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## BUSHFIRE HAZARD ASSESSMENT

PROPOSED ADDITIONS AND ALTERATIONS TO EXISTING  
ACCOMODATION FACILITY

20 CANDLE HEATH ROAD, PERISHER VALLEY, NSW

LGA: Snowy Monaro Regional

Applicant: The Stables

HARRIS ENVIRONMENTAL CONSULTING

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## BUSHFIRE HAZARD ASSESSMENT

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**Report prepared by:**

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### DISCLAIMER

The recommendations provided in the summary of this report are a result of the analysis of the proposal in relation to the requirements of Planning for Bushfire Protection 2019. Utmost care has been taken in the preparation of this report however there is no guarantee of human error. The intention of this report is to address the submission requirements for Development Applications on bushfire prone land. There is no implied assurance or guarantee the summary conditions will be accepted in the final consent and there is no way Harris Environmental Consulting is liable for any financial losses incurred should the recommendations in this report not be accepted in the final conditions of consent.

This bushfire assessment provides a risk assessment of the bushfire hazard as outlined in the PBP 2019 and AS3959 2018. It does not provide protection against any damages or losses resulting from a bushfire event.



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## EXECUTIVE SUMMARY

This Bushfire Hazard Assessment at 20 Candle Heath Road, Perisher Valley, NSW is for proposed alterations to the existing accommodation facility in the form of balcony alterations on Lot 603 DP 1158020. Harris Environmental Consulting was commissioned to provide this bushfire assessment.

The subject land is located within the alpine resorts area of Perisher. The accommodation facility is used for short term tourist accommodation and is considered "Infill Special Fire Protection Purpose" for bushfire assessment purposes. The proposed development does not increase the number of occupants accommodated at the site.

The vegetation within 140 m of the development is classified as:

- Upslope Sub Alpine Forest located 11 m away on the south-east and south-west elevation;
- Downslope 5-10° Sub Alpine Forest located 17 m away on the northwestern elevation;
- Downslope 0-5° Sub Alpine Forest located 14 m away on the northeastern elevation;
- Downslope 0-5° Sub Alpine Complex located 11 m away on the eastern elevation;

The proposed additions and alterations must be constructed to **BAL 40** as specified by AS3959 - 2018 Construction for Buildings in Bushfire Prone Areas and or NASH Standard Steel Framed Construction in Bushfire Areas (2014) and PBP 2019.

National Parks and Wildlife Services (NPWS) have approved the proposed APZ. This is provided in Appendix 1. An APZ should be maintained from the commencement of building works and for perpetuity for the following distances:

- 17 m on the northwestern elevation;
- 14 m on the northeastern elevation
- 11 m on the southern elevations.

Some of the above APZ is located outside the developments lease area. APZs outside of the sublease or leasehold area must be supported by a suitable legal mechanism to ensure APZs are managed under a binding legal agreement for the life of the development, to provide ongoing management and maintenance responsibilities are in place.

The RFS and DPIE will require The Stables (the applicant) to provide a long term ember protection plan for the existing buildings. An Ember Protection Plan, that forms a long-term plan for annual upgrades should be developed to pro-actively enhance the overall bushfire protection for the existing buildings

The subject lot is located on Candle Heath Road. This is a two-wheel drive, all-weather road. The capacity of road surfaces and bridges is sufficient to carry fully loaded firefighting vehicles. The road is a no through road and provides an existing turning area.

An emergency /evacuation plan is to be implemented that meets the requirements as described in the *PBP 2019*. This will need to meet the criteria of the RFS publication: *A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan* and the Australian Standard AS 3745:2010 Planning for emergencies in facilities.

Reticulated water and hydrant booster is supplied to the subject lot.

Any bottled gas will be installed and maintained in accordance with AS1596 and the requirements of the relevant authority. If gas cylinders need to be kept close to the buildings, the release valves must be directed away from the building and away from any combustible material. Polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used;

Electrical transmission lines, if above ground, will be managed in accordance with specifications issued by Energy Australia.

# 1. PROPOSAL

## 1.1 Development Proposal

The owners of The Stables, on 20 Candle Heath Road, Perisher Valley, propose additions and alterations to the existing accommodation facility in the form of laterations to the existing balcony on Lot 603 DP 1158020. Harris Environmental Consulting was commissioned to provide this bushfire assessment.

The subject land is located within the alpine resorts area of Perisher. The accommodation facility is used for short term tourist accommodation and is considered "Infill Special Fire Protection Purpose" for bushfire assessment purposes. The proposed development does not increase the number of occupants accommodated at the site.

The proposed plans are shown in Figure 1.

