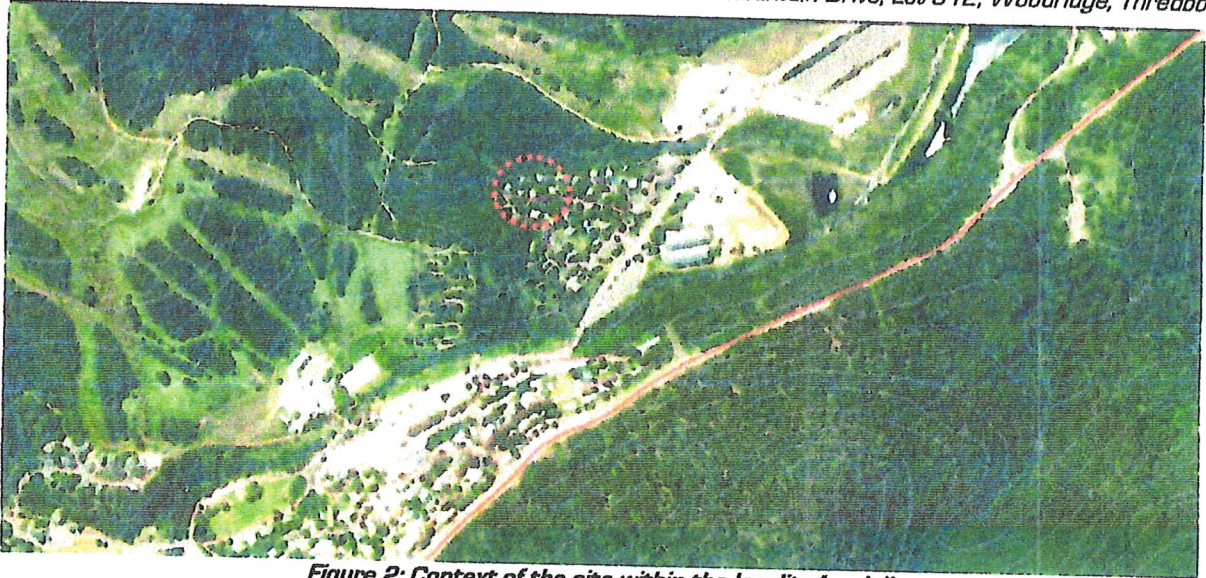


Figure 2: Context of the site within the locality (aerial)



Figure 3: Aerial view of the subject building in context of the locality

The following photos identify the existing building and surrounding environment:



Figure 4: Photo of northern elevation



Figure 5: Photo of southern elevation



Figure 6: Photo of eastern elevation and location of loft extension (proposed gable)



