



## **Bushfire Assessment**

**Cooma Fire Control Centre**

**9 Polo Flat Road, Polo Flat**

**NSW Public Works**

**29 May 2023**

**(Ref: 23017)**

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report by  
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# 1 Introduction

<b>Street or property name:</b>	9 Polo Flat Road	
<b>Suburb, town or locality:</b>	Polo Flat	<b>Postcode:</b> 2630
<b>Lot/DP no:</b>	Lot 14 DP 250029	
<b>Local Government Area:</b>	Snowy Monaro Regional Council	

## 1.1 Background

NSW Public Works commissioned Peterson Bushfire to prepare a Bushfire Assessment Report for a proposed new Fire Control Centre located on a lot identified as 'bushfire prone land'. This report presents the assessment and recommendations to ensure compliance with the relevant bushfire protection legislation and policy. It has been prepared by a consultant accredited by the Fire Protection Association of Australia's BPAD scheme (Accreditation No. BPD-L3-18882).

## 1.2 Location and description of the proposal

The subject land is located within the Polo Flat industrial area on the eastern side of Cooma as shown on Figure 1.

The site of the proposed development is at the northern end of the subject land to the rear of the existing Fire Control Centre on Geebung Street.

The proposal consists of the construction of the new Cooma Fire Control Centre which will consist of the following:



- Administrative building.
- Stores shed with seven bays.
- Access handle off Geebung Street and vehicle entry points.
- Internal access loop road with carparking and hardstand areas.
- Training ground and helipad.
- Associated infrastructure such as drainage controls and landscaping.

The development site plan is included as Figure 2.





### Legend

-  Watercourse
-  Subject Land



Date: 3/04/2023

0 125 250 500  
Metres

Figure 1: Location of the Subject Land




Coordinate System: GDA 1994 MGA Zone 55

Imagery: © Nearmap





#### Legend

-  Watercourse
-  Subject Land
-  Cadastre

**Figure 2: The Proposal**



Date: 3/04/2023

0 20 40 80  
Metres

Coordinate System: GDA 1994 MGA Zone 55

Imagery: © Nearmap

### 1.3 Assessment requirements

The subject land is identified as bushfire prone land by Snowy Monaro Regional Council as shown by the bushfire prone land mapping on Figure 3. The development does not involve habitable uses (Class 1, 2 or 3) or Special Fire Protection Purpose (SFPP) development as defined by 'Planning for Bush Fire Protection 2019' (PBP). Section 8.3 of PBP prescribes the assessment methodology and bushfire protection measures for other uses that do not involve a habitable dwelling or SFPP development.

In order to comply with PBP, the following conditions must be met:

- *satisfy the aim and objectives of PBP outlined in Chapter 1;*
- *consider any issues listed for the specific purpose for the development set out in this chapter; and*
- *propose an appropriate combination of bushfire protection measures.*

It is also important to ensure that a 'defendable space' is provided for the size and scale of the development.

The aim and objectives of PBP are listed below:

1. *The aim of PBP is to provide for the protection of human life and minimise impacts on property from the threat of bush fire, while having due regard to development potential, site characteristics and protection of the environment.*
2. The objectives are to:
  - a) *afford buildings and their occupants protection from exposure to a bush fire;*
  - b) *provide for a defendable space to be located around buildings;*
  - c) *provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings;*
  - d) *ensure that appropriate operational access and egress for emergency service personnel and occupants is available;*
  - e) *provide for ongoing management and maintenance of BPMs; and*
  - f) *ensure that utility services are adequate to meet the needs of firefighters.*

Section 8.3.1 of PBP lists the issues specific to Buildings Class 5-8. As stated in PBP, the NCC does not provide for any bushfire specific performance requirements for these building classes. As such the Asset Protection Zones (APZ) and Bushfire Attack Levels (BAL) do not apply as deemed-to-satisfy provisions for bushfire protection. The general fire safety construction provisions of the NCC are taken as acceptable solutions however construction requirements for bushfire protection (i.e. BALs) are to be considered on a case-by-case basis in order to satisfy the aim and objectives of PBP.