**FIGURE 1 PROPOSED PLANS**



## 2. PROPERTY DESCRIPTION

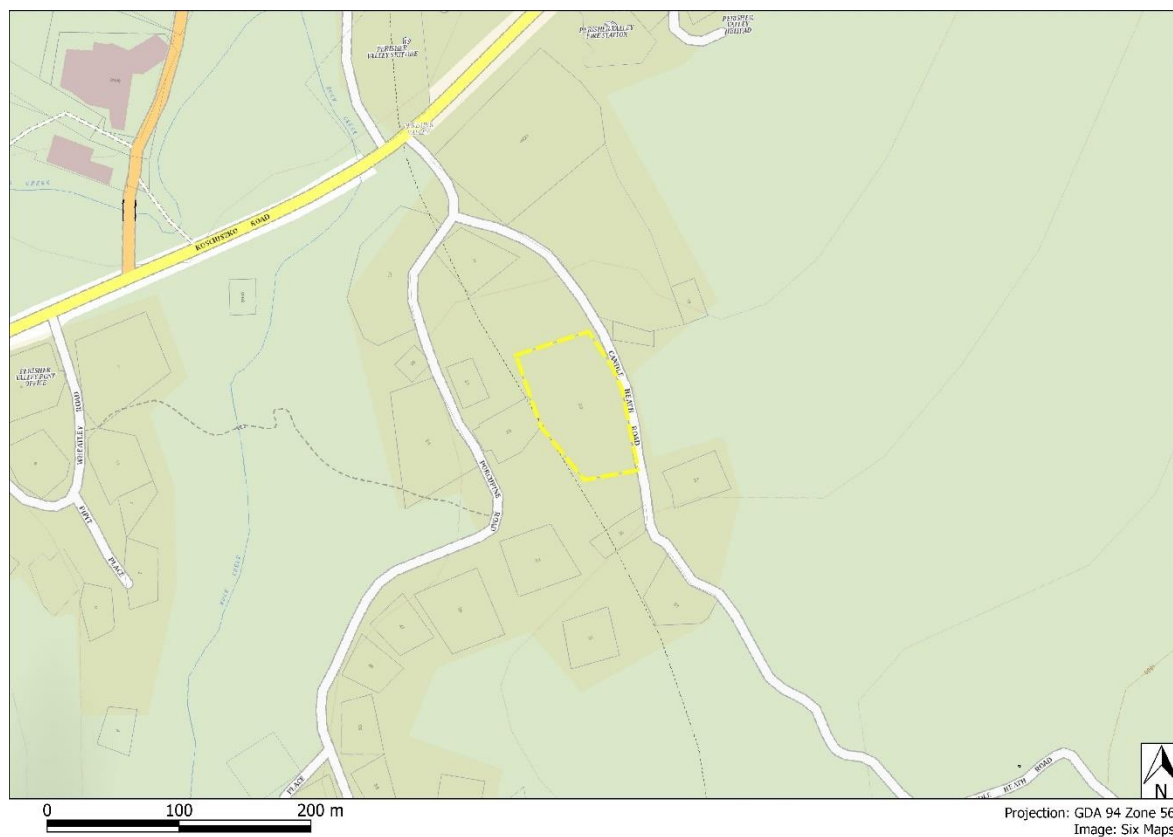
### 2.1 Subject Site

The subject lot is located at 20 Candle Heath Road, Perisher Valley on Lot 603 DP 1158020 as shown in Figure 2. The subject lot is a lease area within Kosciuszko National Park.

Figure 3 provides an extended aerial view of the property and demonstrates the extent to which the western elevation has been cleared from historic agricultural use and the existing Pine Plantation extent on the northern and eastern elevations.

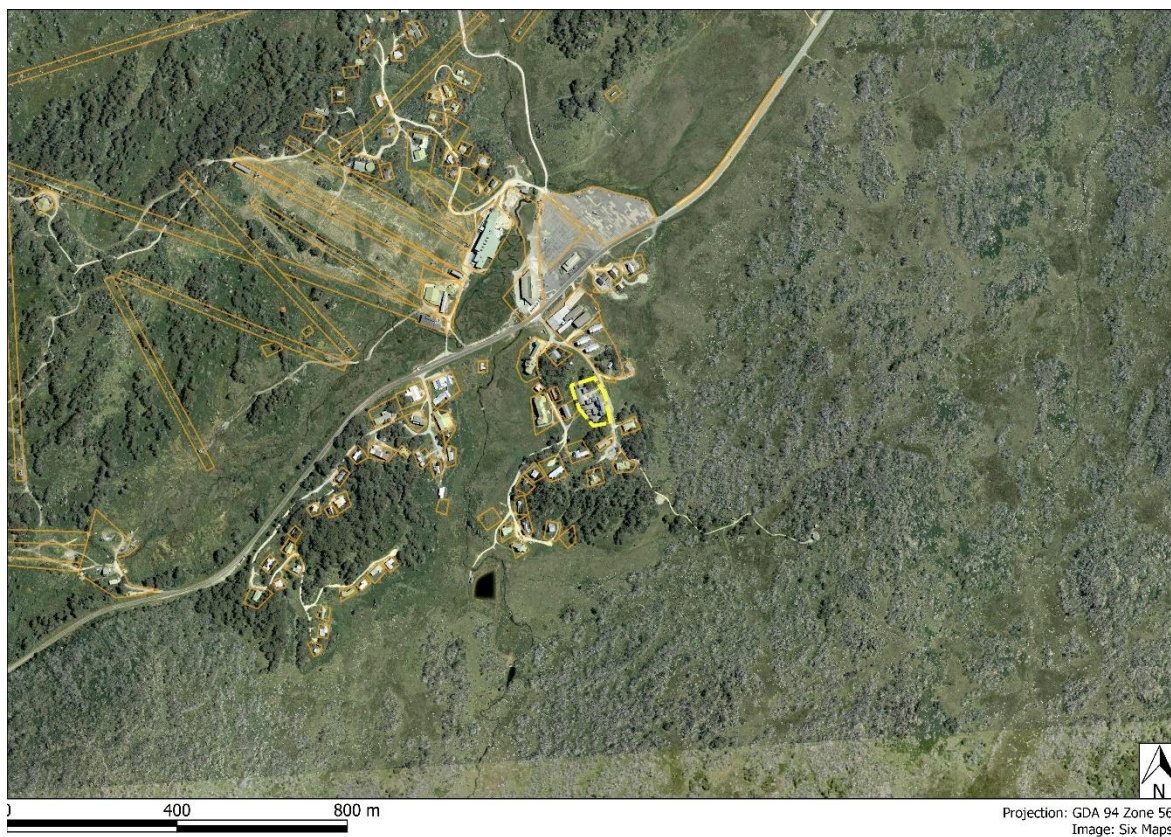
Figure 4 provides a close-up aerial view of the subject lot and location of proposed developments.

