



---

# Travers

bushfire & ecology

---

## Bushfire Management Plan

**Dragon Dreaming  
Music, Arts & Lifestyle Festival**

Lot 58 DP 751002,  
No. 542 Caves Road,  
Wee Jasper

January 2020  
(REF: 18DDF02)





## Bushfire Management Plan

**Dragon Dreaming Music, Arts & Lifestyle Festival**  
**Lot 58 DP 751002, No. 542 Caves Road**  
**Wee Jasper**

Report Authors:	Nicole van Dorst B. App. Sc., Grad. Dip., BPAD-L3 23610 Emma Buxton B. Sc.
Plans prepared:	Sandy Cardow B. Sc.
Checked by:	John Travers B. App. Sc., Ass. Dip., Grad. Dip., BPAD-L3 15195
Date:	06/01/20
File:	18DDF02

This document is copyright ©



### Disclaimer:

This report has been prepared to provide advice to the client on matters pertaining to the particular and specific development proposal as advised by the client and / or their authorised representatives. This report can be used by the client only for its intended purpose and for that purpose only. Should any other use of the advice be made by any person, including the client, then this firm advises that the advice should not be relied upon. The report and its attachments should be read as a whole and no individual part of the report or its attachments should be relied upon as meaning it reflects any advice by this firm. The report does not suggest or guarantee that a bush or grass fire will not occur and or impact the development. The report advises on matters published by the *NSW Rural Fire Service* in their guidelines *Planning for Bush Fire Protection 2006* and other advice available from that organisation.

The mapping is indicative of available space and location of features which may prove critical in assessing the viability of the proposed works. Mapping has been produced on a map base with an inherent level of inaccuracy, the location of all mapped features is to be confirmed by a registered surveyor.



## EXECUTIVE SUMMARY

*Travers bushfire & ecology* has been engaged by *Dragon Dreaming Festival Inc.* to prepare a Bushfire Management Plan for the annual Dragon Dreaming Music, Arts and Lifestyle Festival located at Cooradigbee Homestead, Wee Jasper. This report will accompany a development application (DA) which seeks approval for the running of the Dragon Dreaming Festival for the next five (5) years.

*Dragon Dreaming Festival Inc.* recognises its responsibility to provide a safe environment for patrons and employees, including protection from the risk of bushfire. This plan provides an independent assessment of bushfire risk, amelioration and evacuation measures as well as controls that should be undertaken prior to and during the running of the festival.

Dragon Dreaming Festival is an annual four (4) day music, arts and lifestyle festival which is now entering its eleventh year in operation, after being held successfully in the ACT between 2008 and 2011 and Wee Jasper from 2013 to 2018. The following assessment has been prepared for the existing festival site, which is seeking renewed approval as a music festival venue, attracting large numbers of people and providing overnight camping facilities.

Dragon Dreaming Festival is categorised within the NSW Rural Fire Service's document *Planning for Bush Fire Protection 2019 (PBP)* as being a special fire protection purpose (SFPP) development. Furthermore, *Community Resilience Fact Sheet 7/15 – Music festivals that cater for large crowds in bush fire prone areas* outlines the specific planning guidelines for festival sites (refer Attachment 2). These guidelines include the provision of an on-site safe refuge area that can accommodate all occupants, as well as the provision of an adequate asset protection zone (APZ), access and evacuation procedures. These guidelines and the festival's compliance are summarised within Table A1.

Bushfire protection measures have been recommended within this plan appropriate to the assessed bushfire risk to each aspect of the site, to assist survival during a bushfire.

The following recommendations are provided:

- Cancellation of the festival in the event of a catastrophic fire danger day;
- Maintenance of the entire festival site as an APZ;
- Provision of a substantial open-air bushfire emergency assembly area which complies with the requirements for Neighbourhood Safer Places;
- Strategic location of the majority of camping areas to minimise bushfire exposure (equivalent to radiant heat of  $<2\text{kW/m}^2$  for the majority of campsites) and to ensure maximum time to warn and evacuate people slow to respond;
- Provision of bulk water supply specifically allocated for fire-fighting purposes;
- Emergency management during the planning stage of event organisation in consultation with the NSW RFS and other relevant stakeholders. This will include supplying the agency with a copy of the emergency management and evacuation plan.

**Table A1 – Compliance with the NSW RFS Community Resilience Fast Fact – Fact Sheet 7/15**

Fast Fact No.7/15 requirements (NSW RFS)	Comments
<p>Whether the event is programmed during the gazetted bush fire danger period for the area or on days with an extreme or catastrophic fire danger rating. The NSW RFS would discourage any large festival event that would attract large numbers of patrons during the bush fire danger period.</p>	<p>The critical fire season occurs between November and March, with the bushfire season generally starting as early as October and finishing as late as April. The festival is being held over a 4-day period between 1 – 4<sup>th</sup> November 2020. Whilst this is within the gazetted bushfire danger period, the festival site is located on the foothills adjacent to Burrinjuck Dam, with the majority of camping areas and the bushfire emergency assembly area complying with the requirements for neighbourhood safer places (i.e. exposed to radiant heat impacts of &lt;2kW/m<sup>2</sup>). Based on the provision of a safe assembly point, the festival (as proposed in November 2020) should proceed.</p> <p>However, based on the site's isolated location, distance to townships, single access road and potential for ember attack, it is recommended that the festival be cancelled if the forecast for the event is for a catastrophic fire danger rating.</p>
<p>Whether a bush fire assessment has been undertaken that identifies access and egress routes for both emergency services and patrons should the site need to be evacuated.</p>	<p>Section 4 provides further detail regarding access and egress routes for patrons and emergency services. In the event of a bushfire impacting the site, the safest option is for patrons to proceed on foot to the assembly area. Evacuation (in cars) off site is not recommended due to the potential congestion, single access road in / out, isolated location and potential for external access roads to be impacted by bushfire. In addition, patrons may be under the influence of drugs / alcohol.</p>
<p>The provision of bulk water supplies specifically dedicated for fire-fighting purposes is to be provided.</p>	<p>Section 4 provides further detail regarding water supply for fire fighting vehicles. There are a number of pumping points at Burrinjuck Dam, as well as a small dam located in close proximity to the festival site and adjacent to the access road.</p> <p>In addition to these existing static supplies, it is recommended that a tanker (10,000 litres) is provided on-site, within close proximity to the access road and with suitable connections for a fire truck.</p>
<p>Unobstructed Asset Protection Zones (APZ) of suitable width must surround the site along the boundaries adjacent to the bush fire threat. Slashing of grassed areas needs to occur in the lead up to the event and maintained during the event.</p>	<p>Yes – Adequate APZs have been provided and the entire festival site will be slashed / grazed to ensure grass height does not exceed 10cm as detailed in Section 3 and as depicted in Schedule 1</p>
<p>Emergency management must occur during the planning stage of event organisation and in consultation with the NSW RFS and all other relevant stakeholders.</p>	<p>A bushfire emergency evacuation plan is being prepared and ongoing negotiations with the local NSW Rural Fire Service (NSW RFS) are occurring during the lead up to the event. Section 4 and Appendix 5 provide further details of emergency planning requirements.</p>



Fast Fact No.7/15 requirements (NSW RFS)	Comments
<p>Advance warning by event organisers is to be provided to patrons identifying that the event is located on bush fire prone land. Advice is to be prepared listing the precautions and requirements of patrons in the event of a bush fire event. Patrons should also be reminded that they will be required to comply with any fire restrictions. This could be undertaken at the time of sale of tickets.</p>	<p>It is recommended that event organisers provide details on their website to state that the site is located on bush fire prone land. Details are to be provided regarding the potential cancellation of the festival on days of catastrophic danger.</p> <p>This should also include standard procedures to follow in the event of a bushfire impacting the site, the location of the assembly point and advice on fire restrictions.</p>
<p>Fires for cooking and heating will be in approved fire places only and should be addressed via a Fire Management Plan (e.g. operation and supervision of communal bonfire).</p>	<p>Organisers will follow all legislated fire safety requirements for the duration of the festival. Fires will be confined to approved fire places only (outside of 'flame impact' areas as depicted in Schedule 1) and will not occur within camping areas. There will be no fires (including fire-twirling equipment) on TFB days. Refer Section 4 for further detail).</p>
<p>An emergency management and evacuation plan is to be provided that is acceptable to relevant stakeholders. This is to include crowd management and security and needs to be consistent with the NSW RFS document titled '<i>A guide to developing a bush fire emergency management and evacuation plan</i>'.</p>	<p>A Bushfire Emergency Management and Evacuation Plan for the event will be prepared to comply with this requirement.</p>
<p>Provision of refuge building(s) on-site of suitable capacity for participants and staff that can meet the maximum radiant heat exposure of 10 kW/m<sup>2</sup>. Alternatively, an open-air bushfire emergency assembly area of suitable size may be provided that complies with the requirements for Neighbourhood Safer Places.</p>	<p>As detailed within Section 3 of this report, the majority of camping areas and the bushfire emergency assembly area (open air) complies with the requirements for neighbourhood safer place (i.e. exposed to radiant heat impacts of &lt;2kW/m<sup>2</sup>).</p>
<p>A method of accounting for all people on site during an emergency (e.g. through gate monitoring and check-points) is to be provided.</p>	<p>A Bushfire Emergency Management and Evacuation Plan will be prepared for the event to comply with this requirement.</p>

## GLOSSARY OF TERMS

AHIMS	Aboriginal Heritage Information System
APZ	asset protection zone
AS1596	<i>Storage and handling of LP gas 2002</i>
AS3745	<i>Planning for emergencies in facilities 2009</i>
AS3959	<i>Australian Standard – Construction of buildings in bushfire-prone areas 2009</i>
BAL	bushfire attack level
BCA	<i>Building Code of Australia</i>
DA	development application
EEC	endangered ecological community
EP&A Act	<i>Environmental Planning &amp; Assessment Act 1979</i>
FDI	fire danger index
IPA	inner protection area
km	kilometres
LGA	local government area
LEP	local environmental plan
LMZ	land management zone
m	metres
OPA	outer protection area
PBP	<i>Planning for Bush Fire Protection</i>
RF Act	<i>Rural Fires Act 1997</i>
NSW RFS	NSW Rural Fire Service
SFAZ	strategic fire advantage zone
SFPP	special fire protection purpose
TFB	total fire ban
VMP	vegetation management plan
WM	<i>Water Management Act 2000</i>



## TABLE OF CONTENTS

<b>SECTION 1.0 – INTRODUCTION .....</b>	<b>1</b>
1.1 Aims of the assessment.....	1
1.2 Festival background.....	1
1.3 Information collation.....	2
1.4 Proposal .....	2
1.5 Proposed venue.....	5
1.6 Alternative festival venue .....	8
1.7 Legislation and planning instruments .....	8
1.8 Environmental constraints.....	12
1.9 Heritage .....	13
<b>SECTION 2.0 – DESCRIPTION OF BUSHFIRE RISK AND BEHAVIOUR.....</b>	<b>14</b>
2.1 Description of bushfire risk.....	14
2.2 Fire danger .....	16
2.3 Population and demographic information.....	16
<b>SECTION 3.0 – BUSHFIRE THREAT ASSESSMENT .....</b>	<b>18</b>
3.1 Hazardous fuels.....	18
3.2 Effective slope .....	20
3.3 Bushfire attack assessment .....	20
3.4 Assessment of the size of the assembly area .....	21
<b>SECTION 4.0 – SPECIFIC PROTECTION ISSUES.....</b>	<b>23</b>
4.1 Asset protection zones.....	23
4.2 Hazard management .....	23
4.3 Fire Permits & fuel storage.....	24
4.4 Access for fire fighting operations .....	24
4.5 Water supplies .....	27
4.6 Gas.....	27
4.7 Emergency and evacuation planning .....	27
<b>SECTION 5.0 – CONCLUSION AND RECOMMENDATIONS.....</b>	<b>29</b>
5.1 Conclusion.....	29
5.2 Recommendations.....	30

## REFERENCES

SCHEDULE 1 – Bushfire Protection Measures

APPENDIX 1 – Management of Asset Protection Zones

APPENDIX 2 – Community Resilience Fast Fact – Fact Sheet 7/15, *‘Music Festivals that Cater for Large Crowds in Bush Fire Prone Areas’*

APPENDIX 3 – Previous Dragon Dreaming Development Consent (Part B – Bushfire Protection)

APPENDIX 4 – Results of bushfire attack assessment

APPENDIX 5 – Interagency briefing participants, roles and agenda





# Introduction

# 1

*Travers bushfire & ecology* has been requested to prepare a Bushfire Management Plan for the annual Dragon Dreaming Music, Arts and Lifestyle Festival located at Cooradigbee Homestead, Wee Jasper.

The festival site is located on land mapped by Yass Valley Council as being bushfire prone. This triggers a formal assessment by Council in respect of the NSW Rural Fire Service (NSW RFS) policy against the provisions of *Planning for Bush Fire Protection 2006 (PBP)* and Community Resilience Fast fact sheet 7/15 – *Music festivals that cater for large crowds in bush fire prone areas, NSW Rural Fire Service (RFS)*.

## 1.1 Aims of the assessment

This Bushfire Management Plan has been compiled specifically for the Dragon Dreaming Festival to address the following aims and objectives:

- review the bushfire threat to the landscape;
- undertake a bushfire attack assessment in accordance with *PBP & Fast Fact 7/15*;
- provide advice on mitigation measures, including the adequacy of existing APZs, evacuation procedures and other specific fire management issues;
- review the services infrastructure to the site as it relates to bushfire risk and protection;
- review the potential to carry out hazard management over the landscape.