The specific issues to be assessed for Buildings Class 5-8 are in relation to access, water supply and services, and emergency and evacuation planning as follows:

1. *Provide safe access to/from the public road system for firefighters providing property protection during a bush fire and for occupant egress for evacuation;*
2. *Provide suitable emergency and evacuation (and relocation) arrangements for occupants of the development;*
3. *Provide adequate services of water for the protection of buildings during and after the passage of bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building; and*
4. *Provide for the storage of hazardous materials away from the hazard wherever possible.*



## 2 Bushfire prone land

The purpose of bushfire prone land mapping is to identify lands that may be subject to bushfire risk based simply of the presence of vegetation that could act as a hazard. The maps are a planning tool used to trigger further detailed assessment. They do not present a scalable measure of hazard, threat or risk. These parameters are to be determined under further assessment in accordance with PBP (i.e. this Bushfire Assessment Report).

The Snowy Monaro Regional Bushfire Prone Land Map presented in Figure 3 identifies the subject land and adjoining lands to the north, east and south as Vegetation Category 3, which represents medium bushfire risk vegetation based on the presence of potential grassland hazard in this instance. Any development proposal within a lot containing mapped bushfire prone land (i.e. bushfire prone property) is to comply with the requirements of PBP.






The maps are produced at a broad scale by desk-top Geographic Information Systems (GIS) covering an entire Local Government Area (LGA). They are often conservative and are designed to identify any potential bushfire threat of all levels. Most importantly, the identification of bushfire prone land does not preclude development. The maps are not prescriptive and simply trigger further detailed assessment.

The identification of bushfire hazards is discussed in the following Section 3 and is based on a detailed site inspection, therefore superseding the vegetation categorisation mapping shown on the bushfire prone land map.





### Legend

- |  |   |
|--|---|
|  Watercourse  | <b>Bushfire Prone Land</b>  |
|  Subject Land |  Vegetation Buffer     |
|  Cadastre     |  Vegetation Category 3 |



Date: 3/04/2023

0 100 200 400  
Metres

**Figure 3: Bushfire Prone Land**

Coordinate System: GDA 1994 MGA Zone 55

Imagery: © Nearmap



## 3 Bushfire hazard

An assessment of the bushfire hazard is necessary to determine the application of bushfire protection measures such as APZ location and dimension. This section provides a detailed account of the vegetation communities (bushfire fuels) and the topography (effective slope) that combine to create the bushfire hazard that may affect bushfire behaviour.

Due to the simple nature of the bushfire hazards, the hazard assessment was undertaken using desk-top methods.

### 3.1 Predominant vegetation

The 'predominant vegetation' influencing fire behaviour approaching the development site has been assessed in accordance with the methodology specified by PBP. The vegetation within the 140 m assessment area is mapped on Figure 4 and is described below.