Figure 7: Photo of adjacent building and scattered vegetation

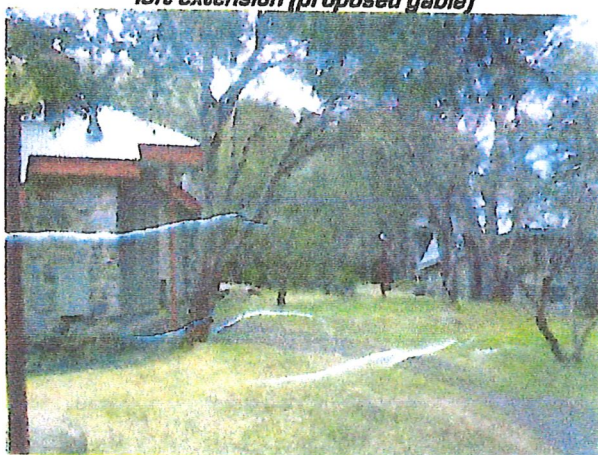


Figure 8: Photo of cleared area between buildings

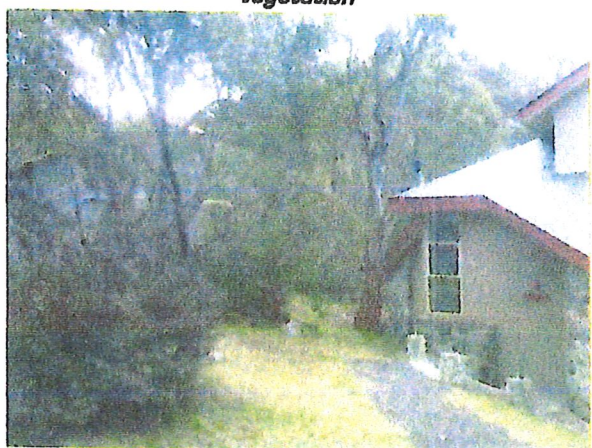


Figure 9: Photo of adjacent building and vegetation



Figure 10: Photo of underground electricity



Figure 11: Photo of vehicle parking area



Figure 12: Photo of adjacent fire hydrant



Figure 13: Photo of sealed vehicle access

1.3 Bushfire Prone Land

The NSW Department of Planning 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 on the 29 September 2010, 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 classified into slope classes (as per PBP).

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 the resort and within the wider locality is Sub-alpine Woodland, which is classified under *Keith, 2004* as Grassy woodlands (Woodlands) formation.

The AUSLIG (1990) Pictorial Analysis confirms that the vegetation on site is Woodlands as also converted from Keith below:

David Keith's Ocean Shores to Desert Dunes	AUSLIG (1990) Pictorial Analysis (AS3959-2009)
Forests (Wet & Dry Sclerophyll)	Forest
Pine Plantations	
Forested Wetlands	
Woodlands (Grassy, Semi-Arid)	Woodland
Tall Heath (Scrub)	Scrub
Freshwater Wetlands	
Short Heath (Open Scrub)	Shrubland
Arid Shrubland	Mallee/Mulga
Alpine Complex (Sedgelands)	Tussock Moorland
Rainforest	Rainforest
Grassland	Grassland

The vegetation to the west through to the north is considered to have the most influence in the event of a bushfire, due to the topography, wind direction and existing built environment.



Figure 14: Aerial view demonstrating the subject site in context with the vegetation that would have the most influence in the event of a bushfire

The vegetation located to the north, being vegetation closest to the subject building, which is considered upslope is approximately 28m from the location of the proposed additions.

Located within this setback are existing buildings and individual Eucalypt trees with scattered ground cover (Sub-alpine Woodland) however they do not form a continuous canopy.

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 14 above) is upslope.

5. SIGNIFICANT ENVIRONMENTAL FEATURES

The proposed additions and alterations are located within the existing building footprint and therefore 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 to an existing apartment used for short-term tourist accommodation, primarily in winter with variable summer visitation.

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.*

Fortunately, the normal fire season within the Kosciuszko National Park extends for a short period from January to March (PBP). This coincides when there are fewer visitors to the chalet, as the chalet is primarily used in winter from June through to October of each year. Although, it is acknowledged that the apartment is used in summer, however generally well below peak capacity.

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 defendable 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 alter the siting or design of the building.</i>

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"> • construction determined in accordance with Appendix 3 and the Requirements for attached garages and others structures in this section. <i>Note: provisions in relation to Class 10a buildings may also apply.</i>	✓	<i>The proposed additions and external alterations are required to be constructed in accordance with BAL-12.5 construction under AS3959-2009.</i>
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"> • compliance with section 4.1.3 for property access roads. • compliance with section 4.2.7 for access standards for internal roads. 	✓	<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 13 above).</i>
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"> • compliance with section 4.1.3 for services - water, electricity and gas. 	✓	<i>Reticulated water supply with fire hydrants are provided throughout Thredbo Village (refer to figure 12 above).</i> <i>Electricity and gas supply is provided underground throughout Thredbo Village (refer to figure 10 above).</i>
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. 	<ul style="list-style-type: none"> • compliance with Appendix 5. 	✓	<i>The proposed additions and alterations do not warrant any significant changes to the existing landscaping on the site.</i>

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.

This is provided below:

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
L. Mullee/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
L. Mullee/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
L. Mullee/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
L. Mullee/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
L. Mullee/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

Based on the slope, distance of the site to the predominant vegetation class, being approximately 28m to Woodlands (with a continuous canopy), located upslope; the category of Bushfire Attack in accordance with Table A2.4.4 in AS3959-2009 is 'BAL-12.5'.

Therefore the proposed additions are required to be constructed to BAL-12.5 in accordance with AS 3959-2009.

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 to the Woodland vegetation located upslope, the level of construction for the proposed works is required to be BAL-12.5 under AS 3959-2009.

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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