## 1.2 Festival background

Dragon Dreaming Festival is an annual music, arts and lifestyle festival which is now entering its eleventh year of operation, after being held successfully in the ACT between 2008 and 2011 and in Wee Jasper between 2013 and 2018.

Dragon Dreaming Festival offers a diverse range of music, retail, education, and culinary attractions in a fully self-contained outdoor environment over the course of four (4) days. The event offers patrons facilities to camp within designated festival grounds during the duration of the event. The event caters for all ages with the general demographic of festival being patrons aged between 1 - 68 years with the majority of tickets sold to patrons between the ages of 23 - 39.

The festival hosts three (3) music stages, two (2) of which are electronically focussed with music ranging from chill out and ambient through to high tempo trance; the third showcases a combination of relaxed electronic sounds and a wide range of live musicians, encompassing genres such as jazz, blues, folk and rock.

### 1.3 Information collation

To achieve the aims of this report, a review of the information relevant to the festival was undertaken prior to the initiation of field surveys. Information sources reviewed include the following:

- Southern Tablelands Bush Fire Risk Management Plan 2018
- Community Resilience Fast fact sheet 7/15 – *Music festivals that cater for large crowds in bush fire prone areas*, NSW Rural Fire Service (RFS)
- Guidelines for Music Festival Event Organisers: Festival Harm Reduction, prepared by NSW Ministry of Health, dated February 2019.
- Development consent conditions issued by Yass Valley Council (Council ref; 5.2014.140.1), dated 4 September 2014
- Yass Valley Council Development Application prepared by *Servants of Sound Pty Ltd*
- Dragon Dreaming Festival Management Strategy and Risk Management Plans prepared by *Servants of Sound Pty Ltd* dated 28 October 2017
- Bushfire Emergency Management & Evacuation Plan prepared by *Travers bushfire & ecology* dated May 2019
- Dragon Dreaming Festival Bushfire Evacuation Plan (2014)
- Bureau of Meteorology (BOM), Climate statistics, obtained 13.05.2019
- Bushfire Environmental Assessment Code 2006
- *Planning for Bush Fire Protection 2006 (PBP) and PBP 2019* (NSW RFS)
- Australian Standard 3959 *Construction of buildings in bushfire-prone areas* (AS3959)
- *Standards for Asset Protection Zones*
- topographical maps DLPI of NSW 1:25,000
- *NearMap* aerial photography

An inspection of the proposed development site and surrounds was undertaken by Nicole van Dorst in April 2019 to assess the topography, slopes, aspect, drainage, vegetation and adjoining land use. The identification of existing bushfire measures and a visual appraisal of bushfire hazard and risk were also undertaken.

### 1.4 Proposal

The current development application (DA) seeks approval for the running of the Dragon Dreaming Festival for the next five (5) years at the Cooradigbee Homestead Property situated at Lot 58 DP 751002 No. 542 Caves Road, Wee Jasper.

The festival is proposed to extend over four (4) days between the dates of 1-4 November 2020 (as per the last two (2) festival events).

The festival is planned as a (ticketed) four (4) day music event with expected patronage of approximately 3,600 paying patrons plus crew, market vendors and service providers. The crew and volunteers will be at the premises for an extended period before and after the event for set up and clean up.

The majority of the on-site camping areas are located in low risk areas exposed to a radiant heat impact of <2kW/m<sup>2</sup>, and will be structured with internal tracks / carriageways provided to ensure that all parts of the camping areas are accessible by emergency response vehicles and equipment.

The festival is open to all ages and includes; restaurants, food and merchandise stalls, workshops, kids' zone, cinema, art gallery / exhibition spaces and games areas. There will

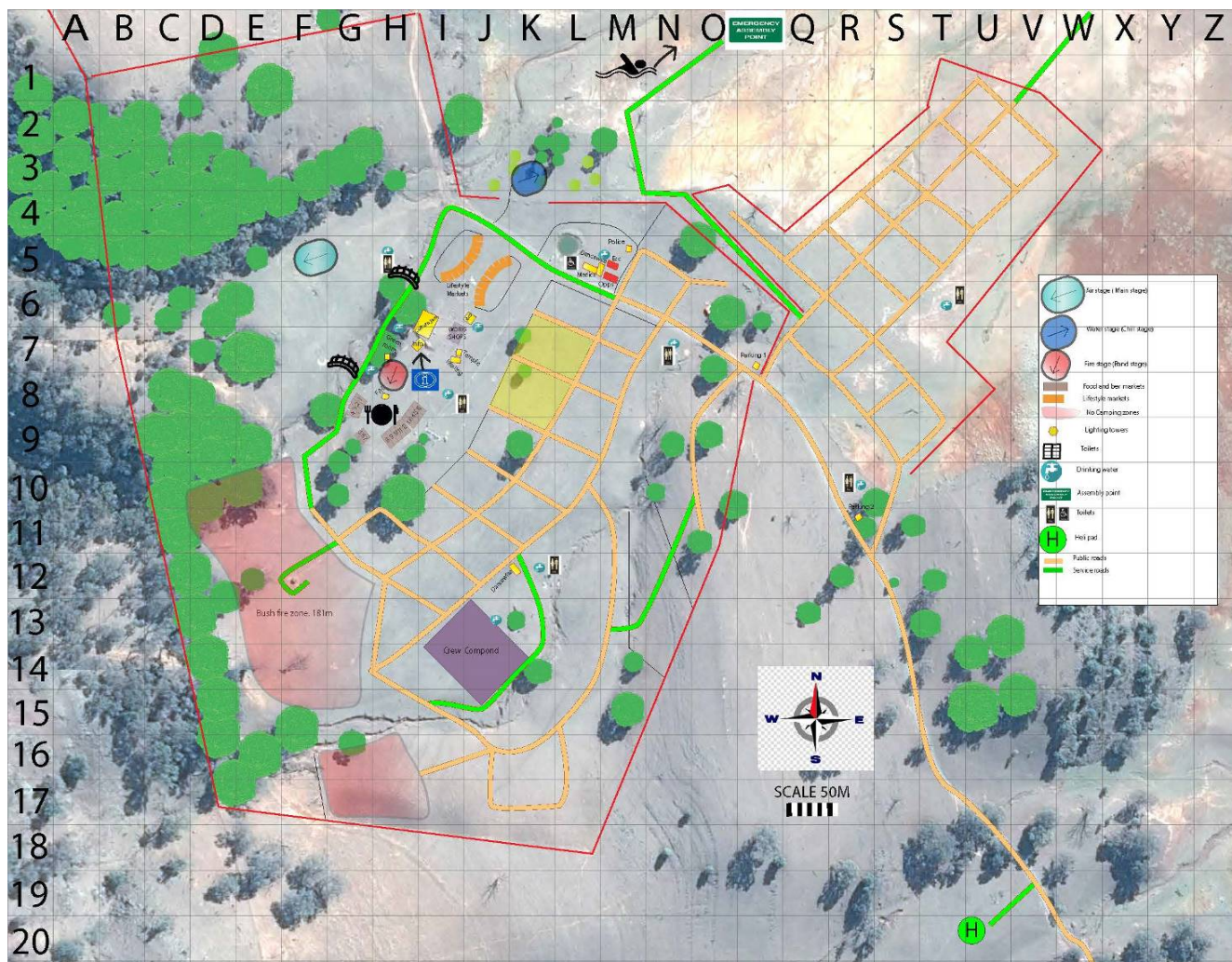
also be water stations, markets and a first aid area incorporated within the site (refer Figure 1.1).

A number of structures are proposed on-site including scaffolding, marquees, caravans and similar temporary structures, as well as three (3) main music stage structures. The event is open to the public from midday on the first day with the event programming finishing on the Monday (4<sup>th</sup> day) at approximately 6:00pm. Patrons are permitted to stay until the Tuesday at 12 noon (with all emergency services rostered until then). The official stages will be closed by 2am on all nights except Saturday night (which will run on a continuous format through the night).

The festival will be powered by generators, with lights, sound systems and food vendors to use generators for the four (4) days of the festival. Communication on-site will be limited to the use of radio, licensed repeaters and satellite phones. It is acknowledged that limited mobile telephone reception is available on site via the *Telstra* network, however organisers will have access to a land line telephone.

Bulk water supply specifically allocated for fire-fighting will be provided by means of a 10,000L water tanker plus the static on-site water provided by the dam/s. Access to the event is achieved via the primary access road, extending from Caves Road in the south, with a number of internal fire trails providing additional access for fire fighting vehicles. The festival site itself will comprise of a number of unsealed roads (6.5m width) and service roads (4m wide) to provide access in and around the festival site.

Schedule 1 shows the proposed festival location, camping grounds and bushfire protection measures, including APZs.



## 1.5 Proposed venue

The Dragon Dreaming Festival venue is situated at the Cooradigbee Homestead property within Lot 58 DP 751002, No. 542 Caves Road, Wee Jasper (refer Figure 1.2). The site is to the north of the Wee Jasper township, approximately 66km south-west of Yass within the local government area (LGA) of Yass Valley.

The site is situated within the cleared valley floor of the greater Southern Tablelands and is largely surrounded by Lake Burrinjuck to the north, Goodradigbee River to the east, bushland on steep upslope land to the west and pastoral lands to the south. Access to the venue is achieved via a variable width 4.5km gravel driveway extending from Caves Road in the south.

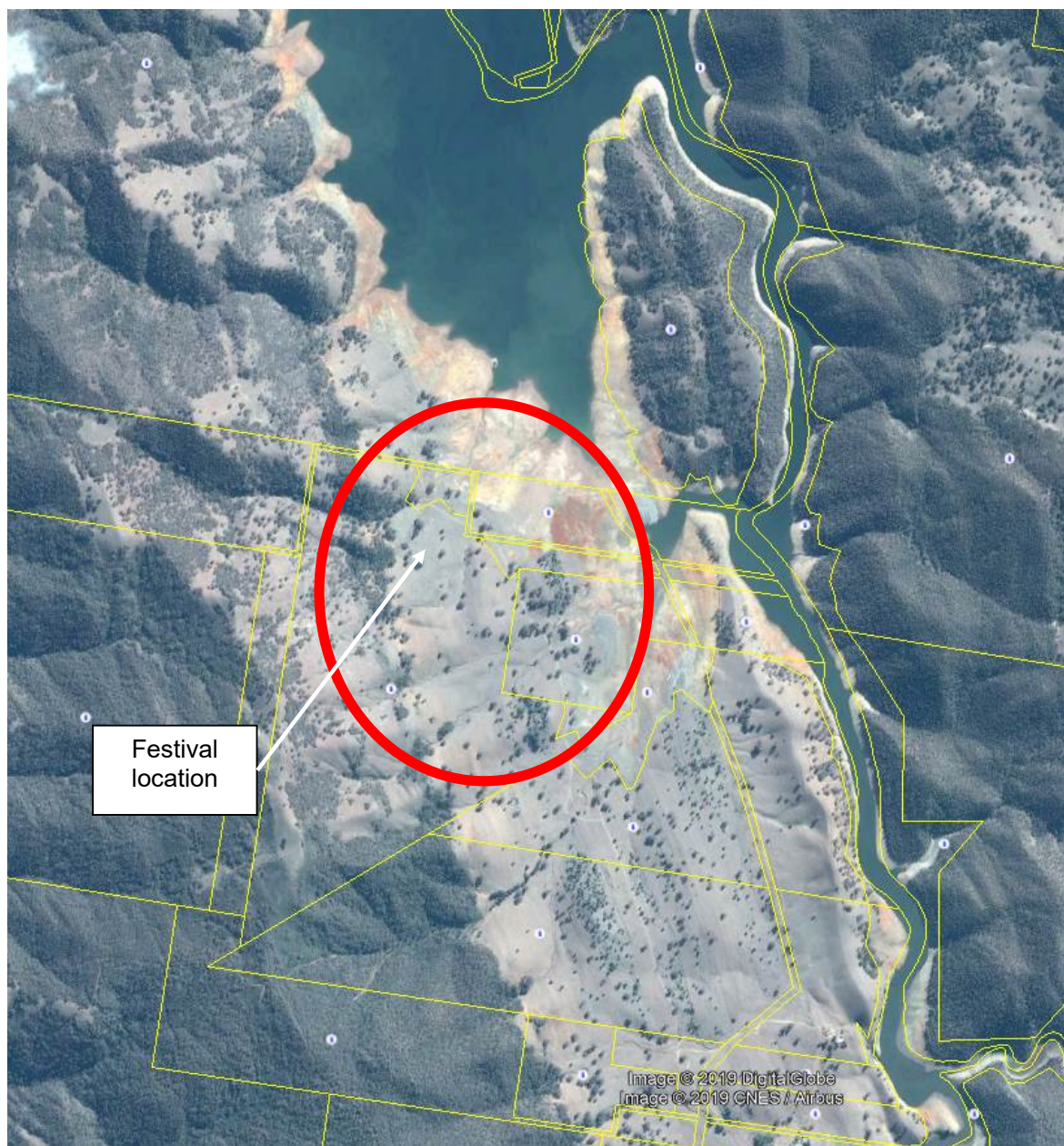
Table 1.1 provides a summary of the planning, cadastral, topographical, and disturbance details of the subject site.