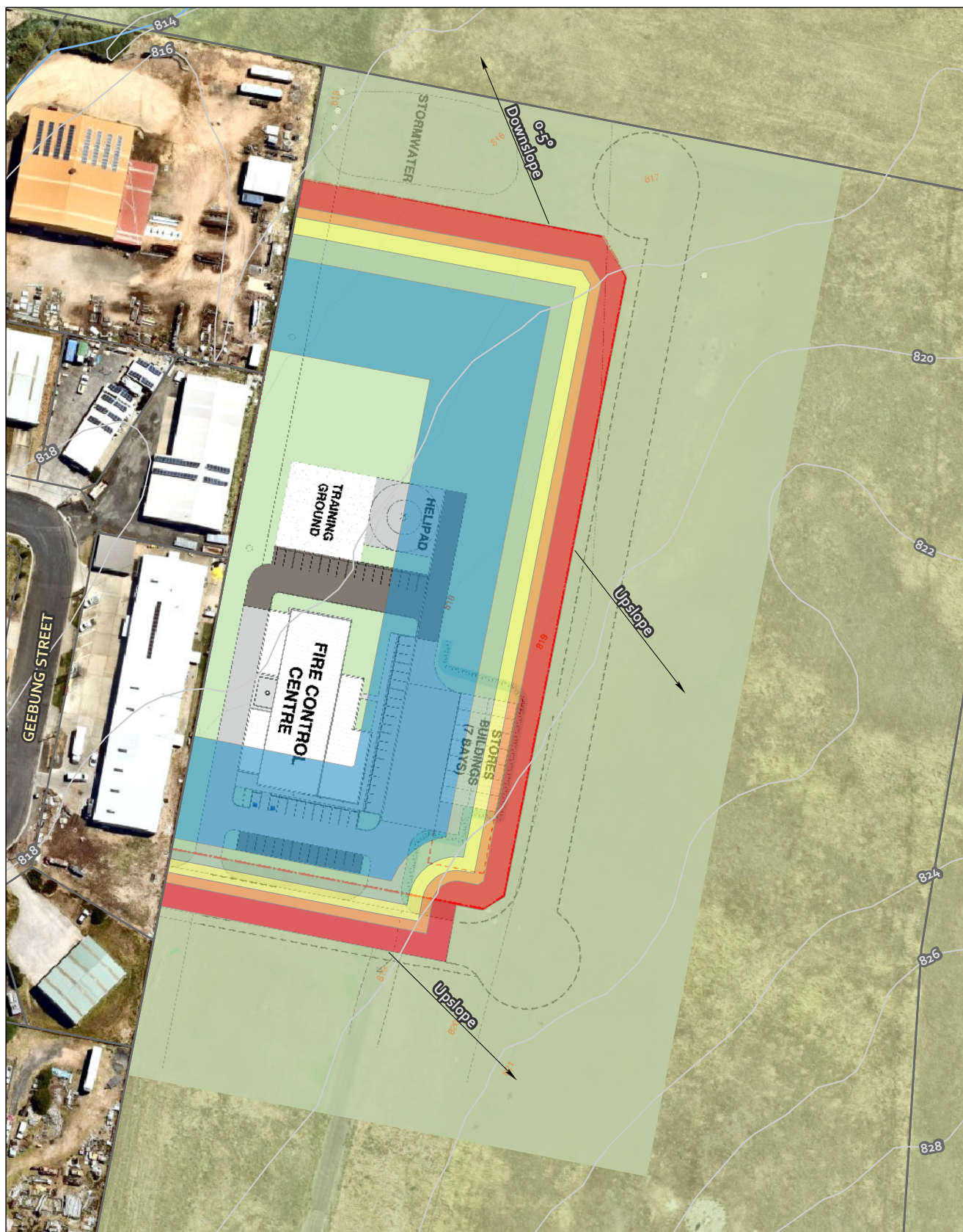
The only hazard within the 140 m assessment area is potential grassland hazard adjoining the development site to the north, east and south. The adjoining land consists of cleared paddocks and can present a hazard depending on the management regime (e.g. grazing or slashing), growth and curing rates. The adjoining paddocks are therefore classified as 'grassland' in accordance with PBP requirements for the determination of APZ and BAL.

Managed lands adjoin the development site to the west.

### 3.2 Effective slope

The 'effective slope' influencing fire behaviour has been assessed in accordance with the methodology specified within PBP. This is conducted by measuring the slope that would most significantly influence fire behaviour where the hazard has been identified within 100 m of the subject land. The effective slope was measured from a 2 m contour layer as shown on Figure 4.

The effective slope under the grassland hazard is within the PBP slope class of 'downslope 0-5 degrees' to the north and 'upslope/flat' to the east and south. The slope assessment is indicated on Figure 4.



**Legend**

- Contour - 2m
- Watercourse
- Cadastre

**Vegetation Formation**

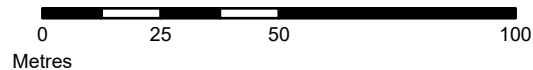
- Grassland

**Bushfire Attack Level (BAL)**

- BAL - Flame Zone
- BAL - 40
- BAL - 29
- BAL - 19
- BAL - 12.5



Date: 3/04/2023



**Figure 1: Bushfire Hazard Analysis and Bushfire Attack Level (BAL)** Coordinate System: GDA 1994 MGA Zone 55

Imagery: © Nearmap



## 4 Bushfire protection measures

PBP requires the assessment of a suite of bushfire protection measures that in total provide an adequate level of protection for development proposals on bush fire prone land. The measures required to be assessed for the development type proposed are listed in Table 1 below and are discussed in detail in the remainder of this section.