**FIGURE 2 LOCATION OF SUBJECT LOT**





**FIGURE 3      BROAD SCALE VIEW OF SUBJECT LOT**



**FIGURE 4      CLOSE UP VIEW OF SUBJECT LOT**





### 3. PLANNING LAYERS

#### 3.1. Planning Layers

The following planning layers are described in Table 1 and shown in the Figures below:

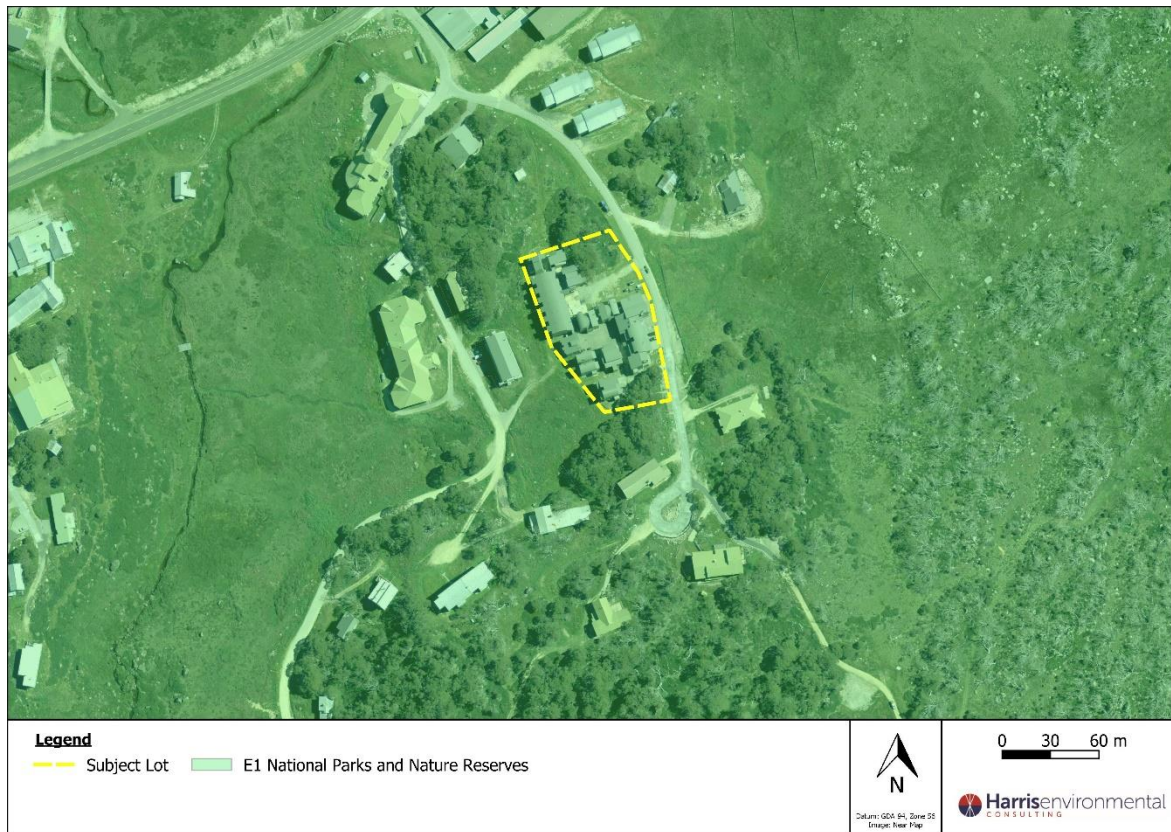
**TABLE 1 PLANNING LAYERS**

MAP	FIGURE	DESCRIPTION
<b>Bushfire Prone Land Map</b>	5	The subject lot is mapped "Vegetation Category 1".
<b>LEP Zone Map</b>	6	The subject lot is zoned as "E1 – National Parks and Nature Reserves".
<b>Vegetation Mapping</b>	7	The vegetation to the east of the proposed development has been mapped as "Sub-alpine Woodland".
<b>Biodiversity Values Map</b>	Appendix ii.	The land around the subject land, to the east of Candle Heath Road and to the south west.