**Table 1.1 – Site features**

<b>Location</b>	542 Caves Road, Wee Jasper Lot 58 DP 751002
<b>Local government area</b>	Yass Valley
<b>Grid reference</b>	102664E 6114632N
<b>Topography</b>	The site is situated within the valley floor of the greater Southern Tablelands. Gently easterly slopes into Goodradigbee River (east) ascending upslope to the west.
<b>Geology and soils</b>	Geology; Undifferentiated tuff. Soils; Barrenjack soil landscape consisting of shallow soils formed on steep hills. Shallow stony, sandy to loamy soil on crests and side slopes. Stony Red and Yellow Podzolic Soils on colluvial foot slopes with alluvial soils.
<b>Catchment and drainage</b>	Lower Murrumbidgee River Catchment
<b>Vegetation</b>	Mixture of grassy woodland, and dry sclerophyll forest (shrubby sub formation) within bushland to the west and mixture of managed / unmanaged grassland (immediately surrounding and to the south).
<b>Existing land use</b>	Cooradigbee Homestead cleared / grazed land) extending to Coodreavale Road in the south.
<b>Clearing</b>	65% is presently clear of any native vegetation.

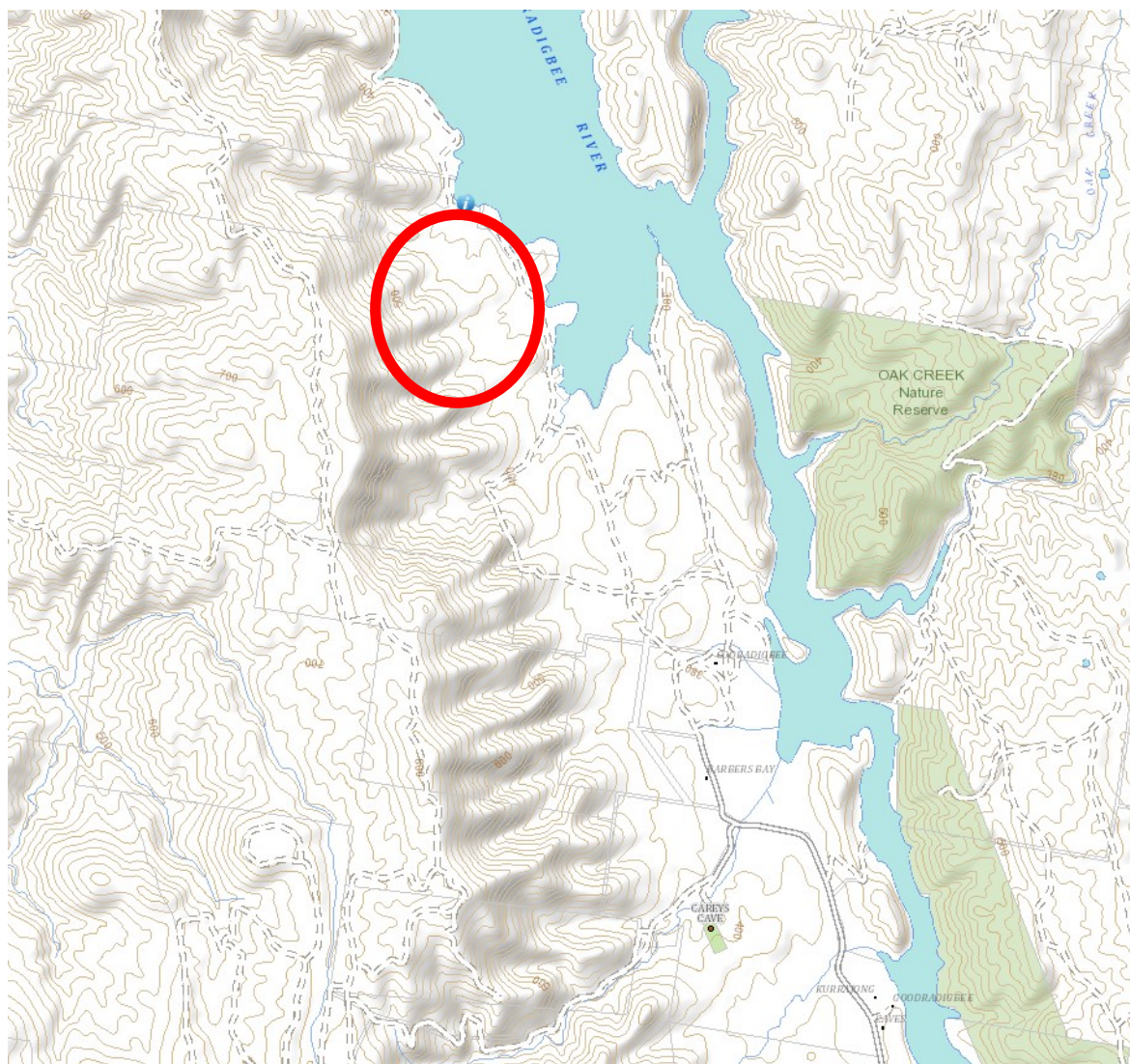
The festival site sits between Burrinjuck Nature Reserve 4km to the north-west and Wee Jasper Nature Reserve 5.75km to the south. Black Andrew Nature Reserve is located 3.7km to the west on the other side of the mountain range and Oak Creek Nature Reserve lies on the other side of Lake Burrinjuck 1.75km to the south-west. All reserves are subject to fire management plans and fire operations maps published by the National Parks and Wildlife Service.





**Figure 1.2 – Aerial appraisal**  
(source: Google Earth Pro, 5/02/2016)





**Figure 1.3 – Topography**  
(source: SIX Maps, 2019)

## 1.6 Alternative festival venue

In accordance with Community Resilience Fast fact sheet 7/15 – *Music festivals that cater for large crowds in bush fire prone areas*, NSW Rural Fire Service (RFS) the NSW RFS discourages outdoor events on catastrophic fire danger days.

Due to the isolated nature of the site, single access route and exposure to ember attack, the Bushfire Emergency Evacuation Plan will outline the following recommendation;

- The festival will not proceed on days with 'catastrophic' fire danger rating.

The festival will be cancelled on these days in cooperation with the emergency services. If the festival is underway and a Catastrophic fire danger is announced the music and activities will cease and the organisers are to engage with emergency services and cooperate with any and all requests / orders from the NSW RFS. The organisers are to implement an education campaign for all patrons to communicate the evacuation plan.

## 1.7 Legislation and planning instruments

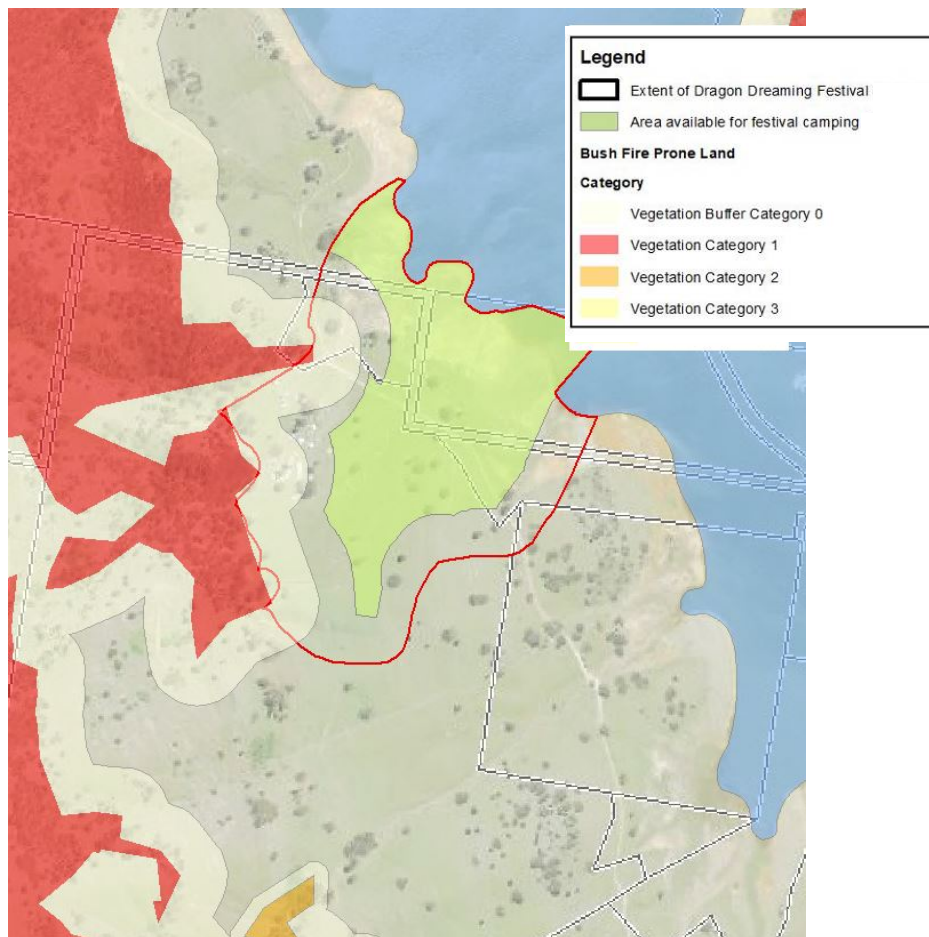
### 1.7.1 Environmental Planning and Assessment Act (EP&A Act)

The *EP&A Act* requires that a consent authority shall not grant approval for a development application for any purpose on bushfire prone land, unless it is satisfied that the development conforms to the specifications and requirements of *PBP*; or consults with the NSW RFS concerning measures to be taken to protect persons, property and the environment from danger that may arise from a bushfire.

The identification of bushfire prone land is required under Section 10.3 of the *EP&A Act*.

### ***Bushfire prone land***

Bushfire prone land maps provide a trigger for the development assessment provisions. Whilst the broader property is mapped by Yass Valley Council as bushfire prone, the majority of the proposed festival venue (and the entire camping area) is located outside of the Category 1 vegetation and its associated buffer (refer Figure 1.4).



**Figure 1.4 – Bushfire prone land map**

### **1.7.2 Rural Fires Act**

The objectives of the Act are to provide for the prevention, mitigation and suppression of bush and other fires, the coordination of bushfire fighting and bushfire prevention and the protection of the environment by requiring certain activities to be carried out, having regard to the principles of ecologically sustainable development.

Section 63 of the Act states that it is the duty of public authorities, land owners and occupiers to take the notified steps (if any) and any other practicable steps to prevent the spread of fires on, and to minimise the danger of the spread of a bushfire on or from, any land vested in or under its control or management.

The notified steps include any steps included in a bushfire risk management plan prepared by public authorities and any steps that the Bush Fire Co-ordinating Committee advises a person to take under Subsection (4); and any reasonable and / or practical steps required to prevent the spread of bushfires.

It is noted that the site is not registered as an asset or a bushfire management zone within the Southern Tablelands Bush Fire Risk Management Plan 2019 (refer Figure 1.5).

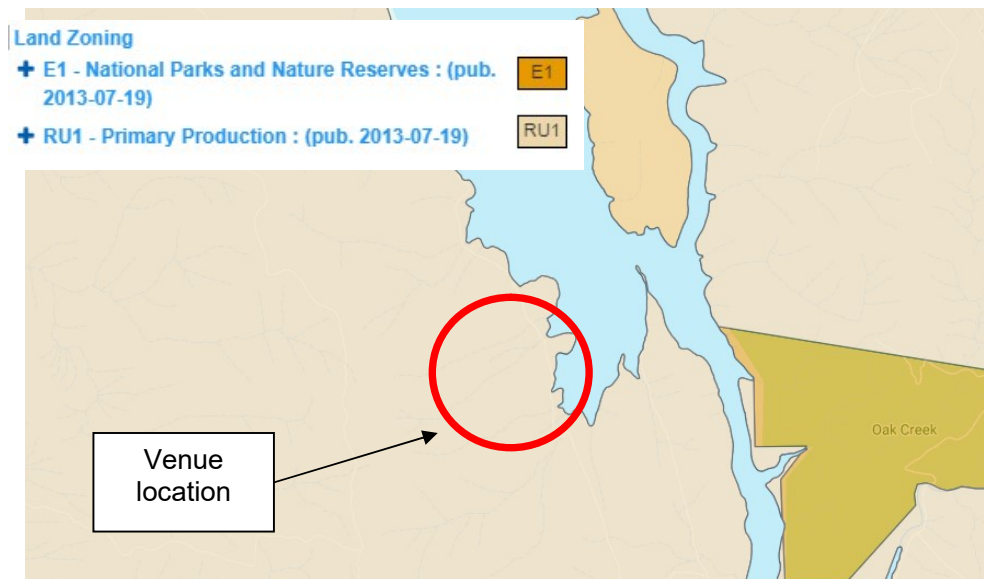




**Figure 1.5 – Southern Tableland Bushfire Risk Management Plan (extract)**  
 (source: Map 8 of 10, Southern Tablelands BFMC Bushfire Fire Risk Management Plan 2019)

### 1.7.3 Yass Valley Local Environmental Plan 2013 (LEP)

The LEP provides for a range of zonings which list development that is permissible, or not permissible, as well as the objectives for development within a zone. The property and adjoining land to the south is zoned RU1 – Primary Production (refer Figure 1.6).



**Figure 1.6 – Zoning**  
 (source: Yass Valley LEP, 2013)

The proposal is consistent with the aims and objectives of the zoning.

#### **1.7.4 Planning for Bush Fire Protection (PBP)**

Bushfire protection planning requires the consideration of the NSW RFS planning document entitled *PBP*. *PBP* provides planning controls for building in bushfire prone areas as well as guidance on effective bushfire protection measures.