**Table 1: Generic PBP bushfire protection measures**

Aim & Objectives (PBP Section 1.1)	Measures
<b>Aim</b>	
<i>The aim of PBP is to provide for the protection of human life and minimise impacts on property from the threat of bush fire, while having due regard to development potential, site characteristics and protection of the environment.</i>	<ul style="list-style-type: none"> <li>Achieving the objectives below will satisfy the aim.</li> </ul>
<b>Objectives</b>	
1. <i>afford buildings and their occupants protection from exposure to a bush fire;</i>	<ul style="list-style-type: none"> <li>Building setbacks from bushfire hazards to avoid critical limits.</li> <li>Building construction specifications or standards.</li> <li>Defendable space - Providing fire-fighter access between buildings and the bushfire hazard.</li> </ul>
2. <i>provide for a defendable space to be located around buildings;</i>	
3. <i>provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings;</i>	
4. <i>ensure that appropriate operational access and egress for emergency service personnel and occupants is available;</i>	<ul style="list-style-type: none"> <li>Access to public road</li> <li>Adequacy of internal property roads</li> <li>Assessment of perimeter access</li> </ul>
5. <i>provide for ongoing management and maintenance of BPMs; and</i>	<ul style="list-style-type: none"> <li>Design and layout to ensure maintenance can occur by occupants without reliance on other parties</li> </ul>

<b>Aim &amp; Objectives (PBP Section 1.1)</b>	<b>Measures</b>
6. <i>ensure that utility services are adequate to meet the needs of firefighters.</i>	<ul style="list-style-type: none"> <li>• Water supply for fire-fighting including provisions for hydrants or static water supplies.</li> <li>• Ensuring installation of electricity and gas supplies do not contribute to the risk of fire to a building.</li> </ul>

**Table 2: Specific PBP bushfire protection measures for buildings Class 5-8**

<b>Objectives (PBP Section 8.3.1)</b>	<b>Measures</b>
1. <i>Provide safe access to/from the public road system for firefighters providing property protection during a bush fire and for occupant egress for evacuation.</i>	<ul style="list-style-type: none"> <li>• Access to public road</li> <li>• Adequacy of internal property roads including assessment of perimeter access</li> <li>• Defendable space - Providing fire-fighter access between buildings and the hazard</li> </ul>
2. <i>Provide suitable emergency and evacuation (and relocation) arrangements for occupants of the development.</i>	<ul style="list-style-type: none"> <li>• Bushfire Emergency Management and Evacuation Plan</li> <li>• Adequacy of internal property roads</li> </ul>
3. <i>Provide adequate services of water for the protection of buildings during and after the passage of bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building.</i>	<ul style="list-style-type: none"> <li>• Water supply for fire-fighting including provisions for hydrants or static water supplies.</li> <li>• Ensuring installation of electricity and gas supplies do not contribute to the risk of fire to a building.</li> </ul>
4. <i>Provide for the storage of hazardous materials away from the hazard wherever possible.</i>	<ul style="list-style-type: none"> <li>• Appropriate storage of hazardous materials away from bushfire hazards.</li> </ul>

## 4.1 Access

### 4.1.1 Public road access

PBP requires an access design that enables safe evacuation whilst facilitating adequate emergency and operational response. Development should have an alternate access or egress option depending on the bushfire risk, the density of the development, and the chances of the road being cut by fire for a prolonged period.

The public road access consists of Geebung Street linked to Polo Flat Road which provides alternate access to the north and south.

The available public road access satisfies PBP access objectives in relation to alternate access and egress.

### 4.1.2 Internal property roads

The proposed internal property road will be suitable for truck movements including turning and is therefore deemed to be adequate for the proposal and compliant with PBP.

Additional provisions for bushfire protection are not required.

### 4.1.3 Defendable space

For habitable development types such as dwellings, the application of a bushfire hazard building setback (i.e. APZ) is related to the vulnerability of an asset typically in terms of combustibility of external materials or the nature of the occupants. The resulting APZ dimension would stipulate a building construction standard (i.e. Bushfire Attack Level – BAL) under Australian Standard AS 3959-2018 *Construction of buildings in bushfire-prone areas*.

As the land use does not include a dwelling or habitable building, PBP does not prescribe an APZ dimension. The general fire safety requirements of the NCC are accepted as adequate bushfire protection for the developments involving Class 5 to 8 buildings.

However, PBP does require the consideration of a managed hazard-separation area for fire-fighting purposes referred to as 'defendable space'. A defendable space is an area between the building and the bushfire hazard that provides an environment in which fire-fighters can undertake property protection after the passage of a bushfire with some level of safety. The defendable space dimension is defined by the ability to gain access around an asset and conduct defensive fire-fighting operations. Relying on a defendable space in lieu of an APZ is deemed acceptable whereby construction satisfies NCC building and structural fire requirements.