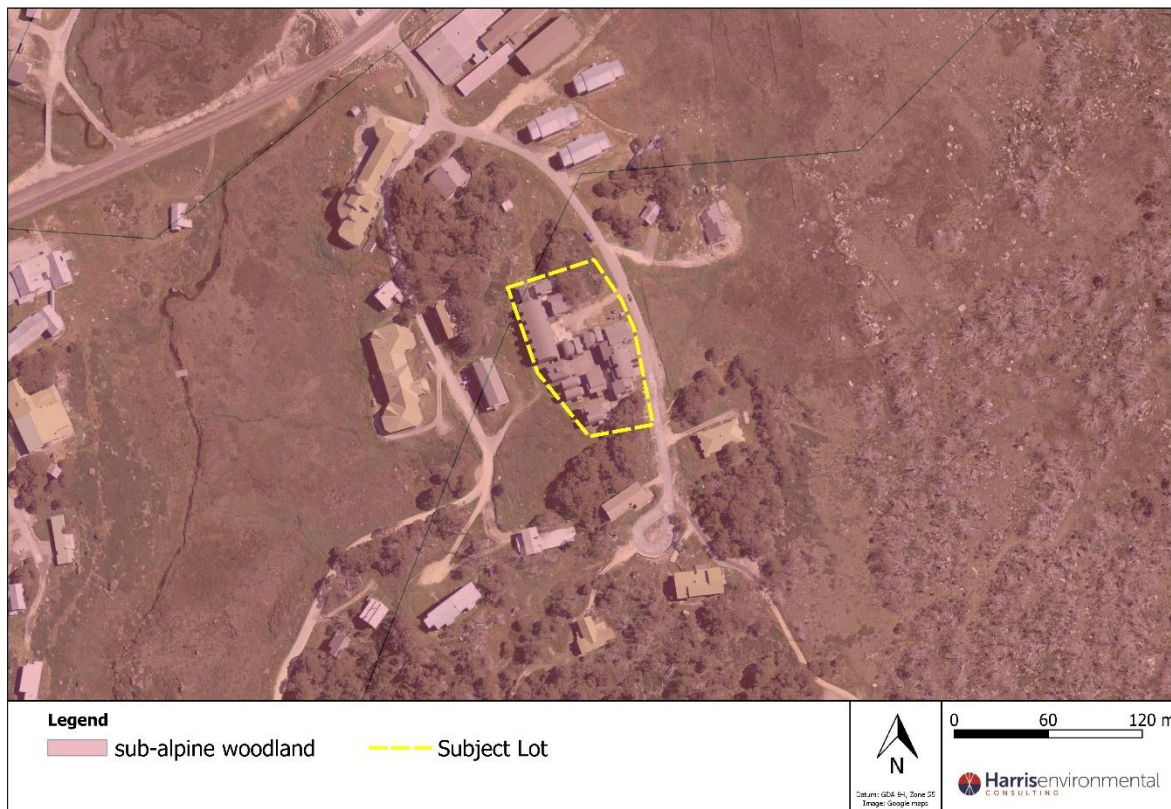
**FIGURE 5 BUSHFIRE PRONE MAP**



**FIGURE 6 LEP ZONE MAP**



**FIGURE 7 VEGETATION MAPPING**



Vegetation mapping Wingecarribee LGA VIS\_ID 2388





## 4. SITE DESCRIPTION

### 4.1 Slope and aspect of the site within 100m

The slope that would most significantly influence fire behaviour was determined over a distance of 100m out from the proposal. This assessment was made using 1 m ( $\pm 0.3$ m) contour intervals from ELVIS.

The Australian Standard AS3959-2018 identifies that the slope of the land under the classified vegetation is much more important than the slope between the site and the edge of the classified vegetation.

As can be seen in Figure 8 the subject land is located on a gentle crest that falls to the north, east and west.

**FIGURE 8** SLOPE





## 4.2 Vegetation formation within 140 m of the proposed dwelling

Figure 10 shows the managed and unmanaged land within a 140 m of the proposed development.

The vegetation formations are described below and summarised in Table 2.

The predominant vegetation surrounding the development is considered Alpine Woodland and classified by PBP as Forest. The vegetation on the eastern and western elevation of the proposed development has been classified Alpine Complex.