The policy aims to provide for the protection of human life (including fire fighters) and to minimise impacts on property and the environment from the threat of bushfire, while having due regard to development potential, on site amenity and protection of the environment. More specifically, the aims and objectives for all development located on bushfire prone land should:

1. Afford occupants of any building adequate protection from exposure to a bushfire.
2. Provide for a defensible space to be located around buildings.
3. Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition.
4. Ensure that safe operational access and egress for emergency service personnel and residents is available.
5. Provide for ongoing management and maintenance of bushfire protection measures, including fuel loads in the APZ.
6. Ensure that utility services are adequate to meet the needs of fire fighters (and others who may assist in bushfire fighting).

The festival is a type of development regarded by the NSW RFS as a SFPP development, *PBP* requires additional objectives to be considered. These include the need to:

7. 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 fire fighters 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.
8. Provide for safe emergency evacuation procedures. SFPP developments are highly dependent on suitable emergency evacuation arrangements, which require greater separation from bushfire threats. During emergencies, the risk to fire fighters and other emergency services personnel can be high through prolonged exposure, where door to door warnings are being given and exposure to the bushfire is imminent.

The nature of SFPPs means that occupants may be more vulnerable to bushfire attack for one or more of the following reasons:

- they may have reduced capacity to evaluate risk and to respond adequately to the bushfire threat.
- they may present organisational difficulties for evacuation and / or management.
- they may be more vulnerable through stress, anxiety and smoke impacts arising from bushfire threat.
- there may be significant verbal communication barriers.
- supervision during a bushfire may be difficult.

- logistical arrangements for the numbers of patrons may be complicated in terms of alternate accommodation, transport, healthcare and food supplies.

In addition, *PBP* outlines the bushfire protection measures required to be assessed for new development in bushfire prone areas. The festival has been assessed in accordance with the following measures:

- asset protection zones;
- building construction and design;
- access arrangements;
- water supply and utilities;
- landscaping; and
- emergency management arrangements.

#### **1.7.5 Building Code of Australia (BCA) and the Australian Standard AS3959 Construction of buildings in bushfire-prone areas 2009 (AS3959)**

The *BCA* is given effect through the *EP&A Act* and forms part of the regulatory environment of construction standards and building controls. The *BCA* outlines objectives, functional statements, performance requirements and deemed to satisfy provisions. In NSW, construction in bushfire prone areas applies to Classes 2, 3, 4 and 9b buildings or a Class 10a associated with Classes 2, 3, 4 and 9b buildings. The construction manual for the deemed to satisfy requirements is *AS3959*.

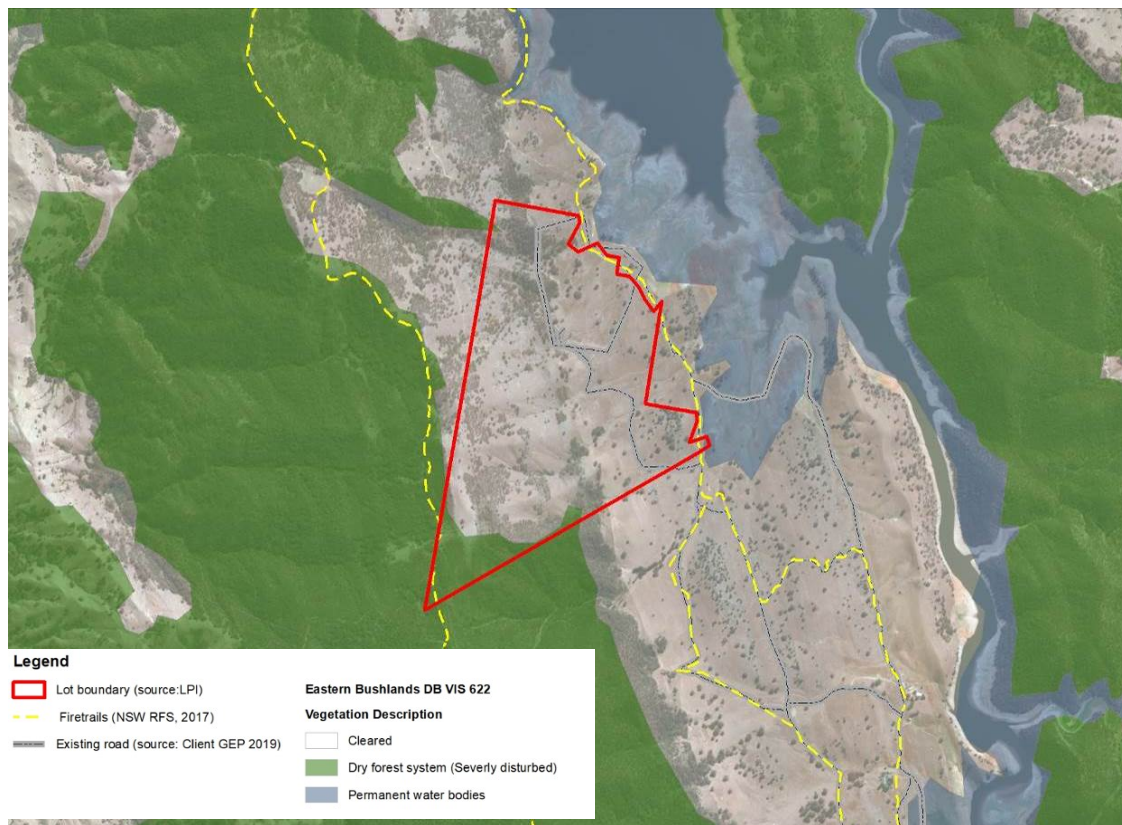
The proposal does not involve the construction of any permanent structures and therefore compliance with the *BCA* or *AS3959* is not required.

### **1.8 Environmental constraints**

The Eastern Bushlands Database Southern Region (1993) has identified the following vegetation communities present within and external to the site (refer Figure 1.7):

- Cleared land;
- Dry forest system (severely disturbed); and
- Permanent water bodies.





**Figure 1.7 – Vegetation overlay**  
(source: Eastern Bushlands Database Mapping (1993))

The festival site is to be maintained as an APZ. No native vegetation will require removal and all temporary structures will be located on grazing land. Therefore, the impact on the environment is minimal.

## 1.9 Heritage

A basic search was conducted on the Aboriginal Heritage Information Management System (AHIMS). The results show that there are no identified sites of Aboriginal significance within the site, or within 50m of the site.



# Description of bushfire risk and fire behaviour

## 2

### 2.1 Description of bushfire risk

#### 2.1.1 *Climate and bushfire season*

The typical / average climate in the Wee Jasper area is temperate to cool characterised by warm to hot summers and cool winters, with peak rainfall generally occurring during winter and spring. The area experiences yearly temperatures from about -5<sup>0C</sup> Celsius (in the winter months of June, July and August) to 35-37<sup>0C</sup> Celsius in the summer months (December, January and February) although colder and higher temperatures are not uncommon.

The bushfire season generally runs from October to March / April, in which high daytime temperatures are expected. Prevailing weather conditions associated with the bushfire season are north / north-westerly winds, although in the late afternoon southerly and easterly winds may occur for short periods. These winds accompanied by high temperatures and low humidity, provide weather conditions for large spreading bushfires. In addition, lightning strikes during storms also occur frequently in the bushfire season. Dry winters can also lead to August / September winds providing potential fire conditions for the cured grassland areas (CZBMC, 2010).

The festival will be held at the start of the fire danger season for the region (beginning of November). Mean temperatures in the area during November range from around 6<sup>0C</sup> to a maximum of 26<sup>0C</sup> whilst mean rainfall in the area ranges from 85 - 105mm. Whilst the springtime conditions of November can reduce the risk of bushfire developing, the festival did experience days of extreme to catastrophic fire danger in 2018.

#### 2.1.2 *Fire history, frequency and causes of ignition*

Fire frequency, intensity and season of occurrence are major factors influencing the distribution and composition of wildlife.

The Southern Tablelands BFMC area has, on average, over 265 fires per year, of which only five (5) can be considered to be large fires. (STBFMC, 2019). The five (5) main sources of ignition within the Southern Tablelands BFMC area include:

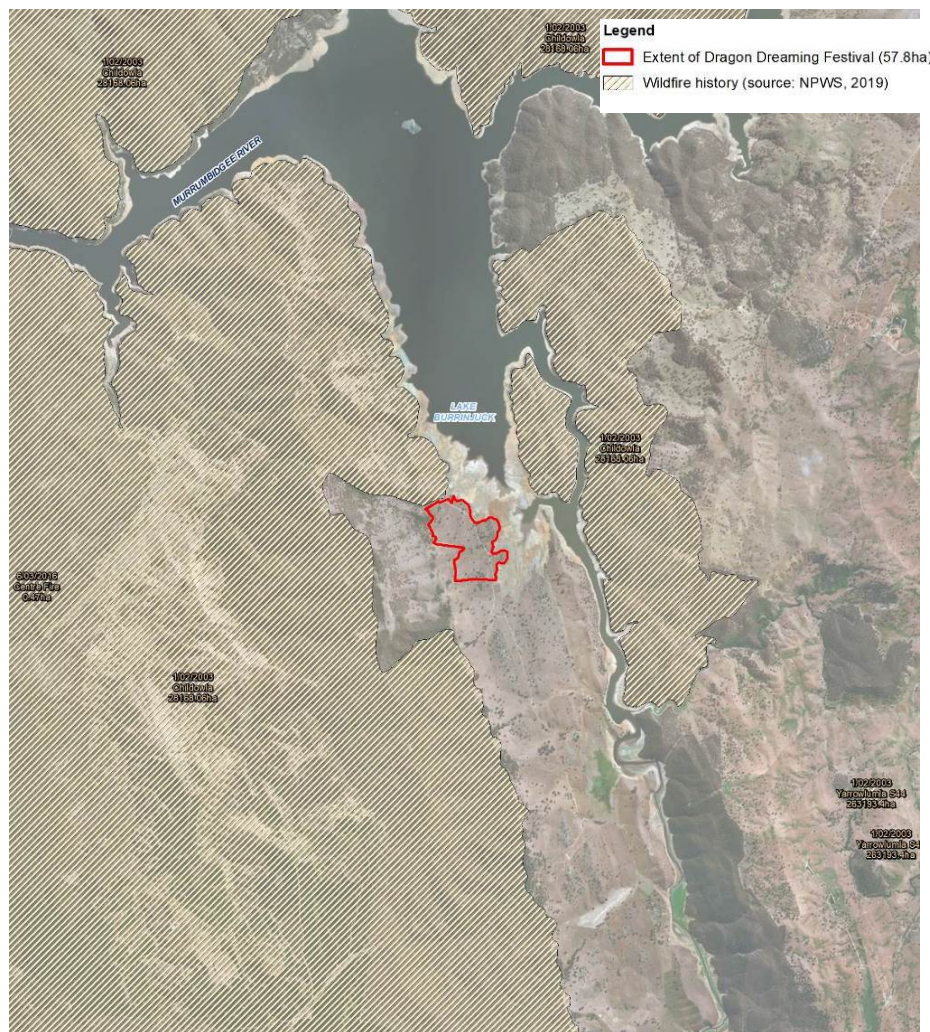
- lightning;
- escapes from illegal burning off;
- illegal burning off;
- human error; and
- arson.

A review of fire history records for the site has been undertaken. This included contact with NSW RFS headquarters, the RFS Wee Jasper office, as well as long term residents, National Parks and Wildlife Service data and media searches.

The results indicate the site has been impacted (in part) by one (1) large recorded fire event, the 'Childowla' wildfire, which occurred in February 2003 and burnt 2,168 ha of bushland. As depicted in Figure 2.1, this fire impacted the vegetation to the north; however the festival grounds were largely protected by the absence of bushland vegetation in its location within the lower parts of the valley.

One (1) other wildfire record, the 'Centre Fire', occurred during 2016 within bushland located approximately 1.5km to the west of the event venue. This relatively small fire (0.47ha) was extinguished by emergency services.

Although fire has not been recorded in recent years, it is considered likely that an unplanned fire could occur through lightning events, however the festival site is unlikely to be impacted by flame or significant radiant heat due to the prevailing winds and steep upslope topography.



**Figure 2.1 – Fire History**  
(source: NPWS, 2019)

As depicted in Figure 2.1, and as confirmed by residents of Wee Jasper, the festival site was not affected by previous fires and was indeed one of the few places in the Wee Jasper Valley not considered under threat at the time.



### **2.1.3 Fuel load assessment**

Fuel loads around the site are relatively low with the festival site being predominantly grassland which is kept short by grazing (sheep) and kangaroos that range the property. The steep hills immediately to the west support a low-density wooded area (with higher density vegetation located in the gullies). The land leading to the dam remains covered in short grass before becoming sandy and devoid of vegetation 200-300 metres from the waterline due to the lake's current volume. These conditions reduce the potential for fire to ignite the festival grounds itself with the location of the camping areas and assembly point located in a safe area, compliant with the requirements of a Neighbourhood Safer Place.

Whilst the fuel loads are low, the assessment within Section 3 has been undertaken using a worst-case scenario adopting fuel loads in AS3959 (2009) AUSLIG as follows;

- Forest – surface and overall fuel load 25 / 35 tonnes per hectare
- Grassland – surface and overall fuel load 4.5 tonnes per hectare.