The proposed administrative building will be setback from the grassland hazards at the northern, eastern and southern boundaries by 122 m, 46 m and 40 m, respectively. The stores shed will be setback off the eastern boundary by 7 m. These setbacks provide the defendable space and effective APZ. The defendable space will consist of the managed grounds of the site including internal access roads and hardstand areas. The effective APZ achieves BAL-12.5 for the administrative building (refer to Figure 4). BAL compliance is not required for the stores shed



as it is Class 10a building that will be separated from the primary building by more than 6 m. The proposed defensible space complies with PBP.

## 4.2 Construction standards

As introduced in Section 1.3, building construction provisions for bushfire protection within Australian Standard AS 3959-2018 *Construction of buildings in bushfire-prone areas* (AS 3959) do not apply to developments of the type proposed as a deemed-to-satisfy requirement under the NCC. Due to the type of development and compliance with NCC requirements for building and structural fire, it is generally accepted that buildings will survive bushfire attack. In addition, staff will not reside at the site and will be familiar with evacuation routes.

However, as stated within Section 8.3.1 of PBP, consideration of building construction provisions is required to satisfy the aim and objectives of PBP and the assessment of which is to be made on a case-by-case basis.

The Bushfire Attack Levels (BAL) impacting the proposal have been determined in accordance with Table A1.12.6 of PBP and are mapped on Figure 4. Figure 4 demonstrates that the highest BAL impacting the administrative building is BAL-12.5. BAL compliance is not required for the stores shed as it is Class 10a building that will be separated from the primary building by more than 6 m.

It is recommended in this instance for the proposed administrative building to be designed and constructed to comply with BAL-12.5 construction specifications listed within AS 3959 and the NSW variation listed within Section 7.5.2 of PBP.

This recommendation is based on the importance of the facility as a community and government asset and its role in emergency management.

## 4.3 Landscaping and vegetation management

The development site is to be maintained to achieve the standard of an Inner Protection Area (IPA) as described within Appendix A4.1.1 of PBP. Maintenance can be achieved by regular mowing and slashing of turf and batters within the site.

Any proposed landscaping is also to comply with the IPA requirements. The IPA requirements stated within PBP are repeated below.

### PBP A4.1.1 Inner Protection Areas (IPAs)

*The IPA is the area closest to the building and creates a fuel-managed area which can minimise the impact of direct flame contact and radiant heat on the development and act as a defensible space. 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*
- *preference should be given to smooth barked and evergreen trees.*

- **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.*

#### **4.4 Emergency and evacuation**

A 'Bushfire Emergency Management and Evacuation Plan' is typically prepared for facilities within bushfire prone areas depending on the level of bushfire risk. A plan is prepared in accordance with the NSW Rural Fire Service document 'A Guide to Developing a Bushfire Emergency Management and Evacuation Plan' (RFS 2014).

The preparation of a 'Bushfire Emergency Management and Evacuation Plan' is not recommended in this case due to the low bushfire risk at the site.

## **4.5 Water supply and other utilities**

### **4.5.1 Water supply**

The proposal will require fire hydrants to be installed to comply with *AS 2419.1 – 2005 Fire Hydrant Installations - System Design, Installation and Commissioning* (AS 2419).

### **4.5.2 Electricity supply**

The supply of electricity will be provided underground. Compliance is therefore achieved.

### **4.5.3 Gas supply**

Any gas services are to be installed and maintained in accordance with Australian Standard *AS/NZS 1596-2014 The storage and handling of LP gas*.

## **4.6 Hazardous materials**

The storage of hazardous materials cannot be made external to the building.



## 5 Conclusion and recommendations

The proposal consists of the new Cooma Fire Control Centre to be located on bushfire prone land. The bushfire hazard consists of potential grassland hazard within cleared paddocks adjoining to the north, east and south.

As stated within Section 8.3.1 of PBP, the NCC does not provide for any bushfire specific performance requirements for the type of development or use proposed. As such APZs and BALs do not apply as deemed-to-satisfy provisions for bushfire protection. However, PBP requires a defendable space and assessment of construction measures.