**TABLE 2      PREDOMINATE VEGETATION CLASSIFICATION**

	<b>Vegetation Formation</b>	<b>Effective Slope</b>	<b>Distance from façade to hazard</b>
<b>North</b>	Sub Alpine Forest	0-5° Downslope	14 m
<b>North West</b>	Sub Alpine Forest	5-10° Downslope	17 m
<b>East</b>	Alpine Complex	0-5° Downslope	11 m
<b>South</b>	Sub Alpine Forest	Upslope	11 m
<b>South East</b>	Sub Alpine Forest	Upslope	11 m
<b>West</b>	Alpine Complex	Upslope	11 m





*Photo 1 View of Alpine Forest vegetation on the northern elevation*



*Photo 2 View of Alpine Forest and snowed over Alpine Complex on north east Elevation*



*Photo 3 View of Alpine Forest and snowed over Alpine Complex on north west elevation*





## 5. BUSHFIRE THREAT ASSESSMENT

### 5.1. Proposed Asset Protection Zone (APZ)

Table A1.12.7 *PBP* (2019) has been used to determine the width of the required APZ for the development using the vegetation and slope data identified. An FDI of 50 was used for this location. As described in Table 2.1 AS3959-2018 Alpine Areas have an FDI of 50. An Alpine is defined as more than 1200 m above the Australian Height Datum in NSW (NCC, 2019).

Table 3 below shows the APZ and BAL Determination for the development. Figure 10 shows the proposed Asset Protection Zone.

An APZ should be maintained from the commencement of building works and maintained for perpetuity for the following distances:

- 17 m on the northwestern elevation;
- 14 m on the northeastern elevation
- 11 m on the southern elevations.

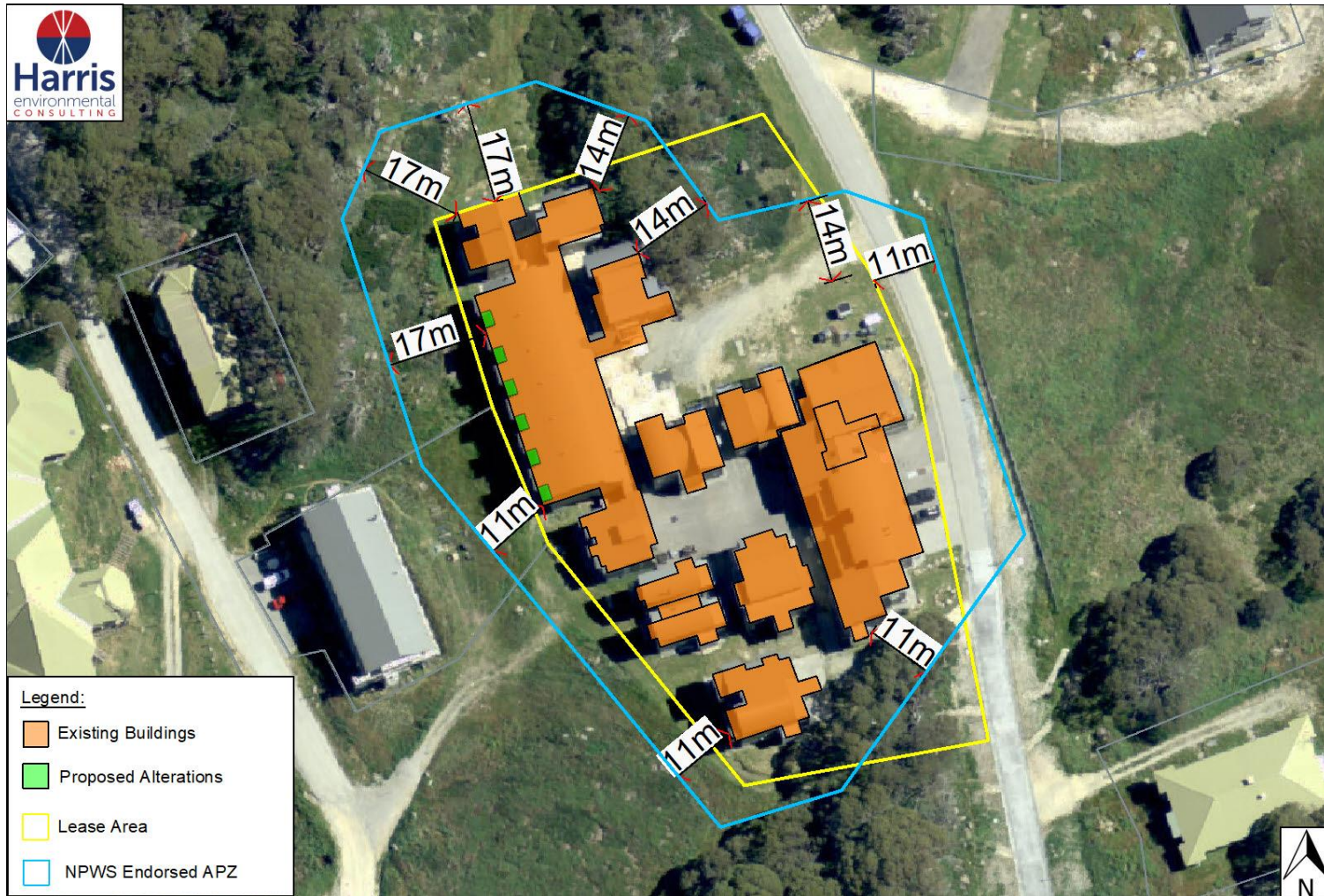
Some of the above APZ is located outside the developments lease area. APZs outside of the sub lease or ease hold area are required to be supported by a suitable legal mechanism to ensure APZs are managed under a binding legal agreement for the lifetime of the development, to ensure ongoing management and maintenance responsibilities are in place.