### **2.1.4 Topography and land use**

Cooradigbee Homestead Property is located on the Southern Tablelands lowland with gently undulating slopes draining towards Lake Burrinjuck. This waterbody forms part of the site's eastern boundary and is connected to Burrinjuck Dam within the broader Lower Murrumbidgee River Catchment.

The festival site and land surrounding the festival entry road is largely managed / cleared with isolated trees. The land to the west of the site supports natural bushland vegetation on moderate to steep upslope topography.

The bushfire impact on the festival site will be reduced based on the site's location on the managed foothills with steep uphill slopes (slowing the rate of bushfire spread) with the waterbody to the east.

## **2.2 Population and demographic information**

The festival in the past attracts on average 2,500 ticket holders per year (with a future growth possibility of up to 5000 in approximately 10 years) and is an all aged event with the general demographic being people aged between 1 and 68 years.

Due to high attendee numbers there is potential for organisational difficulties for evacuation and relocation. Visitors attending the event may also have a reduced capacity to evaluate the risk or ability to respond adequately to a bushfire threat.

In addition, occupants may not be able to leave early due to potential driving impairment relating to alcohol or the like.

## **2.3 Fire Danger**

Fire danger rating systems have been developed to indicate the chances of a fire starting and its rate of spread, intensity and difficulty of suppression, according to various combinations of temperature, wind speed, relative humidity and drought effects. The McArthur Forest Fire Danger Index (FDI) Rating System generates a numerical Fire Danger Index (FDI) and a 6 class descriptive rating of fire danger, based on a number of climatic variables. These include catastrophic, extreme, severe, very high, high and low moderate.

The FDI, together with specific information on fuel weight, topography and forest type, allows predictions of fire behaviour to be made. Such predictions include rate of spread, flame height (and scorch) and spotting distance.

The fire operations map for all reserves advises that the critical fire danger period for the area runs between November and March. The festival is being held at the start of this season in 2020.

In the event that a bushfire impacts the site, the sandy banks of Lake Burrinjuck are devoid of vegetation 200-300 metres from the waterline due to the lake's current volume and provide a safe haven for all patrons on site (on days of <120 FDI). The lake itself also provides further fire protection. This report recommends that the festival is cancelled on Catastrophic fire danger days.



# Bushfire Attack Assessment

## 3

This assessment has been undertaken in accordance with *PBP* to maximise the safety of patrons, staff and emergency service workers during a bushfire event.

The following bushfire assessment relates to the proposed camping areas and the open-air bushfire emergency assembly area, as well as providing general advice regarding the location of other structures (i.e. scaffolding, marquees, caravans and music stage structures).

The camping and assembly areas are located within the eastern portion of the site, adjacent to the dam (refer Schedule 1 attached). The required APZs have been determined in accordance with the methodology outlined in the NSW RFS Fast Fact 7/15 – *Music Festivals that Cater for Large Crowds in Bush Fire Prone Areas* and the requirements for Neighbourhood Safer Places.

### 3.1 Hazardous fuels

*PBP* guidelines require the identification of the predominant vegetation formation in accordance with David Keith (2004), to determine APZ distances for SFPP developments.

The hazardous vegetation within 140m of the proposed Dragon Dreaming Festival venue is mapped by the Eastern Bushland Database Mapping (2003) as the Dry Forest System (severely disturbed) located to the west of the festival site (refer Figure 1.7 and Photos 1-3). The bushfire emergency assembly point (refer Photo 4) is located over 600m from the forest and over 400m from grassland on the banks of Burrinjuck Dam (devoid of any vegetation).



**Photo 1** – Proposed festival site (forest vegetation to west)



**Photos 2 & 3 – Forest vegetation to the west of the site**





**Photos 4** – Bushfire emergency assembly point

### **3.2 Effective slope**

The effective slope is determined by reviewing the slopes within 100m of the development boundary. Effective slope refers to that slope which provides the most effect upon likely fire behaviour. A mean average slope may not in all cases provide sufficient information such that an appropriate assessment can be determined.

The slope within the forest vegetation to the west ranges between  $>10-18^{\circ}\text{C}$  upslope. For the purposes of the assessment below, the effective slope of 'level' has been used (worst-case scenario). Similarly, the grassland to the south and south-west is located on upslope land and has been grazed by sheep, therefore resulting in minimum fuel height. For the purposes of this assessment a worst-case scenario has been adopted using grassland on level slopes.

### **3.3 Bushfire attack assessment**

The following APZs (setbacks required for camping and assembly area) have been modelled as required by the NSW RFS Fast Fact (sheet 7/15) and the requirements for Neighbourhood Safer Places. This includes an input of Fire Danger Index (FDI) of 120 when establishing a  $2\text{kW/m}^2$  upper limit of radiant heat exposure. The flame temperature used in the modelling will be 1200 Kelvin with the fire front defaulted to 100m as required by *Planning for Bush Fire Protection 2006*.

Table 3.1 provides a summary of the bushfire attack assessment and should be read in conjunction with Schedule 1 attached.

**Table 3.1– Bushfire attack assessment**

Aspect	Vegetation within 140m of development (refer Note 1)	Effective slope of land	RESULTS	
			APZ provided (metres)	Radiant heat exposure (refer Note 1)
CAMPING AREA				
North & east	Lake Burrinjuck (waterbody)	N/A	>600m	0.18 kW/m <sup>2</sup>
West	Forest (25 / 35 t/ha)	Level	100m	6.34kW/m <sup>2</sup>
			180m	1.99kW/m <sup>2</sup>
South & south-west	Grassland	Level	100m	1.94 kW/m <sup>2</sup>
BUSHFIRE EMERGENCY ASSEMBLY AREA				
North & east	Lake Burrinjuck (waterbody)	N/A	>600m	0.18 kW/m <sup>2</sup>
West	Forest (25 / 35 t/ha)	Level	>300m	1.07 kW/m <sup>2</sup>
South & south-west	Grassland	Level	>400m	0.42 kW/m <sup>2</sup>
Setbacks for other structures (i.e. fire pits, stages, scaffolding etc.)				
North & east	Lake Burrinjuck (waterbody)	N/A	>600m	0.18 kW/m <sup>2</sup>
West	Forest (25 / 35 t/ha)	Level	25m	Prevents flame contact and radiant heat >29kW/m <sup>2</sup>
South & south-west	Grassland	Level	10	Prevents flame contact and radiant heat >29kW/m <sup>2</sup>

**Note 1:** The results of the radiant heat impact on the proposed camp ground and assembly area are provided within Appendix 5 and were prepared using the bushfire attack assessor (BFAA) developed by *Newcastle Bushfire Consulting* and *Flamesol / FPA Australia*.

### 3.4 Assessment of the size of the assembly area

The size of the assembly area has been determined using the *National Construction Code (NCC)* as a means of determining a suitable size for an open area for temporary accommodation of approximately 6,000 people (patrons and staff). Noting that the estimated patron and staff/volunteer numbers will be approximately 2600 and 600 respectively.

As general guide, the *NCC* allows one (1) person for every 1m<sup>2</sup> for a restaurant or multi-purpose school hall use, however it is considered that the potential time spent on-site prior to off-site evacuation or resumption of the event should be considered. In this regard the *NCC* also identifies that for a transport terminal use an allowance of 2m<sup>2</sup> per person is the occupation rate permitted.

The alignment to a transport terminal is considered to be more consistent with the use in that lengthy delays may be expected, there would need to be sufficient room for luggage.

Although luggage is not expected in this circumstance it may compensate for any emergency aid equipment that may be needed etc.

For an area supporting 6,000 people (patrons and staff etc.) it is therefore considered that a reasonable area set aside for housing occupants within an on-site assembly area would be 12,000m<sup>2</sup> or 1.2ha. The assembly area (coupled with the camping area) is over 20.5ha in size and therefore there is more than adequate space on site to accommodate for safe assembly particularly considering that the estimated patronage is in fact 3600 people as opposed to 6000.



# Specific Protection Issues

## 4

### 4.1 Asset protection zones

APZs are areas of defensible space separating hazardous vegetation from structures and / or in this instance providing sufficient separation between bushland the camping / assembly area to prevent radiant heat impact of  $>2\text{kW/m}^2$  for most aspects.

The APZ generally consists of two (2) subordinate areas, an inner protection area (IPA) and an outer protection area (OPA). In this instance the APZ will consist of an IPA only.

As outlined within Table 3.1, the proposed camp grounds and assembly point will be provided with APZs that exceed the requirements of *PBP* and the requirements of *NSP*. Table 3.1 outlines the proposal's compliance with the performance criteria for *NSP*.

**Table 4.1 – Assessment Criteria for a Neighbourhood Safer Place (NSP)**

Performance criteria	Acceptable solutions	Complies
Open space is located to enhance the chance for survival of humans in attendance from the radiant heat of a bushfire.	Open Space is situated and maintained to prevent direct flame contact, material ignition and radiant heat levels of $2\text{kW/m}^2$ .  or  Provide 310 metres separation distance from a bush fire hazard	Refer Table 2.1. Radiant heat level exposure on the camp sites is less than $2\text{kW/m}^2$ in the majority of cases, with the assembly area being exposed to a radiant heat level of $< 1.07\text{kW/m}^2$ .
Area between bush fire hazard and the site is maintained to a level that ensures the radiant heat levels at the Building / Open Space meet the Performance Criteria for Radiant Heat.	The site and land adjacent to the site between the Building / Open Space and the bush fire hazard is managed land or maintained in accordance with NSW RFS document <i>Standards for Asset Protection Zones</i> .	The entire festival site will be maintained as an APZ (mown / grazed / slashed grass).

### 4.2 Hazard management

Future development is to ensure that the full extent of the Dragon Dreaming Festival site (refer Schedule 1 attached) is;

- Managed in accordance with NSW RFS document *Standards for Asset Protection Zones* available from [www.rfs.nsw.gov.au](http://www.rfs.nsw.gov.au) by following the link 'Publications' and 'Hazard Reduction' and that;
- Landscaping within the property is to be undertaken in accordance with Appendix 5 of *PBP* also available from [www.rfs.nsw.gov.au](http://www.rfs.nsw.gov.au) by following the link 'Publications' and 'Building in a Bush Fire Prone Area'.

### 4.3 Fire Permits and fuel storage

Fire drums and pits must be located outside of the area identified as 'flame impact' in Schedule 1 attached and in accordance with the details lodged with Council in support of the DA. All fires (including fire twirling) are not to occur on TFB days.

Event organisers are to ensure that safe conduct is maintained around the approved fire drums / pits at all times. They are located in public areas and are constantly monitored by site maintenance crew. There will be no fires in the camping area.

Festival controlled fuel will be stored in in gas canisters or sealed fuel drums within a restricted facilities area and managed by the infrastructure team.

### 4.4 Access for fire-fighting operations

On-site camping will be restricted to nominated camping areas only, and will be structured with internal roads provided to ensure that all parts of the camping areas are accessible by emergency response vehicles and equipment (i.e. a 6.5m clearway width).

The primary public / patron access to the festival site is via a single access point from Caves Road approximately 4.5km to the south. Road signage and volunteers in high-visibility gear will be available to direct traffic in accordance with the traffic management plan. Parking will be monitored by the volunteers to ensure all roads are kept clear to ensure 24-hour access for emergency vehicles.

The festival access is depicted in Schedule 1 attached. Whilst the majority of this road is provided with a clearway width of 4-5.5m (provided by gravel road and cleared verges) there are five (5) pinch points as a result of farm gates / grids which will prevent vehicles from passing each other. These areas are identified as 'keep clear zones' in Schedule 1 attached. These areas will be manned by volunteers to maintain traffic flow, noting that in a bushfire event patrons will be directed to the safe assembly point on foot. Evacuation off site (and via cars) will not occur therefore allowing the access road to be used by emergency services only.

In addition to the festival access road there are a number of fire trails that traverse the property (also depicted in Schedule 1 attached which will provide additional access for fire fighting vehicles to undertake fire suppression.

The intent of measures required by the NSW RFS for internal roads is "*to provide safe operational access for emergency services personnel in suppressing a bush fire, while residents are accessing or egressing an area*".

Table 4.2 outlines the proposal's compliance with the performance criteria for internal roads, noting that the acceptable solutions outlined in *PBP* are designed for residential (SFPP) development which support full time residents. In this instance, the festival is a single event which runs over 4 days per year.