The development site will provide a compliant defendable space and effective APZ of at least 40 m for the administrative building, resulting in BAL-12.5. The stores building will benefit from a 7 m defendable space. BAL compliance is recommended for the administrative building due to the significance of the asset to the community.

PBP requires an assessment of the proposal against the aim and objectives of PBP and the four specific objectives for buildings Class 5-8. Tables 3 and 4 below summarise how the objectives have been satisfied. This assessment concludes that all objectives are satisfied with the adoption of the recommendations listed following Tables 3 and 4.

**Table 3: Compliance with PBP aim and objectives**

Aim & Objectives (PBP Section 1.1)	Compliance statement
<b>Aim</b>	
<i>The aim of PBP is to provide for the protection of human life and minimise impacts on property from the threat of bush fire, while having due regard to development potential, site characteristics and protection of the environment.</i>	<ul style="list-style-type: none"> <li>Achieving the objectives below will satisfy the aim.</li> </ul>
<i>Afford buildings and their occupants protection from exposure to a bush fire;</i>	<u>Section 4.1.3 and 4.2 demonstrates compliance.</u> BAL compliance recommended for the administrative building
<i>Provide for a defendable space to be located around buildings;</i>	<u>Section 4.1.3 demonstrates compliance.</u> Defendable space and effective APZ of 40 m for the administrative building and 7 m for the stores building.

<b>Aim &amp; Objectives (PBP Section 1.1)</b>	<b>Compliance statement</b>
<i>Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings;</i>	<u>Section 4.1.3 and 4.2 demonstrates compliance.</u> BAL compliance recommended for the administrative
<i>Ensure that appropriate operational access and egress for emergency service personnel and occupants is available;</i>	<u>Section 4.1.1 and 4.1.2 demonstrates compliance.</u> No further recommendations
<i>Provide for ongoing management and maintenance of BPMS; and</i>	<u>Section 4.3 demonstrates compliance.</u> The site is to be maintained in accordance with IPA requirements.
<i>Ensure that utility services are adequate to meet the needs of firefighters.</i>	<u>Section 4.5 demonstrates compliance.</u> Recommendation for compliant hydrant coverage and installation of gas supplies.

**Table 4: Compliance with PBP Section 8.3.1 objectives**

<b>Objectives (PBP Section 8.3.1)</b>	<b>Compliance statement</b>
<i>Provide safe access to/from the public road system for firefighters providing property protection during a bush fire and for occupant egress for evacuation</i>	<u>Section 4.1.1 and 4.1.2 demonstrates compliance.</u> No further recommendations
<i>Provide suitable emergency and evacuation (and relocation) arrangements for occupants of the development</i>	<u>Section 4.4 demonstrates compliance.</u> Preparation of 'Bushfire Emergency Management and Evacuation Plan' not recommended
<i>Provide adequate services of water for the protection of buildings during and after the passage of bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building</i>	<u>Section 4.5 demonstrates compliance.</u> Recommendation for compliant hydrant coverage and installation of gas supplies
<i>Provide for the storage of hazardous materials away from the hazard wherever possible</i>	<u>Section 4.6 demonstrates compliance.</u> Recommendation for hazardous materials not to be stored externally.

The following recommendations were made within this report:

1. The proposed administrative building is to be designed and constructed to comply with BAL-12.5 construction specifications listed within AS 3959 and the NSW variation listed within Section 7.5.2 of *Planning for Bush Fire Protection 2019* (PBP).
2. Maintenance of the site and landscaping to comply with the standard of an Inner Protection Area (IPA) as described in Appendix A4.1.1 of *Planning for Bush Fire Protection 2019* (PBP).
3. Fire hydrants are to be installed to comply with *AS 2419.1 – 2005 Fire Hydrant Installations - System Design, Installation and Commissioning* (AS 2419).
4. Any gas services are to be installed and maintained in accordance with *AS/NZS 1596-2014 The storage and handling of LP gas*.
5. Hazardous materials are not to be stored externally.

In the author's professional opinion, with the adoption of the above recommendations, the proposed development will comply with *Planning for Bush Fire Protection 2019* (PBP).



David Peterson





## References

NSW Rural Fire Service (RFS). 2014. *A Guide to Developing a Bushfire Emergency Management and Evacuation Plan*. State of New South Wales through the NSW Rural Fire Service.

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