The proposed APZ location was submitted to NPWS and approval was provided via letter as shown in Appendix 1.

**TABLE 3 APZ AND BAL DETERMINATION**

	<b>NORTH</b>	<b>EAST</b>	<b>SOUTH</b>	<b>NORTH WEST</b>
<b>Gradient</b>	5-10° Downslope	0-5° Downslope	Upslope	0-5° Downslope
<b>Vegetation</b>	Sub Alpine Forest	Alpine Complex	Sub Alpine Forest	Sub Alpine Forest
<b>Distance between façade and hazard</b>	17 m	5 m	11 m	14 m
<b>BAL 40 required APZ</b>	17-<22 m	5-<6 m	11-<15 m	14-<18 m
<b>BAL Required</b>	<b>BAL 40</b>	<b>BAL 40</b>	<b>BAL 40</b>	<b>BAL 40</b>

## ASSET PROTECTION ZONE



## 5.2. Relevant Construction Standards

The Australian Standard AS3959 – 2018 is the enabling standard that addresses the performance requirements of both parts 2.3.4 and Part GF5.1 of the Building Code of Australia for the construction of the Class 1, 2 and Class 3 buildings within a designated Bushfire Prone Area.

The following was determined for this site:

*Relevant fire danger index*..... FDI 50  
*Flame temperature* .....1090K

The proposed alterations can be built to **BAL 40** as specified by AS3959 - 2018 Construction for Buildings in Bushfire Prone Areas and or NASH Standard Steel Framed Construction in Bushfire Areas (2014) and PBP 2019.

It should be noted that any works to directly replace existing elements are required to be the equivalent material or a material that improves on the construction than the previous.

## 5.3. Ember Protection Upgrade Plan

In accordance with Section 6.6 of PBP, existing structures in alpine areas should provide a better bush fire protection outcome by upgrading the building for ember protection.

An Ember Protection Plan, that forms a long-term plan for annual upgrades should be developed to pro-actively enhance the overall bushfire protection for the existing buildings.

## 5.4. Emergency Management

An emergency /evacuation plan is to be implemented that meets the requirements as described in the *PBP 2019*. This will need to meet the criteria of the RFS publication: *A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan* and the Australian Standard AS 3745:2010 Planning for emergencies in facilities.

An emergency /evacuation plan will be required. This will:

- Meet the criteria of the RFS guidelines for the Preparation of *Emergency/Evacuation Plan* and AS 3745:2010;
- Provide a trigger system for cancellation of tourists at the site on Extreme and Catastrophic Fire Danger Days. Also, consideration should be given to also preventing occupancy on Severe Fire Danger Days.
- Include a mechanism for the early relocation of occupants on days when adverse fire weather is notified, or adverse fire activity occurs in the local government area in which the development operates.

### 5.5. Safe Operational Access

The *PBP (2019)* requires the provision of safe operational access to structures and water supply for emergency services, while residents are seeking to evacuate from an area.

The subject lot is located on Candle Heath Road. This is a two-wheel drive, all weather road. The capacity of road surfaces and bridges is sufficient to carry fully loaded firefighting vehicles. The road is a no through road and provides an existing turning area.

### 5.6. Adequate Water and Utility Services

Reticulated water is supplied to the subject lot. A hydrant booster is located on the east of the main building as shown in Photo 4.

Any bottled gas will be installed and maintained according to AS1596 and the requirements of the relevant authority. If gas cylinders need to be kept close to the buildings, the release valves must be directed away from the building and away from any combustible material. Polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used.

Electrical transmission lines, if above ground, will be managed in accordance with specifications issued by Energy Australia.

*Photo 4 View of hydrant booster on east of main building*





## 6. LANDSCAPING

An APZ is required to be established and should be maintained for perpetuity as specified.

It is recommended that the APZ be managed as an Inner Protection Area (IPA).

Vegetation within the IPA should be kept to a minimum level. Litter fuels within the IPA should be kept below 1cm in height and be discontinuous. In practical terms the IPA is typically the curtilage around the building, consisting of a mown lawn and well maintained gardens.