**Table 4.2 – Performance criteria for internal roads (PBP guidelines pg. 35)**

Performance criteria	Acceptable solutions	Comments
Internal road widths and design enable safe access for emergency services and allow crews to work with equipment about the vehicle	Internal roads are two-wheel drive, sealed, all weather roads.	The existing access road is unsealed / gravel. This road provides a stable surface to support fire fighting vehicles and complies with the fire trail standards, therefore complying with the performance criteria to provide safe access.
	Internal perimeter roads are provided with at least two traffic lane widths (carriageway 8m minimum kerb to kerb) and shoulders on each side, allowing traffic to pass in opposite directions.	There are no perimeter roads on site. The festival access road is surrounded by cleared / grazed land with forest located over 600m from the road. The width of this gravel road is approximately 4m with cleared hardened verges allowing a clearway width of 6m or greater. As mentioned previously, there are five (5) pinch points (at gates / grids) where the width is reduced to 3m. Given the low usage rates of the road in a bushfire event (evacuation off site via car will not occur) the existing road width complies with the performance criteria to allow safe access for emergency services.
	Roads are through roads. Dead end roads are not more than 100m in length from a through road, incorporate a minimum 12m outer radius turning circle, and are clearly sign posted as a dead end.	The existing access road is 4.5km in length. This is a one-way road which provides access to Caves Road in the south with no alternative egress route. This road (and the surrounding fire trails) provides safe access for emergency services due to the surrounding managed land (exceeding 600m in width). Suitable turning opportunities are provided via fire trail crossings (allowing for a three-point turn) or via existing cleared paddocks.
	Traffic management devices are constructed to facilitate access by emergency services vehicles.	There will be directional signage and volunteer traffic controllers to direct traffic.
	A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.	Complies – and can be maintained

**Table 4.2 – Performance criteria for internal roads (*PBP* guidelines pg. 35)**

Performance criteria	Acceptable solutions	Comments
	Curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress.	The festival access road is relatively straight with minimum curves.
	The minimum distance between inner and outer curves is 6m.	
	Maximum grades do not exceed 15° and average grades are not more than 10°.	All grades are less than 10 degrees
	Cross fall of the pavement is not more than 10°.	Cross fall is less than 10 degrees
	Roads do not traverse through a wetland or other land potentially subject to periodic inundation (other than storm surge).	The roads do not traverse through wetland
	Roads are clearly sign-posted, and bridges clearly indicate load ratings.	There are no bridges.
	The internal road surfaces and bridges have a capacity to carry fully loaded fire fighting vehicles (15 tonnes).	Complies



#### **4.5 Water supplies**

There are a number of pumping points at Burrinjuck Dam which the local fire brigade is aware of, as well as a small dam located in close proximity to the festival site and adjacent to the access road (refer Schedule 1 for location of water point).

In addition to these existing supplies it is recommended that a tanker (10,000 litres) is provided with suitable connections for a fire truck. This supply will be provided solely for fire fighter use and is to be located within 4m of the festival access road during the event and is to be provided with the following:

- a hardened ground surface for truck access within 4m of the tanker.

#### **4.6 Gas**

Dragon Dreaming will implement a ban on all gas cylinders on total fire ban days. Approved food market stall holders are to ensure that any gas supply on site is to comply with section 4.1.3 of *PBP* as follows;

- Reticulated or bottled gas bottles are to be installed and maintained in accordance with *AS1596* and the requirements of relevant authorities. Metal piping is to be used.
- All fixed gas cylinders are to be kept clear of flammable materials.
- If gas cylinders are to be kept close to the structures the release valves must be directed away from the structure and away from any combustible material, so that they do not act as a catalyst to combustion.

#### **4.7 Emergency and evacuation planning**

The Dragon Dreaming Festival is exposed to a high bushfire risk due to its isolation from emergency services and surrounding townships, single access road and potential exposure to ember attack. However, the festival site itself is not located on bushfire prone land and the festival grounds will be maintained as an APZ with campgrounds and other structures located to prevent material ignition.

The biggest challenge for outdoor events in bushfire prone areas is the evacuation of people who may be under the influence of alcohol and / or drugs or have no comprehension of the danger of knowledge of an area which may lead to evacuation via an inappropriate route leading to fatal results. In addition, crowd control and operational access to the venue during bushfire events can prove to be challenging due to the remote location.

In acknowledgement of these factors, the camping area has been strategically located to ensure maximum time to warn and evacuate people to the assembly point, whilst also ensuring highly combustible materials (such as tent fabric, vehicles and gas cookers) will not facilitate the spread of fire.

A Bushfire Emergency Management and Evacuation Plan is to be prepared and should recommend that event organisers ensure:

- Event organisers arrange a briefing with local emergency services (fire brigade). This ensures event organisers and on-site security, medical staff and fire-fighting agencies are aware of local processes and evacuation procedures. This briefing should occur in the week to days before the event, to provide opportunity to address any evolving factors that may contribute to fire danger. Appendix 5 describes

interagency briefing participants and roles together with an example agenda for the meeting;

- The festival does not proceed on days with a 'catastrophic' fire danger rating;
- Procedures are in place to pre-emptively evacuate patrons if weather is forecast to be 'catastrophic';
- Provision of a safe refuge area for safe on-site assembly during a bushfire which is clearly signposted throughout the event footprint. This will include a method of staging evacuation, to ensure that evacuation flow is directed through different stages / areas of the site, moving from areas of higher risk to lower risk and progressing through evacuation zones;
- The assembly point is a non-vegetated bank and on the waterline of Burrinjuck Dam. The expected radiant heat based on FDI 120 (catastrophic) and flame temperature of 1200K is <1.07 kWm<sup>2</sup>.
- That the entire festival site is managed as an APZ to the standards of an IPA; and
- Provision of an adequate bulk water supply specifically allocated for fire-fighting purposes.

Communication on-site will be limited to the use of radio (with a licensed repeater) and satellite phones (held in the information tent). Satellite internet is also available. The tent is staffed 24 hours a day and the phone will be available in the event of an emergency. It is acknowledged that limited mobile telephone reception is available on site via the *Telstra* network, however organisers will have access to a land line telephone and the internet. A dedicated licensed frequency is allocated to the event with sub tones programmed into the event radios to prevent outside interference from other radio communication sources.

Organisers will work with the Wee Jasper RFS to have a fire truck and staff on site during the event. This will provide professional support, immediate response and an opportunity to raise awareness and funds for the emergency service.

The bushfire emergency evacuation plan is to be prepared in accordance with Table 4.3.

**Table 4.3 – Performance criteria for emergency and evacuation planning  
(PBP guidelines pg.39)**

Performance criteria	Acceptable solutions
An emergency and evacuation management plan is approved by the relevant fire authority for the area	<p>An emergency / evacuation plan should be prepared consistent with the RFS <i>Guidelines for the Preparation of Emergency / Evacuation Plan</i>.</p> <p><i>Note: The applicant should provide a copy of the above document to the local Bush Fire Management Committee for their information prior to the occupation of any accommodation of a SFPP.</i></p>
Suitable management arrangements are established for consultation and implementation of the emergency and evacuation plan.	<p>An emergency planning committee is established to consult with staff in developing and implementing an emergency procedures manual.</p> <p>Detailed plans of all emergency assembly areas including on-site and offsite arrangements as stated within AS3745 are clearly displayed, and an annual trial emergency evacuation is conducted.</p>



# Conclusion & Recommendations

## 5

### 5.1 Conclusion

*Travers bushfire & ecology* has been engaged by *Dragon Dreaming Festival Inc.* to prepare a Bushfire Management Plan to accompany a DA which seeks approval for the running of the Dragon Dreaming Festival for the next five (5) years.

The Dragon Dreaming Festival is categorised within the NSW RFS document *Planning for Bush Fire protection (PBP)* as being SFPP development. Furthermore, *Community Resilience Fact Sheet 7/15 – Music festivals that cater for large crowds in bush fire prone areas* outlines the specific planning guidelines for festival sites.

Bushfire protection measures have been recommended within this plan appropriate to the assessed bushfire risk to each aspect of the site, to assist survival during a bushfire.

The following recommendations are provided:

- Cancellation of the festival in the event of a forecast catastrophic fire danger day;
- Maintenance of the entire festival site as an APZ;
- Provision of a substantial open-air bushfire emergency assembly area which complies with the requirements for NSP;
- Provision of the majority of camping areas exposed to a lower bushfire risk (equivalent to  $<2\text{kW/m}^2$ );
- Provision of a bulk water supply specifically allocated for fire-fighting purposes;
- Emergency management during the planning stage of event organisation in consultation with the NSW RFS and other relevant stakeholders. This will include supplying the agency with a copy of the emergency management and evacuation plan.

The following recommendations are provided to ensure that the development is in accordance with the requirements of *PBP*.

## 5.2 Recommendations

**Recommendation 1** - At the commencement of the event, and for its duration, the full extent of the festival site as depicted in Schedule 1 – Bushfire Protection Measures shall be managed as an IPA as outlined in section 4.1.3 and Appendix 5 of *PBP* and the NSW RFS guidelines *Standards for Asset Protection Zones* (RFS, 2005).

**Recommendation 2** - Dragon Dreaming will implement a ban on all gas cylinders on total fire ban days. Approved food market stall holders are to ensure that any gas supply on site is to comply with section 4.1.3 of *PBP* as follows;

- Reticulated or bottled gas bottles are to be installed and maintained in accordance with *AS1596* and the requirements of relevant authorities. Metal piping is to be used;
- All fixed gas cylinders are to be kept clear of flammable materials;
- If gas cylinders are to be kept close to the structures the release valves must be directed away from the structure and away from any combustible material, so that they do not act as a catalyst to combustion.

**Recommendation 3** - In recognition that no reticulated water exists on site, and in addition to the existing dam supply, it is recommended that a tanker (10,000 litres) is provided with suitable connections for a fire truck. This supply will be provided solely for fire fighter use during the event and is to be provided with the following:

- a 65mm Storz outlet with a gate or ball valve is provided as a suitable connection for fire-fighting purposes;
- gate or ball valve and pipes are metal (not plastic) and are adequate for water flow;
- a hardened ground surface for truck access is supplied within 4m of the tank;

**Recommendation 4** – On-site camping will be restricted to nominated camping areas only, and will be structured with internal tracks / carriageways provided to ensure that all parts of the camping areas are accessible by emergency response vehicles and equipment (i.e. a 6.5m clearway width). The existing festival access road is to comply with the performance criteria outlined in Section 4.1.3 of *PBP 2006*.

**Recommendation 5** - Arrangements for emergency and evacuation are to comply with the requirements of Section 4.2.7 of *PBP 2006* and an Emergency Evacuation Plan is to be prepared consistent with the NSW RFS document '*Guidelines for the Preparation of Emergency / Evacuation plan*' and in consultation with NSW RFS Yass Valley District Office.

**Recommendation 6** - Fire drums and pits will be confined to approved fire places only (outside of 'flame impact' areas as depicted in Schedule 1) and will not occur within camping areas in accordance with the details lodged with Council in support of the DA. All fires (including fire twirling) are not to occur on TFB days. Event organisers are to ensure that safe conduct is maintained around the approved fire drums / pits at all times. They are located in public areas and are constantly monitored by site maintenance crew.

Festival controlled fuel will be stored in in gas canisters or sealed fuel drums within a restricted facilities area and managed by the infrastructure team.