When establishing and maintaining an IPA the following requirements apply:

- Trees
  - tree canopy cover should be less than 15% at maturity;
  - trees at maturity should not touch or overhang the building; lower limbs should be removed up to a height of 2m above the ground;
  - tree canopies should be separated by 2 to 5m; and
- Shrubs
  - create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings should be provided;
  - shrubs should not be located under trees;
  - shrubs should not form more than 10% ground cover; and
  - clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.
- Grass
  - grass should be kept mown (as a guide grass should be kept to no more than 100mm in height); and
  - leaves and vegetation debris should be removed.

## 7. HOW THIS PROPOSAL MEETS DEEMED TO SATISFY

The following table shows how the proposed meets the specific objectives that apply to SFPP infill development in the alpine resort areas.

**TABLE 4 DEMONSTRATION OF PBP 2019 COMPLIANCE**

Objective	Demonstration of Compliance
Provide an appropriate defensible space;	An asset protection zone is provided in accordance with BAL 40. NPWS confirmation of management and maintenance responsibilities of the APZ provided in appendix 1.
Provide a better bush fire protection outcome for existing structures (e.g. via ember protection measures);	An Ember Protection Plan, that forms a long-term plan for annual upgrades should be developed to pro-actively enhance the overall bushfire protection for the existing buildings.
Ensure new building work complies with the construction standards set out in AS 3959	The proposed additions and alterations can be built to BAL 40.
To ensure ongoing management and maintenance responsibilities are in place where APZs are proposed outside of the sub lease or leasehold area;	NPWS confirmation of management and maintenance responsibilities of the APZ provided in appendix 1.
Written consent from the land managers is provided for all proposed works outside of the sub lease or leasehold area	NPWS confirmation of management and maintenance responsibilities of the APZ provided in appendix 1.
Proposed APZs outside of the sub lease or ease hold area are supported by a suitable legal mechanism to ensure APZs are managed under a binding legal agreement in perpetuity	NPWS confirmation of management and maintenance responsibilities of the APZ provided in appendix 1. A suitable legal mechanism to ensure APZs are managed under a binding legal agreement in perpetuity is to be provided before the commencement of development.
Ensure building design and construction standards enhance the chances of occupant and building survival.	The proposed additions and alterations can be built to BAL 40.
Provide safe emergency evacuation procedures.	An emergency /evacuation plan is to be implemented that meets the requirements as described in the PBP 2019. This will need to meet the criteria of the RFS publication: A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan and the Australian Standard AS 3745:2010 Planning for emergencies in facilities. An Ember Protection Plan, that forms a long-term plan for annual upgrades should be developed to pro-actively enhance the overall bushfire protection for the existing buildings.

## 8. SUMMARY

This Bushfire Hazard Assessment proposes:

- The proposed alterations are required to be constructed to **BAL 40** as specified by AS3959 - 2018 Construction for Buildings in Bushfire Prone Areas and or NASH Standard Steel Framed Construction in Bushfire Areas (2014) and PBP 2019;
- National Parks and Wildlife Services (NPWS) have approved the proposed APZ. This is provided in Appendix 1. An APZ should be maintained from the commencement of building works and for perpetuity for the following distances:
  - 17 m on the northwestern elevation;
  - 14 m on the northeastern elevation
  - 11 m on the southern elevations.
- Some of the above APZ is located outside the developments lease area. APZs outside of the sub lease or ease hold area are required to be supported by a suitable legal mechanism to ensure APZs are managed under a binding legal agreement for the life of the development, to ensure ongoing management and maintenance responsibilities are in place.
- The subject lot is located on Candle Heath Road. This is a two-wheel drive, all weather road. The capacity of road surfaces and bridges is sufficient to carry fully loaded firefighting vehicles. The road is a no through road and provides an existing turning area.
- An Ember Protection Plan, that forms a long-term plan for annual upgrades should be developed to pro-actively enhance the overall bushfire protection for the existing buildings;
- An emergency /evacuation plan is to be implemented that meets the requirements as described in the *PBP 2019*. This will need to meet the criteria of the RFS publication: *A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan* and the Australian Standard AS 3745:2010 Planning for emergencies in facilities.
- Reticulated water and hydrant booster is supplied to the subject lot;
- Any bottled gas will be installed and maintained in accordance with AS1596 and the requirements of the relevant authority. If gas cylinders need to be kept close to the buildings, the release valves must be directed away from the building and away from any combustible material. Polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used;
- Electrical transmission lines, if above ground, will be managed in accordance with specifications issued by Energy Australia.

## REFERENCES

Australian Building Codes Board. (2010). *Performance Standard for Private Bushfire Shelters: Part 1*.

Geoscience Australia (2019). *ELVIS - Elevation - Foundation Spatial Data*. Elevation.fsdf.org.au. Available at: <http://elevation.fsdf.org.au/>

Keith, D. (2004) "*Ocean Shores to Desert Dunes*" Department of Environment and Conservation, Sydney

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NSW Office of Environment and Heritage (2020). Biodiversity Value Map. Accessed at: <https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BVMap>

NSW Rural Fire Service (2019) *Planning for Bushfire Protection. A Guide for Councils, Planners, Fire Authorities and Developers*. November 2019.

Standards Australia (2018) *AS3959, Construction of buildings in bushfire-prone areas*.

Tozer MG, Turner K, Keith DA, Tindall D, Pennay C, Simpson C, MacKenzie B, Beukers P, Cox S 2010. *Native Vegetation of southeast NSW: a revised classification and map for the coast and eastern tablelands*. *Cunninghamia* 11:359-406.



## APPENDIX 1: NPWS APZ APPROVAL



Our reference: EF20/31338-07  
Doc21/177850

The Stables'  
C/- Tziallas Architects  
210-224 Bong Bong Street,  
Bowral NSW

To Whom it may concern,

### Asset Protection Zone Plan – 'The Stables' Apartments, Perisher Valley.

I refer to your application to undertake vegetation management works for the establishment and ongoing management of an Asset Protection Zone (APZ) for The Stable Apartments, Perisher Valley, as per the attached APZ plan.

I understand that the proposed works are required to provide a defensible space around the building and to remove any potential hazardous trees or branches which are overhanging the building and that the works may include:

- Removal of all fine fuels such as leaves, twigs, bark etc surrounding the building
- Removal of any trees or branches that are overhanging the building whether live or dead
- Removal of trees to provide a defensible space within the lease and extending beyond the lease area as per the attached plan
- Selective removal of native ground cover or trimming of ground cover within the defensible space. We request that the minimum amount of removal is conducted to achieve the desired result.

I note the following provisions to ensure the works comply with the RFS standards in the 'Planning for Bushfire Protection' 2019:

- Native tree canopies will not exceed 15% of the area
- Understorey vegetation will not exceed 10% of the area
- Tree canopies will not be continuous from hazard to asset
- Lower branches will be pruned up to 2m above the ground
- Tree canopies will not overhang the building
- No understorey heath vegetation to be located below trees.

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Kosciuszko Road Jindabyne NSW  
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In light of the information provided to NPWS, the proposed works are considered likely to have minimal environmental impact and are required to provide an APZ for the lodge.

Approval is given under *Clause 21 (2) of the National Parks and Wildlife Regulation 2019* for the proposed works.

The approval is granted subject to conditions which are set out below:

1. If any of the works fall outside of the scope described above, then further consultation with NPWS is required
2. All vegetation must be checked to ensure there are no fauna or fauna habitats prior to felling. This may include active nests, hollows or dreys. If fauna or evidence of fauna is found, further consultation with NPWS is required
3. Works to be undertaken using hand held equipment only, such as chainsaws, mowers or brushcutters,
4. All vegetation should be moved away from the building so it does not add to the fuel load around the building
5. Tree removal should be undertaken by dismantling piece by piece rather than cutting down whole. The timber must be either removed from Kosciuszko National Park or cut up and stacked appropriately for use as firewood
6. **Tree stumps are cut to ground level only.** Stumps are not permitted for removal (ie. no soil disturbance)
7. All works must be in accordance with the RFS Standards for APZs.

This approval is granted for the life of the lease and is for both the implementation of the APZ plan as well as the ongoing vegetation management for the entire APZ.

If you have any enquires regarding this matter, please contact Marion Battishall, Resorts Liaison Officer, on 6450 5543.

Yours sincerely



**Gabriel Wilks**  
**Manager Southern Ranges Services**  
**Southern Ranges Branch**  
10<sup>th</sup> February 2021

The Stables Apartments, Perisher Valley.

## APZ – Implementation /Management Plan



The areas highlighted in Yellow are to be RETAINED. NO CLEARING is to occur in these sites.

APZ Composition (within red boundary)

- Maximum 15% of the APZ as canopy (trees at maturity)
  - Maximum 10% of the APZ as understory (heath)
- These areas highlighted are to be retained (NO CLEARING)
- Remainder APZ to have vegetation managed to a height of 100mm or below.

\*\* No shrubs beneath trees.

**\*\* Where APZ management works leads to bare ground then this area must be planted with native Poa and be maintained until an erosion resistant state is achieved.**

**APZ Management**

- Removal of fine fuels.
- Regular maintenance of grass – to less than 100mm in height.
- Tree canopy should not overhang the building.
- Prune or remove trees so there is not a continuous tree canopy from hazard to asset. Separate tree crowns by 2.5 metres.
- Prune lower branches from trees up to 2m above ground.
- Native trees and shrubs can be retained as clumps or islands.
- Vegetation should not touch the building.
- Removal of weeds and more flammable species first.
- Remove saplings as they grow.

Plan Name: 'The Stables' APZ Management Plan.

Plan date: 03/03/21

Who drew the plan: Harris Environmental Consultants

Site address: 20 Candle Heath Road, Perisher Valley, NSW.

Other notes: Not to scale

This Plan is for an Inner Protection Area (IPA) Asset Protection Zone (APZ).

APZ to be maintained according to RFS APZ standards whilst protecting Environmentally sensitive areas.