## REFERENCES

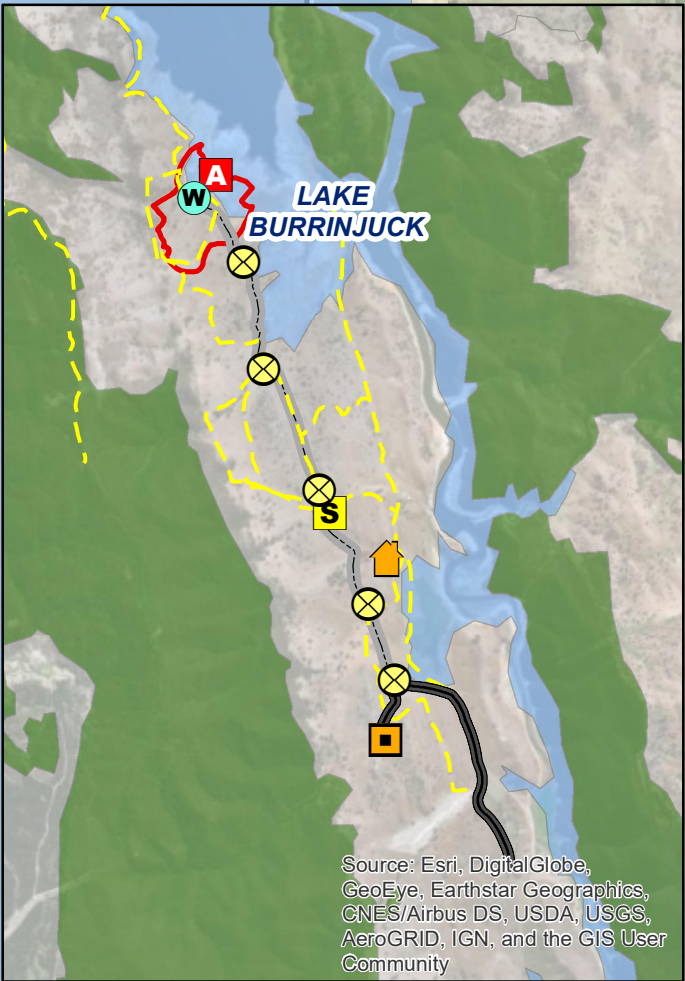
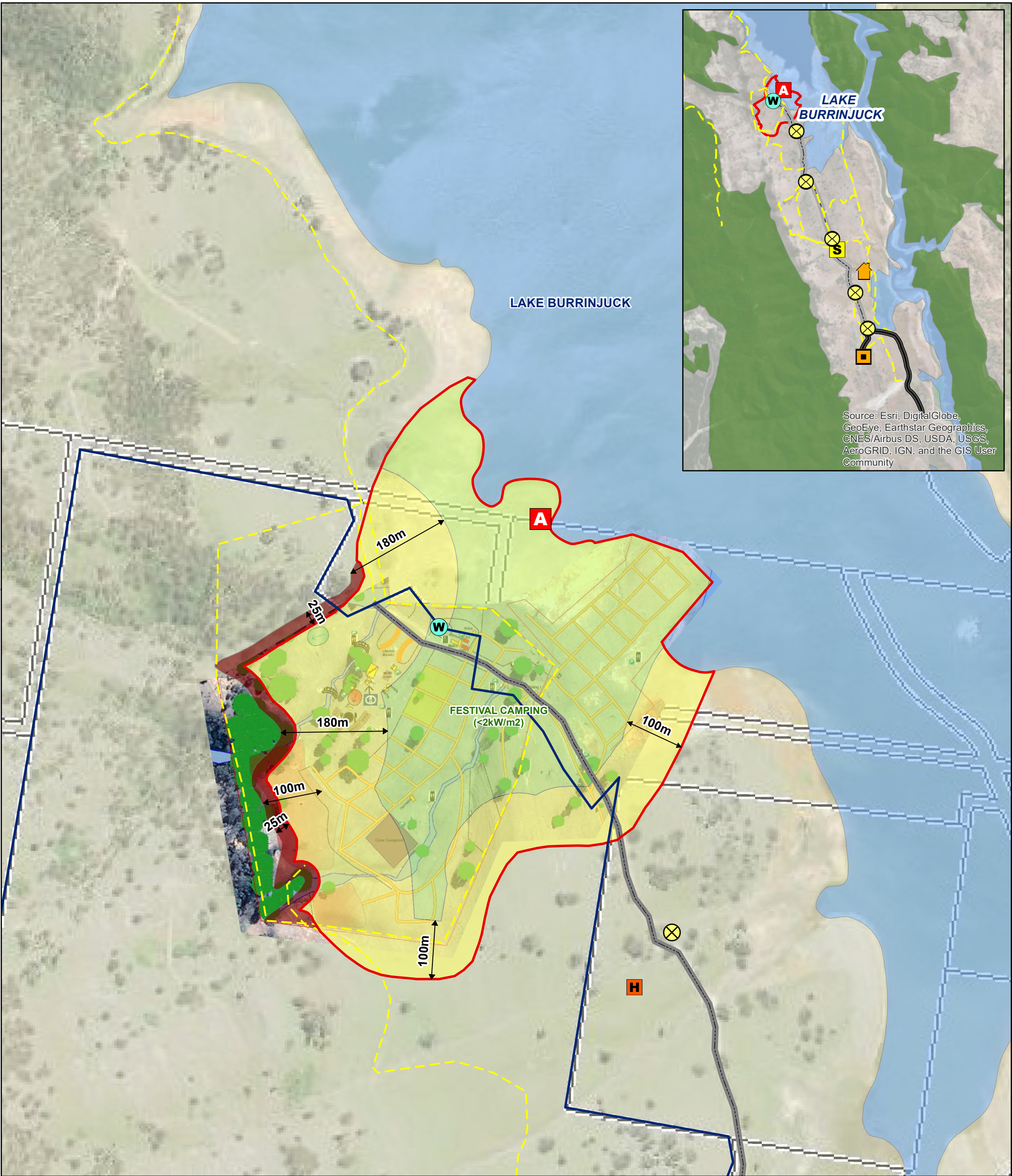
- Australian Building Codes Board (2010) – *Building Code of Australia*, Class 1 and Class 10 Buildings Housing Provisions Volume 2
- Chan, K.W. (2001) – *The suitability of the use of various treated timbers for building constructions in bushfire prone areas*. Warrington Fire Research
- Councils of Standards Australia AS3959 (2009) – *Australian Standard Construction of buildings in bush fire-prone areas*
- Keith, David (2004) – *Ocean Shores to Desert Dunes – The Native Vegetation of New South Wales and the ACT*. The Department of Environment and Climate Change
- Rural Fire Service (2006) - *Planning for bushfire protection – a guide for councils, planners, fire authorities and developers*. NSW Rural Fire Service
- Rural Fire Service (2006) - Bushfire Attack Software on RFS web site
- Tan, B., Midgley, S., Douglas, G. and Short (2004) - *A methodology for assessing bushfire attack*. RFS Development Control Service





# Plan of Bushfire Protection Measures

S1



Legend		
<span style="border: 2px solid red; padding: 2px;"> </span> Extent of Dragon Dreaming Festival Site (42.3ha)	<span style="background-color: orange; border: 1px solid black; padding: 2px;">H</span> Helipad	<b>Bushfire Protection Measures</b>
<span style="border: 2px solid blue; padding: 2px;"> </span> Lot boundary (source:LPI)	<span style="background-color: red; border: 1px solid black; padding: 2px;">A</span> Assembly point (on-site)	<span style="background-color: darkred; border: 1px solid black; padding: 2px;"> </span> Flame impact
<span style="border-bottom: 2px dashed grey; width: 20px; display: inline-block;"></span> Festival access	<span style="background-color: lightblue; border: 1px solid black; padding: 2px;">W</span> Water point (dam)	<span style="background-color: yellow; border: 1px solid black; padding: 2px;"> </span> Radiant heat and ember attack
<span style="border-bottom: 2px solid black; width: 20px; display: inline-block;"></span> Caves Road (sealed)	<span style="background-color: yellow; border: 1px solid black; padding: 2px;">S</span> Festival Security	<span style="background-color: lightgreen; border: 1px solid black; padding: 2px;"> </span> Area subject to lower risk <2kW/m2
<span style="border-bottom: 2px dashed yellow; width: 20px; display: inline-block;"></span> Fire trails	<span style="border: 1px solid black; border-radius: 50%; padding: 2px;">X</span> Keep clear zone	
	<span style="background-color: orange; border: 1px solid black; padding: 2px;"> </span> Cooradigbee Homestead	
	<span style="background-color: orange; border: 1px solid black; padding: 2px;"> </span> Careys Cave	

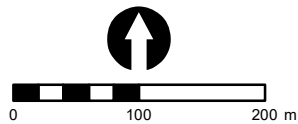


PROJECT & MXD REFERENCE  
Caves Road, Wee Jasper  
18DDF02\_BF001

DATE & ISSUE NUMBER  
5/12/2019  
Issue 1  
AW

SCALE & COORDINATE SYSTEM  
1:6,000 @ A3  
GDA 1994 MGA Zone 55

TITLE  
**Schedule 1 - Bushfire Protection Measures**



Disclaimer: The mapping is indicative of available space and location of features which may prove critical in assessing the viability of the proposed works. Mapping has been produced on a map base with an inherent level of inaccuracy, the location of all mapped features are to be confirmed by a registered surveyor.



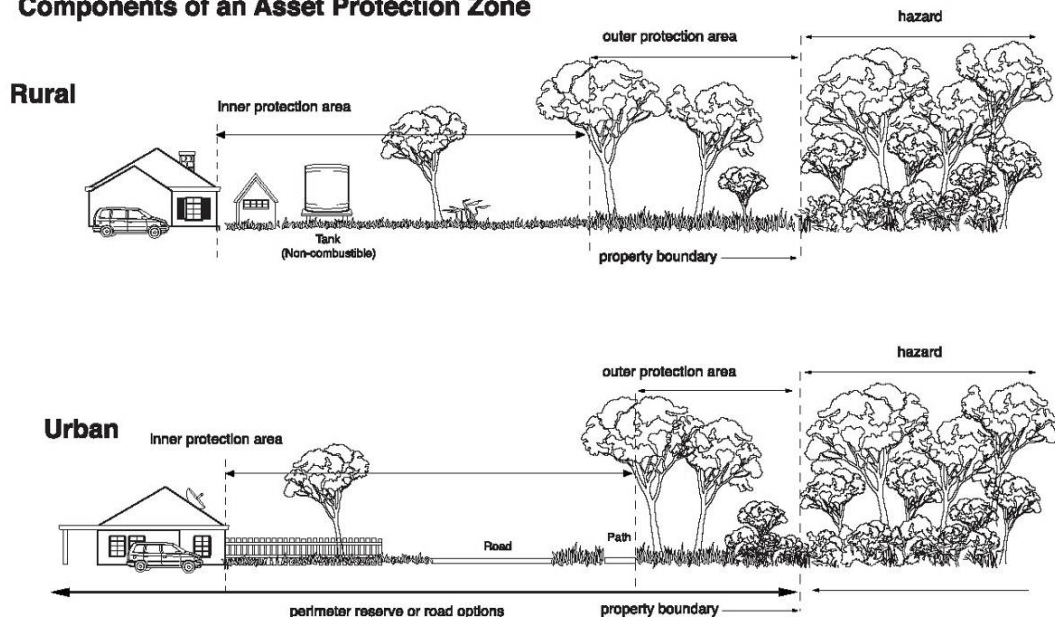
# Management of Asset Protection Zones

# A1

The RFS provides basic advice in respect of managing APZs through documents such as, *Standards for Asset Protection Zones* (RFS, 2005), with landscaping to comply with Appendix 5 of *PBP*.

The APZ generally consists of two subordinate areas, an inner protection area (IPA) and an outer protection area (OPA). The OPA is closest to the bush and the IPA is closest to the dwellings. A typical APZ is graphically represented below:

## Components of an Asset Protection Zone



APZs and progressive reduction in fuel loads  
(Source: RFS, 2006)

**Note:** Vegetation management as shown is for illustrative purposes only. Specific advice is to be sought in regard to vegetation removal and retention from a qualified and experienced expert to ensure APZs comply with the RFS performance criteria.

The following provides maintenance advice for vegetation within the IPA.

### Inner protection area (IPA)

Fuel loads within the IPA are to be maintained so it does not exceed 4t/ha.

Trees are to be maintained to ensure;

- canopy cover does not exceed 15%;
- trees (at maturity) do not touch or overhang the building;



- tree canopies (at maturity) should be well spread out and not form a continuous canopy;
- there should be no unmanaged vegetation within 10m of windows, doorways, eaves and gutters;
- lower limbs should be removed up to a height of 2m above ground.

Shrubs are to be maintained to ensure;

- large discontinuities or gaps in vegetation;
- shrubs should not be located under trees
- shrubs should be in clumps no greater than 5m<sup>2</sup>
- shrubs should be no closer than 10 metres from an exposed window or door.

Grass is to be maintained to ensure:

- a height of 10cm or less;
- leaves and debris are removed.

Landscaping to the site is to comply with the principles of Appendix 5 of *PBP*. In this regard the following landscaping principles are to be incorporated into the development:

- suitable impervious areas being provided immediately surrounding the building such as courtyards, paths and driveways;
- restrict planting in the immediate vicinity of the building which may over time and if not properly maintained come in contact with the building;
- when considering landscape species consideration needs to be given to estimated size of the plant at maturity;
- avoid species with rough fibrous bark, or which retain / shed bark in long strips or retain dead material in their canopies;
- use smooth bark species of trees species which generally do not carry a fire up the bark into the crown;
- avoid planting of deciduous species that may increase fuel at surface/ ground level (i.e. leaf litter);
- avoid climbing species to walls and pergolas;
- locate combustible materials such as woodchips / mulch, flammable fuel stores away from the building;
- locate combustible structures such as garden sheds, pergolas and materials such timber garden furniture way from the building; and
- use of low flammability vegetation species.



# NSW RFS Fast Fact

## 7/15

A2







# Previous DA Consent (Bushfire Protection)

# A3

## yass valley council

the country the people

**NOTICE OF DETERMINATION OF DEVELOPMENT APPLICATION**  
Issued under the Environmental Planning and Assessment (Amendment) Act, 1979  
Section 81(1)(a)

**DEVELOPMENT CONSENT 5.2014.140.1**

Applicant Name: Servants of Sound Pty Ltd

Applicant Address: Attention: Lynton Sheehan  
20 Stanfield Close  
KAMBAH ACT 2902

Land to be developed: Lot 1 DP: 649175, Lots 1, 2 & 3 DP: 914901, Lots 2, 6 & 58 DP: 751002, Lot 1 DP: 914921, WCIC Land 1374-3040  
Caves Road, WEE JASPER 2582

Proposed Development: Dragon Dreaming Music, Arts and Lifestyle Festival

Proposed Use: Temporary Use of Land - Music, Arts and Lifestyle Festival and Primitive Camping Ground

Classification: Not Applicable

**Determination**

Made on: 4 September 2014

Determination: pursuant to the Act(s), notice is hereby given that the above application has been determined by granting consent, subject to conditions

Consent to operate from: 4 September 2014

Consent to lapse on: 4 September 2019

*Note: Such consent will not lapse once the proposed development is physically commenced, except where a specific condition of consent limits the duration of consent.*

**Details of and Reasons for Conditions**

**PART A - GENERAL CONDITIONS**

- (1) Consent is granted generally in accordance with the plan(s) and details submitted to Council with the Development Application. The plan and details have been stamped and attached to this consent. The development shall be carried out in accordance with the stamped plans or as modified by these conditions;

**Note:** If the conditions of this Consent are not satisfied then the event cannot proceed.

- (2) This consent relates only to the development referred to in the development application and specifically does not amount to an approval or acceptance by the Council of any works or buildings already erected on the land, whether or not those works or buildings are the subject of a prior development or building approval;
- (3) This Consent is only issued for a period of 5 years after which time a new Development Application is to be lodged to enable the activity and Consent conditions to be reviewed;

COUNCIL CHAMBERS  
209 COMUR STREET  
YASS NSW 2582

Administration (02) 6226 1477  
Facsimile (02) 6226 2598  
Email [council@yass.nsw.gov.au](mailto:council@yass.nsw.gov.au)  
Web: [www.yassvalley.nsw.gov.au](http://www.yassvalley.nsw.gov.au)

- (19) To ensure appropriate policing at the event the event organiser must negotiate with the NSW Police Force regarding a "User Charges" policing service in accordance with the Cost Recovery and User Charges Policy produced by the NSW Police Force prior to the commencement of the event.

**Note:** The number of police should take into account the NSW position that a level of policing is required at some times during the event whilst recognising the event organiser's provision of event security, the community nature of the event and the social, environmental and economic value of the event to Yass Valley;

**Note:** The negotiations shall be completed no later than 4 weeks prior to the event;

**Note:** NSW Police access to the site can not to be limited to the User Pays arrangements only;

- (20) The event organiser must provide adequate ambulance services for the event.

**Note:** The organiser shall liaise with the Ambulance Service of NSW to address any insufficiencies of the medical plan as produced by Colbrow Medics prior to commencement of the event;

- (21) In the event of any natural disaster the event organisers are to follow any directive the Local Emergency Operations Controller or other emergency authority issue;

**Note:** In certain instances this may result in the cancelation of the event.

#### **PART B – BUSHFIRE PROTECTION**

- (1) At the commencement of the event and for its duration the entire festival site shall be managed as an inner protection area (IPA) as outlined within section 4.1.3 and Appendix 5 of 'Planning for Bush Fire Protection 2006' and the NSW Rural Fire Service's document 'Standards for asset protection zones'.
- (2) To allow for emergency service personnel to undertake operational activities, a defensible space of 10 metres is to be provided around all structures and campsites and managed as an inner protection area (IPA) as outlined within section 4.1.3 and Appendix 5 of 'Planning for Bush Fire Protection 2006' and the NSW Rural Fire Service's document 'Standards for asset protection zones'.
- (3) Water, electricity and gas are to comply with the following requirements of section 4.1.3 of 'Planning for Bush Fire Protection 2006':
- (a) In recognition that no reticulated water supply exists, a 10,000 litre water supply shall be provided for firefighting purposes.
- (4) Access from the public road to the festival site and car parking area shall comply with the following requirements of section 4.2.7 - Access of 'Planning for Bush Fire Protection 2006':
- (a) Internal roads are two wheel drive, all weather roads;
  - (b) Internal roads are provided with at least two traffic lane widths (carriageway 8 metres minimum kerb to kerb) and shoulders on each side, allowing traffic to pass in opposite directions;
  - (c) Internal dead end roads incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end;
  - (d) Traffic management devices are constructed to facilitate access by emergency services vehicles;
  - (e) A minimum vertical clearance of four metres to any overhanging obstructions, including tree branches is provided;
  - (f) Curves have a minimum inner radius of six metres and are minimal in number to allow for rapid access and egress;
  - (g) The minimum distance between inner and outer curves is six metres;
  - (h) Maximum grades do not exceed 15 degrees and average grades are not more than 10 degrees;
  - (i) Cross fall of the pavement is not more than 10 degrees;
  - (j) Roads do not traverse through a wetland or other land potentially subject to periodic inundation (other than flood or storm surge);

- (k) Roads are clearly signposted and bridges clearly indicate load ratings; and
  - (l) The internal road surfaces and bridges have a capacity to carry fully loaded fire fighting vehicles (15 tonnes).
- (5) Arrangements for emergency and evacuation are to comply with the following requirements of section 4.2.7 of 'Planning for Bush Fire Protection 2006' and an Emergency Evacuation Plan is to be prepared consistent with the NSW Rural Fire Service document 'Guidelines for the Preparation of Emergency/Evacuation plan' and in consultation with N.S.W. Rural Fire Service Yass Valley District Office. The Emergency Evacuation Plan should include details regarding refuge/assembly areas and traffic management procedures in the case of a bush fire;
- (6) A fire permit for all fire drums and pits must be obtained from the NSW Rural Fire Service and submitted to Council prior to commencement of the event;
- (7) Fire drums and pits must be located in accordance with the details lodged with Council in support of the Development Application.
- Note:** All other fires are strictly prohibited for the duration of the event;
- (8) The applicant must ensure that safe conduct is maintained around the approved fire drums at all times;
- (9) The applicant must ensure that all festival patrons are kept at a safe distance from activities performed at the fire stage;
- (10) The event is **not** to be held in the summer months of December, January and February as this is the high risk fire season.

#### **PART C – EMERGENCY MANAGEMENT & EVENT SECURITY**

- (1) First aid and medical services must be provided for the full duration of the event in accordance with the Dragon Dreaming Festival 2014 Medical Management Plan, as prepared by Colbrow Medics;
- (2) Agaw Services Pty Ltd T/A Colbrow Medics must ensure that Public Liability Insurance to the value of \$20M is maintained for the currency of the event;
- (3) An operable satellite phone must be located within the information tent and available for use in an emergency for the full duration of the event;
- (4) To ensure the appropriate responses in the event of an emergency, all festival staff and volunteers must be briefed on the procedures for dealing with situations requiring:
- (a) External bushfire response;
  - (b) Internal Fire/Explosion;
  - (c) Emergency evacuation procedures;
  - (d) Safe crowd control;
  - (e) First Aid/Medical response;
- in accordance with the Disaster Response and Evacuation Plan submitted in support of the Development Application and amended to address any issues of the emergency services;
- (5) Blackhawk Logistics must ensure that Public Liability Insurance to the value of \$20M is maintained for the currency of the event;
- (6) The illumination of common areas of the site throughout the hours of darkness is to be provided in accordance with the details lodged with Council in support of the Development Application;
- (7) Any lighting on the site is to be directed in such a manner so that no nuisance is caused to adjoining properties;

#### **PART D – FOOD SAFETY**





# Result of bushfire attack assessment

# A4

## CAMPING AREA



Calculated December 5, 2019, 8:53 am (BALc v.4.8)

### closest campsite

Bushfire Attack Level calculator - AS3959-2009 (Method 2)			
Inputs		Outputs	
Fire Danger Index	120	Rate of spread	3.59 km/h
Vegetation classification	Forest	Flame length	27.6 m
Surface fuel load	25 t/ha	Flame angle	76 °
Overall fuel load	35 t/ha	Panel height	26.78 m
Vegetation height	n/a	Elevation of receiver	13.39 m
Effective slope	0 °	Fire intensity	65,100 kW/m
Site slope	0 °	Transmissivity	0.736
Distance to vegetation	100 m	Viewfactor	0.0771
Flame width	100 m	Radiant heat flux	6.34 kW/m <sup>2</sup>
Windspeed	n/a	Bushfire Attack Level	BAL-12.5
Heat of combustion	18,600 kJ/kg		
Flame temperature	1,200 K		

Rate of Spread - McArthur, 1973 & Noble et al., 1980

Flame length - NSW Rural Fire Service, 2001 & Noble et al., 1980

Elevation of receiver - Douglas & Tan, 2005

Flame angle - Douglas & Tan, 2005

Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005



## Camping areas < 2kW/m2

### NBC Bushfire Attack Assessment Report V2.1

AS3959 (2009) Appendix B - Detailed Method 2

Printed: 30/05/2019 Assessment Date: 8/05/2019

Site Street Address: Dragon Dreaming Festival, Wee Jasper  
Assessor: Mr Admin; admin  
Local Government Area: Yass Alpine Area: No

#### Equations Used

Transmissivity: Fuss and Hammins, 2002  
Flame Length: RFS PBP, 2001  
Rate of Fire Spread: Noble et al., 1980  
Radiant Heat: Drysdale, 1985; Sullivan et al., 2003; Tan et al., 2005  
Peak Elevation of Receiver: Tan et al., 2005  
Peak Flame Angle: Tan et al., 2005

Run Description: A Camping AREA - West

#### Vegetation Information

Vegetation Type: Forest Vegetation Group: Forest and Woodland  
Vegetation Slope: 0 Degrees Vegetation Slope Type: Level  
Surface Fuel Load(t/ha): 25 Overall Fuel Load(t/ha): 35

#### Site Information

Site Slope: 0 Degrees Site Slope Type: Level  
Elevation of Receiver(m): Default APZ/Separation(m): 180

#### Fire Inputs

Veg./Flame Width(m): 100 Flame Temp(K): 1200

#### Calculation Parameters

Flame Emissivity: 95 Relative Humidity(%): 25  
Heat of Combustion(kJ/kg): 18600 Ambient Temp(K): 308  
Moisture Factor: 5 FDI: 120

#### Program Outputs

Category of Attack: VERY LOW Peak Elevation of Receiver(m): 13.67  
Level of Construction: BAL LOW Fire Intensity(kW/m): 65100  
Radiant Heat(kW/m2): 1.99 Flame Angle (degrees): 82  
Flame Length(m): 27.6 Maximum View Factor: 0.026  
Rate Of Spread (km/h): 3.6 Inner Protection Area(m): 141  
Transmissivity: 0.687 Outer Protection Area(m): 39



Calculated December 2, 2019, 2:13 pm (BALc v.4.8)

**Camping Area (Grass)**

Bushfire Attack Level calculator - AS3959-2009 (Method 2)			
Inputs		Outputs	
Grassland Fire Danger Index	130	Rate of spread	16.9 km/h
Vegetation classification	Grassland	Flame length	8.619999999999999 m
Surface fuel load	6 t/ha	Flame angle	86 °
Overall fuel load	6 t/ha	Panel height	8.6 m
Vegetation height	n/a	Elevation of receiver	4.3 m
Effective slope	0 °	Fire intensity	52,390 kW/m
Site slope	0 °	Transmissivity	0.734
Distance to vegetation	100 m	Viewfactor	0.0237
Flame width	100 m	Radiant heat flux	1.94 kW/m <sup>2</sup>
Windspeed	n/a	Bushfire Attack Level	BAL-12.5
Heat of combustion	18,600 kJ/kg		
Flame temperature	1,200 K		

Rate of Spread - Noble et al. 1980

Flame length - Purton, 1982

Elevation of receiver - Douglas & Tan, 2005

Flame angle - Douglas & Tan, 2005

Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

## BUSHFIRE EMERGENCY ASSEMBLY AREAS



Calculated December 2, 2019, 2:38 pm (BALc v.4.8)

### Assembly Point (Forest)

Bushfire Attack Level calculator - AS3959-2009 (Method 2)			
Inputs		Outputs	
Fire Danger Index	120	Rate of spread	3.59 km/h
Vegetation classification	Forest	Flame length	27.6 m
Surface fuel load	25 t/ha	Flame angle	85 °
Overall fuel load	35 t/ha	Panel height	27.49 m
Vegetation height	n/a	Elevation of receiver	13.74 m
Effective slope	0 °	Fire intensity	65,100 kW/m
Site slope	0 °	Transmissivity	0.998
Distance to vegetation	300 m	Viewfactor	0.009599999999999999
Flame width	100 m	Radiant heat flux	1.07 kW/m <sup>2</sup>
Windspeed	n/a	Bushfire Attack Level	BAL-12.5
Heat of combustion	18,600 kJ/kg		
Flame temperature	1,200 K		

Rate of Spread - Mcarthur, 1973 & Noble et al., 1980

Flame length - NSW Rural Fire Service, 2001 & Noble et al., 1980

Elevation of receiver - Douglas & Tan, 2005

Flame angle - Douglas & Tan, 2005

Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005



Calculated December 2, 2019, 2:52 pm (BALc v.4.8)

**Assembly area (Grassland)**

<b>Bushfire Attack Level calculator - AS3959-2009 (Method 2)</b>			
Inputs		Outputs	
Grassland Fire Danger Index	130	Rate of spread	16.9 km/h
Vegetation classification	Grassland	Flame length	8.619999999999999 m
Surface fuel load	6 t/ha	Flame angle	88 °
Overall fuel load	6 t/ha	Panel height	8.619999999999999 m
Vegetation height	n/a	Elevation of receiver	4.31 m
Effective slope	0 °	Fire intensity	52,390 kW/m
Site slope	0 °	Transmissivity	0.6870000000000001
Distance to vegetation	220 m	Viewfactor	0.0054
Flame width	100 m	Radiant heat flux	0.42 kW/m <sup>2</sup>
Windspeed	n/a	Bushfire Attack Level	BAL-12.5
Heat of combustion	18,600 kJ/kg		
Flame temperature	1,200 K		

Rate of Spread - Noble et al, 1980

Flame length - Purton, 1982

Elevation of receiver - Douglas & Tan, 2005

Flame angle - Douglas & Tan, 2005

Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005



# Interagency briefing participants, roles & agenda

# A4

The key stakeholders for this meeting should include:

## **Fire Services**

- NSW RFS
- Fire & Rescue NSW

## **Yass Police**

## **Event organisers**

- *Dragon Dreaming Inc* including;
  - 3 Directors, Event manager, Operations manager, Site manager and Emergency coordination consultant.

## **Security**

- NSA

## **NSW Ambulance**

- Local manager or their delegated representative
- Allocated NSW Ambulance Forward Commander

## **On-site medical provider (*Colbrow Medics*)**

- 2 qualified ambulance paramedics
- 2 doctors

## **The agenda for this meeting should include:**

- Introductions – so all staff are familiar with the NSW RFS Captain, Police Captain, NSW Ambulance Forward Commander, their on-site counterparts and contacts in the event of a bushfire.
- Summary of local bushfire risk factors, on-site safe refuge area and current emergency evacuation plans (for example):
  - Weather events: fire plan and water availability.
  - Anticipated drug related presentations for the event and procedures for assembly.
  - Natural environment: safe refuge area, areas of high bushfire risk.
- Method for initiating transfer (for example):
  - Confirming capacity of pre-deployed ambulance(s) on-site
  - Options for aeromedical retrieval (if required)
  - Radio communications and back up contact numbers
- Pathway for escalation in the event of major bushfire incident or emergency